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Contributors

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SURGICAL EXPERIENCES:

THE SUBSTANCE OF

CLINICAL LECTURES.

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SURGICAL EXPERIENCES:

THE SUBSTANCE OF

CLINICAL LECTURES.

BY

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BRITISH MEDICAL
CANCELLE

TO

HIS PAST AND PRESENT DRESSERS,

This Work is Dedicated

BY

THEIR OLD AND SINCERE FRIEND,

THE AUTHOR.

April, 1865.

BRITISH MEDICAL Library ASSOCIATION

PREFACE.

No obligation is more plainly laid on a hospital surgeon, by virtue of his office, than that of publicity. It is not only because cases must, in the course of years, have come before every one, which the infinite diversity of disease and accident, or the marvellous plasticity of nature's reparative powers, render unusually critical and important; nor is it only because each of us who enters heartily into his professional duties must have felt special interest in some particular department of our many-sided art; but it is also, in an eminent degree, because each and every one who holds such a position is bound occasionally to give an account of his stewardship, and to lay before his professional brethren a fair unbiassed statement of his failures and successes. Such books are at once a guarantee of good faith, and an evidence that the writer has not been slothful in adding his contribution, however small, to the general stock of knowledge, and to the means we possess for the relief of man's mishaps and infirmities.

The form in which the present work is cast, appears to me to possess greater authenticity than could be attained by other and more pretentious methods. In recording Surgical Experiences it has been my object rather to follow simply and honestly the teaching of facts as they came under my own notice, than to aim

at the theoretical completeness of a systematic treatise. Personally, moreover, this arrangement affords me another source of satisfaction by bringing me, for the moment at least, into closer relation with many old associates.

To my dressers, past as well as present, I have dedicated the volume. They, as well as the house surgeons, and, indeed, all who have assisted me in the cases detailed, will, I trust, accept my thanks and good wishes. The list would be incomplete if I omitted the names of a few now removed by death, and one or two may by unavoidable accident have escaped me; but of the many who remain, perhaps some, in very various scenes and places, will, like myself, appreciate the pleasure of recalling in the following pages valuable and useful hours spent in the now demolished wards of old St. Thomas's Hospital.

1841	Robert Brown, Brixton.
	H. Daubeney.
	H. B. Walker.
1842	R. Hodges, London.
	W. H. Freeman, London.
1843	J. Ozanne.
	R. Appleton.
	V. Edwards, London.
	J. T. Carr.
1844	J. Edwards.
1845	W. H. Day, Norwich.
	A. H. Cherry.[1]
	J. Wallace, Carshalton.
	J. Le Gros, St. Helier's, Jersey.
1846	F. T. W. King.
	C. H. Ozanne.
	J. Tarzewell, Blanford.
1847	W. D. Eddowes, Stamford.
1847	G. T. Talbot.
	R. Barwell, London.
1848	T. M. Jones, Portardalais.
	J. Bull.
	J. Craven.
1849	L. W. Sedgwick, London.
	J. L. Jardine, Dorking.
	T. A. Chaldecott, Chertsey.
	H. M. Simmonds, London.
1850	T. Howell, Banwell.
	A. Carpenter, Croydon.
	E. I. Complin.[1]
1851	A. F. Bayne.
	R. A. F. Gurney, Thame.
	H. Lankester, Leicester.
1852	G. D. Brown, Ealing.
	C. S. Richardson, Dursley.
	T. W. Rutter.

[1] In Memoriam.

1852 J. E. Moreton, Tarvin.
1853 J. Drake.
H. Webster, Dulwich.
W. N. Chipperfield, India.
G. T. Keele, London.
1854 S. Morgan, Bath.
S. A. Courtauld.[1]
R. B. Sweeting, Basingstoke.
R. Turner, Lewes.
1855 R. H. Hood.
1856 W. H. Stone, London.
W. Orange, Broadmoor.
Ward G. Cousins, Portsea.
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T. J. Woodhouse, Fulham.
A. Clark.[1]
T. Jones, Ross.
1857 H. Gervis, London.
J. Shea, London.
1858 C. H. Drake, Brixton.
W. Bone.
1859 T. Drake, Stratford.
J. H. Hooper.
1860 G. G. Phillips, Minster.
J. W. Hicks, London.
F. Watson, Nottingham.
C. B. Waller.
1861 A. H. Clay.
G. G. Pearce, Leicester.
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1863 J. Morton, Guildford.
W. W. Wagstaffe, London.
H. Rayner.
C. E. Saunders, London.
F. J. Wadd.
1864 C. T. Aveling.
J. Raby.
1865 W. K. Treves.
F. Stocks.
C. Waller.

[1] In Memoriam.

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ERRATA.

Page 374, *for* "praetical," *read* "practical."
Page 544, *for* "by rectum," *read* "by the rectum."
Page 586, *for* "cinchona," *read* "cinchonæ."
——— *omit* comma *after* "not"

SURGICAL EXPERIENCES.

LECTURE I.

On Diseases of the Spine.

Gentlemen,

I have selected the Diseases of the Spinal Column as the first subject for consideration in the Lectures on Clinical Surgery, which this season[1] it will be my duty to deliver. It is one to which your attention will be frequently called in private practice, and one which is much neglected by the student during his attendance at the hospital.

In the whole range of surgery, there is no subject of deeper interest in a physiological, or of greater importance in a practical, point of view, than that of diseases of the spine. The term, like that of diseases of the head, is a very comprehensive one; for it includes all morbid changes of the bones and ligaments of this beautiful piece of mechanism, as well as of the cerebro-spinal centre, with its protecting and nutrient membranes.

It includes all morbid changes, whether those changes are the result of disease or of accident. And, when we reflect, that the effect of these morbid changes, if they proceed unarrested by the skill of the surgeon, is paralysis and death, we need no additional stimulus to encourage us to study their diagnosis and treatment, to give us the power of averting such evils. There is no subject in the whole range of surgical practice which contains more food for meditation than that of diseases of the spine. There is none which it is more important

[1] 1844.

that you should understand as *general practitioners;* and I make use of the term in distinction to *special practitioners*, or "specialists," as they are called in the present day. I do not wish to underrate the service which has been rendered to orthopædic surgery by the orthopædic hospitals; but I do protest against the idea, which is beginning to be prevalent in some classes, that diseases and deformities of the spine and other parts of the body can be rightly treated only in the orthopædic hospitals.

I say this broadly to you, that you may repeat it to your parents if they are medical practitioners, and to your old masters in all parts of the country, that for your sakes, as a part of the material of your education, they must continue to send to their alma mater all such cases. It is a disease which pervades all classes, but it is more prevalent among the poor than the rich. I think I may safely say that there is not one among those whom I now see before me, who will be many months engaged in private practice before he is called upon to treat some form of this distressing malady. As many of your faces are new to me, I must repeat what I have often had occasion to say before, that spinal disease may be ranged under two heads; the crowning type of one class being the lateral, producing in its most complete form terrible deformity and distress.

You have all heard the expression, in speaking of a young lady, "Poor thing! she is as crooked as a ram's horn."

In lateral curvature, the spine, when viewed from behind, instead of presenting a straight perpendicular line, waves from side to side. In its aggravated form it is as painful to look at as it is lamentable in its result; but it is not indicative of disease of bone, nor, with rare exceptions, is it productive of paralysis.

The other form is the angular curvature, seen when viewed laterally, changing the graceful S-like curve of the whole spinal column into an abrupt angle at one particular point. So abrupt is this deviation from the natural curve, so acute is this angle, that, if you look

at the natural structure of the spinal column shown by a central perpendicular section, you see at once that some portion of the bodies of the vertebræ must have been removed to admit of such a falling forward of the column and such a hunchback projection behind.

This broad line of division is something like that adopted by the geologist when he divides the terrestrial rocks into two grand classes, the stratified and unstratified: the cause which produces the two being, water in the former, fire in the latter, so in the spine, the lateral curvature is the result of weakness, without any lesion of tissue; the angular is the result of lesion caused by disease.

The lateral curvature depends on a feeble condition of the muscles and ligaments, just as the upright figure and the erect spine are due to the proper action of the muscles of the back, the Pons Asinorum of the juvenile anatomist.

Yes, gentlemen, there are seven layers of muscles on each side and four sets. The origin, insertion, relative position, and action are difficult to learn and hard to remember; but when you have once mastered them, then also will you be able to understand the pathology of lateral curvature. Remember this when you dissect them, and do not regard them as a piece of mere dry uninteresting anatomy, to be learned for the College, but for nothing else. If these muscles become feeble, then the spine sinks into unnatural lateral curves; or it arches forward, and that which is at first a mere occasional stoop, becomes ultimately a confirmed deformity.

In this theatre, I have often had occasion to dwell upon the important part which the muscles perform as accessory and intelligent ligaments—binding bones together, strengthening joints, and affording especial support when and where it is most required; illustrating my observations by the structure of the knee-joint, the principal strength of which is to be sought, not in the ligaments, strong and numerous as they are, but in the powerful extensor and flexor muscles which

surround it with their aponeurotic tendons, and brace it up on every side. This principle may be well applied to the organization of the spine in connection with the diseases to which it is liable. The student who neglects to include the muscles of the back in his consideration of the mechanism of the spine as a series of joints, studying only the ligaments, will never be able to reason correctly upon the causes which produce spinal distortion, or employ judicious means for its correction. In the chamber of the sick, you must not regard the spine simply as an inflexible column from which the muscles moving the upper extremities may act as from a fixed point. If you were to take pains to watch the varied movements of this beautiful column when exposed—an opportunity which, unfortunately for anatomists as well as for artists and sculptors, is seldom afforded in this inclement clime—you would see how flexible it is, and how much it is influenced by the muscles attached to it. Every schoolboy knows how fatiguing it is to sit for any length of time on a form without a back to it; but have you, since you have been studying anatomy, ever reflected that such fatigue demonstrates how much more the vertebral column must be supported by muscular fibres, which experience fatigue, than by ligamentous fibres, which do not? Ignorance of the general physiology of muscular action, and the particular physiology of the dorso-spinal muscles, first opened the door to the quack and instrument-maker to undertake the treatment of spinal deformity instead of the surgeon: and I can conceive no greater amount of horrible torture inflicted on the human race, than that which ignorant and unprincipled men have perpetrated under the plea of curing deformities of the spine: it has cast a stain upon the profession, for ignorance of physiology and anatomy has not been limited to quacks and mechanists.

The study of the muscles of the back is looked upon by the pupil in the dissecting-room as a mere exercise of the memory, which is necessary for him when he is going up to the College, but of no value whatever in

the practice of surgery. Often and often have I been asked by students, what is the use of learning the muscles of the back, for we shall be sure to forget them as soon as we have passed the College? Nor is it of any use if they merely learn their origin, and insertion, and relative position, without understanding philosophically their actions and offices. The best method of studying the anatomy of these muscles, so as to retain a knowledge of their functions, which will avail you in the treatment of the deformities of the spine, is to include all the muscles attached to the spine, inclusive of the sacrum—not merely the muscles of the back—in one list, and then to arrange them under four heads :—1st, those which arise from the spine, and are inserted into the extremities; 2nd, those which arise from the spine, and are inserted into the ribs; 3rd, those which arise from the spine, and are inserted into the head; 4th, those which arise from one portion of the spine, and are inserted into another.

In the first division you have on each side seven—the latissimus dorsi, trapezius, rhomboidei, levator scapulæ, the psoæ, and quadratus lumborum.

In the second, six, and one set—the serratus posticus, superior and inferior sacro lumbalis, levatores costarum, scaleni, and diaphragm.

3rd, Nine—splenius capitis, complexus, trachelo mastoideus, obliquus superior capitis, rectus posticus major and minor, rectus lateralis, rectus anticus major and minor.

4th, Ten, and three sets — longissimus dorsi, sacro-lumbalis, spinalis dorsi, semi-spinalis dorsi, and colli, cervicalis descendens, transversalis colli, splenius colli, obliquus inferior capitis and longus colli, multifidus spinæ, inter-spinales, and inter-transversales.

The term "origin of a muscle" is very apt to mislead the student, as it conveys the idea that it is invariably the fixed point, instead of being in its turn movable, as is the case with regard to almost all the muscles of the body, and especially so in the muscles of the back. For instance, the latissimus dorsi muscle is described as

arising from the ilium, the sacral and the lumbar vertebræ, and the ribs, and inserted into the humerus. When these points, which are called the origin, are fixed, its action is to move the upper extremity backwards, and rotate it inwards. But suppose its insertion to be fixed on one side, the right arm, for instance, while the muscles attached to the spine on the left side remain in a relaxed state, then will the latissimus dorsi muscle act from the arm at the fixed point, and curve the lower portion of the spine to that side, and draw up the right hip. The action of both muscles from the arm upon the trunk is well seen if we lay hold of a bar above us, and draw the body up to it, when the arms are of course the fixed points, and the spine the movable one. From this illustration you will comprehend how all the muscles between the extremities and the spine are to be considered in connection with distorted spine: acting both from the spine on the arms and legs, and from the arms and legs on the spine. Also that, in order to move the arm on one side, the spine must be first fixed by muscles attached to the opposite side: just as the muscles which act from the os hyoides upon the lower jaw to open the mouth can only produce that effect while the os hyoides is fixed by those muscles which connect that bone to the sternum and scapula; for when it is not so fixed, the very same muscles raise the os hyoides as in the act of deglutition. And although the spine is not so movable as the os hyoides, still the ligaments alone are not sufficient to prevent its being drawn out of the perpendicular line.

In connection with the attachment and action of the spinal muscles, the surgical pathologist must study well the direction of the articulating surfaces of the vertebræ, in order to connect in his mind the influence which these muscles have over the joints of the spine. He observes in the cervical region that the articulating surfaces are nearly horizontal; consequently that this portion of the column must be dependent for its erect position upon the ligaments which run from one bone to the other, and to the numerous muscles which are

attached to it; for he sees that there are no projecting lips of bone on the sides of the articulating surfaces whereby they are locked together, as is the case in some joints, and in portions of the spine in many of the lower animals. As this mode of articulating the bones gives great freedom of motion, it necessitates a greater number of muscles to keep it upright. In the dorsal region, as the articulating surfaces are placed nearly perpendicularly, the spine does not require the same amount of force to prevent it falling forwards as to prevent it inclining to one side; and he meets with that enormous mass of muscles usually described as the longissimus dorsi, sacro-lumbalis, spinalis dorsi, semi-spinalis dorsi—muscles known in the aggregate as the erector spinæ muscles.

In the lumbar region he sees that the great breadth of the bones, and the corresponding great extent of intervertebral ligaments, with the locking together of the bones, limits the motion, and renders necessary the fewer muscles to move and support it.

In these observations on the physiology of the muscles of the back, you will perceive that I have only attempted to show you the importance of the subject in relation to spinal diseases, without entering minutely into all those details which it is capable of, both in an anatomical and physiological point of view.

Deformities of the spine may be divided into two grand classes: first, those which result from disease commencing in the osseous tissue, and those which are occasioned primarily by a want of sufficient support from the muscles which are attached to the spine. This deficiency on the part of the muscles may arise from general debility; from partial debility, the muscles on one side obtaining the mastery over their antagonist muscles on the opposite side; from excess of power in the muscles of one side, in consequence of their being more constantly employed than their antagonists, which remain comparatively idle; and from a variety of other circumstances which shall be referred to hereafter. The deformity which is consequent upon diseased bones is

an angular curvature, the convexity projecting backwards. Its diagnosis is extremely important, and it shall form the subject of future observations.

In the other class of distortions, the spine is more or less curved laterally, and known under the name of *lateral curvature.* And although caries of the spine is occasionally to be met with in connection with lateral curvature, it is not usually the primary affection; and for general purposes the terms *angular* and *lateral* curvature sufficiently distinguish them into two grand pathological classes.

I have now selected the subject of lateral curvature, as it may be well illustrated by the following case, taken when the subject of it was first admitted, by Mr. Perry, and subsequently by the present dresser, Mr. Renwick:—

Harriet Town, æt. 18, milliner, single, slight made, and rather strumous appearance, admitted into Lydia's Ward, St. Thomas's Hospital, on the 15th of August, 1842, with lateral curvature of the spine. The principal curve in the dorsal region, with its convexity to the right side; slighter curve in the lumbar region; convexity to the left side. The general appearance of the figure not much altered when viewed anteriorly; but posteriorly, in addition to the deformity produced by the curvature of the spine, the projection of the scapula is very decided. She traces her present condition to ill health six years ago. At this time she suffered much from pain in her left side, which caused her to lean in that direction. There has not been any catamenial disorder. Menstruation came on at the age of fourteen, and continued regularly since that period, though her general health has never been very good.

She says she is at present getting worse, that she is very weak, that her appetite is very variable, that she perspires on the slightest exertion; she complains of dull aching pains in the loins, much increased by percussion on the vertebræ; occasional numbness of the legs, but no paralysis of motion. The treatment pursued before her admission was chiefly the administration of tonic medicines, and the application of strengthening plasters to her back. She attributes the want of improvement to having closely devoted herself to needlework. On her admission, I directed her to maintain the recumbent posture during the greater part of the day, and to use her left hand and arm in learning to sew, not employing the right more than was absolutely necessary; a moxa on the side of the lumbar portion of the spine, where her pain was more severe; as a tonic medicine—mist. iodin. c. gent. ter die; pil. aloes c. myrrh, occasionally.

It is now just two months since she was admitted; and she has been very much benefited by the treatment: the curvature is much less; the shoulder-blades do not project so much; she has very little pain in her loins; and her general health is very decidedly improved.

The distortion of the spine in this case, arose principally from a want of power in the erector muscles of the spine to perform their office, as accessory and intelligent ligaments, in maintaining the spine in a straight line, when the muscles of the right scapula were unduly called upon; and although we must not altogether omit the fact of her being induced to incline to the left side, in consequence of the pain she experienced, I considered that the action of the trapezius rhomboidei and latissimus dorsi muscles belonging to the right arm, not being, from this general debility, sufficiently counteracted by those of the left, were the principal agent in the production of the deformity. The pain which she suffered in the lumbar portion of the spine, indicated the strain upon the ligaments in that situation, occasioned by the yielding of the spine in the formation of the second or supplementary curve, to counterbalance the original or dorsal one. The result of the treatment shows that the bodies of the vertebræ had not yet been materially altered in form, as you see in the preparation before me—the result of old-standing disease. In all lateral curvatures of the spine, the intervertebral substance is necessarily compressed on the concave side of the curve; and when such pressure has continued for some time, absorption takes place, which does not stop in the fibrous tissue, but extends to the bone; and in such cases, the simple treatment which succeeded in this case would not avail. There is another consequence of the continuance of the deformity, unremedied by surgical aid, which this preparation also illustrates:—I allude to the production of this osseous layer, which has been thrown out on the sides of the bodies of the vertebræ to act as a natural splint, and strengthen the bent and weakened column. Now, beautifully as this

provision exhibits the resources of nature, you will remember that such a growth would render all attempts to correct the deformity, not merely nugatory, but improper. It is, then, of the greatest importance, in all lateral curvatures of the spine, before you commence your treatment, to ascertain how long the disease has existed, and how far the natural flexibility of the spine is interfered with.

In private practice, when you are called to such a case as the one before us, the probability is, that the friends have no idea that your patient has any affection whatever of the spinal column. They tell you that they wish you to see Miss ——, because she has a swelling in her bosom, or that one collar-bone is larger than the other, or that her shoulder or her hip is growing out. But as soon as the patient appears, you perceive, from the position of her trunk, the spinal column is in fault.

Generally speaking, you are called to these cases in quite their early stage, and before the secondary curve, by which the primary one is corrected, has occurred, and the trunk is not carried in the erect posture. There is a halt in her step, arising from the tilt of the pelvis, thus raising one of the lower limbs, and virtually shortening it. You suggest the possibility of the spine being in fault, and request an examination. You next inquire into the history of her ailments; and most probably you find, as in the present case, that there is some defect of constitution, as exhibited in a general want of power, increased by some evil habit arising from improper management during the progress of her education: such as confinement to seats without backs to rest the spine on, or straight high-back chairs, which are as bad. The slavery which many unfortunate females are doomed to undergo, as a milliner's apprentice, with needle in hand, from morning till night—only interrupted to receive a hurried and scanty meal—ill providing for the vital wear and tear of so many hours of continued labour, is a frequent cause of deformity.

There are some cases of lateral curvature, but I

believe they are very rare, which arise from unnatural action of certain muscles of the spine, produced by abnormal innervation—such as we see in infancy, the result of dental irritation, and occasionally followed by various forms of club-foot, or partial paralysis. I will call your attention to the first case of this kind, which presents itself in the house. The spine is sometimes bent down in the children of the poor, by its being required to sustain, day after day, heavier weights than it is calculated to sustain. I saw an interesting case, in the summer-time, of spinal curvature, in a girl, about fourteen years old, on the borders of Epping Forest, produced by carrying heavy loads of faggot wood on the right shoulder. Tight-lacing is an occasional cause of deformity, though not, as some authors would lead you to believe, the most frequent. The pressure of a very stiff, unyielding strap, will operate injuriously, by confining the scapula, so as to interfere with the healthy and complete action of those spinal muscles which are attached to it. This confinement allows the right arm, which must be used, to obtain undue power. It is also possible that, in weak, sickly girls, the direct pressure of the stays on the ribs may operate upon the spine, driving it from the side on which the pressure is greatest; but such cases are rare.

It is seldom that you find in lateral curvature that the spine is not more or less twisted or contorted. The transverse processes, instead of projecting directly outwards from the spine, are turned, together with the bodies, partially forwards and backwards ; so that supposing the convexity of the lateral curve is to the right, the right transverse processes project partially backwards, and as they carry the ribs with them, the angles of the ribs project, forming a considerable ridge, throwing the spinous processes farther forwards. Mr. Shaw relates a case in which the projection of the transverse processes in the neck was so great that it was mistaken by the practitioner for a tumor, which he attempted to remove by bleeding and blistering.

The contortion or twisting of the spine was, I believe,

first described by Dr. Dodds, a surgeon in the navy; and although I cannot agree with him in his explanation of the manner in which such contortion is produced, the fact itself, which is very important, cannot be disputed. The importance of a knowledge of this alteration of the position of the transverse processes is dependent on the effect which it has of destroying the symmetry of the erector spinal muscles on the two sides of the column. It gives them an unnatural fulness, especially in the loins, which, without due consideration, you might attribute to an inordinate development of muscles, and feel tempted to divide with your knife, under the idea that such projection of the muscles proves them to be in a state of active contractility.

The muscles of the spine do become shortened on the concave side of the curve; but I agree with Mr. Shaw in considering this as the consequence of the curve, and not the cause of it—merely an instance of the way in which muscles adapt themselves to alterations in the form of the skeleton.

I must next caution you against confounding simulated disease of the spine with real curvatures. It is not often in private practice that we meet with such deception; though that strange disease, hysteria, sometimes calls forth the powers of its victims to simulate deformity of the spine; but in hospitals and in the army such cases occasionally occur. M. Guerin states that pretended deviations of the spinal column may be distinguished from the morbid by the following marks:—

1. In the simulated deviations, the seat of the deviation is always the same—the *dorso lumbar* region; the curve constantly the same, having its centre in the middle of the last dorsal vertebra; absence of a projection or gibbosity in the middle of the convexity of the curve; furrows or folds of the skin, generally two in number, always situated between the crista of the ilium and the last rib; considerable inclination of the trunk, the superior extremity separated very much from the line of gravity; elevation of the hip on the side of the

concavity when the heel is detached from the ground; proportional shortening of the corresponding limb.

2. In the morbid deviations, on the contrary, the variable seat of the curve, the curves multiplied and alternate, one of which is the principal and the other supplementary; constant presence of relief, or dorsal and lumbar gibbosities on the side of the convexity of the curves; cutaneous furrows, pronounced and variable, with regard to the seat, as the deviations themselves; not much inclination of the trunk, on account of the supplementary curves; elevation of the hip almost insensible, or for some time only.

The simple lateral curvature, which the present case illustrates, is consequent on debility of the muscular system, and it must not be confounded with that deformity which is occasioned by imperfect development of the osseous tissue. There is a want of due solidity in the skeleton, occasionally met with in infancy, and known by the name of rickets, which it is necessary we should distinguish from the weakness upon which this lateral curvature depends. The term rickets, or rachitism, has been used so loosely, that it may be well to consider briefly its distinguishing characters upon the skeleton. If you look at this beautiful specimen of the disease,[1] you will see at once that the whole framework, from the bones of the feet up to the cranium, is deformed; the bones of the limbs are curved, and more or less twisted on their axis. Their extremities are swollen and deformed; the articulations of the feet and hands offer directions and relations which are not natural; the apophyses and points of attachment of muscles are unnaturally prominent; and, to use the expression of M. Guerin, who has thus described these changes, the ribs are rounded, as it were blown up, and present, at their sternal extremity, a curvature, the concavity of which looks forward and outwards. The chest is thus widened transversely, and depressed into a furrow, in the middle of the articulations of the ribs with the sternal cartilages. The vertebral column deviates laterally or pos-

[1] Mr. Solly here exhibited a rachitic skeleton.

teriorly, and presents a succession of alternate curves. The surfaces are rounded, and, as it were, distended and swollen, presenting many points of depression, which approach the articulating surfaces of the bodies; the vertebral appendices participate in the appearances, and are more or less depressed, as it were, *ecrassée*, in the vertical direction, from muscular action. The pelvis has lost its symmetrical conformation. The sacrum is sometimes vertical, and sometimes more curved than natural and thicker than usual. The hip-bones are more or less approached; they are thicker, as are also the blade-bones and sternum; they are shortened and thickened: the head is generally voluminous. The cranium thickened principally on the sides. The bones of the face exhibit, by their exaggerated development, some marked projections, the angles being more acute than natural; the relations of proportions of all the parts of the osseous system are generally perverted. The skeleton in its totality, as in each of the bones composing it, offers a true reduction in length, in extent, and attests an arrest of development. Rickets, properly so called, is a malady of infancy: it is rarely observed in the fœtus; more frequently towards the age of 18 to 20 months; very rarely after the age of six years.

The immediate influence of rachitism upon the osseous system is shown—by deformity of the bones; by their reduction in dimension; by the ultimate alterations of their tissue; lastly, by the disturbance and retardation of the progress of ossification.

Rachitism of the spine does not occur without indications which cannot be mistaken of its existence in other bones. I have considered this digression necessary, to prevent your confounding the lateral curvature of adult life with that which originates in infancy as the effect of rickets.

We must now, gentlemen, consider the treatment of these cases of lateral curvature when they present themselves in the early stages, as in the case which has just been related.

First, then, with regard to the constitutional treat-

ment of such cases. It is a disease of debility, and the constitution must be strengthened; but you must not suppose that this is to be done by simply giving tonic medicines. You must first ascertain the state of the intestinal secretions, not by inquiry, for this is always unsatisfactory, but by the examination of the state of the tongue, and observing the fæcal evacuations for yourself, and then giving a purgative, containing a greater or less quantity of mercury, according to their character; for there are none of these cases which do not require some alterative medicine before you can give tonics with benefit. You will select your tonic according to the state of female health, giving a preference to the various forms of steel if the patient has attained the age of puberty, and the menstruation is not regular and healthy. But if, as in the case before us, the functions of the uterus are duly performed, then I think that small doses of iodine with the iodide of potassium, in a bitter mixture, forms an excellent tonic, though it, of course, requires to be carefully watched, as, after a time, it occasionally disagrees with the stomach, and must be omitted for some other. I have insisted much on the importance of constitutional treatment, but you must not imagine that this can accomplish all: no patient with distortion of the spine will outgrow it without local treatment. If the disposition to curvature is not arrested, instead of outgrowing the disease, the additional length of the spine will only add to the deformity. "A spine, slightly distorted," says Mr. Shaw, "in a growing girl, may be made straight; but if it be neglected (however great may be the attention paid to the state of the health), the curve will become decidedly worse; and if it be permitted to increase to such a degree as to render the ribs angular, it is very doubtful whether a perfect restoration of the form can ever be effected." In speaking of local treatment, the time necessarily allotted to a clinical lecture forbids my entering into much detail; but it is very important to dwell upon the principles which should guide your practice; indeed, it would be impossible to

describe all the measures which might be judiciously employed in each peculiar case. Exercise of the spinal muscles, without fatigue, is the first thing to be thought of; secondly, exercise of the spinal muscles, without calling upon the ligament to sustain the spine in the erect posture; thirdly, giving the muscles greater power to maintain their contractile force; fourthly, reduction of inflammation which has been excited in the ligaments of the spine. Thus the recumbent posture is necessary for the ligaments, the maintenance of the erect posture for the exercise of the muscles; and, although these two requisites to the cure appear totally opposed, the judicious surgeon will find many ways of effecting the same principle, though his means may vary. Thus, though he must never confine his patient altogether to a sofa, as the total idleness of the muscles would render them wholly useless, he must enjoin the recumbent posture as the rule in the first instance, and the erect posture as the exception. Mr. Shaw has suggested many excellent, and indeed elegant, contrivances for calling forth the energy of the erector muscles of the spine, for the details of which I must refer you to his admirable work on the Spinal Diseases. The practice of rubbing or shampooing the muscles is of the greatest value, as it improves and accelerates the circulation of blood through their vessels. In the case before us, I insisted upon her using the needle with her left hand, as she lay in bed, with a view to exercise freely the spino-scapular muscles. As a local antiphlogistic, there is nothing equal to the moxa, the efficacy of which in reducing inflammation has been clearly shown in the present case. In reference to the treatment of more confirmed cases of spinal curvature, all of which require additional mechanical treatment, I must defer my observations to a future lecture.

LECTURE II.

On Diseases of the Spine.—*Continued.*

In my last clinical lecture I dwelt much on the physiology of the spine as a centre of support, showing upon what structures its strength depended, and how deformity should be prevented, and how its progress should be arrested, when your advice is sought in the early stage of the disease. Your attention shall be directed to the treatment of more confirmed cases of distortion, when we have some patients in the hospital to illustrate my observations. The spinal column is interesting to the surgeon, not merely as a bond of union between the different portions of the skeleton, held together and supported by numerous muscles and ligaments, but from the fact that it contains within its tube that important centre of the nervous system, the spinal cord. This relation of the column to the cerebro-spinal axis should always be borne in mind when you are called upon to treat any of the diseases to which it is liable, but it is especially important in connection with the spinal diseases, of which the following case is an illustration :—

William Dickerson, æt. 21, farmer's labourer, from Cambridgeshire, was admitted into St. Thomas's Hospital, Aug. 22, 1842, with posterior angular curvature of the spine at the ninth dorsal vertebra.

States, that until six months ago he had no signs of disease or curvature whatever. He first noticed a sharp aching pain across the hips and loins, increased by coughing and percussion; at this time he was exposed to wet and cold at his work, though not more than farming labourers are generally; he never had rheumatism, but he has cough at the present time; he does not remember having strained or hurt himself in any way.

August 22nd, 1842.—The spine presents no lateral deviation, but

at the ninth dorsal vertebra there is a considerable projection posteriorly. He suffers acutely if this point is tapped with the hand.

There is no paralysis of the legs, but they are subject to occasional twitchings.

Some cough, attended with bronchial expectoration.

General appearance tolerably healthy; appetite good.

Hydr. c. Cretâ, gr. ij.; Conii, gr. iij. o. n.; Moxa Lumbis.

Sept. 15th.—C. Cruentæ, ad ℥vj.

21st.—Linctus pro tussi.

22nd.—Moxa Lumbis, Hirudines xij. Lumbis.

26th.—C. Cruent. Lumbis ad ℥viij.; Moxa Rep.

Nov. 1st.—C. Cruent. ad ℥viij.

He is now free from pain in his back; he can bear it to be tapped without suffering, but if he coughs or sneezes he has a shooting pain down from the loins. He still, at times, has a little numbness down the legs, but not so much as he had; his countenance and general health are good.

You will immediately perceive that this case illustrates one of the grand divisions of spinal diseases into which I stated they were usually divided: viz., that deformity which is occasioned by actual disease of the bones of the vertebræ. We must now consider how this disease commences, and whether it is similar to other diseases to which our frames are subject.

Bone is liable to be affected with the same kind of diseases as the soft parts; inflammation and its consequences, ulceration, suppuration, gangrene, &c., though the difference of texture modifies the progress of the disease, and appearance which it presents. Different terms have been employed in designating its diseases: thus, ulceration is called caries, and gangrene, necrosis, &c.

When the ulcerative process attacks a bone it is not easily arrested, and a considerable portion of bone is usually destroyed before the ulcer heals.

The texture of the bone which has been removed by this process is never entirely filled up, and the vacant space remains. Supposing, then, caries to have attacked the body of one or more vertebræ, the consequence will be that a considerable gap will be formed in the anterior portion of the column, depriving it of its firmness and solidity.

If you look at this beautiful preparation of caries of the spine, you will immediately perceive the cause of angular curvature. The bodies of the vertebræ have ulcerated, and thus allowed those above and below to approximate anteriorly; the spinous processes are consequently separated, and form the angular projection which you see here, and which can always be detected during life, as in the case just related.

In regard to your diagnosis of caries of the vertebra in such cases as the present you cannot easily err, for here the disease had extended so far as to produce the angular curvature I have described. But it sometimes happens that the first indication of caries of the spine is partial paralysis of some of the muscles of the extremities, unaccompanied with any spinal deformity. In such cases it is extremely important to detect the cause of such paralysis; whether it is dependent on lesion of the spinal cord, or brain, and if of the cord, of what portion. Generally speaking, if you carefully examine the spine, from the cranium to the sacrum, tapping gently the spinous process of each vertebra, you will discover the seat of the disease. But this plan does sometimes fail. Mr. Copeland recommends the application of a sponge wrung out of hot water, and he relates a case of caries of the spine which he detected in this way when every other had failed. Sir B. Brodie observes, that there are cases "in which there is no pain in the spine whatever from the first access of the disease to its termination," and others, in which the disease has been supposed to be cured, the patient not having experienced any pain for two or three years, but in whom, after death, the bodies of the vertebræ were found to be still in a state of caries; and an abscess, containing not less than half a pint of matter, connected with them.

Supposing, then, that you have ascertained the existence of caries of the spine, even though it be prior to the existence of deformity, it is a matter of no little importance to you, to learn whether the disease commences in the osseous or the ligamentous tissues of the column. It is not often that we have the opportunity

of examining these cases in the very early stages—before, in fact, the deformity has commenced—which too frequently is the first intimation we receive of the existence of any malady at all. In this preparation you have the opportunity of observing one form of the disease in its very early stage. The anterior ligament of the spine exhibits marks of inflammation; it is separated from the bone, and fibrinous matter deposited between them: this inflammatory action is the precursor of ulceration of the vertebra; and thus, in some instances, does the disease commence in the ligamentous, not the osseous tissue.

The researches of Sir B. Brodie show that the ulcerative process does not invariably commence in the bone, but occasionally in the fibrous intervertebral cartilage. "I have," says this author, "in some instances, found the intervertebral cartilages in a state of ulceration, while the bones were either in a perfectly healthy state, or merely affected with chronic inflammation, without having lost their natural texture and hardness; while in others it has been manifest that the original disease was the true scrofulous disease of the bone."

When the disease commences in the cartilage, it extends to the bone by simple caries or ulceration, and such cases are much more likely to terminate favourably, that is, with anchylosis, than the scrofulous disease of the bone.

It is therefore important, if possible, to distinguish them in the early stage, both in regard to your treatment and your prognosis. It would be incorrect to assert that this distinction can always be made; but I think the following points may assist you in forming your opinion. You do not meet with decided scrofulous disease of the bodies of the vertebræ, without tolerably decided indications of a scrofulous diathesis, as exhibited by the general appearance of the patient, and symptoms of the disease in other organs; whereas direct injury, such as a forcible twist of the spine, occurring in a person of good general health, without any strumous taint, though deficient in general power, may lead to

inflammation of the anterior and posterior ligaments of the spine, or the intervertebral substance, which, if unchecked, goes on to ulceration, not merely of the fibro-cartilages, but of the bones themselves. Such serious consequences do not often follow strains in strong healthy persons, but only in individuals of lax muscular fibre.

This severe injury of the ligamentous connections of the vertebral column, takes place in consequence of the spinal muscles, whose office I described in my former lecture, under the title of "intelligent ligaments," not performing their duties efficiently. From deficient muscular power, a greater strain is thrown upon the spinal ligaments than they can bear. You must not, then, confound inefficient muscular action, arising from general want of power, with the strumous or scrofulous diathesis. The following case, which I saw at home, on Thursday last, the 3rd instant, illustrates the kind of injury which is very likely to lead to disease of the intervertebral substance if it be not checked :—

Rebecca Warland, æt. 42, married woman, wife of a brewer, has always lived well, but not to excess; appearance rather delicate, but not unhealthy; has had seven children, and five living, the youngest seventeen months old; she nursed until it was five months old. Applied to me at home on account of a pain in her back and loins, which is constant, and a most distressing sensation on stooping. She attributes her present symptoms to a fall, exactly a week ago, in coming downstairs, when she slipped, and falling partly over the bannisters, twisted her spine. She suffered most acute pain at the time, which has never left her altogether since, but has rather increased.

She feels a twitching of the legs while walking, and a catching in her back, which, she says, causes her to draw up her right leg. The pain she experiences in her back is principally on the right side. The spine is throughout tender to the touch; but she suffers acutely if it is tapped over the fourth lumbar vertebra, which was the exact seat of the pain at the time of the accident. As she is falling off to sleep at night, she is awoke with twitchings and catchings of the legs and back part of the head, and when thus roused, she is not collected immediately on awaking, as she always was previous to the accident, but is confused and bewildered. In the daytime, if she stoops her head, she feels giddy and loses her memory. Tongue white, and slightly furred; pulse 68, soft; bowels as usual, rather confined. Ordered—Cal. c. Rhei, gr. xv.; Cuc. Cruent. Lumbis ad ℥viij.

It is evident from the serious effect produced upon the nervous system, which has even extended from the spinal cord up to the brain, how severe a twist the spinal column itself must have received. There must have been a temporary and partial displacement, though probably only momentary, or the cord, which is so beautifully protected, could not have been so much injured. The cause appears slight, in comparison with the lesion produced; and we can only account for it on the principle before adverted to, namely, that the muscles, as supporters of the columns, did not faithfully perform their duty, either from want of sufficient power, or from their being taken unawares, before they had time to contract efficiently.

I think it right to employ the cupping-glasses in these cases, in the first instance, as being more efficient in the acute stage of inflammation, and less painful than the moxa. This patient has been much relieved by these measures, and the symptoms of injury to the cord very much alleviated. I cannot impress too strongly on your mind, the necessity of treating such cases actively at first, and watching them carefully afterwards.

I have two cases in my mind's eye at this moment, in which partial paralysis followed from what I must again designate as sprain of the spine. The one occurred to a steward on board a vessel, as he was lifting some very heavy trunks belonging to a passenger; the other to a carpenter. The first case was in private; but the subject of the latter was a patient in Henry's Ward; and as his case is short, I will read it to you.

Henry Lambton, æt. 29, married man, three children, by trade a carpenter; states that he has always had good health; appearance not strumous; was admitted into Henry's Ward, January 25th, 1842, with partial paraplegia.

He is scarcely able to walk, catching his toes against the ground, and dragging his limbs as he supports himself with a stick; without which, indeed, he could not stand. His legs and thighs feel numb; the left extremity is rather the worse, both in respect to sensation and motion. He has not now, nor ever had, any pain in his head. His general health is good.

His account is, that one year previous to his admission into the hospital, he strained his loins lifting a very heavy weight. He felt

at the time a considerable pain in the lower part of the back, from which he has never been entirely free since. He had medical advice at the time, and was cupped and blistered, but he gradually lost the use of both his limbs in about four months from the time of the accident.

Jan. 27th.—I ordered him hydr. c. cretâ, gr. ij. om. nocte. Two moxas, one on each side of the lumbar portion of the spine, where he experienced most pain on pressure. Strict confinement to the recumbent posture.

March 9th.—Much better, both as regards sensation and motion. Mouth very tender. To take the hydr. c. cretâ, gr. j. instead of ij. The issues discharge very little. Ordered two fresh ones.

19th.—Can now get out of bed without assistance, which he could not do when he came in. The numbness of the extremities is nearly gone, and he can walk without any dragging of his limbs. He does not walk firmly, like a strong man, but he improves after he has been up some time.

Soon after the date of the last report, he got impatient of the confinement, and went home. He returned again in about two months, much worse; but as he refused to keep the recumbent posture, he was dismissed.

In this case, there was no irregularity of the spinous processes, nor indication of disease of the osseous tissue. That a very decided change had taken place in the vertebral canal was very evident from the paralysis, caused in all probability by pressure on the cord from fibrinous deposit, the result of chronic inflammatory action of the intervertebral substance, extending to the ligaments. The rapid improvement under the influence of mercury, and the counter-irritation of the moxa, demonstrates that the cord could not have been damaged by the accident, but only compressed by some matter, which afterwards became absorbed. I have no doubt that the termination of this case, in consequence of the man's obstinacy, will be caries of the spine, angular curvature, and permanent paraplegia.

When disease of the bodies of the vertebræ is not the consequence of simple inflammatory action, by whatever cause such action may be set up, it is occasioned by scrofulous disease. This beautiful preparation, exhibiting its existence in the sacrum and last lumbar vertebra, taken from a man who died in the hospital during the summer, was produced by a direct blow on the part. He fell on board a ship, from the main-top upon the

deck — a height of about thirty feet — striking the sacrum. The accident occurred just three years before his death, during which time he, frequently, partially recovered: the immediate cause of his death was phthisis. You have frequently, during the present season, seen the effects, in different parts of the frame, of scrofula—that dreadful scourge of the human race: sometimes attacking one joint, sometimes another; sometimes arising spontaneously in the system, and sometimes consequent upon severe local injury.

Ulceration of the soft parts is always accompanied by suppuration; but not so caries of the bone. It would, however, appear that suppuration more frequently follows the caries which commences primarily in the bodies of the vertebræ, than that which commences in the ligamentous tissue. The extent to which caries will go on in the latter case, without the formation of matter, is quite extraordinary. Sir Benjamin Brodie says: "I have known as many as three bodies of vertebræ destroyed, and the disease to have lasted many years, without matter having been formed; a fortunate circumstance for the patient, as the chance for his recovery is much greater under these, than it would have been under opposite circumstances. It does not follow that because no abscess appears, that therefore none exists, for they will lie dormant sometimes for years." The same surgeon relates two cases, in one of which there was disease of the loins, and an abscess presented itself in the groin at the end of eight years; and in another, in which the disease was situated in the dorsal vertebra, the interval was sixteen years.

The course which the pus takes towards the skin, after its secretion, varies very considerably. Sometimes it presents on the sides of the vertebræ posteriorly, as in the case from which this cast was taken. The subject of it you saw on Wednesday among the out-patients. Sometimes, I think most frequently, it follows the course of the psoas and iliacus muscles towards the groin, when it presents itself as a firm elastic swelling, not unlike an adipose tumour; for the fluctuation is

very indistinct, in consequence of the quantity of loose adipose tissue in this situation, and the firm aponeurotic covering it receives from the iliac fascia.

As these remarks have led me to the subject of psoas abscesses, it may be well to observe, that you must not consider these abscesses as invariably the result of diseased vertebræ. We had a case in William's Ward a few weeks ago, in which there was an extensive collection of matter in the iliac fossa produced by inflammation of the lumbar and iliac fascia, excited by cold and wet. As I have no doubt we shall have similar cases again in the hospital, I shall not now detain you on this branch of the subject.

In caries of the cervical portion of the spine, when pus is secreted, it will find its way in various directions between the muscles of the neck. It has been known to burst into the pharynx. Sir Benjamin Brodie states that he has seen one case in which it burst into the theca vertebralis, and the whole cord, from its origin to its termination, was bathed in pus.

The most serious cases of caries of the cervical vertebræ are those in which the odontoid process of the second vertebra has been the seat of the ulceration. There are two or three cases on record in which the consequence was the sudden giving way of that process, which, allowing the head to fall forward, the medulla oblongata, or respiratory centre, was crushed, and instant death followed. Sometimes, fortunately for the patient, the inflammatory action leads to a more favourable result in the anchylosis of the two bones, as you see in this preparation.

Prognosis.—It is extremely necessary that you should be very cautious in your prognosis regarding the termination of all cases of caries. Your best guide, in regard to prognosis, in those cases in which there has been angular curvature, is to ascertain whether anchylosis has taken place, or not; for if true angular curvature has once existed, it must have been caused by the absorption of the bodies of one or more of the vertebræ; and the substitution for such deficiency,

experience teaches, is the soldering together, by bony deposit, of the healthy bones above and below the seat of the original disease. This, of course, produces unnatural, though, under the circumstances, providential rigidity of a portion of the column. Since the commencement of this session you have seen two or three cases of anchylosed angular curvature of the spine; they have not been retained in the house, because surgery could not rectify the existing deformity, which our knowledge of the pathology of these cases teaches us it would be madness to attempt.

You may, therefore, as a general rule, feel satisfied that you have effected a cure if the patient is completely relieved of the pain in his back, and at the same time that the posterior projection is less, the rigidity of the column in that situation is unnatural and complete.

With regard to the length of time required to effect anchylosis, it is extremely difficult to state it. One of our best authorities considers that it is seldom effected under six months, and that most frequently it is necessary to retain your patient in the recumbent posture a year or a year and a half.

When caries occurs in the lumbar vertebræ, the disease will often go on to the formation of abscess without any deformity of the spine, for the bodies of the lumbar vertebræ are so wide and large in every direction, that the absorption is seldom sufficient to cause them to fall forwards.

You will remember a man in William's Ward, who had been a patient in the house for nearly twelve months, with lumbar abscess, which burst posteriorly. Now there was no deformity of the spine in this case, but there was great tenderness over the spinous processes of the third and fourth lumbar vertebræ; and I am inclined to regard it as a case of caries of these vertebræ. I am supported in such a supposition from the extreme rarity of lumbar abscesses independent of caries of the spine. From the greater length of the spinous processes in the dorsal region, and the comparatively small size of their bodies, you will readily

understand that a much smaller amount of mischief to the bodies would necessarily produce considerable angular curvature.

Treatment.—In all cases of angular curvature entire rest is absolutely necessary; and this must be continued for some time; seldom less than four or five months, and often for a year, or a year and a half. The exact position in bed must vary with circumstances: as a general rule, that which is easiest to the patient is best; and the lateral position will frequently be found so, taking care to support the back with pillows that are fixed so that they cannot be pushed away. In other cases it has been found desirable to place the patient on his face; and there is a very good convex bed for that purpose contrived, over which the patient lies.

In determining the position in which you place the patient, you must always remember that you must not attempt to correct the deformity: that the maintenance of the curve, and not its obliteration, is the thing to be sought for.

You must be guided in your choice of medicines by the fact of whether the disease appears to be strictly the consequence of a scrofulous diathesis, or of local injury, whether it is accompanied with paralysis or not. If you have a scrofulous diathesis to contend with, you must avoid mercury, and give the various forms of iodine in combination with sarsaparilla, and when these disagree with the stomach, vary them with quinine, steel, &c. In some cases, but they are rare, there is sufficient indication of inflammatory action following local injury to justify you in the use of mercury in small doses. In cases of paralysis you cannot often get on without it, but your doses must be small; such as a grain or two at the most of hydrar. c. cretâ at bedtime. This mineral you give with the view of promoting absorption of that which is pressing on the cord, and producing paralysis. The following case will illustrate the efficacy of these measures, and teach you never to be discouraged in your treatment, though the recovery proceeds extremely slowly, and sometimes even appears

to stand still for a period altogether. When you have pushed the use of mercury even in these small doses as far as you consider consistent with the general strength of the patient, which must of course always be strictly watched, you may then prescribe iodine in doses commencing with half a grain, and going up to two grains, to promote the further action of the absorbents. One word upon local treatment, and then I will read the case I have adverted to. The best counter-irritant is the oldest, that which was first recommended by Mr. Pott —I mean the moxa. You should not make them very large; about the size of a shilling is the best: never make more than one at a time: even if you intend, and it is generally necessary to have two, do not keep them open more than three weeks or a month; heal them, and make fresh ones in the neighbourhood. In very young children, as in this case before you, I find the tincture of iodine extremely efficacious, and less exhausting than the moxa. This child, Henry Warden, was a year and a half old when he was brought to me about three months ago: he then had angular curvature about the sixth dorsal vertebra, and his general appearance was so wretched, from emaciation and pallor, that I never anticipated any favourable results. But you now see the child a healthy, ruddy, plump little fellow. The treatment has been simple—attention to the bowels, the administration of the tinctura cinchona internally, and the tincture of iodine to the back.

Rebecca Young, æt. 21, fair complexion, blue eyes, rather strumous appearance, was admitted into St. Thomas's Hospital in a state of complete paraplegia. She had neither feeling nor motion below the sixth dorsal vertebra, which projects posteriorly, and is very tender on pressure. Parents healthy: live at Felstead in Essex; believes it to be a damp situation in winter. She cannot account for the disease; has always lived well, never carried heavy weights, nor has she been in the habit of carrying children. She thinks that it must have been coming on for about five years, as she constantly suffered from pain in her back; on one occasion she felt a *crick* in her back, and from that time got gradually worse, and she was quite paralyzed about six weeks previous to her admission, which took place on the 23rd of March, 1841.

When I saw her on the 26th, I ordered her a purge of cal. c.

jalap., which brought away some solid and scybalous fæces. This required to be repeated frequently, and had the effect of removing *enormous* masses of fæculent matter.

As soon as the bowels were thoroughly evacuated, I ordered her a moxa on each side of the sixth dorsal vertebra, the situation of the angular curvature. On the 19th of April, I ordered two grains of iodine, to be taken three times, with the hope of promoting absorption of the deposit, which by its pressure was producing the paralysis. I was afraid that her constitutional powers would not be able to bear the effects of mercury, which was contra-indicated by her scrofulous diathesis. On the 22nd, I increased it to three grains; May the 3rd, to three and a half; and on the 14th of June to four grains. During this time there were gradual symptoms of improvement, which encouraged me to persist. And it was interesting to observe the way in which the healthy state was gradually arrived at: first, there were slight crampy feelings in the limbs; next, twitching and catching; and afterwards, decided convulsive involuntary movements.

On the 21st June another moxa was applied a little lower down the spine. On the 26th I ordered her meat daily, instead of the usual house allowance, which is meat four times a week.

On the 30th another moxa: during this period the bowels continued very sluggish, and she required repeated doses of castor oil.

Sept. 30th.—Some slight power of raising her legs, but still very imperfect, and scarcely any improvement in sensation.

Mr. Tyrrell now thought it a good case for trying strychnine, and ordered her the 12th of a grain three times a day: thus, Strychnine, gr. i.; Tinct. Aurant. ℥iss.; sumat. cochl. min. j. ter die.

Nov. 1st.—This was increased to the 8th of a grain: under this medicine she decidedly progressed, and recovered some sensation; at first she experienced shooting pains down the leg, like what is vulgarly called pins and needles; after a little while she suffered more decided pains, and as these subsided she began to feel the touch of the finger, bluntly at first, but more acutely afterwards.

Dec. 6th.—The strychnine now began to act too powerfully, producing general convulsive twitching, and it was therefore abandoned.

Feb. 24th, 1842.—As she seemed a good deal depressed, and her general power rather failing, I ordered porter one pint, and a chop, daily. Her position in bed for the first three or four months was on her face, with very short intervals of change.

March 14th.—I ordered her the mixture, iodine and gentian, continuing the meat and porter. This medicine was continued until the beginning of May, when her general health having much improved, but not the condition of the nervous system, on the 26th of this month I ordered her hydr. c. cretâ, gr. j. om. nocte. From this time her progress, though slow, was very decided, and on the 2nd of August she was presented, and left the hospital able to

walk about with the assistance of a stick, with perfect sensation, and power of controlling and directing the motion of her limbs. Her spinal column presents the appearance shown in the diagram; namely, considerable posterior angular curvature at about the eighth dorsal vertebra, the effect of which on the figure is almost counteracted by a full bowing forwards of the lumbar region of the spine; so that when she is standing there is not any very marked deformity, and she maintains the erect position very well: her stature is shortened, but not bent forwards.

Remarks.—This case is interesting in many points: first, as regards the nervous system, it shows that though the scrofulous disease of the bodies of the vertebra, which caused an angular curvature that must ever remain, had so far encroached on the spinal canal as to press upon the spinal cord and obliterate its functions entirely for almost two months, that, nevertheless, it still retained its integrity, and recovered its functions, when that pressure was removed. It was to promote this result that I ordered the iodine, which I preferred to mercury, in the first instance, for reasons stated above. The moxa, I believe, had the effect of assisting this result.

It would also appear that the strychnine had some effect in restoring the natural functions of the posterior column, more especially after the pressure had been removed, but still it did not effect a complete cure. This, I believe, was ultimately accomplished through the agency of minute doses of the hydr. c. cretâ, continued for some time, which I then no longer feared to administer, as the disease of the bodies of the vertebræ was evidently arrested, and her general health very much improved.

You will now, I trust, thoroughly understand the pathology of the case of William Dickerson, and the principles of treatment which have been pursued. So far they have been successful, but anchylosis has not yet taken place, and our great difficulty will be to persuade him to keep the recumbent posture, now that he is free from pain, until it is accomplished.

LECTURE III.

On Diseases of the Spine.—*Continued.*

On the last occasion that I called your attention to the subject of diseases of the spine, I pointed out an important distinction between the two classes of diseases to which this portion of the frame is liable. In both forms of disease the spine is distorted, and the human frame is consequently more or less deformed; but in the one the curvature is from side to side, and in the other from before backwards.

In the first case the muscles of the spine require to be exercised, and motion, with intervals of rest, and tonic medicines, are required. In the second, absolute and entire rest, with caustic issues, and sometimes mild mercurials, are necessary to arrest the disease, and save the spinal cord from destructive softening.

Nothing, then, you will perceive, can be more important than to distinguish these two classes of cases, requiring, as they do, such opposite modes of treatment, and if their diagnostic marks were always as clear and simple as they appear in a statement of the characteristic differences of the two diseases, nothing would be more easy and simple; but such is not the case. There are cases in which these characteristic differences are not so clear and evident, in which the lines of demarcation are broken down, as it were; and it is to this practical point that I wish to direct your attention. We have now a patient in the house, whose case I will read to you in a few minutes, with a lateral curvature, arising from caries of the spine, and the pathology of which was overlooked by a spine doctor into whose hands he fell when first taken ill, who treated it as a

case simply requiring support; and, so, he supplied him with a pair of stays, which he wore until he became almost paralytic.

Isaac Cripps, æt. 21, printer's devil; came to the hospital complaining of difficulty of breathing and weakness of his legs. Not believing that it had anything to do with his spine, was admitted under one of the physicians who, having examined him, detected its real origin and seat, and sent him up to Isaac's Ward, under my care, October 15th, 1844.

Short, but thick set; rather of a scrofulous appearance; thin skin; a good deal of colour. Complains of great weakness in his lower extremities, especially of the left leg, which has not power of itself to support the weight of the body. He could walk with difficulty, and not without support, dragging the left leg after him. Has not lost all sensation; his thighs are normally sensitive, but his feet and lower parts of his legs feel numbed and cold, with the sensation of needles and pins in his feet, and has frequently sudden pains in his legs, which make them draw up involuntarily. Pain in the spine about the seat of curvature, which appears lateral, and about the situation of the sixth dorsal vertebra; he cannot lie on his back without pain, nor can he, when standing, balance himself properly. The curvature is towards the left side, and there is very little corresponding curve in the lumbar region. The thorax is also enlarged on the left side, about the same situation anteriorly; it projects on the right side, and towards the mesial line. The median line anteriorly presents a double curve.

Has worked four years at a printer's, putting newspapers on to the machine; this they effect by swinging their bodies over towards it; and to prevent their falling, from too great a swing, a high board is placed.

Two years and a half ago he was moving a large piece of iron with another man, when it fell down and struck his thigh, and knocked him violently against the wall; since that he has been much worse, but continued his work as before. He had an apparatus made for him, which he wore nine months; then left it off because it hurt him. He then got worse, and was unable to go on with the work, so went to another part of the business,—to count off the papers,—less laborious. Has felt the loss of power for four months.

16th.—Ordered by Mr. Solly—Spine to be painted with tinct. iodinii, and to take the iodine mixture with gentian.

26th.—Caustic issue.

Nov. 16th.—The legs, the left especially, have lately been drawn up at night involuntarily, and he has not power to straighten them. The nurse is obliged to replace them.

Another issue to be made near the seat of curvature.

Dec. 14th.—Pulv. Doveri, gr. viij.; Cal. gr. ij. omni nocte.

21st.—Has lately felt severe pain in his knees; is now much better; has felt much more power, as well as warmth, in his limbs.

Another moxa to be made near the first, over the lumbar vertebra. Calomel increased to gr. iij.

Jan. 4th.—Another moxa was ordered to-day. He finds himself very much improved; his legs and feet have regained their normal sensibility, and he wants to get out of bed, saying he is quite strong enough.

13th.—Mouth first affected with calomel.

20th.—Discontinued, on account of the mouth being very tender; and all symptoms of paraplegia having ceased, he is very anxious to leave the hospital, but Mr. Solly has persuaded him to remain quiet in bed for the present.

The first point to remark in this case is, the constitution of our patient. You will remember that it is strumous, and predisposed, therefore, to carious disease of the spine, in the event of this portion of the skeleton being injured. This man says that his attention was not called to his spine until he received the blow mentioned in the report; but he now remembers that he used to feel aching pains and weakness in his back previously. It is therefore most probable that some degree of diseased action had been induced in the bones by the constant exertion to which the column was exposed by his peculiar occupation, and that the blow merely aggravated what had been already set up.

Mr. Pott, who has written on the connection between palsy of the lower limbs and curvature of the spine, says,[1] that although it sometimes happened that a smart blow, or a violent strain, had immediately preceded the appearance of the curve, and might be supposed to have given rise to it, yet in many more adults it happened that no such cause was fairly assignable, and that they began to stoop, and to falter in walking, before they thought at all of their back, or of any violence offered to it. That exactly the same symptoms are found in infants and in young children, who have not exerted themselves nor have been injured by others, as in the adult who has strained himself or received a blow; and that the case was still the same in those grown people who have neither done nor suffered any violence.

After adding other facts connected with the pathology of the disease, he says,—

[1] Vol. iii. p. 245.

"All these circumstances put together, induced me, as I have already said, to suspect, when we attribute the whole of this mischief to the mere accidental curvature of the spine in consequence of violence, we mistake an effect for a cause; and that previous both to the paralytic state of the legs, and to the alteration of the figure of the backbone, there is a predisposing cause of both, consisting in a distempered state of the ligaments and bones where the curve soon after makes its appearance."

These views of Mr. Pott are now generally adopted by the profession, and we must not attribute the disease entirely to the accident. Nevertheless, I suspect that the blow materially modified the character and progress of the disease. You will remember, from what I have already stated, that curvature of the spine which follows caries is almost always angular, projecting directly backwards. In this case, I have no doubt the lateral direction of the curve was occasioned by the blow striking the spine laterally, and thus injuring one side of the bodies more than the other, and causing the disease to progress more rapidly on the side of the vertebræ than in the front, its usual seat. You will see, in this preparation, a lateral direction given to the curve, from the ulcerative process having extended on one side of the bodies only, and though we have no history attached to this preparation to enable us to say that any similar cause excited the disease to take this course, the appearance it presents will assist you in understanding how it is possible it might have thus occurred.

Sir B. Brodie, in his work on Diseases of the Joints,[1] relates thus the post mortem appearances in a case where there was lateral curvature arising from caries:—

"There were no remains of the intervertebral cartilage between the fourth and fifth dorsal, and the opposite surfaces of these two vertebræ were ulcerated to a greater extent towards the left side than towards the right, and hence arose the lateral curvature."

You will, then, understand, that you may have a lateral curvature from ulceration of the bodies of the vertebræ.

[1] P. 242.

This patient, you have learnt, suffered from weakness and numbness of the limbs. This weakness and partial loss of sensation arose from pressure on the spinal cord. This pressure has been attributed, by some pathologists, to the acute angle which is formed in the canal from the falling forward of the bodies; but in this case it evidently could not be the cause. I do not believe that it is ever the case, but that the pressure is produced by deposition of adventitious matter within the canal, which matter is, in some cases, the fibrinous deposit from the inflammatory action of the membranes of the cord; in others, the strumous deposit of the bone which encroaches on the canal. It is important that you should understand this, otherwise you will not appreciate the value of mercury in the treatment of the disease, or understand why this patient improved so rapidly when the dose of that mineral was increased so as to affect his system. As soon as the pressure was removed, his nervous cords recovered their functions. If that pressure had been occasioned by the solid bone, it could not have been so speedily removed. But we must not pass over, in our consideration of the treatment, the effect of the moxa. To Mr. Pott we are indebted for our knowledge of the value of this form of counter-irritation, and I have no hesitation in saying that its effects are much more decidedly beneficial than an issue made in any other way. You will also find that it is much better to repeat them than to keep them open for any length of time. I generally close them after they have been open for a month. In a case of paralysis from disease of the spine, which I had under my care when I was Mr. Tyrrell's assistant, where the lower extremities had been entirely useless for twelve months, I applied at least ten moxas, and the patient recovered the use of her limbs so perfectly as to walk well before she left the hospital. In the treatment of all spinal cases you must have patience, and not be discouraged because your remedial measures do not produce an early and decided improvement.

In the treatment of many chronic affections of the eyes, especially those in which the retina is implicated, you may give mercury for months without any apparent benefit, till at last you perceive a slight improvement, and by perseverance you are, eventually, enabled to restore perfect vision, where, by a more hasty plan, the sight might have been destroyed for ever, or left irremediably injured, from a want of knowledge of the fact that a long-continued course of mercury, in very small doses, with counter-irritation, will effect so much.

The next important point in the pathology of diseases of the spine which this case will enable me to discuss is, on the one hand, whether ulceration of the vertebræ ever takes place without any consequent suppuration; on the other, whether or not there is a disease of the vertebræ by which the form of the column is altered, as in caries, but which is not caries. As a general rule, caries of the bones, like ulceration of the soft parts, is accompanied by the formation of pus; and in order to impress this point on your minds, so that you may appreciate the importance of the views I have to bring forward regarding angular deformity without suppuration, I will exhibit a case showing the ordinary effect of caries with suppuration.

In caries of the spine, the matter sometimes finds its way to the surface in one direction and sometimes in another. Here is a cast of the back of a poor child, whom I saw among the out-patients about two years ago: he was then five years old. The angular curvature of the dorsal vertebræ is very distinct: a little below, and on the right side, almost in the lumbar region, you observe this large rounded swelling, about as large as a child's head. This was an abscess. It was opened carefully with a valvular aperture, and then closed again. About two pints of matter were removed. The child's strength was supported with nourishing diet and tonic medicines; the parts kept as much at rest as possible; the abscess painted with the tincture of iodine; and the result has been that anchy-

losis has taken place, and the poor little fellow, though much shortened in stature, and deformed, is a cheerful happy boy, whose principal fault, his mother tells me, is, that he will never be quiet, but is always running about. However, you shall see him for yourselves. [The patient was then brought into the theatre.]

The opening of the abscess has not quite healed yet, and occasionally discharges a small quantity of pus, but he is quite free from pain in the spine. I have brought this case before you with a double object: first, as exhibiting the abscess which is occasioned by caries of the spine, and secondly, in order to encourage you in the treatment of this disease, even where the collection of matter is excessive, and the patient, worn almost to a skeleton, seems on the very verge of the grave. When I first saw this case I certainly believed it to be utterly hopeless, but of course I did not tell him so or his friends, and we have been rewarded for our trouble. Do not despair yourself, and do not take away hope from your patient.

This case merely exhibits one of the many forms and directions which the abscess assumes in this disease; and as we have other cases in the house which illustrate the disease still further, such as psoas abscess, &c., I shall call your attention to these diseases at a future time, and we will now return to the consideration of angular curvature of the spine without suppuration. My attention was first called to the existence of such a disease by Sir B. Brodie. He described it to me under the title of rheumatic caries. I have seen two cases of it; both in the persons of medical men. They are both deeply interesting and instructive. In the first case, the true nature of the disease was not discovered until it had existed twenty years, and deformity had occurred; it was then that I first saw him professionally, and learnt from Sir B. Brodie his opinion. Shortly after this I saw the second case, and from my knowledge thus acquired I discovered its real nature, and had a consultation with that eminent surgeon regarding it. He confirmed the view I had taken; and the

result of the treatment I adopted was his speedy restoration to health. I will give the first of these cases in my friend's own words, which he has kindly sent me.

A. B.—My illness began in 1825: I cannot tell why, but I experienced a pain on the right side of the seventh or eighth dorsal vertebra, for which I was cupped, and which has continued to recur at intervals ever since. My mode of life at that time was not, nor had it been form any years previously (1813), such as to preserve health. I was exsanguious, irritable, and thin—chlorotic. In 1826 and 1827, I became more sensible of illness, especially in the autumn, and was occasionally laid by with fever and inflammatory symptoms, affecting chiefly the cerebro-spinal system. I should call this the inflammatory stage, and I believe that if it had been discovered at this time, and properly treated by local antiphlogistic remedies, change of air, &c., followed by a course of tonics and chalybeates, with a regulated diet, that my present premature decay would have been prevented. As it was, the pain in the back was classed among the general symptoms of fever, and treated accordingly, or rather overlooked, for it was called ague; the immediate urgency was subdued by cupping, bleeding, &c. &c. The disease was reduced to a subordinate form, and the lesser symptoms of its progress left unperceived or unappreciated. These inflammatory attacks happened almost periodically from 1827–28–29. In 1830, I suffered from anasarca, with occasional pain and debility, and it was called debility with dorsal pain. 1831 and 1832 were tolerably quiet: severe attacks (spring and autumn) both of which demanded very firm and peremptory depletion. From this moment I date the decline of my strength—the vigour of youth departed (aged 29), and I was conscious that my health was sapped, although I was not aware in what manner, beneath the very centre and citadel of life.

This closed the inflammatory period. But the succeeding attacks were still severe, and of a mixed character, tending rather, although not entirely, to asthenic symptoms. I was conscious now of being weak in the back, at a particular point, eighth dorsal.

In 1835, I could not throw up the sash of a window, and dreaded pulling on my boots. A midwifery case was torture to me, so was compounding medicine, or walking far, or a rough cab. Any one leaning on my arm was painful, and I stooped in walking. It was considered now that I had rheumatism of the costal and intercostal muscles.

In 1836 (Sept. and Oct.), I was seized with acute pain in the eighth dorsal, fever, pulse 120, bad nights, costiveness, &c.: it was called rheumatic ague. There were spasms of the diaphragm, almost stopping the breath, chronic spasms of all the muscles of the trunk, coming on in epileptic cramps, as it were, tearing, rending,

grasping, and almost squeezing the breath out of my body; to laugh, cry, shout, speak, or turn myself, was utterly impossible till the paroxysm had passed. Often have I waited upstairs till the turmoil was over, then bandaged myself up tight with a flannel roller, taken some laudanum, put on my greatcoat, and gone round to see my patients, and come home again to make up my medicine. Frequently at night a sharp pain would plunge through the spinal cord at the eighth dorsal like a knife, and cause me to twist round involuntarily in bed like a reptile. This state of things continued 1835–36–37, presenting the same features, more or less intense, which no one understood, and for which I was cupped, leeched, blistered, mercurialized, salined, diaphorized, antimonialized, barkified, depleted, dieted, fed up, fed down, at each several recurrence of the disease—all to no good, because everything was done at random, no one knew why or wherefore, while every one gave an opinion which was exceedingly good, save and except that it never once related to the real nature and seat of the malady. During this period, the bladder and the appendant organs began to be involved in the progress of the disorder, and phosphatic urine began to appear, and sometimes serous urine of a very low specific gravity.

In 1838 the evils thickened. It was utterly impossible to turn round in bed without making a previous preparation of the arms and legs; the pulse 92, the eighth dorsal always acutely sensitive. It was almost impossible to walk, or, if walking, to draw up on a sudden; to jump, leap, sneeze, or run, was quite impossible—I never attempted it. I was often hallucinated, and was sometimes unable to distinguish in my memory between dreams and realities. Yet I kept to my business (as well as I could), wore a bandage, took opium, and often went my round with a pulse at 120. I thought that death was staring me in the face, and I prepared to meet it. I consulted very many this year, but no one was sagacious enough to detect the disease; they prescribed and encouraged me, but in fact left me to myself. In the autumn, I covered my back all over with an ointment composed of ung. hydr. for., pulv. opii, and cerate; this gave me relief, and I blessed the thought. Also this year I took, at different times, two pints of vin. ferri, and bottled porter, which did good. About November, the eighth dorsal projected, and solved the mystery, pointing like a sign-post to the truth, which no one had hitherto been able to divine. By December of this year I was comparatively well, or at least easy, and 1839 began with cheering prospects.

From this time the inflammatory stage ceased, and the asthenic condition was fairly established. The nerves were shaken, the legs not so firm as they had been, and the bladder, &c., declined in power. But my spirit was now broke in, and I had learned to bear pain without complaining of it. Neither did I often consult any one about my ailments, as I looked upon obtaining relief as hopeless.

For the last five years I have never been entirely free from pain,

while conscious of gradually losing power. The urine became gradually more phosphatic, the assimilative process more and more deranged, the difficulty of getting about greater and greater, and paraplegia more and more imminent—till I was laid on my back, unable to rise, August, 1843. Thus my long and tedious illness was brought to a crisis, which forced me from the practice of my profession, and compelled me to pack up my tatters, and decamp as well as I could. I had long foreseen this extremity to which I was reduced, and was therefore better prepared in mind to meet it than most persons supposed. My plans were laid two years beforehand.

At this time all the symptoms were those of extreme debility—I was prostrate and crippled, and left London altogether.

I was on my back, on a double inclined plane, in the daytime, unable to sit up for more than half an hour. At night I was in bed. I continued thus from August, 1843, to January, 1844, when my strength began to return. In December, 1843, I was at my worst: pulse 100 and weak; wasting of flesh; costive bowels; bad appetite; sleepless nights; hæmaturia; œdema of the hands, face, and feet. During this period my strength was of course exhausted, but my appetite was voracious, yet neither wholesome nor agreeable. I required a great deal of porter, wine, or even brandy, and I was always thirsty, especially at night.

Pulse 92, weak and sharp, when lying down; on standing up, much quicker. Skin dry and pale, especially the hands and feet. Tongue always clean but pale, with the marks of the teeth in it. Mind perfectly self-possessed. Sleep bad. Drowsy at night, but awake at two or three o'clock, unable to sleep again: often awoke in the night so exhausted as to be obliged to take brandy. Urine copious, pale, with a deep phosphatic deposit; often at 0, like hysteric urine, generally 4°. Sweet odour, unlike that of albuminous urine. As it rose in specific gravity, hæmaturia appeared, and alternated with lithic acid deposit. Always a good deal of cloudy mucus; and the urine when left standing became quickly ammoniacal.

Numbness of the right leg, as high as the top of a Wellington boot. Both legs jumped involuntarily day and night. These startings took place thus: an electric spark, as it were, exploded on the foot, shin, or thigh of one leg, and instantly afterwards both legs jumped. At night they would be subject to subsultus so violent as to awake me in alarm: numbness of both legs always followed this subsultus. The right arm at times was subject to involuntary jerking, as if somebody pulled it with a cord. Also the head was at times jerked forwards involuntarily. I was fatter at that time than I am now. My back was very tender—skin (I am told) over the diseased portion suffused with a blush. My sight was defective, which is usually very keen. Double vision of right eye.

The numbness of the right leg, and the dimness or biopia of the right eye, are now entirely gone, and I have no knowledge of the one or the other, except when, which is seldom the case now, the stomach is disordered or the mind stretched.

On the 2nd of January, 1844, I felt considerably better; got up, dressed, and went out. From January, 1844, till February, 1845, I have been on my back less and less, but I cannot sit in any chair but the one you saw. Nor can I go through the fatigue of a "visit" in an evening or so, without paying for it the next day so severely that I am not inclined to repeat my gaiety. I am never quite easy unless I spend the day after my own fashion, *i.e.* a perfect recluse. My life is one of pain, inconvenience, and bodily trial, to this hour: anything beyond my reach is a difficulty to me; a person jolting me, or turning round, or stepping far, annoys me. Nevertheless, I can walk for about three hours a day a loitering walk; I *can* walk five or six, but with repentance. Not long ago I walked seven miles, but my legs became giddy, and I was forced to ride home in a fly, which was fortunately close at hand. I am always better when I do not walk much, and the bowels act better; I require about twelve hours' bed. In this manner I keep well: what a limited existence! But a living dog is better than a dead lion! It gives me leisure to revolve my philosophy, or my religion, and to ponder on the end.

The recovery has been complete up to a given point—the back is stronger, the disease, I believe, has ceased to make progress, and the assimilative functions are restored in tone. But I must be very well aware that my constitution has received a shock which has penetrated to the centre, and that for the rest of my days I must be content to retain my health upon a tenure certain of being forfeited to the slightest inadvertence. Unless he is prepared to be charged with ignorance of the first principles of pathology, let no medical practitioner who pretends to any skill in his profession superficially suppose that a spinal case is a curable malady, or shut his eyes against its existence as an evidence, in fact, of a deeply seated constitutional derangement, irremediable, progressive, and fatal—*if it have not been recognized in its very first symptoms.*

With regard to treatment:—

In the acute stage (1825–1838) the antiphlogistic treatment was only so much powder and shot thrown away, and rather tended to injure my constitution than to dislodge the enemy within it, by always having been aimed at the wrong mark, if aimed at anything; but afterwards, when blood was abstracted from the region of the spine, I always found benefit from it. The local applications which were of use were ointments composed of spermaceti, opium, and ung. hydr. fort., spread upon lint, and covering the back; soap cerate spread upon calico, and the tincture of iodine.

In the asthenic stage (1839–45) iron stands at the top of the list as the most congenial to the disease, and the most to be relied upon; the tinctura ferri muriatis, and the vinum ferri, in small doses; nitric acid, quinine, and brandy in some modification or other: good sherry is almost indispensable. The best aperients are aloes, with rhubarb, ginger, myrrh, galbanum, and the essential oils. Blue pill occasionally. The acid stomach is best corrected by tonics. Opium is always requisite. The chronic pain in the

diseased bone is best alleviated by a sponge steeped in hot water, and held to the anus—I cannot tell why.

The medicines which disagree—

1. Salines, mercurials, iodine, hydr. potass, alkalies of all sorts, all infusions with mucilage—even beer disagrees on account of the mucilage—comp. decoct. sarsæ disagrees on this account. 2. All cold applications disagree. A draught of cold water at dinner will cause pain for the rest of the evening; cold bathing very pernicious, and cold ablutions.

Diet.—High, sustaining diet, without forcing the circulation. The only diet which really suits is plain roast mutton or beef, with bread, and two or three glasses of sherry, or a little brandy; tea with a great deal of milk, mornings, and bread and butter, and the same in the evening. Every other article of diet either disagrees altogether, or gives rise to unpleasant feelings, acid stomach, and imperfect digestion; puddings, pastry, raw fruits, white meat, bacon, fish (except soles or cod without sauces), desserts of all kinds, claret, port wine, all positively noxious. I must except rice, which, like bread, is a staff of life. Genuine bottled porter sometimes agrees very well.

Dress.—The most particular attention ought to be paid to the clothing. Warmth, not merely of dress, but during the time of dressing and undressing, must be carefully observed, especially in winter; it ought to be performed close by the fire. The bed ought to be warmed, and the feet placed in warm water at night, or wrapped in flannel, chafed with the hand, on retiring for the night. The shoulders ought to be protected during the night with a shawl or small flannel jacket. There ought to be no bedfellow. The breakfast should be taken in bed before rising; warm water used for the hands and face. Cold ablutions (I repeat) are both painful and pernicious, often causing debility and dorsal pain for the remainder of the day. Every article of wearing apparel should be well aired at the fire before putting it on (a cold shirt will give rise to pain); before going out the shoes, the greatcoat, the neckcloth should be made warm, so as to carry out a certain quantity of heat buttoned up in the dress. Even in summer, a light cape will never be too much; an extra flannel suit should be worn next the skin, and worsted stockings in winter.

Exercise is not so fatiguing and pernicious as mental exertion, long-continued thought, or family anxieties.

I need not say that Wellington boots are never to be pulled on. The first intimation I received of my back giving way, was pain in throwing up the sash of a window, and the next in pulling on my boots. Tying or buttoning shoes ought not to be allowed, nor reaching high for anything. The most painful and fatiguing exertion is the act of shaving, even to this day: I am positively almost inclined to abandon my beard, and come out like a regular Jew, or the author of the "Mysteries of Paris." It would have been fortunate for me if I had been born 300 years back, when beards were all the go.

Of the condition of the generative system in spinal disease.—In primo accessu hujus deformitatis, intacta vis genitalis est. Hoc morbo vero durante, plerumque post paucos annos, quum jam medulla spinalis quodammodo compressa; vertebrarum ossa, ad mollitiem et gibbositatem degenerantia, nervorum facultatem renalium interrumpunt; adeo ut, vis virilis labascit lenté, et gradatim extinguitur, ad propria munera idonea damnata. Tum supervenit senectus precoquis, fœcundumque nihil amplius secernitur semen, a cujus stimulo emasculatus æger omnino abscinditur.

Aliquando tamen, excitatio prava, inusitata, ægrotum cum urgenti et inexplebili libidine ad veneris voluptatem instigat: at, eheu! non etiam in thalamo, hæc cupido insatiabilis,—hæc fames tam turpis,—hoc modo laudabili per coitum vix eximi possit.

Languente tandem propter debilitatem virium moventium, sanguinis motus e corpore penis spongioso primo defluit, ac denique genitalia organa versus non amplius augetur. Fit impotentia, vel tantummodo sterilitas, aut siquidem potentia re-mansit virilis, singulari tamen lassitudine comitatur coitus.

Porro, interjecto deinde tempore, testes invicem inflammatione subacutâ correptæ, ac dolore diutino invasæ, imprimis tumescunt, tum marcescunt, et postremo tabescunt. Haud equidem rara, ni fallor, hydrocele, itidemque epididymis induratio, consecuti sunt:—suppuratio nunquam.

Non fortuito facta, ut reor, quod ita jam tunc accidunt hæc symptomata in cursu hujuscemodi morbi.

You can make use of these remarks, if my dog-Latin be done well enough to go up in class.

I will now transcribe some, of which no one need be ashamed, which comprises the general outline of treatment for spinal disease, not merely for the time being under the doctor's hands, but, indeed, for the rest of the invalid's days. An advanced spinal affection is, in fact, premature old age:—therefore, "pugnandum tanquam contra morbum, sic contra senectutem. Habenda ratio valetudinis; utendum exercitationibus modicis; tantum cibi et potionis adhibendum, ut reficiantur vires, non opprimantur. Nec vero corpori soli subveniendum est, sed menti atque animo multo magis. Nam hæc quoque, nisi tanquam lumini oleum instilles, exstinguuntur senectute, et corpora quidem defatigatione et exercitatione ingravescunt; animi autem exercitando levantur——."—*Cicero de Senectute*, xi. 14–20.

This is the sum and substance of the medical treatment.

Yours, &c.

P.S.—Twenty years have passed since the foregoing lines were written. I was then forty, and I am now sixty—twenty years of repose, study, and a progressive improvement of the health. In that space of time I have recovered my strength to such a degree as to be able to travel extensively on the Continent, realizing in my own person what Horace so pleasantly says of Ulysses, "mores hominum multorum vidit, et urbes." I am, I believe, as hale and

hearty as most men of threescore years and upwards, with every reasonable expectation of living on, and making a green old age. At all events, death from spinal disease is no longer imminent, and the chances of life resolve themselves into the common lot of mortality.

November 24, 1864.

LECTURE IV.

Diseases of the Spine.—*Continued.*

Gentlemen,—We must on this occasion return to the subject of rheumatic caries of the spine. I concluded my last lecture with the relation of a case which illustrates, in the most striking manner, the gradual and serious progress of this disease, and the obscurity of its symptoms in the early stages of it. To-day I shall relate a case in which the symptoms were more clearly developed in the first instance, and in which the progress of the disease has been arrested by prompt and decided measures.

Dec. 1842.—E. F., aged 37, fair complexion, slightly inclined to strumous diathesis; six feet in height; well-formed broad chest; great muscular power in lifting heavy weights; very temperate, and active habits; able to endure fatigue; not particularly robust, but seldom ill. Has lately suffered from occasional feelings of rheumatism in his joints, so that, on first moving them in the morning, they have felt stiff, and as if the surfaces grated upon one another: when suffering from dyspepsia, all his rheumatic feelings were aggravated. At the beginning of 1843 he first began to feel pain in his back, especially when leaning against a chair, and all chairs felt equally uncomfortable; but to this he attached no importance, believing the pain to be under the angle of the scapula, until his spine was examined, when he recognized the pain he experienced from tapping it as the same he had felt so long. He had a sensation of tightness round the chest, as if girt in by a belt. During this time he was a good deal harassed by business, driving and walking about for many hours together. He gradually began to find that he could not walk so far or so fast, nor so upright, as he used; and this inability increased upon him. He experienced a sensation of weariness in his legs, which he could not attribute to ordinary fatigue; it annoyed him a good deal, as he was fond of walking, jumping, &c. By degrees he found that he could not turn in bed without pain, and this increased in severity. His heart's action became irregular and intermittent. But all these symptoms he was disposed to attribute to dyspepsia,

and the effect of anxiety in his business; at this time his bowels and liver acted naturally, but his appetite was uncertain and capricious.

About the middle of December, 1843, all these symptoms increased so much, and he became so irritable and nervous, that he came up to town and consulted me regarding them. From his statement I felt very little doubt as to their spinal origin. On stripping him I found no irregularity of these bones; but on tapping the spine downwards, as soon as I came to the third dorsal he cried out; the fourth and the fifth were also tender. He said that it was not acute pain that he experienced from the examination, but a horrible sickening feeling, which lasted more or less for a quarter of an hour afterwards.

From my house he proceeded, by my advice, to Sir Benjamin Brodie, who, after a careful examination, confirmed my diagnosis that it was a case of rheumatic caries.

I now insisted upon his lying down, without interruption, for at least two months; and although this, at the time, appeared to him to be a sacrifice of all his professional prospects, nevertheless, feeling that he required rest, he complied with the directions, and ordered a double inclined couch for the purpose. For two days he kept the recumbent posture on an ordinary bed, but he was wretched, and he said that no words could express the relief he experienced on being removed to his couch. On the ordinary bed he could scarcely place himself in any position in which his back was free from uneasiness or pain.

On the 24th of December, he commenced a course of mercury, by taking one grain of calomel three times a day, and six leeches to the region of the third, fourth, and fifth dorsal. From these he experienced relief, but they made him feel so weak, that for some days he could not raise himself in bed without fainting. He continued the same dose of mercury for three weeks, when his mouth became gently affected, and we now reduced it to a grain every night. At the end of six weeks he was able to turn on his couch without pain, and at the end of eleven weeks he was so well that I allowed him to leave his couch, but he could not sit up without fainting. I therefore ordered for him a spinal support, made by Mr. Bigg, of Leicester Square. This has proved so useful to him, that he has never experienced any feeling of syncope since its application, and he has continued to wear it with the greatest comfort ever since. He now took the iodide of potassium in two-grain doses, with sarsaparilla, and in a very short time was again able to resume his professional duties, which he has continued to perform with perfect ease and comfort to himself, with every feeling of health; and up to this time he has had no return of his ailments.

I think you will agree with me in regarding the three cases I have just related as pregnant with matter for serious reflection. The first point that I think must strike you is the length of time during which

this disease may exist, and its real nature remain undiscovered; also, the extent to which the cerebro-spinal system may be affected before there is any alteration in the form of the vertebral column, or any external mark indicating disease of the osseous tissue. No one who has listened to the graphic account which my friend has written of the rise and progress of his sufferings, that I gave in my last lecture, can, I think, doubt that they depended on irritation of the spinal cord. But whence the exciting, the proximate cause of this irritation? In the ordinary or strumous caries of the vertebra, I have already expressed my opinion that the subsequent paralysis is occasioned by fibrinous effusion into the canal, and not by the pressure of the overlapping bones, and so in rheumatic caries I have no doubt absorption of the bone, which ultimately demonstrates itself by the angular curvature, is preceded by inflammation of its substance. And, therefore, so soon as the inflammation of the bone has extended to the membranes of the cord, so soon do we have evidence of spinal irritation. If this view of the case be correct, it has a most important bearing on our early treatment of this disease. Without troubling you with a detail of other cases of a similar character, those we have before us afford strong evidence of the truth of this view of its pathology. A. B. was always relieved, in the early stage of his disorder, by local depletion, and the disorder was evidently for the time arrested in its progress though not altogether annihilated, as, its nature not being understood, the whole plan of treatment was vacillating and empirical. In Cripps' case, as soon as his system was affected by mercury, so soon did his paralytic symptoms subside. And in the last case, the same result followed the use of the same antiphlogistic remedies.

In treating this disorder as inflammatory, let me beseech you to remember what I have so often dwelt upon in regard to the treatment of all affections of the nervous centres, namely, the general depression of the vital powers which attends an inflammation of their

structure. It will scarcely ever bear active treatment, and the blood-letting should be almost invariably merely local. Indeed, all antiphlogistic treatment must be employed with great caution. Now, if the first case, that of A. B., exhibits the evils which ensue from a man pursuing his occupation, and following his profession, in spite of all his suffering, so does the third case demonstrate the value of perfect rest, with efficient antiphlogistic treatment, in staying the progress of this formidable disease.

I need hardly insist on the importance of a correct diagnosis and prognosis in these cases; and if it is important for you to distinguish between lateral curvature and angular curvature, so it is even still more important that you should distinguish between ordinary or *strumous* caries of the spine, and the *rheumatic* caries of Sir B. Brodie—for I am convinced that the two diseases are essentially different, both as regards their origin, progress, and termination, and the treatment required for their cure—and again, between the latter, and disease of the cord independent of disease of the bone. Sir B. Brodie, in a lecture published in the *Lancet* of the 30th of December, 1843, has remarked that rheumatic caries is always accompanied with pain; scrofulous caries, though frequently, not so invariably; and in paraplegia from disease of the cord independent of disease of the vertebræ, there is an entire absence of pain. The history of each case will also assist you—the presence or absence of a rheumatic or of a scrofulous diathesis—the moral history of your patient, independent of disease of the cord being generally the result of excess in venery by persons leading sedentary lives and engaged in continual mental exertion. But in these last cases—and I have seen several—there is no pain on tapping the spine. But, on the other hand, there are cases of spinal disease in which the diagnosis is not so easy. The patient suffers severe pain on pressure over the spinous processes, with total loss of power of the legs, but without any irregularity of the vertebræ, or other evidence of the existence of

disease of the bones. The most anomalous symptoms, however, generally occur in females; and when we find in our examination of these cases that there is no evidence of a rheumatic tendency previously, that they have never suffered from rheumatic pains, and that the tenderness on pressure is not confined definitively to any particular portion of the spine, severe pressure not inflicting more pain than slight; again, the pain shifting, sometimes in one portion of the spine, sometimes in another; and if, in addition to this, you find clear signs of a hysterical diathesis, you may generally refer such ailments to a hysterical origin. This term, however, is liable to mislead: hysterical complaints are often set down as altogether imaginary, but such is not the case: they are often most serious to the patient, and most harassing and difficult to the practitioner.

There are cases on record in which females have been confined to their couch for years with most of the signs of spinal disease, and who have suddenly recovered the use of their limbs, and lost all pain in their back, under the excitement of some strong mental impression, such as the fear of fire having broken out in their house, &c. Then, again, there are other cases in which severe pain and weakness in the vertebral column had been induced by over-exertion in young and delicate females of tall stature and slight muscular power, at a time when they have been lowered by menorrhagia or other debilitating causes. Not long ago, I was consulted by a lady, residing in a healthy situation in Surrey, who is now thirty years of age, and has been more or less on her back for eighteen years, but in whom there is no irregularity of the vertebral column whatever, or other indications of disease of the bone. She cannot bear the slightest pressure over the lumbar vertebræ, but finds relief from pressure over the dorsal and sacral vertebræ.

She first began to suffer pain in her back seventeen years ago, which she attributed to over-exertion when suffering from menorrhagia. Her pain was always aggravated by a long walk, by carrying anything heavy, or any over-exertion which produced fatigue; and this

increased so much, that if she sat up for any length of time together, she lost the use of her limbs, but always recovered it after lying flat for a short time. After a year or two this was followed by violent spasms and cramps in her arms, by which her limbs were firmly fixed, horrible nightmare, and a feeling as if a thick cord were tied round the chest. This spasmodic feeling was relieved by castor oil.

She gradually more and more lost the use of her limbs: at last, she could not sit up for more than fifteen or twenty minutes without experiencing a most distressing difficulty of breathing. She told me that after striving for three years against it, she found that not only could she not breathe, but that she had severe pain and anguish between her shoulders. During this time she only found relief from the very hardest mattress. She informs me that, now, the only way she can keep her back at all free from pain is by lying on a thick pad laid inside her stays: though it is very uncomfortable with it, it is absolute anguish without it, for then she can scarcely speak or move. She cannot lie in any position for more than two hours at a time, and finds relief by lying on her chest and on her right side, but never on the left. She is a sensible woman, of naturally good constitution, healthy parents, and has never exhibited any signs of hysteria. She is thin and wasted, and her digestion much impaired: she cannot digest any meat, lives principally on fish and vegetables, and farinaceous food. She is cheerful and contented. I persuaded her to try and sit up in a spinal support, similar to the one which gave so much relief in E. F.'s case, but the distress which the change of posture occasioned was frightful. She seemed almost suffocated. She described it afterwards as absolute inability to breathe, but not palpitation of the heart: this she felt subsequently.

My impression, after carefully investigating all the circumstances connected with this lady's afflictions, is, that her sufferings do not arise from any positive disease of the vertebræ; and my chief reason for this opinion

is, that there is no deformity, although the disease has now lasted seventeen years, and the entire absence of rheumatic symptoms: nevertheless, the exact pathological condition is by no means clear. But its very obscurity renders the case instructive, for if it should prove to be rheumatic caries, to which in many respects it bears considerable resemblance, it will throw some light on it. If, on the other hand, it is a case of spinal irritation without actual change of structure, it shows to what an extent functional derangement may occur without disease. With regard to treatment, her extreme debility put all antiphlogistic measures, even of the mildest character, quite out of the question. You all know how much I value the cod-liver oil as a remedial agent: I was therefore much pleased when, after suggesting this with various other tonics, she told me that it was the only one that ever agreed with her. Her general health has decidedly improved since she has been taking it.

Pathology of Rheumatic Caries.—Ever since I became acquainted with the existence of the disease which Sir Benjamin Brodie has thus designated, I have naturally revolved carefully what is the condition of the bones; are they really in a state of ulceration, as in strumous caries, or are they in a totally different condition? As I have not yet had the opportunity of examining the bones in this disease after death, all that I have to say on the subject is necessarily conjectural; and I do not wish you to receive my opinions in any other light than as a theory.

I believe that this disease is a local mollities ossium, *rubra et fragilis*. I know that this view will be objected to on the ground that mollities ossium is a general not a partial disease, and that it is always fatal. In the paper which the Medico-Chirurgical Society did me the honour to publish on the pathology of mollities ossium, I related two cases which occurred in the practice of Mr. Hodgson, of Birmingham, in which this disease was confined to one bone, and I have little doubt that, when the characters of this disease are better under-

stood, we shall find it more limited than is at present supposed. It has long been known to the accoucheur that the bones of the pelvis will be alone the subject of mollities ossium, and also that they will recover their natural condition. Dr. Rigby, in his excellent work entitled "A System of Midwifery," says,—

"Mollities ossium seldom attacks women who have had no children; sometimes it begins shortly after delivery, and very frequently during pregnancy, during the progress of which it continues to increase. Hence it occasionally happens that a woman has given birth to several healthy children without any unusual difficulty in her labours, and after this, the pelvis has gradually become so deformed from mollities ossium as to render delivery impossible by the natural passages."

The same author continues,—

". . . . . where the disease has ceased some time before death, and bone earth has been again deposited—showing that the disease is arrested."

Again, in the same work, we find,—

"Mollities ossium, to a small extent, we believe, is not very uncommon, although cases of extreme deformity from this cause are of rare occurrence."[1]

Dr. Davis, late Professor of Obstetric Medicine at University College, states, in his work on Obstetrics,—

"That mollities ossium is in many cases an exclusive affection of the bones of the pelvis and of the inferior portions of the spinal column. A lady in the neighbourhood of the author's residence had been the subject of severe pain in the back and loins for some months antecedently to her last pregnancy. These pains, as is usual in such cases, were referred to and treated for a rheumatic affection of the muscles of her loins. During her gestation the disorder became greatly aggravated, and she became totally helpless and bedridden. She eventually died. Upon examination after death the pelvis presented the characteristic deformities of malacosteon; whilst, also, several of the lumbar vertebræ, which were imbedded in grume and pus, from ulceration and destruction of the immediately contiguous soft parts, were in a state of caries. No other parts of the skeleton of this subject than the pelvis had suffered distortion, nor could any of her cylindrical bones be discovered to have been in any degree affected by the disease."

It is to be regretted that in this short description the

[1] Pp. 186, 188.

exact appearance which the disease exhibited had not been more accurately described; but as far as it goes it tends to support my hypothesis.

In the paper which I have referred to in the Medico-Chirurgical Transactions, I have stated my opinion that mollities ossium is essentially an inflammatory disease, and as such ought to be treated; and, if this view be correct, you will see that in this respect also it resembles this rheumatic caries.

I am very glad to be able to quote the opinion of the intelligent friend whose case I have related in his own words, in support of this hypothesis. In one of his letters he expresses the opinion "that the condition of the bone is simply that of mollities ossium; that mollities ossium is, as you have conjectured, *ab origine* inflammatory."

There is another circumstance which appears to strengthen this argument. During the progress of true mollities ossium there is a deficiency of secretion of phosphate of lime into the bones, while there is an excretion of it from out of the system by the kidneys, the urine being loaded with it. In A. B.'s case the urine became phosphatic just previous to the alteration in the bone which exhibited itself in angular curvature; and since he has been at Brighton he has passed a calculus composed of phosphate of lime, and shortly after this the urine ceased to deposit blood or phosphate of lime. The excretion of blood I believe was occasioned by the irritation of the calculus; his spinal disease was arrested. In one of his letters written at this time he says, "You will be delighted to hear that I am a good deal improved. The hæmaturia terminated in a small calculus of the triple phosphatic character, since which there has been no news of importance from the renal districts. It is so long since I heard from my back that I am almost in hope that I shall never hear from it again." This was written prior to the medical attendance which fatigued him so much, and threw him back again. So that it would appear that after the inflammatory stage had ceased, the natural deposit of lime into the bone

was arrested, and then, but not till then, did the deformity of the spine take place, and when the abnormal excretion of this earth by the kidneys ceased, and its normal secretion by the vessels of the bone recommenced, then did his sufferings cease, and his recovery begin. In another letter A. B. makes the following ingenious suggestion: "If you consider phosphorus is required both for the brain matter and bone matter, you can get at something like a reason why nervous exhaustion should cause a diminished supply of phosphate of lime in the bones; for as the brain is more worthy than the bone, the constitution would give phosphorus for medulla first before bone."

Acting upon this suggestion, I should not hesitate to give phosphoric acid internally in this stage of the disease. It will do no harm even if it does not act specifically, for it is a good tonic, and often agrees with the digestive organs better than the sulphuric acid. You may begin with ten minims of the dilute acid in water for a dose.

I think that it must be evident to all pathologists who have examined the condition of the vertebral column after death in caries of these bones, that there are two different diseases; in the one there is a deposition of scrofulous tubercle, and the softening which exists appears to depend on this deposition; in the other the bones are red, and charged with soft grumous matter. It is true that this form of disease is sometimes accompanied with suppuration, and so far this would appear to militate against my theory that angular curvature without suppuration is dependent on a different disease; but my object is to bring before you all the pathological facts which bear upon this subject, even though I may not be able to explain their relation to one another at present.

I was very much struck with the account of the post mortem appearances in the following case, related by Sir B. Brodie, in his work on Diseases of the Joints.[1] The appearance of the bones is exactly

[1] Fourth edition, p. 245.

similar to that which I have observed in true mollities ossium.

"Case LXVI.—Edward Griffiths, 45 years of age, was admitted into St. George's Hospital, on the 15th of April, 1818, on account of an abscess which presented itself in the left groin. He said that about four months before his admission he had been seized with pain in the loins, and that the tumour in the groin had appeared about six weeks after the commencement of the pain. He was directed to remain constantly in the horizontal position, and in a short time the tumour formed by the abscess in the groin disappeared, and another showed itself over the os innominatum. On the 15th of May, this abscess was opened, and about forty ounces of pus were discharged. After this he gradually sank, and died, worn out by profuse suppuration, on the 19th of August following.

"On dissection it was found that the cancellous structure, and all the dorsal and lumbar vertebræ, were of a dark red colour, and softer than natural, so that they might be cut with a common scalpel, or even crushed by the pressure of the thumb and finger. The opposite surfaces of the bodies of the second and third lumbar vertebræ, and of the cartilage between them at the posterior part, were extensively destroyed by ulceration.

"Anteriorly the bones and the intervertebral cartilage were entire, and the latter was in a perfectly natural state, but the bones throughout were of a dark and almost black colour. On one side of the body of one of the twelve dorsal vertebræ there was a small ulcerated spot, forming an opening which extended itself into a small cavity into the centre of the bone. The bone was also of a black colour, but the intervertebral cartilages connected with the other vertebræ were in a perfectly natural state.

"The abscess had originated in the carious surfaces of the second and third lumbar vertebræ, and had extended itself behind the left psoas muscle, as low as the upper and anterior part of the left thigh, where it made a turn backwards on the inside of the tendon of the psoas muscle, and thus made its way to the place where it was opened on the posterior part.

"The ribs were throughout unusually vascular and brittle, so that they might be broken by the slightest force. There were vomicæ in the lungs, and tubercles in the liver."

But I must not detain you any longer on the consideration of these views of the pathology of rheumatic caries, by which name we will continue to designate the disease, until we can show by post mortem evidence that the term mollities vertebralis may be substituted for that of caries. Time and further facts alone can show their truth or error; resting satisfied at present,

that the diagnostic marks of the disease are strong and clear, that the plan of treatment which ought to be pursued is equally so, and that if the disease be not detected in its early stages, your prognosis must be unfavourable.

I will now conclude with some further remarks on one point in the management of these cases, to which I have scarcely sufficiently adverted.

In the treatment of all affections of the spinal cord, whether dependent on disease of the vertebræ or not, it is especially important to bear in mind the sympathy which exists between it and the brain. The mind must be kept at rest; the mental powers must not be exerted; the mental energy must be husbanded, or the spinal cord will suffer.

The brain itself is more irritable, and less capable of enduring fatigue. I have lately seen this painfully illustrated in the person of my friend, to whom I have often referred. He had been obliged to attend an old patient of his, who came to the same watering place as he had chosen for his own health.

The case was an anxious one, and the attendance was heavy. The consequence was, that he felt, to use his own words, "the full amount of nervous force very sensibly diminished, which proved itself by occasional giddiness, sleeplessness, and loss of flesh."

In another letter he thus vividly enumerates the various ways in which the brain is sympathetically affected in these diseases.

"1. Despondency. 2. Torpor. 3. Strange sensations—*a*, a wave breaking forwards over the forehead; *b*, a sound or flash of light within the calvarium; *c*, spectral illusions—exceedingly vivid; *d*, tolling of bells in the ears; *e*, occipital pains. 4. Throbbing in the head—clappings. 5. Sleep disturbed; *a*, fearful dreams:—

> "'To live in terror of those fearful dreams
> That shakes us nightly;
> . . . . . Better be with the dead
> Than in the torture of the mind to lie
> In restless ecstasy.'"—*Macbeth.*

b, unrefreshing repose—morning weariness; *c*, broken by sensations of fire or falling.

"Indeed, Shakspeare must have thought of *me* beforehand, when he penned this :—

"'Oh, I have past such miserable nights,
So full of ugly sights, of ghastly dreams,
That, as I am a Christian faithful man,
I would not spend another such a night,
Tho' 'twere to buy a world of happy days ;
So full of dismal terror was the time.'"—*Richard III.*

LECTURE V.

On Diseases of the Spine.—*Continued.*

Gentlemen,—I have frequently had occasion, in this theatre, to call your attention to the ordinary diseases of the spine, as indicated by lateral and angular curvature, and to point out the results of such disease, and the curative measures that should be adopted.

To-day I wish to interest you in a class of cases which are more obscure in diagnosis, and which are more insidious in their progress, but scarcely less serious in their results.

The affections to which I refer commence in the ligaments of the spine, sometimes induced by cold, sometimes by direct injury, such as a sprain, blow, or fall.

The first case that I shall relate to you has already, I think, interested you in our clinical visits in the wards, and you will, I trust, soon recognize it again. This case was sent to me, with the accompanying note, from my friend, Mr. Else, of Camberwell:—

"My dear Sir,—The bearer of this has a strange neuralgic affection, which totally deprives him of power to work. The source of the mischief appears to be in the left branches from the upper dorsal nerves, affecting especially the median nerve of the left arm and forearm. Being a case I thought interesting to you, and your superintendence advantageous to the poor fellow, I have taken the liberty to ask you to make him an in-patient of the hospital for a short time.

"I remain, my dear Sir, yours faithfully,

"J. O. Else.

"308, *Albany Road, Oct.* 22, 1852."

Case: Mr. Brake's notes.—William Voller, aged 40, a labourer at a gas factory, admitted into George's Ward, under Mr. Solly's care, October 26, 1852.

"Exposed much to heat and cold, but enjoyed good health till fourteen weeks ago. About that time, noticed a severe catching pain in the right loin, upon attempting to lift the iron scoop used in his employment; lasted about two days; was under treatment, and got better. Subsequently, the body became covered with a thick rash, with formication over the arms, trunk, and front of the legs, but without loss of power. Had diarrhœa and pain in the abdomen; was under treatment six weeks, and recovered. Returned to work on a Monday, but, not being strong enough to keep on, did not return again till the following Friday, but obliged to give up after two nights' work, on account of weakness. Remained at home for about a fortnight; at the expiration of that time, while walking, had a severe pain in the back just between the shoulders. The same night, this pain in the back continuing, he noticed a severe tingling in the left shoulder and along the side of the arm and forearm, followed by numbness. Applied a mustard poultice to the back and forearm; found afterwards that he had very little use in the arm, and no relief from pain; was cupped, and applied a liniment, but without any beneficial result; also tried continuous poultices for a fortnight, without relief. Cannot rest upon the shoulder without pain and uneasiness."

The deduction which I make from this history is, that, in the first instance, this man was attacked with rheumatic inflammation of the ligaments of the lower cervical portion of the spine, extending from thence to the theca vertebralis, accompanied by some effusion on the cord. The severe catching pain in the right arm, on attempting to move his scoop, is not characteristic of simple rheumatic affection of the muscles. This pain is followed by a severe tingling down the arm. Now I need only remind you of what takes place if you strike the ulna nerve, as it runs over the inner condyle of the humerus, or, in ordinary language, the funny-bone. This tingling is succeeded by numbness; in other words, the nerve, which was first only irritated, is now compressed and partially paralysed. I dare say that most of you know the sensation of numbness which results if you go to sleep in your chair, overdone by your nocturnal studies, with one leg crossed over the other. When you awake, you find your leg still asleep; it is numbed from the pressure of the popliteal nerve on one side by the knee of the other leg. But, to return to the case.

Oct 28.—Treatment: Hydr. iodidi, gr. i. ter die; moxa to side of spine.

Nov. 6.—Mouth a little affected; pain and uneasiness less on lying on right side; still continues on the left shoulder. Pil. bis in die.

8th.—Gums very tender. Pil. omitted.

17th.—Much better. Only complains of numbness along fore-arm and two last fingers.

29th.—All pain and uneasiness left him.

Dec. 4.—Cured.

If this man had not been actively treated, both before his admission by Mr. Else, who kindly sent the man up here, and had not this, too, been followed up, on his admission, by complete salivation, he would have had ultimately more advanced disease of the cord, and, in all probability, entire paralysis. Under the continued use of mercury, and steady counter-irritation, the deposit has been absorbed, and the poor fellow restored to health.

You have all seen instances in this hospital of men brought in perfectly paraplegic, having lost all motion and sensation below a certain portion of the spine. You inquire into the history of the case, and you learn that the poor fellow, most probably, has fallen from a great height, perhaps from the maintop of a vessel in the river. His existence is prolonged a few days, more or less, according to the seat of injury; and then, in the dead-house, you find, on post mortem examination, a fraction of the vertebræ and laceration of the spinal cord. You do not so often see in hospitals those cases in which the effect of the injury is slighter, and therefore little considered at the time, but setting up disease which produces very serious consequences in after life. I have lately been much interested in a case of this kind occurring in my private practice.

The subject of it was a fine young man, about 23 years of age. About two years and a half previous to his consulting me (on the 4th of September, 1852), he fell from a height of sixteen or seventeen feet, with his back flat on a hard gravel walk. He was stunned at the time, though he did not strike his head directly. He received immediately the best advice; was bled from the arm, and leeched over the left hip. He was very sore, and had severe headaches for

some days afterwards, and was not able to walk until seven or eight weeks had elapsed from the time of the injury. He was then examined by several medical men, and pronounced sound. After this, he went abroad, and lived rather freely. Just ten months before he consulted me, he began to suffer from involuntary seminal emissions, accompanied with great feeling of weakness in the back. About two months after these first appeared, he remembers finding a swelling on the left side of the loins; but this inconvenienced him so little, that he did not even mention it to his medical attendant, who treated him for dyspepsia, ordering him plenty of horse and pedestrian exercise, with tonics; but he continued to get worse, and was obliged to return to England. On his arrival, he applied to an eminent surgeon, who treated him for the spermatorrhœa with the caustic catheter. He remained under his treatment for two months, but without improvement, when his father brought him to me. From the history, which I elicited by a careful cross-examination, I came to the conclusion that the spermatorrhœa had a spinal, not generative origin. On stripping him, I found an elongated swelling, about four inches in length, on the left side of the lumbar vertebræ. It did not fluctuate, but it was elastic.

On rapping the spine in this situation he suffered a distinct, though not severe thrilling pain, shooting from the spine down the legs, with some numbness. He now stated that he occasionally suffered from the same kind of pain when walking or riding, and from the motion of a railway carriage. He also complained of a feeling of weakness in both legs, but more especially in the right. I was also informed that he slightly dragged that leg in walking, and that he could not balance himself naturally. His countenance was anxious, and he looked out of health. The nocturnal emissions were occurring frequently, without erection or pleasurable sensations. I found spermatozoa in his urine, on examination under the microscope.

Putting all these facts together, I came to the conclusion that the spine had been injured by the blow from his fall about two years and a half previously. I was rather afraid, from the swelling in the mass of the erector spinæ muscles, that an abscess was forming in that situation, and that the disease was not limited to the ligaments. Nevertheless, I had great hopes that it was not so serious as that, inasmuch as he bore firm pressure and rapping on the spine too well for there to be much serious disease of the bones; but I had no doubt of there being chronic inflammation, with some deposit, of the ligaments of the vertebræ, and also of the theca vertebralis.

With this view of the pathology of the case, I ordered him to be confined to the house, and almost entirely to the sofa, to have a large moxa made over the swelling, to take quinine, in doses of two grains, ter in die, in the infusion of roses, with sulphate of magnesia; to remain quietly in the country; scarcely to move off the sofa; on no account to ride, either on horseback or in any kind of carriage, railway or otherwise; to have meat, but not to take any wine or beer.

On the 24th of September I changed this to the carbonate of iron in ten-grain doses, with pil. aloes c. myrrh at night.

On the 22nd of October, 1852, about six weeks from his consulting me, I received the following from his medical attendant in the country:—

"I am glad to say that V. T. is going on as favourably as when you saw him. The issue discharges well. He has not any numbness on tapping the spine, nor any disagreeable sensation. He has had several seminal emissions, but they have been attended with natural feelings, and have not left him in the weak nervous state as when they occurred some months ago. When I saw him yesterday, he complained of feeling weaker in the right leg than the left, but not in any pain."

From this date he gradually but steadily improved; the issue was healed on the 4th of December, and now (January, 1853) he is quite restored to health; the swelling has been entirely absorbed, and on both sides the loins are exactly the same size and shape. The nocturnal emissions have ceased; the urine is free from spermatozoa.

Feb. 7.—He has all the appearance of health, and, though still nervous about a relapse, he has no single sign indicating it.

He can bear any tapping on the spine from the top to the bottom. He has been out with his gun for several hours during the day, and feels no weakness or unnatural sensation in the lower extremities.[1]

The result of this case is highly satisfactory, and it

[1] This man has remained in perfect health ever since, and has done duty regularly with his regiment.

must encourage you to pursue a similar plan of treatment in a case in which the pathology is similar; for I do not exaggerate when I say that, if this disease had been further neglected, it must have terminated in complete paralysis of the lower extremities.

You must not confound this class of cases with another, and that of a wholly different origin, and in which the pathological condition is likewise different. I refer to a form of paraplegia which comes on so insidiously that the sad victim is almost lost before he is aware that his health is seriously deranged. The disease is unaccompanied with pain, and it generally occurs to those whose attention is so drawn from themselves by active mental exertion that they often pay no attention to the first symptoms of disease, as they regard them as trivial and unimportant. The cases we have just been analyzing had both an inflammatory origin; the cases to which I now direct your attention are, I believe, anæmic from the first; they are cases of permanent spinal exhaustion, and you will see, therefore, the importance of a correct diagnosis, as the treatment which, in the one case, would cure your patient, in the other would aggravate his malady.

The disease commences with slight numbness of the lower extremities; this is followed by some loss of power; there is no pain in the spinal region at all; when you examine them, you may rap the spine, from the neck to the rump, and the patient does not shrink. You may apply the hot sponge, but this elicits no evidence of disease of the vertebral column.

The history will assist you if you strike the right key. You find no evidence of your patient having ever received any injury to the spine. He cannot account for it at all. If, however, you ask him whether he has had much sexual intercourse, he will say, if he is honest, yes; but more probably he will not acknowledge it immediately, when you tax him directly with not having been satisfied with the caresses and charms of one syren, that two claimed him for their own, and that his animal pride would not permit him to

stint them, he will generally acknowledge to the truth of the soft impeachment. If, on the other hand, he says indignantly, that he never had connection with a woman in his life, it is almost certain that he is a victim of that dread delusion—masturbation.

In the treatment of these cases you must avoid all antiphlogistic measures, for they only do harm. The first thing is to stop the exciting cause, and this is often the most difficult part of your task. I have known men of sound sense in all other matters, men whose judgment is of the greatest value to their clients, such slaves to the venereal appetite and their own ideas of pleasure, that they would submit to any plan of treatment that you like to propose, yet would not abstain from copulation, or give up their ordinary exercise and mental employment. I remember once saying to a patient, who consulted me for this malady, and whom I found perfectly deaf to all my advice on this point, "The best thing that could happen to you would be to be pitched out of your phaeton, and to have a bad compound fracture of the leg, which would confine you to your bed and your back for at least two months." Now, it did so happen that this gentleman met with an accident, though, unfortunately for him, not so serious as to confine him for more than a month or six weeks; but even this rest did him so much good, and he rose so much better, that he forgot all his good resolutions, pursued the same course again, and is now perfectly, and I fear irrecoverably, paraplegic.[1]

Unless you enjoin in these cases, rest, bodily, mentally, and erotically, you can do little or nothing with them; and if your patient will not submit to it you had much better take your leave without prescribing; for all the medicine in the Pharmacopœia will do no good without entire rest.

As regards medicine, I have found ten to fifteen drops of the tinct. lyttæ, with from two to four grains of the sulphate of zinc, the best. A generous, but not a stimulating, diet must be advised.

[1] He has remained a hopeless cripple ever since.

LECTURE VI.

On Diseases of the Spine.—*Continued.*

Gentlemen,—It is my intention, during the remainder of this winter session, to continue my series of clinical lectures on the cases of disease of the spine and of paralysis which have been lately, and which may be, admitted into my wards in this hospital.

The most interesting class of cases of spinal disease are those in which there has been injury to the spine, *in propriâ personâ*, the vertebral column with its bones and ligaments, and that delicate, and therefore carefully protected, centre of the nervous system, the spinal cord. I must not be tempted to dwell on the beautiful anatomy of this region, though I may be obliged sometimes to refer to certain points in explanation of symptoms.

The first case that I shall call your attention to is one which most of you have had the opportunity of observing in the wards. I became interested in this patient in the first instance, because he was introduced to me as the son of a medical practitioner; that itself is a passport to our sympathy. His father, now dead, had never been very successful, and his son went to sea as a common sailor. The poor fellow was in a sad plight when he entered the hospital, and I never expected that he would have left it alive.

I will, however, now proceed to read the notes of his case, which have been very clearly reported by Mr. Saunders, interrupting that report occasionally when I think there is room for a practical observation.

Spinal disease consequent on a fall; discharge of pus through the bladder; treated with issues; recovery.—J. B. S——, aged 21,

a sailor, was admitted into King's Ward, Sept. 16, 1862, suffering from partial paraplegia. Ten months ago, while sailing in the Gulf of Florida during a strong breeze of wind, he was putting a preventer-brace on the yard, when the ship gave a sudden lurch, and he fell head foremost from the fore-topsail yard on to the deck, a distance of at least seventy feet. He caught on the forestay, which somewhat broke his fall, and then pitched on the lower part of his back and buttock, his head and the upper part of his body not being struck. He was picked up insensible, in which condition he remained four days.

This, gentlemen, you will perceive, was, in the first instance, a concussion of the brain through the spinal column, unaccompanied by any direct blow upon the head. Such cases are rare, and therefore instructive. It does not appear from the history of the case that, although the concussion was severe, it was accompanied by any permanent mischief within the skull.

On return to consciousness, he found that he had lost the use of his legs, and had no control over his bladder or rectum. There was a piece of flesh taken completely out about the position of the last dorsal vertebra, exposing, so he was told, his backbone; the sore became very offensive, and did not heal for three months. He received no treatment of any kind for six weeks, as there was no surgeon on board. He then arrived at New York, and there went into hospital. He remained in hospital for six months.

His case was considered hopeless, and no treatment was adopted for the first three months, though he was well fed and attended to. All this time there was a large open wound, discharging freely; and to this source of counter-irritation, I suppose, may be attributed the improvement in the condition of his spinal cord, as indicated by his gradually recovering some use in his limbs, so that at the end of four months he was able to get about upon crutches. His surgeon then ordered him to take the sixteenth of a grain of strychnine, with phosphoric acid as a drink when he was thirsty—he does not know the dose. All this time pus was discharged with his urine.

Under the above treatment he improved, and, a fortnight before he sailed for England and seven months after the accident, he was able to walk without crutches. On his arrival in England he could walk pretty well, although it occasioned him some pain across the loins. About a fortnight ago he was compelled to walk, or rather crawl, from Liverpool to Luton, a distance of 184 miles. This caused him such pain that he was dragged down towards his left side while walking. He was helped along by a stick, but it took him three quarters of an hour to walk a mile for the first week, and after that, for the remaining eight days of the fifteen in which he accomplished his journey, half an hour to walk a mile. This completely knocked him up, and compelled him to keep his bed.

He was sent up to town, and for four days of last week was in one of the largest of our metropolitan hospitals, but was then discharged as incurable.

When admitted into this hospital, he could not stand upright, or walk with a stick for more than a quarter of an hour at a time, with a drag of the left foot. Sensation was dull in both legs and buttocks, but more so in the left; upper extremities unaffected. He had no control over the bladder or rectum. Urine very thick and turbid; he says that soon after the accident it was almost solid; it contained no albumen. Since the accident there has been a constant discharge of "matter" from the urethra. On examining his back, it was noticed that the spinous processes of the eleventh and twelfth dorsal vertebræ projected considerably. To the left, there was an irregular cicatrix about the size of the palm of the hand, the result of the wound before mentioned; another smaller one on the sacrum, communicating with carious bone. Tongue clean; bowels rather confined; pulse 80, firm and regular. To have one scruple of powdered rhubarb with mercury at bedtime; full diet.

Sept. 17th.—Mr. Solly saw him, and ordered the solution of bichloride of mercury, one drachm, twice a day; a moxa to be put on the right side of spine; to have a pint and a half of porter; extra diet.

26th.—Improving in general health; issue discharging freely; more sensation in legs than he had on admission; sleeps well, and does not complain of pain.

Oct. 3rd.—Progressing very favourably.

12th.—Walked downstairs, and was able to get about the garden for some time by the help of a stick; sensation returning in legs, but no improvement in the buttocks.

15th.—Ordered to take iodine mixture, one ounce, twice a day.

21st.—Has been gaining strength and improving daily; but to-day he is somewhat feverish, and is suffering from catarrh. Ordered Dover's powder, ten grains, at bedtime; lemonade.

22nd.—Mr. Solly saw him this morning, and ordered compound senna mixture, two ounces; Dover's powder to be repeated at night.

23rd.—Has been much purged by the compound senna mixture. He got up for a short time this morning, feeling slightly better; but in the afternoon was seized with very severe pain in loins and in the abdomen, stretching from the navel to the penis. He passed a large clot of blood with his urine, and the urine now (which dribbles away continuously) is still bloody. Mr. Lee saw him, and ordered compound spirit of ether, half a drachm; tincture of opium, twenty minims; peppermint water, one ounce and a half; to be taken immediately.

24th.—Had a tolerably good night, and is better this morning. Complains of occasional shooting pains in the loins. He has been very sick, but not so much purged. Urine very dark coloured, but does not deposit a sediment, and contains no blood. Repeat draught; brandy, four ounces; two eggs; strong beef tea.

25th.—Still very sick; passed urine containing blood this morning; tongue furred; bowels regular.

26th.—There has always been a slight discharge of pus per urethra, but this morning he passed about three ounces with his urine. Was restless last night, but did not suffer much pain; urine itself is quite clear. Repeat draught.

27th.—Again passed pus, but not in so great a quantity; suffers hardly any pain; his paraplegic symptoms are rather better; the issue is still dressed with peas, and discharges freely; no tenderness in loins.

28th.—Passed about three ounces of pus this morning: feels better in himself.

29th.—The same quantity of pus passed again this morning, quite distinct from urine, which is, as before, clear.

30th.—Feeling much better to-day; no pus passed; free from pain.

31st.—Passed about two ounces of pus this morning; sensation more perfect in legs; general health tolerably good.

Nov. 1st to 4th.—He has continued to pass some pus daily, generally the first thing on waking in the morning, but sometimes also during the day.

4th to 11th.—General health improving. Whenever he assumes the upright posture, after lying down for some time, there is a discharge of pus, free from urine.

12th.—There is a slight swelling on the left side of twelfth dorsal vertebra, which he says is very tender. Mr. Solly ordered a moxa to be placed over it. In the afternoon he complained of considerable pain in abdomen; he also had rigors.

Dec. 1st.—Since the last report he has continued to improve. He can walk pretty well, and has more sensation in his legs. On the 29th of last month the iodine mixture was left off, in consequence of his having some running from his eyes and nose. He was ordered quinine, two grains; dilute sulphuric acid, ten minims; infusion of roses, one ounce; syrup of ginger, half a drachm; three times a day. The discharge of pus still takes place. The issue is dressed with peas, and discharges very freely. He is having full diet; two pints of porter; beef tea.

Soon after this report he left the hospital, all discharge of pus through the bladder being arrested.

On Feb. 3rd I received a note from this patient, in which he says,—

"You will be glad to hear that I am much better. I can feel nature returning. I have a certain amount of sexual desire, which I had entirely lost ever since the accident. I also know when I want to pass my motions, though I have still no control over them or over my water. The toes of my left foot are now nearly straight, and I am getting more elasticity in my daily walking."

I hope from this account that he will ultimately

recover power in the whole of his spinal nerves, as he has gradually recovered so much.

I attribute his recovery to the free use of caustic over the lower portion of the spine, the mild but continued employment of mercury, and, after the apparent removal by absorption of the effused fibrin which had been pressing on the cauda equina, the stimulation of the atrophied nerves by strychnine.

Having thus shown you what mischief may be induced by direct violence in the spine and the nervous centre which the spine is formed to protect, and what persevering and persistent surgery can do in remedying and restoring the lesions produced by such injury, I will next call your attention to a case which forcibly illustrates a class of cases in which lesions are induced by disease and not by direct injury. To appreciate rightly these especial cases, you must be reminded of the existence and the function of the anterior ligament of the spine. This ligament, as a broad strong flat expanded tendinous band, extends from the head downwards to the point of the os coccygis, and helps to preserve the natural curvatures of the spine. The spine in health, when viewed either behind or before, is perfectly straight; when viewed laterally it presents a double curve—the first convexity of which forwards is in the lower part of the cervical region, and the second in the lower part of the dorsal and lumbar region. The tendency of the lower curve is to increase under the superincumbent weight of the body; the office of this ligament is to prevent it. You must not, however, conclude from my last observation that all the weight which may in the course of a man's daily labour be put upon the spinal column, either through the medium of the head or the shoulders, affects especially the lumbar curve and thence the anterior spinal ligament. It is the posterior curve which exists in the dorsal region that is most heavily taxed by the weight-carrying multitude, and hence the stooping shoulders. But there is another class of men whose spines are taxed heavily in their labour; it is the military. The soldier is obliged

by his drill to maintain the erect posture; no stoop is allowed. When a non-commissioned officer is on his legs from morning to night, engaged in drilling, musketry instruction, &c., his anterior spinal ligament has a long-continued strain upon it. If to this purely physical cause of disease there is added the influence of cold and damp, you will not be surprised to learn that this ligament becomes inflamed; that the inflammation extends to the intervertebral substance and bodies of the vertebræ, sometimes producing suppuration and psoas abscess, sometimes extending to spinal membranes, not so much in the form of acute inflammation as by fibrinous deposit and pressure consequent thereon.

Such cases in their later stages are unfortunately too common to the practical surgeon. In their early stages they are not so often seen, and when seen not always recognized. I am glad, therefore, to be able to direct your attention to one so distinct as to be able sufficiently early to imprint its characters, I hope, upon your minds; to show you, also, that by appropriate treatment the disease may be arrested, and that the paralysis which, if the disease runs its natural course, is inevitable, may be averted. The facts which I am about to read to you, and which have been so correctly detailed by my dresser, Mr. Saunders, I elicited from the patient when he came to me in Savile Row. It was upon this history that I admitted him as an in-patient at St. Thomas's Hospital, and obtained leave of absence for him from his employers for three months.

T. H——, aged 25, inspector of foreign baggage on the Chatham and Dover Railway, was admitted into King's Ward on Dec. 3rd, 1863. He is a well-built young man, of florid complexion, and sanguine temperament. In 1855, when in his eighteenth year, he entered the army, and shortly afterwards was appointed instructor of musketry at Hythe, on the staff. His duties were, lecturing to the officers and men on the theory of firing, and superintending the practice on the ground. During a period of two years he visited the principal garrison towns of England. He was then ordered to India, to act in the same capacity. On his arrival he had to march 900 miles, which was accomplished in about three months, by marches of twelve and sometimes thirty miles a day. He had frequently to wade through rivers, and allow his clothes to dry on

him. His shins became very painful from the continual walking, but under treatment soon became better. He remained in India two years, his health being remarkably good until within a few months of his return to England, when he was much troubled with dyspepsia and pains in the chest, coming on every day, and being sometimes so severe as to cause him to gasp for breath. On his return he again went to the School of Musketry, at Hythe, and remained there for about two months. He was then ordered to the west of Ireland. Here it was that he first began to feel his health fail him. On account of the distance between the barracks and the practice-ground, he was out from early in the morning until about seven o'clock in the evening, standing constantly with wet feet on the bog, and exposed to most severe weather. After being there a few months he began to feel pains in his back, in order to relieve which he was frequently obliged to sit on a stool, and on trying to get up he felt a great stiffness and inability to straighten the back for some moments. This gradually became worse, until a pain of a dull aching character became fixed in a position between the sixth and eighth dorsal vertebræ. He has left the army for the last nine months, and has since been following his present employment. He is now engaged from six in the morning till nine at night, fully half of which time he is standing. He, in common with all the other members of his family, enjoyed good health up to the time of his going to Ireland. Has been temperate as regards drinking, but when in India he was accustomed to smoke sixteen or seventeen cigars a day; since then he has seldom exceeded five or six pipes. Has been married for the last three years, and has three children.

Dec. 3rd.—The pain he now complains of occupies a position between the sixth and eighth dorsal vertebræ; in the middle of which space there is a spot, about the size of a half-crown, very much more tender than any other. Between these two points there is some sinking of the spines of the vertebræ. He suffers little or no pain on percussion; but a hot sponge passing down the spine elicits pain on arriving at the tender part; and, after it has been removed, he still feels a burning sensation for some minutes. Corresponding to the most tender spot on the spine is a point at the lower extremity of the sternum, and the pain seems to penetrate through the body from point to point, and not along the course of the ribs. The pain is not constant, but he can induce it at will by making this portion of the spine more convex anteriorly; thus, in fact, stretching the anterior ligament. The action of the psoas also in flexing the thigh on the abdomen causes pain. The pain is always worse during damp weather. Has never had rheumatism settled in any one joint, but has had rheumatic pains when he has caught cold. He also complains of great pain in his knees, and this is more particularly the case when walking upstairs, at which time, too, he suffers from palpitation of the heart. He can walk on level ground for about a mile without feeling much fatigue. There is no paralysis or loss of sensation; but of late he has

occasionally stumbled, and feels less sure of his footing than formerly. His memory, too, has failed him at times. He has never at any time received any injury to his head or spine.

4th.—Mr. Solly ordered a moxa to be put in the right side of the spine opposite the tender part. To take an ounce of iodine mixture twice a day.

5th.—Was taken early this morning with a sharp attack of diarrhœa and vomiting. Great tenesmus.

6th.—The purging continued all day yesterday; but to-day it has ceased, leaving him, however, very weak.

18th.—For the last few days he has been troubled with a dull aching pain, half way round his body; it is worst on waking in the morning, and gradually gets better. This he finds he can induce at will by taking a forced inspiration, and at the end of the expiration the pain begins. He suffers from palpitation of the heart on any slight exertion; complains of a nasty taste in his mouth in the morning; appetite bad; pulse 100, full and regular. The moxa discharges pretty freely. To take quinine mixture.

26th.—Tincture of iodine to be painted down the course of the spine on every day so long as the skin will bear it.

29th.—Another moxa was put in exactly opposite the previous one; is lying on an inclined bed, which affords ample support for the spine. Pain in the back less.

31st.—He says he has felt much better since the last moxa has been in; very slight pain in the back; pain quite gone from the knees. General health much improved.

I have now ordered him a spine support, as I am sure that if he were at once to leave his bed and resume the erect posture all his former serious symptoms would return. I hope, however, that by giving the spinal column some artificial support we shall be able to rest the anterior ligament, and that he will be able to resume his employment.

Since the last report he has left the hospital, with a special report, "Quite well."

LECTURE VII.

On Diseases of the Spine.—*Continued.*

Gentlemen,—I must now explain that the aggravated stoop, the antero-posterior curvature, is of the same genus and arises from the same cause as the lateral curvature, though it differs from it in form. It is the curve of feebleness, not of disease. It is most important that you should distinguish between this antero-posterior curvature and the true angular curvature, which it resembles so much in outward appearances. Each can be recognized by looking at the spine sideways. The outward difference is, that in the antero-posterior deformity the curve is never quite lost, though it forms part of a very small circle; whereas in the other, as its name implies, there is really an acute angle.

It is to the antero-posterior curvatures and their modifications that I wish to call your attention to-day. On your early recognition and true diagnosis of this disease, and your judicious treatment of it, may depend the earthly happiness and health of your patient—the form and stature of the man—the difference between a hunchbacked cripple and that especial attribute of man, the erect posture.

I have no case in the hospital at this moment which exactly illustrates these observations, but they are dictated by the remembrance of a case I have lately had in private practice, the account of which is drawn up by Dr. M'Donnell, of Stoke Newington. I give it in his own words, merely appending a running commentary for your instruction.

"Mrs. ——'s child (the sixth, all the others healthy), a fine healthy boy, was born June 30, 1862. He continued to thrive

until the December following, when he had a slight attack of bronchitis, which was subdued by the usual remedies: he required attendance for four or five days only. He was vaccinated when two months old, successfully, and no unpleasant consequence ensued. A slight cough resulted from the attack in December, but no advice was sought. The general health began to suffer, which was attributed to a scanty supply of breast-milk: he was less lively, and not so well nourished in appearance. About the beginning of February, 1863, his nurse noticed an unusual projection in the back, and had remarked it to the mother, but no uneasiness was felt by the parents at that time. The strength of his legs had begun to fail, and he did not move them as before. I visited him on the 11th of February, and found a slight curvature present in the centre of the dorsal vertebræ, with little power in the limbs. He was more fretful, failed to be amused, and had fallen off considerably in flesh and good looks. A wet-nurse was advised, but not assented to; then, in absence of this, that the child be weaned, and well supported by all the means suitable to infancy, and be freely sponged daily in the tepid salt-water bath. The complaint progressed, when, on the 23rd of March, he was seen again. The curvature had increased, was more angular, limited to four or five central dorsal vertebræ, and projected directly backwards. There was now not the slightest power over the lower limbs, which were usually cold, while the body was hot. Sudden movements would cause him to scream, and indications of pain were elicited on suddenly tapping in the neighbourhood, *i. e.* on either side, of the projection of the spine. He could not suffer to be amused as children of his age usually are, preferring quietude and immobility, as also the horizontal position in the nurse's arms. A hacking cough was present. There was no paralysis of the sphincter ani et vesicæ. The expression of the countenance was anxious and pitiful; the eyes were brilliant; the whole body was wasted. Mr. Solly was consulted on the 24th of March."

The appearance of the spine in this child, the history of the case, the pain and suffering from pressure on the curvature, all rather pointed to the conclusion that there was disease of the bodies of one or more vertebræ, and that the child was doomed to be a hunchback for life. Further examination, however, convinced me that it was not a true case of angular curvature, but an exaggerated stoop or curved back, without carious disease of the bodies, but in all probability with a partial absorption of them. That the spinal canal was encroached upon, and the spinal cord more or less compressed, was clear from the amount of paralysis which existed in the lower extremities.

With this view of its pathology, the first step in the remedial agency to be set at work appeared to me rest, entire rest, to the vertebral column, support to the spinal column, to do by mechanical means what the muscles could no longer do, prevent the spine bending unduly forwards. Not to make any attempt to straighten it forcibly or suddenly, but quietly and gradually, I advised the application of a leathern splint, carefully moulded to the back and lower extremities. I extended it to the lower extremities because I knew that in so young a child sufficient support could not be obtained by limiting it to the spine. This plan was carried out most efficiently by Mr. Millikin, instrument maker to St. Thomas's Hospital.

The splint was composed of three pieces—1st, a piece of leather moulded accurately to the back, embracing the sides, and nearly meeting in front, softly padded at the back, and fastened over the chest by an elastic lacing piece; 2nd and 3rd, two pieces of leather moulded to the thighs and legs, and connected to the body-piece by steel hinges or joints, which could be secured at any angle by screws. The leg-pieces were also softly padded. The child being placed in this splint, and the elastic laced over the chest, there were straps buckled round the thighs and legs to each, so that there was perfect rest enforced to all parts, with the exception of the neck and arms. In the course of a week the splint was applied, and at first was very irksome to the child, and especially at night; no sleep was obtained for a night or two when it was worn.

"It was decided to leave it off at night, and it was not again resumed at that time. Phosphate of iron with lime-water was suggested as medicine, and every support to be given. After a few weeks benefit was apparent from the use of the instrument. It was very difficult to manage the urine, and prevent it spoiling the instrument and making it offensive. It was found after a time that this mischief was best guarded against by freely padding the lower parts of the body-piece and the thigh-pieces with cotton-wool, and by oiling daily the steel joint. The bowels were easily managed; the child's wants were anticipated, and its infantile language of expression interpreted in due time. He had the benefit of the sea-side for two months in the summer, and returned greatly improved

in appearance, and had grown as much as was natural. The curvature still remained, though less prominent, and some power was now had over the lower limbs. Two or three teeth had been cut at Worthing; since his return two more. He has gradually improved, and the power over the limbs increases; the curvature gradually lessening. He is well nourished; is a fine child for his age, and is now playful."

On the 26th of July I received the following report:—

"The spinal affection of Mrs. ——'s child, a sketch of whose case I sent you some months ago, has been quite recovered from. He has been well for several months, and has discontinued the supporting apparatus about three months. The spine is perfectly straight, and he is full grown, vigorous, and looks remarkably well. I am firmly of opinion that but for the timely interference of the support afforded at your suggestion and upon your advice, this child would have been a hunchback, with all its attendant miseries to himself and to his family. No cure could be more perfect."

The result of the case proved the correctness of the diagnosis. If there had been ulceration of the bodies of the bone, such as you may see in the preparations of this disease in our museum, the child's life might have been saved by the support given to the spine, but the deformity could not have been corrected. The very cure which nature effects in this disease consists in arresting the destructive process set up in the bodies of the vertebræ, healing the osseous wound, uniting the separated bones, anchylosing one or more bones together, strengthening the union by supplementary bands of bony tissue, but not completely filling up the chasm, or quite correcting the deformity.

If, gentlemen, you understand, as I trust you do, the pathology of angular curvature, you may think it a work of supererogation to warn you against any attempt to straighten the spine, or correct the accompanying deformity of the thorax. I say accompanying deformity of the chest. I will explain what I mean. If the angular deformity is great, the capacity of the thoracic cavity is encroached upon; and in order to get room for the lungs and heart, nature thrusts out the sternum, raising it, and the whole chest assumes per-

manently something like the form which I am now producing in my chest by taking a very forced inspiration.

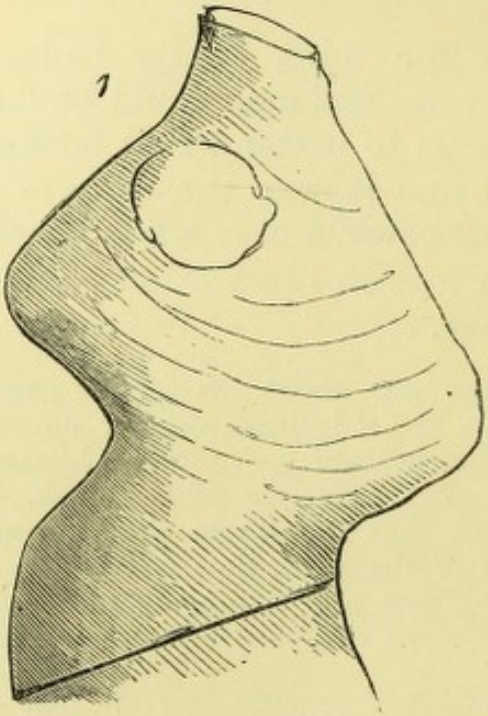
You will, I am sure, hardly believe that in the present day any medical man could be found so ignorant or such a knave as to pretend that he could correct such deformity, and that it was the duty of the surgeon to do so; I had, however, a case a few years ago in private practice, which was an illustration of this form of ignorance or knavery.

The patient, who was about twenty-five years of age when he first consulted me, had a decided angular curvature in the dorsal region, with a compensating curve in the lumbar. There was no stoop, but considerable projection of the back. The sternum was thrust forward, and thus the whole chest projected considerably. The arrangement of the chest, though not very sightly, was very essential to the comfort and well-being of the patient, as thereby allowing a fair amount of space for the action of the heart and lungs.

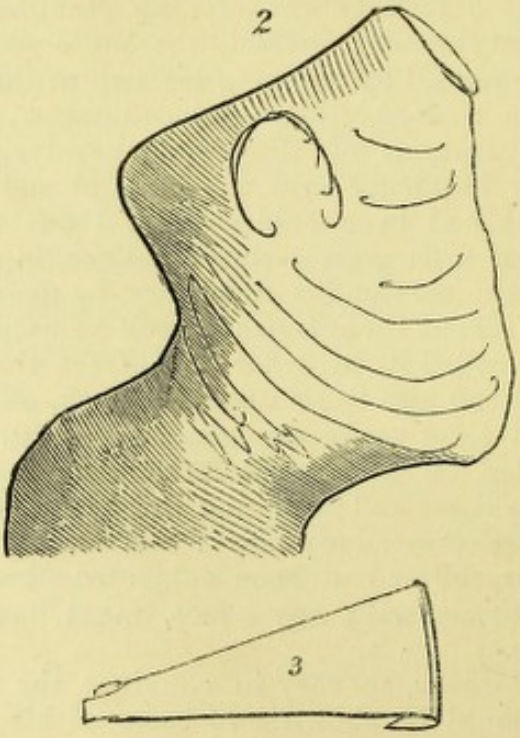
The most formidable symptom of disease was unmistakable signs of impending paraplegia, or paralysis of the lower extremities. He complained of a feeling of pins and needles down the thighs, some numbness in the feet, occasional cramps, and some loss of power in walking and standing. The brief history of the case was, that the deformity was of long standing, not attended with much inconvenience; indeed, the more recent and serious symptoms were induced by carrying his gun in the field for rather a long day. This over-exertion produced great pain in his back and the other symptoms of threatened paralysis which I have detailed. On my inquiring into the amount and kind of medical treatment that he had been subjected to, I was told that he was under the care of a surgeon—who, I believe, is since dead—who told him he would correct his deformity by degrees without any doubt whatever. About three times a week he used to smooth down the chest, as he called it, in order to correct the unnatural protrusion. He ordered him to lie upon his back, and then pretended to extend it, and thus make straight the breast. The extension was partly carried on by manual force, and partly by fixing the upper part of the chest and attaching weights to the legs. I need hardly say that I expressed my horror and disgust at the treatment to which the poor fellow had been subjected—treatment which, if it had been continued with any effect, must have rendered him paralyzed for life.

It was not, however, so easy to convince the patient; and he desired that I should be shown two casts of his chest which had been taken, the one when he was first placed under treatment, and the other after he had been subjected to it for about a month. He

called my attention to the difference in the projection of the chest—the deformity which was most apparent to him, and concerning



which he was most anxious. At the first glance I could not quite understand it, as there certainly was some difference in the form; but in a few minutes I discovered the mystery. The two casts



were really identical; but the facet on which the casts stand had been altered in one of them (Fig. 2). Fig. 3 represents the

amount that had been removed, throwing the whole rather backwards, and thus lessening the lower part of the chest. The revelation of the fraud rather astonished my patient, but it did not quite convince him; so it was agreed that Sir Benjamin Brodie should be called in for consultation. After that all went on well.

I was obliged to confine my friend to a couch for about two months, in order by entire rest to check the inflammatory action which had been induced in the first instance by walking and shooting, and afterwards by pulling and rubbing. He ultimately recovered, and is now tolerably well and strong. Though still unable to keep in an erect posture for any length of time, he has been benefited by a judiciously applied spinal support, made of cowhide, carefully moulded to the spine.

My friend, Mr. Hingeston, of Brighton, whose admirable volume on the "Topics of the Day," must be familiar to the profession, has called my attention to the observations made by Hippocrates, upwards of 2250 years ago; and has kindly favoured me with the following translation, which I think is interesting, though not pathologically instructive:—

"The spine sometimes projects from disease, but never recovers its original figure. This deformity generally occurs about the seventh or eighth dorsal vertebra. Persons thus afflicted are usually the subjects likewise of varicose veins of the legs; they have small hands, narrow chests, squeaking voices, and a projecting larynx (*De Artic.* § xxxvii). This disease of the bones of the spine is strumous, and takes place instead of pulmonary consumption, to which it is in its nature closely allied (*ibid.*). When it occurs in the dorsal region, the bladder and kidneys suffer. Abscesses sometimes form and break in the loins, or at the groins. They are very difficult of cure: nor does the discharge of pus cure the bone. In general, the buttocks waste. In such persons, the spine is long; the beard grows late, and they are often sterile. When the disease happens in those disposed to corpulency, it is much less malignant than it is in growing youths, or lean adults. The corpulent and fleshy thus afflicted, live on and grow old, in spite of the disease: some exceed their sixtieth year; but the greater number sink at or before that age. It alternates with phthisis (*De Artic.* § xxxviii; *Vect.* § xxi). It is curable chiefly by the spontaneous efforts of nature; and this very often all of a sudden. Indeed, bony softening becomes hard again as quickly as it had become soft (*De Artic.* § xliv). A softened spine is a dangerous, and often a fatal malady. The curved is more fatal than the gibbous or angular: they both tend very seriously to death, or constitutional decay, or renal disease; but, upon the whole, they are much less noxious than spinal disease without osseous deformity. The disease of the bone engages the disease, and prevents it from settling on the more vital organs. The

palsy of the legs and arms, the wasting of the body, and the retention of urine, happen chiefly in those cases where there is no spinal deformity, nor any projecting bone forwards or backwards; and paralytic affections take place the least frequently in cases of gibbous or angular projections (*ibid.* § 1). There are many contrivances for the cure of these cases; and there are many pretenders, who seek to earn a passing popularity by accomplishing some wonderful restoration; but they are all worthless, and often hurtful, by weakening the general health; and they not unfrequently protract the disease by confinement and restraint (*De Artic.* § xxxix). Nature is the grand restorative—the horizontal posture, air, diet, and repose" (*De Artic.* § 1).—*Hippocrates: Opera Omnia, Græc. et Latin. Batav. apud Graasbechios*, 1665. 2 vols. See also, *Œuvres complètes d'Hippocrate, par Littrĕ*, tome 4^{me}, pp. 177–183. Paris, 1844.

LECTURE VIII.

On Injuries of the Head.

Gentlemen,—One of the accidents admitted last week permits me to direct your attention to the subject of injuries of the head. These injuries are as important in a practical as they are interesting in a physiological point of view.

For, beautifully as nature has protected the brain, the case which has been contrived for this purpose cannot be interfered with without our fearing some disturbance of the organ it contains. And we find in practice that all injuries to the skull and the membranes which cover it without or line it within, are liable to be attended with disturbance of the instrument which the mind employs in its communications with the external world. The limits of a clinical lecture necessarily forbid my entering much into either the anatomy or physiology of the subject; nevertheless I think it desirable briefly to remind you of the varied structures which are implicated in these injuries. And as in the treatment of them it is the brain which we have especially to consider, let us review them each from the surface of this organ to the external world.

This surface of the brain, from its ganglionic nature, is so vascular, that a special membrane, the pia mater, supports its vessels, and forms its first covering. Next in order is the arachnoid, a serous membrane, placed here to prevent that friction which the constant motion of the brain would cause.

To the physiologist the existence of this membrane affords ample proof, even if other proof were wanting, that the brain during life moves within the skull; and

to the surgeon it is interesting, as it impresses him with the importance of preventing any alteration in its structure, however slight, which could interfere with this intention, or cause the friction which its healthy condition prevents.

The next is a strong fibrous elastic membrane, lining the bony case in which the brain is placed. It is split into bands, which are stretched in different directions like the springs of a carriage, to prevent jolts and jars. The bony covering itself is not homogeneous, but constructed internally of a dense unyielding plate, which, like the steel of a helmet, is to protect the brain from sharp-pointed instruments; while the outer, though less dense in material, is equally well constructed for its guardian office. The very coverings of the skull itself are important in their physiology to the surgeon. The external periosteum which nourishes the bone, and with its thousand vessels inosculates at all points with those of the dura mater within; the loose and delicate cellular membrane which connects the periosteum to the firm tendon of the occipito-frontalis; and, though last in our number, not the least in practical importance, the skin, which in this situation is perhaps more interesting to the surgeon in connection with its injuries and its functions, than the skin in any other part of the body.

On the present occasion I shall not call your attention to the subject of scalp wounds; but I shall take the first opportunity which is afforded me by the reception of a well-marked accident illustrating this important branch of surgery. To-day we must confine our attention to fractures of the skull, their consequences, and the treatment to be employed.

The subject of the present case, John Wingrove, æt. 33, a stone sawyer, of healthy appearance, was admitted into St. Thomas's Hospital, at a quarter before 8 A.M. on April 13th, 1843, with a compound fracture of the skull. The wound was about two inches and a half in length on the right side of the head, near the posterior extremity of the vertex. The scalp was completely divided, and the bone perfectly bare. The parietal bone was fractured in a fissured form; a portion of the outer table being depressed, so that the fractured

edge of the skull was distinct above it. Whether the inner table was also fractured it was impossible to say positively, but my belief is that such was not the case. [A sketch was handed round the theatre, showing the situation and extent of the injury.] Some blood flowed from the bone, but not much. A portion of the leather lining of his cap had been driven into the wound, and was nipped so closely by edges of the bone that it was not easily removed. A small artery was bleeding on the divided edge of the scalp. I saw this man at a quarter before nine, about one hour and a quarter after it had happened. He was quite sensible; both pupils acted perfectly naturally to the light; he complained of pain in his head, but referred it principally to the forehead. There was no paralysis of any kind; pulse small, only 60 in the minute. The accident occurred at the New Royal Exchange, and was occasioned by a blow from the head of a mason's hammer which flew off from the handle, and, falling about thirty feet, struck him on the head and glanced off. He was completely stunned by the blow, and had no recollection of being put into the cab by which he was conveyed to the hospital, but he recoverd his senses before he arrived there.

I ordered Cat. Lini. to the wound. Calomel, gr. v. 3tiâ horâ.

Half-past 12 P.M.—No change.

Half-past 10 P.M.—Pulse 80, but not strong; says his head is much better, but he feels very tired and cannot sleep, but this he is not surprised at, as he never can sleep well if he has not had his usual day's work.

He has taken five doses of the calomel, and the bowels have been copiously relieved; as he has no untoward symptoms, I have discontinued the calomel.

Not more than two or three ounces of blood have been lost from the wound.

14th.—Going on well in every respect; no bad symptoms; almost free from pain in his head; pulse 64; suffers a little from cough.

Linc. pro tussi.

15th.—Has had a good deal of pain in the forehead, which he attributes to the shaking of his head from his cough. His pulse 86, but not strong; loud respiration over the whole chest. No pain in the wound or neighbourhood; bowels not open to-day.

Ordered—Calomel, gr. v., 4tâ horâ; Hirud. xxx. lateri capitis dextro. Head shaved. Pil. Ipecac. c. Conio, gr. v. 6ta horâ. Emplast. Lytt. pectori.

16th.—Much better; his cough very much relieved; free from pain in his head; bowels not open to-day; mouth tender.

Ordered—M. S. C. stat. To omit the Cal. till to-night. A poultice to the blister.

17th, 9 A.M.—Has had a bad night; head very painful in the frontal region; pulse small, 80; looks uncomfortable; wound healthy, suppurating.

Ordered—Hirud. xxx. stat.

12 at night—Better; very little cough.

To omit the Pil. Ipecac. c. Conio, and to rep. Hirud. h. n.

18th.—Much better as regards his head, but the cough still troublesome.

To repeat the Ipec. c. Conio, the blister on the chest not having risen well; to paint the throat and chest with tincture of iodine. Pulv. Rhei c. Cal. gr. xv. h. n.

19th.—Much better in every respect.

20th.—Free from pain in his head, and the cough nearly gone.

21st and 22nd.—I did not see him.

23rd.—Going on well in every respect.

Let us now direct our attention to the man's symptoms on admission, and the treatment adopted. First, here we had a fractured skull with depression of the bone. Now, some fifty or sixty years ago the trephine would have been immediately applied, with the view of elevating the depressed portion. This operation, however, in the present day, is not considered justifiable in the absence of symptoms of compression, or direct irritation of the brain.

In the examination of a case of this kind, then, it is extremely important for you to enter minutely into all those signs which indicate any injury to the brain. First, the mental condition—this was perfectly normal; he was quite sensible, and his manner natural. Next, the state of the pupils—the iris is placed before that expanded surface of the optic nerve, the retina, as an intelligent curtain to guard it from injury. The vital contrivances by which it acts, and by which its action is directed, are so beautifully perfect that the extent of the opening of the curtain is indicative of the state of the nervous apparatus it is destined to protect, by preventing such an amount of light impinging upon it as would be liable to injure it. In disease of the globe of the eye, the dilated pupil indicates more or less pressure on the retina by some cause in the globe itself, such as a permanently turgid choroid, &c. But if with a healthy eye, but in connection with a blow on the head, we find a dilated pupil, then we have the sign of some pressure or injury to the nerve in its course within the skull, or the ganglia in which it terminates.

The dilated pupil, then, indicates very serious injury to the optic nerve, or the nervous centres with which it

is connected, though it may happen, as in the case of very severe concussion, that the injury is remediable. The contracted pupil, on the contrary, indicates an irritability of the nervous instruments, an undue excitement of their natural function, not an obliteration of it. You will sometimes see, in the case of injury of the brain, dilation of one pupil and contraction of the other; where this is the case you will find the most severe injury of the brain on the side opposite the dilated pupil. I have several facts to prove this assertion, which I shall relate on a future occasion.

The next point to which our attention was directed in reference to the prognosis of the case, was the state of the wound, and the blood which flowed into it. Now the blood which flowed into the depression might be from a wounded artery of the dura mater, or simply from the bone. If from the dura mater, the injury was of course very serious: this I hoped, and believed, from its extent at the time, was not the case, as I stated to one of the pupils who inquired of me what I thought of it. It soon ceased, proving that this supposition was correct; which is satisfactory, as it goes far to show that the inner table was not fractured. That the outer table may be fractured without the inner is proved by this preparation, where you see considerable depression of the outer without any whatever of the inner table.

We will next consider our treatment of the case. I ordered him a poultice of linseed meal to his head, to be separated from the wound by a piece of thin rag. This I did in order to encourage the bleeding, at the same time giving directions to Mr. Fixot, the dresser, to carefully watch its effects. I ordered Hydr. Chlorid. gr. v. 3tiâ horâ. Now, although this man was at present free from all symptoms of serious injury to the brain, notwithstanding the depression of the bone, a few hours might entirely change his condition. Reaction had scarcely taken place from the shock of the injury, and there was no indication for the abstraction of blood from the arm. The nature of the injury was, however,

such as we find frequently followed by inflammation of the membranes and substance of the brain, and to avert this calamity, I ordered the calomel.

In speaking of inflammation of the membranes of the brain, let me impress upon your minds that these membranes are seldom inflamed without this hemispherical ganglion either being positively inflamed itself, or directly suffering by irritation from the effects of the contiguous inflammation; and inflammation of the pia mater is in reality inflammation of the ganglion itself, which I do not think the practitioner sufficiently considers. Now, as this ganglion is that portion of the brain which more immediately than any other ministers to intellect, inflammation of it causes derangement of the intellect, and of all effects of inflammatory action on the human frame, I need not say this is most to be dreaded. You cannot, therefore, be too much on your guard to prevent its intrusion, and to distinguish it almost before it is set up; for when once set up, it is not so easy to arrest it, and when arrested it too often leaves behind consequences which are felt for the remainder of life.

The following case, the subject of which was admitted about two years ago, so well illustrates the effect of fracture of the skull in lighting up inflammation of the hemispherical ganglion, and the symptoms of that inflammation, contrasted with the natural condition of that organ after the inflammation had been arrested, that I shall briefly detail it before proceeding further, to show you what might have occurred in this case, if I had not anticipated the threatened evil by precautionary treatment.

Inflammation of the Membranes of the Brain, caused by Fracture of the Skull, arrested by antiphlogistic measures, and Aconite.—Betsy Rankin, æt. 18, works at the ropewalk, admitted April 20, 1841, Luke's Ward for Dorcas, under Mr. Travers, Mr. Solly in attendance. Her mother stated that she had been thrown out of a swing at Greenwich Fair, a week previous to admission; that she was stunned at the time, and had suffered from severe pain in the head since; but she was not considered to be seriously injured. At the time she presented herself she exhibited an

unnaturally excited appearance of the eye; she complained of violent pain in the head; but her answers to questions were perfectly rational, though her manner was abrupt and rude.

One of my colleagues happening to see the case immediately after she was in bed, and believing it to be his own, before I came up into the ward, and finding an irregularity of the surface of the skull, cut down upon it: the pain of the incision made her very violent, and disgustingly abusive in her language. The incision permitted the escape of some coagulated blood. The division of the temporal artery gave rise to a free hæmorrhage of about eight ounces. It exposed a frac- extending horizontally through the parietal bone to the frontal bone, and another extending perpendicularly from the above.

11 P.M. same day.—Still very violent and abusive in her language when spoken to; otherwise quiet and dozing; tongue foul; pulse quick. I explained to the sister of the ward that her violent language was to be considered as a symptom of disease, and that everything must be effected by a soothing system and by kindness. This was scarcely understood at first, but the plan was most fully carried out, and its value afterwards most thoroughly appreciated by the sister.

When I saw her I ordered M. S. C. stat. Cal. gr. iij. quâque tertiâ horâ.

21st.—Bowels freely opened; last evacuation about three o'clock was watery; her manner is still excited, but she expresses herself much relieved, adding in a sharp tone that she only wanted to be quiet. On account of the diarrhœa I ordered the Cal. to be discontinued, and Hydr. c. Cretâ, gr. iij. 6tâ quâque, instead.

22nd.—She is rather more rational. As the bowels are now quiet, ordered the calomel to be renewed.

23rd.—Bowels relieved, but not purged; complains of pain in her head, which is unnaturally hot. Ordered twelve leeches to be applied, if the sister of the ward could persuade her to have them on, but not to use any violence.

24th.—The leeches were applied as directed without much difficulty; her head is relieved, and she is quiet, dozing nearly the whole of the day.

29th.—Much better; says that she has very little pain in the head, and no heat. Ordered a little fish; her conduct and manner to-day were quiet, natural, and well behaved. I found her in the middle of the day sitting up in her bed knitting.

May 1st.—As she was not quite so well to-day, exhibiting some

of her previous excited manner, and fearing a return of the inflammation, I ordered, as I did not think her constitution would bear any more calomel,—

Ext. Aconiti, gr. j. ter die; Hirud. xij.; Pil. Hydr. gr. v. ter in die.

This last medicine was continued with small doses of blue pill until the 29th, when she was dismissed quite well.

Her manner now was modest and unassuming, and she expressed herself exceedingly grateful for everything that had been done for her in the hospital.

Remarks.—From the first I regarded the girl's excited manner, her disgusting violent language, and her quickness and cunning, all as true marks of inflammatory action in this portion of the brain. When I first stated to the pupils that I believed her language was the effect of disease, and not habitual to her, it was remarked that she could not be at all insane, for she was quick enough, and knew what she was about as well as any girl in the ward, and that she must be a downright bad one. The correctness of my opinion was proved by the altered manner of the girl as soon as the inflammation was entirely subdued by decided but moderate antiphlogistic measures. The beneficial effect of aconite was, I consider, shown by the retrogression which occurred during its accidental omission.

I must now, after this long digression, return to the case of John Wingrove. The next practical point for our consideration is the recurrence of the pain in his head, which you will remember he complained of when first admitted, showing that such pain, though brought back again by the cough, was but the result of the original injury, and not, as it often is, merely sympathetic with a disturbed stomach. You will naturally say, how was this likely, the forehead was not the immediate seat of the injury, but the posterior portion of the skull? This is true, but it is also true that the brain as frequently suffers from the effect of the *contre-coup* as from the direct blow; and I have no doubt but that the force with which the anterior lobes of the brain were driven against the frontal bone by the shock of the blow was the cause of the pain in the forehead.

We may have ample proof of the fact that the brain may be actually shaken in the skull by a blow, even though the blow does not break the skull. Sometimes, indeed, the brain is actually lacerated by such concussion, but this, I believe, only occurs in old people, where the brain has partially receded from its case in consequence of senile atrophy. I am well aware that this view of the subject is directly opposed to several very good authorities, but it is not hastily or recently formed. The following cases illustrate the fact:—

Laceration of the Brain from a Blow, without Fracture of the Skull.—Elizabeth Swannell, æt. 69, a cook, was admitted, under the care of Mr. Green, into Elizabeth's Ward, St. Thomas's Hospital, on the 24th February, 1841, at half-past 4 P.M., having received a large contused wound, which exposed the bone over the right eyebrow: no fracture or further external injury could be detected.

Symptoms on admission.—Perfectly insensible and motionless; left pupil very much contracted and fixed; the swelling of the surrounding parts prevented the state of the right being ascertained; breathing laboured, with a stertorous noise; pulse 96, full, and not easily compressed; extremities moderately warm; fæces and urine involuntarily passed: great rigidity of the muscles, especially of the right arm and left leg; frothy saliva issuing from the mouth. No spirituous odour could be detected in the breath.

History.—Shortly after two o'clock, while going downstairs, she suddenly fell, and was picked up exactly in the same state in which she was brought to the hospital; was not subject to fits; nobody saw the accident.

Treatment.—A surgeon had bled her in the left arm previous to admission; soon after admission she was cupped to ℥ix. from the nape of the neck, a large blister was applied to the back part of the head, which was shaved, and hot water to her feet. Breathing slightly relieved by cupping; pulse continued full, and 92. At nine o'clock I saw her with Mr. B. Travers, apparently exactly in the same state, except that her pulse varied in frequency from 76 to 92; it was very full, but did not indicate sufficient strength to bear further loss of blood. Her breathing was not quite so laboured. At eleven o'clock I gave her gr. iij. of calomel.

February 25, 9 A.M.—No improvement in respect of sensation or motion; breathing a little impeded by mucus; much frothy saliva issuing from the mouth. She remained exactly in the same state, her pulse continuing full, and about 90, till within two or three minutes of her death, which took place at ten minutes past 4 P.M.

Post-mortem examination.—The brain did not seem to fill the skull completely. No morbid appearance on the surface of the

brain. Tentorium smeared with blood. *Interior.*—Extensive effusion of blood into the left ventricle; some into the right: this effusion appears to have resulted from laceration of the left corpus striatum and thalamus, also of those fibres of the great commissure which form the anterior part of the roof of the left ventricle. The lacerated corpus striatum and thalamus were forced into the right ventricle under the fornix, and when first observed looked almost like a medullary tumour with an ulcerated surface. In this case the brain appears to have been lacerated by the *contre-coup*, to which it was especially exposed from its diminished size in relation to its containing cavity—the result of senile atrophy.

April 4, 1843.—Dr. Bright makes a statement, in the second volume of his "Reports of Medical Cases," p. 663, confirmatory of the view that I have taken of the brain not completely filling the skull in old persons; see also p. 683.

The next case will impress upon your minds the serious effects which may be produced by *contre-coup*, and the necessity and advantage of combating them carefully.

Injury to the Head.—William Pearson, æt. about 40, a potboy at a public-house, was admitted into George's Ward, under my care, May 16, 1842, with a small lacerated wound on the left side of the head; he was intoxicated at the time of admission. The accident was caused by his being knocked down or run over by a cart, I could not learn which.

The case was regarded by the dresser as one of intoxication; and I did not see him until the following morning.

17th.—He now complains much of pain in his head, but, with this exception, there were no symptoms indicative of cerebral mischief, and the headache I considered more characteristic of disordered stomach than brain. There was no drowsiness, and his manner was natural: he referred the pain to his forehead, and not to the seat of injury; his pupils acted naturally.

I ordered—Pulv. Jalapæ c. Cal. ʒj. stat. M. S. C. 6tâ hor. post.

In the evening, finding that though his bowels had been relieved, the pain in the head continued, I ordered him Calomel, gr. v. 4tâ horâ.

18th.—Symptoms much the same.

Ordered—Opium, gr. j. at night, and repeat the cal. and jalap as a purge.

19th.—Has had convulsive movements of the left side of the face, of an epileptic character. Tongue drawn to the left side. Constantly spitting a large quantity of frothy saliva. Both pupils are alike, and slightly contracted, but act freely to the light. Pulse 116, weak. He is quite conscious, and answers all questions naturally, though he has not perfect power of speech. I again

examined the head, and, for the first time, perceived that there was some tenderness on pressure on the right of the head, opposite the wound.

Ordered—Hirudines xx. to the right side of the head; to be followed by a blister.

Opii Tinctura, ♏xxx.; Spirit. Ammon. Arom. ʒss.; Mist. Camphor. ℥j. hac nocte.

20th.—Says he found relief from the leeches, and his head is much better, though still very bad. Pulse soft.

22nd.—No appearance of twitching; but tongue still drawn to the left side. Has vomited some greenish bile. Pulse soft.

Ordered—Hirudines xxx. to the right side. Port wine ℥vj. in arrowroot.

23rd.—Says his head is much better, though not quite free from pain. Has only had one fit of convulsive twitching since the last report. Pulse still weak.

Ordered—Quinine, gr. ij. b. d.

24th.—Much better; free from headache; no twitching since yesterday; appetite returning. Pulse weak, 80.

Quinine and a pint of porter daily, in addition to the wine.

This man perfectly recovered, and left the hospital quite well, soon after the last report.

I have no doubt that the convulsive twitchings in this case were occasioned by some injury to the brain, produced by the *contre-coup;* and the case is instructive from its showing how gradually serious symptoms will sometimes arise some days after the receipt of injury. The result of the local depletion and counter-irritation bear out this view of it, and the general tonic plan which was indicated by the previous habits of the man, and his state of constitution, is important to attend to, from the success which followed its adoption.

These two cases will, I trust, impress upon your minds the importance of attending to the possible effects of the *contre-coup;* and our present case shows how necessary it is to arrest, as soon as possible, in all cases of injury to the head, bronchial irritation, occasioning cough. As a general rule, in all recent cases of injury to the brain, you would avoid the irritation of a blister, but in the present case it was very evident that the irritation of the cough, and its influence on the brain, was more serious than the irritation of the blister was likely to be. Finally, let me warn you of considering

the patient out of danger, who has received so serious an injury as in the case before us, notwithstanding its present favourable progress. Its termination, whether favourable or otherwise, I shall call your attention to at our next meeting.

LECTURE IX.

On Injuries of the Head.—*Continued.*

Gentlemen, — The subject to which your attention was directed on the last occasion we met shall be resumed on the present. You will, I have no doubt, remember my then warning you against considering any patient who has received a serious injury of the head as out of danger merely because he shows no symptoms of injury to the brain during the first few days. The value of such a warning has been too truthfully illustrated in the sequence of the case of John Wingrove which I then detailed. I might well say that, in these cases, we know not what an hour may bring forth; for when we last met nothing could appear more favourable than the case related, though I have now to detail a fatal termination, from extensive cerebral lesion. I will first read to you my notes of the case to its termination, and we can then discuss the practical and physiological points of interest raised by its relation. After my lecture on the 24th, you will remember we found him apparently going on well, but as he still had pain in the head I ordered twenty leeches, and Pil. Hydrar. gr. v. bis in die.

25th.—No worse.

26th.—I received a message from the dresser saying that the man had passed a bad night, and was in a good deal of pain in his head, for which he had applied twenty leeches. I saw him at 1 P.M. His head has been relieved by the leeches, but he complains of pain at the external angle of the right orbit, which pain appears to him to rise upwards from the jaw, and to shoot over the head. He states that he is free from pain in the neighbourhood of the wound. His mouth is tender from the mercury. As the pain has so much of a neuralgic character, and possibly connected with this salivation, I ordered the mercury to be omitted, and the face to be fomented,

after which an ointment containing aconitine to be rubbed into the side of the face. At 5 P.M., when I saw him again, he had been relieved by the fomentation, but had not had the ointment, as there was not any aconite in the hospital. I ordered instead of it equal parts of the extract of belladonna and lard, to be made into an ointment and rubbed into the face.

Pulv. Jalap. co. ℈j. hac nocte. M. S. C. cras mane.

27th, Noon—Pulse 80, soft, and rather weak; complains of his forehead and the side of the head, but no pain in the neighbourhood of the wound. His countenance was anxious and distressed; the right pupil was dilated; the left natural. I thought at first that this might possibly arise from the application of the belladonna, but he complained of having lost the feeling in his left hand, and that he could not lay hold of things so readily with it. I need hardly say I regarded this circumstance with the greatest concern, as I feared the worst from it. He had another very serious symptom, viz. that on lying down he complained of his head throbbing violently.

I ordered the twenty leeches to be repeated, and five grains of blue pill twice a day; the head to be raised in bed. Immediately I quitted the ward I called the attention of the pupils who were with me to the serious character of his symptoms, and gave an unfavourable prognosis.

At 8 P.M. I received a message from the dresser, informing me that he had had a fit; and when I arrived I found him just recovering from a third fit. The fits were not preceded by any scream, but in every other respect they were all of a true epileptic character. As soon as he began to recover his senses he went off again, and just previous to this he became very violent, and was with difficulty retained in bed. I inquired of his wife whether he had ever been subject to epilepsy: she said no, but that she had heard from his mother that when a child he had been subject to fits. Coupling the invasion of these fits with the incipient paralysis observed in the morning, I considered it not impossible that there was some irritation from the internal surface of the fractured bone. I therefore determined to trephine. This was accomplished by making first a crucial incision of the integuments, and then by the application of the trephine on the lower edge of the fissure in the parietal bone. After the removal of the portion cut by the trephine, I removed with the dressing forceps a small portion of bone with a sharp edge, about the size of a thumb-nail, from under the superior edge of the fissure in the internal surface, which evidently pressed on the dura mater. About eight ounces of blood were lost at the operation, but very little afterwards. I performed it just after the commencement of the fourth fit, as I found he was too excited after he recovered from one to permit any operation willingly. He had one fit shortly after it was completed, but no more during the night. The dresser, Mr. Fixot, sat up with him, and he tells me that the patient complained of a good deal of pain in his head, referring it principally to the forehead and eyebrow,

but sometimes to the back parts, near the wound; he dozed at intervals, and then awoke with pain; pulse very variable, sometimes thready, and sometimes a little fuller; cough occasionally occurred, always causing violent pain in the head.

28th, 9 A.M.—He has now paralysis of the whole of the left side of the head, body, and left extremity.

He knows me: complains of pain in his head, and wishes to sit up in bed: we raised him, and then he complained of being faint. I gave him a very little weak brandy and water, and ordered some sal volatile occasionally. His pulse is weak: 100.

28th, 10 P.M.—Has had nine fits at intervals during the day, the last about half an hour before I came down: he is quite sensible between the attacks; the sister thinks he has lost some power in the right arm. As he was now dozing I would not disturb him; pulse 80, small, but not very feeble; skin hot. In one of the fits the convulsions were very slight, and confined to the left side of the body, and he seemed scarcely to lose his consciousness. I learned from the sister that she had observed twitching of the muscles on the left side during the afternoon of yesterday.

On Saturday he continued sensible, and he did not appear to lose his consciousness even during the fits, for as soon as the convulsions ceased he would take up his handkerchief and wipe his mouth. He had fits every half-hour, which began at nine in the morning, and continued till four in the afternoon, when twelve leeches were applied to his head, and he had no more till eleven o'clock at night, when he had a very slight one, but at twelve he had a very severe one, which continued one hour; he was perfectly conscious, and breathing natural; scarcely ever complained of his head, and then referred the pain to the right brow.

Sunday, 30th.—He had no decided fits, only twitching of the muscles; remained sensible till about four o'clock in the afternoon, when a great change took place; he turned very pale, and had more twitching of the muscles, and at twenty minutes after four had a fit, which lasted an hour and a half. After this he totally lost the use of his inferior extremities; all consciousness left him, and he did not have another fit, but merely twitching of the muscles, and died at twenty minutes after three, on the 1st of May, moaning a great deal, and making a great noise, but for one hour before he died he never spoke.

Post-mortem, May 1st, 1 P.M.—Head. After the cranium was sawn through, about half an ounce of yellow pus escaped, while endeavouring to detach it from the dura mater. When this was done we found the internal table of the skull fractured more extensively than the outer table, split inward from the upper edge of the fracture. A portion of this table which was thus split I had removed with the dressing forceps, after using the trephine. The portions which remained could not have been removed without some force, as they were only partially separated from the surrounding bone.

At the time of the operation I did not detect this further depres-

sion, from a fear of separating the dura mater more than was absolutely necessary. But the appearance of this bone certainly teaches us that we are warranted in such cases (even in the absence of depression of the outer table, and the removal of the portions which are found at the edge of the opening made by the trephine) in searching carefully for any further portions that may have been separated.

Opposite this fracture there was a small opening in the dura mater of the size and shape of the extremity of the nail of the little finger, through which some softened brownish-coloured brain was exuding. On turning back the dura mater, we found, on the same side, the whole surface of the arachnoidea investiens covered with healthy yellow pus. The arachnoidea reflexa lining the dura mater was coated with a thick layer of pus, so tenacious that it almost amounted to a false membrane.

The brain corresponding to the seat of fracture was much discoloured. The centre of this discoloration was of a dark, dirty-brownish hue, of a semi-liquid consistency, gradually becoming firmer, and shaded off to a dingy-pinkish colour towards the circumference, which was spotted with deep bloody points; a horizontal section of the brain, about half an inch from the surface, showed this very distinctly. The disorganization extended downwards into the lateral ventricle at the commencement of the descending and posterior cornua, involving a portion of the transverse commissure, but not either the thalamus or corpus striatum. The surface of the brain, where the arachnoidea had been covered with pus, was slightly softened in many places, but most so over the inferior edge of the anterior lobes of the right hemisphere.

The hemispherical ganglion was scarcely, if at all, altered in its condition; its colour was healthy, neither paler nor deeper than usual; the edge, in some situations, was converted into a greyish-greenish tint, which Dr. Hodgkin attributed to a post-mortem action of sulphuretted hydrogen.

The pia mater and arachnoid on the left hemisphere were both perfectly healthy, and also on the surface of both hemispheres, where they are in contact with the falx major.

If the nature of the fracture in this case, and the injury inflicted on the brain and its membranes, as demonstrated by this post-mortem examination, could have been ascertained at the time of his admission, no one could have hesitated to use the trephine. It is, then, a question for our consideration why this condition was not detected, and how far it would be desirable to adopt a different course when a similar case comes before us.

As a post-mortem examination does not demonstrate the amount of lesion of the brain at the time of his

admission, for much that we now observe is the result of subsequent inflammation and gangrene, let us endeavour, reasoning from other cases and the physiology of the subject, to establish this point.

At the time of his admission it is very clear that the internal table of the skull was more extensively fractured than the outer, and that the fractured portions were partially depressed, notwithstanding the entire absence of all symptoms of compression. These symptoms, as almost universally agreed to by surgeons, consist of an entire loss of consciousness; the mental faculties are smothered, and they cannot be roused. Many of the functions of vegetative life are also interfered with, the breathing is laborious and stertorous, not unfrequently the sphincters are relaxed, and the excretions are evacuated involuntarily. There are sometimes other symptoms, but these are the most common.

You will naturally say, if such are the symptoms of compression, why were they entirely absent in this case, where we see that the inner table was depressed and driven in upon the brain? I am inclined to believe that the acknowledged symptoms of compression depend upon the extent of the hemispherical ganglion which is pressed upon suddenly, and that if only a very small portion of this ganglion is pressed upon, then its functions are not naturally impaired, as in this case, and many others that might be quoted: nevertheless, you must not consider it more than a hypothesis of my own, and not as an established principle. Nevertheless, I conceive this is the only truly physiological explanation of this apparent anomaly.

The splintered portion of the skull lacerated the dura mater to a very small extent; and to about the same extent, but no more, was the hemispherical ganglion originally injured. The medullary or fibrous substance beneath was so shaken that blood was effused in small points, as may sometimes be observed in cases of simple concussion without fracture. You will be surprised, on referring to treatises on injuries of the head, to find so many cases recorded in which very

serious injuries to the brain have been unattended by serious symptoms of disturbed intellect; but, as far as I can judge from the loose mode in which post-mortem appearances are almost invariably detailed, they are all cases in which the injury is confined to the base of the brain, or the hemispherical ganglion has been but slightly injured in the first instance. It is a pity that surgeons who have written on this subject should have neglected to state the exact extent of the *surface* injured, for this fact is equally important in its physiological as it is in its pathological bearing; the ignorance of it having induced some well-meaning, but foolish, people to quote such cases in proof of their theory that the brain is not the organ of the mind—not distinguishing between the ganglion which is connected with the mind, and those which are not. The following case, quoted by Mr. Guthrie from Dupuytren, illustrates my view of this subject:—

"A young man had received a wound in the head from a knife, which healed in the usual way, leaving only a little pain, which occurred occasionally round the cicatrix. Some years after, he was brought to the Hôtel Dieu in a state of stupefaction, with which he had been suddenly seized. An incision having been made through the cicatrix, the point of a knife was seen sticking in the bone, the removal of which gave no relief. The trephine was then applied without any result. The paralysis continuing on the opposite side to that on which the wound had been received, it was thought right to open the dura mater, and then to plunge the knife into the brain, when a large quantity of pus escaped. The paralysis ceased that night; he recovered his speech, became sensible, and entirely, though gradually, recovered."

In this case we may conclude, from the account, that the ganglion was only injured to the extent of the breadth and thickness of the knife, and no disturbance of the mind followed until an abscess formed, which, pressing on the ganglion from within, indicated its presence by the stupefaction and paralysis that followed.

The evacuation of the matter relieved the pressure, the senses returned, and the paralysis ceased.

Whether this explanation of the fact, that you do meet with cases of depression of the table of the skull

without the ordinary signs of compression of the brain, be true in its physiology or not, the fact itself is a most important one for you to remember for its practical bearings. I shall again advert to it when I criticise my treatment of the case.

On referring to its progress, you will remember that on the eighth, ninth, and tenth days after the accident, he was almost free from untoward symptoms: so well indeed had the case gone on, that my friend Mr. Travers, who had watched it with some interest, congratulated me on the favourable result of the anticipatory treatment which I had adopted. It may be fairly considered that these antiphlogistic measures, which were practised so early, stayed for the time the invasion of inflammatory action, though they did not entirely arrest it. His system was brought under the influence of mercury within twenty-four hours of the occurrence of the injury, and though he was not bled from the arm—for he never had a pulse exhibiting sufficient vascular action to justify it—yet 148 leeches were applied to the head.

The cough was much subdued by the ipecacuanha and conium pill, a blister, and the tincture of iodine to the chest.

But still the mischief went on, and thus I believe the fibrous medulla beneath the hemispherical ganglion became softened, as indicated on the eleventh day, by slight loss of sensation in the left hand. If the medulla had been materially altered in its texture, at the time of his admission, by the blow, there must have been paralysis at that time, and the fact of its not appearing till the eleventh day shows how slowly the softening and disorganization must have proceeded. The softening increased, and then an epileptic fit takes place, quickly succeeded by another, and another, and another, until, by means of openings made with the trephine, a splinter of bone was removed.

The principal cause of irritation is removed, and one more fit occurs immediately, and then they cease for about twelve hours, when they again recur, and though

occasionally stopped for a short period by local blood-letting, they return at intervals until the patient becomes quite insensible, remaining so for twelve hours previous to his death. This loss of consciousness I attribute to the pus we found effused on the surface of the brain; for until the pus was effused there was nothing to interfere with the hemispherical ganglion, and therefore nothing to affect the intellect; and neither the quantity nor quality of the pus was such as might not have been effused in the course of twelve or fifteen hours at the longest. I think the inflammatory action which caused it was occasioned *by* the epileptic fits, and not the cause of them. The cause of the fits, I believe, is to be found in the softening and gangrene of the fibrous or conducting substance of the brain.

Taking this view of the progress of the case, we cannot avoid the conclusion that, if this patient had been trephined when he was first admitted, he would have had a better chance of recovery than by postponing it; and though it is impossible to say whether the brain was or was not so much injured at first as to have been irremediable, I candidly confess that I do not believe it was; for if such had been the case there must have been some symptoms of such a lesion, and it is astonishing from what serious lesion, both primary and secondary, the brain will recover. No, gentlemen, I believe that almost all the disorganization which the post-mortem examination exhibited in the right hemisphere of the brain was the result of inflammatory action, excited by the irritation of the fractured skull, and partly kept up and aggravated by the concussions occasioned by the cough. The number of cases on record in which patients have recovered whose brains have been seriously wounded, when the cause of irritation has been removed, should encourage you to make the attempt as early as possible to relieve your patient, if you can discover that any cause of irritation exists. The difficulty in the present case was to ascertain the fact of depression of the internal table.

There is no point in surgical practice regarding which there is and has been so much difference of opinion as the use of the trephine. Mr. Abernethy's "Treatise on Injuries of the Head" was called forth in consequence of the difference of opinion regarding the line of practice that ought to be followed in particular cases. He relates seven cases of fracture, with depression, which occurred within one twelvemonth at St. Bartholomew's, that recovered without any operation, "showing that a slight degree of pressure does not derange the functions of the brain, for a limited period at any rate, after its application." After relating other cases, he goes on to say:—

"Such cases ought to deter surgeons from elevating the bone in every instance of slight depression, since by the operation they must inflict a further injury upon their patients, the consequence of which it is impossible to estimate. From all, therefore, that I have learned from books, as well as from the observations I have made in practice, and from reasoning upon the subject, I am disposed to join in opinion with those surgeons who are against trephining in slight depressions of the skull, or small extravasations of the dura mater."

Benjamin Bell, whose "System of Surgery" was published in 1801, says:—

"Hitherto it has been a general rule to consider the application of the trepan as necessary in every fissure, whether any symptoms of a compressed brain have occurred or not; but due attention to the real nature of the fissure, and to the effects most likely to result from perforating the skull, will show that, although fissures may be frequently combined with such symptoms as require the trepan, yet that they are not always, or necessarily so; and unless when such symptoms actually exist, that this operation, instead of affording relief, must frequently do harm; for it is by no means calculated for, or in any respect adequate to, the prevention of these symptoms, and I have already endeavoured to show that laying the brain bare is never to be considered as harmless, and therefore that it should never be advised but where it is probable that some advantage may be derived from it."

In the present day these observations of Mr. Bell seem almost superfluous, but when we find such precepts as the following inculcated by John Hunter, in his "Surgical Lectures," we need not be surprised that

subsequent teachers of surgery should have felt the necessity of warning their pupils of the too free use of the trephine. "As we cannot tell for certain at the time," says Mr. Hunter, "whether the symptoms arise from concussion, compression, or from extravasation of blood, it may be more advisable to trepan, *as the operation can do no harm.*"

Mr. Lawrence relates an interesting case in a clinical lecture,[1] of a boy who recovered without operation, in whom the skull was fractured and depressed, the brain wounded, and portions of it extravasated through a laceration of the scalp. Mr. Lawrence says:—

"In this case, as the bone was here evidently and considerably depressed, and as it was also probably driven in upon the brain, it would, I believe, have accorded with the principles of treatment generally admitted, to have performed an operation for the purpose of elevating and removing depressed and detached portions of the bone. . . . . .

"The considerations which determined me not to do this, were the favourable state of the patient generally, and in particular the absence of all symptoms indicating compression of the brain; the specimens in pathological collections of very extensive injuries of the skull repaired by a natural process; the smallness of the external wound, which brought this case nearly into the state of simple fracture; the extensive incision of the integuments, and exposure of the bone, dura mater, and brain, which an operation would have involved; and the almost invariable fatal termination of such proceedings within my own experience in hospital practice."

Dr. Hennen, in his admirable work on "Military Surgery," relates many cases to show that the trephine should not be used, even when the bone is evidently depressed, in the absence of symptoms. He says:[2]—

"We have here sufficient proof that there is no absolute necessity for trepanning merely for depressed bones from gunshot, although few would be so hardy as not to remove all fragments that came easily and readily away."

You will do well to read all the cases which he relates; and, in the hope that most of you will do so, I will only quote one short history in connection with the case before us.

[1] Med. Gaz. vol. xxi. p. 345. [2] P. 288.

"A soldier was shot in the head in the Canadian campaign. A fracture was the consequence, with a depression of not less than an inch and a half; but as no untoward symptom occurred, no operation was had recourse to. This man recovered, and went to the rear, where, at a distance of several weeks afterwards, he got an attack of phrenitis from excessive drinking, and died. As the existence of the ball in the brain was strongly suspected, an inquiry was made after death, and on dissection it was found lodged in the corpus callosum."

Mr. Guthrie, in his interesting and valuable work on "Injuries of the Head," makes some excellent remarks on the best mode of proceeding in these obscure cases. He says:—

"The inner table is sometimes broken in a peculiar manner, to which I believe attention has only been drawn by myself in my lectures, since trepanning has ceased to be the rule in all cases of fracture. In these cases the skull is cut rather than broken by a sharp-cutting instrument, such as an axe, sword," &c.

Just, in fact, as a piece of wood might be, while the inner table, like a piece of glass or brittle steel, is broken and splintered inwards.

Mr. Guthrie continues:—

"These cases should be examined carefully. The length of the wound on the top, or side, or any part of the head which is curved and not flat, will readily show to what depth the sword or axe has penetrated. A blunt, or flat-ended probe should in such cases be carefully passed into the wound, and being gently pressed against one of the cut edges of the bone, its thickness may be measured, and the presence or absence of the inner table may thus be ascertained. If it should be separated from the diploe, the continued but careful insertion of the probe will detect it deeper in the wound; a further careful investigation will show the extent in length of this separation, although not in width, and will, in all probability, satisfy the surgeon that those portions of bone which have thus been broken and driven in are sticking in or irritating the brain. In many such cases there has not been more than a momentary stunning felt by the patient; he says he is free from symptoms, that he is not much hurt, and is satisfied he shall be well in a few days. . . . . .

"An officer was struck on the head in Halifax, Nova Scotia, by a drunken woman, with a tomahawk or small Indian hatchet, which made a perpendicular cut into his left parietal bone, and knocked him down. As he soon recovered from the blow, and suffered nothing but the ordinary symptoms of a common wound of the head with fracture, it was considered to be a favourable case, and

was treated simply, although with sufficient precaution. He sat up and shaved himself until the fourteenth day, when he observed that the corner of his mouth on the opposite side to that on which he had been wounded was fixed, and the other drawn aside, and that he had not the free use of the right arm, so as to enable him to shave. He was bled largely, but the symptoms increased until he lost the use of his right side, became comatose, and died. On examination the inner table was found broken, separated from the diploe, and driven into the brain, which was at that part soft, yellow, and in a state of suppuration."

After relating several other instructive cases bearing on this point, Mr. Guthrie says:—

"The principle being laid down that it is right and proper to examine all such wounds with a blunt flat probe, in order to ascertain if possible whether the inner table is depressed or broken, the question necessarily arises, what is to be done when such depression and breaking down of the inner table is ascertained to have taken place. There can be no hesitation in answering that, in all such cases, the trephine should be applied, although no symptoms should exist, with the view of anticipating them. . . . . .

"The old doctrine, it may be said, in regard to fractures generally, is revived in these cases, but on a principle with which our predecessors were not sufficiently acquainted. A patient very often survives a mere depression of the skull; he may, and occasionally does, survive a greater depression of the inner than the outer table; but I do not believe that he ever does survive and remain in tolerable health, after a depression with fracture of the inner table, when portions of it have been driven into the dura mater. If cases could be advanced of complete recovery after such injuries, I should not consider them as superseding the practice recommended, unless they were so numerous as to establish the fact that wounds of the dura mater and brain are not extremely dangerous. I have referred purposely to many cases in which a cure was effected, after a lapse of time, by the bone being removed; but they rather support than invalidate the principle I have inculcated. There are great objections, I admit, to the trephine being applied in ordinary cases of fracture, which are not attended by symptoms of further mischief; but the nature of the cases which I have particularly referred to having been ascertained, I maintain that the practice should be prompt and decisive in every instance in which the surgeon is satisfied that there is not merely a slight depression or separation of the inner table, but that several points of it are driven into the dura mater."

I have thought it incumbent on me to dwell very fully on the justifiableness of the use of the trephine in such fractures of the skull where there is an absence of cerebral symptoms, lest I should have practically misled

you by attaching too much importance to this circumstance in my former lecture. Nevertheless, I cannot recommend the use of the trephine in any case, unless you have very decided evidence of a wounded dura mater from splintered portions of the inner table.

The same authority says :—

"If there be any doubt on the mind of the surgeon whether there are, or are not, any portions depressed and irritating the brain or its membranes, he should wait; and in this it is that the real difference between modern surgery and that of the olden time exists, with respect to adults."

The nature of the fracture in this case rendered it almost impossible to ascertain the fact of fracture of the inner table by means of the probe, as recommended by Mr. Guthrie.

You will perceive, gentlemen, from these few quotations, that there is still considerable difference of opinion as to any general rule for the use of the trephine in fracture of the skull. It must, indeed, be admitted that no general rule can be laid down, but that every surgeon must be guided by the peculiar circumstances of each particular case, bearing in mind that there are cases of injury of the brain in which the trephine may be required, though all the symptoms of *compression* are absent. Such cases, it is true, are rare, and their diagnosis difficult, but it is only by the remembrance of their occasional existence that you will ever detect them.

And, on the other hand, scarcely any extent of wound of the skull, the brain, and its membranes, accompanied with unequivocal depression of bone, should discourage you from the operation, if the functions of vegetative life are not so seriously interfered with as to make a fatal result inevitable; for the records of surgery teem with cases showing from what serious injury of the brain some patients will recover.

The following case, which some of you may remember, will come under this head, and also illustrate the usual symptoms of compression and the first effect of such an operation.

James White, æt. 49, was admitted into St. Thomas's Hospital at half-past 9 A.M. of the 13th of July, 1842. When I visited him at 12, I found him with an incised wound of the scalp, with a corresponding fissured fracture of the skull on the left side, extending from the occipital bone across the parietal bone and coronal suture into the frontal bone. The brain was oozing out at the posterior portion of the fissure, and it was reported that he had lost a large quantity of blood. The wound was inflicted with a large bill-hook as he lay asleep (by a man who intended robbing him). When admitted he was quite sensible, and answered all questions rationally; but when I saw him about two hours subsequently, it was difficult to rouse him, and his answers were not clear. The muscles of his face were paralyzed both as regards sensation and motion, for he was quite unconscious of my touching him, even when I pinched him sharply. On examination of the wound I found a portion of depressed bone driven under the edge of the upper portion of the parietal bone, and as it was evident that it could not be removed without a larger opening in the skull, I determined, with the advice of Mr. Green, to trephine the cranium, and remove it. The operation was performed without difficulty, and with scarcely any expression of pain on the part of the patient.

Three pieces were removed, two about the size of a square inch, one the size of a finger-nail, besides the portion removed by the trephine. A smaller, but very sharp, portion was driven through the dura mater and wounded the brain. The immediate effect of the removal of the bone was very striking. The patient at once complained of pain, and articulated quite distinctly, which he could not do before the operation. The sensibility of the skin of the thigh was also restored, as he felt my fingers when I touched him, though not so distinctly as in the perfect state. Arterial blood flowed very freely, but the bleeding did not last long after the removal of the bone.

Ordered him hyd. chlorid. gr. v. 4tâ quâque horâ s., and cold water to the wound.

11 P.M.—Much the same as when I left him; has been dozing.

14th, 1 P.M.—Not quite so sensible as yesterday; skin hot; very thirsty; pulse 120; has taken six doses of calomel; mouth slightly affected; mercurial fœtor; bowels open once pretty freely.

Cal. gr. j. 6tâ horâ s.; Hirud. x. capitis lateri sinistro et.

9 P.M.—Has been dozing all the afternoon; complains of his head when roused; cannot speak distinctly, but his answers are rational; skin very hot; pulse 140, sharp and small; very thirsty.

Ordered—V.S. ad ℥xvj. Enema communis.

Expressed himself, in answer to my inquiry, relieved by the bleeding.

15th.—Much the same; still sensible, and complains of pains in his head; mouth scarcely so tender.

Hirud. xxx. capiti.

16th.—Scarcely any difference in his condition; says his head is not so painful; wound gaping; no fungus cerebri. Mr. Green

advised my not pushing the mercury further, and to apply a poultice instead of the lint, considering it of great importance to establish suppuration.

Ordered—Cataplasma panis. To omit the mercury.

19th, 10 A.M.—Much the same; pulse 120; skin very hot; complains of pain in the head.

Ordered Hirud. xxx.

10 P.M.—Sinking; quite rational, but very low; can scarcely answer; pulse too quick to count; gave him two ounces of brandy; had very little effect upon his pulse. Ordered it to be renewed in the night, if he lived.

20th, 9 A.M. — Sensible, but more depressed than last night; has taken some more stimulus during the night; sank gradually, and died about 11 o'clock.

Post-mortem.—Fracture extending from the centre of the frontal bone across the left parietal bone into the lambdoidal suture, which was separated slightly, so as to admit blood enough to make its course for about an inch in extent. The dura mater was divided for about four inches. The surface of the brain opposite the wound was softened, red, and pulpy. The disorganization extended downwards for about an inch and a half in its deepest part. Surrounding this softened portion, for about half an inch, the brain was dotted with red points, and a little beyond it was in spots rather yellow. The surface of the brain on the left side was coated with a very thin yellow tawnish layer of ill-formed pus. The right side normal; the corpora striata, thalami nervorum opticorum, and the rest of the brain, healthy.

This case is interesting in many points of view.

First, the intellect remaining so perfect, notwithstanding the extent of the brain that was injured. This circumstance confirms the theory stated elsewhere, that incised wounds of the hemispherical ganglion do not, in the first instance, affect the intellect so much as a compressing force; because the extent of surface which is injured is less in the former than the latter injury in the first instance; though as soon as blood is extravasated, and softening of the ganglion follows, then the senses are oppressed and subsequently obliterated.

Secondly, that the removal of the bone should have almost perfectly restored the functions of the nerves of sensation, which had been obliterated by its pressure, while it had no effect upon the motor tract.

Thirdly, the proof it affords that both motion and sensation may be interfered with, without the corpora

striata and thalami nervorum opticorum being injured. In a practical point of view, I had some doubt as to whether I had pushed the depletion too far, as the man seemed exhausted; but the membranes exhibited quite sufficient indication of inflammatory action to justify the treatment most fully, and showed how high it would have run if it had not been checked.

To return to Wingrove's case. The next practical point which the consideration of it suggests is, whether you are justified in opening the dura mater when it has been exposed by the trephine, in those cases in which there are symptoms of pus beneath its surface.

The dura mater, when exposed by the removal of a portion of the skull, will be seen to rise and fall with the pulsations of the brain, if it is not separated from the dura mater by anything else than the other investing membranes. It is true that in a tranquil state, and with a small opening, the motion is very slight. The absence of this motion is stated by Mr. Guthrie as diagnostic of fluid beneath.

"I have seen," says this author, "on the removal of a portion of bone, the dura mater rapidly rise up into the opening, so as to attain nearly the level of the surface of the skull, totally devoid, however, of that pulsatory motion which usually marks its healthy state; and an opening into it under these circumstances has allowed a quantity of purulent matter to escape, proving that the unnatural elevation of the dura mater was caused by the resiliency of the brain, when the opposing pressure of the cranium was removed. I consider this tense elevation, and the absence of pulsation, to be positive signs of there being a fluid beneath, requiring an incision into the dura mater for its evacuation. It is a point scarcely, if at all, noticed in English surgery, although much insisted on in France. It was not in the slightest degree understood till the commencement of the war in the Peninsula, and was one of those points which particularly attracted my attention."

In Wingrove's case no such phenomenon was exhibited at the time of the operation, nor did I perceive it when I examined the wound at my daily visits, which would rather confirm the opinion that the pus was not effused until about twelve or fifteen hours before death.

If I had observed this sign of the presence of matter

under the dura mater, I confess that I should have punctured it, though I cannot believe, from the post-mortem examination, that the operation would have altered the result, as nothing could have changed the gangrenous condition of the brain. There are many other points of interest connected with injuries of the skull, and the use of the trephine, which do not bear upon the present case, but which I shall take the first opportunity of bringing before your notice.

I cannot conclude these remarks without expressing the hope that the study of this case will impress you with the importance of making a very careful diagnosis and prognosis in all injuries of the skull; and that, while you value the trephine and elevator as most useful instruments for the relief of a compressed and irritated brain, that you will never be tempted by the prospect of performing what, if successful, is certainly a brilliant operation, but blamefully mischievous if the condition of the parts should not absolutely require it, without having first a well-grounded conviction that their use can alone save the life of your patient; remembering that in all such injuries the great danger to be apprehended is inflammation of the brain and its membranes, and that nothing is so likely to produce it as their exposure to the air and the forcible removal of their natural protectors.

LECTURE X.

On Injuries of the Head.—*Continued.*

Gentlemen,—Fractures of the base of the skull are not unfrequent in a large, busy, crowded, labouring city, like London: recoveries are few and far between. When I say recoveries from this injury, I speak advisedly. I think we are as justified in asserting, in those cases where the symptoms are very marked, that the skull is positively fractured, as we are when we see the skull bared before us in the dead-house.

The following case will, I think, convince you that a fractured base is not always fatal:—

Bartholomew M'C——, aged thirty-nine, ship-porter, admitted into Abraham's Ward, Sept. 23, 1857. While raising some timber from a lighter into a ship, one piece fell back and struck him down in the barge below. In this case, the blow coming from above must have struck the vertex of the head. When picked up, he was senseless. On admission, there was bleeding from the nose and from both ears, but no serum. Pulse 92, labouring; breathing stertorous; pupils—or, at least, the left, for the ecchymosis and swelling of the right eyelid prevented the pupil of that eye being observed—moderately dilated and insensible. Head to be shaved and an ice-bag applied. To take eight grains of calomel in powder immediately, and two grains in two hours. He remained insensible during the rest of the day, and lay quiet, occasionally moaning; twice he has been sick. The bleeding from the right ear continued up to the evening. The bowels not being opened, he had a common enema, after which they were twice moved during the night.

Sept. 24th.—During the day he continued much in the same condition; pulse 96, full. Towards evening he became more conscious, and referred to his head as the seat of pain; breathing became natural, though still heavy. Mr. Solly, finding the pulse full and hard, ordered forty leeches to the scalp, which had the effect of softening the pulse, but did not diminish it in volume.

25th.—Has been sleeping the whole day; breathing heavy; when questioned he pointed to the vertex and forehead as the principal seats of pain.

26th.—Less drowsy, but dislikes being disturbed; a good deal of

hesitation in his speech; (it was afterwards ascertained that this was usual;) there is considerable in-turning of the right eye, and its pupil is always more dilated and less responsive to light than that of the left.

This inward squint has been the result of paralysis of the abductor oculi, through pressure on the sixth pair of nerves; the dilated pupil of this eye is to be considered as the result of pressure on the optic nerve, or more or less palsy of the retina.

28th.—Being quite under the influence of mercury, it was discontinued, and an alum gargle ordered.

This man owes his recovery, I believe, to the rapidity with which he was brought under the influence of mercury. Bowels open.

29th.—Mouth very sore. Ordered, a chlorinated soda gargle.

30th.—Complaining of accession of pain in the head and across the forehead; hot scalp; a good deal of pyrexia. Thirty leeches were ordered; these did good service, but it was thought necessary to repeat them on the 2nd.

The continued heat of head was to my mind an indication of the persistence of inflammation, and hence my reason for calling in the aid of my black allies, and they did good service to the state.

Oct. 5th.—Since the last application of the leeches he has progressed very favourably. Continues to complain of pain in both supra-orbitar regions, particularly the right; tongue pale but not coated; bowels open; pulse tranquil; appetite good, and he asks for a better diet, but he was kept on milk, of which he was to have one pint extra.

I believe that the slightest improvement in this man's diet would have again roused the inflammatory action which the leeches had subdued. Our London patients do not bear much pulling down, and very soon require a nourishing diet, or typhoid fever attacks them; or erysipelas, in cases of scalp wounds; or, as you have lately seen, that pleasant complication in a case of erysipelas, delirium tremens. Still, in this case I felt the necessity of a low diet, and therefore adhered to the milk.

8th.—Pupils both act on admission of light, but the right remains permanently the more dilated, and vision with it is much less distinct. Paralysis of the portio dura on the left side; food collects between that cheek and gum. When told to smile, it is all on the right side; when told to puff out his cheeks, the wind escapes at the left corner of the mouth, and the cheek flaps passively; there is total want of expression on that side. He cannot close the left eyelids, and there is always some ptosis of the upper lid, which may depend on paralysis of the third, or on want of tone in the orbicularis from the paralysis of the facial. He can project his tongue quite straight, and turn it to either side indifferently. He complains of numbness in the distribution of the infra-orbitar division of the fifth. He has also quite lost all taste. To have cantharides blister to the temples, mercury ointment afterwards.

11th.—The application of the mercury to the blistered surfaces has made no impression on the pain in the temples, nor improved the sight of the right eye.

18th.—Feverish; tongue brown and dry; hot skin; headache. Effervescing potash mixture, an ounce and a half every four hours.

19th.—Powdered rhubarb and mercury, one scruple, to be taken directly. Less feverish; tongue clearer, moist. He always now wears a shade, which he says helps his vision. When he closes his left eye he feels a giddiness; when he uses both eyes, a fog obscures his vision. He complains of a difficulty of swallowing, unless it be liquids, or solids that are well "greased," as he expresses it; but he has recovered his taste.

Nov. 5th.—Complains of accession of pain in the head; some pyrexia. He was ordered twelve leeches, with linseed poultice.

6th.—Much better.

7th.—Mixture of bichloride of mercury, one ounce, three times a day.

20th.—Able to get up and walk about, though with some feeling of vertigo. Pupils act equally; vision of the right still much less clear than the left. Paralysis of left facial lessened; no ptosis; more expression; numbness less in distribution of infra-orbitar: now he experiences frequent tingling sensations in the course of the same nerve. In-turning of the right eye persists. Swallowing much better. Complains of frequent lacrymation; when he endeavours to fix his attention on any object, it increases the fog over his vision; when he shuts either eye he can see better with the other, though best always with the left; when he shuts the left eye he cannot point with his finger straight to any object; always goes wide of the mark; any effort makes him feel a little giddy. He says that all his face feels different from what it used to feel before the accident. General health very good. Still kept on low diet, much against his inclination.

A few days subsequent to this date he was presented, at his own desire, the only paralyses remaining being of

the left facial, of the right abducens, and of the right optic. When dismissed, the greatest caution was enjoined upon him as to diet and regimen.

In this case the number of nerves which were paralyzed indicated the great amount of injury and the extent of the extravasation.

In contrast to the above case, and in order to point out forcibly the difficulty which sometimes occurs in detecting fracture of the base, and still more the difficulty of persuading the patient and his friends of the serious nature of the injury, I shall detail briefly a case which came before me in my private practice. The time will come when you will be surprised by the incredulity of non-professional men as to the danger to be apprehended in a case of injury of the head, in which the symptoms are not severe in the first instance. If the consciousness of the sufferer is not entirely obliterated, or if, obliterated for a short time, it is soon recovered, they think you are exaggerating the danger, and if they are low-minded, vulgar people, they will even suspect that you want to make the most of the case; and often the poor patient himself, as soon as the power of thought returns, feeling weak and depressed, will accuse his medical attendants of unnecessary caution, and say decidedly, as in the instance now to be related, that all he wants is good nourishing diet, and the same amount of wine, &c., that he has been accustomed to. We, of course, meet with these fancies in hospital practice, but they are more easily managed than in private. But neither in public nor in private, if you are clear, as you ought to be, in your conviction of the true pathology of the injury, ever yield your opinion, or alter your practice. It is far better to give up the case than agree to a line of treatment which you do not approve.

On the 20th of May, 1856, D. S—— was thrown from his horse with great violence, as the animal was galloping at full speed. He pitched on the right side of his head, the skin of which was grazed. There were bruises on the whole of the right side of the neck, limbs, and body. He bled freely from the ear on that side,

making, I was told, a pool of blood in the road. I learnt from a man who saw the accident, and picked him up, that he was then quite unconscious. But he soon partially recovered his senses; for when the medical man of the neighbourhood, Mr. Chapman, saw him, about ten minutes after the occurrence of the accident, he was able to answer a few words, though not very distinctly or continuously, in reply to his questions. So slight at this time were the symptoms of severe injury to the head, that Mr. Chapman thought him well enough to be removed from Norwood, in a fly, to his residence in London. Mr. Chapman's judgment might, perhaps, have been a little biassed by a conscientious feeling of not wishing to retain D. S—— as his patient in a country inn, away from the comforts of his own home.

I saw him first in London, about six hours after the receipt of the injury, in the presence of Mr. Chapman, who had kindly accompanied him to town. From this gentleman I learnt that when he first saw the patient the pupils of both eyes were natural in appearance, slightly but equally dilated, and that they contracted normally to the influence of light; that the pulse was feeble and regular, and the breathing natural. He said that it was like a case of simple concussion. When I saw him he was partially conscious, though dull; he at once asked who I was, and, though he did not recognize my face, which was not unknown to him, he evidently remembered my name. We ordered him a purgative of calomel and rhubarb, to be followed by a senna draught in the morning; these cleared the bowels well.

I shall not detain you with the daily notes of this case, but merely mention that the cerebral symptoms did not assume any serious character until twenty-four hours previous to his death, which took place on the fourteenth day from the date of the injury. At each visit he was quite conscious, though rather lethargic, and answered all questions rationally. He complained that we did not allow him enough to eat, and told his usual medical attendant that all he wanted was his usual diet, and that if we would allow him that he would soon be quite well. The symptoms which I did not like, and which induced me after each visit to give a very guarded opinion as to his progress, were—a continued though slightly increased beat in the head; a slightly dilated pupil of the left eye; a sluggish and peevish manner; and his complaint that he was not free from headache, though he said it was nothing to signify; he had had an injury to the eye and slight squinting from a former injury, so that this symptom

was not thought of much importance. The accident occurred on a Tuesday. He spoke but little, except in answer to questions from his nurse or medical attendant. He answered slowly, but never incorrectly; he seemed to require time to collect his thoughts. But on the Friday he talked to his brother, who was his partner, perfectly rationally about business, and from this time his intelligence improved until thirty-six hours before his death.

On the Thursday week following the accident—that is, on the ninth day—he seemed so well that his brother, who up to that time had slept every night at his house, went home. It was on this day that, in a consultation with Sir B. Brodie and Mr. Headland, we yielded to his repeated solicitations that he might be allowed to sit up a little during the course of the day; we agreed to his doing so in the arm-chair for an hour the next day, but that he was not to see any of his numerous friends, who called in great numbers to inquire after him. All this precaution he thought very absurd, showing how well he felt himself.

The following morning, at half-past eight, he got up, partially dressed himself, went into his sitting-room, got out his geological hammer, and began to work at some of his fossils. He had not been occupied in this way above a quarter of an hour before he became drowsy, and soon comatose, and was a corpse in about thirty-six hours from the time of his thus leaving his bed and exercising himself in this imprudent manner.

After his death, I heard that on every occasion his bowels acted he got out of bed and went to the water-closet upstairs. I mention this fact, because it certainly never did occur to me during my attendance that such a thing would be allowed, for he had an excellent nurse, who I thought knew her business. It has, however, been a warning to me for the future to ascertain how such matters are provided for, and to guard against any such imprudence.

If it is wrong to permit a man in a state of delirium, having fractured either arm or leg, to leave his bed—for

no man in his senses would do such a thing—it is still more dangerous to permit a man who has fractured his skull to move about as if nothing was the matter. I know that in many such cases, when patients are tolerably conscious, and when they are obstinate and self-opiniated, it is extremely difficult to manage them; but you must not hesitate to speak the truth, and tell your patient distinctly, that his skull is fractured. This may seem harsh, but it is really kindness, if by it, and by that alone, you can control your patient.

Mr. Hilton, in his valuable lectures on "Fractures of the Base of the Skull," has forcibly pointed out the importance of keeping the head still, and not allowing your patient to assume the upright posture until five or six weeks have elapsed, and the injury is repaired. He dwells upon it especially in reference to the rupture which takes place in the water-bed on which the brain rests in a normal state. In fracture of the base of the skull, extending through the petrous portion of the temporal bone, the cerebro-spinal fluid escapes at the external ear, and this flow is itself an indication of the severity of the injury, but its absence is no proof of the absence of fracture. But to return to the management of an unruly patient. When either you have ample proof of fracture of the skull or only suspect it, as in the case just related, I again wish to impress upon you the absolute necessity of keeping your patient as quietly and unintermittingly in bed as if his leg were broken, and that you are justified in telling him plainly, if such an extreme measure is necessary to attain your object, that his skull is fractured, and that absolute rest is necessary to preserve his life.

A post mortem examination in this case revealed the frightful amount of mischief which had been inflicted on this poor fellow's skull and brain. External to the skull there was a large ecchymosed spot over the temporal muscle on the right side, and, corresponding with this there was a large coagulum of blood between the bone and dura mater, extending downwards as low as the petrous portion of the temporal. By the removal

of the calvarium, the dura mater on the left side, corresponding with the superior posterior angle of the parietal, exhibited unmistakable indications of blood extravasated beneath by its purple hue and bulging surface. The clot which produced this extended from the base of the brain to the vertex. On removing the brain, we found the lower part of the left middle lobe superficially lacerated, discoloured by blood, and slightly softened; there was also superficial laceration of the under part of the left anterior lobe, with an accompanying sanguineous infiltration. The remainder of the brain was firm and healthy; no suppuration nor any other morbid appearance. There was a fracture of the skull, extending from the upper part of the squamous plate of the right temporal bone downwards through its petrous portion, and thence across the occipital, but not quite reaching the foramen magnum.

From this account, you will perceive that the laceration of the brain was on the opposite side to the fracture; it was occasioned, therefore, by the *contre-coup*. This laceration and a certain amount of extravasation must have been contemporaneous with the injury; but I doubt whether the whole amount of coagulum found after death was poured out at the time of the accident. I am inclined to think that this second flow of blood followed his resuming his favourite occupation with his geological hammer. It is not, however, probable that, with this amount of injury to the brain, any amount of rest or judicious antiphlogistic treatment could have averted the fatal result; but the whole course of the case, with its post mortem revelations, will show how extremely careful—aye, and obstinate—you must be in the treatment of any injury of the head, where there is even the slightest ground for suspecting fracture of the base.

LECTURE XI.

Injuries of the Head.—*Continued.*

Gentlemen,—Two cases of injury to the head lately admitted into the hospital appear to me sufficiently interesting to be worthy of your serious attention. It enables me to continue in these lectures this interesting subject of injury to the brain from external violence to the skull. The first occurred a little while back, but I have not yet lectured upon it. I shall not detail it at length, but sketch it, I hope sufficiently clearly to be instructive.

Robert W——, a cabman, aged 60, was pitched off his box on London Bridge. He struck the ground with the top of his head. I saw him fall. When picked up he was quite unconscious. He was in bed in the hospital within ten minutes after the occurrence of the accident, and within a quarter of a hour I found he had so far recovered from the concussion, that he was able to tell his name and address.

There was some bleeding from the left ear, and no external laceration to account for it. I ordered him five grains of calomel every six hours; the head to be shaved, and a cold lotion applied. He continued in a stupid, lethargic state, but without actual coma, during the whole day, with a slow irregular pulse of no force or power. Towards evening he vomited, and his pulse became fuller. Ordered a common enema, and the cold lotion to be continued.

June 4th—the following morning—he was rather more conscious, and the pulse softer. He complains of pain at the top of the head, where there is a good deal of heat. Ordered ice in a bladder to be substituted for the lotion. The bleeding from the ear continues.

5th.—Head cooler, and on the whole better.

6th.—Bowels very freely opened. Calomel to be discontinued. His manner is very strange this morning; gives wandering answers when spoken to; no positive delirium, but just those slight indications which made me suspect the approach of delirium tremens—*delirium ebriosorum*. The head was now tolerably cool, and the pulse soft and moderately full. It was neither the wiry pulse

indicative of inflammation, nor the full, oppressed, labouring pulse accompanying cerebral effusion.

7th.—The symptoms of delirium tremens are more marked; he is more restless, wanting to get out of bed, talking of his work, &c. Taking all his symptoms together, with his previous habits of life as a cabman, I ventured to treat the case as delirium tremens, as an anæmic, not a hyperæmic, condition of the brain, notwithstanding the possibility of there being a fracture of the base of the skull. I ordered him a drachm of laudanum immediately, and ten minims of the same, with half a drachm of sal volatile, in peppermint-water, every six hours. He had a better night.

8th.—The following morning he answered all questions; recovering; the pulse continued quiet. I ordered the ice to be continued, as the head was still slightly above the temperature of the rest of the body. I ventured to give him a pint of porter.

This plan of treatment answered, and was continued until he was discharged from the hospital pretty well, though very deaf. I have seen him since, and he complains that his head is of no use to him, and that he cannot follow his occupation as a cabman. I have every reason to believe that there has been a fracture of the base of the skull in this case, notwithstanding the man's recovery as regards his bodily health.

The next case, from its fatal termination, enables us to connect the symptoms during life with the actual lesions of the brain as exhibited after death, which, while it is not so satisfactory to the surgeon, is often more instructive to the pupil.

Fracture of Base of Skull; Extravasation; Death.—James F——, aged fifty, foreman at a ship-chandler's, was admitted, Sept. 23rd, 1857, into Abraham's Ward. It appears that while engaged in minding a trap-door held up by chains at the back of the warehouse, one of the chains gave way, and he was precipitated a distance of about sixteen feet, striking his head, just before he reached the ground, against the side of a barge, and then falling into the mud. The nature of the accident is part of your evidence, and a very important part, in coming to a conclusion as to whether there is a fracture of the base of the skull—an injury which is always, I believe, occasioned by a direct blow on the vertex. He was picked up at once, and was sufficiently sensible to walk through the premises to a cab. The absence of immediate unconsciousness is no proof of the absence of fracture. By the time, however, he arrived at the hospital he was totally insensible. Blood was issuing, though not in any great quantity, from both ears; the pupils were contracted. The contracted pupils indicate an irritated brain,

not a compressed one. The pulse was feeble and intermittent. This pulse is characteristic of severe injury of the brain, accompanied with slight hæmorrhage. Skin cold and moist, though this may have been partially due to the encasement of mud with which he was admitted.

Within a few minutes after he was in bed he had a strong epileptiform convulsive attack, but unaccompanied with any scream or foaming at the mouth, or turgescence of the vessels of the face and head. When I was informed of this epileptiform convulsion, I felt compelled to give a very unfavourable prognosis; for, taken with the rest of this history, it points almost with certainty to laceration of the brain, and if this man had recovered it would have been no proof that the brain was not torn. There are many cases on record of recovery where the brain has been so much torn that even large portions have been lost. I have detailed several of these cases in my work on this subject. You must, however, take care to distinguish between the epileptiform convulsion and true epilepsy, and you should always ascertain whether your patient has been subject to epileptic fits. Ordered five grains of calomel, and two grains every two hours; the head was shaved, and an ice-bag applied to the scalp; hot water to the feet.

He remained insensible throughout the day; breathing heavy, but not stertorous. In the evening he had another fit. A common enema was administered, which opened the bowels three times during the night.

Sept. 24th.—Has had no fit to-day, but is very restless; not so insensible but that he seems to hear any question addressed to him, although he gives no, or at least no intelligent, reply; once he appeared to recognize his master when he spoke to him by name; pupils contracted; pulse still feeble, but more rapid, 120; scalp very hot, making the surface of the body seem cool by contrast. Fifteen leeches to be applied to the scalp.

25th.—Has had two fits during the night; has been to-day so violent in the interim of the convulsions as to require restraint with the strait-jacket.

I am always sorry to hear that any patient of mine, under any circumstances, is put into a strait-jacket. They are the abominations of the old lunatic asylums,

dismissed entirely from all well-conducted modern ones. In these establishments one or two judicious attendants supply the place of the mechanical restraint, but in an hospital we are not provided with such attendants, and therefore, we are obliged to have recourse to the waistcoat, though even here we can often find convalescent patients who will attend to a fellow sufferer with great kindness and judgment.

The patient talks a good deal and incoherently; occasionally appears to doze for fifteen or twenty minutes; takes no food beyond a little milk, or arrowroot, or beef-tea; once, indeed, he appeared to relish a draught of cold water. Various rhonci and large crepitation are common over the whole chest; gurgling also accompanies his breathing from accumulation of mucus, which he either has not the power or the sense to expectorate. He has appeared aware of his wife's presence, but holds no intelligible conversation with her; he rambles a good deal; bowels have been twice relieved.

26th.—He appears a little better this morning; quieter, a shade more rational; scalp less hot; strait-jacket taken off; the fits towards the afternoon become more frequent, but less violent, apparently for want of power; he is hemiplegic as regards the left side; the arm falls powerless when raised, and, all along, whenever he has attempted to get out of bed, it has been withdrawn, and towards his right side; when he mutters, the mouth is drawn to the right side; the right side of the body is the most strongly convulsed when in a fit. Bowels being irritated by the calomel, it was ordered every six hours. Motions passed involuntarily.

27th.—Has two or three times asked for some beef-tea, but with this exception has said nothing connectedly. Convulsions almost incessant; pulse feeble and fluttering; pupils contracted and insensible; loud rattling in his throat; all attempts at drinking seemed to choke him. Died about midnight.

Sectio cadaveris.—Heart: rather above natural size; there was a little deposit about the aortic valves, and some upon the lining membrane of the aorta. Lungs: both very much congested at their lower part; bronchial tubes red, and contained a quantity of mucopurulent fluid; right pleura somewhat adherent. Head: some effusion of blood beneath the scalp at the posterior part. Brain somewhat congested on the surface. At the outer and under part of the middle lobe of the right hemisphere was a laceration of its substance for an inch or more, in the immediate neighbourhood of which the brain substance was very soft; superficial to this laceration, but external to and beneath the dura mater, was a considerable effusion of blood, it was diffused, and did not form a hard clot. Just above the left lateral sinus, near the torcular Herophili, between the dura mater and the skull, was more blood also diffused.

The left petrous process presented two or three small fissures, but no blood was extravasated in this part of the brain. The remainder of the brain was firm and healthy.

The next case, taken from my private practice, forcibly illustrates my assertion, that in fractures of the base of the skull the symptoms are not always so severe as to indicate so serious an injury. It is true that in this case we were unfortunately refused the only means we have of positively demonstrating to the eye the pathological condition of the brain—viz. a post-mortem examination. Nevertheless, there can be little doubt that the brain was injured by a fracture at the base.

On December 28th, 1857, I was sent for by telegraph from Dr. Boulger of Bletchingley, to come down immediately to see a case of concussion. The patient was Mr. M——, aged twenty-four, single, a stout herculean man, a sportsman in habit, living well, but not intemperately, in first-rate condition. The accident occurred on the 26th, two days previously. He was in his dog-cart, his horse reared on starting, the reins broke, and he was pitched out backwards, falling on his head, on which the blow must have been very heavy from his great weight, which was about twenty stone. When Dr. Boulger first saw him he found him cold, senseless, and pallid. Blood of a bright red colour, but very *small in quantity*, was issuing from the left ear. No wound or abrasion of the head; the pupils active. This is a very extraordinary fact, considering the serious injury. There was no reaction for two hours; after that he vomited, and became partly sensitive for a few seconds, then relapsing into unconsciousness, and snoring slightly. The next morning he took some tea. His pulse continued feeble and oppressed through the day. No serum had followed the bleeding from the ear, which stopped at the time of the accident, and was very slight, apparently arterial. The head becoming hot and slightly painful, ice was applied to the scalp. He has passed urine, arising for that purpose; very little power to assist himself, but no paralysis. A purge, containing five grains of calomel, was now given, followed by a black draught in four hours. The bowels were comfortably relieved, and he expressed himself as feeling better; less lethargic; more sensible; pulse 65, still laboured and weak; the pupils continuing active and alike. He took tea and arrowroot; more himself, but rather more restless; pulse about 70, but uneven and laboured. Observed that the right pupil was more dilated than the left, although it contracted slowly on the application of strong light. His tongue was moist and furred; there is occasional wandering and incoherence, on attempting to converse.

Dec. 28th, 1857.—When I first saw him, I found him lying in bed, very much flushed, his head very hot. Manner rather excited,

apparently not knowing Dr. Boulger, and not answering him rationally. The right pupil of the eye rather more dilated than the left, and though it answered to the light of a candle, it did so much more sluggishly than the left; the tongue moist but furred; pulse very irregular, both in force and frequency, but on the whole full and slow—it was an oppressed pulse.

In reply to my question, "Does your head ache?" he said, "Yes, it does," and put his hand to the forehead. Dr. Boulger told me that he was much worse now than when he saw him in the morning, about six hours previously. He was then quite rational, though heavy. Under all the circumstances we determined to perform venesection, as leeches could not be applied in less than two hours, and then only twenty.

Dr. Boulger opened the median cephalic vein, and let blood *pleno rivo*, which we allowed to the extent of twenty ounces. This loss did not produce any faintness, but a very decided though only a temporary improvement. From this and the other facts of the case, I argue that there was a fracture of the base, with internal cranial hæmorrhage at the time of the injury, but that, in consequence of the effusion taking place at the base of the brain, the old reputed symptoms for diagnosing compression were absent. The practical points to be derived are the same as those from the other cases—namely, the apparent *slightness* of the symptoms in the first instance, so much so that the friends of the poor fellow would not believe that he was seriously injured, and were inclined to believe that Dr. B. was making too much of the case. Like one of the patients I have been speaking about, he would get out for every motion of his bowels. Indeed, his enormous weight rendered it almost impossible for his attendant to place the bed-pan under him, unless he had been placed on one of those beds which are made purposely for lifting heavy weights. Of these contrivances, I have seen none equal to one invented by my friend and brother-in-law, Mr. Denne, Medical Superintendent at the Bedford Asylum, and patented by Mr. Hooper, Pall Mall. This bed, I think, will prove of great value to the profession. An account of it, with a woodcut, may be seen in Mr. Denne's report of the asylum.

But to return to our patient. On the following day, Dr. Boulger shaved the head, applied twenty leeches, gave three grains of calomel every three hours, with the antimonial wine, and applied ice to the head.

29th.—Symptoms better; the pupils more alike; the expression more natural; less restlessness; pulse 80, but more even and regular. Arrowroot and beef-tea taken at intervals. Mercury beginning to affect the mouth. Head still hot. In the evening, twenty more leeches were applied to the scalp.

30th.—System decidedly affected by the mercury; the pulse 80, and the head much cooler, but great restlessness and prostration.

31st.—Much the same, but more restless. From this date he gradually sank. Squinting took place, but there was no other feature of note. He died comatose on the seventh day from the receipt of the injury. The antiphlogistic measures which were adopted appeared to arrest for a short time the rapid progress of inflammatory action, but the injury was too severe to admit of cure, and the case adds another to the list of fatal injuries with comparatively slight signs of cerebral mischief for the first forty-eight hours.

As we were forbidden to make any post-mortem examination, I can only conjecture the amount of injury.

LECTURE XII.

On Injuries of the Head and Spinal Cord.

Gentlemen,—We have lately had under our care several cases of injury of the cerebro-spinal axis, of considerable interest. To these I will now direct your attention; and as I have the pleasure of addressing many whose faces are new to me, and whom I presume are commencing their studies, my older friends and senior auditors must excuse me if some of my observations are trite and rudimentary.

Case 1.—William W——, aged 40; occupation, plasterer; stout, well-built, and lusty; of moderately temperate habits; admitted into George's Ward, under the care of Mr. Solly, about 10 A.M., Sept. 20, 1850, having fallen from a scaffolding in the Brixton Road, three quarters of an hour before, brought here in an insensible state, and according to his fellow-workman's account, having lost much blood from a wound of the scalp, extending from behind forward, laying bare a large part of the pericranium, on the left side of the head, but leaving the pericranium entire. On examination, the skull was found entire, although the fall had been nearly on the vertex of the skull, from a height of fifty feet. There was also an oblique fracture of the left clavicle, and the corresponding shoulder was much bruised. Whilst having his head shaved, he became a little conscious, and knew a fellow-workman, who brought him here. He complains much of his shoulder and back of the neck, when the head is raised, but not at all of his head; and puts out his tongue when asked to do so; the pulse is small, weak, easily compressible, 70; pupils a little dilated, with slight action; the wound dirty, and filled with sand and gravel; respiration is quiet and easy. The wound, after being well cleaned, was bound up gently with a linen roller, and cold applied to the part. —One P.M.: Has been dozing occasionally, and quiet; perfectly conscious; pulse as before; body cool; constantly complains of his shoulder and neck; pupils partly but equally dilated; the right side is paralyzed, and there is loss of sensation, as well as motion, as high as the elbow. I did not ascertain the precise time that this occurred, although I found that he could not move his arm about twelve.

Ordered, calomel, two grains every four hours; cold to the head.—Nine P.M.: Skin warmer; pulse firmer; complains of the numbness in the right side; pupils still dilated; much thirst; tongue dry; head hot; has no power over his bladder, and has but little in his left leg; pulse 80, compressible.

Sept. 21st.—Eight A.M.: Quiet all night, dozing occasionally, yet feels much pain in all his limbs; he has a little more sensation in his right arm, but no motion; face flushed; tongue dry and brown; much thirst; no intolerance of light; pupils as before; skin hot; pulse 84, soft, compressible; no power over the bladder; says but little; left hand and arm very cold. Continued calomel; house medicine and castor oil.—Eight P.M.: Very quiet, and at times half unconscious; bowels freely relieved; the skin and face hot and flushed, but moist; pupils scarcely sensible to light; tongue dry and brown; complains of his mouth, but no mercurial fœtor; more feeling in his right hand, and is said to have a little motion in his right leg, but I did not observe it; pulse fuller, but compressible, 96; urine high coloured, not decidedly ammoniacal, and still removed by the catheter.

22nd.—Quarter to six A.M.: I was called by the night-nurse, and found him dead. She had seen him some four hours before, but did not observe any change. The patient lying in the next bed, said that he had been awake two hours, but did not see the least movement, or hear the least noise, from the bed; and he appears just the same, as regards position, as when I left him at ten last night.

Post-mortem appearances.—Body examined by Mr. Bristowe, thirty-two hours after death. No appearance of pus in the wound; no adhesion of scalp, but an appearance of fibrine on the pericranium, which is entire. The calvarium is uninjured; beneath the dura mater two small clots of blood were found, both together, smaller than a fourpenny-piece; a little fluid between dura mater and arachnoid; much more beneath the latter, and the membranes generally congested; no other change found, except congestion and effusion of serum to the extent, perhaps, of an ounce and a half, in ventricles and elsewhere. Lungs very much congested. Heart fat, but otherwise healthy. Abdominal viscera congested. Shoulder clavicle fractured very obliquely at the junction of the prismatic with the flattened portion, and the surrounding tissues infiltrated with blood. Spinal column: A fracture of the right laminæ of the arches of the fourth and fifth cervical vertebræ, with considerable congestion of the membranes of the cord in their neighbourhood; hæmorrhage into the substance of the cord to considerable extent on the right side, more slightly on the left, but no breach of surface; the effused blood on the right side extended about three-quarters of an inch longitudinally, and in the centre of the effusion it was about a quarter of an inch wide, occupying the whole of the grey matter, and nearly half of the white column, but not reaching the surface; on the left side, the deposit was at least one-fourth that on the right, and more separated, so that a much greater extent of the columns escaped uninjured.

The case which you have just heard read, gentlemen, is peculiarly interesting in a physiological point of view, and it affords some points for observation in regard to practice and diagnosis.

I happened to be in the ward when the two men came in, for I shall have occasion to call your attention to another case of injury to the head, admitted at the same time. He was quite sensible when I saw him, and I was pleased to find him recover so quickly from the effects of the concussion. There was nothing in his pulse or general symptoms either to call for, or warrant, any blood-letting. When I saw him again, at one o'clock, and found him suffering from hemiplegia of the side opposite the injury of the head, I thought it most probable that there was some lesion of the right hemisphere. I could not attribute the paralysis to effusion of blood on the brain, for he had none of the symptoms of compression. It has been considered in the diagnosis of diseases of the brain and the spinal cord, and, I think, justly, that hemiplegia or paralysis of one side of the body is an indication that the disease is in the brain, not in the spinal cord; and in this case of injury I certainly did not look to the spinal cord as the seat of mischief. I confess that I could not understand the case; I could not explain to my own mind why there should be such decided paralysis following a blow on the upper part of the skull, and such entire absence of mental disturbance. The mind was intact. Again the pupils, though slightly dilated, were both alike; there was no difference between them. As a general rule, I have found that one dilated pupil is an almost certain sign of severe injury to the opposite side of the brain.

With regard to the treatment: You will remark that I ordered a linen bandage to be applied to the head to bring together the lacerated scalp, instead of either sutures or plaster, as less likely to excite erysipelas. I ordered the calomel rather to prevent the occurrence of inflammation than to subdue any that was present. The next day it was evident that the man was much worse,

but still there was no particular indication for either a more decisive antiphlogistic treatment, or the contrary; and in this opinion my colleague, Mr. Green, who saw him with me, agreed.

The following day he died suddenly, and the post-mortem examination alone reveals the cause. In the examination of the head we found two small clots on the brain, about the size of a pea, beneath the seat of external injury to the scalp, but they were too small to account for the paralysis. There was considerable venous congestion, so much so that mentally I blamed myself for not having bled him from the arm. At the base of the skull there was considerable serous effusion, but it was not until we had examined the vertebral column that the mystery was solved.

And here let me remark that we found—what I have often seen before—the surface of the cord perfectly sound and uninjured, and the interior bruised and softened. In these cases it appears that the dura mater protects the firm fibrous neurine, which is placed on the circumference of the cord, while the more delicate vesicular neurine is broken down, and its blood-vessels ruptured. The greater extent of the injury on the right side accounts for the paralysis of the same side of the body. The proximity of the injury to the medulla oblongata accounts for the suddenness of the death.

The next case to which I shall direct your attention was admitted at the same time. He is now, I hope, out of danger, but for a short time after his admission he appeared to be *in articulo mortis*. I will not anticipate, but at once read to you the case.

Supposed Fracture at Base of Skull.—Henry H——, aged 38, a plasterer, residing at Brixton, of short stature, and a light weight; generally healthy, but of intemperate habits; admitted, under the care of Mr. Green, into George's Ward, Sept. 20, 1850, having fallen from a scaffold, nearly fifty feet high, in the Brixton Road, at a quarter past nine A.M.

On admission, half an hour afterwards, was partly conscious, and wished to walk out for a certain purpose; surface pale and cold; pulse about 70; presently he attempted to walk, but soon staggered, and fell back to his seat, and became insensible; on the journey to

the hospital, there had been *profuse* bleeding from the left ear and nose, but at admission had nearly ceased; pulse then fell to 32, with stertorous breathing; widely dilated and insensible pupils; and respiration gasping, probably not more than eight or ten per minute; body cold and deathly; in half an hour the pulse rose to 92, and at 11 A.M., 105, soft, quickly, slightly irregular; moaning and crying out very much. 12 (noon).—Has vomited blood; quieter; pulse, 90; head cold; pupils now act a little; respiration slow, but not stertorous. 1 P.M.—Eyes very sensible to light; still slight oozing from left ear; pulse 80, stronger; has again vomited a little blood. 4 P.M.—Opens his eyes occasionally, but soon closes them; calls out, "Cramp;" respiration easy and quiet. 9 P.M.—Very violent, and strapped down to bed; screams and stares wildly when spoken to; pupils less dilated, each equally; skin warm, and covered with perspiration; pulse 104, harder, and quickened by struggling; bladder emptied by catheter; no alvine evacuation. To take calomel powder, two grains, every four hours; mercury and rhubarb, one scruple.

Sept. 21st: 10 A.M.—Very violent all night; no more vomiting, or bleeding from ear; hears what is said, but does not seem to understand; skin and head hot, but not dry; face flushed; pupils equally susceptible of light, and contract fully; thirsty; pulse 94, easily compressible; during the day, he became quieter, and pulse fell to 80; bowels still confined. Repeat calomel and rhubarb; and to have a mustard plaster. 8 P.M.—Much quieter; dozes occasionally; understands questions, putting out his tongue when asked to do so; eyes not so impatient of light; head at times cold; at others, hot and flushed; pulse small and weak, 86; perfect use of all his limbs; no bruises or wounds can be discovered; says he is very giddy, and confused in his head; bowels not open, but seems in pain there; has passed his urine voluntarily; it is naturally acid; being quieter, a leg and arm were released from confinement.

22nd.—Had a much quieter night, and slept sometimes; more rational, but does not know persons yet; pulse still weak; bowels freely relieved; skin cooler; tongue white, and lost its dry brown fur, moist. Continue medicine.

23rd.—Inclined to be a little noisy; the pulse harder, yet compressible; skin and mouth drier, more thirst; tongue whitish brown; pupils more dilated, each equally, and sluggish; not so rational; head hotter; bowels open. Ordered, forty leeches to scalp; continue calomel, two grains, every four hours, with effervescent mixture.

24th.—Quiet, but conversation irrational; heat of scalp less; tongue white, moist, and mouth affected by calomel; pulse very easily compressible; bowels open; urine natural.

25th.—More restless, but some sleep; fully touched by calomel; pulse feeble and sharp, 85; scalp cool at times. Omit calomel; continue mixture.

26th.—Very restless all night; more irrational; heat of scalp

increased; pulse weak; pupils contract well; bowels freely open; much thirst; salivation still continues. Repeat forty leeches, and to have soda-water.

27th.—A very rambling restless night, getting out of bed, and constantly talking; mouth tumid and very offensive; thirsty still, but will not take the medicine; urine high coloured, small in quantity, acid; pulse small, weak. Mr. Solly, finding that the bleeding did not diminish the restlessness, &c., but rather increased it, ordered tincture of opium, forty minims; compound spirit of ammonia, half a drachm; camphorated mixture, one ounce, at night; sesquicarbonate of ammonia, five grains; tincture of opium, ten minims; camphorated mixture, one ounce every six hours.

28th.—Had a much quieter night; more composed; does not talk so much; pulse 88, soft; bowels open; no headache complained of.

30th.—Much the same; talks rationally on most subjects; mouth very sore; head cool; pupils active; pulse 70, regaining power; sleeps soundly at times.

October 1st.—Pupils unequally dilated and more sluggish, the left being least; rather more restless; bowels not open. Ordered house medicine.

3rd.—Unequal dilatation not present, but still sluggish; does not talk rationally about his accident, but on other things quite sane; bowels freely open; mouth continues sore, but using the chloride of soda gargle; pulse quiet, without power; thinks he could eat, if it was not on account of sore mouth.

6th.—Slowly improving in strength, but yet labouring under delusions as to where he is, and how his accident occurred.

9th.—Sits up some hours every day, and walks about the ward with a steady gait; is now aware that he is in St. Thomas's Hospital, and also of the cause of the accident, but would hardly believe it at first.

11th.—Appetite improves; wants to go out.

12th.—Last evening became restless and rather bewildered; says he feels confused and can feel his temples throb, and has been chilly, several times wanted to sit by the fire; he has more thirst, but his tongue is clean and bowels freely open; pulse 80, soft. Mr. Solly ordered a blister to the neck, and to have tincture of opium, forty minims, if the restlessness continued at night.

13th.—Is much more composed, and slept very comfortably after the blister had risen; did not require the draught; no chills.

14th.—Continues in bed, and better, but the left pupil seems slightly more dilated than the other.

21st.—Improved in every respect; quite rational, and free from headache, but he says his head is not strong yet, and that he finds himself best when quiet.

In this case we have all the evidence of fracture of the base of the skull, the profuse bleeding from the ear,

the injury inflicted by a direct and very severe blow on the vertex of the skull; the insensibility, stertorous breathing, dilated pupils, and gasping respiration, not the effect of mere concussion, because he was conscious when first brought in, but coming on with the attempt to walk, all designated serious injury to the brain, and its protecting instrument, the skull. Sir A. Cooper, in his interesting lectures on Surgery, used to say, that fractures of the base are generally united with extravasation, and here we had the signs of compression as arising from extravasation. The signs of inflammation were also present to a certain extent in the delirium and excitement which followed.

With regard to the treatment of this case you may perhaps have been surprised, with the above diagnosis of the injury, that I did not bleed him from the arm. My reason for not doing so was, that the pulse did not appear to me at any time to indicate that *general* tension of the arterial system which can alone justify *general* bleeding; for I can assure you that the lancet has killed more patients than it ever saved. The time has passed, gentlemen—at any rate in St. Thomas's Hospital—when the lancet is considered indispensable to the recovery of a patient suffering from fracture of the skull. I am quite aware that you have a different class of patients to deal with in the country, and that venesection may be much more frequently required there than in London.

It is quite true that this man lost a large quantity of blood on his way to the hospital, and it is very probable that if he had not been thus blooded the lancet might have been required; therefore all that I wish to impress on your minds is, that, as a general rule, it is much better to avoid the use of the lancet, and that if you have to combat local inflammation, combat it by local depletion and mercury. Yes, my friends, mercury; this is, indeed, our sheet-anchor in all cases of inflammation and extravasation. And to the influence of mercury, rapidly and decidedly induced in this case, do I attribute this poor fellow's recovery.

The manner in which the mercury was administered I considered very important. In a general way, as most of you are aware, when we want to salivate a patient rapidly, we give calomel combined with opium, to prevent its passing off by the bowels, but in injuries of the head you must not give it with opium. In the first place, the opium is seldom wanted, as the bowels are usually so torpid that the calomel does not excite diarrhœa; and, in the second place, the tendency of opium to produce congestion of the brain is so decided, that the opium will do more harm than the mercury will do good. You will remember that shortly after the man recovered from his semi-comatose condition, he became more and more excited, and that he was strapped down to the bed. Now, do not judge from this that I approve strait-waistcoats and straps in the treatment of lunacy; on the contrary, I think that their use in such cases is unjustifiable. I consider that those men (I mean, especially, Pinel, in France, and Conolly, in this country) who have proved that they may be abandoned altogether, are the greatest benefactors to mankind that have appeared on this earth for centuries. No words can express the load of misery that Conolly has torn off the shoulders of suffering humanity by the bold intrepid course, through good report and evil report, which he has pursued at Hanwell. We erect monuments and give titles and fortunes to our warriors and our successful legislators; but we leave the modest silent philanthropist to effect a revolution in the cause of benevolence, and to pass unheeded and unnoticed into his grave.

You must forgive this digression. I believe that a case like this is an exception to the rule, and that it was just as necessary to strap this poor fellow down to the bed with his fractured skull, as it would have been to have strapped his leg down if that also had been fractured. I believe that his safety depended on his not being allowed to move at all.

In this case, as in many other instances of injury to the skull, when there has been much blood lost, the time

arrives when your patient requires an opposite line of treatment, when he becomes restless from exhaustion and debility.

This occurred on the seventh day after admission. The day previously, finding him rather more irrational, with some heat of head, I ordered the leeches to be repeated, but he was not relieved: he had a more restless night; and finding him fully under the influence of the mercury, and the pulse soft and feeble, and his mental condition improved under the stimulus of talking to me, I determined to try the effect of ammonia and opium. In prescribing this, I directed the dresser to watch its effect, and to continue it or not according to the result. The effect was decidedly beneficial. He had a much quieter night, and was decidedly better the next day.

In these cases it is always advisable to order ammonia in preference to any permanent stimulus, as the effect, if prejudicial, soon passes off. With regard to opium, I find, in using it in affections of the brain, whether idiopathic or from injury, that, if it excites instead of narcotizing, it is an indication of the mischief being inflammatory and not anæmic, and that if cold applications to the head will procure sleep, when the opium fails, antiphlogistic measures are required.

At one time it was considered that if a case recovered, it was a proof that it was not a fracture of the base of the skull; but this is now no longer the opinion, as there are positive cases on record of fracture of the base that have recovered, the fracture having been proved by post-mortem examination.

The next case, though fatal, is extremely interesting:

Thomas P——, aged 32, navigator, a robust man, but of intemperate habits, admitted (August 29th, 1850) into George's Ward, at half-past 7 A.M., under Mr. Solly, having sustained an accident just before, by the falling of some iron block apparatus of great weight upon his head. On admission he was seen by the house surgeon, and found in a semi-comatose condition, unable to walk without assistance, or to give any account of himself, but tossing about in a violent and restless manner; pupils were dilated and sluggish; skin cold; pulse rapid and weak; features collapsed. A scalp

wound which had bled freely, four inches in length, was found over the lower part of the parietal bone, extending from the middle line, near the posterior superior angle, in a direction downwards, backwards, and to the left side, and on introducing the finger, a fracture was discovered. At 1 P.M., Mr. Dixon saw him for Mr. Solly, and had the head shaved. On drawing back the edges of the wound with a retractor, it was found that both tables of the skull were splintered and depressed—the outer table, to an extent corresponding to the size of a halfpenny, and nearly circular in shape: the inner table, of course, was fractured to a greater extent. Feeling the splinters of bone loose, Mr. Dixon was able to extract them without a trephine: about a dozen pieces were thus removed by the elevator and forceps, some of the spicula extending some distance beneath the edge of the outer table; the dura mater was found uninjured except by the point of the spiculum, which had become fixed in it. On the removal of the bone the brain rose and fell synchronously with the respiration; free hæmorrhage took place both from within and without the skull; the latter was arrested by pressure and the tying of one small artery in the scalp; the former ceased after a while, upon the application of cold. He cried out lustily during the operation, but immediately afterwards sank into a quiet sleep. His pulse was now 108, and weak; tongue clean; the irides answered freely to the stimulus of light. 8 P.M.—Still quiet; sleeps occasionally; when awake is quite sensible; urine passes freely; bowels not open. Ordered, croton oil two minims, immediately.

Aug. 30th.—Has passed a tolerably quiet night, but was restless at intervals; skin cool and moist; head warmer than natural; wound looks healthy; no appetite, but is somewhat thirsty; pulse 90, and soft; some headache. Ordered, forty leeches to the head: cold lotion to the back. Mercury with chalk, five grains every six hours.

31st.—Better after the leeches, which bled freely; has still some headache and heat about the head; bowels open.

Sept. 1st.—Headache continuing; in other respects he is much the same, and quite sensible; gums spongy from the mercury. Ordered, forty leeches to the head.

2nd.—Passed a restless night; complains much of his head, which aches severely; tongue white and thickly coated; skin warm, but moist; pulse 84, soft; great thirst; has a tranquil expression of countenance, and is still perfectly rational. Ordered, nitrate of potass, ten grains; carbonate of soda, one scruple, in water; three times a day. Saline mixture occasionally.

4th.—No marked difference, except that the head aches less; pulse 78, soft; sleeps tolerably, and has no tremors either awake or asleep; answers questions rationally, and is not at all slow in comprehending them; wishes particularly to get up and take exercise; bowels rather confined. Half an ounce of castor oil immediately.

6th.—Improving, and appeared going on well, until half-past

11 A.M., at which time he was observed to become very restless; he sat up in bed, but immediately fell back in a convulsive fit; he remained insensible for only about a minute and a half, but the convulsions lasted for about four minutes; he foamed at the mouth, and the face was drawn much to the right side; the right side of the body was convulsed more than the left; pupils were dilated; pulse 130, small. After he had recovered his consciousness, he asked those about him what had happened, and complained that he could not move his right arm or leg to his satisfaction, and it was found that he had greatly lost the power of motion and sensation in those parts. After this, he said that he was tired, and he fell into a quiet sleep. Bowels not open to-day. An opening mixture, two ounces, immediately. Wound discharges a thin serous fluid, but does not seem inclined to close; gums tender. Iodide of potass, two grains twice a day; and a blister to the neck.

9th.—Paralysis of right side is still increasing; pain in head is better; blister discharging freely; pulse 96, small; gums very tender.

11th.—Sensation on right side of face is not much impaired, but there is considerable paralysis of the muscles on that side.

12th.—Is very drowsy to-day, and does not like to answer questions; speech is affected; complete paralysis of muscles on right side of body; says his head aches very much; blister discharges freely; pulse 80, easily compressible; tongue furred. To take solution of bichloride of mercury, one drachm, in sarsaparilla decoction, thrice a day; beef-tea.

14th.—Getting weaker every day; is quite conscious, and can answer rationally, although his speech is faltering; bowels rather constipated.

18th.—About the same; right pupil more dilated than the left, and does not act at all; the left does contract a little, when stimulated by light. It requires great exertion on his part to speak, and he is very much exhausted; wound discharges more to-day, but does not show the least inclination to heal.

21st.—Symptoms to-day have improved; he can speak a little better; headache better; a quantity of clear serum has come away from the wound to-day. Seton to be inserted in nape of neck.

23rd.—Has improved since Saturday, can speak more intelligibly; no return of sensation or motion on right side of body.

25th.—Seton is discharging; articulates better; appears more cheerful; sleeps well.

28th.—Speech improving daily; can answer quite distinctly and without exertion; head is much better; sensation in right arm has partially returned. He says that vision with the left eye is not so good as with the right; pupils equal to-day; serum still dribbles away from the wound; tongue cleaner; pulse feeble; is particularly anxious to get up.

29th.—He remained quiet until about two o'clock this morning, when he was found half out of bed with his head depending. He was put to bed, and the house surgeon was sent for, who found

him comatose, and with stertorous breathing; quite insensible. Was bled to twenty ounces, which had the effect of lowering his pulse, but did not relieve his symptoms, and he died about 8 A.M.

Post-mortem examination.—On the left side of the skull, about one inch and a half in front of the posterior superior angle of the parietal bone, was an aperture, through both tables of the skull, extending obliquely outwards and downwards about one inch and a quarter long, and half an inch in breadth. This had resulted from fracture, the fragments of bone having been removed at the time of admission; no fissures could be seen extending in any direction from this aperture. The dura mater, at a part corresponding to the aperture of the skull, was ulcerated and disintegrated, and a probe passed readily into a cavity in the substance of the brain. There was some projection at this point somewhat resembling a hernia cerebri. Immediately in the neighbourhood of this spot, the opposed surfaces of the arachnoid were very firmly adherent, and a little beyond this was a small quantity of recent lymph in the pia mater; beyond this, there was no indication of inflammation over the hemispherical ganglion; at the base of the brain, lymph and pus were effused into the pia mater in several parts in a thin layer, especially in the neighbourhood of the sella turcica, and over the right hemisphere of the cerebellum. The cavity of the left lateral ventricle, especially its posterior corner, contained a considerable quantity of pus, and an ulcerated communication was seen at its upper and posterior part leading through the substance of the hemisphere to the aperture in the dura mater. *Chest:* Heart healthy; lungs congested, especially posteriorly, near the base of each lung, and in their substance were a few small patches of purulent infiltration; abdominal viscera healthy.

This case was one of those unhappy ones of fractured skull, with exposed and wounded dura mater, which are almost always followed by abscess of the brain. I dare say that some of you may remember the remark made on the 4th, the day but one before he had the convulsive fit. One of the pupils remarked to me how well he appeared to be going on, to which I replied, "I fear not; there is great danger of suppuration of the brain." The convulsive fit which followed, coupled with the other circumstances of the case, convinced me of the existence of abscess of the brain. I suspect that the immediate cause of this fit was the bursting of the abscess into the ventricle, for, on the following day, serum, almost clear, issued from the wound. The paralysis which followed was the result

of some lesion of the conducting nerve fibres in the left hemisphere of the brain. This paralysis increased. The right pupil became at last permanently dilated. For a few days his intellectual faculties were entirely suspended; he was comatose and unconscious; but these serious symptoms abated, as I believe, from the free discharge of fluid from the ventricles relieving the hemispherical ganglion from undue pressure, for the symptoms improved synchronously with an increased discharge from the wound; again the discharge abated, and he dies comatose, and the ventricles are found distended with serum and pus.

During the greater part of this case the mind was but little affected, and at no time was there any mental excitement, any maniacal delirium, and the post-mortem examination explains this fact. Round the opening in the dura mater of the abscess of the brain, the opposed surfaces of the arachnoid were adherent, and bounded the inflammatory action. The *hemispherical ganglion beyond was not inflamed.*

With regard to the treatment, it was strictly, but not severely antiphlogistic. I believe that his days were lengthened by it, and I believe that was all the remedial art could effect for him.

The case teaches you one very important lesson, especially in regard to private practice, where your reputation depends so much on the correctness of your diagnosis and prognosis. It teaches you how unfavourable your prognosis should be where the dura mater and brain have been wounded by a spiculum of bone, notwithstanding the absence of all serious symptoms for the first week or ten days.

I have now called your attention to all the most salient points in these cases, and I hope that they will give to my younger friends additional interest in the study of the anatomy and physiology of the brain.

December, 1864.—On reading over the remarks which I made on blood-letting in the last lecture, I feel bound now to put on record my opinion after more than thirty years' hospital experience on this subject. I fear that,

as a profession, we are too much losing sight of blood-letting as a remedial agent. I am sure that nature often warns us of our neglect by instituting severe hæmorrhage; and that many a valuable life has been saved by nature's own conservative hand.

I shall select a few such cases as have occurred in my own practice in illustration of my opinions, in addition to others, that will be found in the following lectures.

One of the earliest cases which convinced me of the value of blood-letting in the treatment of severe internal injury was my own. About the year 1825, when I was an apprentice of Mr. Travers, I was severely injured in the hunting field by a large and heavy horse falling across the lower part of my chest on the left side. I was not stunned, but felt as if all the wind was knocked out of me, and believed that three or four of my ribs must be broken. I was carried into a neighbouring farm-house; and, as soon as the doctor could be found, I was bled. I was afterwards placed in a postchaise, and supported by two friends, one on each side, I rode about five miles, to Dunmow, in Essex. During the ride, I twice expectorated a small quantity of blood. It was not pleasant to look at, as I imagined that the lungs must be lacerated. It did not recur, so I had the satisfaction of finding that my fears on that point were groundless. I was confined to my bed for a week, and during that time lost seventy ounces of blood by the lancet and leeches.

My symptoms indicated inflammation both of the left pleura and the left side of the abdomen, and from frequent spasms of the diaphragm, which were frightfully painful, I thought there must have been some slight laceration of its fibres. I got well enough to return to my studies at the hospital in about a month, but I did not quite lose the pain on the left side for six weeks or two months. I never felt the slightest ill effects from the blood-letting, but great relief in every respect. I shall always think that my life was saved by it.

Nevertheless, it is certainly too true that blood-letting in those days was carried to an absurd and even criminal extent.

I remember when I was a dresser to Mr. Travers, in 1824, bleeding forty patients in one week.

Many of these were bled by order of the physician, the bleeding orders being sent to the surgery after their visits. Many were bled because it was the custom at spring and fall. Many were bled by order of the surgeon, and many bled on the judgment of the dresser for the week, who in those days enjoyed all the duties and responsibilities of house surgeon and assistant surgeon, there being no such officers at St. Thomas's in those days.

April, 1859.—I was consulted by a maiden lady. She suffered from giddiness and general discomfort, with a dragging pain in her head, a waving sensation before the eyes, a difficulty in turning in bed, and great restlessness at night, with a feeling of weight at the back of the neck. She was unable to read comfortably, and said she felt very wretched.

After carefully examining her head, eye, pulse, and general condition, I ordered her to be cupped to eight ounces; to take the bichloride of mercury in small doses. She improved at once; and, though her medical man, the late Mr. Thos. Smith, of Crawley, who was an old friend of mine, expressed his astonishment and regret at the course of treatment, he afterwards acknowledged that it had been peculiarly successful. In one of his letters he says:

"Dear Solly,

"Our patient, Miss ——, continues to improve. I continue the liq. hyd. bichlo., which she has taken the last ten days with a progressive improvement in her general symptoms, as also in her appearance. She still has, however, occasionally what she describes as the dragging pain in the head, though less in degree; as also the undulating sensation before the eyes, all very much better; she can also turn in bed with more freedom, and the nights are better; the weight on the shoulders and back part of the neck is equally improved.

"The frequency of the pulse is much reduced; in fact, for the last ten days I should call it natural. She cannot do better than

pursue the same plan. In such a case we must be content with small things if the improvement be progressive."

This lady perfectly recovered, and has had no return of her head symptoms, which occurred five years ago, and is now eighty-three, in good health, and very active.

The next case is, I consider, very striking in illustration of the value of blood-letting in apoplexy, in an old person, even though that patient looked pale and feeble. I do not, however, wish to inculcate the opinion that blood-letting is necessary in all cases of apoplexy, for each case must stand upon its own merits and the general symptoms of the disease. Heat in the head is one of those indications which assists me materially in my judgment of the case. Without heat and pain in the head, I should certainly not bleed—I might almost add, and without more or less congestion of the conjunctiva.

Mrs. Cox, aged 70.—Slight, delicate-looking woman, married to a clergyman: mother of a large family. On the 17th May, 1857, she fell down in the garden not quite insensible, but she had lost all voluntary power over her limbs. No medical man was sent for until the 25th—a week afterwards. I learnt from Mr. Ambler, who attended her, that she was then suffering from severe pain in the head and giddiness. He bled her from the arm with some relief, but on the 4th of June she had another attack, and on this occasion she was cupped.

July 31st.—She fell out of her chair with a similar attack. On this occasion I first saw her. I did not recommend any repetition of the bleeding.

I prescribed the bichloride of mercury in small doses.

During the remainder of this year she had frequent attacks, though slight.

Not getting better, I was called in again on the 22nd January, 1858. I advised abstinence from all stimulants, and very little meat; in fact, a meagre diet: and recommended the bichloride of mercury to be continued for some time. Under the slight action of this mineral she gradually improved, and towards the end of the year was able to walk in the garden for a quarter to half an hour daily.

Dec. 16th, 1858.—She had a severe attack of giddiness, which caused her to fall; and, from this date till Sept. 1859, was unable to do more than walk occasionally in the garden, but towards the end of the year was able to walk about a mile to church.

1860.—She says her head was very uncomfortable. It kept on getting worse, until she was entirely confined to her room. In April I was again consulted, and I ordered iodine to be painted behind the ears, but it did no good.

May 3rd.—I ordered ten leeches on each temple, but without much effect.

May 6th.—Thirty leeches to the top of the head, but not producing all the benefit I sought, on the 18th I ordered her to be cupped to ten ounces; and now her condition improved, but still there remained some heat in the head, and giddiness.

July 21st.—Twenty-eight leeches.

28th.—Twenty leeches, and after this she was able to get out again; nevertheless, on the 9th of November in the same year, she was again obliged to see her usual medical attendant, Mr. Ambler, who applied ten leeches, and on the 10th she was cupped; since which she gradually got quite well, and is now able to walk two or three miles daily.

From what occurred afterwards, I firmly believe that, if I had freely leeched the head, as I did on a future occasion, I should have arrested the disease much more rapidly. This leads me to repeat that I am convinced that local blood-letting is infinitely more effective than venesection from the arm.

I will next detail a few cases in which nature has taken the treatment in hand, and I think we ought not to neglect the lessons which she thus teaches us.

On the 19th of January, 1855, I was requested to visit Mr. Richard Thornton, at Merton, in Surrey, as he was said to be bleeding to death.

He had already lost an enormous quantity of blood from the nose; I was told two or three pints at least. I met, in consultation, his usual medical attendant and a London physician. I at once proceeded to plug the nose in the usual method, and the operation was successful.

Mr. Richard Thornton was then in the 79th year of his age, rather full habit, but not to any great extent. He could hardly be called plethoric. I learnt from Mr. Chapman, of Tooting, who attends him, that he had slight but unmistakable symptoms of cerebral congestion. He had been drowsy, and felt heavy, without positive giddiness, but something very like it. Slight headache, and that general amount of discomfort which we so often find to precede an apoplectic seizure in the old man. He recovered rapidly the depressing effects of the blood-letting.

When convalescent, I told him, with the consent of

Mr. Chapman, that he must regard his bleeding nose as a conservative agent, acting, it is true, without his orders, but beneficially and providentially in the preservation of his life. That he must consider it as a warning not to live quite so well, and, if possible, to take more exercise.

He has followed this advice, and, with the exception of severe cold, which this winter confined him to the house for a few weeks, is in perfect health in his eighty-ninth year. And thus has nature, by her own hand, preserved the life of an excellent, generous, and kind-hearted man, whose health is used for worthy purposes.

In October, 1863, Mr. Huth, then in his eighty-eighth year, consulted me for catarrh of the bladder, with inability to void his urine from enlarged prostate.

I passed the instrument for him three times a day for three months and fourteen days without experiencing difficulty. Nevertheless, he occasionally suffered from passive hæmorrhage from the bladder.

It is to the beneficial effect of this bleeding that I wish now to call attention.

Mr. Huth had suffered from bronchitis and pneumonia of the right lung the year previous to my seeing him. There was some consolidation of the lower part of the right lung.

The first hæmorrhage was very abundant, so as to make me anxious, considering his great age. He lost quite a pint of blood. It commenced about 8 P.M., and, as it was not arrested till 3 A.M., he got no sleep till that hour. Instead of pulling him down, it relieved his breathing so much that he was fresher and better after it than he had been for some time. I found him reading the *Times* after breakfast, as if his night had been undisturbed, and he had not lost a drop of blood. This bleeding also relieved the chronic inflammation of the mucous membrane of the bladder.

Each hæmorrhage, and it occurred on three occasions, was attended with great relief to his bladder and chest. On the last occasion of the hæmorrhage Dr. Herman Weber, who was in attendance with me on account of

the condition of the lungs, was very much struck with the marked benefit from the blood-letting.

The old gentleman, who was extremely intelligent and very observant, acknowledged with thankfulness the great relief he derived from it, though at first he became alarmed and anxious.

I explained to him that the periodicity of the bleeding about once a month appeared to indicate a gradual congestion of the blood-vessels of the bladder until they would hold no more, that then the blood oozed through the coats and flowed away. The bleeding was always venous. The quantity of mucus was always diminished, and the bladder became much less irritable.

June 10th, 1850.—Mrs. Kilsby, aged fifty-three, active, but rather plethoric, late Sister Abraham, at St. Thomas's Hospital. She tells me that six years ago she suffered from constant pain on the left side of the head. General sleeplessness, and when she did fall off to sleep always had disagreeable visions before the eyes, and bad dreams. She could not bear any excitement or trouble; still, she did not complain, and continued to perform her duties at the hospital. Suddenly hæmorrhage took place from the nose, which did not stop for three days. She says she must have lost at least four pints of blood. The nose was plugged, but this did not stop it. An ice pillow, and ice to the nose, at last arrested it. The loss of blood was so great that she was not able to leave her bed for a fortnight, and was unable to do her duties in the ward for six weeks.

After this she gradually recovered her strength. The loss of blood removed all the pain in her face and head, and general discomfort. Her mind was clear, and she felt quite young again. For four years she remained perfectly well. At the end of that time the pain slightly returned, and continued to increase for some months: at the end of about eight months the epistaxis returned, but not so severely. This loss again relieved her, and removed the pain, which has not returned again until this summer. She has had no return of neuralgia, but suffered from dizziness. This was relieved by another spontaneous bleeding from the nose, amounting altogether to at least two pints. It was not, however, quite continuous, but came on generally every other night. This hæmorrhage relieved her entirely from all dizziness, and she again felt perfectly well.

Having very briefly said what I believe to be true regarding the benefit that may be derived from judicious blood-letting, I am most anxious that it should not be

supposed that I do not also believe that many a life has been sacrificed to the lancet. Almost all blood-letting, to be useful, should be local; that is, abstracted from the spot nearest to the inflamed organ, either by leeches, or by the cupping-glasses. The exception to this rule, and it is a very decided one, is, in the case of penetrating wounds of the thorax, in which the lungs are wounded. In such a case, if there is much dyspnœa I always bleed freely from the arm, and with the greatest benefit. I shall endeavour, if I have time to do so, to advert to this subject again. I will now bring forward a case in illustration of the injury occasioned by profuse general bleeding in injuries of the head.

Injury to the Head; Venesection; Death.—T. K——, blacksmith, aged fifty, accidentally struck on the head by a fellow workman. A scalp wound over the left parietal bone, laying bare the skull. Neither depression nor fracture; was not stunned. Somebody bled him on the spot: he resumed his work. Three days afterwards he was sick, very sleepy, and in pain. Wound enlarged to examine the subjacent bone. Bled to sixteen ounces. Cal. et jalap: pulse 120. The next day he was bled again to twenty-two ounces. He complained of loss of sight after the second bleeding. On the fourth day erysipelas appeared on the head, and very quickly extended over the face and neck: aperients repeated. He was conversing with his wife at intervals till 7 P.M.: at 8.30 P.M. he rose up suddenly and fell back dead, in an apparent syncope. *Sectio cadaveris.*—The cranium having been opened, the brain was found healthy, except towards the base, where there was some slight inflammation. But there was no appearance which could explain the cause of death.

N.B.—From the wound, and by venesection, he lost fifty ounces of blood in five days.

LECTURE XIII.

On Amaurosis.

[When this lecture was delivered, the ophthalmoscope was unknown. Much that was obscure or conjectural only then has, by means of that most valuable instrument, become as clear as the sun at noonday.

No surgeon in the present day would think of prescribing for a case of imperfect vision, unless he could discover the cause at once by the unaided eye, without having the assistance of the ophthalmoscope. Nevertheless, I believe that my diagnosis in the cases related in this lecture was correct, as proved by the success of the treatment. I also am sure that the practical application of the facts to the treatment of brain disease is as equally applicable now as it was then (February, 1850).]

Gentlemen,—I propose to-day to call your attention to two cases of amaurosis now under my care in George's Ward. The cases are interesting and instructive in themselves, but they are still more so in reference to the treatment of other and more obscure affections of the nervous system. All diseases of the eye are especially interesting to the pathologist, from the instruction he may derive from their study in the treatment of more deep-seated and obscure lesions. I have long been convinced that the obscurity which envelops the diseases of the brain and its membranes might, in some measure, be removed by comparing these diseases with those of the retina and its membranes. I believe that every form of mental disturbance is dependent on some change in the condition of the cortical substance of the

brain, or the membranes attached to it. This change is, no doubt, often very slight and temporary, but nevertheless real, and would be perceptible to the sight if the parts were as open to observation as the eye. I have dwelt on this in my work on the Brain, but that must not prevent my directing your attention to it now. The term *functional disease* is a very useful cloak for our ignorance on many occasions, but I think it is our duty to discover, if possible, a real and material cause for every deviation from health. The diseases of the eye can be seen, and the effect of both internal and topical remedies watched during their operation. Many physicians of eminence who have been engaged in the treatment of the insane, believe in the existence of mental disease unattended with disease of the instrument (the brain) which the mind employs in its communications with the world. This partly arises from the fact that *medical treatment*, either constitutional or local, has hitherto had so little control over these diseases, and that *moral* treatment has done so much.

This, however, proves nothing. For there are many diseases of the eye which would get well by *moral* treatment, if I may so express it. The entire rest of the organ by seclusion will alone sometimes arrest disease. And, on the other hand, very active depletory measures have often done as much harm in the treatment of diseases of the eye as they have in those of the brain.

Let any man, ignorant of the treatment of ophthalmic diseases, attempt the cure of a case of strumous ophthalmia; he would in all probability, seeing the red, inflamed conjunctivæ, the pain suffered by the patient, and the distress occasioned by the presence of light, employ all the most approved antiphlogistic measures. He would bleed from the arm, purge violently, and then possibly put his patient under the influence of mercury. What would be the consequence? Why, most assuredly the loss of the eye—total blindness. And the same sad results followed the treatment of insanity, when it was considered to be an inflammation

of the brain, except in very acute cases occurring in subjects with much constitutional power; injudicious treatment being attended in the one case with the loss of sight; in the other, with the loss of intellect.

But suppose a judicious surgeon, one bred in the school of Farre, Travers, Lawrence, and my late respected colleague, Frederic Tyrrell, called upon to treat this strumous inflammation of the eye: he would support his patient's general health with a tonic plan of treatment; he would improve the condition of the circulating fluid, and the instruments which circulate it; he would endeavour to arrest local inflammation, by small local blood-lettings, counter-irritants, and astringent lotions, by removing him from all those atmospheric influences and moral circumstances which would stimulate the organ. And thus he might ultimately succeed; but what care, what patience, and what confidence in the remedial agents employed does it require on the part of the surgeon who treats these cases, to effect a cure.

If, then, it is so difficult to subdue an inflammation in an organ, the actual condition of whose blood-vessels we can view, to which we can actually apply local remedies, and from which we can withdraw the injurious agents which have produced this inflammation, and exclude the natural stimulus of the organ, and see, in the whole course of our remedial measures, the progress, or the failure, of each particular plan of treatment, is it astonishing that physicians should have failed so much in the treatment of chronic and strumous inflammation of the arachnoid, pia mater, and hemispherical ganglion, when they have all these difficulties to contend with, and want many of these adjuncts?

Mr. Tyrrell, in his lectures, used to relate, in illustration of the importance of generous diet, and tonic medicine, in the cure of chronic asthenic ophthalmia, the case of a young gentleman, who was brought to him by his father, an intelligent medical man, on account of the obstinacy of the ophthalmia from which he was suffering. The father had been employing antiphlogis-

tic measures. Mr. Tyrrell said, "Before I prescribe for your boy, go and give him a good dinner, and a pint of porter." The father was thunderstruck, the boy delighted, for he had had nothing but water-gruel, &c., for the previous week. The father did as he was told; the same principle was extended to the prescriptions, and the boy soon got well.

Now, supposing that this inflammation, instead of being the eye, where it could be seen, had been an inflammation of the brain, which cannot be seen, the existence of which could only be imagined by symptoms, and the physician had prescribed the same phlogistic treatment, with the same success, he would adduce it as a proof that there had been no inflammation at all.

Again, the cures that are effected by moral treatment alone, are often brought forward as a proof that mental diseases are unconnected with, and independent of, corporeal diseases. It would be just as correct to say an inflammation of the eye was no inflammation of the eye, because such inflammation is sometimes cured by placing a patient in a dark room, and in removing the part from the injurious stimulus of light and atmospheric influences.

The moral treatment of the insane is no more; it essentially consists in the removal of injurious stimuli, soothing and tranquillizing the organ. I have at present only adverted to strumous ophthalmia in illustration of this view, but, as I have already said, there are many other ophthalmic affections which are equally in point, and the consideration of which will, I think, be found equally instructive: iritis, choroiditis, and amaurosis, but especially the last.

The treatment of iritis is chiefly instructive in demonstrating the superiority of mercury over bloodletting, in subduing a deep-seated inflammation, and the necessity of bringing your patient rapidly under its influence, to prevent the consequence of adhesive inflammation.

Amaurosis, consequent on chronic choroiditis, of which one of our present cases is a good illustration,

is, I believe, almost pathologically identical with mental imbecility, consequent on chronic meningitis.

In the first case, the delicate structure of the retina, the vesicular neurine, which expanded from the optic nerve, has been pressed upon by its vascular and serous membranes—the choroid and membrana Jacobi, thickened by morbid deposit. In the second, the vesicular neurine of the hemispherical ganglion is pressed on by the thickened pia mater and arachnoid. And most certainly the success which attends perseverance in the treatment of chronic choroiditis and amaurosis, ought to encourage us to similar patience and perseverance in the treatment of chronic meningitis.

But I must now read to you our notes of these cases, and you will then see more clearly how the successful treatment should encourage us to pursue a similar course in the treatment of diseases of the brain.

Case 1 (reported by Mr. Chaldecott).—Francis H——, aged thirty-six, single, an excavator, of temperate habits, was admitted into George Ward, under Mr. Solly's care, November 27th, 1849, with partial amaurosis of both eyes. *History.*—His work as an excavator has been in the tunnels, working therefore by candle-light. His sight, he says, had been, until thirteen months since, particularly good. Three years since had a severe blow on the head from a brick falling down into a shaft where he was at work, on a railway in France. He recovered from the concussion induced by the blow in half an hour, and though for a fortnight afterwards he remained at home, he suffered only from slight headache, unaccompanied by febrile symptoms; he was attended by an English medical man, but he was not bled. The accident, however, produced a depression, which still remains, situate about the junction of the middle and posterior third of the sagittal suture, one inch long, and a quarter of an inch broad, the long diameter being placed transversely. Ever since this accident he has suffered from occasional headache, to which he had never before been subject; the pain generally beginning at the depression.

About thirteen months since, he first observed a fixed black spot before the right eye, the sight of which began to be indistinct, and soon after the headaches began to be more severe and frequent, keeping him for days together from his work. These severe headaches continued for about three months, and then abated. Seven months ago the sight of the left eye began to fail, and a fixed black spot appeared before it. This spot increased in size, until it produced considerable dimness, like a fog before his eyes; the

dimness of vision has been gradually increasing up to the time of admission here. Five months since, began to suffer from flashes of fire passing before both eyes. His health during the whole of the time has been very good. Shortly after his vision first became impaired he consulted Mr. Foulkes, of Shrewsbury; under his care he took mercury, which slightly affected his mouth, and his sight improved, but he could not afford to remain there out of work.

On admission there was nothing abnormal to be distinguished in the structures of either eye, but with the right he could but just tell light from darkness, and could distinguish no object. With the left he could see objects across the ward, and in good daylight distinguish the features on the face so as to know again the person he looked at, but at dusk, or by candlelight, he was quite blind. He could see objects much more distinctly with the left eye, if they were placed on its outside, and not straight before him. The flashes of fire were very vivid and many. Ordered mercury with chalk, two grains; compound senna mixture, half an ounce, every morning.

Jan. 15th, 1850.—He continued the mercury with chalk until about a week ago, when, the mouth being very evidently affected, it was left off. The flashes of fire, though still present, are much less vivid and numerous. The right eye is very much improved; with it he can now distinguish a person walking down the ward, and he can see also the window-frames; the curtain before it is less thick, and more distinct: the left eye is also much better; he can now read with it print of this size (P), and though still quite blind at candlelight, can see much better by dusk. He can still see an object better if placed to its outside than when straight before it. Dilation of the pupil by belladonna does not improve the sight.

In reporting this case, gentlemen, Mr. Chaldecott has very properly detailed the fact of the patient's having received a blow on his head previous to the occurrence of the amaurosis, as it enables me to call your attention to one not unfrequent source of amaurosis—namely, pressure on the optic nerve, or optic ganglion, in the cranial cavity.

Amaurosis is palsy of the optic nerve, and, like palsy of other nerves, may arise from different causes. The most frequent cause is pressure. Sometimes the pressure is on the optic nerve within the skull, sometimes in the orbit, sometimes on that expanded portion called the retina. When the retina is compressed the pressure is generally produced by a deposit on the choroid, with which it is in such close contact. The thickening of

the choroid is the effect of inflammation, constituting the disease we call choroiditis, and this we shall soon have to consider in connection with the next case of amaurosis I have selected for our instruction to-day.

In the case we are now considering, I do not see sufficient reason for believing that the blow on the head is the primary source—that the amaurosis has a cerebral origin. The injury occurred about a year and a half before his vision first became defective; he has no cerebral symptoms. It is true he says he has suffered from headaches frequently since the blow, but these may be neuralgic, the nerves of the scalp must have been seriously injured by a blow which would produce such a depression in the skull. We must then, I think, look for another source of this amaurosis, and this may be found in the nature of his occupation. As a tunnel excavator, he was working in a close damp atmosphere, working by a dim light, and suddenly emerging into daylight once or twice in the twenty-four hours; living an irregular life; for though he was not a drunkard, he was an unmarried man, and his wages, which were large, were spent in eating, drinking, and most probably in venereal excesses. We all know the sudden effect produced by passing from a dark room to a bright light; we can see nothing, the retina is temporarily paralyzed. Now if the change is taking place every day, we can quite understand that at last some permanent injury may be inflicted on the retina. The stooping position in which he had to work would all favour congestion of the choroid membrane. The flashes of fire in his eyes prove that the vessels of the choroid and retina were liable to sudden and momentary distention. You all, I dare say, know that a blow on the eye will, to use the schoolboy's phrase, make it strike a light. The concussion of the retina induces the sensation of light. In the absence of an external force for this phenomenon, we must look for an internal one, and this we find in the fact, that all blood-vessels may be suddenly enlarged, and thereby the surrounding parts exposed by the yielding coat of the vessel to the whole impulse of the

heart's action. I have explained so freely my views on this physical cause of determination of blood to a part in my last lecture on epilepsy, that I need not dwell on it now. You see it illustrated in the phenomenon of blushing, and in the erection of the penis. We all know that in inflammation of the conjunctiva, where the vessels can be seen, as soon as the eye is employed, the vessels become distended. Every organ in the performance of its function requires blood to enable it to perform that function, and we cannot use the retina without the assistance of its blood-vessels. In the healthy state of its vessels, they admit no more blood than is sufficient for their office, but in disease the middle coat yields to the pressure of the heart, and the inflamed part throbs with each contraction of the left ventricle, and the irritated retina conveys to the brain of the patient the impressions of light, which in a state of health are only excited by vibration of the æther which surrounds us.

The following case is also extremely interesting. It is amaurosis produced by choroiditis.

Case (reported by Mr. Sedgewick). *Imperfect Amaurosis of both Eyes.*—Thomas Highsted, aged thirty-six, fish-seller, was admitted into George Ward, under Mr. Solly, on the 13th of November, 1849. Has always had good health; countenance heavy. About nine years ago the sight of the left eye became dim; he could not judge of the size of objects, lumps of fish which he was going to buy appearing larger than in reality they were; the vision was misty, but he never perceived scintillations or muscæ; occasionally had pain in the eye, not supra-orbital. The sight gradually got worse; and about five years after the first attack, he could perceive light, but could not see objects. About one year ago he first had sparks of light and muscæ volitantes in this eye. Fifteen months since he received a blow over the right eye with a stone, which produced ecchymosis of the lids. The sight was not in the least affected, and, as he asserts, no severe inflammation of the globe followed, although he confesses to some redness of the conjunctiva. Eight days subsequently, while going out to work in the morning, he saw a black object frequently passing him on the right side, which, as soon as it was perceived, vanished. This occurrence happened very many times during the day. When night approached, but before it was quite dark, he was unable to observe any light, or to distinguish any object. Occasionally has had severe pain in the supra-orbital region, but is not aware of the occurrence of any

inflammation. In a few days muscæ volitantes, large flashes of light, and brilliant coruscations, made their appearance. He was not able to find his way about for three months, and then only very imperfectly, the sight having slightly improved. From the beginning, the outer side of the retina was totally senseless; the inner half much less useless. On bright days, the glare of the sun being absent, he can see best; is almost blind in the evening, in moonlight, and on dull days. Now the iris of each eye is slowly sensible to light; the pupil is much dilated and irregular, from adhesions of the posterior surface of the iris to the lens; no pain in the eye; general health good; lens transparent. Ordered mercury with chalk, two grains, every night.

Jan. 15th, 1850.—Gums a little tender; sight, on the whole, improved; muscæ and scintillations much less numerous; complains of weakness or inability to look at any object for even a minute. To omit the mercury.

This man has been in the habit of driving a fish-cart during the night, between Hastings and Brighton. The constant exposure to all sorts of weather, and the varying influence of light upon the eye, have been the exciting cause of this disease. When you observe the great irregularity of his pupils, and their adhesion to the capsule of the iris, all of which have been necessarily caused by subsequent inflammation, it must seem strange to you that the patient says that his eyes have never been inflamed.

This history is not singular, as I have already stated the disease is often so insidious that it creeps on unobserved, until the sight is seriously affected. When the disease is confined to one eye, it often continues for two or three months, without the patient being aware of—and the friends are often the first to perceive—this lamentable result. In illustration of this fact, I will another day relate to you a case, on which I have been consulted within the last few days, as it is strikingly in point.

In reference to Highsted, it is gratifying to observe the gradual but steady improvement which is taking place in his sight. The weakness of which he now complains, and the difficulty he feels in turning the eye to the light, though distressing to him, is a good sign. In a physiological point of view it is also interesting. The retina, beginning to be relieved of the burden which

weighed down its powers, is at first unnaturally sensible to light: the stimulus is too much for it; but this will soon pass off. It is one of the most unequivocal proofs of the beneficial action of the mercury, in removing, by absorption, the deposit in the choroid. This circumstance must not deceive you with regard to the action of mercury. You must not suppose that a rapid salivation will effect a rapid cure; such is not the case.

Yes, gentlemen, the great secret of success in the treatment of these chronic cases, as indeed it is in all chronic cases, is not to attempt to take the disease by storm. Do not attempt too much. Be contented with a *very* slow progress, but, being firm in your view of the pathology of the case, persevere. Do not be turned to the right or to the left either by the stupid and officious interference of the kind friends of your patient, or by his own impatience. You may often be obliged to give mercury in minute doses for one or two months before there will be any improvement in vision, but this must not discourage you; go on, and you will have the satisfaction of seeing your patient ultimately recover. But you must stop short of salivation.

Mercury will often restore the sight in amaurosis, even where the perception of light is destroyed. Mr. Tyrrell used to consider that a case was not entirely hopeless if the globe retained its natural consistency, neither abnormally hard nor soft and shrunken; for when the disease is of very long continuance, then the retina and vitreous humour become sometimes implicated in the morbid action, and partial atrophy ensues.

If we could apply the same test in our diagnosis and prognosis of cerebral affections—if we could ascertain by the touch when the ganglion has become atrophied, and when it is still unchanged in structure—we should administer our remedies with more confidence. In these amaurotic cases it is not merely necessary to sustain the mercurial action for months, but at the same time the power and tone of the patient's constitution must be sustained by a good nutritious diet and a moderate

quantity of stimulus. Mr. Tyrrell's words are,[1]—"I consider that the safety of the treatment and its efficacy depends very greatly upon the support of the general power; for whilst this is properly sustained, I believe that the remedy cannot produce any general injurious effect, though its operation upon the local disease may proceed most beneficially. Unless the general power be maintained, the effects of the mercurial action on the system are extremely distressing and injurious, and it can rarely be continued long enough to remedy the amaurosis."

Case.—Mr. T—— relates the case of a man, about thirty-eight years of age, who had been amaurotic for seven years, and had lost the perception of light; but the globes possessed their natural firmness and elasticity; the pupils were clear, but irregular, from many points of adhesion between the pupillary margin of the iris and the anterior capsule of the lens; the irides were discoloured and dull, and he had the vacant aspect of a blind person. I admitted him into the infirmary in Charterhouse Square, and put him under mercurial treatment, with a nutritious diet; as soon as the mouth became tender, a considerable degree of sclerotitis occurred, with pain and tenderness of the eyeballs. The plan was, however, steadily continued, and some belladonna was applied night and morning to each eyebrow; he soon became sensible of light, and gradually acquired the power of discerning objects, and at the same time the adhesions between the iris and the capsule of the lens began to give way, and the pupils to reassume their natural figures. By degrees the vision improved, all appearance of inflammatory action subsided, the pupils became nearly regular, and the irides brilliant; the full mercurial action was kept up for above six weeks, when the amaurosis was completely subdued, and his vision perfect. For about sixteen weeks he discharged about a pint and a half of saliva daily; but, in spite of the severity of the treatment, he came out of the course improved in appearance, and evidently increased in bulk.

I must again repeat, that the more I see of chronic affections of the brain the more I am convinced that the same rules ought to guide us in the treatment of these cases and ophthalmic affections. The following case shows the value of this plan of treatment in chronic meningitis, with some serous effusion.

Case 50.—A lady, aged forty-eight, a married woman, but without any children, consulted me, on the 8th of December, 1841, for

[1] Cyclopædia of Surgery, vol. i. p. 91.

drooping of the right eyelid, and violent pain in the head. The right eyelid droops over the eyeball, and she can only raise it half way. The left she has complete command over. There is a quivering motion in both eyelids and eyeballs. When she closes the left eye, and attempts to look at anything with the right, she finds her vision very imperfect and misty.

She complains of a shooting pricking pain in the ball of the right eye, with a feeling of great pressure and pain in the left side of the head and face.

She says she sometimes has feelings as if she was not right in her mind, as if she was going delirious. These feelings existed previous to the eye being affected. Her countenance is rather wild and anxious, the eyes staring and unnatural.

She complains of sensations in the body and extremities, which she calls "live blood," or "pins and needles," as if there was something fluttering underneath the skin; sometimes the right eyeball flutters so violently that it feels to her as if it would jump out of her head. The right arm and leg sometimes is numb, but the left never feels so.

She passes per anum, from piles, nearly a pint of blood during the week, which she considers gives great relief to the head. I found, on inquiry, that she had been much harassed latterly, and suffered much anxiety of mind.

About six years ago she had a miscarriage, since which the womb has been displaced, and it has become hard and shrunken, and prevented all connection for two years. She has only menstruated once during the last two years, and that occurred about two months ago, and she felt relieved by their appearance. Pulse quick and irritable; tongue rather pale, but not furred; appetite pretty good: sleeps tolerably; feels very weak. Ordered mercury and chalk, two grains, night and morning; blister to the forehead.

After using the mercury in doses varying according to its effect, and never so as to salivate, with various counter-irritants, issues, &c., at the same time supporting the general health for two months and a half, the paralysis of the eyelid was entirely cured, and the pain in the head left her, and she felt nearly well; she left off her medicine, and I lost sight of her for above two months, after which time she came to me again.

Her countenance is worse: the right eyelid again droops. She says that all her sufferings have returned as bad as ever, though her general health has improved.

The pain at the back of the head is most violent, and the burning sensation at the top of the neck so severe that she can scarcely contain herself; at times something seems to pass over the eyes, so as to make her blind. Sometimes the sensations are so horrible

that she feels as if she was going mad. She has some loss of power on the right side, across the right leg—it feels numb and heavy—moral causes appeared to have produced this relapse, though she says that soon after the mouth became well from the mercury, she began to feel uncomfortable.

This time I was obliged to cup her three or four times, as well as employ mercury in full doses. She came under my care, on this occasion, on the 13th of April, and it was not till the 22nd of June that I could report any decided improvement; by this time she was able to walk pretty well; her head felt easy, and she says she can now use her reason.

I continued the mercury for four months, at the end of which time she was quite well. Her sight was quite restored; no pain in her head; feels strong and hearty; spirits good; mind equable and placid. Her countenance is entirely changed; instead of a staring, wild, unnatural expression, she looks composed and comfortable. She expresses herself grateful for her recovery.

I shall take an early opportunity of returning to this subject; in the meantime I am sure you will watch the progress of these two cases of amaurosis with attentive interest.

The following fact bearing upon this subject I have from my friend Mr. Hingeston, now resident at Brighton :—

"A lady, of ample means and good position in life, consulted me about her eyesight. One pupil was dilated—the other natural. Both eyes were perfectly sound, and free from any kind of diseased action. I came to the conclusion that there was slight effusion into the lateral ventricle of the opposite side; and gave a much more serious opinion than either she or her relatives looked for. They left me to consult some eminent oculist in London. The next account I heard of her was, that she had been suddenly carried off by a stroke of apoplexy."

LECTURE XIV.

Amaurosis, Inflammation of Dura Mater, Syphilis, etc.

Gentlemen,—It is now about ten weeks since I directed your attention to two cases of amaurosis; I will now make a few observations on their progress since that date: first, with regard to Highsted, the man whose amaurosis was induced by choroiditis.

On the 16th of January I discontinued the mercury, as his mouth was becoming tender, and I did not order it again for three weeks, that is, till the 6th of February. During this time very little alteration had taken place in the eyes, but they did not retrograde. I now ordered the grey powder again, in two-grain doses every night, with some improvement.

On the 13th of March, wishing to expedite his cure, I ordered a blister to the right temple: this, he says, was followed the next day by strong flashes of light, and at first his sight was more confused, but it has been brighter since.

On the 20th he was cupped to six ounces. I continued the small doses of grey powder till the 27th of March, when I thought that his health was suffering, and it would be better to suspend the mercury and give him a tonic, which would, at the same time, act beneficially on his eyes. I ordered him iodide of potassium, two grains; in an infusion of gentian.

April 3rd.—He says that he can now see a little in the evening, which he could not do a month ago. He discovered this from his looking out of one of the windows in the ward, at some little distance in front of which there is a portion of the hospital built on arches, which form a covered walk: he says that he can now see light through the arches, which he could not a month ago: he says that the glimmering which comes across his eye sometimes seems to pass between an object and his eye, and sometimes not; for instance, he can see the inkstand quite clearly one minute, and the next minute a glimmering comes over the eye, and shuts the object out again. But three weeks ago he could not have told whether it was an inkstand or not. If he looks steadily at any object for even a short time it produces a pain in the eye, which obliges him to desist. Every now and then he sees so distinctly that he thinks his sight is going to be quite restored; but if he perseveres in look-

ing, he then finds the scum, as he expresses it, comes over again. By the time night arrives he is very glad to go to bed, his eyes ache so; when he first came in he could see so little that his eyes never ached; he says some points of his sight are much clearer than others; he can see more with the right eye; but with one spot in the left he can see more distinctly.

On being asked what the colours of two camellias were, he said, "I see three colours—red, white, and green, which is correct?" He says, "A month ago I could not see that they were flowers—the glimmering was so thick that I could not see through it." After the cupping he says the eyes flashed fire dreadfully; but this has passed off, and he thinks the last medicine has strengthened his eyes, for sometimes there is so much light that his vision is confused.

You will perceive, gentlemen, from this report, how decidedly, though gradually, the poor fellow is recovering his sight. It is now very important that he should not try his eyes too much: the retina having been pressed upon so long, it is unnaturally sensible; and if he exposes it too much to the stimulus of light, there is danger of fresh inflammatory mischief being set up. He will require very careful watching, taking care that his health is not injured by the mercury, and giving him those tonics, from time to time, which, at the same time that they support the constitution, also promote absorption of adventitious matter. I know of no tonic that does this so perfectly as the various preparations of iodine. The poor fellow is very patient, and says he will do anything in the hope of recovering his sight, so as to be able to get his living again. I really think that this will now be accomplished.

In Heath's case, we recommenced the mercury on the 15th, but only one grain every night. His mouth has not been tender, but he has had a disagreeable taste in it. During this period, he says, the sight has been gradually becoming lighter; but there was still a fog before his eyes: this he sees most distinctly if he looks on a sheet of white paper; it will shift across the paper as he moves his eyes. He can now read the ordinary large print of an octavo volume; he could not see to read at all when he came in,—"I could not see," he says, "even the window-frames, with the right eye, when I

came in; I could just discern daylight from dark, but that was all; now I can distinguish a countenance in the ward, so as to know any person, and can read a large print." The right eye becomes dark sooner in the evening than the left.

March 23rd.—I increased the dose to one grain and a half, at the same time ordering him a blister to the nape of the neck. The flashes of light, he says, are not so vivid or so frequent of late. He felt relief from the last blister; the eyes are clearer, and the eyelids feel less heavy. He still sees better out of the corners of the eyes than straightforward; can see any way better than he can straightforward. This arises from the fact, that that portion of the retina, which is the most sensible in a state of health, and placed, as you know, exactly in the direct axis of vision, when the eye is directed to any object, is the first paralyzed in amaurosis, and is the part which is the last in being restored to health.

This poor fellow consulted me as to his going over to America, and showed me a letter, stating that they had sent a check to his mother to pay his passage. I have advised his remaining in the hospital another two months, as I believe by that time his eye will be very much more improved, and that there will be less danger of a return of the disease. There will also be less risk from cold as the spring advances. He has gladly availed himself of my permission to stop—thus showing his own confidence in the ultimate restoration of his sight, from the improvement which has already taken place.

You will remember, gentlemen, when I first called your attention to amaurosis, that I told you I did so, not merely on account of the importance of the subject in itself, but from the fact, that it illustrates the way in which affections of the membranes of the brain ought to be treated. A circumstance brought this subject very forcibly before my notice this morning. You will all remember a poor fellow of the name of Lashwood, who was under my care a short time ago, with disease of the intervertebral substance in the lumbar region. Well, his brother consulted me about a twelvemonth ago regarding his eyes. He complained of dimness of vision; but he also complained of great pain in his head, which

he said was much aggravated by stooping; it was worse also at night, and he often felt quite stupid when he got up in the morning. He could not take a drop of beer, as it made him foolish.

The vessels of the sclerotic coat were distended with red blood, and his eye had that bloodshot appearance which, taken in conjunction with the symptoms he related, convinced me, that besides the dimness of vision, to which he attached so much importance, he was on the verge of a cloud, which threatened to overwhelm, not merely his ocular, but his mental vision. In other words, it was clear that the membranes of the brain were congested, as well as those of the eye. His occupation was that of a farm-labourer, and he said that he knew that the stooping at his work—a position which, of course, favoured this congestion—did him a great deal of harm. I tried to persuade him to give it up for a time, and offered to take him into the hospital, but he said he could not leave his family. I then did the best I could for him, by ordering some leeches to his head, and an active aperient, which was repeated once or twice; this relieved him so much, that I heard nothing more of him till this morning, when I learnt that, on returning home from church on Sunday, he showed decided symptoms of mental derangement. Now, this melancholy, though brief history, is not a rare one. I hope you will apply the lesson which it teaches.

Last week I was invited by a medical friend, who knows my *penchant* for looking into the skulls of the insane, to examine a man who had died in an asylum, where he had been forty-three years. We found—what some might say was very little, but to me it seemed sufficient—an excessively adherent dura mater, which, in an old man of seventy-two, indicated previous inflammation; a very thickened opaque arachnoid membrane, beneath which there was a layer, about one-seventh of an inch in depth, of thick, almost gelatinous, dark-coloured serum; a very pale, hemispherical ganglion.

The commencement of this man's illness was at college,

evidently one of inflammation of the meninges. His life was saved; but not so the hemispherical ganglion—not so the intellect.

The same might have occurred to the eye—inflammation of the scleroticæ and choroid, as in Highsted's case, instead of inflammation of the dura mater and arachnoid; effusion between the choroid and retina, instead of effusion between the arachnoid and hemispherical ganglion; pressure on the retina, alteration of structure, and consequent amaurosis, instead of pressure on the hemispherical ganglion and loss of intellect. Pray remember, gentlemen, how much depends on the judgment you display in the *early* treatment of these sad cases.

In connection with this subject, I will bring before you a case of syphilitic disease travelling to the membranes of the brain. You must have observed this patient in my rounds.

Lues Venerea, with Syphilitic Disease of Larynx, Bones of the Skull, and Meninges.—Joseph Faulkner, aged thirty-three, was admitted, under Mr. Solly, into George's Ward, Nov. 27, 1849; transferred into Job's, Dec. 1, 1849; suffering from necrosis of bones of nose and right leg, the effect of constitutional syphilis.

History.—His history is very confused; at first he would not allow that he had suffered from the disease for eighteen years, but he was afterwards brought to acknowledge, that five years before admission he had suffered from chancre, of which he had been quite cured, he thinks, without mercury. Also, that a year and a half ago he had discharge from the penis, he thinks, without chancre, and that this was cured by means of a mixture and pills, the mouth not being made sore. About three months after this attack, the constitutional symptoms of the disease began to appear, eruptions of a dark-red colour, breaking out over the shoulders and upper part of the body. The symptoms next following these were, great pain in all his bones, and swellings appearing over them in various parts. After this came on a swelling of the left side of the nose, extending along the lower margin of the left orbit, which was followed by a discharge of fetid pus through the nostril, and the escape of several pieces of dead bone by that passage, the nose on that side, in the meantime, falling in and becoming irregular. About three months before admission, a swelling appeared on the right leg, over the tibia; this was opened, and an ulcer formed, which has ever since remained unhealed.

November 27th.—On admission, the ulcer on the tibia remained open, and at the bottom of it dead bone was felt with the probe.

The fetid discharge from the nose still continued, but in diminished quantity. There were no eruptions or sore throat, or any other local manifestations of the disease, but the general health was considerably affected, the appetite being bad, the pulse quick and weak, and the tongue furred. He was ordered iodine and sarsaparilla mixture twice a day; Plummer's pill, five grains every night; cataplasma lini. to the leg; chloride of soda lotion to be injected into the nose.

February 16th.—General health much improved, but laryngeal cartilages now affected, there being considerable hoarseness and tenderness on pressure over the larynx; also pain on swallowing, no cause for this being to be seen in the fauces; discharge from nose still continues. To have alum gargle injected into the nose; a blister over larynx dressed with mercury ointment; citrate of potass mixture three times a day.

25th.—Hoarseness and tenderness much the same; no dyspnœa; blister quite healed. To apply the iodide of potass ointment.

30th.—Tincture of iodine to be applied.

Up to this point, the case presents no features which connect it with our present subject; but, in surgery, we must always bear in mind, that we know not what a day may bring forth, and it is by anticipating evils that we often prevent them. You must all remember that case of acute laryngitis, consequent on syphilitic disease of the cartilages of the larynx, which occurred within a few beds of our present patient, and that I was only just in time to save him from suffocation by the operation of laryngotomy. It is true, he left the hospital well, but the laryngitis nearly proved fatal from its rapidity. In our present case, we arrested the laryngeal mischief, in an earlier stage. But the demon of syphilis, as if disappointed in one quarter, seizes its victim in another. The membranes of the brain become affected, the disease travelling by easy stages from the external periosteum, through the bones of the skull, to the dura mater, or internal periosteum.

March 14th.—States that he was just thinking that he would ask to be presented, as he felt so much better, when he was suddenly seized with a strange and indescribable sensation in his head; no pain.

15th.—Much the same; loses his recollection for a moment, then recovers it; slight pain in the head.—Eight P.M. Pain increased. Castor oil, one ounce.

16th.—Pain in the head increasingly severe; some febrile action; much excited; mind wandering; does not know his attendants.—Eight P.M. Delirium; the previous excitement has greatly exhausted him; loss of vision; cannot close the right eye, the pupil of which is greatly dilated. Castor oil not having acted, ordered house medicine. Ordered mist. potassæ cum acido citrico, three times a day; cold lotion; mercury with chalk, five grains, three times a day.

18th.—In same condition; face flushed.

20th.—Much the same.

23rd.—Pain greatly relieved by the cold lotion, and the bowels being freely opened; vision not so imperfect; can close the right eye; no delirium to-day; memory improved; but complains of great uneasiness about the region of the heart; respiration oppressed, and sighing; pulse quick and bounding, but soft and compressible; the face more extensively flushed, of a deep red colour; vomits frequently; tongue moist, swollen, and tremulous; had a bad night; cough very troublesome. Ordered ipecacuanha powder, one grain; extract of conium, five grains; three times a day.

24th.—Cough relieved; slight pain in the bowels; breathing still distressed.

27th.—Much relieved; pain in the head continues, though not so severe. Ordered a blister, to be dressed with strong mercury ointment.

28th.—Decidedly better.

30th.—Memory rather impaired.

This case of Faulkner's is by no means a rare one. A man of the name of Hawkins, who was lately under my care in Lazarus Ward, and has suffered from constitutional syphilis for the last ten years, was under my care, about eight years ago, with disease of the bones of the skull; he was apparently going on well in every respect. I called the attention of my pupils to the case as one of those in which serous effusion into the cranial cavity often took place suddenly, and if not treated promptly, was certainly fatal.

Within two days I was called to him. He was just conscious, but barely so. He would answer yes, or no, but that was all, and put his hand to his head to indicate the seat of his suffering. The nurse stated that, on first getting up in the morning, he complained of his head, and seemed drowsy and stupid, and that he had been gradually getting worse. I saw him about mid-day. He possessed much more general power than

Faulkner, and I was therefore able to treat him more actively.

He took two grains of calomel every four hours. I raised a blister with boiling water, and dressed the surface with strong mercurial ointment; within twenty-four hours he was salivated; up to that time all his symptoms got worse, but after that he began to improve, and soon recovered from all signs of cerebral disturbance. It was also very interesting to observe how all his syphilitic diseases abated, under the free use of mercury. In Faulkner's case, there was a little inflammatory blush on the upper part of the face and the side of the head, increased by the diseased bones beneath. If this inflammation had been mistaken for erysipelas, and port wine, our sheet anchor in the treatment of this complaint, had been ordered, a fatal result would have soon followed. The dilatation of the right pupil and temporary amaurosis was quite sufficient to point out the cerebral mischief. He is now out of danger, but he will be some time before he gets rid of all syphilitic symptoms.

LECTURE XV.

On Epilepsy following Injury to the Cranium.

Gentlemen,—Epilepsy is a subject which has engaged the anxious attention of the profession from the first dawn of medicine as a science up to the present time. Accidental circumstances have brought the disease a good deal before my personal observation, and though we may each of us have our particular theory of its nature, it must still be allowed that we are almost as much in the dark regarding its true pathology as they were in the days of Hippocrates. In all cases I believe that the convulsion is preceded by a temporary hyperæmia, or flush of the cerebral vascular system. It is true that this theory has its difficulty. For instance, many cases of epilepsy, especially in females, appear to depend on general anæmia; but it must be remembered that there are also cases of amenorrhœa, and that when the uterine functions are restored, the epileptic paroxysms disappear also. It has been asserted that convulsions in infants are induced by these two totally opposite conditions; but this I doubt. I do not mean that I doubt that convulsions in infants are connected with a *general* anæmic as well as hyperæmic condition; but I believe that the vascular system of the *brain* and *spinal* cord must be the same in all cases immediately preceding the convulsion. I cannot believe that similar phenomena can be produced by totally dissimilar causes. But we all know that local congestions and local inflammations occur in totally opposite conditions of the vascular system; but the direct *effect* of the congestion or inflammation is the same. Take, for instance, strumous ophthalmia of the eye in a miserable half-starved child,

and active ophthalmia in a plethoric man. The immediate effect on the sight is quite the same in both. I have observed that in some patients, and these have been young men in the prime of life, with florid complexions, the fit has been immediately preceded by a flush of the face. In others, and these are chlorotic females suffering from amenorrhœa, the fit is preceded by a deadly pallor. Again: you will often find, in taking the history of the rise and progress of a case of epilepsy, that previous to a true epileptic fit, the patient has suffered from repeated faintings. This is a very important fact, and one you must attend to, as it may enable you to avert the complete epileptic disease by previous treatment promptly applied. In the first case it is possible there is blood enough in the body to flush both external and internal vessels; both the vessels of the brain and the vessels of the face; in the other, the supply being limited, the brain alone gets an undue quantity.

I believe, then, that the morbid action which precedes an epileptic attack is a sudden determination of blood to the brain, which expends itself in the secretion of that nervous power, which, in a state of health, is employed by the brain to convey volition to the muscles, which power is, I have no doubt, identical with electricity. This excessive secretion is carried by the motor nerves like a discharge from an electric battery, and from its quantity and excess produces excessive action of the muscles. It is another illustration of a law which I have had occasion to speak about before—namely, that the first effect of arterial excitement in every secreting organ is to excite to an unnatural degree the natural function of the organ. We know that mental emotion will cause a sudden determination of blood to other organs, which, according to the part, will be followed or not by secretion.

Blushing and erection of the penis are instances of sudden determination of blood to a particular part. And the lacrymal glands, salivary glands, testicles, prostate gland, gastric glands, and even the kidneys, often pour

forth their secretions so abundantly, and so suddenly, that the formative fluid, the blood, must have circulated through their capillaries in greater quantity, and with greater rapidity, than when the glands were at rest, and their secretions suspended. I think that the periodic attacks of mania with which many of the insane are afflicted may be regarded in this light.

The vessels which are especially the seat of this morbid action, I suspect, are those of the plexus choroides and one of the layers of the cortical substance. The choroid plexus is frequently found hypertrophied in the brain of epileptics, assuming an almost fleshy appearance. This hypertrophy would very probably be the effect of repeated action. It is also the seat of small tumours, generally like hydatids.

The expression "determination of blood to the head" is often made use of, but without any explanation of the manner in which this takes place. I doubt whether the profession generally have any distinct idea as to the exact condition of the vascular system that produces it. I would venture to offer the following theory, the first idea of which I certainly derived, many years ago, from that most truly philosophical work, the "Elements of Physic" of Dr. Arnott. It applies, not merely to the head, but everywhere else.

The middle or muscular coat of the arteries, in a state of health, contracts, with each systole of the ventricles, just sufficiently to give a solidity to the wall of the pipe; so that the force of the contraction is not lost on a yielding surface; a much greater force is required to drive water through a leather hose than through a leaden tube. The middle coat contracts sufficiently to assimilate the artery, physically and temporarily, to the leaden tube. Arteries with permanently rigid walls, like leaden tubes, would have interfered, by their rigidity, with the motions of the limbs; and hence this beautiful contrivance. When this middle coat does not contract, or only contracts imperfectly, then the force of the heart dilates the tubes and produces congestion.

I believe, then, that determination of blood to the head arises simply from deficient contraction of the muscular coat of the capillaries of the brain, preceded by the excitement of the heart's action.

The throbbing of the carotid arteries may be considered as corroborative evidence in favour of this opinion. The throbbing cannot arise from action of the vessel; it is the action of the heart, felt strongly, and seen distinctly, because the tube yields to the impulse of the left ventricle, instead of resisting it, like a solid leaden pipe. If the throbbing arose from the action of the artery, it would not be synchronous with the heart, which it is. It is the same yielding of the coat of the capillaries, in an inflamed limb, which gives rise to the throbbing sensation which all of us have felt in some small spot or another.

I think that it is not at all improbable, that the reason why these capillaries of the brain thus suddenly and unnaturally neglect to perform their duty is some defective innervation from the sympathetic nerves, whose office I hold to be the regulation of the coat of the arteries, so as to produce secretions in the glands, or blushing in the face.

There are many circumstances attending organic disease of the brain which I think can only be accounted for on the supposition that the quantity of blood in the brain varies very much at different times. One of the most striking of these is the remission of pain and accession being produced by anything that would tend to accelerate the circulation.

Most authors who have written on epilepsy, Esquirol among the number, agree in stating that the brain is in a state of congestion during the fit.

The amazing benefit which I have seen derived from the use of digitalis is strongly corroborative of this theory. This powerful medicine was most serviceable when it kept the pulse down even below the standard of health.

I believe that in all cases of fatal epilepsy, where there has been autopsy, the vessels of the brain and

membranes have been found enormously distended, and in some there has been extravasation.

The warning which many epileptics have—viz., a singing noise in the ears, I believe arises from the dilated carotid artery vibrating in the carotid canal, close to the vestibule of the internal ear.

I regard it as analogous to the throbbing produced by the dilated artery in inflamed parts.

Dr. Conolly observed that epileptic patients are occasionally warned of the approach of the paroxysm by mental excitement, their high spirits becoming to their friends the well known precursors of their sufferings. This must arise from arterial action. It is analogous to the mental excitement induced by spirituous liquors; no one doubts that this psychical effect is produced by a physical cause.

Dr. Bright says,—"I believe that almost always, during the epileptic paroxysm, either as a cause or an effect, sanguineous congestion takes place within the brain."

Dr. Prichard's and Dr. Alison's opinions coincide with this. But I must not detain you longer on this branch of our subject, as I have entered very freely into it in my work on the brain.

For a knowledge of all the medicines which have been used in the treatment of this formidable disease, I must refer you to Dr. Copland's admirable and erudite article on this subject. In some cases—as, for instance, in the case which has called forth these remarks, there are general symptoms which call for especial treatment; but there are many cases of epilepsy which are clearly functional, and then your treatment must be, to a certain extent, experimental or empirical.

In females suffering from amenorrhœa, I have seen the greatest benefit derived from the use of steel. But this mineral must be continued for months—obstinately continued. In order to do this you must vary the form of it, always giving it in small doses, or you will nauseate your patient, and disturb the digestive organs.

The carbonate of iron, the iron mixture, the citrate of iron, the sulphate of iron, are all useful in their turn. I have lately had a successful case—by obstinately persevering in this plan of treatment—in the person of a young lady, who had suffered from this complaint for above five years, and who had been under the care of many of the physicians at the West End. She has now been free from attacks for nearly two years.

After administering steel for some time, great advantage is often derived from the combination of the sulphate of iron and sulphate of zinc. In young men with a florid complexion and irritable pulse, I have found the digitalis of great service, several patients recovering entirely under its use; but it is a medicine which requires great care, and constant watching.

The sulphate of zinc certainly possesses a decided power over the disease, and I have had three or four patients recover under its use. I seldom give it in larger doses than two grains, and as it is a medicine which may be given without danger, I generally prescribe it in the first instance.

In old and chronic cases, when everything else has failed, I give the oxide of silver, which is one of the most valuable medicines we possess. It requires watching, to prevent its discolouring the skin. But if you do so carefully, and leave it off for about a fortnight at the end of every two months, there is very little danger.

One of the worst cases of epilepsy I ever knew, independent of organic disease, got well under its employment. The patient had been ill fifteen years; he took the medicine for twelve months, and he has been quite well for above sixteen years.

I have the opportunity of calling your attention to this subject, afforded me by the following cases in the hospital.

William O——, aged fourteen, a healthy-looking and intelligent boy, was admitted into George's Ward on December 1, 1849, under Mr. Solly. His health has been generally very good. Had measles and scarlatina some years ago, but both very slightly, and

for three or four years before the accident occurred he was in perfect health. His family are all healthy, and are none of them subject to fits.

In the early part of November, 1848, whilst pulling at a rope against others, his opponents suddenly let go their hold, and he fell backward, striking his head with great violence on the even surface of the flagstones. He was stunned by the blow, and remained insensible for about a quarter of an hour; during this time no convulsions occurred, and in a very little while longer he had quite recovered. There was no wound of the scalp. The accident occurred about five o'clock in the afternoon.

On the morning of the third day afterwards, he suffered from headache and drowsiness, accompanied with thirst and heat of skin. About 2 P.M. on the same day he was seized with an epileptic fit. The following is an account of it, derived from Mr. Bury, the surgeon who attended him:—"The cause of this fit seemed at the time very obscure, the circumstance of the fall having been kept back from me; there was no indigested substance in the stomach or bowels to account for it, neither was there evidence of disease working within the cranium; the configuration of the head was proper and healthy; the fit was very severe, and four or five hours elapsed before the boy was conscious. Leeches were applied, and an evaporating lotion, with the clipping of the hair and pretty active purgative medicines, low diet, cool room, and exclusion of light, &c. The case did remarkably well." Additional particulars were obtained from the patient himself. He says, that on the accession of the fit he uttered no cry, and he asserts that it lasted three quarters of an hour. He remained well for three weeks; he then went to Bury St. Edmunds, where, during a six weeks' stay, he had six fits. After his return home he remained free from them for six months, when he had another, and also one at the expiration of other four months; the last happened about a month after this, and about ten days after admission. This exceeded in severity any of the other fits, and was not so soon recovered from. A severe headache, which he describes as commencing at the upper angle of the occipital bone, always precedes the fit. During the intervals he is in good health, but has headache when he reads much.

On admission he was in good health. Appetite good; bowels regular; tongue clean and moist; pulse 80, full and compressible; free from headache. At the superior angle of the occipital bone is a depression, trilateral, and painful on pressure; from it commences the premonitory headache.

Dec. 10th.—Has continued well up to seven this morning, when he complained of headache; referred to the frontal region. At 7.30 A.M. a slight epileptic fit came on, preceded by no cry; there was little struggling, the eyes rolled about, the teeth closed, but no grinding; the tongue not bitten, and no foaming at the mouth; it lasted fifteen minutes, and was succeeded by incoherence, but not coma. He laughed both during and after the fit. At 10 A.M. he was quite rational; he was free from headache; the

face was rather more compressible than usual, and the pulse was unaffected.

The case you have just heard related is one of great interest: a case of epilepsy induced by an injury of the head. The exact amount of that injury it is impossible to decide. Just at the superior angle of the occipital bone there is a deep fissure. This might arise from the depression of that angle of the bone. This portion, though not large enough to produce symptoms of compression, might act as a source of irritation. If we could be certain that such was really the case, there could be no doubt as to the course of treatment which ought to be pursued—namely, to apply the trephine, and remove it. This operation is, however, far too serious to be adopted without greater certainty than we possess at present. It will naturally occur to you, how is it possible that there can be any such serious source of irritation constantly *in situ*, and the result of that irritation only occurring every three or four weeks, the boy, in the interval, remaining perfectly well? Now, strange as this may appear, we do know of parallel cases. On the other hand, it is quite possible, and, on the whole, more probable, that the result of the blow has been an injury to the dura mater, productive of some thickening and deposit. The tenderness of the spot, and the pain which the boy suffers when it is pressed upon, shows that there is some mischief there still. If, however, the disease is in the dura mater, and there is no displacement of bone, then we have a chance of touching the disease by means of mercury and local treatment. In the hope that this view of the case is correct, I have ordered small doses of mercury, a poultice over the spot, and counter-irritation below it over the occipital bone.

Injuries of the head are sometimes followed immediately—that is, within a few hours—by convulsions, and when such is the case, your prognosis must be most unfavourable, for they generally indicate some lesion of the cerebral substance. But if the convulsions do not occur for some days, they generally are dependent on sub-

sequent inflammation. All such cases require active treatment, and they will occasionally recover. The following case is in point, and shows what may be done by antiphlogistic measures.

I have never before seen convulsions of such frequency and severity following injury of the brain without a fatal result. That the cerebral lesion must have been very serious is, I think, proved by the paralysis of the arm and leg. In a therapeutic point of view, it is important to observe how obstinate the symptoms were until the system was influenced by the mercury. I have no doubt but that the blood-letting arrested the inflammatory action until the mercury performed its work, but it did not appear as if the blood-letting alone could control the disease.

Case.—Thomas Smith, a boy, aged fourteen, residing at Woolwich, was admitted into George's Ward, under the care of Mr. Solly, with a severe injury of the head. It was stated that he had fallen from a scaffolding twenty feet or upwards in height, pitching upon his head; when picked up was quite insensible, and evidently suffering from a severe concussion of the brain. His head was directed to be shaved, a cold lotion to be applied, and warmth to the extremities, and five grains of calomel were given immediately. At 1.30 he was again seen by Mr. Solly, when he had recovered his senses, but was very drowsy, and complained of pain in his head; the pulse was somewhat slow and labouring; the pupils dilated, particularly the left, but contracting upon the admission of light. He was ordered to take two grains of calomel every two hours, and to have twenty leeches applied to the head. At 9 P.M. was much the same as in the middle of the day; was bled from the arm to eight ounces.

May 12th.—At 8.30 A.M.: He complained still of pain in the head, continued drowsy; pulse 72; bowels not opened, although he had taken eight doses of mercury. Ordered calomel, five grains, every hour, until the bowels were relieved. Leeches to be repeated, but thirty in place of twenty.—At 1 P.M.: Continue treatment.—At 11 P.M. was sleeping; sensible when roused, but complained of pain, particularly on the left side of the head. Bowels still confined; had taken nine five-grain doses of calomel. Ordered an enema to be administered immediately, and repeated if necessary. The calomel to be omitted until the morning.

13th.—Sleeps a good deal, and he is not easily roused, but quite sensible when awakened. Said "I have got the headache, sir," and then dozed off again; pulse 64; bowels opened twice by the enema, stool lumpy, and dark brown. Ordered calomel, five grains.— At 1 P.M.: Rather more drowsy, becoming forgetful;

leeches to be repeated, thirty in number.—At 7 P.M.: The sister observed that he had slight grating of the teeth, and almost immediately thrust his tongue from his mouth, and it remained out; at the same time the right arm was drawn up, and there was rolling of the eyes. The sister thought he was conscious, but he could not speak. She then sent for Mr. Solly, which was at 8 P.M. His countenance had become more anxious; he was not so readily roused, and answered less perfectly questions put to him, speaking in a drawling way; pulse 76, not so full. A vein was opened in the arm, but the blood, which was very dark, flowed so slowly that the temporal artery was opened. He was raised from the pillow, and as soon as little more than an ounce had flowed, he had a convulsive fit; the struggle was slight, and accompanied by a slight moan. The artery was then completely divided, which stopped the bleeding, and he was again laid on the pillow; he almost immediately recovered his consciousness; his countenance was pale, and covered with cold sweat; pulse 56, irregular. In a few minutes he seemed better, and said, in answer to a question. that he was easier. Ordered mercury and chalk, two grains every four hours.

14th.—Early morning: Said he was very bad; quite conscious; has had no more convulsions; complained of his head; pulse 72; soft; mouth rather tender.—At 9 P.M.: Countenance more cheerful; head cooler; pulse 80; said he was better. Continue treatment.—At 11 P.M.: Had another convulsive fit, which was very short; foaming from the mouth, which was drawn somewhat to the right side; no scream. A few minutes before this he had started up in the bed, and would have fallen out but for the attendant.

15th.—Several fits, of short duration, have occurred during the night.—At 8.30: Countenance very heavy and dull; scarcely any answer given to questions; right side of face and arm partially paralyzed, but can feel somewhat when pinched; bowels not open. Continue the mercury and chalk.—At 7.30: Has had several fits, but not of great length, nor severe; countenance much the same; answers slowly, but rationally; bowels relieved; motions loose and green; pulse 80. Continue the mercury and chalk.

16th.—Not so conscious, or so well in other respects; pulse eighty. Continue treatment.

17th.—Very drowsy; has frequent fits, some of longer duration than before; countenance heavy and bad; pulse 140; cannot get him to take food; is not aware when it is offered him.

18th.—Much worse; countenance continues anxious; can scarcely answer any question; pulse 156, small; says he wants his breakfast; always expressing a feeling of hunger. Convulsions occur very frequently.

19th.—Countenance more anxious; says he is better, and that the pain in the head is less; has greater difficulty in speaking, and is certainly worse. Continue mercury.

20th.—Appears much the same; says he feels better; pupils both act to light; the right arm is paralyzed, but not the leg; the convulsions continue.

21st.—Convulsions not so frequent in occurrence, but continue for a greater length of time, and are more violent; he is not so drowsy; his countenance has improved, and he says he has less pain in the head; pulse 130; bowels open. Continue treatment.

22nd.—The convulsions continue very violent, but occur less frequently even than yesterday; his countenance has much improved; pupils act; pulse 120; bowels open; says he is better, but complains of his head.

23rd.—There is little alteration as regards the frequency and violence of the convulsions; he has the power of moving his arm, which was paralyzed on Wednesday; countenance continues good; pulse 120; bowels open; mouth beginning to get a little tender. Continue treatment.

24th.—Has had no fit since last night; appears much relieved; the pain in the head diminished; countenance good; bowels open; tongue cleaning; pulse 112; complains of his gums. Continue treatment. Apply cold lotion to the head. Has quite recovered the power of his arm; pulse 108; bowels open; appetite good. Continue the pills night and morning, instead of every sixth hour. Discontinue the application of the ointment.

26th.—Has passed a good night; no recurrence of the fits; pain in the head slight, and confined to the frontal region; bowels open; pulse 108. Mouth tender.

27th.—Says he is better; has but little pain in the head; tongue cleaning; pulse 112; bowels confined. Ordered, compound colocynth pill, ten grains, to be repeated if necessary. His bowels were relieved before the colocynth was given, therefore no purgative required.

28th.—Is progressing favourably.

June 3rd.—His gums are still tender, and he is generally much better. Ordered, mercury with chalk every other night, instead of night and morning.

7th.—Is much improved; has no pain in the head, or elsewhere; bowels regular; tongue clean, appetite good; pulse 90.

13th.—Appears and describes himself as feeling quite well; is rapidly gaining strength. To discontinue the pills altogether.

This lad recovered perfectly.

When the convulsive paroxysms occur at regular intervals, leaving the patient perfectly well in the intervals, they then constitute the disease which we call epilepsy.

I shall call your attention to this subject again, when I review the progress of our present patient's case, which I hope, for the credit of medical surgery, may prove satisfactory.

LECTURE XVI.

On Concussion of the Brain, Delirium Tremens, and Epilepsy.

Gentlemen,—The case that I have to call your attention to to-day is one of extreme interest. As has been said, "Good wine needs no bush," so may I say of this case, that it requires no introduction.

John W——, aged thirty-seven, omnibus conductor, admitted January 22, 1857, with concussion of the brain: habits intemperate, drinking beer and spirits throughout the whole day, but without getting positively drunk till the evening. When standing on the board at the back of the omnibus, which was in motion at the time, his strap gave way, and he fell with much force to the ground, striking the centre of the occiput. The blow must have been very severe. When admitted there was a swelling, about the size of an orange, at the seat of injury, from effusion under the scalp; but there was no fracture of the bone, or any evidence of fracture of the base of the skull; no bleeding from the ears, nose, or mouth. He was barely conscious, and could only be roused with difficulty so as to answer a simple question or two. His pulse was slow, small, and fluttering, and his skin cold. His pupils were not fixed, but answered to the stimulus of light.

The above description you will at once recognize as that of a case of simple, and not very severe, concussion of the brain. As there was no fracture or evidence of compression, or other symptom indicating the necessity of operative interference, I was not sent for, and I did not see him until the next morning. It may perhaps appear to you strange that with such a blow, the skull was not fractured, and that no blood-vessel was ruptured by the jar. As you advance in professional experience and anatomical knowledge, you will find, as a fact, that the skull is seldom fractured by a fall upon the head, unless the fall be from a great height, the vertex of the skull coming to the ground, and then fracture of the

base will follow. But in other instances, the blow is almost invariably received by some of those buttresses, some of those strong points of the skull, which nature has provided to protect the brain from ordinary injuries. If a man is pitched off his horse on his head when hunting, his skull is seldom fractured, unless the head strike a stone, stake, or other projecting body. But if his horse kick him when down, then the brain-case may be broken into.

The absence of extravasation of blood within the skull, either from laceration of the brain, or laceration of the blood-vessels of the meninges, in this case is, I believe, to be attributed to the age of the patient, and his general plethora at the time. If he had been an old man in an anæmic condition, the probability is that such a blow would inevitably have been followed by laceration of the brain, or some amount of extravasation. I say some amount of extravasation, because I have seen cases where there has been a mere smearing of blood over the surface of the brain; an extravasation not sufficient to produce compression, or the symptoms of compression, but sufficient to produce great irritation, and long-continued violent pain.

I have traced this morbid state in cases of apoplexy from disease, by its symptoms during life, until a post-mortem examination has revealed its positive condition.

I have lately had under my care a female servant, who was injured by a railway collision. She is fifty-three years of age, anæmic, and rather below par in every respect. At the time of the accident the symptoms of concussion were very slight. Her general powers were much depressed; the pulse feeble, and consciousness disturbed, but not obliterated. She had received a severe contusion over the right eye and forehead; she did not at first complain much of her head, but wished to be left quiet. She felt very sick, and vomited at the time. On the following day there were still no serious symptoms, and I did not see her again until two or three days after the accident, when the pulse, which had been gradually getting up, was then

from 100 to 120, and firm and throbbing. The countenance gradually became anxious. The treatment adopted was a purgative in the first instance, and cold applications to the head, and then a saline mixture. After two or three days, as her head was easier, but her pulse feeble and general powers depressed, we ventured to give a little ammonia and a grain of steel: even this small quantity increased the pain in the head, and the following day we abandoned it. From this time the case was treated antiphlogistically with calomel to salivation, repeated leeches, and cold lotions and ice to the head as long as the unnatural heat continued, which it did for four or five weeks, accompanied with sleeplessness, want of appetite, entire inability to read or think, feeling only tolerably comfortable when quiet; more than once complaining of a loud report and noises in the head.

This poor woman ultimately recovered, but she was under treatment about two months. Her memory is still feeble; she cannot walk upstairs without feeling giddy. She cannot read or write. If she walks out in the streets, she feels more or less lost; has some tremblings or weakness in the legs—some pricking feelings; pulse continues 90 to 100. Still sleepless—cannot get to sleep for hours, and one morning found herself sitting up in bed. She cannot therefore even now be considered perfectly well.

This case is a very peculiar one, and such as I have never seen except as the result of railway concussion. I do not, of course, mean to say that no other kind of violent collision might not produce the same result; I only mean that, in above thirty years' hospital experience, I do not remember a case exactly similar, but I have seen a corresponding train of symptoms follow concussion on a railway.

The peculiarity is the absence of severe symptoms of concussion, compression, or other signs of injury to the brain, at the time of the accident; the extreme, constant, and lasting heat of the head; the great, unintermittent, and unvarying pain of the head, unfollowed by

the excitement which accompanies inflammation of the pia mater and hemispherical ganglion, or the eclipse of the faculties which serous effusion invariably, though gradually, produces. I believe that in this case there was slight hæmorrhage on the surface of the brain, just smearing it with blood. There was enough to act as a foreign body—as an irritant, but not enough to produce compression; and there was enough to have produced inflammation, effusion, and death if our treatment had not been energetic and decided. Her general powers were feeble, so that over-depletion would have easily thrown her into a typhoid state, and less would have allowed inflammatory action to have ridden rampant over her brain. I never had the care of a case of injury to the brain in which I had more reason to believe that careful surgical treatment was the means of saving life. I attended the case with Mr. Skelding, of Euston Square, and I am much indebted to him for the judicious and accurate manner in which he managed the case between the intervals of our consultations.

The case in the hospital which we have to consider to-day affords a striking contrast to this poor woman; for as certainly as leeches, calomel, &c., saved her life, so certainly would these remedial agents have hurled the omnibus conductor into the grave.

We will now, then, continue the report:—

Hair to be cut close, and a cold lotion to the head; an aperient draught to be taken immediately.

If I had prescribed for this man on admission, I should have ordered a scruple of rhubarb and calomel, in preference to the aperient draught, for the latter merely acts on the large intestines, often producing only a watery evacuation, instead of stimulating the liver, and unloading the canal from the stomach to the anus.

23rd.—On being put to bed yesterday evening, his pulse shortly afterwards became stronger, and he appeared to sleep soundly and quietly.

In a case of concussion never be afraid of your

patient sleeping; the longer the better, if it is unaccompanied by stertor, or other symptoms of compression. You must look upon sleep, in these cases, as in many others, as Nature's soft nurse.

This morning he answers questions rationally; he has vomited considerably, but his bowels have not yet acted; pulse 88, good power, not hard; tongue coated with a white creamy fur; skin rather hot. Ordered by the house surgeon, one drachm of sulphate of magnesia, in water, immediately, and repeat if necessary; head to be shaved, and ice applied.

Evening.—He is restless, has jumped out of bed once or twice for no apparent reason, has not slept for the last twelve hours, is slightly delirious, and calls for beer; pulse intermittent.

24th, Noon.—He has not had much sleep; very restless and irritable; bowels have acted freely. When questioned, he answers in a collected manner; he states that he is better, and feels less pain in the head. The next minute his conduct and manner are irrational; he wants to get out of bed and go home, and talks foolishly. Tongue moist and creamy, and pulse rapid.

I now saw him for the first time, and was of course called upon to decide whether he was suffering from that inflammation of the brain which is a frequent sequence to severe concussion, or from incipient delirium tremens. The decision was a most important one, as the two states required a diametrically opposite course of treatment. After carefully considering all his symptoms, I came to the conclusion that it was delirium ebriosorum, the delirium of drunkards, that which is usually known as delirium tremens; I say usually known as delirium tremens, because you will sometimes find that the delirium e potû is confounded with delirium ebriosorum. The distinction is an important one. In the latter, in the delirium ebriosorum, I believe that the brain is in an anæmic condition. It is occasioned by the sudden deprivation of its accustomed stimulus; it comes on when a drunkard leaves off drinking. The other—the delirium e potû—occurs during the full influence of alcoholic drinks. It is a result of over-stimulation to the brain, which, through its agency, is congested and inflamed. It is a rare disease, compared with the delirium ebriosorum.

I will now endeavour to give you my reasons for

this conclusion, though the shades of all cerebral diseases run so much one into the other that it is very difficult to paint in words the distinct characters which ought and will guide you at the bedside, if you make good use of your time in the wards when in London. The main points are these: that in delirium tremens—and you will understand that in employing that term I now mean to confine it to the anæmic, the atonic form—there is, first, the absence of any heat in the head. There is no test so certain of the existence or absence of inflammation of the brain and its meninges as unnatural heat of the head. You must first compare the heat of the brain-case or skull with other parts of the head and face, as the ears and nose, next with the hands, trunk, and extremities, of course making allowance for the difference between covered and uncovered parts. Also observe accurately whether both sides of the head are alike. We have on the opposite side of the ward a very interesting case of injury to the skull, which I shall refer to again very soon, in which there is a difference in the heat of the two sides of the head. Next, the tongue. In true inflammation of the brain, I believe that the tongue is always dry and furred, not moist and creamy. The pulse rapid, and irregular in frequency and force, not hard and regular as it is usually at the commencement of an inflammatory attack, or slow and labouring as it is in the latter stages of disease of the brain.

But the manner and mental condition of the patient is the most conclusive. In delirium tremens, the amount of mental aberration varies very much: one minute he will talk in a wild, excited, and silly manner, and the next he will answer quite rationally. It appears as if the brain recovered for a short time its normal condition under the excitement occasioned by seeing a fresh face by the bedside. In a case of inflammation of the brain, there is no such cessation of symptoms; the mental excitement and aberration of intellect is continuous: the delirious wanderings may vary in intensity, but they are never absent.

In delirium tremens, as the name implies, there is always more or less tremor. It may be observed in the tongue, legs, eyeballs, and extremities. There is a busy way about the patient, if I may so express it; he is always thinking of his business, fancying he is at his work, talking to companions, &c. There is usually an entire freedom from pain in the head, which is a marked symptom in the early stages of inflammation of the brain.

Having, then, come to the conclusion, notwithstanding the severe blow on the head which my patient had received two days previously, notwithstanding the symptoms of concussion of the brain at the time of the accident, that I had to treat an anæmic, not a hyperæmic, condition of that organ, I ventured to prescribe one drachm of liquor of opium, immediately, to be repeated in six hours if he did not sleep. Tincture of opium, ten minims; aromatic spirit of ammonia, half a drachm; camphor mixture, one drachm, every four hours. Porter, one pint. We will continue the report:—

Evening.—Before, and for some short time after, taking the opium, he became more restless and impatient, frequently getting out of bed, &c. The delirium assumed a wandering character; he fancied he saw things in his bed, and that he was busy in his accustomed employment. After about three hours he fell into a sound sleep.

25th.—He has slept soundly for several hours, answers in a rational and collected manner, and seems altogether better.

11 P.M.—Has had a fit of an epileptic character, with much foaming at the mouth, rigidity of the muscles, and clenching of the hands; after which he was bathed in a copious perspiration. His pulse was 84, irregular and intermittent; his tongue moist, but coated with a white creamy fur. He soon became conscious; but after being raised in bed, and having taken a powder of calomel and rhubarb which had been ordered in the morning, he had another epileptic seizure, with nearly the same symptoms, but with more grinding of the teeth and contraction of the pupils.

26th, 10 A.M.—Had another fit about half-past one; is now more composed. The irregular intermitting character of the pulse is much more marked after each fit, but no cardiac affection is perceptible by the stethoscope.

I saw him this day soon after one o'clock; he had a

fit while I was by his bedside, and there was no mistake as to its true epileptic character.

Here, gentlemen, we had to combat with a fearful complication of his maladies. Epilepsy, that strange mysterious disease! How little do we know of its proximate or ultimate cause, and consequently how empirical is our treatment of it! There is, however, one point in its pathology regarding which I have no doubt—namely, that it is essentially a disease of debility, and that all blood-letting does harm. In thus decidedly stating this opinion, I ought, however, to observe that some physicians of great practical experience do not agree with me, and I have heard them relate cases in which they consider that local depletion has been attended with benefit in epilepsy. Of course there is no rule without an exception, and every man must use his judgment in the treatment of each individual case. I think it necessary to warn you against blood-letting in epilepsy, because, unless you approach a case of epilepsy with this impression regarding depletion, you would be tempted to employ it. At the time of an epileptic fit, and for some time after that, there is every indication of congestion of the brain, varying in intensity in different patients and in different attacks of the same patient; but symptoms of congestion of the brain are never absent altogether. If, therefore, you see a case immediately after the convulsive stage of the fit has passed off, you will be tempted to pull out your lancet and relieve the struggling and oppressed brain of the load which bears upon it; and with this little instrument you may relieve it for the time, but with the certainty—at least, so my experience has taught me—of causing an earlier repetition of the fits, with increased severity.

I remember, some years ago, being tempted, from the signs which I have detailed to you, to use the lancet. My patient was a stout, strong-built, plethoric man, in other respects apparently in rude health; a man to whom you would have thought the abstraction of a little blood would be no loss, but a gain. It was not

so; the blood-letting was followed by a rapid succession of attacks, such as he had not previously been liable to. This gentleman suffered from the disease for many years subsequently, but ultimately recovered, taking the oxide of silver; and he has remained well for the last ten years.

I must, however, warn you not to confound the convulsions which are caused by laceration of the brain with those of true epilepsy. If you have once watched a case of epilepsy, you are not likely to confuse the two; and therefore I say, take every opportunity of watching this complaint that offers itself while you are about the hospital or elsewhere. The convulsions arising from lacerated brain are more like a continued disease than those of epilepsy, the spasmodic contractions of the muscles are not usually so violent, but more continuous; they are more like the flickering of summer lightning than the sudden discharge of one thunder cloud; they are usually confined to the same part of the body—one arm or one leg on the same side of the body, or even one side of the face.

Between true epileptic fits, if they do not succeed each other very rapidly, the brain recovers itself, and the intellect appears natural. If, however, the convulsions arise from laceration of the brain, then the cloud never entirely passes off; consciousness throughout is more or less obliterated. Sometimes, it is true, the patient may be roused so as to answer some simple questions, even after extensive injury of the brain; but such exertions are evidently the result of great effort, and the mental obscuration immediately returns.

In laceration of the brain you will generally find the pupils of the eyes unequal; at first the pupil opposite the injury is unnaturally contracted. It is smaller than the other; neither does it act so readily. As the disease of the brain advances, then the pupil dilates, till at last the iris becoming quite paralyzed, the elastic ciliary ligament obtains the mastery, and the protecting curtain of the eye no longer obeys the nervous system. I do not mean to assert the pupils are never found unequally

dilated in epilepsy during the attack, but it is not usual.

With these opinions regarding the atonic condition of the nervous system in epilepsy, I had no difficulty in continuing the same plan of treatment I had commenced for delirium tremens, adding to it that medicine from which I have seen more benefit accrue than any other in the treatment of epilepsy, namely, the oxide of silver.

We will now return to Mr. Sprakeling's report of the case :—

26th, 9 P.M.—From half-past twelve to the present time he has had twenty epileptic seizures; they have been much of the same nature and duration; the face becomes rather livid towards the end of each attack. There is no evidence of paralysis during a fit; he lies as if in a sound sleep. His face is flushed, but there is no particular heat of skin of the face or head. The pupils act on the stimulus of light, though sluggishly: pulse rather fuller, about 88, and compressible.

27th.—Is conscious to-day when spoken to, but his answers are scarcely rational. He jumps out of bed occasionally, and talks a good deal; has had two fits during the day.

28th.—Improving daily. When questioned, he answers rationally at first, but afterwards he talks in a delirious rambling manner about his occupation; his pulse is 68, small and weak. There is no heat of skin, though his face looks flushed; tongue sore, but not coated; bowels open. Ordered gin, six ounces in the twenty-four hours, and two pints of ale, this having been his usual drink; full diet, with mutton chop. To repeat the mixture of ammonia and opium previously prescribed. Only one fit during this day.

30th.—Answers questions more rationally; pulse soft and quiet; not unnatural heat of skin; bowels confined. Compound rhubarb pill every night.

Feb. 6th.—Improving daily. States that he feels much better. Allowed to leave his bed. He answers questions correctly, but there is still the busy restless manner of the delirium ebriosorum that is not quite satisfactory; bowels regular; appetite good; pulse 84, small and weak.

12th.—The same diet, stimulants, and medicine have been continued; his manner is more rational and collected. He wishes to leave the hospital, but I advised him to stay a little longer, and he consented.

19th.—He has been gradually and steadily improving up to the present time. He has had no return of the epilepsy since the 25th of January. His conversation and manner are now quite rational. He states that he is entirely free from pain in his head. Under

these circumstances I saw no reason to detain him longer in the hospital. He left it this day quite well. How long he will remain so depends upon himself. If he commences his old intemperate habits, he will very soon be ill again; but, if not, I see no reason to apprehend a relapse.

I do not remember a more interesting case, practically, physiologically, and morally. It reminds one of the value of the injunction, "Be temperate in all things."

LECTURE XVII.

On Paralysis.

Gentlemen, — Two cases of paraplegia, or palsy of the lower half of the body, now under my care in this hospital, enable me to call your attention in this course of clinical lectures to the important subject of paralysis. Paralysis is a term much used out of the profession, and but little understood. It is employed by non-professional persons to designate a cause, not an effect. It is therefore possible that many of you who are now only commencing your studies, still in the embryonic condition of medical pupilage, may have the same vague ideas of the meaning of the term; and none, I am sure, can know too much, think too deeply, or observe too closely, all that relates to this important subject. The practitioner who can diagnose correctly the causes of paralysis in its early states, will often save both the life and the intellect of his patient; the man who mistakes it often sacrifices both to his ignorance. The diagnosis and treatment of paralysis falls alike to the physician, the surgeon, and the general practitioner. Woe to you, my young friends, if you do not avail yourselves of the opportunities which the large wards of this noble hospital afford! In a clinical lecture I shall not, of course, enter into a minute disquisition on paralysis, but I must say a few words for the instruction of my younger hearers.

Paralysis may be general or local. Its proximate or immediate cause may be pressure on some portion of the nervous system, or disorganization of it. The ultimate cause may be local violence, such as a fracture of the skull or of the vertebral column, effusion of blood, as in apoplexy, or a mere *coup de vent*, or blast of cold air on the face, inducing facial paralysis, or

palsy of the portio dura. I have lately had two well marked cases of local paralysis from a railway accident. In the one there was a deep lacerated wound above the eye, which divided the supra-orbital nerve, and the upper part of the forehead was quite numb; there was entire loss of sensation in that portion of skin which is supplied in a normal state by that nerve. In the other case the auricular nerve, one of the sensory branches of the fifth, was torn through under the skin without any external wound: the skin covering that side of the head was devoid of sensation.

That form of blindness which the ophthalmic surgeon knows under the title of amaurosis, and the public by the name of gutta serena, is a palsy of the optic nerve, sometimes induced by pressure in the globe of the eye, sometimes by pressure on the nerve in its course from the brain, and sometimes by disease of the brain itself. And so I might continue for the next half-hour to give you illustrations of individual forms of paralysis, but, trusting that I have said enough to make you understand the meaning of the term, I shall advance at once to special instances of this disease, in the hope of assisting you to distinguish some of its most important and most frequently recurring forms. I wish to assist you especially to distinguish between paralysis arising from disease or injury of the spinal cord, and that from disease or injury of the brain. Now, many of the older students will perhaps think this a most easy matter—that a man must be a fool who cannot do so at once; but I assure you that this is a mistake.

In the early stages of paralysis it is often by no means easy to do so. I have lately seen two cases in private practice, in which it was difficult to diagnose the seat of the disease. In the one, a case of spinal paralysis, the disease presented so many of the characters of the general palsy of the insane, that a very intelligent practitioner was inclined to regard it as one of the instances of that sad, and I believe irremediable, disease. The other, which has since proved to be a complete case of cerebral palsy, was in its early stages

supposed to be a true spinal affection. In the first case the patient is recovering; in the other, he is sinking into a state of hopeless dementia. As I shall relate the first case at length, I will not say more about it at present. Of the case of general paralysis and dementia I will say a few words.

The subject of it is a man who was once as strong and as healthy as any one of you are; but his business was an exciting one, requiring great energy, and tasking the brain to its utmost. In order to supply, and, as he believed, by necessity, the waste which his mental and bodily work created, he used to take a large quantity of wine, thus adding fuel to the fire which was kindled within him. I do not mean that he was intemperate in a worldly sense—for a man may take a great deal more of stimulants than is beneficial to his organization without exhibiting any signs of injury at the time; but of this be certain, that if you want to keep your brains in a state of healthful mental activity, you will take very little. The country gentleman and farmer of the old school might drink their wine, their brandy, and their beer with comparative impunity: for their brains were dormant, and these stimulants were the only stimulus their brains received; but woe to the man of intellect, the man who has to live by the toil of his brain, if he attempts to supply by fermented liquors the loss occasioned by mental labour! He may feel better for a time, but he is sure to sink more rapidly in the end. There was another habit, also, in which my patient indulged, and which I cannot but regard as the curse of the present age. I mean smoking. Now, don't be frightened, my young friends: I am not going to give a sermon against smoking—that is not my business; but it is my business to point out to you all the various and insidious causes of general paralysis, and smoking is one of them. I know of no *single* vice which does so much harm as smoking. It is a snare and a delusion. It soothes the excited nervous system at the time, to render it more irritable and more feeble ultimately. It is like opium in that respect; and if you want to know

all the wretchedness which this drug can produce, you should read the "Confessions of an Opium Eater." I can always distinguish by his complexion a man who smokes much; and the appearance which the fauces present is an unerring guide to the habits of such a man. I believe that cases of general paralysis are more frequent in England than they used to be, and I suspect that smoking tobacco is one of the causes of that increase.

But I must not detain you any longer from the immediate subject of this clinique. The two cases now in the hospital that I am about to relate, from the notes of my dresser, Mr. Sprakeling, are both cases of spinal paralysis, the one induced by the pressure of an angular curvature of the dorsal portion of the vertebral canal, the other by a blow on the lumbar portion.

William W——, aged thirty-two, compositor, was admitted into Abraham's Ward on the 17th of June, 1856. He is an unhealthy, strumous-looking man, who states that he never noticed any projection or curvature of the spine till six months ago, but since that time has noticed it gradually coming on.

Let me here remark that this angular curvature is almost always a strumous disease, commencing in the cancellated structure of the bodies of the vertebræ. If you look at this preparation, you will see exactly how it occurs. The body of one or more of the vertebræ being absorbed, the bones above and below fall forward, so as to meet and supply the vacancy. If it were not for this arrangement, our patient's life would not be worth an hour's purchase; for the beautiful protective apparatus of the spinal cord being deficient, its delicate and soft substance would be torn in the first movement that was made. Instead of being slightly pressed, as at present, it would be divided. The angle of the back is the proof that the column is not separated in front.

About six weeks ago, he first began to be sensible of some alteration of temperature in the lower limbs, with numbness and occasional twitchings and rigidity of them. He then began to lose power in them, and for the last three weeks they have been totally paralyzed. At present, there appears to be an angular curvature of the spine in the dorsal region; he seems to have lost the use of the

lower extremities entirely, but, with the exception of the feet, there is no very perceptible coldness; he has, however, lost almost entirely the sensibility of them. There are occasional spasmodic twitchings and startings of the limbs, but there does not appear to be any tightness over the chest, or dyspnœa. The bowels are costive, but he has not lost control of the sphincters. He has, at times, some difficulty in micturating, with frequent desire to do so, but inability properly to empty his bladder. There appears at present considerable tympanites, but no great distension of the bladder. His appetite is deficient; urine clear and unsedimentous; pulse 92, of considerable power; tongue clean. Ordered mercury with chalk, two grains every night. A moxa on each side of the spine.

Believing that the cause of the paralysis in this case is the pressure caused by affusion into the canal at the seat of the angular curvature, I have ordered those remedies which I think are more likely to promote the absorption of the offending matter. He has never injured the spine from a blow or a fall.

June 25th.—States that he has felt some tingling in the toes and foot, but there is no increase of sensibility in the paralyzed limbs. He is suffering from indigestion. Dyspeptic mixture, one ounce to be taken twice a day.

27th.—There seems to be a slight increase of sensibility in the left foot and leg. He suffers a good deal from tympanites. The bowels are only relieved by aperients.

July 5th.—There is still a good deal of tympanites, and he complains, and has complained for this last week, of pain in the right hypochondriac region, where there is some tenderness on pressure. The bowels are relaxed. There is a decided increase of sensation in both legs. Pulse small and feeble; tongue clean. Aspect rather improved, as also in his appetite.

11th.—Complained on the 9th of a good deal of pain in the bowels and in the right hypochondrium. Ordered iodide of mercury, half a grain, opium, half a grain, every night. To-day he seems somewhat relieved from the pain, but complains of a good deal of general weakness. Pulse 84, weak; tongue clean.

19th.—He does not complain of so much pain in the right hypochondrium or in the bowels. There has been no further improvement in sensation; there are dull aching pains now and then in the legs, with spasmodic startings of them.

I regard these aching pains as a favourable sign; they always precede the natural sensation in the part. I dare say that some of you who are working hard at your profession all day in the hospital have a nap after-

wards, previous to commencing your evening work. Occasionally, one of your legs falls asleep, as the ordinary expression is, and it does not awake with the rest of the body. Your leg, in fact, is numb and powerless from pressure on the nerves, usually the popliteal. Now, you must all have remarked that before the natural sensation returns, a most unnatural and painful sensation precedes it—a tingling, or "pins and needles," as we call it. This, on a small scale, and acting very quickly in your persons, is identical with that which is going on more slowly, but I believe as surely, in this patient.

The tongue is clean. The moxa having healed, a fresh one was made to-day.

26th.—He continues much the same.

31st.—Much in the same state.

Aug. 3rd.—The moxa repeated. Ordered mixed diet.

21st.—He has improved but slightly. He states that he often feels pricking sensations and startings in the limbs. Sensation has slightly increased, but there is no power of locomotion. His bowels have lately been much confined, but he has experienced considerable relief, and has felt himself better, after an aperient taken yesterday. He states also that his appetite has much improved, and he feels altogether stronger since he has taken the cod-liver oil. Pulse 84, firmer.

26th.—He thinks that sensation in his legs has further increased. Ordered mercury with chalk, two grains every night.

Sept. 20th.—Repeat moxa. Compound rhubarb pill, five grains every night.

Oct. 8th.—Within this last fortnight he fancies that there has been a diminution of sensation. Up to this time, the paralytic symptoms have remained much in the same state. At present he has very little feeling in the right leg when touched, sensation appearing to be more perfect in the left. His general health, up to the last three or four days, has improved; he is now, however, complaining of being weak and low-spirited; pulse 76, small and weak; bowels are now confined. To take, iodide of mercury, half a grain, every night.

14th.—The paralytic symptoms remain much in the same state. Sensation varies a good deal, being more perfect on one day than on another, but the power of locomotion has not increased. He is often troubled to retain his urine. The state of the bowels varies, being sometimes relaxed, and sometimes confined; pulse small and weak.

Nov. 7th.—Still improving.

I have very great hopes that this man will perfectly

recover. It may require some faith on your part to believe me when I say that those limbs which are now so senseless and motionless will again support his body, obey his commands, and be recognized again by their sensation as a part of his living structure. I have seen and published the recovery of cases quite as unpromising as this. It may take some months yet to accomplish it, but happily, in a hospital, we are not liable to be cut off in our course of treatment by the impatience of the patient or his friends.

In the next case we shall find the improvement more rapid.

Eleanor V——, aged fifty, housekeeper, admitted into Queen's Ward, August 19th, 1856. She is a hearty, strong woman, of florid complexion, who states that she has occasionally suffered from rheumatism, and had an attack of fever twelve years ago, but, with these exceptions, had always enjoyed good health up to her present illness. She states that her mother and three sisters died consumptive, but her father was always a healthy man, and died at the age of seventy-three years. She ascribes her present condition to a fall she had downstairs two years ago, whereby she hurt "the lower part of her back." Directly after this fall she felt total loss of power in the legs, with numbness, which lasted about an hour, after which she was able to get up and walk about. Soon afterwards, however, she noticed great coldness of the lower extremities, with loss of power in them, which symptoms have gradually increased up to the present time. There is now some coldness of the feet, but not of the legs. There is great loss of power in the legs, and a considerable loss of sensation, but no numbness. She can walk, but is obliged to be supported to prevent her falling. She suffers also from startings and prickings in the legs, and when she moves them, she states that she feels pain in the back. There is no abnormal curvature or malformation of the spine, but she experiences considerable pain when the second or third lower lumbar vertebræ are struck. There is slight incontinence of urine, but her bowels are regular. Her general health and assimilative powers are good. Pulse 120; tongue slightly coated; she has occasional rigors. There is a small ulcer on the left leg, about the size of a sixpence, with a broad red circumference. She was ordered to take two grains of calomel and half a grain of opium every night. Moxa to be made on the side of the spine; water dressing to be applied to the ulcer.

Aug. 27th.—She thinks that she can move her legs better, and sensation in them has increased; her gums are sore from the mercury. Omit pill.

Sept. 3rd.—She has been gradually improving. She can now stand up for a considerable time, and without pain. The issue

continues to discharge well. She says she feels herself getting stronger, and can walk from one end of the ward to the other, without support. Bowels regular; tongue clean; pulse 98, tolerably firm; appetite good.

11th.—Still improving. The sensation in her legs has returned perfectly within the last three days, and she can stand up for a longer time than she could. Appetite good; bowels regular.

13th.—She says that she can feel a sensible improvement in herself every day. Yesterday she could stand up for a much longer time than usual. She is very comfortable and cheerful.

19th.—Improving daily. Yesterday she was able to walk to the end of the ward and back again without any assistance. Feels very well, but rather weak.

24th, Wednesday.—Last Saturday she began to sit up all day, and has continued to do so till the present time; but she is not so well to-day, and is weaker in the limbs. She was ordered to keep her bed again, to have another issue made in her back, and to take one ounce and a half of iodine mixture twice a day.

30th.—Much the same. She has not been out of bed since the issue was made, and feels out of health from having caught cold. Tongue rather furred; bowels regular. Ordered one grain of iodide of mercury and half a grain of opium every night.

Oct. 7th.—She has recovered from the cold, and feels considerably better. Tongue cleaner.

13th.—The gums are now swollen and tender. She can now raise her legs up in bed, whilst lying in the recumbent position, which she was unable to do on her admission. She also, this morning, walked across the ward without assistance. She is able to retain the urine, and the bowels act regularly. Sensation in the legs is perfect. She is not troubled with prickings or startings in the legs now. Pulse full; appetite good.

One peculiarity in this case—and it is a peculiarity of great importance in a practical point of view—is the length of time which elapsed between the occurrence of the injury and the paralytic symptoms—nearly two years. Let this fact warn you, when you are engaged in private practice, to give a very guarded prognosis of the consequences which may ensue from a blow on the spine, and let it remind you to inquire particularly as to the antecedents in a case of paraplegia, where the causes are obscure and the diagnosis consequently difficult. This again brings to my mind the case that I referred to at the commencement of the lecture, and which I wish to relate to you in connection with this subject; but I find by the time which has elapsed I must reserve it for another time.

LECTURE XVIII.

On Paralysis.—*Continued.*

In my last lecture I referred to a case of paralysis which I considered so instructive that I feel no apology is necessary for again introducing it to your notice, although it has not occupied a bed in the hospital. The diagnosis was obscure, and at first there was no palpable cause of the paralysis: the history gave us the clue. This history is peculiarly instructive. It will show how an injury, which at the time of its occurrence was thought lightly of, was ultimately the cause of much suffering and distress. It will be a warning to you to treat seriously all severe blows on the spine, and to give a guarded prognosis as to the future. It shows also that the advent of serious symptoms in such cases is very varied, and sometimes so obscure that the real nature of the disease may easily be mistaken and misunderstood.

H. P——, a stout, tall, muscular man, aged fifty-six, of regular, temperate habits, in comfortable circumstances, and free from any serious causes of anxiety, first consulted me, by the advice of his usual medical attendant, Mr. Carpenter of Croydon, on the 24th of January, 1856, and from himself I principally obtained the following history:—He has suffered, for the last eight or nine years, from a relaxed condition of the mucous membrane, at times affecting the bowels, but more especially the throat and bronchial membrane. In 1851 there was a great deal of general debility and rheumatism, and he was then much benefited by the baths at Buxton. In 1852 he was still out of health, and took riding exercise. In September of the same year, when near his own door, and sitting carelessly on his horse, the animal suddenly started, and threw him on the ground, striking the loins violently. He rose, almost at once, and, declaring himself but little hurt, walked home. But after an hour or two he experienced violent pain in the loins, lower part of the back, and stomach; and he was lifted into bed with difficulty. For

a few days the lower limbs were almost powerless, and slightly numb. His bowels would not act without medicine, and appeared to him to be partially paralyzed; his medical attendant at the time told him it was so. Frequent use of the hip-bath restored him rapidly, and within a fortnight he resumed his usual active habits, feeling no effect whatever from the accident. Indeed, so complete apparently was the recovery that he forgot the accident, and never attributed his present condition in any way to its occurrence.

About a year after this he stumbled in going downstairs, missed his footing, but recovered himself by great muscular exertion. He felt the jar of this very much at the time, and I have no doubt of this second accident having contributed to the mischief from which he afterwards suffered.

The next circumstance in his life that should be referred to as possibly bearing on his symptoms is, that he was called upon, by the death of his managing partner, to take a very active share in his business, both mentally and physically; in fact, more work was thrown upon the brain than it had been accustomed to. In addition to this, he moved from a healthy, airy situation to a damp and confined locality, and with it came a total change of habits as to exercise and recreation. He worked hard for rather more than two years, when his health began to give way; that was about June, 1855. He became at times restless, excited, and unnaturally irritable, yet refusing to take any relaxation; very sensitive to sudden sounds or jolts in a carriage, however slight, and was out of spirits about his own health.

August, 1855.—He complained of pain and stiffness in the neck, which was attributed to a cold caught by sitting in a draught, and was treated as such with lotions and embrocations as for a stiff neck. The pain fluctuated, but neither it nor the stiffness ever entirely subsided. Flying rheumatic pains attacked him, and his whole state of health and spirits gave great anxiety to his family. Not yielding to the medical treatment which was adopted, he very reluctantly agreed to go to Brighton for a week. With the first day's rest, he seemed to break down. The rheumatic pains about the back, chest, and limbs became very severe, the stiffness in the neck increased, and in about a fortnight afterwards he became subject to spasms round the loins, which he described as clipping him, and was attributed to a loaded state of the colon. The bowels were sluggish and flatulent. The spasms abated a little after a course of aperient medicine, but they never subsided till towards the end of July, 1856. The rheumatic pains ceased in December, but the limbs became more and more powerless, and the stiffness of the neck increased. A blister was applied, which relieved him for a few days only. Mustard poultices were tried in the region of the spasms, and several embrocations, some containing chloroform, but without any effect. The bowels never acted without medicine, and even then they appeared to him to act without any control or will of his own, but as if the fæces came away simply by their own weight. The urine at this time became turbid. The sleep at night

was very disturbed from pain, and was accompanied by profuse perspirations, which became very offensive.

A slight rally enabled Mr. P—— to leave Brighton, and return home, but he then became rapidly worse, all the above named symptoms increasing in intensity; the countenance became drawn, the complexion livid, the look when asleep very distressing, the lips and eyelids unclosed and drawn as in a dying man. His intellect was as clear as ever, but he could not attend to business without producing headache, flushing of the face, and a quickened pulse, and when over, immediate sleep, as if from exhaustion. At this time, though usually extremely cheerful, he could not bear the sound of more than one voice, and anything like a discussion was most distressing to him.

Up to this period, the remedies were directed to his general health. A pill containing a small quantity of mercury, to act upon the liver, hydriodate of potash after every meal, cod-liver oil and quinine, and a sedative at night of aconite and cajeput oil. Mr. Carpenter, who saw him at this time (Dec. 29th), has thus described his condition:—

As I entered the room, he rose, by the assistance of his hands upon the sofa, and jerked himself into the erect posture; he then walked forward a step or two, slowly and steadily, as if balancing himself upon his legs, with the feet somewhat separated. Whilst speaking to him, he had a spasm, which caused him to exclaim. This he referred to his sides. When he sat down again, it was with a sudden drop, and if he wished to lie down on the sofa, he was obliged to raise his legs into the horizontal posture by means of his hands, or by his attendant's assistance. When he had been in the recumbent posture for a short time, his limbs became stiff, as if the joints were rusty, and he was obliged to have them moved before he could use them himself. His nights were disturbed with frequent spasms, some of them producing a complete shriek. They were increased if he tried to lie on his side, especially on the right. I also noticed at this time a certain degree of tremulousness in his speech, with a certain amount of restlessness, which, after a few days of careful watching, led me to fear the supervention of general paralysis. Every unfavourable symptom was aggravated by any exercise of the mind, and the least attention to business was followed by a greater want of power. His flesh felt firm, and the pulse was quite regular and steady, about 74; tongue clean; skin moist.

Mr. Carpenter, in continuation, remarked, "There was now and then sudden loss of power in the right leg and arm, which soon passed off, but it left a weakness and numbness for some time."

It was about this time that I was first called in by the earnest wish of the gentlemen in attendance, for neither the patient nor his wife, who is a remarkably intelligent woman, were at all alarmed by these symptoms. They

regarded them as simple indications of disturbed digestive organs, and rheumatism, and as they have told me since, that when Mr. C—— first hinted at paralysis, they thought it was the error of a young practitioner. Now, however, they are aware how much they owe to his careful observation.

When I first saw this case I found it very difficult to determine in what portion of the nervous system was the disease on which the paralysis depended. There was much that pointed to the brain as the seat of the disease—viz., the unnatural irritability, and inability to attend to business; but these symptoms, as I have already mentioned, I have often seen accompanying disease and disturbance of the spinal cord, especially in its early stages. The spinal cord is never seriously affected without the brain sympathizing.

The hesitation in his speech, and the manner of speaking, was not unnatural to him, though, if new, it might have been considered indicative of disease. The paralytic affection being more marked on the right side of the body was in itself very suggestive of disease on one side; brain hemiplegic.

To those of my hearers who are young in the profession, I may observe that, if we have disease on the left side of the brain, so certainly do we have paralysis on the opposite side of the body, and *vice versâ*. The anatomical reason for this you will soon discover in the decussation of the motor and sensory tracts in the medulla oblongata. But, my friends, you must not regard such a sign as deciding the question. You may have the disease so limited to one side of the spinal cord, and to the nerves of one side of the body, that hemiplegia may exist without cerebral disease; and such, I am happy to say, proved to be the case in this instance.

You will find, at page 88, an interesting case of spinal disease, illustrating the sympathy of the brain with the spinal cord.

The cause of this hemiplegia appeared demonstrated a few days afterwards in the shape of a large swelling

extending down the right side of the vertebral column, especially in the lumbar region. The history of the case also indicated the spinal cord and its nerves as the seat of mischief. We could not but remember that, at the time of the first accident, he had, though only for a short time, the same amount of paralysis. Having, then, determined that the lesion was of the spinal cord, not of the brain, we still had to determine whether the spinal cord was affected secondarily, through an injury or disease of the bones and intervertebral substance, or through some disease of the ligaments. You have already observed, in the instance of the poor fellow whose case I related in my last lecture, how sensitive the spine is over the seat of disease, and I know no deviation from this rule. In a doubtful case, where there is no deformity to guide you to the seat of the disease, the locality is almost invariably detected by tapping the spine from the head to the tail. This should be done with great care. In some the diseased spot is exquisitely tender, and in all pain, or at least a jarring sensation, is perceived on reaching it. But in this case no amount of tapping over the bones of the vertebra elicited the slightest painful sensation.

The next point to decide was, the condition of the ligaments. This was tested by requiring our patient to twist his spine himself; or, in other words, to put first one set of ligaments on the stretch, and then another. These movements immediately gave him pain, more especially in the lumbar region. He could not rotate the upper part of the body on the lower without enduring, not merely pain, but sometimes positive spasm of the diaphragm, sometimes cramps in the glutei muscles and sometimes in the psoas. Pressure on the right side of the spinous processes of the eighth dorsal vertebra, where he said the spasm seemed to spring from, also was distressing to him.

In addition to the symptoms of paralysis which have been already mentioned, I must not omit to describe his condition in bed. He was so utterly unable to turn himself over, or to raise himself from the recumbent

position, without assistance, that a naval friend contrived a system of ropes and pulleys, by which his wife was able to hoist him up without assistance.

Having, then, decided on the seat of the disease, we had next to consider the extent and cause of the lesion. We could not but remember the accident in seeking for a cause. The paralysis which existed at that time, though very evanescent, was identical in extent and character. Still it was strange that it did not reappear earlier. The rheumatic diathesis served as an explanation to much which would otherwise have been mysterious. You must all know that if any man who has had a sprain or an injury to a joint is attacked with rheumatism, it is sure to find out the injured part, and first locate itself there. And so I believe in this case, which we now regarded as one of rheumatic inflammation of the ligaments of the spine causing some effusion into the vertebral canal, and consequently pressure either on the cord itself, or, more probably, on the nerves in their exit. The swelling on the right side of the spine confirmed this view. It was the serous effusion which we see always taking place in the neighbourhood of joints suffering from disease of ligaments or cartilages. We have two or three good illustrations of this fact in the hospital, more particularly of the knee-joint. The swelling is not caused by the enlargement of the tissues which are inflamed, but by serous infiltration of the cellular tissue which surrounds the joint. It was upon this view of the case that I made a deep incision through this swelling down to the spine; and the relief afforded by this "stab in the back," as my friend called it, was immense. From that time the improvement in his paralytic symptoms may be first dated. But in explaining the pathology of the case, I am forestalling my account of our treatment.

His urine was loaded with lithates, and was evacuated easily; the action from the bowels was still leaden and scybalous, and only procured by constant purgatives and enemata. There were also frequent feelings of faintness, which induced him to take freely of stimulants. On examining the action of the ribs, it was found

that they did not move freely, and that respiration was in a great measure performed by the diaphragm, whilst the stethoscope did not detect anything abnormal in the lungs or heart. The first medicine employed was the iodide of potassium, but without much improvement. Strychnine was next given in small doses, in compliance with the suggestion of one of his former attendants, but for only a few days, as it seemed to be prejudicial.

On the 26th of January the caustic potash was applied to the neighbourhood of the eighth dorsal vertebra, and a slough, about the size of a florin, was the result; at the same time, hyoscyamus pill, four grains, with compound extract of colocynth, one grain, was given every night, and an occasional calomel and scammony pill as an aperient. The slough was more than nine weeks in separating. About the same period, also, attention was paid to his position whilst in the recumbent posture, and he found great comfort from one of Alderman's prone couches. The quantity of stimulants was much diminished; claret was substituted for the Spanish wines and beer. Under this plan of treatment the spasms became less frequent, the loss of power in the right side not so evident, and the power of voluntary expulsion from the rectum returned, the bowels acting therefore more regularly.

Feb. 29th.—The tongue, mouth, and throat presented several little ulcers, which teased him, and somewhat increased his distaste for food, although he still ate heartily. His medicine was now changed for a short time for the nitro-muriatic acid; but on the 3rd of March, as there was no improvement of his paralysis, the bichloride of mercury was given, whilst the compound iodine ointment was freely applied all over the back, especially upon the now considerably increased enlargement on the right side of the vertebral column. About this time he had a frequent hard and straining cough, with the occasional expectoration of a teaspoonful of blood. No source of this hæmorrhage could be detected by stethoscopic examination; we therefore concluded that it came from some ulcer in the pharynx, of which we could see several in the throat. A soothing cough mixture was prescribed for this, and in a short time it subsided, as the ulcers healed, and it has never returned.

March 11th.—The first issue being nearly healed, a second application of the potassa fusa was made a little to the right side of the sixth cervical vertebra. The slough from this separated much more rapidly than on the previous occasion, at the same time the gums began to show evidence of mercurial action, and his general condition improved very much.

19th.—We ordered one grain of iodide of mercury, and this was continued until May 28th, the gums being kept slightly tender. Aperients were given occasionally when the bowels required them.

The rectum had now completely recovered its power, and his rest at night was very satisfactory. After the 5th of April, the back was painted with iodine regularly, so as to remove the cuticle frequently, and the potassa fusa applied for the last time to the lowest issue.

About the end of April he began to complain rather more of the pains in his neck and back of the head, principally indicating the edges of the trapezius muscle. He also suffered more frequently from cramps of the thigh and glutei muscles. About this time swellings took place on the sternum, and over the sterno-clavicular and costal articulations, soft and fluctuating, evidently periosteal, not painful, but tender to the touch, and evidently still more interfering with the movements of the thorax. We combated the disease of the spine by the application of blisters to the nape of the neck, and very stimulating embrocations. The power of the legs kept gradually and more rapidly increasing, and with the relief he became more cheerful and more active.

The mercury was omitted on the 28th of May, and the guaiacum mixture with colchicum given three times daily; belladonna and opium freely rubbed in between the shoulders; occasional blisters applied to the chest, and at times a brisk purgative given. The improvement continued without any interruption, except that he suffered rather more pain with the changes of weather; but he was now able to take a good deal of exercise, and he walked without any appearance of paralysis.

Early in July, he went to Buxton, but he did not derive much benefit from the baths on this occasion. Since he returned home, he has, however, been gradually improving, and has evidently derived benefit from the lemon-juice which he has been taking since his return. In fact, he may now be considered convalescent as far as the paralysis is concerned, and the rheumatic poison is fast abandoning its varied position, so that in a short time I think the whole territory will be pronounced free from disease.

This gentleman has been in perfect health ever since.

The practical instruction which you derive from this case is the fact that all cases of paralysis are not incurable; your success, however, depends on a correct diagnosis, for there can be no doubt that, if this case had been treated as one of those sad cases of general paralysis accompanied with the usual debility, by means of tonics, &c., the disease would have been aggravated, and perhaps incurable. If the paralysis had been entirely ignored, and the case treated as one of congestion of the liver and obstinate constipation, the spinal disease would have advanced unchecked until the structure of the spinal cord had become irremediably disorganized by the pressure exercised by periosteal and ligamentous thickening, with serous effusion. If, on the other hand, it had been one of those cases of anæmic or asthenic paraplegia,

which are so insidious and so obstinate, where there is no evidence of any disease of the protective apparatus of the spinal cord, then all our issues, blisters, iodine ointment, and other local counter-irritants, with the internal administration of mercury, would have rendered the disease still worse, and hastened the fatal tendency. In these cases, gentlemen, a correct diagnosis is everything, and the rarity of the case must be my excuse for its relation, in the hope of assisting you in recognizing its features, if such should at any future time present itself to you in practice.

LECTURE XIX.

Scriveners' Palsy, or the Paralysis of Writers.

Gentlemen,—There is a rare disease of the nervous system regarding which I am desirous of having some talk with you. It is scriveners' palsy, or the writers' paralysis. Happily for suffering humanity, this form of palsy is rare, notwithstanding the fact that the greatest part of the middle classes of London get their bread by the use of the pen, either as the exponent of their own thoughts or the thoughts of others, or in recording the sums gained, lost, or spent in this great emporium of commerce—this vast Babylon. Its insidious attack is not limited to the male sex, though, of course, the usual occupations of woman render her less liable to it. I know, however, one case: that of a talented and highly gifted lady, now no more, who suffered from it for some years, and up to the time of her death, which was not caused by it, nor by any direct disease of the nervous system. This lady, the wife of a baronet, was poisoned by bad drainage in one of the fashionable quarters at the West End of London, and died of diphtheria. I have stated that the disease is comparatively rare; and it is astonishing how little has been written on the subject. Even that leviathan of medical lore, Dr. Copland, has not treated of it in his "Dictionary of Practical Medicine." Nevertheless, it is a most important subject. Upon your early correct diagnosis may depend the health and happiness of your patient. If you mistake its real nature, and regard it as a sign of incipient softening of the brain—a mistake which I have known to occur—you may destroy the happiness of your patient, and bring on the very disease which

you have erroneously diagnosed. You might easily do so, particularly if you had lately had an opportunity of seeing at a lunatic asylum much of the creeping or general paralysis of the insane, and mistake it for that sad and hopeless disease, merely because your mind has been filled with its gloomy but variable aspect. The chief inconveniences from an error in diagnosis would be, perhaps, the loss of some valuable time in adopting a proper treatment, and giving great and painful anxiety to the patient's relatives and friends.

The disease, as the name implies, shows itself outwardly in a palsy of the writing powers. The muscles cease to obey the mandates of the will. It comes on very insidiously, the first indication often being only a painful feeling in the thumb or forefinger of the writing hand, accompanied with some stiffness; these unnatural sensations subsiding during the hours of rest and sleep, to return with the writer's work on the next day.

The loss of power is not sudden, as in a paralytic stroke; nor is it a complete paralysis of any group of muscles. The paralyzed scrivener, though he cannot write, can amuse himself in his garden, can shoot, and cut his meat like a Christian at the dinner-table; indeed he can do almost anything he likes, except earn his daily bread as a scribbler.

Scriveners' palsy is not the only instance of a set of muscles being cramped and paralyzed by long-continued exertion. There is, as observed by Professor Halse, of Gottingen,[1] shoemakers' cramp, milking cramp, the musicians', compositors', and the sempstresses' cramp.

When scriveners' palsy first commences, the victim of it only feels its direful influence after a hard day's work. He regards it only as a sign of fatigue, and, as he starts fresh the next morning, attaches no importance to it as the first attack of a serious enemy; but in a short time he is obliged to rest earlier in the day, and hails his early dinner hour with joy, as giving him some respite from the fangs of his tormentor. He tries to overcome his difficulty by holding the pen firmer, but

[1] Virchow: Handbuch der Speciellen Pathologie und Therapie.

this really only increases the evil. Suddenly he finds his pen dash off at a tangent, and the word that he intended to write in the proper line is, to his horror, commenced in the left-hand corner of the page. Not unfrequently the act of writing is arrested, not by such sudden diversion, but by trembling, and a shaking palsy limited to the right hand.

In the cases that have come under my own notice, I have observed much disturbance also in the function of the nerves of sensation. There is generally a feeling of weariness and slight pins and needles, but usually not numbness. Halse, who has seen more of these cases, says: "Ordinarily no disturbances of the sensibility show themselves, except an undefined feeling of straining or fatigue; sometimes a pressure in that part of the muscles; a painful drawing of the nerves in the direction of the trunk; a cold feeling in the whole arm. These morbid sensations only appear, as a rule, after strained efforts to overcome the spasmodic hindrance (or impediment); probably, from their very passing appearance lasting so short a time, are not observed. The whole of the sufferings come after long-sustained and strained employment of the fingers and hands; and the cramp only appears later. In the case of Vallerond, after a wound from an exploding shell (?), a fragment of which remained for a long time in the wounded middle finger, a constant pain followed, which was accompanied later by a winter's croup, which resisted all attempts at cure. Fanciful peculiar tremblings, as with Romberg's nailsmith, without any other consequence, give rise to severe pains, which only accompany certain movements, and are followed by tonic cramp of the muscles. A smith complained to me from the same cause, besides sensitiveness in the arm, of a frequent firm contraction of the fingers of the right hand, accompanied by the feeling of its having gone to sleep. These appearances were perceptible in rest, as well as in different movements. I myself once got severe pain in the muscles of the hand after long-continued work at anatomy; and I was then for a considerable time

subject to it in holding the forceps, and to powerful tonic contractions of the muscles used for that purpose."

Before considering the pathology of this disease, I will relate briefly some cases of it which have come before me in my private practice. The first I shall give in the patient's own words, which are very graphic.

"I am a clerk of four years' service in the —— Bank. My duties consist entirely in writing. I first felt pain in my right arm about May, 1862; had then been in the employ of the above-mentioned bank three years, and during that time had worked extremely hard, writing without cessation from morning till evening. Before entering the —— Bank I had been in the service of the —— Bank of London for a few months, and prior to that, with the exception of a year or two, at school in London, had spent the principal portion of my life in North Wales, where boating, walking, and other out-door amusements, occupied the greater portion of my time.

"The first symptoms were those of a sprain in the wrist, but I could not recollect hurting it in any way. I, however, used embrocations, and bandaged it for a fortnight. It did not get better, so I discontinued writing for a few days, and it improved so much that I soon resumed work, though still experiencing slight inconvenience, which gradually increased. At this date the pain was most violent between the knuckles of the first and second, and second and third fingers of my right hand. When I moved my second finger I could feel an uneasy sensation striking up my arm, apparently in the sinews connected with that finger. However, I could do a long day's work, and often wrote in the evening for my own amusement, not thinking the complaint from which I suffered very serious. At this time I was a volunteer, but finding the weight of the rifle too much for my weak arm to carry I resigned. I then went to my doctor for advice. He had been previously treating me for sluggish liver and piles. Explaining to him the above-mentioned symptoms, he imagined my complaint to be rheumatism, and treated me accordingly. I still continued to work as much as before. The pain was a burning, uncomfortable feeling between the knuckles (more especially between the second and third fingers) and in the back of the hand, extending occasionally to the shoulder after writing about an hour, and gradually getting worse whilst writing. I worked on in this state for eight months. At times the symptoms were much more violent, and I frequently in the course of a day had to put down my pen, feeling it quite impossible to continue work in that state, but a few minutes' rest always gave me relief, and I resumed work.

"About this time (Jan. 1863) I obtained a letter of introduction from my manager to you. On this occasion you prescribed for me the sixteenth part of a grain of strychnia twice a day. By

your advice I at once left off writing, and went home to Wales. When first I discontinued work I experienced great relief; so much so, indeed, that I at times could scarcely feel there was anything the matter with my arm; but the fatigue of the long journey home brought it back again, and when I arrived, the burning sensation returned with great force, and extended all over the back part of my shoulder, and when I wrote I could feel it creeping down my side and under my shoulder-bone. It also became uncomfortable; on the skin a nasty nervous sensation, accompanied by the old symptoms of burning and bursting, became apparent; it troubled me in the night, frequently keeping me awake for hours, and if by any possibility I happened to turn over and sleep upon it, the symptoms would all increase, and the pain become very violent. I continued to use your prescription, and gave my arm entire rest, had a sling made to keep it in a comfortable position, but all to no purpose. So I wrote to you for instructions. You told me to increase the dose of strychnine, under the superintendence of my medical adviser on the spot. I did as you directed, also, by advice of the family doctor, hired shower baths of sea-water, and had water poured down the spine. I also went to Dublin, and consulted a doctor there—Dr. Wilson. He prescribed for me, but without effect; so I returned to London after an absence of two months, with symptoms all more marked than when I left town. You then gave me another prescription, and ordered blisters to be applied to my shoulder and inside part of my arm, just above my elbow, and told me to poultice the blisters, which I did for about a fortnight, my occupation being at this time changed, having a berth assigned to me which required little writing of importance. I did not again visit you.

"About April, 1863, or eleven months from the time I was first attacked, I was examined by a hospital surgeon, who told me that he thought I must have injured a nerve in my neck, probably at some remote period. He advised me to try what light exercise of my arm would do, and did not prescribe; and desired me to visit him in two months. I then went to a celebrated West-End physician, who prescribed; but the medicine proved too strong, so I discontinued it.

"My present symptoms are as follow:—When the weather is very settled, and neither extremely warm nor cold, as long as I entirely rest my arm it is pretty comfortable; though at all times I can feel a nervous pain, and the more I think about it the worse it becomes. If I take up a pen to write I feel that a change takes place instantly; and directly I commence writing, the old burning sensation and uncomfortable nervous feeling comes on, and would no doubt increase if I wrote a dozen lines with my right hand; for even signing my name at times causes me much inconvenience. Changes of weather, especially from warm to cold, cause me much uneasiness, as it is always worse when cold, and is also very much affected by the state of my health; as when low spirited or suffering from piles I find it is worse. When very cold weather sets in, it aches

and burns very much, and I feel at times a violent pain under the shoulder-bone. The exertion of writing this short account, though with my left hand, has made it feel much worse; it aches, burns, and pains me about the right shoulder, and even up to the back part of my head; while a nasty creeping sensation pervades the whole of my shoulder, arm, and hand. I am, sir, your most obedient servant, "G. D."

I have advised this gentleman to abandon the use of the pen altogether, to take a sea voyage, and carry his arm in a sling, to remind him that he must not use it.

The next case that I have to relate is also that of a bank clerk, who has now lost his means of subsistence. It is a sad case, and one in which all remedial agents appear to have failed to effect a cure. At first he improved very decidedly, but he did not persevere with the remedies.

Mr. S——, aged twenty-five, clerk in the —— Bank, applied to me for advice on the 20th of October, 1863. He states that he has lost the use of the forefinger and the finger next to it, or middle finger; that he first felt a weakness in them about ten days ago, but that he did not like to give up, and therefore worked through it; but it increased so much that at last he could not hold the pen. He did not apply for advice at first, because he thought that it was merely a sprain from pulling the ledgers about. I immediately recognized the first stage of scriveners' palsy. His complexion is pale, and he is rather thin, with reddish hair; circulation languid. He states that his family generally are healthy; that he has had no strain on his constitution in any way; that he has been married two years, living quietly and steadily. He has no loss of power above the elbow. There is a certain amount of numbness in the fingers affected, which is increased when holding a pen, or by any pressure upon the fingers. The numbness is not quite constant, but varies from time to time. Sometimes those fingers are fixed, and he has a difficulty in extending them. His hand soon gets very cold; but by wrapping it up he can keep the temperature at its natural standard. Ordered the sixteenth of a grain of strychnine twice a day, with galvanism.

Dec. 4th.—Has continued to take this dose without feeling any inconvenience whatever. He applies the galvanism about 7 P.M. by a battery of two plates of copper, and four of zinc. He applies one plate to the front of the forearm, and the other he holds in his hand. Immediately after the application the hand feels quite well, and the improvement lasts some hours. The hand is always better in the morning after a night's rest. It is worse in the middle of the day. He says his hand is much better, and that he believes he could now write again, but he has not tried.

(Mr. Solly showed to the class some specimens of writing.) The above are written with the left and right hand. The latter shows better than any description the immense improvement that has taken place; but I have forbidden his using it again at present.

The next case, unlike the last two, has been one of complete recovery. It is that of a gentleman who when first attacked was a resident in Eastern climes, and it was not until his return to England that he came under my notice. He was then very anxious about it, and being an intelligent man, but without any medical education, naturally enough thought that, as a form of paralysis, it must be indicative of some kind of softening of the brain. When I told him at my first interview what was really the nature of his complaint, I took a great load off his mind, and gave him a tonic quite as effectual as the various minerals he had been previously depositing in his stomach. I did, indeed, then effectually "minister to a mind diseased." On asking him to give me a sketch of the rise and progress of his malady, he gave me the following:—

"The first time I ever felt any inconvenient sensation in my right hand was, as well as I can remember, about 1858–59. At that time I had an unusual quantity of writing on my hands—a great deal that was strictly official, and much that was semi-official. The inconvenience I then felt was a cramp throughout the entire hand, which made me often lay down my pen and *straighten out* my right hand with my left. In 1860 a good deal of my writing ceased. I still had much official writing, but semi-officially and privately I had much less to do; and the cramped state of my hand entirely disappeared.

"In 1862–3 my duties required more writing than usual. I imposed upon myself also a great deal of writing which did not, strictly speaking, belong to my office, and my hand again began to suffer. Meantime I felt the old sensation of cramp, but towards the end of 1862 it assumed a new form. I then began to feel a pain in my right thumb, exactly as I should have felt had I sprained it. I supposed I had sprained it by excessive writing: and, by the advice of my medical attendant, I bound a piece of white tape tightly round it, and this seemed to give me partial relief. By degrees the pain in the thumb ceased and was succeeded by a sensation, difficult to describe, in the last two fingers of the right hand. It sometimes was a tingling—a burning sort of tingling—commencing in the tips of the fingers, or, more properly, most per-

ceptible in the tips of the fingers, and extending up the hand; sometimes it was a numbness in the fingers, occasionally accompanied by sharp but slight shooting pains, which sometimes extended up the arm. I first felt this, as well as I can recollect, about the end of 1862. It gradually increased, never assuming an acute form, but practically rendering my hand much less useful to me than formerly. After writing for a while, I was compelled to pause, from sheer inability to continue writing. This effect increased rapidly, and in March, 1863, I was compelled to do much of my work by dictation. When my hand was in this state I suffered much from depression, probably occasioned by the, to me, inexplicable nature of my ailment. When my hand was at its worst, I felt a dull aching in the fingers affected and up my arm. I should add that I had long been suffering from severe dyspepsia, occasioned by a long residence in the tropics.

"I used to feel the tingling sensation in the two last fingers of my right hand when I went to bed, and it would continue all night, being just as perceptible in the morning. But this I have not felt for two months. Still, when I am tired and out of sorts, I feel this sensation at once. I have twice felt it from these causes, without having used my hand for writing, since my last visit to Mr. Solly.

"To-day my hand failed after writing one sheet of note-paper. The effect of the strychnine was an almost instantaneous sensation of slight painful tingling in the same two fingers.

"Dec. 10th, 1864.—The sensation is difficult to describe: sometimes it is a tingling; sometimes a numbness. After writing three pages with the left hand to-day, I felt the sensation I spoke of in the right leg."

When this gentleman first consulted me, I advised his using the right hand as little as possible, and gave him general tonics, &c. In August, 1863, I obliged him to discontinue writing altogether with the right hand, and to keep it in a sling; and he soon learnt to write in a very tolerable way with the left hand, but he did not make much progress in recovery. He continued to suffer from all the consequences of a long residence in the East, with severe mental occupation. His strength seemed gone; his appetite failed him; he suffered much from low fever and insomnolence. And though he did not use the right hand, it still felt uncomfortable and miserable. In the August of this year, by my desire, he left England for a more bracing climate, and remained for two months in a bracing mountain air. The change acted like a charm. He began to walk out and sleep

as in the days of his youth; he carried his gun all day, felt no fatigue, and shot with his usual dexterity. During this time he scarcely ever touched a pen, either with the left or right hand.

After his return to England he felt even still more his sojourn in the hills. He says now: "Though my hand still occasionally fails me, I can feel that I am ail but cured; but if am tired and out of sorts, my old symptoms return."

LECTURE XX.

SCRIVENERS' PALSY.—*Continued.*

GENTLEMEN,—Again returning to the subject of scriveners' palsy, I will relate another case, as it illustrates the main characteristics of the disease very forcibly, and also shows that the malady is more easily cured when detected early.

Mr. Q——, aged twenty-five, single. Parents are alive and healthy, and on his father's side very long-lived; he has a grandmother aged ninety-two. His habits have always been regular and steady, taking beer with his meals, but not spirits. He smokes very little now, and did not smoke at all when he was first attacked. He has been engaged in mercantile business since he was fourteen years of age, but previously to going into the —— Bank (which he did about five years ago) he was in a large wholesale house. In this house he had less writing and more active exercise. After he had been in the service of the bank about a year he complained of an uncomfortable sensation in the upper arm of the right side, but not at first in the hand and fingers. This discomfort was succeeded by violent trembling in the muscles and tendons of the hand and arm, accompanied by a sensation of extreme fatigue in the limb, as if he had been using some violent physical exertion, rendering the arm and hand completely numbed. This numbness was so complete that he could pinch and prick the fingers without feeling anything. At last it became so bad that he could not hold his pen. When these symptoms first commenced they would all retire at night, and, with rest and sleep, he would feel pretty well in the morning; but ere long, even this relief was denied him, and he commenced business in the morning with some discomfort. When, at last, the handwriting became so bad that he was ashamed of it, he sought my advice.

I recommended a complete change of air and scene, which through the great kindness of those who claimed his services he was enabled to effect. After the lapse of two months away from his writing occupation, during which time he was benefiting by the bracing sea air and

bathing at Brighton, he almost entirely recovered. Since that time (beyond an occasional return of the symptoms in a mild degree after using the pen without cessation for any lengthened period) he has not experienced sufficient inconvenience to lead him to fear a return of the disease. He has not so much writing to do now as formerly, and writes an exeellent hand without difficulty.

The next case does not tell much for our medical treatment of such cases, though it shows that with rest they will recover. I have no doubt that the pen he speaks of was of service, but I do not believe that it would have effected a cure if it had been alone employed in the first instance. Coming after the rest, the pen was certainly of use. This patient shall tell his own story in his own words, which are as follow:—

"I entered the service of the —— Bank in November, 1859. About the middle of 1860 I began to experience an involuntary pressure of my thumb upon the pen while writing, which increased until it was so violent as to be very painful, and I was compelled to hold the pen with my fingers, without using the thumb. The thumb then doubled itself into the palm of the hand, causing much pain. These sensations were experienced only while writing, or when holding any article between the finger and the top joint of the thumb. At this time I was at ——, in Essex, and I sought the advice of a surgeon, who gave me a liniment; but this not proving efficacious, I went to another, who also gave a liniment, and advised me to hold my arm under a stream of cold water, and have it rubbed with the hand in a brisk manner. This was done twice a day for some time. In November I was removed to the head office, and I cannot remember whether it was before or after this that my thumb so far improved that I could hold the pen with my fingers without the contraction of the thumb upon the palm before complained of.

"On 21st Feb. 1860, I first sought your advice in the matter, when you advised me to write as little as possible, and gave me a prescription [this was the thirtieth of a grain of strychnine], stating my case to be an attack of the scriveners' palsy in a slight degree. On the 25th you increased the dose [to the sixteenth of a grain], and directed me to leave off writing for a fortnight. This medicine caused twitchings of the muscles of the face, and on April 5th you gave me another prescription [the twelfth of a grain of the bichloride of mercury]. On the 16th of April you advised me to try galvanism, and by the kindness of Mr. Wood, of Cheapside, I was allowed to go to his shop and have the use of one of his instru-

ments for a fortnight to try its effect. At first it appeared beneficial, but the effect was not permanent.

"During this time I had been writing with my left hand, but I began to feel an unpleasant sensation in my left arm, and you advised me that I must discontinue it.

"On May 9th you gave me small doses of colchicum, and on the 28th tincture of iron. The latter, however, I did not use, as I left the bank on the 31st and went to my home in the country.

"In July I started on a voyage to the Canary Islands, the journey out and home occupying six weeks. This did not appear to produce any especial good at the time, but I think it had a beneficial effect upon my general health.

"I re-entered the service of the bank in September, taking a post requiring but little writing; and in the same month I attended an orthopædic hospital, and was seen by Mr. —— and Mr. ——. One of these thought the extensors were withered, but the other differed from him. I was put under the care of Mr. ——, and various trials were made of a spring fixed on a glove, intended to prevent the thumb from contracting. But no success attended these efforts, and in Jan. 1862, I ceased my attendance.

"In February I purchased Perry's 'Orthodactylic' penholder, the peculiarity of which consists in three small plates affixed to the holder in the places where the thumb and fingers should rest. About this time my thumb rapidly improved, and in March I was able partially to resume my duties at the books. In April, 1863, I re-entered upon full duty at the desk, since which time I have experienced no inconvenience from the usual labours of the office. [He now writes an admirable hand.]

"A medical gentleman suggested to one of the clerks that the disease might, perhaps, be caused by the contact of the thumb with the steel pens which are used in the office (Mitchell's barrel-pens); and since then I have used a quill over the barrel of the pen as a protection, and others of the clerks tell me they have derived benefit by doing the same.

"*Note.*—My habits have always been quiet and regular; no smoker; a teetotaler. In youth I grew fast, and was of not very robust health, though not subject to very severe illness. My father was afflicted with nervousness; mother healthy.

"C. W——, Dec. 14th, 1864."

Very little has been published on the pathology of this disease in the English language. Halse, in Virchow's[1] "Handbook of Special Pathology and Therapeutics," has an article upon it; but this, unfortunately, throws no light upon the treatment of this formidable disease. He confirms my opinion that the act of writing is dependent on the co-ordination of several muscles:

[1] Virchow: Handbuch der Speciellen Pathologie und Therapie, vol. iv. p. 142.

saying, "Notwithstanding the combinations necessary for this purpose become by degrees so habitual that a conscious separation of the single acts is not possible to the mind, it appears as if the rhythm of it, as it is learnt with difficulty, yet it in no way approaches the proper automatic movements—such as breathing, &c. Writing requires always a constant attention, which becomes more or less mechanical." This author also refers to an irritability of the upper dorsal region of the spine, sometimes induced by over-practising on the pianoforte, as indicated by pain in that region and morbid contractions of the fingers. I have seen such cases, and may mention, as a digression from our consideration of its pathology, that I always prescribe nervine tonics and rest from that kind of action of the muscles—but not entire rest of the limb; active exercise in the open air, with a hoop where it is possible, and calisthenic exercises of all kinds.

This aching in the spine may also be observed in connection with scriveners' palsy; and the fact is important, as I shall explain further on. Very little consideration of the subject of scriveners' palsy is needed to convince us that the disease is not a simple paralysis of muscular power. The patient can call all his muscles into action; but he cannot bring them all into such *harmonious* action as to be able to write. What is the reason of this? I must not, even in a clinical lecture, take it for granted that you are all well up in the physiology of the brain and spinal cord, and I am sure I need not ask forgiveness of those who are, if I go a little into the A B C of the matter.

The physiological and pathological explanation of this disease is not given by Halse. It must be sought in the newest discovered mines of nervous lore. I believe that I was one of the first to insist upon the distinct office of the cineritious and medullary neurine, and I felt that this was the more necessary, inasmuch as Gall and Spurzheim, those grand pioneers in nervine anatomy and physiology, omitted to adopt this view. They merely spoke of the cineritious neurine as the

womb or producer of the white, not, as is now universally acknowledged, the real and sole source of power. Much has been discovered lately in regard to the physiological action of this grey neurine—the vesicular portion of the nervous system, and its relation to the tubular, especially as regards the spinal cord. The spinal cord, as I suppose most of you know by this time, is not merely a large nerve or large bundle of nerves — in other words, it is not merely a conducting instrument. It consists of the two kinds of neurine, the tubular or conducting neurine and the vesicular or dynamic neurine; the white or tubular neurine, the grey or vesicular neurine. I remember when Marshall Hall first enunciated his views and discoveries regarding the especial power of the spinal cord in the production of what he called its excito-motory power, I said, "Well, if you are right, the instrument of that power is the grey matter of the cord." To which he replied, "I know not at all what is the instrument of that power, or in what part of the cord it is developed; I only know of its existence, and that I have proved." Since then the grey matter has been proved to have that function, but it has also been proved to have another distinct from it. It is this power and the machinery of it, so to say, that you must understand, if you do not do so at present, before you can understand what I believe to be the physiology and pathology of scriveners' palsy.

Ever since the days of Hippocrates it has been known that if the fibres of the brain are torn through by an irruption of blood into their substance, the communication by which the will flows to the muscles is cut off, and the muscles supplied by such fibres are paralyzed. Until a very late period it was supposed that the cerebrum and the tubular fibres of the spinal cord were the only instruments concerned in producing the action of muscles. Latterly, however, the physiologist has felt convinced that there must be some additional instrument concerned in the transaction: some instrument for co-ordinating or combining the action of muscles. The cerebellum has now, by almost universal accord, a

portion of this power attributed to it. Schroeder Van der Kolk does not consider that all the credit is due to the cerebellum, but that the vesicles of the cord also have their share in it. I confess that I think so too. The exact proportion in which this power of co-ordinating muscular action is possessed by these centres, I suppose no one will at present pretend to decide. I expect that morbid anatomy, unveiled by the microscope, will clear up a great deal that is yet obscure. Romberg, who gives a short notice of writers' cramp in his work,[1] mentions a fact which shows that it may take its origin in the cerebellum:—"Paralysis of the upper extremity, dependent on a cerebral or spinal affection, frequently commences with impaired power of conduction in the motor nerves of the fingers, and consequent difficulty of writing. A man was under my care whose disease lay in the cerebellum, and made its *début* with an impairment in writing." It will only be by the accumulation of such facts that the mystery will be unveiled.

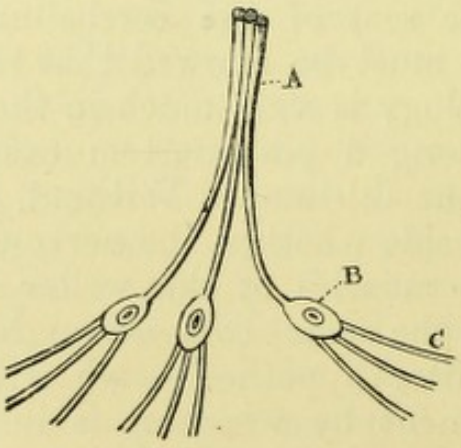
In the present state of our knowledge of the symptoms which attend scriveners' palsy, I think we are justified in believing that the disease commences in the cord. We find that most of the patients have felt some uneasiness in the lower part of the cervical region and in the upper part of the dorsal. There is seldom any complaint of discomfort in the head, either in the occipital region (the seat of the cerebellum), or in the frontal. Still it must be allowed that the whole question of its pathology is very much in the dark, though I hope before long a post-mortem examination may help us out of our dilemma. Without, therefore, now attempting to decide whether the nervous power which co-ordinates the muscles of the writer resides in the cerebellum or in the spinal cord—though I am inclined to favour the latter hypothesis—we will consider the nervine arrangement by which it is in all probability produced; and though I shall describe it as existing

[1] A Manual of the Nervous Diseases of Man. By M. H. Romberg, M.D. Translated by Dr. Sieveking for the Sydenham Society, vol. i. p. 321.

in the spinal cord, still there is no reason to doubt that to a certain extent the same physical arrangement exists in both dynamic centres.

Lockhart Clarke and Schroeder Van der Kolk were, I believe, the first to explain clearly the nervous mechanism, if I may so express it, by which a group of muscles are made to act in such unison that complicated actions are produced in perfect harmony. The first-named gentleman originally demonstrated the actual connection of the nerve-tubules with the nerve-vesicles. Schroeder Van der Kolk followed it up and reasoned upon it.

We are so accustomed to see all muscular actions harmonious that we neglect to consider the means by which this result is obtained. Let us consider the act of volition, and how it is carried out. I will state the matter briefly and dogmatically. Will springs from the action of the hemispherical ganglion or cortical substance of the hemispheres of the brain. It descends along the white fibres of the hemisphere through the corpus striatum, crura cerebri, pons Varolii, and medulla oblongata, where it crosses from one side to the other, and then descends in the cord to the vesicular neurine in the interior of the medulla spinalis. Now I must have recourse to a diagram on the black board. You will see by this diagram that I represent a nerve-



fibre (A) coming down from the brain, joining the nucleated vesicles (B), those ministers of power in the

substance of the cord, the cineritious neurine. I think it right to repeat these terms frequently in order that they may be household words engraved on the tablet of your memory. From these vesicles you see other and more numerous nerve-tubules (c) arising; these go to all the numerous flexors and extensors of the hand, which produce the act of writing. If the nerve-tubes (A) went directly from the cord to the muscles of the hand, those muscles would act, but they would act spasmodically, not harmoniously. The instrument then which produces all this harmony, which co-ordinates the muscular action necessary to writing, whether good or bad, are the nucleated vesicles marked B. It is no sound argument against this theory that the act of writing does not come by instinct like the acts of the lower animals, but that the child has to learn to write —in other words, that these vesicles have to learn their co-ordinating duties. Is it not so with the brain itself? The child cannot reason and think accurately as soon as it is born. The ganglionic cells of the hemispherical ganglia have to be educated just as much as any other part of our living mechanism.

The observations of Schroeder Van der Kolk to which I have referred are given by him in the work published by the Sydenham Society, and translated by Wm. Davies Moore, Esq., M.B.[1] As I hope you will all take the first opportunity of reading this admirable treatise, I shall not give the author's words at length.

The main point on which you should have a clear idea is this: That the nerve-fibres which you trace with your dissecting knives into a muscle or group of muscles, do not spring directly from the brain, or run without interruption from it. These nerve-fibres spring from "a group of mutually connected ganglionic cells, which cells receive the impressions of our will along the anterior white columns." These impressions or stimulations, being thus distributed uniformly over all the cells of a group, produce in all the motor filaments

[1] Professor S. Van der Kolk on the Minute Structure of the Spinal Cord and Medulla, &c., p. 81.

of a nerve arising from this group a uniform and simultaneous action.

The number of these anterior conducting filaments of volition must thus be proportional to the number of the group of cells, and the several combinations of which they are capable. The greater size of the anterior grey cornua in the cervical and lumbar enlargements of the spinal cord are accounted for by this fact.

If we accept this view of Schroeder Van der Kolk of the anatomy and physiology of the spinal cord, confirmed as it is by the earlier and later descriptions of Lockhart Clarke, we are, I think, justified in believing that the writers' palsy must depend upon the disturbance or actual disease of these spinal cells. I must not, however, enter upon this part of the subject in this lecture, but reserve it for my next.

LECTURE XXI.

On Scriveners' Palsy.—*Continued.*

Gentlemen,—Trusting that you have not forgotten what I told you in my last lecture regarding the anatomy of the spinal cord, its groups of cells and nerves connected therewith, I will now endeavour to prove to you that these cells are frequently diseased, and that upon such disease, in all probability, the scriveners' palsy depends. Scriveners' palsy is not, so far as we know, a fatal disease; patients do not die from it, but they may die with it, and as we have not yet any recorded case of a post mortem after scriveners' palsy, I want you to look out for it. Nevertheless, it has been proved that these ganglionic cells are liable to disease—a disease which in its early stages cannot be recognized by the naked eye. The microscope must aid us. Thin sections of a healthy cord show all that beautiful anatomy, which my old pupil, Lockhart Clarke, has so perfectly elucidated that the Royal Society have awarded him the Royal Medal. In health the microscope shows the vesicles plump and transparent, with a distinct nucleus and nucleolus. In disease the microscope shows the vesicles no longer transparent, but more or less filled with granular matter, and the nucleus more or less obliterated. In Beale's "Archives," No. XIII., vol. iv. p. 41, you will find, from the pen of Mr. Lockhart Clarke, an admirable account of this granular degeneration. Again, let me repeat that this description does not apply to a case of scriveners' palsy, and you will therefore please to understand distinctly that the account I am going to give you of granular degeneration and granular disintegration of vesicular neurine, as described by Lockhart Clarke, does not apply at the

present time to scriveners' palsy. If, however, it should hereafter be proved that I am right in my theory, then also will be proved that granular degeneration in its early stage may be arrested, and that fresh and healthy cells are reproduced, if these cells are left completely at rest to perfect the reproduction of the cell-structure, and not interfered with during the reproductive action by attempts on the part of the patient to use the damaged centre of nervous power—in other words, by resting entirely the group of muscles which are called into co-ordinate action by such centres.

The first case in which Mr. Lockhart Clarke made this discovery of granular degeneration of nervous tissue in connection with paralysis is described in vol. iii. of Beale's "Archives," beginning page 1. The whole paper ought to be, if it has not already been, perused by every practitioner of medicine and surgery. I referred to the facts in my lectures at the College of Surgeons the year before last, and I was surprised to find how many even of that learned body of men were unacquainted with the discovery which had been made. It is entitled, "An important Case of Muscular Atrophy, accompanied with Disease of the Spinal Cord." I do not think we shall often see this title again. It implies that the muscular atrophy was the disease, and the condition of the spinal cord the accompaniment; whereas the disease of the cord was the primary malady, and the muscular atrophy the necessary and invariable consequence of long-continued disease of its co-ordinating centre.

The only ground upon which pathologists could base the idea of muscular atrophy consequent upon paralysis without disease of the spinal cord has been cut from under their feet by this discovery. Hundreds of such cases have been examined, and reported to be free from disease because the disease was not patent to the naked eye. There is no longer any excuse for such nonsense. No post-mortem examination of the spinal cord can be considered as conclusive unless it is examined in thin slices under the microscope.

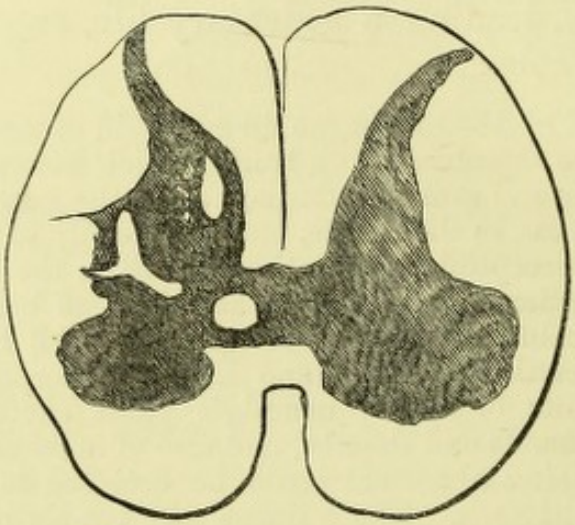
The important features of the case, and those which appear to me at all to bear upon the pathology of scriveners' palsy, are these. The patient was sixty-five years of age, leading a sedentary life, engaged in literary occupations.

"In the end of 1855 he began to complain of neuralgic pains in the balls of the thumbs of both hands, which before long extended to the forearms and arms. After some months he was conscious of marked weakness in the hands, more especially in the right, soon followed by perceptible diminution of size in the muscles of the thumbs and index fingers, which also became bent inwards and towards the palms as an habitual posture. All this time, while his general health was good, and his body corpulent, he made great complaints of severe neuralgic pains shooting down his arms into the hands and thumbs, and also of weakness of the back. . . . . Nothing abnormal could be detected in the organs of the chest or abdomen. The kidneys and bowels acted regularly, and apparently naturally; he had no tenderness of the spine, no headache, and his mind, when not turned on his own condition, was clear and rational."

The further history of Dr. P——'s case, up to the time of his death, in January, 1861 (the disease lasted, therefore, a little over five years), "which was preceded for a few days, and possibly caused, by an attack of acute laryngitis, is nothing more than a detail of the gradual increase in the intensity of the symptoms already noted, and the extension of the pains to the lower limbs and feet, where the sensation of intense heat and burning was constantly complained of, aggravated by the act of walking."

I shall not attempt to give you the detailed account by Mr. Lockhart Clarke of the post mortem appearances, but such a very brief abstract as will suffice for my present purpose. There was no disease of the pons Varolii or cerebellum. In a transverse section of the spinal cord, at the origin of the fourth pair of cervical nerves, three lesional spaces might be seen; and the diagram on the next page will explain their position. You will recognize the shape of the spinal cord as shown in a transverse section, and the shape of the grey or vesicular neurine in its centre, like two irregularly shaped letters C placed back to back. The three white spots you

see in the grey mass on the left hand are lesional spots, or spots of granular degeneration.



The next case in which Mr. Lockhart Clarke gives us the result of his inquiries was clearly not a case of scriveners' palsy, but extremely interesting in every point of view. The case is most ably related by Dr. Thudichum in the fourth volume of Beale's "Archives," page 26, and the brief abstract which I now mean to give you must not prevent your reading the whole account with care and attention.

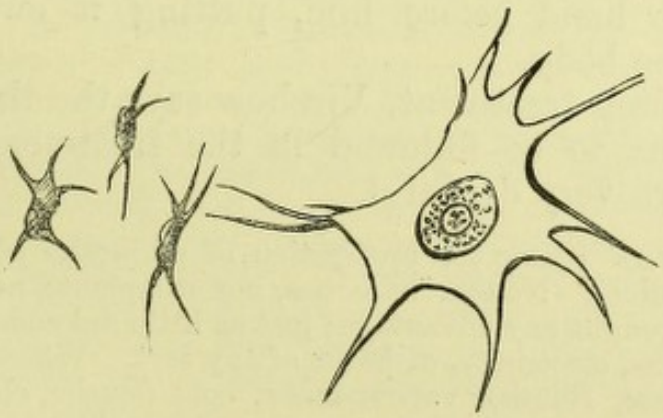
The patient was forty-five years of age. The cause of disease was concussion of the spine produced simply by a jump, the patient coming down heavily on his heels. He was stunned at the time, confined to bed for a few days, and then appeared to get quite well. "It was, however, soon perceived that a great change had taken place in his habits. Having been extremely fond of manly sports and exercises—rowing, cricketing, riding on horseback, dancing, and the like—he discontinued to take part in any of them, although he continued to go every autumn to the Scotch moors for the purpose of shooting grouse." At the age of fifty—*i. e.* five years after the accident—"while engaged in this latter sport, he perceived that his right leg had lost a part of its usual strength; that although he could perform with it every motion, yet he could not perform it

in the manner necessary for the purpose; that he could not put the foot in the exact place where he wanted to put it." In other words, that he could will the action of the muscles of the leg, and that they would obey the will, but, the co-ordinating power being lost, he could not combine their action so as to walk.

Mr. Clarke published in the *British and Foreign Medico-Chirurgical Review* (vol. xxx. p. 219) another interesting case of paralysis, with muscular atrophy and disease of the nervous centres, which Dr. Radcliffe brought to his notice. In this case he says,—

"The ordinary and inefficient method of examining the nervous centres must have failed to detect minute structural changes upon which the wasting palsy was actually dependent, and would, perhaps, have resulted in recording the case as one of simple muscular atrophy. In this case the condition of granular degeneration had gone on to vesicular atrophy. The cells had shrunk: none of them were larger than the nuclei of the surrounding healthy cells; the majority were much smaller, without any traces of nuclei or distinct granular contents. These shrunken cells consisted of irregularly stellate and apparently membranous bodies, which, in some instances, seemed shrivelled sheaths of healthy cells, or like radiating portions of the connective tissue."

The accompanying diagram, taken from this paper, shows the relative proportion of the healthy, plump,



vigorous cells, and the miserable shrunken sheaths to which by disease they have been reduced.

Amongst other proofs that might be adduced in favour of my view, that the seat of the disease is cen-

tral in the spinal cord, is the fact, that the use of the left hand in writing, instead of the right, will induce uncomfortable feeling in the latter. The explanation of which I suppose to be that in writing or drawing, the action of the muscles of the left hand, the will having travelled by the conducting fibres of the spinal cord from the brain to the group of cells in the left half of the cord, these cells, on being called into action, excite their neighbouring cells, through the medium of the transverse commissure, in the right side of the cord—*i. e.* those which co-ordinate the muscles in the right, such excitement being manifested by the uncomfortable feeling described. One of my patients, when I spoke to him about the use of the left hand, said he would continue to use it if I wished, but he thought it would be better if he did not use either. He said, "If I write with my left hand, I feel an indescribable tingling feeling in the damaged hand, which does not subside on leaving off writing;" for instance, he continued to feel it whilst talking to me, having been writing half an hour previously. Occasionally he has the same kind of sensation in the right leg. He also says that he has had less of this discomfort since he has held the paper on which he has to write by strong clips instead of holding it steady by the right hand, and then, instead of keeping the right hand before him, putting it out of sight behind the body.

Regarding treatment, Virchow says the therapeutical indications to be followed in the treatment of these palsies are very doubtful.

"In writers' cramp the application of all means of healing has proved fruitless. Neither narcotics, nor stimulants, nor tonics, nor nervines brought any advantage; just as little did counter-irritants, embrocations, electricity, or baths of any sort. Where rheumatism was the cause, Russian vapour-baths, cold douche, electricity, and embrocations with oil of turpentine, were able to remove the complaint. The cutting through of the long muscle of the thumb was tried with some result by Stromeyer in a case in which writer's cramp was conditional on this muscle. Dieffenbach performed the cutting through of the muscle several times without being able to arrive at anything by it; Langenbeck, with a passing improvement. Nothing therefore remains but the application of different mecha-

nical appliances which make writing possible. Many such are known, designed by Froschel, Cazenave, and others. One patient helped himself by means of placing the pen in a piece of wood bored through with holes, which he grasped with the whole hand, and so could regulate in writing."

As regards treatment, Romberg (*loc. cit.*, p. 323) says,—

"The treatment hitherto pursued, both local and general, has been invariably ineffectual, so that the patients generally ceased from all attempts at cure, and remained satisfied with mechanical contrivances, the object of which was more or less to cause a pressure upon the skin and the subjacent muscles. Stromeyer also applied the principle of division of the muscles to the cure of the writers' cramp, and in one case a brilliant result justified the antispasmodic reputation of tenotomy. As early as the fourteenth day after the subcutaneous division of the tendon of the flexor longus pollicis, the patient was able to resume his pianoforte playing and to write. On the other hand, it is to be observed that the operation was perfectly ineffectual in several patients upon whom Dieffenbach operated."

The following passage regarding treatment in the relation, by Drs. Adamson and Bell, of the case of Dr. P——, already referred to, is, I think, instructive:—

"As regards treatment, it may be mentioned that he made a long-continued trial of the following remedies, viz. iodide of potassium with sarsaparilla, strychnine, quinine, valerianate of zinc, phosphate of zinc, arsenic, tinctures of lobelia and lupulus, of cantharides, ergot of rye, actea racemosa, with various mineral acids. Throughout the progress of the disease he employed occasional, and for the last two years regular, preparations of scammony and calomel. He had sedatives in every variety of form, externally and internally, and for the last three years took Battley's sedative solution every night, consuming about thirty ounces each year, besides trying chlorodyne, chloric ether, conium, henbane, lupulin, &c. &c. He tried galvanism and regular friction or shampooing of the limbs, wet bandages, &c. Subcutaneous injection of morphia was repeatedly tried when pain was concentrated in any individual spot.

"Amongst other systems of treatment, he made a lengthened trial of the waters at Aix-la-Chapelle, and visited also several other German baths, including a water-cure establishment. He also placed himself for a time under a quack doctor, whose grand specific was systematic friction and kneading of the spine. These plans of treatment he discontinued only on being thoroughly convinced that they did him no good.

"Counter-irritation along the spine was also had recourse to, but each and all without the experience of any, even temporary, relief. The diet was always generous, and with a liberal allowance of stimulants."[1]

No mention is made of complete and entire rest of the palsied hand when the disease first made its appearance. Believing as I do that this is the right course to pursue in the treatment of such cases, the fact that the employment of rest was not one of the remedial agents which so signally failed should encourage us to employ it in any similar case.

My own experience, then, in the treatment of these cases is very decided: rest—entire rest from the occupation that has produced the disease. If the disease is recognized early, then two months' entire rest will arrest its progress; at the end of that time strychnine is of service, but it is injurious when given in the early stage of the disease, and before rest. During the time of rest the health should be sustained and improved in every possible way. Fresh bracing air—mountain air if attainable—is of more service than all the tonics in the world. As regards tonics, they must be varied to suit the peculiarities of each constitution. Zinc, iron, and quinine are the tonics on which I rely most.

The following is one of the most striking cases of paralysis I know of, induced suddenly by little more than an hour's continued strain upon a nervous centre, confirming all that I have said regarding the controlling and co-ordinating power of the spinal cord:—A gentleman got into the five o'clock express train for Brighton. He was no sooner seated than he felt a strong desire to have the bowels relieved; but there was no help for it—the train started, nor did it stop till it reached its destination at a quarter past six o'clock. All this time the desire to go to stool increased more and more, but he restrained it successfully by a violent effort. The moment the train stopped he sprang out of the carriage, when the sphincter ani relaxed, and the contents of the bowels were poured out into his clothes. The curious

[1] Beale's Archives, vol. iii. p. 4.

part of the case is, that he became paraplegic. The spinal cord had been over-exerted, exhausted, and paralyzed by the long-continued effort. In this case the brain, from which I suppose all must admit that the will emanated by which he desired to control his sphincter, did not give way. His intellect was not impaired, and the whole muscular system was not paralyzed, only that portion which is supplied by the lower portion of the cord. I regard this as identical in its pathology with scriveners' palsy, only that the destruction of the nervous centre was sudden, not gradual. I do not know what treatment was adopted in this case, but, reasoning from analogy, I should have advised complete rest; that some arrangement should have been made to prevent his ever having to control the action of the bowels if he had in any degree retained that power.

Having told you all I know, or fancy I know, concerning this palsy, and all the speculations I have made regarding the pathological changes produced by or productive of the disease, I will ask you to carry on the subject. If you meet with any cases amongst the poor classes of our working men, send them here, and I will give them a bed, and do the best I can to cure them. If you hear of any such cases—and mind you inquire for them when you go into the country for your Christmas holidays—get your medical friends to watch them; and, if they can obtain a post mortem, ask them to send me the cervical enlargement of the cord (if they cannot obtain the whole), and we will make sections after the plan recommended by Lockhart Clarke, and test the validity of my views respecting its morbid anatomy.

LECTURE XXII.

On Diseases of the Joints.

Gentlemen,—The numerous cases of diseased joints which are admitted into my wards will, I think, be more instructive to you if I make them the subject of a few clinical lectures. The subject is interesting, both in a physiological and a pathological point of view. There is no part of the living organism which illustrates so simply and so beautifully the adaptation of means to an end, and the perfection of creative wisdom, as the articulating system. All joints are composed of solid materials, parts of the bony and cartilaginous skeleton, with more or less provision for motion according to the office of the bones and cartilages which enter into their composition. In some instances, joints are merely the joining of bones together, so as to allow only a yielding motion, as in those of the face. In some instances the bones are joined loosely in the young subject, and allow of considerable motion, which, in the adult, is not required, and therefore not permitted; as in the bones of the skull.

It is not with the pathology of those joints that we shall be now detained. The truly movable joints, such as the knee and the hip, are constantly requiring the surgeon's attention. In such joints we have the extremities of the bones moulded into forms which permit of considerable motion without difficulty or danger of displacement. Covering the extremities of these bones, there is that admirable contrivance to prevent concussion — the articular cartilage. To the

physiologist this cartilage is interesting, from the simplicity and perfection of the arrangement by which it is endowed with firmness and elasticity; the fibres of articular cartilage being placed, like the hairs of a brush, perpendicular to the pressure they receive in the motions of the joint. To the surgeon this cartilage is interesting, as the frequent seat of disease. Covering the cartilage, and lining the whole joint, is the synovial membrane—the joint-oil membrane, placed there to afford a constant supply of the synovial fluid. This membrane exists in every movable joint, and, whatever the form of the joint may be, the membrane is always a completely closed sac. To protect this membrane, and bind the bones together, we have a fibrous capsule, varying in its form: not always having a continuous surface all round the joint, never being a closely shut sac like the synovial membrane, but tubular, the extremities of the bone shutting up the ends of the tube. All these articular capsules are more or less formed by the expansion of the tendons of muscles, or have tendons attached to them. Without such an arrangement these capsules would be feeble and inconvenient; they would not be, as they now are, tense and resisting at one moment where tension and resistance are required, or loose and yielding the next moment where relaxation and flexibility are required. The knee-joint illustrates this in the most striking way. The quadriceps muscle, with its powerful extensor tendons, forms with the knee-pan the front and side of the capsule of the knee-joint. When the joint is bent it relaxes and yields, allowing the most perfect flexion. When the joint is straight, and it is important that the bones should be kept in apposition, and the whole of the leg, from the foot to the trunk, form one unyielding pillar, then this capsule is first drawn out of the way of the hinge as it closes, and secondly, is made so firm that, instead of being a soft flexible surface, it becomes a firm unyielding wall all round the front and sides of the joint; the back of which is equally well protected by the expansion of the tendon of the semi-

membranosus, one of the ham-string muscles: the semi-tendinosus and biceps giving their powerful aid as lateral ligaments.

The peculiar and protecting sensibility of these ligaments must not be forgotten. Each tissue in the body has its own protecting sensibility. The teeth at once feel and resent the presence of acid in the mouth, as one of their greatest enemies; the brain, though insensible to the knife, as has been shown by Flourens, in his experiments on birds, aches if we overwork it; the heart, insensible to the touch, as Harvey demonstrated to his royal master, palpitates and flutters under over-exertion, creating the most intense distress, and thus warning its thoughtless master to be still. So it is with the ligaments, protected by that most perfect, most sensible, and sensitive of coverings; they are insensible to those injuries which the skin can warn us of, such as may be inflicted by cutting instruments or burning agents, but they are liable to be stretched; and how soon would our joints be useless if this could be done with impunity! Only contrast the knee-joint in a state of health with the same with its ligaments stretched till they are too long to keep the bones in their natural position; or, to go still further, suppose any joint in the body with its ligaments relaxed: every motion would be followed by a dislocation. No, my friends: the almighty Architect of our bodies has managed things better for us than this. So soon as we by accident subject the ligaments of our joints to such an amount of tension as endangers their integrity, so soon do we experience the most severe pain to which the human frame is liable, and which we all know under the familiar term of "sprain." But I must not forget that we have not yet completed our list of the tissues which form a joint. Even the common cellular membrane which surrounds the joints is as interesting to the surgeon as it is to the physiologist, for it is not unfrequently the seat of inflammation; and, as we shall see when we have to consider the diseases of the knee-joint, it is of the greatest im-

portance to remember its existence, and not to confound suppuration of this tissue with the formation of matter in the interior of the joint. The subcutaneous bursæ are important parts in the structure of most of the locomotive joints, and not unfrequently the seat of disease. Then, last but not least in this important catalogue, we have that cutaneous surface, to whose peculiar and protecting sensibility we owe so much.

We have already seen that the ligaments cannot be stretched without damage to the organism, but the skin must yield and bend with every motion of the body, and therefore its elasticity is unrivalled; and in a state of perfect health how beautifully it fits, and how admirably it relaxes where it should be loose, and contracts again where it should be tense! But I must not allow the charm of physiological anatomy to make me forget that it is not now the subject of my lectures, but that we are met here to profit by the surgical facts with which our ample wards present us.

The first case to which I have to call your attention is one of long-standing disease of the hip-joint. The subject of it was a young woman, aged thirty-two, one of whose parents died phthisical. She had small-pox when six years of age, and remained in delicate health for some time after. At the age of twelve she fell down a whole flight of stairs, and injured her left hip, but the injury was considered slight, and therefore unattended to; and as a servant of all work she continued for hours at the wash-tub, though suffering, as she now states, continued, though not severe pain.

She first came under my notice in November, 1841, just ten years ago, when she was admitted into St. Thomas's Hospital under my care. At this time the left thigh and leg were considerably shorter than the right, with all the usual signs of chronic disease of the hip-joint. The buttock was flattened, and the line of the glutæus muscle nearly lost, and much more oblique than on the opposite side. All motion of the joint, which was very limited, gave pain, especially when the head of the thigh-bone was brought forcibly

into contact with the acetabulum. The thigh was bent on the pelvis, and rather everted.

There was a fistulous abscess communicating with the joint, the capsule of which appeared to be much thickened from chronic inflammation; but I could not detect any diseased bone. Tonic medicines were given internally, and issues several times repeated, both in front and behind the joint. She was discharged on the 19th of April, 1842, free from pain in the joint and having gained considerable power of motion, the abscess no longer discharging. With the assistance of a high-soled shoe, she was able to walk very well.

I then lost sight of her till this time last year (Nov. 1850), when I admitted her again under my care; but I find that she was under the care of Mr. Simon, from December, 1847, to March, 1848.

The treatment then consisted of mineral tonics, with a seton over the hip. It is stated in the ward-book that she was presented unrelieved.

The following notes were taken by my dresser, Mr. Complin :—

E. C——, aged thirty, servant, admitted into Queen's Ward, Nov. 26, 1850. The patient had been subject to abscesses about the hip for nearly twenty-five years, which were sometimes open for months, and then, as her health improved, healed up again.

On admission, she had a sinus on the outer side of the thigh, just below the trochanter major, which discharged large quantities of pus every day; the course of this sinus was very tortuous, and the probe could not find its way down to the bone. Her health had suffered considerably, and she became very thin. She was ordered one drachm of cod-liver oil, three times a day; blister to the hip; linseed poultice afterwards. After taking the oil for some time, she suffered from sickness, and that was changed for iodine and gentian mixture, twice a day. The sinus still continued discharging immense quantities of purulent matter.

In the beginning of the year 1851, she suffered greatly from violent attacks of retching, and these attacks were always more severe when the quantity of discharge was lessened. She was ordered an effervescing draught, with one drachm of compound tincture of cardamoms, three times a day, and roast meat daily.

During the months of March and April, she improved in health, the sickness left her, and she was gaining flesh. She was then taking diluted sulphuric acid, ten minims; quinine, one grain; syrup of ginger, one drachm, in effusion of roses, twice a day.

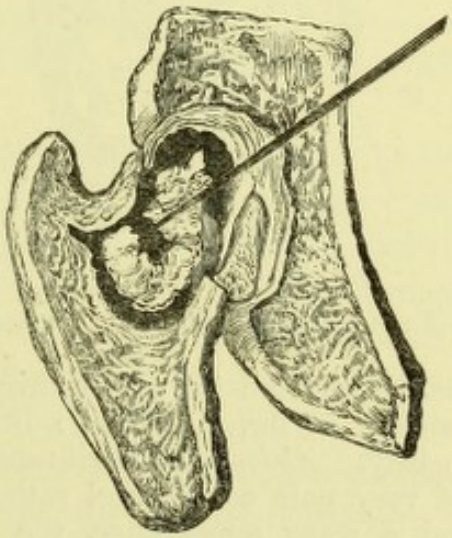
In the beginning of May, the sickness again returned, but without any diminution in the quantity of discharge. She was ordered soda-water and brandy, and one minim of creosote three times a day. Mustard poultice to the epigastrium.

The vomiting continued more or less until the beginning of July, when it again subsided, and she was able to take her food comfortably again. She was ordered two pints of porter daily, and to omit the medicines.

July 19th.—Going on comfortably; takes food; no sickness; discharge still very great. Porter, two pints, daily. During the latter part of July, the vomiting again returned, and continued daily, until she became so exhausted that she could scarcely retain any food on her stomach. Severe diarrhœa also supervened, and she died on the 24th of November, 1851.

Post-mortem Examination.—General appearance: ordinary stature, spare and emaciated; left leg slightly flexed, and drawn

Fig. 1.



Necrosis of the head and neck of the left femur; section.

upwards and inwards. Below the great trochanter of the left femur were two old fistulous openings, communicating with a wide fistulous abscess running inwards in front of the thigh-bone behind the tendon of the rectus muscle (fig. 2). This fistulous abscess is bounded internally by a blind pouch, under the psoas and iliacus muscles. In the centre of it there is an opening in the neck of the thigh-bone, just in front and below the head of the trochanter major (see fig. 2).

This opening is about two-thirds of an inch in length, and half an inch in breadth, through the cancellous structure of the femur (see fig. 2). The cavity, of which this opening is the outlet, occupies nearly the whole of the interior of the neck of the thigh-bone, and contains a sequestrum of dead bone (see fig. 1). The centre

of the head of the femur is absorbed, with its cartilaginous covering. The whole of the synovial membrane and cartilage of the joint is gone; its place is supplied by a firm fibrous membrane, which, uniting the femur to the pelvis, forms a soft but firm anchylosis. The sequestrum is soft and quite loose, and might be

Fig. 2.



Necrosis of the neck of the left femur; anterior view.

broken down and removed from its cavity through the opening in the sound bone, shown in fig. 2. *Chest:* Both lungs perfectly healthy; heart healthy. *Abdomen:* peritonæum healthy; liver greatly enlarged, of very pale colour, and rather firm consistence; a section presented a waxy appearance, the cut surface being remarkably smooth and glistening; the angles and space between the enlarged and light yellow coloured acini were filled with a colourless or slightly greyish translucent substance, of the appearance and consistence of firm uncoloured calf's-foot jelly. Kidneys firmer than usual in texture, but otherwise apparently healthy. Spleen firmer than usual, but apparently healthy. Stomach and small intestines healthy. Cæcum generally congested, and exhibiting numerous irregular ulcers, extending through the mucous membrane. The ascending and transverse colon presented similar appearances, the ulcers gradually diminishing in number and size to the descending colon, which was healthy. Uterus healthy. In the situation of the left ovary there was a coarsely lobulated tumour of about two inches in diameter, which Mr. William Adams, of whose pathological accuracy I can scarcely speak too highly, has since discovered to be a specimen of that rare disease, cholestoma.

The case I have just read is replete with interest to the practical surgeon. Disease of the hip-joint is for the most part a strumous disease, attacking women before the age of puberty. The offspring of the poor in this metropolis are especially liable to it. Scarcely a taking in day passes without one or more of these poor creatures presenting themselves for admission. In some of these cases, though I believe rarely, the disease has commenced in the cancellous structure of the head of the thigh-bone. It is a scrofulous disease of the bone, and extends from its tissue to the cartilages of the head of the femur, without involving the acetabulum. These are cases in which the operation of excision of the head of the bone may be executed with advantage; but they are rare, and it is extremely difficult to distinguish them from those in which the disease has not been limited to the thigh-bone, but in which the acetabulum has become implicated.

The disease is most frequently set up by inflammation of the synovial membrane, induced by exposure to cold, or over-exertion, acting on a frame debilitated by London cachexia; sometimes it results from a direct injury, as in the case just related, and another to which I have often directed your attention, in George's Ward, and the details of which I shall comment upon in the course of these lectures. When the disease can be traced to accident, even if the constitution on which it falls is decidedly strumous, there is always more reason for anticipating a favourable conclusion than when the disease comes on without any apparent cause; and so insidious is this *morbus coxæ* in some instances, that Mr. Ford states on his own personal knowledge that caries of the bone in the cotyloid cavity, and on the head of the thigh-bone, may exist before any external symptoms had proved its presence there. Generally speaking, the child is first observed to limp in his walk, and on being questioned by his parents, complains of pain in the hip, or not unfrequently on the inner side of the thigh, near the origin of the adductor longus muscle. The pain is not usually severe, and consequently is too often

neglected by parents until the disease has considerably advanced, as we have seen in the case which is our text for these observations.

If the patient is brought to you in this stage, you find that pressure over the joint in front will be attended with pain, for the synovial membrane is less covered in this situation than behind, and it is therefore more susceptible to the touch. Extension of the limb on the pelvis, and swinging it in the air while the weight of the body is sustained by the opposite limb, is also extremely distressing to the patient.

In the early and acute stages of the disease, when the joint is distended with an increased quantity of synovia, the buttock appears fuller than the opposite side; and this same fulness may be observed on the front of the joint in the groin. Still it must be allowed, that though it is not difficult to diagnose acute inflammation of this joint, yet it is difficult to state accurately the extent to which that inflammation has run. The hip-joint is so much covered in by muscles, that we cannot detect all the changes which go on in it, as we can more or less perfectly in the knee-joint, which from its exposed position can be much more easily examined. In the case of the knee-joint, we can compare the shape, form, and appearance of the sound joint so much more accurately with the diseased than we can in the hip-joint.

It has been said, that in the early stages of hip-disease the limb is lengthened. But here again the change is more apparent than real.

I believe that a very slight degree of elongation does take place, and from the following causes; but the very enumeration of the causes will convince you that this change must be almost inappreciable.

1st.—Relaxation of the muscles allowing the bone to drop from the socket.

2ndly.—Effusion into the joint, distension of the capsule, and protrusion of the bone.

3rdly.—Thickening from inflammatory deposit of the adipose substance which occupies the centre of the cotyloid cavity.

In a practical point of view, I consider this lengthening,—though, as I have already said, it is more apparent than real,—important as diagnostic of the acute and active stage of the disease.

It is only in this stage that I have found any local depletion of service; for, as a general rule, and certainly in the more advanced stages, leeches, and other means of local blood-letting, only do harm, by weakening the powers of the patient. It is in this stage that absolute rest is so important, and that calomel and opium are of real use.

Pressure of one articulating surface against the other does not much affect the patient, unless there is ulceration of the cartilages; and therefore this manœuvre is often a means of diagnosing this additional mischief. The mere pushing the os femoris directly into the acetabulum will not always give rise to pain, even if there is ulceration; but by giving the thigh a rotation inwards, thus jerking the bone against the inner side of the cotyloid cup, you can generally detect any increase of disease beyond mere synovitis.

After the disease has existed for some time, the rotundity of the buttock is lost, and the edge of the glutæus muscle no longer stands out in bold relief, the fissure separating the nates from the thigh almost disappears, and the line becomes more oblique. These changes all depend on the wasting of the muscles from disuse, consequent on the state of the joint admitting of but little motion.

The patient often complains of pain of the knee, referring it to the inner side. This pain has usually been considered sympathetic, and I believe that it generally is so, but M. Bonnet, to whose work I shall again have occasion to refer, considers "that the pain arises from actual disease in that joint."[1] He is not able to prove this opinion by numerous facts, for he says, "I have neglected, as preceding authors have done, to open the knee-joint,"—in those cases in which he has dissected the hip-joint; but on one

[1] Tome ii. p. 275.

occasion when the hip had suffered from chronic disease, he found synovial disease in the knee, with absorption of the cartilages. He attributes this secondary affection of the knee-joint to the compression and distension which the knee-joint suffers from the false position in which it is placed by the fixed flexion and inversion of the thigh.

In the case of E. C——, there was unequivocal shortening of the limb, so much so, that she required a sole to her shoe of at least four inches, to enable her to walk at all evenly. Now, whence this shortening? If we look at the head of the bone, we find its convexity diminished; but that is all. If we look to the neck, we find it very nearly the ordinary length in a female of her stature. No absorption of its exterior has taken place; the obliquity also is normal. It has not assumed the horizontal line which shortens the limb in old age. The explanation is simple, and rests upon a very important law in the economy—namely, that the development of every part of the living organism which is not normally employed during growth is more or less arrested; and I feel no hesitation in saying, that if the diseased thigh-bone had been compared with its fellow on the opposite side, a considerable difference would have been discovered in the length, size, and height of the two bones.

In some cases of this disease, as you may see in one of my patients now in the hospital, the os femoris is actually dislocated, and the head of the bone lies on the dorsum of the ilium. In such cases there is no doubt regarding the shortening; but there are cases in which there is apparent dislocation, and the signs of which have been so distinct, in the opinion of the attending surgeons, that they have felt no doubt on the subject, but in whom a post mortem examination has proved that there was no displacement whatever.

But these observations must not lead you to suppose that, in all cases of disease of the hip-joint, the shortening of the limb can be thus accounted for, or that there is a positive shortening of the limb in all cases of this disease.

We have already seen that one of the characteristics of *morbus coxæ* is, that the thigh is flexed upon the pelvis, so that the toe can only just reach the ground; and so far the limb is shortened. It is a point of some importance, and it is one on which much has been written, to ascertain whether the limb is really, or only apparently shortened; and there are other cases in which the head and neck of the bone are removed under the action of carious absorption. Here, again, there can be no doubt the shortening is real. But in the greater number of cases the shortening is only apparent, not real. It arises from the alteration in the position of the pelvis from lateral curvature of the lumbar vertebræ; and if this curvature has not existed so long as to have become permanent, the error may be detected by placing the pelvis of the patient, when in bed, at its proper right angle to the spine, and then, if the diseased joint will permit the extension of the thigh, placing the limbs parallel. If it cannot be accomplished in this way, accurate measurement from the ant. sup. spin. process of the ilium to the patella, and thence to the sole of the foot under the ankle, will generally decide the question.

I regard the case of E. C——, as one of strumous disease of the head of the thigh-bone. If this view is correct, I think we may derive some encouragement in our endeavours to arrest this sad affliction in the cases that come under our care. The disease appears to have been excited in the first instance by an accident; but she was not laid up or prevented following her employment at the washing tub or elsewhere, as would have been the case if the accident had been attended by acute inflammation of the synovial membrane and ligaments, or its consecutive ulceration of the cartilages. It has been proved by Sir B. Brodie and others that this strumous affection goes on insidiously, accompanied by little pain. The disease, I conclude, extended slowly from the bone to the cartilage. The cartilages were slowly ulcerated; matter formed in the joint, and found its way out by several openings. In this stage of the disease she came first under my care, in 1841. I believe that the

measures then adopted arrested the ulcerative process, and the suppurative action with its debilitating consequences. A conservative action was set up, fibrine thrown out, and that firm fibrous membrane organized which you see uniting the head of the femur to the acetabulum, and filling up the joint. But unfortunately for the poor girl, a portion of the neck of the femur had died, was necrosed, and the dead portion, or sequestrum, which you see occupying the interior of the neck of the bone, remained to the day of her death a source of irritation and purulent discharge.

It behoves us, therefore, to inquire how this happened. My own view of the course of proceeding is, that the supply of blood was cut off from this circumscribed portion of the femur by the destruction of the ligamentum teres, and the artery which runs down the centre of it. The existence of this vessel has long been known to anatomists, and its importance in regard to the nourishment of this portion of the bone was well insisted on by Sir Astley Cooper in reference to the repair of fractures of the neck of the thigh-bone within the capsule. But this may not alone have been sufficient; and we may then adopt Mr. Lloyd's suggestion. This author states, and Sir B. Brodie agrees in this view, "that in the last stage of this disease the bones not only lose the preternatural vascularity which they possessed at an early period, but even become less vascular than healthy bone."

But whatever be the explanation of the fact, the fact itself is a most important one, that a sequestrum may remain for years in the neck of the femur, discharging matter, to the destruction of the patient, though the original disease of the joint which produced the sequestrum has been arrested, and the disease of the joint itself entirely cured. I do not know of any other case on record exactly similar. I have related it at the Pathological Society; and although there were many surgeons of eminence present, none had seen its parallel.

Its importance can scarcely be over-estimated in a practical point of view. For though, in the first place,

her general health during the later period of life seemed to preclude the possibility of operating without a fatal issue, and, in the second place, the disclosure after death, of extensive visceral disease, showed that the operation must have been in vain, even if she had recovered from the immediate effects of it,—there are other cases in which the patient's health is good, with the exception of that depression which must accompany profuse suppuration, and in whom an operation would be warranted, and very probably lead to a complete recovery. Caries, limited to a small portion of the neck or trochanter of the femur, sometimes occurs, which might as easily be removed, and with the same prospect of success, as the sequestrum we have just been considering. Mr. Knox, in "Some Observations on Excision of the Pelvic Extremity of the Femur," has referred to several cases of this kind: two occurred in his own practice. In one, which occurred in 1816, the disease had existed three years, but the operation of excision of the head of the femur had then never been proposed; and though Mr. Knox, feeling convinced that the joint was not implicated, was desirous of cutting down on the caries, his colleagues gave him no encouragement. The operation was not performed, and the patient died exhausted. On dissection it appeared that the caries was limited to the outer surface of the trochanter major, and might easily have been removed by a file or by the head of a trephine.

The second case occurred in 1825 or 1826. The patient was a farmer in Roxburgh, and the case was so clear to Mr. Knox that he proposed operating; but as he was much out of health at the time, he intended recruiting his health by sea air, &c., first. However, in the meantime, he fell into the hands of another surgeon, who, not having the same prudence, operated at once, and the patient sank. On dissection, it was proved the disease was confined to the trochanter major, the joint being perfectly sound.

Only a few days ago, in company with Mr. Fillitter, a surgeon in the Hackney Road, I saw a case in many

respects similar to the one we have lately watched in the hospital. The subject of it is a gentleman of stout build, moderate height, and dark complexion; habits uniformly temperate. When a child of about six years of age, he was attacked with pain in the left hip-joint, and subsequently lameness. Twelve months afterwards, an abscess formed, giving rise to much constitutional disturbance, which reduced him greatly. He was seen at this time by Mr. Green, of St. Thomas's Hospital, who stated that he was labouring under disease of the hip-joint. After confinement for about a year and a half, during fifteen months of which the abscess continued to discharge, and a second, apparently superficial, formed over the buttock, he regained health and strength; the affected limb was shortened, and the shortening increased after he got about. A small opening remained over the fore part of the limb for four or five years, yielding a very slight discharge. This wound reopened three times up to the age of nineteen years, since which time, up to the date of the present attack, he has had merely occasional stiffness with pain, lasting for a few days. For four years previous to the present attack, he believed himself to have been entirely free from any local symptom whatever, and has frequently walked twelve or fourteen miles without fatigue.

In March, 1849, whilst in good health, he became troubled with pain, somewhat of a rheumatic character, in the outer part of this hip-joint, causing an apparent weakness in the limb. This was preceded by occasional stiffness, and followed by an abscess which opened below the trochanter. Six weeks after its first appearance, it was attended with a good deal of suffering at night. In May, a second opening formed, and he again consulted Mr. Green, who recommended rest, and sarsaparilla internally, and gave it as his opinion that the head of the femur was diseased, but the acetabulum not so. The discharge from these openings was flocculent, with thin purulent fluid, and the formation of the abscesses was attended with a good deal of destruction of substance. A third and very large abscess formed

shortly afterwards at the outer side of the joint, from which he suffered great pain, relieved only by lying on the sound side, with the affected limb resting on the other, thereby removing pressure from the joint. Towards the latter end of July he recovered sufficiently to leave town, and remained in the country upwards of two months. On his return he regained his usual health, and resumed his occupation. The limb, however, continued weak, and the openings remained. Early in November, in consequence, he imagines, of a little over exertion, or the use of iodine injections, which he had tried for some weeks (strength of half a grain to one ounce of water), a fresh abscess formed, with symptoms similar to the last, in the neighbourhood of the joint, and compelled him again to lie by; and shortly after a superficial collection of matter, apparently a suppurating gland, made its appearance at the inner side of the thigh. After these had discharged their contents he became free from pain, and has continued so up to the present time (January, 1851). Minute fragments of bone have escaped with the discharge from the openings on the outer side of the joint.

Present state.—General health good; pulse ranging from 85 to 100; tongue clean; taste somewhat impaired, but appetite and digestion good; walks easily for a short distance, and climbs stairs readily; much exertion produces dull pain in the joint. There are on the fore part of the limb the depressed adherent cicatrices of old abscesses, and on the fore and outer parts four papillary openings of sinuses, three of which I ascertained to lead to bone, carious, certainly, but I could not detect a detached sequestrum; the discharge from these is flaky and thin. On the inner side are two openings of a superficial sinus. The limb is shortened to the extent perhaps of two inches and a half; is smaller in circumference than the right. The foot is everted, the trochanter approximated to the spine of the ilium; and on flexing the thigh on the trunk, which he can do almost to the full extent, the whole pelvis is most distinctly seen to move with it, rotating on the opposite femur,

the joints of the lumbar vertebræ yielding considerably at the same time; so that the thigh-bone on the diseased side moves *with* the pelvis, but not in the least *on* the pelvis. I believe that in this case there is a sequestrum in the neck of the thigh-bone, and I therefore believe that an operation is justifiable.

I heard of a case, a few days ago, in which the head of the femur was excised; and after the operation had been performed, it was discovered that the head of the bone was sound, with the exception of a sequestrum in its centre, which might have been removed without the excision of the head.

You will learn from these cases that one of the results of disease of the hip, knee, and other joints, may be the production of a sequestrum in the head of the bone entering into the composition of the joint; and you will see how important it is to ascertain, by a most careful and searching examination, the presence of such sequestrum, with a view to its removal by operation.

I cannot conclude these observations without adverting to the existence of long-standing disease of the liver in this case. The frequent concomitance of disease of the liver with disease of the hip, has been pointed out by Mr. Coulson, who states that in the Margate Infirmary leeches and other measures are oftener applied to this organ than to the affected joint. I am unprepared to account for this alliance. I know not whether it should be considered cause or effect; but I am disposed to believe that they both arise from the same strumous diathesis. The fact is important, and you should remember it in your treatment of this disease.

LECTURE XXIII.

On Diseases of the Joints.—*Continued.*

In my last lecture I directed your attention to a disease of the hip of long standing. To-day I shall endeavour to interest you in some of more recent date.

The first case that I shall read to you is one which has engaged my attention for some time, and especially in reference to this operation of excision of the head of the femur. It has been the subject of many consultations with my colleague, Mr. Green.

Wm. B——, aged 30, labourer, admitted into George's Ward, under the care of Mr. Solly, March 25th, 1851, with an abscess in the right thigh. He states that he fell from a scaffold about twelve months since, and struck the outer side of the thigh, about the situation of the trochanter major: he rested a day or two, and then resumed his work, but ever since he has had pain in that neighbourhood. About six months ago he noticed a swelling near the insertion of the tensor vaginæ femoris muscle, which soon became prominent and tender; but he continued his work until about two months since, when he became quite unable to walk. He has had blisters and other applications constantly applied to the part, without any benefit. Now the swelling can be covered by the hand: it has a rounded outline, and presents distinct fluctuation. The pain has been of a dull aching character, increased by any movement of the limb. The latter appears to be shortened, but there is no difference compared with the sound limb when measured from the anterior superior spinous process to the patella. The general health is not much affected; the pulse is quiet, and tongue clean. An incision was made into the abscess, and about thirty ounces of thin whey-like matter evacuated, with some curdy flakes in it: a poultice of linseed was then applied. The opening continued to discharge a large quantity of ill-formed pus for some time; he became feverish towards evening, with cold flushes, and lost his appetite; the pulse increased in frequency, and on March 31st was 110, on which day he was ordered a pint of porter and strong beef-tea. He then began to improve, the hectic symptoms decreased, the discharge became

less, and the appetite better. The walls of the abscess seemed to be uniting, and a probe introduced into the wound only showed a long sinus, which passed quite up to the trochanter major. About the middle of April he began to complain of pain in his knee, and a good deal of tenderness in the groin: the pulse became quicker, and he had profuse perspirations. He was ordered disulphate of quinine, two grains; dilute sulphuric acid, ten minims, in compound infusion of roses, three times a day, and a slice of roast meat daily.

He continued in much the same state for some weeks. About May 18th the discharge became thicker, and quite changed its character, being of a port-wine colour, and very profuse. The probe passed its whole length into the sinus, and then touched a portion of dead bone close to the trochanter major. At this time, the sweating and quick pulse subsided a little, and still more after he had taken four ounces of wine daily, which was first ordered May 19th, 1851. The red discharge continued for about three weeks, and then became milky again. A small piece of bone came away, about the size of two barleycorns. The discharge diminished, the hectic state subsided, and he seemed to be gradually recovering. It was noticed, about June 1st, that the foot had changed its position, and was turned outwards. There was also a shortening of the limb for at least three inches, and the hip itself had become very prominent. On measuring the limb, the distance between the knee and the anterior superior spinous process was found to have decreased at least an inch and a half, whilst the trochanter was at least an inch farther from it; probably more, but it could not positively be determined, on account of the thickening over that process. He now remained stationary for about a month, when the bloody discharge was set up again, and continued more or less for a fortnight, and then subsided. This was about the middle of July: at the end of that month another small piece of bone came out of the sinus with the discharge. The pain in the knee and groin quite left him, and he improved considerably in his general health. In this state he had continued since that time, entirely confined to his bed, and for months unable to help himself at all. About the beginning of November he became able to bend his knee a little, and move himself without any pain. The discharge, which was quite purulent, diminished in quantity; his appetite kept good, and his pulse quiet.

This case is not an ordinary case of strumous disease of the hip-joint. I thus read its history:—The fall from the scaffold injured the hip, and set up inflammation; not sufficiently acute to prevent him from following his occupation. His scrofulous diathesis, inherited from a phthisical parent, gave a sluggish turn to the diaease; slow but extensive suppuration ensues.

During this stage, the poor fellow was very nearly sinking into the grave, and for some days I hardly expected to see him at my next visit; but thanks to a tonic plan of treatment, and the nourishment and stimulants which our amply endowed hospital enables us to order, he has, by the blessing of Providence, weathered the storm; and if I had lectured on his case a few weeks ago, I should have said, that I hoped that the disease was arrested, and a new though false joint had been formed; but these hopes have been disappointed. He was anxious to go into the country, and I thought it right to see if he would bear a little change from his bed for a short time during the day; but even this movement induced fresh inflammation, and a considerable increase of suppurative discharge.

Such a change as dislocation of the hip, from its effects and consequences, when it occurs to a man in health, and remains undetected and unreduced, must be regarded as one of the greatest misfortunes that could happen to him; but not so in disease of the hip, for dislocation does not take place until the joint has been so completely disorganized, that, as a joint, it is useless. The ligamentum teres is gone; the edge of the acetabulum, with its cotyloid ligament, has crumbled down, and has been carried away by the stream of pus which has so long flowed from the joint; its containing capsule is rent asunder. It has been recommended, when such displacement was likely to take place, that mechanical measures should be adopted to retain the bones in apposition. This is a great mistake, and Nature, in her measures on this occasion, as on many others, shows herself a better pathologist than the surgeon.

The patient is relieved by this change from the misery he has so long endured by the friction of two ulcerated surfaces; and it is most striking how our patient, whose case I have just read to you, improved in general health, evidently by relief from pain, as soon as the cervix femoris was released from its distressing prison-house.

I do not mean, by these observations, that you are to be indifferent to the displacement of the bone, or to encourage it, but I wish you to understand that you must not endeavour to keep it in its place by force; and that when there is much suffering, it is better to leave it to nature.

Nevertheless, in all diseases of the hip-joint, you cannot pay too much attention to the position of the limb. If the limb is allowed to be much flexed, and rotated inwards, pressure will be made on the outside of the capsule, and dislocation on the dorsum ilii will occur before the diseased condition of the cartilages really requires the change. If, on the other hand, the thigh is everted, then dislocation may take place on the os pubis, from undue tension of the inner surface of the capsule; and again, even if dislocation does not occur, but if you succeed in procuring anchylosis, the position of the anchylosed limb is very faulty. It is therefore very important to keep the limb extended, if possible. I say if possible, because in many of these cases the flexed position is so much easier to the patient, that any attempt to extend it gives such severe pain, and sets up so much constitutional disturbance, that we are frequently obliged to abandon it; for you must remember that your patient's life, which is in jeopardy, must not be risked by increasing the constitutional irritation, which is often very severe. When I speak of an extended limb, I do not mean that it should be perfectly straight; for when the hip-joint is anchylosed, it is better that the knee should be slightly bent; the patient being able to walk better with the limb a little flexed, and it is more easily carried over inequalities in the surface of the ground than when it is quite straight.

Jean Louis Petit, in 1722, first pointed out the existence of consecutive dislocation as the result of disease of the hip-joint. Louis Petit was a fine old surgeon, and he liked to protect his professional brethren. On one occasion he was called to see a lady, who was suffering from disease of the hip, who, to use his own words,—

"For two months after a fall had complained of a rheumatic pain that had seized upon her hip and her whole thigh. At the recital that was made me of her fall, and the circumstances that attended it, I was prepossessed, even without touching her, with an opinion that the thigh was dislocated upwards and outwards. Nevertheless, before I told her all, I examined her, and found all the signs that denote this luxation. I then declared to her that her thigh was disjointed. The assistants blamed the surgeon who had her under cure because he had not discovered this dislocation. I informed them that they blamed him wrongfully, because he had not seen the patient but the three or four first days; and that, besides, this disease is not known, though very frequent, and does not manifest itself till a long time after the fall.

"'Tis a luxation of a very particular kind, which the strokes don't produce at first, but of which they are the occasional causes. 'Twas by having been deceived myself, and having reflected upon my error, that I found it out, and give the observation of it at present, to the end that for the future the number of cripples may not be so great. There are many whose limping is only caused by this distemper not being known in its beginning.

"Many of the profession who were called in, as well as myself, pretended to excuse the surgeon, but by such weak and extravagant arguments as, far from destroying, confirmed the error of those who blamed him.

"There are many such false brethren, who only attack our reputation by silence; a dumb language, but so much the more eloquent as 'tis affected. As I am an enemy to such treacherous persons, far from being silent on this occasion, taking part with the truth, I assured them that the thigh was not luxated at the time of the fall, but long after."

Mr. Collis, of Dublin, in his lectures, makes an observation, which, though I cannot confirm it by my own experience, is one of sufficient importance to be worthy of your attention. The patient labouring under hip-joint disease will often appear to get almost well, and his parent and medical attendants will congratulate themselves on his improved condition, when they will be very much disappointed in their expectations by finding him with the symptoms of hydrocephalus. He gets convulsions, and may be carried off in twenty-four hours. This, Mr. Collis says, he has often seen occur.

The second case is the pure strumous disease of the joint.

George H——, aged five years, was admitted into Queen's Ward, under my care, December 2nd, 1852, with disease of the hip-joint.

On admission there was an abscess pointing behind the great trochanter of the left thigh; the limb was not wasted; the toes of the left foot rested on the tarsus of the opposite side, and the knee was turned inwards over the right thigh; there was the cicatrix of an old sinus at the upper and under part of the thigh; the child was of a florid complexion and an intelligent countenance; strumous appearance, with a large head and thick upper lip, but the abdomen was soft, and the child well nourished. The mother can give no connected account of the disease, but states that the child fell down stairs sixteen months ago, but did not walk lamely until four months ago, when the abscess formed. They have not fared well of late. The father died of phthisis, and she had to work for her family.

Dec. 3rd.—I opened the abscess, and about six ounces of healthy-looking pus escaped; the swelling was lessened upon the buttock, but still there appeared considerable deformity of the hip—so much so, that many thought that the thigh-bone must be dislocated. The diseased limb appeared much shorter than that on the opposite side. The thigh was flexed and inverted on the pelvis, and the foot rested on the dorsum of the opposite side. There was a good deal of swelling over the trochanter major, which gave the appearance of an unnatural projection of the bone. But the shortening was only imaginary, not real. On measuring the limb with great care, from the anterior superior spinous process of the ilium to the patella, the length of the limb was as nearly equal as possible, though it did not reach the ground; for the pelvis was tilted obliquely by a slight lateral curvature of the lumbar portion of the spine. The distance from the spinous process of the ilium to the trochanter major was also equal on both sides. The head of the thigh-bone could be felt in the groin, but not so distinctly as on the sound side, in consequence of its being thrown into a hollow by the contraction of the psoas, iliacus, and adductor muscles, which contraction is increased by the pain which all pressure on the front of the joint produces. The same conservative and instinctive action of the muscles prevents our rotating the joint, and combines with the other symptoms to give the appearance of dislocation.

The treatment which I have adopted in this case has been very simple. The cod-liver oil has been given internally, and a poultice applied to the abscess.

The possibility of performing any operation has been carefully considered, and this leads me to observe that diseases of the hip-joint have assumed a greater interest in the eyes of the surgeon, since he finds that there are many cases in which the disease may be arrested by operative interference. Disease of the hip-joint was formerly considered a hopelessly lingering complaint, in which the services of the surgeon were of little use; but the advance of science has assisted in detecting the

disease in its earlier stages, before the disorganizing process has irremediably destroyed the joint, and rendered all local and constitutional treatment unavailing. It has also been proved that in some cases the disease may be removed by the scalpel and the saw, and a cure may be thus accomplished.

The establishment of this principle in operative surgery has seriously increased our responsibility; for it is not in every case—no, not one in ten—in which any operation could be recommended. It is therefore your duty to investigate each case most carefully, in order to decide whether an operation should be performed or not. One of my objects, in these lectures, is to call your attention to all those circumstances which will assist your diagnosis. It is by no means an easy matter, in these cases, to determine the propriety of operating. Hence the duty of studying, with the greatest care and attention, the whole subject while you have such a wide field before you as this hospital affords.

The opinion of the profession is still very much divided on the propriety of operating in such cases. The success which has attended Mr. Syme's operation for excising the elbow-joint, has naturally directed the attention of the profession to the extension of the same remedial measures to other joints; and though I find Mr. Syme, in his latest publication, stating that "more extended experience has confirmed my conviction, that the shoulder and elbow joints are the only articulations which admit of excision with advantage for caries;" and again, "I have now operated on the elbow upwards of ninety times, and with results almost uniformly of the most gratifying kind, &c.," with the greatest respect for this talented surgeon, I still think that it is criminal in the surgeon to shut his eyes to the advantages to be obtained from the judicious application of this operation of the hip-joint.

To Mr. Anthony White, of the Westminster Hospital, is due the credit of having first successfully performed this operation. This he accomplished in April, 1822. There is a very neat account of it in Mr. South's trans-

lation of Chelius. The subject of the operation was a boy twelve years of age, who had suffered severely for three years from strumous disease of the hip. The operation was successful in every respect. The boy died five years afterwards, of phthisis, and the parts are deposited in the museum of the College of Surgeons. It is much to be regretted that Mr. South has not favoured the profession with his opinion of the value of this operation.

The practical writers on surgery give extremely meagre advice on this point. Mr. Bransby Cooper, in his valuable work on Surgery,[1] simply says,—"It is neither difficult nor dangerous, if the period for its performance be judiciously chosen," but he does not assist us in our inquiry what are the cases which justify the operation, or when is the period at which it should be performed.

Mr. Skey says,[2]—

"This operation is rarely justifiable, or when performed answers any good purpose. The operation is only indicated in disease of long standing, in which the parts are much attenuated, and when abscesses form about the joint or around the head of the bone."

Professor Miller, of Edinburgh, says,[3]—

"Till lately, this operation has not had a place in surgery; and it is still begirt with difficulty and danger. As just stated, in a few cases of advanced morbus coxarius, it may be deemed warrantable —when the head of the femur is dislocated, and is causing continuance or aggravation of excitement; when the joint is open, and when there is reason to believe that the acetabulum is comparatively free from disease."

I am glad to see by the *Lancet*,[4] that my experienced friend, Mr. Stanley, of St. Bartholomew's, whose attention has been so long directed to diseases of bone, has become a convert to this operation, because I know that, with his caution, he would not undertake it without due consideration.

Mr. Stanley's patient was a girl ten years of age.

[1] Page 321.
[2] Page 393.
[3] Practice of Surgery, page 622.
[4] February 14, 1852.

She was operated upon on the 24th of January, and she has been going on well ever since. He removed the head of the femur by cutting pliers.

Mr. Knox, of Edinburgh, who has published an interesting paper on this subject, is in favour of the operation. He says,—

"To Mr. Fergusson is due the merit, by a series of operations unequalled for a judicious boldness, of proving, not merely the safety of such operations, but their comparative measure of success; he has opened up some important pathological questions, which pathologists had suffered to remain in abeyance for many years."

These operations, it is true, are not uniformly successful, nor always easy of performance; nevertheless, they belong to legitimate surgery, if I may so say. More extended pathological inquiries, by affording a surer diagnosis, will no doubt add still further to the safety of the operation; but they must not, and ought not, to be undertaken rashly, for this it is which has already brought the operation into disrepute. My friend, Mr. Fergusson, for whom I have the greatest respect, both as a man and an operating surgeon, has sent me the following note in answer to one requesting his present views with regard to this operation, and also the merit that was due to him for its revival: he says,—

"I have had only four cases of excision of the head of the femur in my own hands, and three of them are alive and well; one of the cases has been well for six years. The case now dead survived about eighteen months or two years, and died of enlarged liver. There was an open sinus, however, at the hip, and a bit of necrosed bone lying at the bottom. I did not take away the trochanter in this case, but recommend that it should always be removed, even though quite healthy. Of seven cases which I have recommended, and seen the operations performed (those including my own four), five are now alive and well. I do not think, however, that the success with others has been so great; for my own part, I am convinced that the cases eligible for its performance are very rare. Whatever merit or demerit there may be regarding its revival in this country since Anthony White's case must be attributed to me."

Mr. Lizars, in his useful work on "Operative Surgery," gives no opinion to guide the student in regard to this operation.

Mr. Haynes Walton, one of the surgeons to St. Mary's Hospital, took a great deal of pains to collect all the cases which had been published; and, on the 13th of December, 1849, he read a paper on the subject at the Medical Society of London, which unfortunately has never been published in a complete form. On that occasion, he gave an account of twelve cases, six of which died, and six recovered. Two others were mentioned, who had undergone operation, but the results of which he could not learn. The conclusion at which he arrived was, that there were cases of hip-joint disease, where the disease was limited to the head of the femur; the acetabulum healthy, or no longer implicated—that is, having recovered, if it had been diseased; the head of the bone dislocated, and lying in a sinus or abscess cavity; the patient sinking from exhausting suppuration, there being no internal disease or other manifestation of local injury than that in the hip; that the removal of the head of the femur would save life. The cases operated on by Mr. Walton are thus detailed by Mr. Knox in the paper referred to:—

"William W——, aged seventeen, came under my care, at St. Pancras Dispensary, on the 21st of February, 1848. He had just been discharged from University College Hospital. He had the usual symptoms of morbus coxarius. An abscess was opened next day, which discharged about a pint of fœtid pus, with coagula of blood. He had hectic fever, and was much emaciated. Under these pressing circumstances, it was deemed advisable to excise the carious portions of the bone, whatever they might be. If pelvic disease existed, it possibly might be overcome with the gouge. The operation was accordingly performed on the 24th of March. The caries extended much farther down the femur than was anticipated, and I consequently found it necessary to remove, not only the head and neck, but also the trochanters, and with about an inch of the shaft. The condition of the parts operated on was this: the capsular ligament had but a slender hold of the pelvic bones; the head of the femur was also gone; the remaining portion rested against the margin of the acetabulum; this cavity had been denuded by disease of its cartilaginous and synovial apparatus, but otherwise did not seem diseased. I gouged out some portions of the cavity, and they appeared sound. The femoral attachment of the capsular ligament was sound.

"The patient continued to improve for two months, at which time the splint I had used was removed. The discharge had nearly

ceased. Two weeks later, he could rotate the limb, and raise it a little; later still, he could sit up in bed. In June, the limb swelled, and symptoms of general disease for the first time appeared, and he died on the 9th of July, greatly emaciated.

"On examination after death, a few small tubercles were found in the left lung. In the right kidney, all traces of glandular structure had disappeared. An excellent false joint had formed. This boy died, then, of scrofulous disease of the kidneys.

"Case 12.—The last case I have to bring forward—and this includes all with which I am acquainted—was also operated on by Mr. Walton, in the end of October, 1848. The boy was twelve years of age, and had been under his care in the March of that year. The history, as related by Mr. Walton, is briefly thus:—About eighteen months before, all the symptoms of well-marked morbus coxarius came on. Losing sight of him for a time, I found that in the interval he had been under the care of Mr. Syme. This was in August. When I next saw him, he was reduced almost to a skeleton, and abscess and fever had done their worst. Soon after, another abscess was opened by me on the inside of the thigh, near the scrotum; from this escaped much fœtid pus and blood. Thus reduced, there remained but one chance for life—namely, an operation; and to this I accordingly resorted. The head of the bone was not dislocated; the neck was divided with the saw close to the trochanters. The acetabulum was bare, and slightly rough in the centre, and more especially when it came in contact with the head of the femur. He suffered but little from the operation. At eight of the same evening, there came on a serious hæmorrhage, and before I could reach him he was dead.

"A full inspection of the body could not be obtained; all that was permitted was to examine the inside of the thigh, from which the bleeding came. The abscess, it was found, had extended deep among the adductors of the thigh, insulating the great artery and veins from the surrounding textures; where the profunda vein joined the femoral was a small, ulcerated opening, and from this had arisen the hæmorrhage which had destroyed life. Accidental circumstances, then, not necessarily connected with the disease which led to the operation, rendered this measure abortive in both these cases."

With regard to the danger of the operation, Mr. Walton remarks that he has been present at eight of these operations; "that not a ligature was required, and the amount of blood lost was surprisingly small."

The case of Mr. Morris, of Spalding, who sets you an example of what you ought to do, gentlemen, when you go into general practice in the country, is most instructive and encouraging in regard to this operation. His patient was eighteen years of age; inflammation

and suppuration of the hip-joint followed typhus fever seven years ago; during this period the disease has continued, with short intervals of improvement. The right thigh became three inches shorter than the sound one; the knee inclined over the left thigh; the sole of the foot was turned outwards, the great toe pointing to the ground, midway between the heel and toes of the sound foot, against which it rested; the great trochanter projected backwards, and pressed firmly against the integuments, as if it would burst through; immediately behind and below it there were three fistulous openings, leading to carious bone.

On the 12th of November, 1849, Mr. Morris removed the head of the bone, in which there were four carious cavities; he also removed a sequestrum from the neck, behind the acetabulum. The patient recovered rapidly; and Mr. Morris thus justly contrasts his condition after the operation with that prior to it:—"A perfect freedom from exhausting discharge, hectic fever, and excruciating pain; and instead of a fixed and crippled state of limb, a straight leg, and perfect pliability of hip." The report, November, 1850, exactly a year after the operation, was still more favourable.

You will here see the head and neck of the thigh-bone which he removed. To Mr. Haynes Walton I am indebted for the loan of this specimen. You will observe the alteration which has taken place in its shape; it has lost the globular form, and assumed the flattened, mushroom appearance, which has been described under the title of rheumatic enlargement of the bone. All this alteration shows that the disease was not a strumous affection of the bone. It must not then be regarded as a precedent for operating in scrofulous cases; but we have other instances to show the value of the operation, even when the system is labouring under this fearful load.

In diseases of other joints we do not hesitate to remove this disease, though the scrofulous taint is clear and decided. Indeed, we often see that the removal of scrofulous joints so relieves the constitution, that the

whole diathesis appears changed. I have seen this repeatedly in regard to amputations of the knee-joint; and when we come to this part of our subject, I shall adduce some cases to corroborate my opinion. Symptoms of phthisis have entirely disappeared, with a long-continued and enfeebling source of disease.

In my own opinion, the same principles ought to guide us in the performance of this operation as those which influence us to operate or withhold the knife in the treatment of disease in other joints. No surgeon in the possession of his senses, in the present day, for one moment contemplates the performance of any operation until all hope of rendering the diseased joint soundly useful again by other means has passed away. No surgeon proposes to remove a limb unless the disease threatens the life of the patient, and is of such an extensive character, or in such a situation, that nothing but an amputation can remove the disease. For instance, in the treatment of that ulcerative disease of the elbow-joint which has extended beyond the reach of internal medicine or local applications, we remove the diseased surfaces, and the patient retains a useful limb.

Again, in the knee-joint, after having tried in vain to arrest the destructive action and procure anchylosis, we find our patient sinking into the grave with hectic fever, we amputate the limb, and snatch him from the jaws of death. And so we ought to act in the treatment of disease of the hip-joint. If after we have expended all the resources of our art in endeavouring to turn the tide of destructive suppuration, and induce a conservative process, we fail, then we are justified in operating.

The exact extent of the operation no man should attempt to determine beforehand. He must proceed cautiously, and be guided by the state in which he finds the bones, both in the neighbourhood of the joint and in the joint itself, remembering that it is the long-continued suppuration, sometimes going on for years, which is endangering the life of the patient; and this

suppuration proceeds from diseased bone. This, then, is the first fact which you must ascertain distinctly before you determine to operate at all. It has been said that you should not operate unless dislocation has taken place, but with this opinion I do not accord. You have already learnt that this operation has been successful in the case of Mr. Morris, of Spalding, and others, where there was no displacement. Moreover, the best surgeons have been deceived in their diagnosis of dislocation. You have also seen that a wasting suppuration endangering life, when the bone remains in the socket, the joint being perfectly sound, may arise from a small carious spot on the trochanter major or the cervix femoris external to the capsule, though the patient has been supposed to be suffering from hip-disease for years. There is no operation in surgery which requires more caution, more coolness, and more consideration during its performance, than this. I know that in one of these cases the head and neck of the thigh-bone were removed, when the disease was limited to a small carious spot on the neck external to the joint.

It has been said that you should not operate if the acetabulum be diseased as well as the femur, but I do not consider that this should deter you if the life of your patient be in danger. It has been clearly proved that disease in the acetabulum has been stopped, and the cavity repaired and filled up, or rather, I should say, the edges absorbed, and thus the cup obliterated, after the head of the bone has been removed from it.

As a general rule, I do not recommend excision of the head of the femur, unless it is dislocated; but this rule must not be applied too exclusively, for the operation has been performed, and with perfect success, when the bone remained in the socket. But if you have to perform the operation you must take care to displace the bone first, which is comparatively easy before you cut through the neck, but very difficult afterwards.

You need not be afraid of nature neglecting the rest of the femur, if I may so express it, after you have

removed the head and neck. The remodelling power of the absorbents is set to work, the edges are rounded off, and the previously softened bone is repaired and consolidated. In one of Mr. Walton's cases, where the bone was soft at the time of the operation, it was found firm three months afterwards, though the patient died of consumption. Nor is there any want of a capsular ligament in the place of that which has ulcerated away. In favourable cases a firm, dense, sound, fibrous membrane is soon developed, which unites the femur to the pelvis.

I have, then, no hesitation in recommending this operation to you as one that it will be your duty to perform under the circumstances, and with the precaution, I have recommended. Do not rush into it hastily on the one hand, nor timidly reject it on the other, when it is evident that your patient must sink from disease if the surgeon does not remove it. Also remember that if the operation is a legitimate operation in surgery, it is one that, to be useful, must not be delayed too long.

LECTURE XXIV.

On Diseases of the Joints.—*Continued.*

Diseases of the Hip-Joint.

Gentlemen,—I propose to continue my observations on those cases of diseases of the hip-joint which engaged our attention towards the termination of last session.

The name of the patient whose case was the subject of my last lecture is William B——. He was under my care in George's Ward for several months, suffering from very old standing disease of the hip, induced by an accident. It was evident that there was some carious bone, and I had many discussions and consultations with my colleague, Mr. Green, regarding the propriety of cutting down on the joint, and removing the diseased bone.

The date of my report in this case when I last lectured on it, was the 20th of January, and at that time I hoped that we should have been able to avoid an operation; but the improvement was very short-lived, as you will perceive by the following account, from the 18th of February:—

Feb. 18th.—He is suffering from feverish symptoms, with loss of appetite and a troublesome cough; the hip also has been more painful, and the discharge more copious, but no loose bone can be felt. Effervescent mixture three times daily.

25th.—He is now improved as regards his general health; pulse 94; sleeps well, but still has a troublesome cough, unaccompanied with much expectoration; respiratory sounds are tolerably healthy, but mixed with some rhonchus and crepitation of the larger tubes. There is free discharge from the sinus over the trochanter, and the old sinus which had closed has again become open; he is in

no pain, and no alteration has taken place in the appearance of the limb.

March 8th.—He is now complaining of general indisposition and sleeplessness; troublesome cough and loss of appetite; skin warm, and perspiring freely; tongue clean; pulse 108, soft; the discharge, he thinks, has rather increased in quantity, and has a reddish tinge; there is some pain on pressure of the groin. A probe passed down the upper sinus gives the sensation of impinging on bare bone, but of this I am not certain.

16th.—Dover's powder, five grains; nitrate of potash gargle.

27th.—Since the last report he has somewhat alternated in his condition; the discharge has continued copious from both openings, that from the upper one thin and reddish; there has been a good deal of cough, with soreness of the throat, but without expectoration, for which sinapism and gargle were ordered. He was seen by Mr. Green and Mr. Solly, and they decided that it would be advisable to attempt the removal of the diseased portions of the bone as soon as the feverish symptoms had subsided. The cough is now much less, and his appearance is improved, though he complains of increasing weakness; pulse 100, soft; tongue clean; appetite bad; perspires freely; bowels rather confined. An ordinary probe can be passed upwards its whole length through the lower opening, and it can be passed downwards to an equal extent from the upper sinus; the two communicate. In any other direction the probe cannot be inserted to a greater depth than three inches; and over the trochanter it impinges in some solid texture, but no decided feeling of striking bare bone is experienced. The discharge continues copious, but there is no heat or redness of the skin, and no pain in the joint.

It was now very evident that the poor fellow was sinking rapidly into the grave under the profuse discharge of pus. That this purulent drain arose from a diseased cervix femoris, I had no doubt. I determined, therefore, to remove the carious bone, and on the 2nd of April I operated.

My first incision commenced about two inches above the trochanter major, and extended downwards about seven inches, through the upper fistulous opening, and within two inches of the lower. I had to cut though a layer of dense brawny cellular tissue about three inches deep, before I reached the bone. A second incision was then made, about three inches in length, across the front of the joint, in a direction transverse to the first, and joining it at the middle.

The thick fibrous tissues connected with the upper

extremity of the femur were then dissected away. I found the neck of the femur encased in a very firm and partially ossified capsule. On removing this, I felt that a portion of the head of the femur was soft and carious. I therefore proceeded to divide the neck of the femur by means of a circular saw, with a lever movement. By this the shaft of the femur was sawn through, just below the base of the great trochanter.

Great difficulty was experienced in the removal of the head and trochanter from the firm adhesion which had taken place between them and the dorsum ilii, and



Head of thigh-bone removed.

from the cartilaginous deposit which had commenced for the formation of a new acetabulum. After a good deal of dissection, it was, however, separated and extracted. The shaft of the bone below appeared to be free from disease. The surface of the dorsum ilii afforded no evidence of disease in it. The acetabulum was much flattened, its edges partly removed, and its cavity in part filled by deposit, ossified only in patches, and not presenting the soft texture of carious bone, or permitting any indentation from the finger-nail. No vessel required tying, and but a few ounces of blood were lost. The edges of the wound were then brought together by five sutures and strips of isinglass plaster.

4 P.M.—Feels faint; pulse 100, small and weak; the lower limbs, and especially the right one, cool; good deal of cutting pain complained of. Brandy at six o'clock; the temperature of the lower extremities was still low, and pulse feeble; hot bottle applied to the feet, and shortly afterwards two ounces of wine given. 9 P.M.—Surface warmer; pulse 108, more power, but there is a marked variation in its strength, and occasionally there is an intermission. Tongue clean and moist, but has some thirst; there has been but slight oozing of blood since the operation. Half a drachm of Battley's solution, four ounces of wine, and four ounces of brandy, were ordered by Mr. Solly. 12 (night).—Has slept a little; skin warm; perspiring freely; tongue moist; pulse 114, and quite regular, both as to time and power; rather hard. Had some brandy half an hour since.

April 4th: 10 A.M.—Has passed a tolerable night, dozing at intervals, but is troubled by cough; he has no pain at the hip, except when the cough jerks it. Ordered, nitrate of potass, half a drachm; tincture of opium, half a drachm; confection of roses, three drachms and a half; a little to be taken after every attack of cough. Brandy increased to six ounces. There has been only a serous oozing from the wound, the edges of which do not appear inflamed, but below the incision there is some tension of the skin and a slight blush; pulse 116, softer, and not perfectly regular; tongue moist; skin warm and moist; some thirst. 10 P.M.—Has taken a little meat for dinner. At six o'clock he had a slight rigor, and vomited what he had taken. Brandy given. The tension and redness have increased, and at the old lower sinus there are slight bulging and fluctuation. An opening was made and a little pus evacuated. No loose bone could be felt by the probe. He is in no pain except when coughing; pulse 124, regular; feet cool. Hot bottle applied. Repeat opium.

5th: 10 A.M.—Has slept several hours; cough less troublesome; tension and redness of the thigh disappeared, but there has not been much discharge from the wound; the lower half of the wound appears to heal favourably. One suture was divided, and also a strip of plaster. The surface is not hot or red; there is slight oozing of blood and serum; pulse 120, rather sharp, but regular; tongue slightly dry, and coated. Bowels not relieved since operation; no shivering; not much thirst; wound more free; quite comfortable. Arrowroot; two ounces of rum.

6th: 10 A.M.—Had a good night; no shivering; skin warm and moist; tongue moist and clean. Evening—Pulse 124. Has taken some meat for dinner. Wound looking well.

7th: 10 A.M.—Not a good night—disturbed by another patient; tongue clean and moist; appetite better. Skin comfortable. Strapping removed; three sutures cut, and edges brought together by isinglass strips. There is free discharge, thick and mixed with blood; edges looking well, and there is no tenderness or inflammation.

8th.—Slept well and is quite comfortable.

10th.—Good night; pulse 116.

11th.—Pulse 104, regular. Slept well.

14th.—Had a good night, and is quite comfortable; pulse 100, soft.

15th.—Was much the same last night, and has slept pretty well; but on examining him this morning, it was found that erysipelas had come on, the surface over the front of the joint, as far as the middle line down the outer side of the thigh and upper part of the leg, being light red, and somewat tense, and the wound looking less healthy. All the straps were removed, and poultices alone applied. Tongue moist, slightly coated at the base of a yellowish brown; had some headache last night, but is free from it now; little appetite, and he feels more feeble; skin hot but not dry; is in no pain; pulse 104, rather feeble, but varying in power, and occasionally intermits a beat; bowels confined. A poultice was applied along the whole limb on its outer side, and warm white wash. 9 P.M.—Has vomited twice during the day; no headache; face depressed and haggard; tongue a little coated; has taken his food as usual; skin hot; bowels once moved; the redness of the skin is heightened in colour, and is slightly extended upwards, and to the inner side of the thigh, as well as nearly to the ankle: the wound is looking pale, somewhat sloughy, and the discharge is thinner; pulse 136, feeble, and slightly irregular. His night draught was given him, with soda-water, but was soon vomited. Cough very troublesome. Ordered, a mustard poultice to the chest; and twenty-five minims of tincture of opium.

16th: 9 A.M.—Late last night he passed a copious and most offensive motion; he has slept a good deal during the night, and perspired freely; face pale, and countenance anxious; tongue rather dry, and a little coated; takes his food as usual; skin cool and moist; there has been no shivering; no thirst; the edges of the wound are gaping widely, and the surface sloughy, except quite at the bottom, where it is cleaner; discharge thin; the redness of the skin has extended a little upwards, but is paler; and there is not so much tension on the inner side of the thigh; the skin over the thigh is of a dusky red hue, with patches of white, but no evidence of suppuration underneath. On the outer side of the leg, vesication has taken place, and the inflammation has extended down to the ankle; pulse 140, more feeble and fluttering, sometimes difficult to count; but says he feels rather better this morning; takes his stimulants well.

9 P.M.—He has vomited twice during the day; a great deal of pain from the right knee to the foot, and the leg is much blistered and encrusted with scabs; appetite less; does not feel so well. Ordered by Mr. Whitfield, hydrocyanic acid, five minims, aromatic spirit of ammonia, one drachm, in water, every sixth hour.

17th: 10 A.M.—He has slept but little during the night; face haggard and anxious; appetite bad, and he has thrown up what he took for breakfast; tongue more dry and coated; complains much of thirst; skin cool, and perspiring freely; pulse 134, feeble, and

varying; the redness of the limb has extended a little higher on the outer side of the hip, and on the inner side of the thigh nearly reaches to the perinæum; the foot also is involved; the redness is rather heightened in colour, and disappears on pressure; there is no evidence of suppuration going on in any part except the wound, which is sloughy and gaping, and the discharge of a thin unhealthy character.

9 P.M.—He has vomited all that he has taken; but, although he looks much depressed, he does not feel weaker; pulse 166, feeble and fluttering. The foot, as well as the whole limb, is very much swollen, and the redness extends over the whole of the thigh, though it does not appear to have passed higher towards the trunk. He had a little pain on the inner side of the thigh, and here, at the back part, there is an indistinct sense of fluctuation. No shivering; abdomen flaccid, and bowels once moved. Creosote, one minim, three times a day.

18th: 9 A.M.—Has slept at intervals; face pale; eyes somewhat sunken, and countenance more haggard; tongue dry and brown at the centre, moist at the tip and edges; no appetite; has thrown up his breakfast and the brandy; skin cool and clammy; the redness has extended upwards on the trunk, and the limb is more swollen and tense; the wound sloughy, with very offensive thin discharge; pulse between 140 and 150, very feeble, sometimes not to be counted. 5 P.M.—He has vomited everything; eyes sunken; tongue dryer and more coated; hands cold and clammy; there has been some hiccup, and he is now somewhat inattentive, though quite sensible; articulation not quite so distinct; pulse 160. 10 P.M.—Pulse barely perceptible; respiration 46 in a minute; rapidly sinking. He died a few minutes past twelve, having previously vomited repeatedly.

Post mortem examination, April 19th, 1852.—Appearance: Of ordinary stature; body well nourished; right leg swollen and discoloured from recent erysipelas. On the outer side of the right hip-joint was a T-shaped recent incision, and a little below this was an old fistulous opening. The dissection of the hip-joint and neighbouring parts presented the following appearances:—The head of the femur had been removed close to the lesser trochanter, and the cut surface of the shaft, the edges of which were rounded off, was now covered with a thick fleshy layer of granulations; immediately below this the surface of the shaft was irregular, from the growth of numerous small spicula of bone. The remaining portion of the femur was healthy inevery other respect. The cartilage and fibrous tissues of the acetabulum had been entirely removed, and its osseous margin had been destroyed by absorption or caries, so that the natural form of the cavity had entirely disappeared, and it presented an elongated oval form, the long axis of which was upwards and outwards in the direction of the dorsum ilii. The head of the femur in its partially dislocated condition had lodged in the upper part of the cavity. Although the acetabulum had undergone the alteration in form above described, its

surface was everywhere covered with fleshy granulations, and no existing caries or exposed bone was apparent. This joint cavity contained a small amount of pus, and from it a sinus led to the external orifice described below the wound. On the surface of the granulations in the acetabulum and those in the joint were several small fragments of bone. Head: brain healthy. Chest: heart and lungs healthy. Abdomen: liver and spleen healthy. Stomach and intestines healthy. Kidneys: right kidney healthy; in the membranous portion of the left was a considerable quantity of small gravel.



Upper extremity of the shaft of the femur, fifteen days after the operation, showing the deposit modelling the new head.

Such then, gentlemen, is the end of this sad eventful history; but I think you will agree with me in considering it pregnant with interest and instruction.

The only difficulty in the performance of the operation arose from the efforts set up by nature to form a new socket for the dislocated bone; and the extent of the new cup and capsule was so great that I certainly experienced considerable difficulty in detaching the bone from its second resting-place. I employed a circular saw, such as those found useful in section of the horizontal ramus of the face, for the division of the bone.

My reason for preferring a circular saw, in these cases, is the smallness of its range beyond the bone to

be divided. The longitudinal saw, however short it may be made, must pass more or less into the soft parts, unless you can completely displace the head of the bone before attempting to divide; but this is not always possible, and it was not so in this case.

The handle of the ordinary circular saw works at right angles to it, and could not be used in operating on the thigh. I therefore got that ingenious anatomical mechanist, Mr. Millikin, Mr. Bigg's assistant, to put a long lever handle to the saw, and this answered the purpose very nicely. But, in a similar case, I should recommend a larger circle to the saw.

The result of the post mortem examination is peculiarly interesting and satisfactory, for it encourages the belief that had the patient not been cut off by erysipelas, the operation would have proved successful. The disease was limited to the head of the femur, but so extensive that nature could not have detached it from the sound bone under less than months of suffering, accompanied by such a wasting suppuration that in all human probability he must have sunk before it could have been accomplished. The acetabulum and the rest of the femur were sound, so that all diseased bone had been removed by the operation. All the viscera were healthy. The cough from which he had suffered was therefore, as we believed, only sympathetic. The only regret I feel with regard to the treatment is, that I did not operate six months previously, when I first believed that it was a fitting case for such practice. The powers which had been employed in the production of a new acetabulum for the diseased bone, would have been more usefully expended if that diseased bone had been removed; and the greatest difficulty in the performance of the operation would have been avoided —the tearing of the head of the bone from its new socket.

The occurrence of erysipelas was one of those untoward events to which the wards of a hospital are always more or less liable, and had no relation to this

peculiar operation; for although our wards are now seldom visited by that fearful scourge, since the hospital has been thrown more open by the destruction of houses in the neighbourhood, still it will occasionally visit us.

On consideration of all the circumstances of this case, I have no hesitation in telling you that they confirm my opinion, previously expressed, that excision of the head of the thigh-bone, in certain cases of morbus coxarius, is a justifiable operation in surgery; but, if it is right to perform it, it should be done early in the course of the disease.

LECTURE XXV.

On Diseases and Injuries of the Joints.

Gentlemen,—From the diseases of the hip-joint we will descend to those of the knee; but you must take the metaphor in an anatomical, not a surgical sense; for, whether we regard the importance of the joint in locomotion, its complicated anatomical machinery, its exposed position both in relation to atmospheric changes and liability to injury from violence, it is a joint to be placed as high in the scale of practical interest as that which we have just been considering.

Strumous affections of the knee-joint, with ulceration of the cartilages, are fearfully frequent in this country; but, if the scrofulous diathesis is not very intense, you may generally succeed in arresting the destructive tendency of the disease, and procure an anchylosed joint, if you are consulted in an early stage, and your patient will conform to the rules laid down for his welfare.

You will all remember a girl I have just presented from Queen's Ward, cured. It is true that she was in the hospital nearly four years: few, therefore, of the gentlemen attending this lecture will remember her appearance on admission. I am quite sure that you would never recognize the present healthy, happy-looking young woman as the poor wan, miserable, emaciated child that occupied the same bed four years ago. She was so ill that amputation of the limb was quite out of the question; she would have died on the operating table. I had, however, very little hope of being able to save life; but, thanks to the cod-liver oil, perfect and entire rest, good and nourishing diet, with repeated moxas over the joint, both her life and limb have been saved.

It is not necessary for me to read to you the details of the case; the plan of treatment is comprehended in those few words, and its result has been for some time before your eyes. But you must not suppose such simple measures will always be so successful, or such a course of treatment is unattended with anxiety: to be conducted safely it must be conducted with judgment. You must watch such cases very carefully day by day, lest they sink from the wasting discharge which ensues, or are destroyed by the constitutional irritation which they excite.

Cases occasionally occur in which there is no doubt that the life of the patient has been sacrificed in the attempt to save the limb. I had a case of this kind under my care in Henry's Ward, eight years ago. The subject was a young man, about twenty years of age, with unequivocal strumous disease of the knee-joint: he was very much out of health when he came into the hospital, but without any of the physical signs of disease of the lungs. Considering it a fair case to try to save the joint, I adopted such measures as have been already described; but he became worse, and died, after being in the house four months, with tubercular disease of the lungs. I do not mean to say that amputation would have prevented this fatal termination, but I confess that if I had a similar case I should recommend amputation at an earlier period. I do not think, with some surgeons, that the removal of a scrofulous joint increases the tendency to tubercular disease of the lungs. I always consider it my duty to examine the chest carefully, and obtain the opinion of my medical colleague as to the condition of the lungs, before operating; but unless there is very positive evidence of disease of those organs I do not think it right to deprive my patients of this mode of relief. In two cases I have amputated scrofulous knee-joints where there were some symptoms of tubercular deposit in the lungs, but in both cases the patients recovered from the operation, regained their health, and I believe they are alive now, six years having elapsed. As a rule I endeavour to procure

anchylosis, and thus save the limb: if, however, I find the health of my patient does not improve, with entire rest of the joint, and the employment of those tonics which I consider most indicated, then I lose no time in advising the operation. I must again repeat my conviction that of all the tonics we possess there is none equal to cod-liver oil in strumous cases, and that by the assistance of that medicine I have been able to preserve limbs which I doubt if I could have saved without it.

The next case that I shall relate to you illustrates the fatal termination; but I believe that this sad result was entirely occasioned by the patient's own imprudence.

George M——, aged thirty-one years, lighterman, was admitted into George's Ward, under Mr. Solly, Dec. 8, 1851, with ulceration of cartilages and synovitis of the right knee-joint.

History.—Appears to be of a healthy family. Had syphilis and gonorrhœa when he was about twenty-six years old, and took mercury in moderation. Never had rheumatism. He is married. He states that ten years ago he perceived a hard lump, like a nut-shell, on the outside of the patella, between the femur and the tibia, which gradually extended like a cord in the shape of a horseshoe over the condyles of the femur to the other side. At this time he began to feel pain when he was working. The skin was not red, and there was no external inflammation.

The account which an illiterate patient gives of the rise and progress of his disease is never very clear or satisfactory; nevertheless, it is your duty to elicit as much as you can. The conclusion which I draw from this account is, that the disease commenced with chronic or subacute inflammation, and thickening of the synovial membrane in the front of the joint.

His knee did not disturb him at night. He cannot account for the origin of the disease, but says he may have fallen or knocked his knee in the barge. He went to a surgeon, who prescribed iodide of potassium ointment, and rest. The ointment he used, but not the rest.

This poor fellow, in taking the medicine but rejecting the rest, was like a great many other patients, even among the higher classes, who ought to know better; he just adopted that portion of the prescription which suited his inclination. Many gentlemen come to our consulting rooms in the morning to be relieved of symp-

toms which are solely the effect of their own indiscretion and intemperance in eating and drinking, and they expect you to cure them by physic, while they pursue the same insane course. They do not object to take medicine; will even consent, if the case requires it, to the application of leeches or blisters; but object decidedly to leave off their wine, or, in the instance of a mercurial course, will not on any account confine themselves to the house. Now, gentlemen, when you meet with such cases you must be decided, even at the risk of losing your patients: such patients only do you more harm than good; you are better without them and their money, whatever it might amount to, if they will not adhere to those rules of diet, &c., which are essential to their health.

The cord-like swelling continued, and the pain became worse, occurring especially when he pulled on or took off his boots. He continued working, and has even walked twenty miles in a day. This state continued until five years ago, when he began to feel difficulty in flexing his leg. The angle of flexion he was able to perform gradually became less acute, and then more obtuse, until now the limb is nearly straight. Two years ago he went to Mr. Cock, of Guy's, having aggravated the pain by a fall, who prescribed rest and iodine ointment, leeches, and poultices, and some stomachic medicine. He rested, however, very imperfectly, only on Sundays.

Last May he came here to Mr. Solly. At this time he could scarcely bend his knee, and was incessantly knocking his toes against stones as he walked, and the capsule would fill now and then, and subside again. Mr. Solly ordered leeches, blisters, rest, and quinine, and advised him to come into the hospital. However, he did not come in, but continued his employment until October, when he fell down the watermen's stairs, and somehow had his knee forcibly bent under him. This gave him excruciating pain, but he hobbled home, and found the knee-joint immensely swollen. He poulticed and rested it, and the swelling went down, and he came backwards and forwards in a cart as an out-patient of Mr. Solly's, and was at last prevailed on to come in, on the 8th of December.

Dec. 8.—The limb is now nearly straight and immovable, all motion giving great pain. When he fell down the watermen's stairs, the forcible flexion was accompanied by a sensation, he says, of the breaking up of cartilage. The affected leg is atrophied, and he has lost flesh generally. There are occasionally severe aching and shooting pains, which sometimes awake him at night. There is great bulging of the capsule around the patella, and his general

health is much impaired. He sweats a little at night, but eats well, and has a tolerably healthy complexion. He is losing weight. The pulse is good. The knee-joint measures round sixteen inches and a half. Put up in a M'Intyre's splint; to take iodine mixture, &c.

Regarding this as a case of synovitis running on to ulceration of the cartilages, in which Nature had already effected anchylosis, I determined to try and assist her in her own course. It was true that the poor fellow, in his anxiety to provide for his family by his daily labour, had done much to counteract the conservative process; still I think it not at all improbable that this would have been effected if he had not had the misfortune to fall down the stairs, and rupture the adhesions which had been formed. But this was not all the mischief that this injury induced; it set up fresh inflammation of suppurative character, for which you will perceive the following treatment was adopted, with the view of subduing the inflammation.

Jan. 9th.—A large horseshoe-shaped blister was ordered. The knee became gradually smaller, but he did not like the restraint of a splint, so the limb was taken out and placed on a pillow beneath a cradle, and the blister dressed with strong mercury ointment.

In the treatment of these affections of joints, where you are endeavouring to procure anchylosis as the only chance of saving both life and limb, you will frequently find your patient secretly as well as openly counteracting your efforts. I speak especially of hospital patients. More than once I have had patients complain of the restraint of the splint, and remove it themselves, not because they really suffered pain from the position or confinement of the limb, but because they were afraid of losing the use of the joint; and no words could persuade them that their safety alone depended on the possibility of producing a stiff joint. I have known this from the confession of the patients themselves. I mention it, not to induce you to shut your ears or disregard the complaints of patients; on the contrary, I think that they always deserve attention; but to warn you against deceit from this cause.

The joint measures fifteen inches and a half round; no pain.

Feb. 1.—The leg and thigh were encased with gutta percha, and rolled, the knee being covered with mercury ointment. Complains of loss of appetite; slightly salivated.

8th.—Mercury discontinued.

18th.—Had a good night; feels better; pulse as yesterday.

19th.—Tongue clean, passed a pretty good night; pulse frequent, small and soft; tongue moist and clean; appetite a little better.

21st.—Opium at night; slept three hours; castor oil in the morning, operated freely.

March 8.—Fluctuation detected in knee and calf; evidently connected one with the other. The splint was removed, and Mr. Solly made an opening in the calf, and about eight ounces of curdy pus escaped. The limb was rolled. Ordered roast meat daily, and porter, beef-tea, wine, arrowroot, eggs, mutton chop.

9th.—Limb unrolled; about four ounces of fetid pus escaped; much constitutional disturbance; does not sleep well; is thirsty and feverish. The knee measures less by an inch since the escape of pus.

10th.—Pus flows from the wound freely; general health as yesterday.

13th.—Integument over knee puffy; there was a sense of fluctuation and an incision was made below the outer condyle; no pus escaped; pus flows from calf.

I now felt that the only prospect of being able to save the life of my patient was to amputate the limb as soon as his general health and the state of the limb would permit the operation, and I therefore requested the opinion of my colleague, Mr. Green, on this matter, who considered there was too much inflammatory fever to operate then, but thought amputation must be the issue.

Mr. Solly made an incision above the head of the fibula; a small quantity of pus escaped.

16th.—Pus flows from the first and third wounds; sleeps badly; is feverish at night; has no appetite; tongue morbidly clean and red; skin dry; bowels confined.

17th.—Passed a good night; had thirty minims of tincture of opium; feels better; pulse small, frequent, weak.

24th.—Tincture of opium, forty minims; did not sleep well; sweats; tongue moist; skin ditto; pulse frequent, but he has rather more power; three wounds discharging pus freely. Two o'clock P.M.—Mr. Solly amputated the thigh about five inches above the knee, and in making the posterior flap, gave vent to a large quantity of pus.

It is a matter of so much importance to the man who has lost his natural leg to move the artificial substitute which art provides for him, that in an amputation of the thigh you must not be induced to carry your incisions high up the thigh in order to avoid cutting into an abscess. The presence of a portion of the wall of an abscess in the flap of the stump does not materially delay it healing.

The femoral artery was compressed by Mr. Le Gros Clark, and not above two or three ounces of blood were lost.

You will perceive by this report that I was assisted by my able colleague Mr. Clark; and I assure you such assistance is of the greatest value in conducting an amputation, where it is so important not to lose a drop more blood than can be avoided. In compressing the artery at the groin, the pressure is not applied until the moment before the incision is made; and there is, therefore, no turgescence of the veins of the limb, as there is under the use of the tournequet, the pressure of which occasions considerable loss of venous blood from the lower portion of the limb. Chloroform was administered, and the femoral vein was tied.

In some cases of amputation, the femoral vein bleeds so profusely that it is absolutely necessary to tie it. This profuse venous hæmorrhage generally occurs in feeble subjects long wasted by disease. The vein dilates under the upward column, the valves become useless, and the regurgitation is fearful. But do not think, gentlemen, that it is a matter of light importance whether the vein is tied or not. All the older surgeons of the present day held it to be a very dangerous practice; and I am convinced that that opinion was not lightly embraced, but was the result of observations on the serious mischief following this step. In modern times it has been the fashion to assert that there is no danger whatever in applying a ligature to a vein. My own opinion is, that both opinions are in the extreme. I can state, from the experience of more than thirty years in this large hospital, that veins may be tied with

impunity; but I am also bound to add, that I have seen phlebitis follow the use of the ligature, and a fatal result the sequence, if not the consequence, of the practice.

Indeed, I believe that this very case is an illustration of the mischief which sometimes ensues from it.

It is quite true that we found sufficient visceral disease to account for this poor fellow's death, without being obliged to look at the state of the veins to explain it; and it is also true that phlebitis and pyemia occur in subjects when no vein has been ligatured. Still, it is my duty to call your attention to all the facts of the case, that they may be stored by you, and compared with the other facts you may be able to obtain on this subject during your sojourn in this Borough of Southwark; and I must again repeat, that a ligature should not be put on a vein unless the hæmorrhage from that vein is so great as to endanger the safety of your patient.

Description of knee-joint, examined one hour after amputation, by Dr. Bristowe.—The knee-joint was entirely disorganized; the cartilages were completely removed from the surface of the patella. The surface exposed to the external condyle was quite denuded, and the exposed bone was nearly smooth and firm; the surface opposing internal condyle was more or less covered by a pulpy substance, but there was no cartilage. The articular surface of the femur was almost denuded; that over the external condyle completely so. The bone was compact everywhere. The surface opposed to the patella was nearly smooth, but irregular and eaten into hollows opposite the tibia. The internal condyle was also much exposed; small patches of pulpy substance adhered to it in places. The inner articular surface of the tibia was completely bare, and the bone roughened; the outer was almost covered entirely by a pulpy membrane. The inner inter-articular had disappeared; the outer was reduced to a thin rim. The crucial ligaments were softened and pulpy; the whole synovial membrane of the joint was inflamed and discoloured, and in places ulcerated, so as to communicate with the sinuses, some of which extended upwards to the thigh, beneath and between the muscles, so as almost completely to invest the thigh-bone; some extended downwards behind the muscles of the calf.

Two hours after the operation thirty minims of tincture of opium were administered, and not having the

desired effect, two hours afterwards, twenty-five minims more; he dozed a little about half-past twelve. He vomited, and did so three times between that hour and two o'clock. He dozed after this; had a restless night; pulse frequent, soft, and full; tongue moist and clear; not much appetite, but still has taken wine, beef-tea, custard pudding, &c.

26th.—Thirty minims of tincture of opium. Tongue clean and moist; pulse less frequent, soft, and more full; appetite better; slight discharge of pus from stump.

27th.—Had thirty minims of tincture of opium. Passed a better night. Took castor oil this morning, which has operated freely; bowels not been opened before for a week; tongue clean; skin moist; pulse frequent and feeble; appetite a little better. As yesterday, the wound looks healthy.

29th.—Wound healthy; twenty minims of tincture of opium; did not sleep well; tongue and pulse good; thirsty, however.

30th.—Had thirty minims of tincture of opium, but did not sleep well. This morning his purgative operated very much, the fæces being very offensive; tongue clean; pulse good. 7.30 P.M. He had a fit of shivering, and after that he became hot, and sweated a great deal; he vomited his food; had thirty minims of tincture of opium, but passed a restless night. Took brandy, beef-tea, wine, &c. Effervescent mixture, and soda-water.

31st: 9 A.M.—Looks haggard; skin cool and moist; tongue brown in the centre, white at the edges; pulse without power, and frequent; no action in the stump beyond the discharge of a small quantity of very thin pus. Mr. Solly ordered him carbonate of ammonia, five grains; tincture of cinchona, one drachm, in effervescent mixture, every six hours, and as much brandy and nourishment as he could take; but he can take no solid food. 12 P.M.—Mr. Green saw him; had rallied considerably. In the evening he became restless again, and sweated. Had thirty minims of tincture of opium at eleven o'clock; restless at night. 4 A.M.—In coughing up some mucus was sick.

April 1st: 9 A.M.—Mr. Solly dressed stump; no action in it, no granulation; no pus; pulse frequent; no power; tongue brown in the centre; had a slight rigor in the night; takes his liquid food; bowels slightly opened this morning. 7 A.M.—Anxious countenance, clammy skin; pulse faltering and without power; takes little nourishment, and ate piece of a mutton chop; dozed in the night; had no opium, had a fit of coughing about three o'clock, and was unable to spit up the mucus. Became cold and died at four A.M., perfectly conscious of what was taking place.

The description which has just been given you of the state of the knee-joint after amputation, is a faithful

portrait of acute suppurative inflammation invading a joint already the seat of chronic disease.

Post mortem examination.—Chest: Pleura on both sides universally adherent by old adhesions. Both lungs thickly studded from apex to base, and groups of small tubercles; intervening lung-structure congested in parts, but otherwise healthy, and free from any consolidation. None of the tubercles in a softened condition. Heart healthy. Abdomen: Peritonæum healthy; liver rather large, pale, and soft, slightly fatty. The right kidney contained a large mass of encysted tubercular matter at the upper portion of the pelvis, into which it projected; the structure otherwise appeared to be tolerably healthy. Left kidney apparently healthy. Stomach and intestines, spleen and pancreas, healthy. Stump: The femoral vein was filled with pus, which extended a short distance into the iliac vein, the middle and upper portions of which were filled with coagulum, and softened at the lower part of the vein, and in the upper portion of a dirty brown colour; the parietes of the vein were thickened throughout. Femoral artery, contracted and healthy, and its extremity in the stump plugged with rather loosely adherent coagulum half an inch in length.

LECTURE XXVI.

On Diseases of the Joints.—*Continued.*

Excision of the Knee-Joint.

Gentlemen,—The subject to which I wish to call your attention to-day is one which is just now (1859) exciting very general interest in the profession—namely, excision of the knee-joint. When this operation was reintroduced by Mr. Fergusson in 1830, I confess I was very incredulous as to its value. I thought that those cases that would be cured by excision might be cured without it. I had had, as you have heard me say before, several cases of apparently hopeless disease of this joint arrested by the repeated use of the moxa externally and cod-liver oil within; a good firm anchylosis being the result. On the other hand, I have had cases of ulceration of the cartilages which have been carried off by phthisis during the progress of a local cure. But we have yet no proof that either excision or amputation would have averted such an untoward result.

The facts, however, that have converted me to the belief that excision of the knee-joint is not merely admissible in many cases, but that it is decidedly desirable, are—first, the time occupied in procuring a perfect cure by anchylosis, which ranges from two to four years in all adults; secondly, that even in the most favourable cases there is great tendency to a recurrence of the disease; and, thirdly, that the statistics of the cases already published show that the operation is not so fatal as amputation of the thigh.

With regard to the statistics of this operation, you will find some valuable information in a paper in the

"Guy's Hospital Reports,"[1] by Mr. Blackburn, who was a dresser of Mr. Key's. He says:—

"The honour of originating the operation as it is now performed, of basing it on sound surgical principles, and of showing its applicability to several of the large articulations, is unquestionably due to Mr. Henry Park, of Liverpool."

In a note, he says,—

"I am the more anxious to make this statement because Mr. Syme and M. Velpeau have thought right to treat very slightingly Mr. Park's merits. The pamphlet in which this gentleman proposes the operation evinces a candid, reflecting, and enterprising mind. The circumstance of his not having had the opportunity of carrying his ideas extensively into practice will weigh little with those who can appreciate the sound arguments by which the proposal is supported. The foresight which predicts the results of an untried measure evinces higher talent than the industry which collects together the evidence of experience. Mr. Park's honour as a man, and skill as a surgeon, are still proverbial in the scene of his former labours." "This gentleman," continues Mr. Blackburn, "after long reflection and many experiments, was led to believe the operation admissible, and in 1781 performed it on the knee-joint with entire success."

I must not, however, be tempted to quote more from Mr. Blackburn, though I shall avail myself of his labours. The poor fellow is no more, and, judging from this paper, his death has been a loss to the profession, while the intellect it displays and the knowledge it contains reflect great credit on the school of Guy's Hospital, where he was educated.

Mr. Park, of Liverpool, with that modesty which so often attends real talent, did not publish his case directly to the profession, but wrote a letter to Perceval Pott, of St. Bartholomew's—a name well known to you, if from nothing else, from the term "Pott's fracture." This letter was subsequently published by Dr. James Jeffrey, Professor of Anatomy and Surgery in the University of Glasgow, in 1806, with cases by Moreau of Paris.

His patient was a strong Scotch sailor, aged thirty-three, having suffered for ten years from disease of the knee-joint. The leg was partially anchylosed at a right

[1] No. II. p. 275, April, 1836.

angle. The slightest attempt to move the leg gave him exquisite pain. "This poor man's sufferings, which had been some time great, were daily increasing, and his health declining in such a degree that he began to beg to have the limb taken off." This Mr. Park declined, at the same time proposing excision; though, as he says, "I rather wished to make the first attempt on the elbow." Mr. Park excised the knee-joint on the 2nd of July, 1781. "The quantity of bone was somewhat, though not much, more than two inches of the femur, and of the tibia rather more than one inch, which were but just enough to enable me to bring the leg into a right line with the thigh, the previous contraction of the flexor muscles being such as to keep the two sawn ends of bone in contact."

The case was not managed after the operation in the simple way that is pursued in the present day, and a good deal of constitutional disturbance ensued, with a foul sloughy sore. Yet, notwithstanding a severe fall, which occurred about seven months after the operation, by which the union was disturbed, he was able to walk about and bear the whole weight of his body on this limb at the end of twelve months from the date of the operation. "This man," says Mr. Park, "afterwards made several voyages to sea, in which he was able to go aloft with considerable agility, and to perform all the duties of a seaman. He was twice shipwrecked, and suffered from hardships, without feeling any further complaint in that limb, and was at last unfortunately drowned by the overturning of a flat in the Mersey."

Mr. Park's second case was unsuccessful, but it was not well selected. The publication of Mr. Park's cases elicited the fact that about twenty years previously Mr. Filkin, of Northwich, had performed this operation with perfect success; but, unlike surgeons of the present day, he hid his light under a bushel. In this case, his modesty or indolence, as regards writing, deprived the profession of a valuable fact. Now, let this be a lesson to you, my young friends, to keep records of all your more important cases when you get into

practice. I do not want you to rush into the other extreme, of publishing every trivial case that occurs to you, without ascertaining whether there is any real novelty in it or not.

M. Moreau, of Paris, was the first surgeon who followed Mr. Park's example. His cases were published by his son. He operated on the 17th of September, 1792. "At the end of the third month the consolidation of the bones was such that I left the limb at liberty in bed; the patient moved it about at his pleasure," says this celebrated surgeon; but afterwards is obliged to record that his patient was carried off by dysentery, very fairly adding,—

"This unfortunate accident deprived me of the pleasure of enjoying the fruits of my cure; but I remained convinced of the utility of the operation, and persuaded of the propriety and necessity of performing it in similar cases. I looked upon my patient as cured, for I had no relapse to dread.

M. Moreau's second case was unsuccessful; his third recovered with a useful limb.

From Mr. Blackburn, to whose paper I have already referred, I learn that, in 1809, Mülder operated unsuccessfully. This brings us to Cases 8 and 9, operated on by Crampton, of Dublin, one only being successful. Cases 10 and 11 were Mr. Syme's; one was successful, the other fatal. On all these cases Mr. Blackburn makes the following remarks:—

"Facts like these require little comment. Of eleven operations, five have entirely failed; one partially, and in the remaining five, though life was preserved, the recoveries were long and tedious. With whatever truth the results of the fatal cases may be assigned to accidental causes, it must be remembered that these accidental causes apply equally to any other operation; and in forming an estimate, it would be unjust to make an exception to the rule which classes all cases not followed by recovery as instances of failure. The excision of the knee-joint is, therefore, a measure against which experience strongly militates."

The operation was now abandoned by the profession for twenty years. The observations of Mr. Blackburn, I have no doubt, made the London surgeons hesitate; and the fact that Mr. Syme, who took up so warmly

excision of the elbow-joint, objected to excision of the knee, of course carried great weight with the profession. Fortunately for humanity, and the onward progress of conservative surgery, Mr. Fergusson had the courage to undertake it in 1850. He was quickly followed by Mr. Jones, of Jersey, Mr. Page, of Carlisle, and Mr. Mackenzie. I must not detain you, in a clinical lecture like this, by further statistical details, but refer you to the excellent monograph of Mr. Butcher, of Dublin; the records of cases in his own practice by Mr. Humphry, of Cambridge, in the "Medico-Chirurgical Transactions;" and Mr. Price's scattered observations in the *Lancet*. In Mr. Butcher's first table of cases occurring between July, 1850, and December, 1854, there are thirty-one, of which only five proved fatal. In his next table, from December, 1854, to December, 1856, he records fifty-one cases, with only nine deaths. This proportion of deaths compared very favourably with those from amputations of the thigh, which, as far as our records go to the present time, are seldom less than one in three.

Mr. Humphry, surgeon to Addenbrooke Hospital, Cambridge, has published, in the "Medico-Chirurgical Transactions" for 1858, an account of thirteen cases in which he excised the knee-joint. The whole paper is very instructive, and well worthy perusal. Of these thirteen cases, one died, as I believe, from the effect of previous disease; in four, amputation was necessary; in the remaining eight, a useful limb was preserved.

At this hospital—St. Thomas's—we are indebted to our senior surgeon, Mr. South, for its introduction into our operating theatre. The success which attended him has encouraged others to follow his example. He has had six cases, with only one death following immediately upon the operation. This was in a female, who lived fourteen days. In another case, death followed, but as the patient lived ten months, the operation cannot be considered the cause. The particulars of these cases will be published at some future time by Mr. South himself. Mr. Clark has also had two cases, the first

eminently successful, and the second progressing favourably. I have had three cases; the first was not well selected, as the poor fellow died of rapid phthisis. As far as the operation was concerned, it was encouraging. He experienced immediate relief, and from a state of great suffering was removed to one of comparative ease. The wound was nearly healed at the time of his death, and anchylosis partly completed.

Case 2.—Edward P——, aged sixteen, of strumous diathesis, admitted Jan. 15, 1859, with ulceration of the cartilages of the knee-joint, and partial dislocation backwards of the tibia. He has been ill for four years, and during that period was in the hospital three times. He attributes his first illness to an injury to the joint. About a fortnight after the injury he says that the knee began to swell, and he was then admitted to the hospital. An abscess formed and burst, and he partially recovered. He left the hospital, and the leg then became contracted. The abscess formed again twice afterwards, and on each occasion he was admitted to the hospital. On this his last admission, there was a large sinus on the outer aspect, which discharged pus. An abscess again formed, and on Tuesday, Feb. 9, I excised the knee-joint. Prior to this period his health had been much improved by good diet and cod-liver oil. On cutting into the joint, there was found to be a very firm and partially bony anchylosis, which I was obliged to saw through before I could remove the articular ends of the bones. Owing to the contraction of the tendons, it was found necessary to remove about one inch of femur before the leg could be straightened; this was, however, done, and the leg was then placed on a M'Intyre splint made with only a narrow sliding bar at the back of the knee-joint, so that it could be dressed without removing the splint. The flap was fastened by means of sutures and adhesive plaster. Ordered five minims of the tincture of opium, as occasion may require; also eggs, two ounces of wine, a chop, and a pint of porter. He slept well for four nights with the sedative draught, after which it was not found necessary to continue it.

Feb. 10.—The wound clean; no hæmorrhage; appetite good; bowels open.

11th.—All iritation has subsided; tongue clean; bowels open; pulse regular; no pain.

12th.—The wound beginning to suppurate, the sutures were removed in the evening of this day, and warm water dressing applied.

16th.—Improving rapidly; the wound is going on well. In fact, the boy has not had a single bad symptom, and on March 1 the wound had nearly healed, and there was considerable bony union.

March 14.—Wound healed all but one little spot; enjoys perfect health.

Case 3.—Joseph R——, aged eight, admitted January 8th, 1859, with ulceration of the cartilages of the knee-joint, and also an abscess within the joint. He states that eleven months before his admission he received an injury to the knee. It then began to swell; but no abscess formed at this time. He could not walk, nor bear any percussion on the heel. The leg remained in a semi-flexed position. On admission there was an abscess in the joint pointing at the inner and lower part, which opened. He, however, got worse, and hectic; the knee was excessively painful; his countenance indicated great suffering; his expression was very anxious, and he screamed if you even approached his leg with your hand. Several consultations were held as to the course to be adopted; and, on March 5th, I excised the joint, with the approbation of my colleagues. There was extensive ulceration of the cartilages, and large quantities of false membrane in the joint. The abscess had burrowed up the thigh, but the bone was not bare, nor was there any evidence of necrosis. I therefore proceeded with the operation. The leg was placed on a M'Intyre modified splint, as in the above case of Edward P——, and the wound closed by sutures and rollers. Warm-water dressing was then applied. Ordered, wine, four ounces; porter, a pint; eggs, chop, cod-liver oil; and tincture of opium, thirty minims, immediately.

March 6th.—Slept well; tongue clean; no pain. The wound looks quiet. There has been no hæmorrhage. Bowels open; pulse regular; appetite good; has lost all hectic symptoms.

8th.—Going on well. Eats, drinks, and sleeps well.

11th.—Sutures were taken out to-day; the wound has healed nearly all round.

13th.—Progressing most favourably; in fact, he lost all his bad symptoms at the time of the operation, and has never had a recurrence of them since.

15th.—Quite well in health; the wound nearly healed.

Such, then, gentlemen, is the progress of these cases up to the present time. It is now especially that I feel called upon to direct your attention to this important subject. These cases are in progress, and you may watch them for yourselves. Nothing, up to the present time, can be more satisfactory, but we cannot consider them as cured. "There is many a slip between the cup and the lip," and it may yet be my duty to report an unfavourable termination, though at present all is *couleur de rose*, and I have no reason to anticipate an unfavourable result.

In the second case, that of Joseph R——, I was afraid of the condition of the thigh-bone, from the burrowing of the abscess under the rectus, and took

care to obtain the permission of the father of the child, who is a porter at the Great Northern Railway, to convert my operation into an amputation of the thigh if I found in the progress of it that such a proceeding was necessary.

With regard to the manner in which this operation should be performed, I must say a few words. First and foremost, take care and have your splint prepared beforehand,—an iron splint, with a thigh-piece to reach just to the edge of the buttock, fitting well, when padded, to the posterior surface of the thigh, with an open space behind the knee-joint; then fitting, again, well to the calf, with another open space for the heel, to rest on a piece of linen drawn tight across the opening; and a foot-piece which can be shifted. All the padding must be covered with some thin waterproof material, such as gutta percha. Several of the early cases were, I believe, lost from want of attention to the proper and careful adaptation of the limb in the first instance.

The bones should not press much upon each other, but touch gently; sufficiently in apposition to induce bony union, but not sufficient to produce constitutional irritation. Mr. Syme, who has been one of the great opponents of this operation, lost his second case apparently from want of attention to these rules. On the sixth day after the operation, he was obliged to cut away two inches more of the femur, and his patient died on the eighth.

Your first incision is to extend in a semilunar direction right across the front of the joint, from one condyle to the other, just below the patella. The curve must be slight; the commencing points parallel, and well over the condyles. This incision should be made firmly, boldly, and quickly, right into the joint. This flap is to be dissected upwards with the patella, thus completely exposing the surface of the condyles. In some cases this is easily done; not so in others, where anchylosis has commenced. The crucial ligaments, if not destroyed, are now exposed, and what remains must be

divided carefully on a director; otherwise your knife might slip farther than you intended, and, to your great horror, into the popliteal artery and vein. If your first incision were well carried back on to the condyles, their articulating surfaces are now completely exposed for the use of the saw. This saw should be Butcher's; I mean Butcher, of Dublin; not a butcher's saw, as the theatre porter seems to think, from the instrument he has given me. This saw of Mr. Butcher's is one of the most perfect tools I ever worked with. The safest plan is to commence from behind, and to carry it forward over the rounded extremity of the femur till you reach the edge of its articulating surface in front. In this way, and by the assistance of this saw, you remove only a thin slice, including all the diseased articulating cartilages, but without shortening the bone to an inconvenient extent. In like manner remove a slice from the head of the tibia, though of course here your cut will be simply flat, at right angles to the shaft of the bone. This part of the operation is very greatly facilitated by your assistant forcibly flexing the leg, and pushing the head of the tibia well upwards and forwards. The patella must next engage your attention. The articulating surface, whether diseased or not, must be removed by the saw, unless you decide to remove the whole bone, which latter proceeding is strongly recommended by some operators of great experience. Hitherto I have left it, but in my next operation I shall remove it. I have not had any proof that it retards the healing process, but I am told by those who have operated more frequently than I have that it does so, and that it does not add to the strength of the limb. Having completed your saw cuts, examine the cut surfaces, and observe carefully whether you have removed all the diseased bone, and whether you have opened a sequestral or carious cavity. In the former case, I need hardly say, you must remove the sequestrum; and in the latter you may use the gouge, to scoop out any carious bone that the saw has left behind. I have advised your only removing a *thin* slice

from both femur and tibia, to prevent shortening of the limb. This is the rule; the exception occurs when, from long-continued contraction of the flexors, you have a difficulty in straightening the limb, in which case you must again have recourse to the saw, as the bones should not be pressed *forcibly* against each other. I have seen no inconvenience from *slight* pressure.

The operation seldom gives rise to much hæmorrhage. One or two arteries are all that usually require ligature. But all that bleed freely must be secured, as secondary hæmorrhage has, in more cases than one, been apparently the indirect cause of a fatal result. Four or five sutures are usually required. Roll the thigh to the splint with a firm linen roller as far as the knee; leave this uncovered; roll the leg in like manner below, and the foot to the foot-piece. Use no side splints.

All this must be done before your patient is removed from the operating table; and, if done without dawdling —I do not mean with indecent haste—it will be concluded almost before your patient has recovered from the chloroform.

There is no point which has struck me more forcibly in these operations than the great relief from pain which, after a few hours' smarting, they afford to the patient. I usually give a dose of opium about three hours after its completion, and frequently no more is required. Mr. Humphry, of Cambridge, objects to the use of opiates after operations in general. My own experience in a London hospital is decidedly in favour of their use.

I think that all of you who have watched my last two cases must have been struck with the vast improvement in the countenances of the two little fellows since their diseased joints have been cut out. There is no longer that anxious and distressing expression which was always present previously. Their faces are now bright and cheerful, the colour is returning to their cheeks, and, instead of treating me to tears, they always welcome me with a smile.

In conclusion, let me recommend you, gentlemen, to

give this important subject your most careful consideration. Watch for yourselves all the cases that occur in this hospital. Take the opportunity of seeing all you can in other hospitals ; for I am sure that you will invariably, in the present day, meet with the courtesy which I hope you all show to strangers when they visit us. Do not be guided in your selection of this operation by the *ipse dixit* of any man, but take all the evidence, all the practical evidence, which is offered *pro* and *con.* by those who have had the most experience.

January 1865.—I have little to add to the above favourable opinions regarding the operation for excision of the knee-joint, though my cases, like those of other operating surgeons, have not all been successful. In two I have been obliged subsequently to amputate, no union of bone taking place: in both the patients recovered. In another case, from non-union, I have re-excised the ends of the bones. This patient is now in the hospital, and going on well as far as his general health is concerned; but I am still doubtful about the anchylosis. The great point in the treatment is to procure the most perfect rest, and I now think that the side splints assist materially in obtaining this desideratum.

LECTURE XXVII.

On Cases of Diseased Bone.

Gentlemen,—I shall endeavour to pursue the same plan this session which I have hitherto adopted, of making a few clinical observations by the bedside of my patients, when those observations can be made without pain to the individuals, or without giving them any further insight into their own cases than they already possess; but as this only applies to a few cases, we find it advantageous to retire for a short time to our operating theatre, where I can call your attention from time to time to the most interesting features of each case, with the practical and physiological instruction to be derived therefrom. You will soon perceive that they are not formal lectures, but simply clinical observations.

Now, you cannot fail to have been struck with the number of cases of diseased bone in my wards at the present time. This arises from two causes—first, cases of diseased bone are extremely frequent in this metropolis; secondly, we are able by operative interference to do more good in these cases in a short time than in many that present themselves for admission.

The first case that I will talk to you about is the one in which you have just seen me operate. You have seen me remove from a man's leg, while the patient was under the influence of chloroform, five detached pieces of bone, some of them with points as sharp as needles, none of them much larger than the end of your thumb. This is not, strictly speaking, a case of diseased bone, but a case of injured bone. It was originally a compound comminuted fracture, one of the worst I ever saw saved from the amputating knife. These fragments of bone had been detached at the time of the injury. The

body of the bone had united, leaving these behind, a constant source of pain and distress to the poor fellow. The cavity from which they were removed was, as I showed you after the operation, smooth and soft, no carious or exposed bone communicating with it. I have therefore every reason to hope that all cause of irritation is gone, and that the patient will speedily enjoy the perfect use of the limb. As a rule, you should avoid all unnecessary meddling with a compound fracture after your examination of the limb when you are first called to attend it. And when you first examine a comminuted fracture, it is not good surgery to rake about the wound, and remove every detached piece of bone that you meet with. Such meddling with the wound adds to the constitutional irritation which always more or less follows a compound fracture. Any loose pieces that are superficial and apparent may be removed. The consequence of this non-interference is, that sometimes small pieces are left, and produce a good deal of pain; and you might imagine that they ought to be immediately removed, and that nothing was simpler or easier: but experience says no. It is better to wait a little, and see if Nature will not throw them off without your knife and forceps; for it has been found that such interference, even after the shaft of the bone had firmly united, and the whole seemed quiescent, has lit up a flame which the most skilful medical surgery has been unable to extinguish.

I had a case of this kind under my care many years ago, in which this occurred, and the man nearly lost his life, and I remember Mr. Green, to whom I was then acting as assistant, telling me of a case which occurred in his practice, in which erysipelas followed the removal of some dead bone of a compound fracture that carried the patient to his grave. Still, one swallow does not prove it summer, nor one or two cases establish a principle. They do, however, warn us not to interfere lightly in the treatment of such cases, or without sufficient grounds disturb such inflammable materials as a limb which has been the seat of so serious an injury.

There is another point that I must advert to in regard to this case—namely, the impossibility of applying splints of any kind for the first month or five weeks. I have a great dislike to removing a limb if there is the slightest chance of saving it and the patient's life at the same time; still I must allow that in this case it is a question whether amputation had not better have been performed at the period of the accident. He certainly would have been saved much suffering, and he would have got to his work much sooner; but I doubt if his wooden leg would have been as useful to him as his own, though it is shorter than the sound limb.

This patient has gone on well in every respect since the operation; he has not had a bad symptom; he has lost the pricking and shooting pain he suffered from previously, and is now cheerful and contented.

The next cases are also cases of bones injured by violence, though the violence has not been sufficient to fracture the bone asunder. This source of disease in bones has not, I think, been sufficiently attended to. You have all of you, I dare say, heard of such cases, or have seen bones fractured by muscular exertion alone. The fractured patella, of which there is a good case now in the ward, is an illustration of this form of accident. But larger bones have been broken, the humerus and femur have been snapped asunder by sudden and violent muscular contraction. The cases to which I now allude do not present such evident marks of injury at the time, and they are often passed by as mere sprains. A mere sprain! What does the surgeon mean by a sprain? What I mean by the term sprain is the forcible stretching of the ligaments of a joint until their fibres are more or less lacerated and torn. Tendons are sometimes torn or ruptured at a distance from their attachment to bone, as, for instance, the tendo-Achilles, the plantaris, and the rectus femoris, as pointed out by Mr. Grantham in his interesting surgical essays. The fibro-cellular tissue of which they are formed is also occasionally torn where it is incorporated with the osseous tissue of the bone to which it is attached; and this laceration

is even more serious in its results than the more evident injury of the body of the tendon itself. It is this laceration which frequently gives rise to carious disease of bone, to necrosis, and also to inflammation of the periosteum. I believe that disease of bone is also induced by long-continued muscular exertion exciting inflammation of the osseous tissue at the point of a tendinous or muscular attachment without any laceration.

I remember a case in private practice of this kind, which interested me very much. The subject of it was a young lady, about twenty-four years of age, in good health at the time, but not strong, surrounded by every comfort that wealth could bestow, living well, and taking a fair amount of daily exercise. I was first consulted after a large chronic abscess had formed *behind* the right mamma, but not affecting the mamma itself. This was attributed, and, I believe, justly, to long-continued exertion of the arms above the head in dressing a Christmas tree. She was a woman of great nervous energy. Her determination and courage enabled her to go on with her occupation long after she felt fatigue. At night when she retired to rest, she felt an aching pain behind the left breast. Of this she made no complaint. A month after this, an abscess, in the form of a pullet's egg, showed itself above the mamma. The abscess was opened, pressure was applied, and a careful, tonic plan of constitutional treatment adopted, change of air, carriage exercise, &c., but still the sinus would not heal. In consequence of this non-healing, I was called in consultation. As soon as I saw the wound I was convinced that it was the mouth of a sinus leading to diseased bone. I recommended an examination of the sinus under chloroform, and the removal of any carious bone that might be found. The proceeding was thought too formidable, and another opinion was sought and given by a hospital surgeon of repute. His advice was to run a seton through the sinus, and this proceeding seemed to the patient and friends almost as bad as the one I had recommended, and my plan was ultimately agreed to.

With the assistance of my friend Mr. Martin, of Reigate, I first made an opening at the lower extremity of the sinus, below the mamma, with a prostatic trocar, introduced into the upper opening. The sinus was at least five inches long. I next dilated the upper mouth of the sinus sufficiently to insert my finger, and then feeling a small portion of carious sternum at the upper part, and at the lower, a similar disease of the third and fourth ribs, I removed the softened bone, in both places, with the gouge, and from this time the case went on well, and the sinus rapidly healed. My only source of regret in the treatment of the case was, that this plan had not been adopted earlier; but one naturally shrinks from a formidable operation on a delicate, sensitive female, even with the assistance of chloroform. There is no instrument in the chirurgical armarium which has done the state of operative surgery more service than the gouge. Its judicious use arrests old standing and intricate disease of bone in a way that no medicaments can ever accomplish.

There is a case now in the house, which illustrates this kind of injury and disease admirably. The subject, Nathaniel B——, aged eighteen, of strumous diathesis, a stoker on board a Thames steamer, exposed, therefore, to sudden transitions from heat to cold, was attacked with acute rheumatic inflammation of the knee-joint, and with subacute inflammation of the periosteum covering the clavicle. This latter mischief was indicated by a swelling, about the size of a pigeon's egg; but as it disappeared in the course of a few days, by simply fomenting the part, we cannot suppose that suppuration had then taken place. About two months after this swelling first appeared, and after he had been on his back just nine weeks, whilst raising himself in bed, he felt a sudden snap of his collar-bone, and at the same time heard a distinct sound as if something had broken. He felt much uneasiness about the middle of the bone, and was quite unable to bring his arm forward, or raise it to his head, and all attempts to do so gave him great pain. At this time he was emaciated, and very weak.

From this account you will perceive that the collar-bone was broken by the action of the clavicular portion of the pectoralis major, the bone having been previously weakened by disease. At the time the swelling just described took place, the periosteum was, I conclude, detached from the clavicle, and the portion of bone, which was thus deprived of the nutrition which it derives from the vessels of that membrane, mortified or necrosed. That some process of this kind took place was evident from his condition when he was admitted, which was only three weeks after the fracture took place. Instead of finding an ordinary fracture of the clavicle (which had not been bandaged), with the two fractured extremities overlapping, and tolerably firmly united, there was no attempt at union. There was a fluctuating tumour, about the size of a hen's egg, just below the bone, and the broken ends were expanded by imperfectly developed callus, cup-like, and partly forming the walls of this tumour. When I first examined it, I was fearful that it was a malignant or cystic disease of the clavicle; but the fluid which followed the needle was healthy serum, presenting no appearance of cell growth under the microscope.

With a tonic plan of treatment and rest, the clavicle united, though the sinus did not close. I now allowed him to leave the hospital, believing that his general health would improve more in the country, and he was presented early in February. On the 17th of July he was readmitted, still exhibiting marks of carious disease of the clavicle, but in addition to this mischief he had disease of the humerus. And now comes the practical and physiological point of interest. When he came in again there was an abscess over the insertion of the deltoid; when this was opened, a narrow sequestrum, about an inch and a half in length, was removed. This sequestrum was from that portion of the humerus to which the deltoid is attached. It would therefore appear that the same muscular effort which fractured the clavicle injured the humerus and induced necrosis;

and hence the sequestrum which you now see before you.

The lower and posterior surface of the os femoris—that face of the bone which forms the anterior boundary of the popliteal space—is a very common seat of necrosis. The fact, for such it is, often puzzled me until I was aware of this muscular cause—if I may so express it—of necrosis. I believe that it is caused by violent and unexpected action of the gastrocnemius externus, and also, perhaps, by the short head of the biceps flexor cruris.

I had an interesting case of this kind, in Queen's Ward, about a year ago, which got quite well after the removal of a large but superficial sequestrum.

At the commencement of this year I admitted a boy only fifteen years of age, with disease of the lower third of the femur. He was not able to give a very clear account of the origin of the disease, but he says it commenced six years ago during a convalescence from some cutaneous disease. For sixteen weeks he was confined to his bed with a profuse suppuration. Previous to his admission under my care he had been under a hospital surgeon ; but still the disease lingered on without that operative relief which ought to have been afforded years ago.

On the 3rd of February I made an incision on the outer side of the thigh through two external openings, down to the bone, where I found a large loose sequestrum about five inches long—too long to be removed entire. I broke it with a pair of strong bone forceps. The cavity which lodged this bone was smooth and continuous. The wound soon healed, and he left the hospital quite well in about six weeks.

In all the above cases the injury to the bone might have been soon apparent, and the treatment clear and straightforward, but not so when the injured bone is more deeply seated. Sometimes, without any actual laceration of the surface of the bone taking place, the disease takes its rise from the tendinous attachment of

a muscle, and extends to the ligaments and articulating surfaces in a joint. In some of these cases you find the bone neither carious nor necrosed, but the periosteum enormously thickened, and the bone in the immediate neighbourhood softened. This is especially the case when the injury is through the medium of tendon, which performs the double office of a conductor of muscular power, and a ligament or guardian of a joint. Let me remind you of the origin and relation of the tendon of the popliteus muscle to the knee-joint. It arises in a deep pit on the outside of the outer condyle of the os femoris, a little above the articular margin of the bone; it descends obliquely behind the knee-joint, where it attains the space between the femur and the tibia; it is lined internally by the synovial membrane of the joint, and now plays the part of a true ligament. If therefore from any sudden or violent exertion on the part of this muscle its origin from the bone is injured and inflammation set up, you can readily understand how such inflammation may be extended to the knee-joint. This view is no mere theory. I will relate to you briefly a case, which many of the older students will remember as interesting me very much at the time. It would not yield to those measures which I have so frequently demonstrated to you are successful in arresting scrofulous disease of the cartilages; and though I was at last obliged to have recourse to amputation, I believe I delayed the operation, hoping against hope, some months after the case was considered hopeless by many who watched it with equal interest with myself.

E. B——, aged twenty-one, dark eyes and hair, rather strumous diathesis, was admitted under my care on April 11th, 1854. The knee is swollen and the shape altered, but apparently more from external than internal effusion. All motion gives her increased pain, which is not severe when at rest. It is much aggravated by pressure on the outer side, where there is a fistulous aperture, from which there is a slight discharge.

History.—Two years previous to her admission she slipped and fell on the grass suddenly, when preparing to run a race, and immediately felt a severe smarting pain in the right knee; it caused

her to limp for a few hours, but she did not leave the pic-nic party she was at, nor did she lay up until four days had elapsed.

From this portion of the history we learn that the knee was not injured by a blow, but by a violent muscular exertion to save herself from falling after her foot had slipped upon the grass. The popliteus muscle would be called into play on such an occasion. The injury at this time could not have been very severe, for she did not lay by altogether until seventeen months after the receipt of this injury. If, therefore, she had rested it at once, I have no doubt that the serious mischief which afterwards ensued might have been prevented. About seven months ago the joint became enlarged and painful, and during the first month she used to lie upon a sofa during the daytime, and to walk upstairs at night; at the end of that time, one evening when she was going upstairs she experienced a sudden and severe pain in the knee, and felt as if something had given way in the joint. Since that night she has never been able to set her foot to the ground, and has lost all power of moving it, or resting on it in the slightest degree, any attempt to do so giving her the most excruciating pain. At this time I believe that the connection between the tendon of the popliteus and the external semilunar cartilage was torn through.

The surgeon who attended her placed the limb on a wooden splint, applied blisters from time to time, altogether amounting to eleven, eight leeches at six different times, cupped once, and used one seton. The pain during the last seven months has been very severe, sometimes worse at night, sometimes better; the general health does not appear to have suffered much. She has been well supported with wine, brandy, stout, and meat, all in moderation. Suppuration took place; the matter accumulated, and a swelling formed on the outer and back part of the joint. The surface broke, and a large quantity of pus escaped, and this opening has not healed.

I shall not weary you by reading the daily notes, though they are well taken and interesting, as our

time is so short. Repeated abscesses formed in the neighbourhood of the joint, and she had two or three severe attacks of hæmoptysis, and her sufferings at times were frightful; but still her health did not give way rapidly, and for ten months I combated the disease. At the end of that time it was clear that she must sink into her grave if her limb were allowed to remain on. On the 28th of February I amputated it, under chloroform. I made a very long stump, as her friends were able to afford her an artificial leg. She rallied quickly after the operation, and left the hospital quite well on the 29th of April, little more than a twelvemonth after her admission.

The examination of the knee-joint disclosed the following condition:—The patella was adherent to the femur by slight bands. The greater part of the cartilage was healthy, but there were patches of ulceration, and from the patches these adhesive bands sprung. The cartilage was nearly entire, and sound over the front of the femur in the rotulator furrow, and also over the inner condyle, but it was gone over the whole of that portion of the outer condyle (which was bare, soft, and eroded) where it articulates with the tibia. The corresponding surface on the tibia was in a similar condition. The outer semilunar cartilage was softened and pulpy, and nearly absorbed. The tendon of the popliteus was brown, pulpy, soft, and disintegrated, and also the anterior crucial ligament; the posterior was discoloured, but firm. The periosteum covering the lower and back part of the femur was thickened, but not so much so as that on the tibia, which was nearly one-sixth of an inch in depth. The bone underneath was soft, but not carious. There was a large abscess in the lower part of the popliteal and upper part of the posterior tibia spaces. The popliteus muscle was thickened and infiltrated with serum and completely disorganized.

The appearances just described are not those of an ordinary case of strumous ulceration of the cartilages. I must confess that I was glad to find that such was the case, as I believe it is only the second time that I

have amputated a limb for disease of the knee-joint since I have been an officer of this hospital. In every other instance I have been able to procure anchylosis, though in one it required three years to accomplish it. I have several other cases of diseased bone that I want to talk to you about, but I must leave them to our next meeting.

LECTURE XXVIII.

On Diseases of the Bones and Joints.

Necrosis of the Femur.—Compound Fracture into the Knee-Joint; Recovery.—Caries of the Os Calcis, and its Removal.

Gentlemen,—Since our last meeting you have seen me operate on another case of diseased bone. The case is interesting, from its affording another illustration of injury to the osseous tissue, inflicted by muscular exertion, in a scrofulous subject.

Edward H——, aged eighteen, waiter in a London hotel: says that he was never very strong, and that he has had a succession of abscesses every spring since he has been in London, a period of four years. He has several scars from strumous suppuration about the body and on the neck. He dates the commencement of his disease, eight months back, to a strain upon his legs in carrying a heavy coal-scuttle upstairs. At first he felt merely a pricking sensation in the neighbourhood of the knee. This was succeeded by great pain and effusion, so that the prominence of the patella was lost, showing that effusion was *over*, not *in* the joint. Leeches were applied; they relieved the pain, but did not reduce the swelling, which gradually extended up the thigh. This was at first hard, but it soon suppurated, and the pus was let out by an incision just above the inner condyle, and again afterwards on the outer side.

When the patient was admitted, it was clear that there was no disease of the knee-joint, but the lower end of the shaft of the femur was much thickened. He can stand with the knee slightly flexed, but he cannot put the foot flat on the ground, and the leg cannot be extended in a straight line with the thigh; but the ham-string muscles are not the agents which prevent it, as they are not tense. All this convinces me that the injured structure is at the origin of the gastrocnemius externus from the femur. When attempting to straighten the limb, the patient points behind to the origin of this muscle above the condyles, as the part

at which the resistance is offered. An examination of the femur with the probe soon convinced me of the existence of necrosis; but I thought it better to delay the operation a little, until his health was improved and he became accustomed to his new home. I ordered him cod-liver oil and a generous diet.

I operated on Nov. 3rd, the patient being narcotized by chloroform. I first laid open the sinus on the outer side to the extent of three or four inches, just anterior to the short head of the biceps, cutting bare the bone. The probe did not give a very clear indication of the presence of a sequestrum; but the general appearance of the sinus, the symptoms, and the immense amount of new bone convinced me of its existence. I therefore used the trephine, and after some hard work removed a piece, a quarter of an inch in thickness, before the sequestral cavity was opened. The presence of dead bone was now evident, but the artificial opening in the new bone was too small to remove it. I was obliged to use the gouge and mallet, and extend it to about an inch and a half, before I could seize the sequestrum with the bone-forceps. The dead bone broke readily, but the pieces when put together were about two inches long and an inch wide, and the eighth of an inch thick. With a little trouble all was removed, leaving a smooth cavity. Two small arteries bled during the operation, but they were closed by torsion without ligature. In the evening there was some hæmorrhage from the arteries of the bone, which could not be tied. The tincture of sesquichloride of iron was applied, and afterwards a graduated compress, which completely commanded the bleeding.

Nov. 4th.—No more hæmorrhage; patient pale and depressed; pulse quick and small. Ordered two ounces of wine.

5th.—Slept better last night; has flushes in the evening, with slight feverish symptoms, which pass off in the morning. Increased the wine to four ounces, and ordered two pints of porter.

7th.—When I visited him to-day I found him depressed, and I pointed out to you how pale the wound was, and how flabby the granulations. There was also

a slight erysipelatous blush on the inner side of the thigh. With these appearances before me, I ordered an increase of wine from four ounces to eight. In giving him wine in preference to other stimulants I was guided by the lad's former position as a waiter in an hotel. I now added two grains of quinine, with ten drops of dilute sulphuric acid.

When you consider the small opening to the bony prison-house in which the dead bone was confined, and the thickness of the prison-walls, you will comprehend the value of the operation from the difficulty the sequestrum would have had in making its escape. Months, nay years, might have elapsed before this would have been accomplished by unassisted Nature. I have just had before me some papers for an insurance office, in which mention is made of exfoliation of the lower part of the thigh, which has been going on now for about thirty years. The individual is now thirty-nine years of age, and the disease was induced by a fracture when he was a child. It is in such lingering cases as this that you should advise an operation, or at least a thorough exploration under chloroform. It is true that patients will not always submit, and that the case drags on contrary to the advice of the medical adviser; but still he has done his duty.

There is another case of compound fracture, in which it may be necessary to remove some dead bone; but whether I am obliged to adopt this proceeding or not, the case is one of interest, as I think you will acknowledge when you hear the notes of it read, which are furnished by Mr. Wood. A compound fracture into the knee-joint is at all times a most serious matter for the patient; but when it occurs in an old woman above sixty, the risk is immensely increased.

Sarah G——, aged sixty-three, a pale, emaciated, weak-looking woman, admitted Aug. 20th, 1855, at half-past two P.M. About eleven A.M., whilst walking downstairs, she suddenly fell forwards and rolled to the bottom. The surgeon who was called in, on examination, found the broken end of the femur protruding through the skin. He reduced it, applied splints temporarily, and removed her to the hospital.

Present state.—There are two lacerated wounds on the external part of the thigh, about the junction of the middle and lower thirds, the larger one about the size of a sixpence. Through this wound the fractured end of the bone can be felt. The patella is whole, but the lower end of the femur is split through the condyles into the joint. The movement between the condyles is visible to the eye.

There was a considerable amount of hæmorrhage from the wound (principally venous), which, after some trouble, was stopped by pressure and ice, but not till she had lost (to a woman of her age and spare habit) a considerable quantity of blood.

When I examined the condition of the limb, and took into consideration the loss of blood and the continuous oozing, which could scarcely be controlled, with the age and debility of the patient, I felt it my duty, though most reluctantly, to advise amputation; but I confess I was not sorry when she refused to have it performed. I could not conceal from myself that the operation afforded her a very slender prospect of recovery. When, therefore, she expressed a strong wish to retain the limb, I did not urge the necessity of the operation, though I told her I considered it my duty to advise it, as more likely to save her life than if I attempted to save her limb. Those of you who have watched the progress of the case must have observed upon how slight a thread her life seemed to hang from day to day; for at least a fortnight, it seemed a mere flicker in the socket; but her life has been preserved, and another case added to those which may encourage you to avoid amputations in severe injury. There can be no doubt that she would not have weathered the storm if she had not been liberally supplied with wine, brandy, &c. The daily notes are interesting in this case, so I shall give them pretty fully.

The limb was then put up on a double incline, the thigh above the wound having been previously rolled to prevent as much as possible the spasmodic action of the muscles, which troubled her. —Evening: Feels comfortable, and has very little pain; no hæmorrhage; pulse 112, and undulating; bowels open. [My reason for adopting the double inclined plane in this case, instead of the straight splint, which I prefer in fractures of the thigh, was the difficulty of dressing the wound with the outside splint. The double inclined plane is also an easier position to the patient in a

compound fracture.] To take one-third of a grain of acetate of morphia at night, and repeat, if necessary.

Aug. 21st.—Very comfortable; no bleeding; took her tea and dose of morphia, and then slept comfortably; pulse 90. There is a piece of lint soaked in blood over the wound. Repeat the morphia; eggs, beef-tea, and six ounces of wine.

24th.—Comfortable.

25th.—Pulse quiet, but feeble. Increase wine to eight ounces and mixed diet.

26th.—Knee very little swollen; wound discharges a thinnish, sanguinolent, unhealthy-looking matter, which seems as though mixed with synovial secretion. Removed the splint and put it up afresh, making greater extension.

Sept. 23rd.—A scale of bone has been extruded, about the size of two finger-nails, thin and honeycombed. There is now less discharge, though still profuse. There is good union of the fracture between the condyles, and considerable firmness of the other one also. Mixed diet; brandy, six ounces.

Oct. 2nd.—Less discharge, and principally from one small orifice. On passing a probe into it for about two inches and a half, it came in contact with dead bone. To have a gutta-percha splint, and be allowed to get up.

26th.—Doing well; dead bone can be felt with a probe; appetite good; less discharge. To have only one pint of porter; wine, four ounces.

30th.—All the discharging orifices have healed, except the one at the bottom of which there is dead bone.

Nov. 5th.—To leave off the gutta-percha splint, as there is now very firm union. She looks healthy and well; not much discharge now; appetite very good; tongue clean.

Do not let the recital of this case induce you to suppose that it is sound surgery to attempt to preserve a limb with a compound fracture of the knee-joint in a patient who has passed the age of sixty. Nevertheless, I have no doubt that if your lot in life is cast in the country, you will be able to succeed in acts of conservative surgery which we scarcely dare attempt in London.

For the three or four last seasons I have had the satisfaction of calling your attention to cases in which, by conservative surgery, we have been able to save feet in which disease has invaded more or less of the tarsal bones. In all these cases I have preferred the use of the gouge to the excising scalpel. It sounds well, and reads well, "excision of the os calcis," "excision of the

astragalus," &c.; and I do not mean to say that such operations are never justifiable, or are never required; indeed, I give Mr. Thomas Wakley great credit for his operation for the removal of the os calcis and astragalus, and the useful foot which was the result; but I do say, that, as a *rule*, the tarsal bones should not be excised. You scarcely ever meet with a bone that is diseased throughout its whole substance: there is always a small piece sound; it may be merely a shell, just a thin piece, to which one or more of the articulating cartilages are attached. Never mind how small it is, that small piece should not be removed. It is a matrix for the generation of new bone. Its texture is of the utmost importance in the regeneration of the foot.

The next case for our consideration illustrates most strikingly the value of the principle. It is one of disease of the os calcis, and I have gouged away, at different times, nearly the whole of that bone—not all, for I have left the attachment of the tendo Achillis and its continuation in the foot, the plantar fascia I have also left, the surface of articulation with the astragalus. The chasm after each operation has been frightful; indeed, I might say, disgusting to any bystander but one who could picture to himself the present state as a result of so much apparent butchery.

Caroline W——, aged twenty-four, milliner, Walworth, was admitted under my care, into Queen's Ward, April 12th, 1854. She has, therefore, been in the hospital about a year and a half. Is evidently a strumous subject. Had always enjoyed good health; but about four years ago she had an attack of erysipelas of the head and arm, after which (and to which she ascribes her illness) she first noticed considerable weakness in the left ankle, so much so that she used to limp when she attempted to walk, as if from a sprain. The ankle was very much swollen, particularly of an evening; but she used to get about on it without much inconvenience, excepting the lameness. About two years later it suddenly became worse, and she was obliged to lay up for six months. There was no open wound of any kind, but the ankle was much more swollen, and the pain in it constant, and of a severe throbbing nature. It was blistered, iodine paint applied, bran poultices, and perfect rest, with a certain amount of benefit, so much so that she was enabled to pursue her usual avocations again, although the lameness continued, as also the pain when she attempted to

move the limb. About twelve months after this (six months before her admission) she again found her ankle was becoming worse. Similar treatment was employed without the same result, or indeed producing the slightest benefit, and accordingly she came into the hospital. On admission there was a small external wound on the other side of the left ankle, the instep was much swollen, and there was a constant darting pain in it, much increased on the slightest movement. I at once pronounced it to be a case of caries of the os calcis. In fact, the ankle-joint itself was not diseased. [Patients in these cases generally speak of the ankle-joint, but you must not confound the two diseases.] From the position in which the carious disease of the calcis commenced, I attribute it to a sprain of the perpendicular ligament at its connection with this bone. Ordered, linseed poultice; cod-liver oil, one drachm; tincture of sesquichloride of iron, ten minims, twice a day. House diet; porter, one pint; eggs, two daily.

May 12th.—This treatment was continued for about a month, when I opened a superficial abscess over the external malleolus, giving great relief. To take, disulphate of quinine, two grains; dilute sulphuric acid, ten minims, twice a day.

July 15th.—During the last two months the same medicine was continued; and she continued to poultice her ankle. On several occasions I probed it to see if there was any carious bone in a condition for removal; and several superficial abscesses which formed were opened. Her health improved very much.

Sept. 30th.—During the past month no change of importance has occurred. I do not think the ankle much less swollen than when I first saw it two months ago, and the sinuses still continue to discharge freely.

Nov. 2nd.—Her health being now pretty good, I thought I might be able to remove some of the carious bone. She was taken into the operating theatre, and chloroform having been administered, I cut down and removed with the gouge a considerable portion of the os calcis. Lint and cold water applied to the wound, and the limb elevated, as there was threatening of hæmorrhage. No vessel required ligature. Ordered, wine four ounces, and sago.

3rd.—She is much easier this morning than she has been for the last four years. [There is nothing more striking in these cases than the immediate relief from pain, even by an operation which is so formidable to look at.] There has been no secondary hæmorrhage, and the wound looks well. Her appetite was very indifferent, so she was ordered to have a chop instead of her slice, if she liked it better.

8th.—The wound is healing by the first intention, and the swelling about the ankle has so much diminished, that you can distinguish the external malleolus quite plainly.

Dec. 6th.—The foot is now much swollen again, and there is evidently more diseased bone. A small superficial abscess was again opened to-day.

January 3rd, 1855.—To-day I again cut down on and gouged

away a further quantity of diseased bone. There was hardly any hæmorrhage this time.

4th.—Much easier since the operation. The swelling has again gone down, and there is but little pain in it. The wounds are looking very well, and there has been no secondary hæmorrhage.

10th.—Going on well.

Feb. 7th.—Progressing satisfactorily; she complains much less of pain; the ankle is very much smaller than when she came in; her appetite and general health seem good, and there appears every prospect of an ultimate recovery.

March 7th.—During the past month she has gone on extremely well; the ankle has shown no disposition to swell again, and she suffers little or no pain in it.

April 14th.—Going on well; general health improving; ankle rather more painful, seems somewhat puffy.

16th.—Yesterday there was some hæmorrhage from the external wound; the blood was dark-coloured, and since then she has felt much easier. To-day the ankle is less swollen.

30th.—Pain in the ankle increased, as also the swelling; does not sleep well; appetite failing, and general health not so good.

May 10th.—As the discharge increased, so also the pain, irritation, and deterioration of health. I again placed her under the influence of chloroform, and, making a long incision on the outer part of the foot, in a longitudinal direction, removed, principally by means of the gouge, a carious portion of os calcis and a very large part of the cuboid bone, thus forming a large cavity in the tarsus, in which the finger-end could be freely moved about. There was not much hæmorrhage; wet lint was applied to the part till hæmorrhage ceased, and then a poultice.

15th.—Pain in the foot diminished; healthy suppurative discharge; sleeps better.

June 10th.—Removed up to Dorcas's Ward two days ago, as they were cleaning Queen's; foot more inflamed, and very painful; appetite bad, and slight febrile symptoms.

17th.—For the last few days has had rheumatism in the wrists, arms, and a little in the legs, accompanied by swelling of joints; ankle swollen and painful, and extremely tender; appetite bad, and sleeps badly. Take an ounce of lemon juice three times a day.

23rd.—Rheumatism very bad; less swelling of wrists; shifts about; ankle not so painful. Ordered one ounce of guaiacum mixture three times a day.

July 3rd.—Ankle better; less red and swollen; wound healing; discharge healthy; rheumatism better; left cheek swollen; general health better. To take one grain of quinine twice a day.

12th.—Improving.

Aug. 6th.—Ankle healing; discharge less. Face still swollen and painful. Ordered to leave her bed, and walk on a wooden leg with a rest.

19th.—Extracted three carious stumps from left side of upper jaw. Face less swollen and painful; ankle improving.

30th.—Face well; no rheumatism; ankle healing; discharge; gets about well with her wooden leg; general health good.

Sept. 14th.—Health good; ankle improving fast. The catamenia have not appeared since she has been in the hospital.

20th.—There is a little discharge from the corner of the wound nearest the toes; everywhere else it has quite healed. She has none of that pricking sensation which she experienced before when diseased bone was present. She hangs it down a little now, which she says causes it to bleed a little.

Oct. 1st.—Foot much the same; gets about well with her wooden leg; general health good.

20th.—Scarcely any pain in foot, and little discharge; no more rheumatism. Catamenia not yet appeared since she has been in the hospital.

Nov. 19th.—Yesterday had a return of the old pain in her foot; she thinks she took cold in going outside the ward to see her friends, who could not come in on account of the illness of another patient. Feels poorly; appetite bad, and slight febrile symptoms; foot slightly inflamed, and more painful to-day.

20th.—Constitutional symptoms better, but foot more inflamed; looks red, more tender, and discharge increased much.

21st.—Much better; the inflammation, which seems to have been excited merely by the exposure to cold, has subsided, and I have given her permission to leave the hospital, as I think the change will do her good. She is to come up to see me every fortnight.

LECTURE XXIX.

On Injuries of the Knee-Joint.

Gentlemen,—I will direct your attention to-day to some of the injuries to which the knee-joint is liable, for the whole subject is of great practical importance. The records of surgery, unfortunately, do not contain much information regarding the course you should follow in the treatment of very severe injuries of this part. Many a surgeon in the country has been sorely perplexed for the want of precedents to guide him in these cases. He is of course anxious to avoid amputation, if he can do so without risk. He wants, and often searches most anxiously for, cases to justify his endeavour to save both the limb and life of his patient. We possess no accurate statistics, for the general works on Surgery contain very meagre advice on this important subject. Do not suppose, gentlemen, that I imagine I can supply this void; but I feel it my duty to add my mite to the heap which is required to fill this chasm in the records of surgical experience. The knee-joint, from its exposed position, is very liable to injury, but the injuries are not usually serious. In general, when the lower extremity is exposed to great violence, either the bones of the leg or thigh-bone are fractured, and the strain is not on the ligaments and structure of the knee-joint. But it sometimes, though rarely, happens, the leg is so fixed, and at the same time protected and supported, that the whole force is expended on the joint itself.

I will, however, first say a few words regarding the slighter and more usual form of injuries, in order to warn you that many an injury, though apparently slight at the time, gives rise to so much disease in the joint that

amputation is required some years afterwards. Sometimes the injury, though very severe at the time, is not thought seriously of, by either the patient or his medical attendant, because there is no wound. Sometimes the injury is considered to be merely a sprain, and therefore neither the patient nor his limb need be confined. All these are errors against which I must guard you; indeed, you cannot be too careful in your treatment of all injuries of the knee-joint, however slight they may appear, or too guarded in your prognosis. Rest of the limb should be complete for the first few days, even in slight injuries; and in all sprains you should support the joint by either a gum bandage or a pasteboard splint. There is nothing which gives rise to more annoyance to a patient than the after consequences of an inefficiently treated sprain. Look upon a sprain of the ligaments of the knee-joint as seriously as fracture of the leg, and treat it with the same care, and your patient will bless you in after life; and if he compares the condition of his limb with that of a friend who neglected himself after a similar accident, he will fairly attribute the result to your careful treatment.

The first case to which I shall direct your attention is one of considerable interest, as I think you must have seen from the observations I have made from time to time at the bedside. To the careless observer it might be apparently one of little importance, but not so when it is considered in its true light, and compared with others a little more severe in their character, or where the same treatment could not be immediately adopted.

Charles D——, aged forty, a turner by trade, was admitted under my care on the 4th of March, 1851, in a state of intoxication. We were informed that he fell off a plank the height of ten feet among some stones, and that at the same time he twisted his leg. When discovered by his fellow-workmen he was unable to walk, and was carried to the hospital on a stretcher.

On admission the knee was hot, painful, and swollen. The character of the swelling was not that of mere effusion into the cellular tissue, but of an increase of fluid within the joint. Any attempt to move it gave great pain. At the same time it had lost its natural firmness, and the leg could be bent outwards at a

greater angle than on the sound side. The joint in that direction yielded unnaturally, giving me the impression that the internal lateral ligament must be ruptured, though there was not so much lateral motion as to give the idea that the crucial were also torn through. It was observed, as the right leg lay on the bed, that the internal condyle of the femur projected considerably, as in the ordinary knock-knee.

March 5th.—The joint has now become very much swollen. There is severe pain, which is much increased by any pressure upon the internal lateral ligament. There is no increase of pain on flexing the leg upon the thigh, but adduction, or pushing up the head of the tibia against the condyles of the femur, causes a great increase of pain, as well as percussion upon the patella. The swelling now seemed to be general swelling of the tissues, and not mere synovial effusion. The abducted state of the limb continued. The limb was placed on a straight splint with a foot-piece, and cold lotion ordered to be constantly applied to the joint.

8th.—The pain and swelling somewhat increased, but the constitutional symptoms are not severe. Ordered ten leeches to the right knee; powdered rhubarb and calomel one scruple, to be taken immediately. On the following day the pain and swelling had decreased considerably, and in a short time the limb became quite easy whilst he was quiet; linseed-meal poultice applied.

12th.—A good deal of the superficial tumefaction and tenderness is gone, which renders the synovial swelling more distinct, the patella being sunk in a kind of horseshoe-shaped swelling. This, however, subsided in like manner, and on the 31st he was able to leave off the splint, although any movement of the limb caused some pain; and there was some crepitation about the patella.

On April 8th this had also disappeared, and he only complained of a weakness in the limb: it was therefore ordered to be encased in buff-leather, strapped and rolled. He was unable to bear the buff-leather more than a few days; and feeling pretty well, and anxious to go home, he was discharged on the 20th.

A fortnight afterwards he came to the hospital to show his knee; it was then seen that the abducted state of the limb had slightly returned, but he had no pain in it.

The next case to which I shall call your attention occurred some time ago, but it bears upon this important question.

Thomas K——, aged twenty-six, town traveller, of very intemperate habits, was admitted under my care into George's Ward, 24th October, 1846, with compound fracture of the leg, and injury to the knee-joint.

When he came in, he was drunk, and suffering so much from sickness and depression, that immediate

amputation was then out of the question, though the injury was so severe that I felt no doubt regarding its necessity.

The tibia and fibula were fractured through the lower third, and there was an extensive wound communicating with the fracture. The integuments of more than half the surface of the leg were stripped off, exposing the fascia.

On my first examination of the knee-joint, I felt once quite distinctly a crepitation, which convinced me that the head of the tibia was splintered into the joint. After he had been in some hours, the crepitation could no longer be felt, so that the existence of fracture was doubted by those who examined it subsequently. I mention this because I have observed the same obscurity in another similar case. On the 26th, the second day after his admission, he had so far rallied, that I had him removed into the operating theatre; but when taken there, he became so faint, that I was obliged to send him to bed. He never rallied again, but died on the third day from the accident.

Post-mortem examination.—Appearance: a compound fracture of the right tibia and fibula towards the lower third, and the integuments of more than half the extent of the leg separated from the fascia, with a dark bloody serum effused between them. The integuments of the whole leg and part of the thigh very dark from ecchymosis and congestion; the muscles, also, of the leg torn and ecchymosed. The knee-joint contained bloody serum, and an oblique fracture of the inner side of the head of the tibia extended into the joint. The popliteal vessels were uninjured, nor were any of the principal vessels of the leg torn.

There can be no doubt that this poor fellow sank under the shock of an injury received when the general vital powers were depressed by intoxication. The nervous energy was exhausted; but we must not attribute this exhaustion solely to the state in which the accident found him, but to the vicious habits in which he had indulged for years. There is no single cause, gentlemen, which so frequently induces a fatal issue in cases of severe injury, as the habitual use of intoxicating liquors. The patients either never rally at

all, as this patient, or they rally with great difficulty. Ordinary stimulants have no effect upon them. I have no hesitation in saying that a healthy man of sober habits might have endured exactly the same injury, and that very little depression would have followed; and if the accident had occurred in the country, the leg might possibly have been saved: so much does fresh, pure air assist nature in maintaining the reparative process.

The worst feature in K——'s case was the split of the head of the tibia into the knee-joint. The fissure allows the synovial fluid to flow out into the cellular tissue, and it sets up a great deal of constitutional irritation. It is almost invariably followed by suppuration of the joint; and I have never yet known a case in which it has occurred that did not prove fatal, except when the limb was amputated. You will therefore see the importance of discovering this fracture at the time of the accident.

I do not mean to assert dogmatically that the discovery of this fracture is to be considered a certain index for the necessity of amputation; I only mention to you the result of my experience; and I warn you of the importance of watching such a case with the greatest care.

I lately had another instance, in George's Ward, of this accident. It was followed by one of the most severe attacks of delirium tremens I ever witnessed. The habits of the man were extremely intemperate, and there was quite sufficient to account for delirium tremens. But it was not an ordinary case of delirium tremens; it did not yield to the usual remedies; it did not yield, as I have seen innumerable cases do with similar treatment; and I could only account for its intractable character, and its rapidly fatal course, by the fact that there was a fissure of the head of the tibia into the joint.

The delirium was that form of delirium which my respected master, Mr. Travers, has so admirably described in his work on Constitutional Irritation, and from which I must quote briefly:—

"From a revision of the contents of the last chapter, it appears, that affections of the sensory, as acute bodily pain or mental anxiety, co-operating with local injury—a burn or a bruise—a laceration or a fracture—an operation or an inflammation—a hæmorrhage or a wasting suppuration—a poison permeating the body—are so many mischiefs severally competent to produce states of the system which have a very indistinct relation to that of fever, and over which the remedies usually resorted to in fever have no control." . . . . . "The great mark of distinction between the cases of local injury which proceed steadily forward to convalescence, and those which place the life of the patient in peril, is the degree of complication of the nervous system."

You will see, then, the importance of diagnosing accurately those forms of injuries which most frequently excite severe constitutional irritation. The case I referred to is so instructive, that I shall read it in detail.

William B——, aged thirty-eight, admitted into George's Ward, under Mr. Solly's care, Jan. 1, 1851, at 8 P.M., with a fracture of the right leg. He is stout and lusty; and without being a drunkard (so called), nearly lives upon gin, &c. Shortly before admission, he had fallen from an omnibus, and produced the injury. The fracture is situated just below the tuberosity of the tibia, the upper portion of the bone being comminuted, the outer part being quite loose, the fracture evidently extending into the knee-joint; the fibula was fractured a little lower down in the leg. It very soon began to swell, so that in a short time the state of the fracture could not be made out. It being new year's day, he had been drinking a great deal, and was evidently the worse for liquor. The limb was placed upon a patella board with a foot-piece, and gently bandaged to it. He was ordered one scruple of powdered rhubarb with calomel, to be taken immediately.

Jan. 2nd.—He has had a very restless night, and seemed in a great deal of pain. On removing the bandage, the limb was found enormously swollen, and very much ecchymosed; the swelling extended for some inches above the knee, and downwards nearly to the ankle. He is in a very irritable, nervous state, with a hot, sweating skin, furred tongue, and severe headache; quick, easily compressible pulse, and not the least appetite for anything. The powder had operated frequently. He was ordered—Tincture of opium, ten minims; sesqui-carbonate of ammonia, five grains; compound tincture of cascarilla, two drachms; camphor mixture, an ounce and a half,—three times a day. Tincture of opium, forty minims; peppermint-water, one ounce,—at night, and repeat after four hours, if necessary. Gin, six ounces; roast meat; and a pint of porter. A long piece of pasteboard was applied on either side of the limb, opposite the knee (to act as a gentle support), and gently

rolled. 9 P.M.—Feels much easier, and has been much less irritable since he had the gin. The skin is hot and wet; pulse 100, soft.

3rd.—Seems rather more comfortable, and system much less irritable, but tongue and hand rather tremulous; swelling not increased. 9 P.M.—Rather more irritable. To repeat the mixture at night.

4th.—Had a very bad night; no sleep; very restless and delirious; pulse very weak, 110; tongue more furred, moist, and tremulous; no appetite; severe headache. The leg itself continues very much swollen; about the same circumference at the knee as yesterday; on the outer side below the patella it is very dark and tense; elsewhere it seems a little less so. The foot is warm, posterior tibial artery perceptible. This morning he seems a little more composed; the bandages and pasteboards were readjusted, after which he expressed himself as being quite easy; bowels regular. The gin was increased to ten ounces, and he was ordered to have more opium at night if necessary.

5th.—He had forty minims of the tincture of opium in a dose of the mixture at eight last night, but continued very delirious and restless. At eleven the dose was repeated. This had the effect of quieting him until 6 A.M., when he became excited again, but was quieted by a dose of his mixture with some gin. At 10 A.M. he seemed rational. Last night his pulse was 112; this morning it is 100; but he is very shaky; tongue tremulous, furred; no appetite, and only craves for gin. Has been very flighty all the afternoon, notwithstanding his gin and opium. The pulse is 100, soft and jerking; face flushed, but conjunctivæ pale, and irides contracted. At 5 P.M. he had a grain of morphia; this was now ordered to be repeated again.

6th. 2 A.M.—He continued very restless, so that the morphia was again repeated; but the delirium increased, and he became quite violent; he struggled excessively, so that finding it impossible to keep him in bed and his leg quiet, and fearful that the bones might be made to protrude, the straps were put on loosely. The bones could be felt grating in the joint at almost every movement. The morphia seeming to have no effect, and apparently rather increasing the excitement, he had forty minims of tincture of opium in a dose of the mixture. Soon afterwards he became a little quieter, but his tongue was busy and his fingers hard at work. At 4 A.M. he had thirty minims more, with a similar short effect; it was repeated again at 5: but his pulse had become exceedingly quick, the tongue very dry, and pupils contracting to a point. The pulse could not be accurately counted from his movements—perhaps 140; face flushed and hot. The house surgeon being fearful of giving the opium again without Mr. Solly's sanction, he was informed of the man's state; Mr. Solly wished him to continue it. He had therefore forty minims in a glass of gin at half-past six, and for a time he was quieter. At nine Mr. Solly saw him, and the symptoms continuing without much abatement, the fractured limb being violently agitated, he was ordered an extra pint of

porter, and the opium to be continued; but it soon became evident that he was much weaker. Instead of shouts, his voice was scarcely above a whisper; the conjunctivæ became flushed, and the pupils continued contracted; the skin hot and drier; tongue a little moister. The opium was repeated at half-past ten, again at half-past eleven, and half-past twelve, in doses of forty minims, but without in the least closing his eyes or calming him much. His head remained hot and flushed, and he had a great desire to shake the fractured leg. At 1 P.M. Mr. Solly saw him with Dr. Bennett; and, thinking that a fair trial of opium and stimulants had been made, they changed it for small doses of potassio-tartrate of antimony, and ordered the head to be shaved, and cold applied. He soon became still more excited; the pulse became quicker than ever; eyes very brilliant, and tongue constantly at work. He paid no attention to a voice, however loudly spoken to. At a quarter past five he suddenly became comatose; respiration was laboured and slow; face exceedingly pale; pupils dilated; extremities cold; and he died a quarter of an hour afterwards.

Post-mortem examination forty-five hours afterwards.—Veins on exterior of head congested; the arachnoid rather dull, and semi-opaque; the cerebral substance rather darker than it should be, especially the cortical part; the base of skull contained about three ounces of fluid; there was very little in the sinuses; the choroid plexuses were very dark; the brain generally was soft. The right leg was very much ecchymosed; head of tibia comminuted; cavity of joint full of blood, and cartilages roughened by action of bones upon it.

LECTURE XXX.

On Injuries of the Knee-Joint.—*Continued.*

The next case in illustration of these injuries to the knee is deeply interesting, and I will only remark, before reading it, that it forms a pleasing contrast to those cases of delirium which, under the term *delirium tremens*, is caused by the debasing practice of habitual intemperance. In this case life was not endangered by intemperance. The delirium was that of constitutional irritation excited by severe local injury, and the amputation was only performed just in time to save life. I have no hesitation in saying that, if it had been postponed any longer, a fearful delirium, *similar* to that of delirium tremens, but not controllable like that, would have been established, and must have hurried my unfortunate patient into his grave.

The subject of it is a gentleman, aged forty-seven, whose horses ran away as he was driving home from a railroad station in the evening. The turning into his grounds was a sharp angle, and the off-wheel caught the right-hand gatepost with such violence as to upset the phaeton and fling out both him and the coachman. Unfortunately for my patient, his right leg was fixed between the carriage and the post, while the impulsive force was expended on the whole body, which was twisted backward, so that the thigh was bent nearly to a right angle outwards from the knee-joint, and he was hung up by the back of his coat to the rails on a line behind the post by which his leg was fixed. When he attempted to stand, on being extricated from his dangerous position, the leg bent in the same direction at the time so much that he told me afterwards it was like

leaning on a broken walking-stick, and that his own impression was, that the limb must be broken in four or five places. He was seen within a quarter of an hour of the accident by his usual medical attendant, to whom I am indebted for the account of his case previous to my seeing him. He was lying on the sofa, complaining of the most intense pain, which was greatly aggravated by the slightest movement. There was a small contused wound over the inner condyle, with so much effusion over the bone that it could not be felt on a careful examination, but with the slightest effort the limb could be moved to any extent outwards, from which I concluded that the internal lateral ligament was torn through, and, in all probability, the crucial ligaments also. On being put to bed, he was laid on his right side; the limb was laid on the outer side. Twenty-four leeches were applied over the joint; a quarter of a grain of morphia every six hours. His diet was low, without stimulants, and the leeches, twenty-four in number, repeated every day until seventy-two were applied. I saw him first on the Sunday, the fifth day after the accident. I examined the limb very gently, but quite sufficiently to convince me that the internal lateral and crucial ligaments were torn through. The patient being apparently a healthy man in the prime of life, and as there was not much constitutional disturbance, I thought it right to try and save the limb, though I did so with much anxiety.

We placed the limb in an antero-posterior, semi-flexed position, keeping the foot upright by means of pillows: continuing the spongio-piline, applied warm. I suggested the possibility of being able to apply a pasteboard splint on the outer side in the course of a day or two, to support the limb and prevent any motion in the joint. A pasteboard splint was put on by Mr. D——, on Thursday, and forty minims of Battley's solution given about three o'clock. Shortly afterwards some men of business came down to see him, and he was excessively annoyed and excited. Up to this time his pulse had remained steady, about 80.

Mr. D—— saw him after this had occurred, about eight P.M.; he was then quite delirious. Skin hot; pulse 120.

Mr. D—— at once examined into the condition of the joint, and he states that there was no tension in the bandages or increased heat in the limb. It appeared, therefore, most probable that the delirium arose from the opium, he having been disturbed just at the time the sedative action ought to have been induced.

March 7th, 9 A.M.—The pulse has sunk to 100; but he has been talking all night, not having slept at all. Skin moist; great thirst; tongue dry and furred; great flatulency. He then complained of having a sensation of a hundredweight pressing down the upper part of the tibia. Mr. D—— removed the splint and one of the bandages, which change he said relieved him. But up to this time, Mr. D—— states there was no increased heat in the joint, or tenderness, and that he bore the movement of the patella from side to side without any feeling of pain.

9th.—I received a telegraphic message requesting my immediate attendance. I found the limb much altered, the patella elevated, the whole joint fearfully swollen, but projecting principally on the inner side, in which situation the skin was red, tense, and vesicated, pointing at one spot, on which there was a black slough about the size of a sixpence. He stated that his sufferings were extreme, that his leg for the last twenty-four hours had felt as if it were in a vice. It was evident that there was no time to be lost in making an opening. This I did to the extent of half an inch, when nearly a pint of discoloured pus, mixed with synovia, flowed rapidly out of the wound. He expressed himself a little relieved. The formidable nature of the case was but too obvious. We had to meet an open knee-joint in a state of suppuration! The momentous question was, whether it would be possible to save both life and limb. I confess that I felt little doubt of the necessity of immediate amputation, but I thought it right to give him the benefit of another opinion; and Sir B. Brodie saw him with me at nine o'clock the same evening. He considered that I was justified in making the attempt to save the limb. We therefore determined to do so.

10th, 8 A.M.—Has passed a tolerable night: slept at intervals; is easier this morning. The inflammation of the skin has not extended upwards, but the skin is very tense, and inclined to slough at points. To relieve the tension, I passed a director from the wound about an inch under the skin upwards, and divided it with a bistoury. I then applied again a large linseed-meal poultice, and placed the limb more on the outer side, which he says is the most easy position. 8 P.M.—Rather less redness of the skin; tension relieved; but the matter burrows and bags below the wound.

Passed a director downwards under the skin, and divided it about an inch. These incisions gave a free exit to the matter, and relieved all tension.

11th, 8 A.M.—Has passed a tolerable night without taking any morphia. Countenance rather anxious; pulse rapid, 112; not feeble; tongue a little furred; inflammation of skin decidedly less; wound looks very healthy. Ordered iron and citrous quinine, five grains, in an effervescing draught, twice a day. 8 P.M.—Has passed a quiet day; the limb lying on the outer side, the foot turned completely outwards. Appetite improved; takes nourishment well; wound looks remarkably healthy; less inflammation of the surrounding skin; cheerful and sanguine. I have more hopes than I have had yet of a successful issue.

12th, 8 A.M.—Very restless night. The wound does not look worse, but his tongue is not so clean; appetite indifferent; skin relaxed and perspiring. Ordered him quinine, two grains, sulphuric acid ten minims, compound tincture of cardamoms, infusion of roses. 8 A.M.—Has not slept during the day. About 9 A.M., we transferred him to a couch on the plan of Earle's fracture-bed. The movement was effected in the following way:—Four men, each holding a corner of the sheet and blanket, lifted him off his bed, and two men going on either side of the couch, he was quietly lowered on to it. I took charge of the leg myself, carrying it on a pillow. The change was effected easily, and without giving him any pain, but it made him very nervous.

13th.—Has passed a restless night; but he did not take any morphia. Pulse 84; skin cool. The wound looks healthy; but there is a large teacupful of fluid, apparently synovia, mixed with pus, in the poultice. I also observed a thin discharge of the same kind run rapidly from the joint into the popliteal space. This free discharge of synovia is the most unfavourable symptom now.

15th, 8 P.M.—Looks cheerful; complexion good; tongue moist and clean, particularly healthy, not red or glazed; skin moist; pulse variable, between 100 and 86; fair volume; appetite has been good; had eaten a portion of a beef-steak and two smelts for his dinner, with two glasses of home-brewed beer. The wound is cleaning rapidly and granulated; looks perfectly healthy, cannot detect any synovia running from the joint, but the sponge placed to catch the discharge during the day contains three or four ounces of fluid. I considered his condition very favourable, and I have great hopes of his complete recovery. Compound colocynth, ten grains.

16th.—Had three-quarters of a grain of morphia at half-past twelve; went to sleep immediately, and slept without interruption till half-past five; he then took a cup of tea, and fell off to sleep again, and slept till half-past seven. The best night he has had yet.

18th.—Not had a very good night, complains that the limb started a good deal and woke him. 6 P.M.—Visited him; found him com-

fortable; countenance good; pulse ranging between 80 and 90; skin moist and appetite good; wound remarkably healthy, contracting; very little synovial discharge; but there is a decided increase of heat on the outer side of the patella, and rather more tenderness. Mr. D—— thinks that there is not quite so much heat as in the morning. Carried the poultice more completely round the joint, and decided that if it were not relieved by the morning we would apply some leeches. Ordered, compound colocynth pill, five grains, morphia, three-quarters of a grain.

20th, 6 A.M.—Saw him again; decided that the leeches need not be repeated. Ordered, colocynth, two grains; aloes, five grains; morphia, three-quarters of a grain.

22nd, 6 P.M.—Not so well; the knee is more swollen, and is becoming more painful. The whole is much more swollen, and slightly œdematous; pulse smaller, 26, 27, 26, 26. Has been wandering in his mind; after waking from his sleep, complained that two men had been admitted into his room, sent for his housekeeper and complained to her of having so acted.

The discharge is very abundant. I examined the limb at six, and again at half-past eight; during this interval, I found that at least two ounces had been discharged. The tongue is a little dry, but not furred; the appetite not quite so good; bowels a little irritable. The nurse reports that the limb has started more than usual during the day. 9 P.M.—Morphia, one grain. In about half an hour he sent to say he was very sleepy, and anxious to know if he might have his milk; he did so, but as he was restless at half-past eleven, and complaining, I gave him half a grain more morphia. This made him quiet, but he did not get to sleep till two; then he slept till four, and was dozing again during the night, so much so, that in the morning he said it was the best night he had had, and that he felt less anxiety regarding the dressing of the limb. Discharge more profuse; leg more swollen; skin over the inner side of the knee rather tense and shining; thigh more swollen; tongue much the same; pulse 27, 26, 25, 26; countenance much the same. 7 P.M.—Has passed a tranquil day; appetite rather better; leg uncomfortable; knee more swollen; lies on the outer side; nothing like so much discharge; not more than an ounce in the poultice; it has not run down along the leg. Pulse 120; tongue clean and moist; perspires profusely; bowels not open. Morphia, one grain.

24th.—I have slept in his house every night since my consultation with Sir B. Brodie, and watched his progress with great anxiety; has had a pretty good night, but occasionally delirious; slept at intervals; countenance tranquil; skin very moist; joint rather painful. Pulse 10, 30, 26, 25, small; tongue, a brownish fur at the back, moist, and clean at the tip. The general condition of his nervous system, and the enormous discharge, confirm my fears that amputation must be had recourse to.

25th.—He is anxious regarding the amputation, and has made up his mind to the necessity; says he feels that the limb can never

again be of use to him. Seen again by Sir B. Brodie, who confirms my opinion. 5 P.M.—Removed it by a double flap operation in the thigh. He lost five or six ounces of blood. 10 P.M.—Gave him a grain of morphia, which was repeated twice before he had any sleep; he rambled a good deal in the evening, but had a pretty good night, becoming quiet about twelve. Applied ice to the stump.

26th, 8 A.M.—Quite rational and quiet this morning; some bleeding about seven, but the reapplication of the ice restrained it.

Examination of the Limb.—Cellular tissue under the quadriceps femoris in the vicinity of the joint infiltrated with pus; large quantity of pus in the joint; the posterior crucial ligament torn through; an extensive abscess in the popliteal space. In examining the head of the tibia, we found a fissure extending through cartilage and bone on the internal condyloid surface; the fissure extended through the centre of this space from before backwards, and down the shaft of the bone; ulceration of the cartilages, but without the formation of any false membrane. The portion thus split from the rest of the bone was still so firmly bound to it that I could not move it so as to produce crepitus, using as much force as I could exert. Through this fissure the synovial fluid drained into the popliteal space communicating with the abscess above referred to.

April 9th.—He has been going on well since the last report; there has not been any union by the first intention, but it has been granulating kindly. I found both the ligatures floating in the pus, at the edge of the wound, so that I conclude they separated yesterday, the fourteenth day from the operation. The stump healed well, forming a large fleshy cushion, and he has since walked about with great activity on an artificial limb, made by Mr. Gray, of Cork Street.

The case was a painfully interesting one to me, and I watched it night and day, with great anxiety, from the moment I first found that suppuration had occurred in the joint. I do not believe that any plan of treatment could have prevented this action. The injury to the internal ligaments was such, that a certain amount of pus must have been secreted in the process of reparation, even if the inflammation had not exceeded what may be called its conservative action. The friends of this patient, when I first saw him, hearing that there was no wound, were surprised when I stated the serious nature of the injury, and the fear I entertained for the preservation of the limb. Indeed, I was obliged to intimate as much to the patient himself, in order to keep him quiet, as he had not kept his limb perfectly

at rest. In fact, he expected to go to town in a few days, and was much disappointed when I told him he must not think of such a thing for some weeks to come.

With regard to the application of a splint in such cases, it must be done with the greatest care, and removed immediately there is any increase of pain or inflammation. You must not suppose that the mere fact of suppuration having taken place in a joint, is sufficient to justify amputation. You must put into the balance the age and general constitution of your patient —whether he is a fat and flabby subject, without much power, or whether he is thin and muscular; whether he is irritable, nervous, and excitable, or calm, tranquil, and sanguine.

With regard to the local treatment, I have no hesitation in recommending a free opening into the joint, where there is extensive suppuration, and much constitutional irritation in consequence; and on this subject I think the opinion of Mr. Rutherford Alcock of infinite value, from his great experience. He says:[1]—

"The great object, then, is, firstly, to prevent the deposit and accumulation of matter in the articulation, which, notwithstanding all that has been said of its bland, innocuous nature, previously to the admission of atmospheric air, quickly erodes all the articulating surfaces, in the generality of cases; I have seen exceptions, but they are few; and, secondly, to prevent the matter from burrowing among the muscles extending upwards and downwards, thus involving the whole limb in a suppurative and disorganizing disease.

"No sooner, therefore, is suppuration established, than it becomes necessary to devise the best means of obtaining its evacuation, and to secure its draining off, in proportion, or as fast as it forms. Any fears of the contact of air, I cannot but think, are out of place. The matter will do more mischief by being allowed to lodge. Counter openings in pendent positions, and free incisions, either in the vicinity, or, if necessary, through the capsule, should be promptly and boldly practised, together with such regulated pressure, above and below the articulation, as the state of the limb may indicate and allow, in order to counteract the tendency to spread and burrow."

Sir A. Cooper relates a case in his work on Dislocation

[1] Med. Chir. Trans., vol. xxiii. p. 268.

which in some respects resembles the preceding case. There was a compound fracture of the condyles into the joint, but the patient went on well for twenty days. On the evening of the twenty-first day, he was found much heated, with a very frequent pulse, dry tongue, and a tendency to delirium. He died on the twenty-fourth day.

The limb on examination after death exhibited great signs of inflammation; a considerable quantity of matter was found between the muscles of the thigh, a part of which was discharged by the external wound. It would seem from the account that the delirium and fever came on too rapidly to give time for amputation.

Of fractures into the joint, those of the tibia are, as far as my experience goes, the most dangerous. I have seen several simple fractures of the os femoris into the knee-joint, and they generally do well, but not always. Compound fracture of these parts is very rare. Mr. Travers relates a very interesting case, in Sir A. Cooper's work. It occurred in a boy, though his age is not mentioned. There was much displacement of the fractured bone, and a small wound communicating. The fracture extended nearly in the direction of the axis of the bone, in addition to a transverse fracture of the shaft of the bone above the joint; the external condyle was movable and thrown out of its place during the accident, as if it had been drawn by the leg, and twisted inwards. There was very little constitutional disturbance. The fractured portion of bone ultimately protruded, and became detached. The accident occurred on the 17th of September, and he was discharged from the hospital on the 6th of December, being able to bend the joint and walk tolerably well with a stick. In the following February he had the free use of the joint.

Fracture through the condyles into the joint, even in old people, will sometimes do well. I remember an old lady, aged eighty-four, admitted into Queen's Ward, December 27th, 1842, with this injury. She was placed on Liston's splint, and, after two months, left perfectly well.

LECTURE XXXI.

On Injuries of the Knee-joint.—*Continued.*

I will next relate to you some cases of severe injury to the knee-joint, followed by a favourable issue.

In the twenty-fourth volume of the *Medical Gazette*,[1] there is an instructive case of wound into the knee-joint, terminating favourably. The subject of it, a patient of the Newark Dispensary, was twenty-eight years of age. The wound was six inches in extent, passing round under the knee-cap, dividing the ligamentum patellæ, and thus rendering the joint completely exposed. The synovia had escaped, and the wound was filled with dirt. On the eighth day, "removed all the dressings and sutures; union had taken place throughout almost the whole extent. On inner side of the knee a small orifice, through which the synovia flowed copiously, in consequence of restlessness on previous night."

The wound in the joint closed in about six weeks, and he was discharged cured in four months from the date of the accident, with an anchylosed joint.

In the nineteenth volume of the *Medical Gazette*,[2] there is a case of lateral dislocation of the knee-joint, the tibia forced outwards, the external condyle resting on the inner articulating surface of the tibia. The case occurred in the London Hospital, and did well; it was treated with repeated application of leeches and warm water. There was no constitutional disturbance.

In the third volume of the *Medical Gazette*[3] there is a case of dislocation of the head of the tibia from the knee-joint inwards. After the dislocation was reduced,—

"The knee was wrapped in compresses, wet with a solution of muriate of ammonia. Next morning, however, the limb was again

[1] P. 397. [2] Page 52. [3] Page 459.

turned outwards, and it was necessary to apply the apparatus used in fractures, in order to keep the parts in their just position. This was allowed to remain above a fortnight, at the end of which time the limb could easily be moved by the patient; but it was soon observed to have a tendency to resume its former posture, and it was now supposed that the internal lateral ligament was ruptured; nothing, however, with respect to this point could be ascertained by examination. The apparatus was reapplied, with the addition of a roller and padding, applied so as to keep the knee as much as possible in its proper position; and at the time the account was written (two months after the accident), the patient had begun to walk on crutches, the limb being almost entirely restored."

The following case is also instructive, showing how an extensive wound in the joint will heal in a young subject; also that such injury is not necessarily accompanied with anchylosis.[1]

"A boy, of good constitution, aged eleven years, while sitting astride on a low billet of wood, with his knees much bent, received a blow from an axe on the left knee from below upward. The axe first took effect on the lower extremity of the patella, which it completely split, dividing it into an anterior and posterior portion; the inner edge of the instrument next came in contact with the inner condyle of the femur, from which it all but severed a portion of its articulating surface. A few minutes after the injury, the limb was found extended, and presented a large flap-shaped gaping wound over the knee-joint; attached to, and drawn upwards with the upper portion, could be distinctly perceived the anterior section of the patella. In the centre of the wound the articulating surfaces of the femur and tibia were felt; at the lower part, the remaining or posterior section of the patella was found *in situ*, being retained by its ligament; while protruding from the angle of the wound, and attached only by a small pedicle of cartilage, was a portion of the inner condyle of the femur, measuring about an inch and a half in breadth, and nearly half an inch in thickness, the whole under surface of which lined the articular cartilage. There was no perceptible escape of synovia, the limb having been kept extended from the moment the injury was received. Dr. J—— determined to attempt to save the limb. To diminish pain, and to alleviate the shock to the system, a powerful dose of muriate of morphia was immediately administered; the protruding portion of the inner condyle was then removed, and care being taken not to bend the limb, the edges of the wound were brought together by four interrupted sutures, with adhesive straps between them. A splint was placed under the joint, and the limb placed extended in a fracture-box, and evaporating ice-cold lotions continually applied night and day over the wound; these were continued for eight days, after

[1] Medical Gazette, vol. xxxvii. p. 348.

which period the lotion was applied without the ice some days longer. By these means the fever and inflammation were subdued. Between eight and eleven days all the sutures were removed. The adhesive plaster was only found necessary till the thirteenth day, the parts beneath being adherent throughout their extent; after which Liston's red lotion was applied. There was no suppuration or formation of abscesses. On the seventeenth day after the accident, the wound had nearly all cicatrized. In three weeks from the receipt of the injury, the patella appeared to have united; the splint was removed, and very gentle passive motion of the limb commenced, without causing pain; which was continued, and gradually increased every day afterwards, for some time, the limb being returned to the fracture-box afterwards.

"On the 5th of May, being the fourth week, the limb was taken out of the box altogether; by the fifth week the lad was able to go about on crutches, to bear his weight on the wounded leg, and also to raise the leg by the power of its own muscles. At this time the knee-joint remained somewhat puffy and swollen, which state was removed by applying the tincture of iodine. On the 15th of May the lad could bend the leg backwards to a right angle with the thigh. From this time the improvement in the motion of the joint was progressive; the patella, though considerably altered in shape, was perfectly united, and its motion was as free as that of the other side. For some months the lad was slightly lame, but he at length perfectly recovered the use of the limb in every respect."

In the fifth volume of the same journal,[1] there is an account of a case of severe injury to the knee-joint, under Mr. Earle, of Bartholomew's, in which the patient ultimately recovered. The joint was opened by a drawing-knife, and extensive suppuration followed, both in the joint and above it, but the patient was able to leave the hospital with very good motion in the joint, in about ten weeks from the receipt of the injury.

In a clinical lecture, published in the twenty-third volume of the *Medical Gazette*, delivered by Mr. Arnott, there is a very interesting case of penetrating wound of the knee-joint, which had been much neglected previous to its coming under Mr. Arnott's care.

"There was great and uniform swelling of the joint, heat of the skin, and considerable external redness. The gaping wound exposed a quantity of tawny cellular substance, and from it a thin glutinous fluid escaped. The patient was placed in bed (one of

[1] Page 222.

Mr. Earle's), and the heel elevated; twenty leeches were immediately applied, and the patient having been purged, three grains of calomel and a quarter of a grain of tartarized antimony were ordered every six hours. The swelling and inflammation ran very high, and extended to the neighbouring thigh, which became enlarged, with great constitutional disturbance. The synovial secretion became opaque, and mixed with coagulable lymph. Large pieces of this occasionally blocked up the wound, obstructed the flow of synovia, causing aggravation of the symptoms, and requiring their removal. Ultimately, the fluid discharged became puriform, or synovia mixed with pus. The leeches were repeated daily, and sometimes twice a day, for the first week, with warm fomentations, which were found to be most agreeable, and the mercury was pushed till the mouth became affected; and this action was maintained for several weeks. By these means the inflammation was checked, the swelling subsided, the discharge diminished, and reassumed its transparent character; the wound granulated, and at the end of five weeks had completely cicatrized. He recovered the perfect use of the joint.

"This is not the only instance in which I have known the function of the joint to be perfectly re-established, although the discharge had been puriform; yet it is undoubtedly one not of frequent occurrence."

I have selected these favourable cases, gentlemen, to show how much nature can accomplish in the reparation of severe injuries, and I hope that their narration will prevent your amputating without due consideration. I hope that they will encourage you in your endeavour to save the limb of a fellow-creature under the most trying circumstances; remembering that the highest department of surgery is conservative, not operative: that it is always more noble to save a limb than to perform an operation, however brilliantly you may execute it. On the other hand, you must not overlook the danger in such cases; you must remember the value of human life, and we must therefore look to the other side of the picture. I shall not be able to relate many unfavourable cases, as surgeons have not been fond of putting their unsuccessful cases into print; they don't like publishing their failures; and it is for this reason that we have no accurate statistics.

The general opinion of the profession regarding the fatal character of most of these injuries has not been hastily formed; it has been founded on experience,

though the facts on which that experience is founded are unfortunately not in print.

On the 15th of April, 1828, a man, whose age is not mentioned, was admitted into Guy's Hospital, under Mr. Key, having received an incised wound with an adze. The incision penetrated the joint just above the internal lateral ligament, dividing a small portion of the internal articular cartilage; a good deal of synovial fluid escaped. The limb was semi-flexed, raised, and placed upon a pillow. Notwithstanding the most judicious treatment, the limb was obliged to be amputated nearly twenty-three days after the injury.

Mr. Alcock's experience regarding the result of injuries to the knee-joint is very unfavourable; and though his experience is chiefly in reference to gunshot wounds, I am afraid that if we had a faithful record of all the fatal cases in civil practice, as well as the favourable cases, the statistics would not be much better. He says,[1]—

"The injuries of the knee are the most numerous, and, with the exception of the hip, the most fatal to life, and generally, at best, leading to the loss of limb. Of thirty-five of the knee, twenty-two lost their lives, and of the remaining thirteen who were saved, eight lost their legs. After such results, it is little to say, that the five who recovered preserved good and useful limbs."

While we are on the subject of injuries to the knee-joint, gentlemen, I must call your attention to one form of injury which, if it is not correctly diagnosed, might lead to an unnecessary amputation. I refer to the separation or compound fracture of the shaft of the os femoris at its junction with the condyloid epiphysis. Mr. Charles Hawkins related a case of this kind at the Medico-Chirurgical Society in 1842, which occurred many years ago in St. George's Hospital. The patient was ten years old; the accident occurred by his getting his leg entangled between the spokes of the wheel when riding behind a carriage.[2] On admission, the end of the femur was situated in the popliteal space; there was a

[1] Page 277, loc. cit.

[2] The Lancet, vol. ii. p. 202.

large wound, through which the end of the bone had passed; there was much pain, but the nerves and vessels were uninjured. A consultation of the surgical staff of the hospital was held on the case, and it was generally considered that there was very severe injury to the joint. The leg was removed. On examining the limb, however, the joint was found to be perfect and intact; the head of the bone had been torn from its epiphysis. The boy did well.

I have a few more words to say with regard to dislocations of the knee-joint. This accident can scarcely occur, except from extreme violence. The tibia may be displaced laterally and partially, or it may be completely dislocated, either inwards or outwards. It is an accident in which the displaced limb is easily returned to its normal state; and it is therefore worthy of special attention, more in reference to concomitant circumstances, and the amount of injury inflicted on the structure of the joint and surrounding soft parts, than the means to be adopted for its reduction.

Most of the simple dislocations of the knee do well; for the knee may be dislocated without the crucial ligaments being torn through. It is not often that we have the opportunity of dissecting a dislocation of the knee. Sir A. Cooper has related a case of compound dislocation, in which the "os femoris was thrown behind the outer side of the head of the tibia, and the external condyle of the thigh-bone was dislocated outwards and backwards; the thigh-bone was twisted outwards, and the internal condyle advanced upon the head of the tibia." On dissecting the limb, which he was compelled to amputate, he found that the "vastus internus muscle had a large aperture torn in it just above its insertion into the patella; the tibia projected forwards, and the patella was drawn to the outer side of the knee, being no longer in a line with the tubercle of the tibia. Looking at the joint posteriorly, both heads of the gastrocnemius externus muscle were lacerated; the capsular ligament was so completely torn posteriorly, that both the condyles of the os femoris

were seen projecting through the laceration in the gastrocnemius; neither the sciatic nerve, the popliteal artery and vein, the lateral, nor the crucial ligaments, were ruptured."

There is an admirable case of recovery after compound fracture into the knee-joint, reported in the thirty-ninth volume of the *Medical Gazette*.[1] It occurred in the practice of Mr. Brooke, of Cheltenham. The lad was only eleven years and a half old, and in good health at the time of the accident, but the capsular ligament of the knee-joint was ruptured; there was an oblique fracture through the external condyle of the femur, and a transverse fracture of the lower third of this bone just above the joint. He regained the use of the knee.

The following case of dislocation of the knee-joint was most painfully interesting to me. It occurred to one of my most intimate friends; and when I was sent for to Walthamstow, to see him, I thought that my feelings of affection for him, as in the case of a near relation, might bias my judgment; so I called on Mr. Tyrrell, and took him down with me; and I will now read to you my daily reports of the case, and reserve my comments until its conclusion.

Dislocation of the Knee-joint, with Rupture of the Popliteal Artery.—September 1, 1839.—This accident was occasioned in the following manner:—The subject of it, a young man in his twenty-second year, who had lost the sight of one eye, and with it the power of measuring distances, in attempting to jump a double rail at the top of a high bank, fell with his left leg fixed between the two rails; thus the whole weight of his body—and he was a tall man—acted as a long lever, drawing the shaft of the os femoris forwards, and threw the condyles partially into the popliteal space behind the tibia, which was drawn backwards and outwards. A gentleman, who witnessed the accident, likened the appearance of his leg, as he hung suspended by the rail, to that of one leg of a pair of trousers hanging over the baluster, with a boot left in. Considerable difficulty was experienced in extricating him from his position. The dislocation was reduced on the spot, with great ease, a few minutes after it occurred, by a medical man, Mr. Thomas Solly, of Walthamstow. He was then removed in a gig to the house of a

[1] Page 56.

friend, a short distance from the scene of the accident. The joint became rapidly swollen, and in about three hours the whole leg, foot, popliteal space, and lower part of the thigh, were distended, and the skin was tense and shining. A tournequet was then applied, which gave excessive pain. I visited him, in company with Mr. Tyrrell, at about 1 o'clock A.M., that is, about nine hours after the accident. He was calm and collected; tolerably free from pain—the tournequet having been removed; his pulse was quick, and his countenance anxious; he had suffered tortures previous to, and during the application of the tournequet, so much so, that he was quite delirious; but his pain ceased immediately on its removal. The limb was considerably ecchymosed about the knee, slightly vesicated, and very cold, nearly insensible to touch. Leeches had been applied.

At the consultation which ensued between Mr. Tyrrell, Mr. E. A. Lloyd, of St. Bartholomew's, Mr. Thomas Solly, of Walthamstow, and myself, it was determined to attempt the preservation of the limb, by applying a ligature to the femoral artery. The operation was performed, in the usual way, by Mr. Tyrrell. There was a small branch divided upon the sheath, which afterwards occasioned a troublesome hæmorrhage. Hot bottles were applied to the leg, and a draught composed of half a drachm of Battley's solution, in camphor mixture, was given. He did not get much sleep, in consequence of the bleeding, which could only be restrained by pressure on the groin, and for which we were ultimately obliged to remove the strapping and coagulum of blood, and search for the bleeding vessel. A piece of lint, dipped in cold water, was placed in the wound, and the hæmorrhage arrested.

2nd.—The following day was passed without much fever, but the stomach was irritable from the presence of some unripe fruit which had been eaten the day before; the bowels confined; pulse quick and weak; but he was tolerably free from pain; passed a restless night.

3rd.—Bowels relieved after doses of rhubarb and colocynth, followed by an enema; fæces foul and black; leg much the same; rather more sensation, and purplish-mottled about the foot; not quite so cold, even when the bottles of hot water were removed.

4th.—Full opiate at night; Battley's solution, forty minims; pulse rather stronger; more sensation returning in the leg, but it is more discoloured, and the ecchymosis increased about the knee; vesicles about the ankle. Mr. Tyrrell saw him again to-day, and considered him better than could be expected. Good night's rest with Battley's solution.

5th.—Tongue clean and moist; bowels opened freely; last motion healthy; great deal of pain in the leg and knee; pulse about 100, not so full or strong; leg more discoloured, and painful; vesication extending up the inner and under sides; sanguineo-serous oozing from the ham and leg; good night from Battley's solution.

6th.—Very little alteration in the appearance of the leg; rather

more discoloured about the foot and ham; more vesication; more sensibility of skin and warmth, and occasional shooting, pricking pains; pulse 100, much fuller; tongue clean and moist; appetite improved. An egg for breakfast; beef-tea and arrowroot in the middle of the day; mutton chops about six. More cheerful, but the leg occasionally very painful. In the evening there was a faint purple line to be observed just between the ankle and calf, extending round the leg, evidently the precursor of a line of demarcation; slight difference in the heat of the limb, and also of sensation, above and below that line.

7th.—Slept at intervals; tongue dry; pulse 120, quicker and weaker; line of demarcation rather more distinct, but still faint; whole appearance much worse; knee excessively painful; great heat of skin; high-coloured urine; slight delirium early in the morning; no pain of head; tongue getting foul and dry; bowels confined; countenance beginning to get anxious; rallied about noon. His mother came up from the country, and the meeting gave him much pleasure, but also excited him. Evening.—Pulse quicker.

8th.—Has passed a good night from a full dose of opium; tongue dry; pulse quick and weaker; sensation of sinking; foot and leg below the line of demarcation quite purple; calf and knee hotter than natural; vesication and ulceration in the ham. Evening. —Slight hæmorrhage from the wound, restrained by cold water. Pulse fluttering, rapid, scarcely to be counted; stomach irritable; great flatulency—almost choked by flatus.

9th.—Greatly distressed during the whole night; delirious; vomiting; tympanitis. Flatulency relieved by oil of mint, with the infusion of calumba and carbonate of ammonia. Stomach quiet in the afternoon; less excitement; wandering and delirium at intervals. Seen by Mr. Tyrrell, Mr. Alcock, and myself. Agreed that amputation was out of the question.

10th.—Delirious during the whole night; no sleep, notwithstanding the administration of the acetate of morphia; pulse countless, fluttering; jumped out of bed in a paroxysm of delirium, but recognized every person about him; lividity of surface extending up the leg and the inner side of the thigh; apparently sinking during the whole day. The delirium assuming more the method and cunning of insanity; violent towards evening; pulse still weak and fluttering, but considerable muscular power remaining.

10 P.M.—The lividity of surface has reached the inner side of the thigh; raving continues; the character of the delirium so much like insanity as to induce me to believe that it partly arose from a former injury of the skull. Continued in this state till death, which took place at a quarter before five o'clock on the morning of the 11th.

Post-mortem examination. — Popliteal space: rupture of the muscular portion of the semi-membranosus, leaving the posterior tendinous portion, which is inserted into the tibia, entire; also of

the inner head of the gastrocnemius; the popliteal vein and artery both torn directly across, at the same spot, just opposite the head of the gastrocnemius; popliteal nerve entire; posterior ligament torn through, leaving the posterior surface of the condyles bare; both the crucial ligaments were torn through. Thorax: slight atheromatous deposit in the arch of the aorta and semilunar valves; slight hypertrophy of the left ventricle; abdomen healthy; head not examined.

Thus terminated this sad history. I have now no hesitation in saying that the best course in this case would have been immediate amputation, as recommended by Mr. Lloyd, and my cousin, Mr. T. Solly.

When I first saw him, with Mr. Tyrrell, he was in a very unfavourable state for so severe an operation as amputation of the thigh. The agony he had endured was excessive, and I think it most probable that he would have sunk under the additional shock of the operation. Mr. Rutherford Alcock, who, as an old friend of this patient, was sent for, but unable to attend, says, in reference to this case, in the twenty-third volume of the Medico-Chirurgical Transactions,—

"With a somewhat extensive experience in amputations, I should at all times be reluctant to resort to that operation in a patient whose nerves had been put upon the stretch for many hours by pain and anxiety of no ordinary character, if by any other measure these could be removed for a time, or in a great measure removed. Rarely, indeed, have I seen such cases do well.

"In a similar accident, under more favourable circumstances—that is to say, when the patient could immediately receive such surgical relief as might be decided to be the best—what should be the rule of practice?

"Few more embarrassing accidents could occur. In the first place, the exact nature of the injury, and its extent, can only be very imperfectly estimated by the external appearances, and the degree of force and mode in which it was applied. These are our only guides, and very insufficient ones. An external wound would make the case much simpler of diagnosis, and by so much a safer injury.

"From the mode of the accident I should be inclined to fear that the violence that would suffice to dislocate the knee, at the same time rupturing the popliteal artery, would also either have ruptured, or so far injured by extension, the vitality of the vein, as to prevent circulation, and lead to the coagulation of the blood within its tunics, when, of course, amputation becomes imperative.

"On the other hand, if such were not the case, we incur the risk of removing the limb, which admitted of successful treatment. An incision over the ruptured vessel, and the application of a ligature, might place the patient in a favourable state, provided this additional violence did not bring on such excessive inflammatory action in and about the articulation as to lead to some disastrous result. If the vein were found injured, or extensive laceration, as in this case, of the synovial capsule, with great extravasation of blood, the patient would only have undergone a somewhat protracted operation, the termination of which would necessarily be amputation.

"I have been led to the following conclusion as, under all the circumstances, most likely to prove the safest practice.

"When there has been great violence offered to an articulation, sufficient to produce dislocation and evident injury to a large blood-vessel in the vicinity, an incision should be made down to the vessels, and the nature and extent of the injury ascertained. If the artery alone be implicated, the capsule not extensively lacerated, nor blood extravasated within, a ligature may be placed above or below the ruptured point of the artery, and the case treated with a view to saving the limb: if any of these adverse circumstances be found, amputation should be proceeded with."

In this opinion of Mr. Alcock's I quite concur: that is, supposing there is not sufficient evidence that both vein and artery have given way, as, when that is the case, there can be no doubt of the necessity for immediate amputation. When the dislocation is accompanied by a wound which renders it compound, the question of amputation is much more easily decided; but even here a great deal must depend upon the age of the patient, as we have seen in the case of compound fracture into joint, occurring in the practice of Mr. Travers at St. Thomas's Hospital.

In conclusion I would remark, that in general an incised wound of the knee-joint is less fatal than a contused one; that a wrench of the joint, accompanied by internal laceration, sets up a fearful amount of constitutional irritation, which, in a subject above the middle period of life, is generally fatal, either to the limb or the life of the patient; and that a split of the head of either the femur or the tibia into the joint materially increases the danger, and is generally fatal, unless amputation is had recourse to. A limb crushed by machinery, though the injury be unaccompanied by

hæmorrhage, sometimes produces such a shock to the nervous system, that reaction never takes place, and the poor sufferer dies from exhaustion of the nervous force, before any operation can be performed for his relief.

LECTURE XXXII.

On Diseases of the Joints.

Gentlemen,—The admission of a patient last week with such extensive disease of the knee-joint, of the thigh and the leg, as to require almost immediate amputation, affords me the opportunity of directing your attention to this important subject. It is a subject on which each of you will have to exercise your educated and conscientious judgment, whether you are intending to practise in London or the country, as private practitioners solely, or attached to hospitals and union houses. I desire to-day especially to point out to you where it is necessary to resort to the knife in order to save life.

Your great object should be to save a diseased limb from an operation, and this whether the operation be of a truly conservative character, such as the excision of a joint, or the entire removal of the whole limb. You have sometimes heard me say, partly in joke and partly in earnest, that any fool can cut a leg off, but it requires a true surgeon to save it. This feeling ought to guide you, and I assure you it is very necessary to inculcate it in the present day, when there is quite a *cacoethes operandi*.

I must, however, no longer delay the details of the case which has given rise to these reflections, and you will see that they are applicable in more ways than one. My notes are taken partly by the dresser from the patient's own statements, and partly from the gentleman (an old pupil) who kindly sent the poor fellow into the hospital.

J. D——, aged forty-four, a farm labourer, applied first for medical advice on the 23rd of September, a little more than two months

previous to admission. He attributes his illness to "cold taken when thatching with wetted straw." He was seized with pain on the left side of his body, which obliged him to leave off his work, and go home to bed. On the following day he sent for his medical attendant, who states that he found him suffering from headache, shivering, nausea, quick pulse, and furred tongue. Notwithstanding appropriate treatment, symptoms of local rheumatism appeared in his left thigh and knee, around which point there were tenderness and swelling, followed by rigors, and a collection of pus below the knee in front of the tibia. This abscess was opened about a fortnight after the commencement of the disease, and discharged a large quantity of pus. But the supply of matter was most abundant, and fresh openings in the neighbourhood of the knee-joint were required. The skin was obliged to be divided on the outer side of it, and also in the popliteal space. The patient states that about two pints were discharged daily. Previous to these additional openings the knee-joint appeared more swollen, and to diminish after the matter was let out. This is accounted for by the fistulous opening I discovered from the knee-joint into the abscess; and this escape prevented the joint presenting the usual appearance of disease. The pain in the knee, he says, was constant during the whole of this time, and that it felt "*as if the knee-joint was going*"—most expressive is this poor man's diction. He states he could not move it in the slightest degree; where he placed it with his hands, there must it lie. The patient says, "I told my doctors weeks ago that it was of no use to me; it must be cut off." He also states that it kept gradually getting worse day by day. He describes his journey from the country as being one of great agony, which I can fully understand from the distress he experienced when carried most carefully upon a stretcher from my ward upstairs to the operating theatre. He has two large bedsores. His family history is good; his father and mother both living, the former eighty-five years of age, and in good health. He has two children, both healthy.

As soon as I saw this poor fellow lying in Abraham's Ward, which was the day after his admission, when he had recovered from the excitement of the journey, I at once came to the conclusion that his limb must be removed. His countenance bespoke a long continuance of wearing suffering; his hectic cheek, sunken eye, and anxious expression spoke volumes. He looked more like sixty than forty years of age. The outline of the joint differed but little from the sound one, but there was a reason for this. A fistulous opening above the joint led into the cavity of a large abscess, but not down to carious bone. Below the joint there was a

long incised wound, terminating above in a small mass of ulceration, communicating with spotted caries of the head of the tibia. At the lower angle of the wound, the tibia lay, white, but dull, denuded of periosteum, necrosed, but not exfoliated. The slightest motion of the joint put him to extreme pain. His pulse was feeble, and his tongue unnaturally red.

Under these circumstances, I felt it my duty to lose no time in telling my patient that I considered his limb must be removed in order to save his life. The poor fellow received the announcement with less surprise and horror than I expected; he only asked for time to communicate with his wife, which of course I agreed to. His calmness on the prospect of an operation being presented to him was explained this morning, when he informed me that he told his medical attendants five weeks ago that he was sure his limb ought to be cut off. As a rule, gentlemen, you will find that a patient's own feelings afford very strong proof of some serious disorganization of the joint which he thus desires to be relieved of.

When I saw him again on the Monday morning for the purpose of hearing his decision, he told me that he was desirous I should perform the operation as soon as I thought right. The wife, however, told the sister of the ward that a surgeon in the country of high standing said that there was no reason whatever for amputation, and that he ought to get quite well with his limb on. As you do not know the name of the medical man referred to, I do not hesitate to mention this fact that you may draw the necessary instruction from it. In all cases of disease where I think there can be the slightest doubt regarding the propriety of an operation, I never hesitate to take advantage of the opinion and judgment of my colleagues. But in this case I felt no doubt. Nevertheless, after this decided opinion, given deliberately by a surgeon of experience, I thought it right to ask Mr. South to see the case; for that purpose the patient was carried into our consulting room before being taken to the theatre. Certainly, if I had any

doubt before, I had none when I saw the agony the poor creature endured in being carried upstairs into the room where we were waiting for him. The slightest motion of the stretcher was torture to him. Mr. South made a most careful examination, as also did Mr. Sidney Jones; and, as their opinion entirely agreed with mine, I amputated through the thigh, after our patient had been completely narcotized by chloroform.

I performed the operation which I prefer—namely, the double flap, the anterior flap being divided by a circular incision from within outwards, and the posterior transfixed. I used Mr. Butcher's saw, as this enables the operator to give a smooth convex surface to the bone, without any sharp edges. The bone was unnaturally hard. In making my flaps, I opened, as I expected (and I trust that this will not delay the healing of the stump), a large abscess, the surfaces of which I brought into apposition, in dressing the wound, by means of a roller. Four sutures brought the edges into good contact, so that no strapping was required. It is always better to do without plaster if you can, for the removal and reapplication of it is one of the most painful proceedings in connection with an amputation. I do not, in a case like this, either expect or desire to obtain union by the first intention of the whole surface of the flaps, for, if such occur, it would shut up the fascial abscess of the thigh, and a fresh opening would be required. Nevertheless, I hope that a portion of the opposing surfaces will unite; but I expect that a small portion of plaster will be necessary after the sutures are removed. At present the stump looks remarkably healthy; no nasty little blush along the edges of the wound.

I must now show you the interior of the joint, and the condition of the femur and tibia beyond its limits. Nearly the whole of the investing articular cartilage covering the extremity of the femur was gone; only about an inch square left in front. Its place was supplied by a dark, bloody, carious surface. The bone was bare and soft; a portion of the cartilage on the under

surface of the patella ulcerated; the head of the tibia completely disorganized; not a vestige of cartilage to be seen. Dark and ulcerated bone, with deposits here and there of pus, supplied the place of that beautiful structure which in health caps the leg bone in the knee-joint with its semilunar articular cartilages. Remnants, and small ones, of the crucial ligament. And this was what was *once* a joint. A section through the head of the tibia exhibited the bony tissue infiltrated with pus.

This examination will, I think, satisfy any surgeon, even if he is not very deep in the pathology of diseased joints, that the individual who had the privilege of possessing this, the remains of a knee, a few days ago, would have lived only a few days more if he had continued to hold it. I was very much struck by his reply, on the morning following the operation, to my inquiry how he was. "Oh! I am much better; I have very little pain, and I have slept better than I have done for the last nine weeks." His pulse was good; tongue tolerably clean, and not quite so red; appetite good; no sickness after the chloroform. He was allowed four glasses of wine, porter, and any little thing he fancied.

I thus read this history. Rheumatic fever from cold and wet, localized in the knee-joint, followed by rapid suppuration within and without. Free incisions and appropriate medicines relieve his sufferings, but cannot save the joint from destruction, the removal of which cannot be accomplished by excision, from the extensive necrosis of the shaft, and interstitial suppuration of the head of the tibia. From the history of the progress of the case, it would appear that the inflammatory action ran its course to suppuration too rapidly to be arrested by leeches and other local antiphlogistic measures. Therefore I suppose we must conclude that, though an earlier diagnosis of the extent of disease of the joint might have saved suffering by an earlier amputation, it could not have saved the limb. With regard to the diagnosis, it must be remembered that the signs of suppuration within the knee-joint were masked by an early escape of the pus. This fact

renders the case more instructive, for it is a rare occurrence, one which you would not readily expect, unless you looked for it as a possible contingency.

In my next clinical lecture I will talk to you regarding several patients I have now in the hospital, whose knee-joints have been diseased. All are nearly well; so that I hope I have succeeded, with one exception, in saving their limbs from the knife and the saw, and all their bodies from an early grave. The exception is the one whose knee-joint I excised, and who is so nearly sound, that I expect he will leave the hospital in about a fortnight.

LECTURE XXXIII.

On Diseases of the Joints.—*Continued.*

Gentlemen,—In my last clinical lecture I detailed to you a case of acute disease of the knee-joint, in which I was obliged to mutilate the man to save his life.

Such cases used to be more common than they are at present. The advance of surgical science has nipped them in the bud, and we usually now receive them into our hospitals in a more chronic form. I should, perhaps, have hardly thought the case worthy of clinical remark had I not heard that a provincial celebrity had positively denied the necessity for any operative interference. I thought, then, that if a man of practical experience forbids the operation, it must be just such an illustrative case as would be of use to you. Let me, then, remind you, that it was the severity of the constitutional irritation, and the agony the patient suffered from the slightest motion of the joint, which in me decided the momentous question of amputation or no amputation.

To-day I shall speak of nine cases of diseased knee-joint in which I believe I have succeeded in saving both limb and life without any operation, and one case where the same ultimate result has been obtained by the excision of the joint.

Some of these cases were sent to me from the country as good cases for excision, which of course implies, or ought to imply, that there was no prospect of curing them without an operation; one came from a metropolitan dispensary, as a forlorn hope. The poor boy was almost *in extremis*.

There is one point which must, of course, strike you

in listening to these details; viz. the length of time that some of them have been in the hospital. The power of retaining our patients in the hospital until a cure is effected is a privilege which can only be enjoyed in the old, well-endowed hospitals. And, for the sake of humanity, what a blessed privilege it is!

It is true that chloroform has robbed operations of all their pain during their performance, but it cannot remove the after pain, and it cannot remove the danger which is and must be attached to them, even when the most skilful hands manipulate.

I cannot deny that the length of time which is required to accomplish a perfect, usable anchylosis of the knee-joint in the adult (from one to two years) is an objection to the plan which I am now advocating. It is true that in a favourable case for excision the cure is frequently complete in one-third of that time. It is also true that the cases which do best, and get well most rapidly, are those where there is very little disease, and where the operation ought never to have been performed. When I speak of from one to two years being required to perfect an anchylosis, I refer to patients above the age of eighteen or twenty.

In different forms of disease there is also a great difference in the length of time. In scrofulous caries of bones entering into the composition of a joint, the cure is always very slow and very difficult. This observation applies almost equally to cases of excision. There is another point in favour of excision. If the operation succeeds—that is, if your patient neither dies from the effect of the operation, which I must allow is very rarely the case, or the limb is not obliged to be removed ultimately, an event not so uncommon as we could wish—then the anchylosis is more certain than that which is obtained by medical as distinguished from operative surgery. I must confess that I have been disappointed in some of my cases of natural as distinguished from artificial anchylosis, by their return to the hospital after I had hoped a complete cure had been effected. This observation applies to the boy

whose joint I ultimately excised, and also to Oliver R——. In the latter instance about a month's rest and a little counter-irritation have apparently completed our triumph over the disease.

I wish to put the subject fairly before you, and not to make you attach too much value to the medico-surgical treatment as opposed to the operative; nor must I forget that the longer we practise our profession the less we are inclined to operate, unless the indications for the necessity are very apparent, till at last there is too much disposition to avoid all operations. Though I know that I have not arrived at that stage of my surgical existence, still I must take care the tendency does not tincture my instructions.

I must not detain you any longer from the consideration of the cases, the notes of which I will, however, curtail as much as possible.

Case 1.—John D——, aged twenty-four, labourer, was admitted into Abraham's Ward, June 11th, 1860, with disease of the right knee. He states that this knee has always been larger than the left, and when about twelve years old he injured it by a fall; but it got quite well in a few days. He attributes the origin of the present disease to a cart-wheel running over his knee seven years ago, since which it has never been well, though he has been able to walk at intervals. He has now been laid up for more than five months, and has been under the care of an old dresser of mine at the Stamford Infirmary, who had applied blisters and issues; but as it did not appear to get much better, he sent the man up to St. Thomas's as a fit case for excision.

The joint was considerably enlarged, with some tenderness on pressure on the surface, and great pain when it was moved, or when the articular surfaces were pressed together. The pain at night was so great as to prevent him from sleeping. He was rather pale and weakly-looking, but had little febrile disturbance, and his appetite was good.

This was certainly a very favourable case for excision; for although the joint was completely disorganized, the disease was not scrofulous. And these are the cases which usually progress so favourably after an operation; but you have heard my reasons for avoiding an operation unless necessary to save life.

On admission, the limb was placed on a Liston splint, and a poultice applied to the knee.

June 13th.—Moxa to the inner side of the joint, that being the most painful part. Iodine mixture twice a day.

16th.—Ordered cod-liver oil, one drachm; tincture of sesquichloride of iron, twenty minims, three times a day. Twenty-five minims of tincture of opium every night. Moxa to the outer side of the joint.

22nd.—Much less pain in the joint, and he sleeps much better. The knee appears to be slightly diminished in size.

30th.—The joint appears to be rather more swollen, but he does not complain of increased pain.

July 5th.—No alteration in the size of the knee, but rather less pain. Moxa applied just below the patella.

12th.—The joint is rather smaller and more of its natural shape. There is now very little pain, but still some tenderness on pressure on the inner side. To leave off the opium, as he now sleeps well at night.

Aug. 2nd.—The joint is assuming a more natural shape, and there is no pain except on pressure. He sleeps well without opium, and his general health and appearance have much improved. Moxa ordered on the inner side.

29th.—Still some tenderness on the inner and lower part of the knee; otherwise much better. He sleeps well, and his appetite is good.

Sept. 3rd.—Moxa ordered.

December.—Since the last notes, his general health has been very good; the joint is free from pain, and has gradually been returning towards a normal shape, and anchylosis is slowly proceeding. The limb has been kept in a state of perfect rest throughout.

Anchylosis seems to be almost, if not quite, perfect; but great care will be necessary for some time. In a few days I shall remove the splints, and allow him to move the limb a little in bed. If this amount of exercise do not induce any pain or fresh inflammation in the joint, I shall next apply a gutta-percha splint, and allow him to get up and walk a little with crutches; but I do not expect that he will be able to leave the hospital with safety for the next six weeks.

Case 2.—Henry H——, aged eleven years, was admitted on the 29th of June, 1860. He has been ill ten weeks with swelling and severe pain of the left knee, which came on after kneeling on the damp ground, bird-catching, with his father. He was quite well

previously. He is now in a state of complete exhaustion, with an emaciated countenance, expressive of great suffering, and cannot bear the slightest movement of the leg without screaming from pain. An abscess has been opened in the neighbourhood of the knee-joint, and is discharging pus freely, and there is a large slough over the sacrum. Ordered, cod-liver oil, one drachm; tincture of sesquichloride of iron, ten minims: to be taken twice a day.

When I first saw this poor boy, I believed that immediate amputation would produce a fatal result. I had, therefore, but one course to pursue—namely, to strengthen his vital powers, either to enable him to bear the operation if I could not improve the condition of the joint, or what I hardly dare hope for, to do without the knife altogether.

The leg was placed on a Liston splint, and a linseed-meal poultice applied. A water cushion was ordered for the back. To have a mixed diet; wine, four ounces; porter, one pint.

July 4th, five days after admission.—Appetite and general health greatly improved; less pain in the knee.

11th.—The knee is better, but an abscess of considerable size has formed on the outside of the thigh. This was opened a little below the trochanter major. A splint, with a spinal support, was ordered.

21st.—Health has greatly improved, and his appearance is much altered for the better since admission. The slough on the sacrum has nearly healed; also, the abscess on the hip, and the knee is less swollen, and much less painful.

August.—He can lift the leg from the splint without pain, and firm anchylosis is taking place; his health is comparatively good.

September.—The knee appears quite solid. No fresh symptoms.

October.—The splint is left off.

November.—The knee remaining free from pain, he was allowed to get up a little; but in a few days it became swollen just below the patella, unaccompanied by pain. He was ordered to keep his bed. The potassa fusa was applied over the inflamed part, and the limb replaced on a Liston splint.

December 31st.—Under the above treatment the swelling has subsided. The leg is still kept on the splint. The boy's health is good.

Now, as regards the cause and progress of this disease, you must have been struck with its great similarity to that of the poor fellow whose leg I was obliged to amputate. Why the difference in the results?

The different ages of the two patients is quite sufficient answer without any reference to the treatment.

The next case is a very simple one, but is likewise instructive :—

Case 3.—Henry N——, aged eight years, was admitted Feb. 14, 1860, with disorganization of the knee-joint, the disease having existed a year and a half. There was not only a painful and swollen condition of the joint, but considerable contraction. The active disease was gradually subdued by rest, with moxas and appropriate tonics, including cod-liver oil. The limb was then gradually straightened by means of a Liston splint, with an Archimedean screw at the knee, and a leather pad over the joint, with straps above and below. The limb is now quite straight, and anchylosis is going on favourably; but there is still slight tenderness on the outer side of the patella, which it is expected will soon be removed, when he will be able to leave off the splint.

This case is deficient in previous history; but the appearance of the joint told its own tale. There had been active disease at work; but the conservative action of nature was prevailing. Anchylosis was nearly complete; but the anchylosis had not been properly directed by the science of surgery. Instead of the limb being nearly straight, it was bent at such an angle as to be useless as an organ of support and progression.

In such cases I always endeavour to get a straight limb by gradual extension, in preference to forcible extension under the influence of chloroform; and, in this instance, I have succeeded.

Case 4.—Ellen B——, a strumous delicate child, six years of age, was admitted into St. Thomas's Hospital, July 10, 1860, with an old-standing disease of the knee-joint. Her right leg was flexed at an acute angle, the foot being turned outwards, and the joint was marked with scars of old abscesses. Cod-liver oil was given twice a day, with full diet, and the limb was put upon a Liston splint. The splint was continued till Jan. 2, 1861, when irons and straps were substituted. During the time she has been in the hospital, one or two abscesses have appeared in the joint, but have healed again. The limb is now quite straight, and though the joint is enlarged, there is no sign of the presence of disease in it. She is able to walk about the ward.

In the next case the disease had completely subsided,

which was not the case in the last; but the deformity was so great that I determined to extend it forcibly.

Case 5.—Anne P——, aged six years, was admitted May 14, 1860, after two years' previous disease of the knee-joint. She was sent to me by an old dresser as a fit case for excision of the joint. The patient was a strumous child, but now in good health. There was much swelling and pain in the joint, and the leg was flexed at an acute angle. There was no opening into the joint.

May 16.—Ordered, cod-liver oil, one drachm; tincture of muriate of iron, ten minims: twice a day.

On May 24, I made forcible extension under chloroform. After the operation there was much increase of the pain, and the child suffered from feverish symptoms. Opium with liquor of acetate of ammonia was given for a day or two after the operation.

31st.—The swelling of the joint has much subsided, and the feverish symptoms have nearly disappeared. The splint was continued till the end of November, when anchylosis was nearly complete.

Case 6.—Caroline W——, a strumous girl, aged seventeen, was admitted into the hospital, March 20, 1860. At the early part of the year she had been attacked with synovitis and ulceration of the cartilages of the left knee-joint. Some time before, she had been in the hospital suffering from disease of the same joint. The right limb is shortened and contracted, and has been diseased for fourteen years. Cod-liver oil and tincture of muriate of iron were ordered, and the limb placed upon a Liston splint. As there were considerable swelling and tenderness in the joint, six leeches were applied, and a linseed-meal poultice. Gradual improvement took place. During the spring and summer, potassa fusa was occasionally applied, and the poultice continued. In the autumn, irons and a boot were used, and the limb was kept extended, and by October, anchylosis was tolerably complete.

Dec. 13.—She was discharged from the hospital, able to walk about the ward, the joint being perfectly stiff and devoid of pain.

Case 7.—James W——, labourer, aged thirty-five, admitted Aug. 23, 1859. Whilst at work about four months ago, loading a cart with thorn bushes, he was struck on the knee by a bough, a thorn upon which penetrated the joint immediately above the patella. The thorn was extracted, and considerable inflammation followed; this ran on to suppuration, and two incisions were made to let out the pus, but whether the pus lay internal or external to the joint cannot be clearly ascertained. When admitted, the joint was red and hot; the cellular tissue covering it was very hard and brawny, and swollen to such an extent as to obliterate all the depressions and protuberances, and give it somewhat of an oval shape. There was a continual, acute, gnawing pain, very much increased by motion. The extent of this latter is very limited. There is frequently convulsive starting of the joint at night. It was put on a

Liston splint, slightly bent, and a poultice applied. Iodine mixture, twice a day, was given.

Sept. 29.—A small piece of dead bone was extracted to-day. The pain is not so severe, and only occurs at intervals; there is also a greater extent of motion. I ordered a moxa to be applied.

Nov. 15. — Good deal of induration about the joint; not so much pain; health very good.

16th.—Opening over joint discharging still; joint rather painful.

May 21. — Original wound still discharging. A little anchylosis has taken place; joint hard all round, and not painful unless moved.

August.—Wound healed; going on well. Moxas occasionally used. He is the very picture of health.

November.—Some small amount of inflammation still remains; anchylosis nearly complete.

December.—Liston splint removed, and gutta-percha substituted. The man attempted to get up, but found that his leg was made worse by being out of bed, and therefore he has remained there since. The inflammation has not yet entirely gone. General health continues perfectly good.

I have little doubt that another month's rest will complete the cure, and that in about six weeks' time he will be able to return into the country.

Case 8.—Oliver R——, aged twenty-six, was admitted Sept. 28, 1860. He has had disease of the knee-joint for fifteen months, and has previously been in the hospital under my care. He left with the joint anchylosed; but, on moving the limb, slight pain and tenderness about the joint returned, for which he was readmitted on the above date. A Liston splint was applied, with poultice and moxas, and in about a month the symptoms had entirely subsided. Early in December a gutta-percha splint was moulded to the back of the joint, and he was allowed to walk about with this support, which he was able to do without any pain or inconvenience; and before Christmas he was discharged with a firmly anchylosed and very useful limb.

I will conclude this lecture with some brief notes of a case of excision of the knee-joint, which has been slowly advancing to a perfect cure.

Case 9.—John C—— was admitted into the hospital on the 5th of May, 1860. During the previous winter he had been in the hospital with great tenderness, pain, and swelling in the knee-joint, which gradually subsided under the application of moxas, conjoined with perfect rest, nourishing diet, and cod-liver oil. On his admission it was found that the disease had returned in an increased degree, with loss of appetite, cough, pain in the chest, emaciation, and night-sweats. With nourishing diet and tonics

his general health improved, and the joint was excised on the 19th of May. The cartilages were found extensively diseased, with slight secondary disease of the bone. The extremities of the condyles of the femur and the head of the tibia were removed, but not the patella. The limb was straightened on a splint, and sutures applied.

It was delightful to see this poor boy's countenance on the morning after the operation. He said he was quite free from pain, which the poor child had not been for months. Since this the boy's general health has gradually and steadily improved, but the anchylosis has been very slow; now, however, it is firm, and the wound nearly healed.

LECTURE XXXIV.

On Diseases of the Joints.—(*Continued.*)

Gentlemen,—From the lower extremity we must ascend to the upper; and we have already some cases in the wards which will serve to illustrate this series of lectures. The sternoclavicular articulation would, in the regular surgical course, be the next joint to engage our attention; but as we have no case in the house in which this joint is the subject of disease, I must proceed at once to the shoulder-joint. As a general rule, you will find a great disproportion in the number of cases in which the joints of the arm are diseased, in comparison with the legs; and this fact you will readily understand when you consider how much more the legs are exposed to injury than the arms; also how much more difficult it is to induce a patient in the early stage of disease to rest the leg than the arm. The consequence is, that we shall not find such an ample supply for illustration as we have hitherto enjoyed; nevertheless, I think we shall not long wait for ample food for thought.

The synovial membrane of the shoulder-joint is not unfrequently inflamed, and the joint soon becomes distended with fluid, and the whole form of the shoulder is altered. In a well-developed muscular man, the beauty of the deltoid is lost, and a large pyriform swelling appears to occupy its place. In a thinner subject, the point of the shoulder is a little less prominent, from an unnatural bulging of the arm just below it. In the examination of this joint for the purpose of detecting the existence of disease, and diagnosing its nature, you will find it necessary,

as I stated in reference to the knee-joint, that you should expose both joints at the same time, to be able to compare them one with the other. It is then that you see the features of the disease clearly, and the slightest deformity becomes at once apparent. We have two well-marked cases of disease of the shoulder-joint at present in the house, and these we will take as the text of further observations on the more important forms of disease of this joint.

Chronic Inflammation of the Shoulder-joint; Enlargement of the Head of the Humerus; Abscess discharging at middle of Arm.[1]—Thomas S——, a labourer, aged twenty-seven years, admitted into Abraham's Ward, under the care of Mr. Solly, on the 22nd of November, 1853.

History.—Was born at Halstead, in Essex, and has always lived in the country, and been much exposed to the air, having followed the occupation of a farm labourer. His parents are living, and healthy, but he has lost two sisters from phthisis. He states that he has always enjoyed very good health until the commencement of his present disease. He is married, and has three children. He is not aware that he has ever received any injury to the shoulder; but about fourteen months ago he experienced a sensation of coldness, and a slight pain between the shoulder-blades, which he attributes to having been extremely wet for ten hours whilst employed in dipping sheep a week or two previously. This coldness and pain continued for some time; but he felt no inconvenience at his work until a month afterwards, when a "stiffness" of the left arm came on, unattended by either redness, swelling, or pain. The "stiffness" of the joint increased, and upon extra exertion, or any slight blow, he felt some degree of pain, so that he was constrained to relinquish his employment, and place himself under the treatment of Mr. Sinclair, of Halstead, who told him that he had rheumatism in the shoulder, and ordered him colchicum, with warm clothing, and perfect rest to the joint, and fomentations, &c. Six weeks after giving up work he found that the shoulder had become very much swollen, the integuments slightly red, and he experienced some pain, but not of a severe character. The swelling gradually increased until it attained the size of a man's head. Counter-irritation was induced by the application of an ointment, which brought out a crop of pustules; this was continued for some time, but the swelling also continued, and spread down the arm. In June or July the pointing of an abscess was noticed at about the middle of the upper arm. An incision was made, and about a pint and a half of thin, unhealthy pus evacuated. The

[1] Reported by Mr. Chipperfield.

swelling of the shoulder then slightly decreased. The discharge continued very profuse for nearly three months, and then gradually diminished, and at the same time the shoulder became less swollen. A slight, thin, puriform fluid has continued to flow from the orifice up to this time, and the shoulder has become vastly less than it was.

This account of his previous history, which is more complete than we usually obtain, shows how extremely insidious these inflammatory attacks are in some instances. Exposure to wet and cold is a very frequent cause of inflammation of the joints, and the labouring population are not sufficiently careful of themselves. Such histories as these, however, arm you with positive facts to warn your patients against these dangers. Many an individual among the middle and upper classes has had occasion to regret his imprudence in allowing his wet clothes to remain on after exposure to rain, &c.; yet how often we find men saying, "Oh, it won't hurt me!" If, however, you can say to such a man, I have seen the shoulder-joint converted into one large abscess by similar neglect, he begins to think that you have just grounds for your advice, and that he ought to attend to it.

Our patient is a stout-built, tolerably healthy-looking countryman, but exhibiting the strumous diathesis. Happening to be in London, he was induced to apply at the hospital, and become an in-patient.

The left shoulder is manifestly of larger size than the right—the increase being chiefly due to an expansion of the head and neck of the humerus. This is ascertained by manipulation, and it appears that the anterior part of the bone is more enlarged than the posterior.

The head of the humerus is, as you know, surrounded by thick strong tendons. In fact, the capsule of the joint—for there is no true capsular ligament as in the hip-joint—is formed above, behind, and before, by the tendons of the supra-spinatus, infra-spinatus, teres minor, and subscapularis muscles. When this joint is actively inflamed, this capsule is infiltrated with inflammatory deposits, and these thickened tissues surrounding closely the head of the bone, convey to the hand of the

examiner the idea that the bone itself is enlarged. It is only by very careful and repeated manipulation that you ascertain whether the bony tissue is really enlarged, or whether it is only thickening of the capsule.

The integuments around the joint are somewhat thickened and indurated, but not discoloured, except what may be the result of the continued counter-irritation which has been pursued. There are three large cicatrices, apparently of issues, but he does not think that anything else was applied besides the ointment.

On the inner side of the arm, just above the insertion of the coraco-brachialis, there is a small, oblique, fistulous opening, from which a thin synovial-looking fluid escapes in small quantities. This leads upwards towards the joint, and apparently into it, for a small probe of ordinary length can be passed up the whole of its length.

He says that he suffers very little pain now—none, in fact, when the arm is at rest; but although he can adduct, flex, and extend the limb, these motions are limited, and abduction can only be performed to a very slight extent. He complains of no pain upon manipulation, except when the fingers are firmly pressed upon the head of the bone, or when rotation on its axis is performed. His health appears tolerably good. He says that he has gained flesh lately, though he was somewhat reduced by sweating at the time the abscess was discharging freely. Mr. Solly examined him, and ordered full diet. Sulphate of quinine, one grain, twice a day.

Dec. 3.—He continues in much the same state, but believes himself that his arm is stronger. He finds that he is much better when the arm is quite at rest. Health very good. Pulse firm and steady; tongue clean; bowels open; appetite good. To continue the pills, and have the arm confined to the side by a broad roller.

In statu quo. Mr. Solly had a long probe procured, and upon introducing it found that it passed readily into the joint, he believed through the bicipital groove. This produced some pain, and an increased flow of fluid, but no carious bone could be felt.

Complete rest to be observed. To continue the quinine; and the seton to be introduced through the deltoid.

As I have already stated, it is extremely difficult, in these cases, to distinguish between actual enlargement of the head of the bone and apparent enlargement from an infiltrated capsule. Do not confound an *infiltrated capsule* with a *distended capsule*.

In synovitis, followed by hydrops articuli, or purulent effusion, you have a distended capsule. In this very case, previous to his admission, and the bursting of the abscess, the joint was distended. But an infiltrated

capsule is the result of long-continued inflammation, and the one must not be confounded with the other. The physical examination of this point certainly gave the impression, as stated by my dresser, in his notes, that the bone itself was enlarged; in which case it was more than probable that the enlarged head contained within it a piece of necrosed bone. As this condition of the joint could only be ascertained by further examination, and it was evident that he was not suffering from any actual inflammation of the joint at the present time, I determined to support his system, and watch his general health.

It is very necessary in the treatment of the agricultural labourer in a London hospital to avoid frightening him with the idea of any operation being necessary, however slight.

After your patient has been in the hospital a short time, and seen you from time to time, he gains confidence in you, and will readily submit to much that he would have shrunk from at first, or the bare proposal of which would have sent him flying back to the country.

The examination by means of the probe did not educe any fresh fact, and the comparatively slight disturbance of the tissues surrounding the capsule induced me to hope that there was not any sequestrum to be removed. The fact of the joint being much easier when at rest, and the pain being greatest when the articulating surfaces were brought into contact, induced me to believe that there was ulceration of the cartilages. I therefore confined the joint by a bandage, and adopted that kind of counter-irritation which I have found most convenient and serviceable in the treatment of diseases of the shoulder-joint—namely, the seton.

Dec. 14.—The seton has been put in, and a free discharge of pus set up. Since its introduction the fistulous opening at the middle of the upper arm has discharged much more freely; the pus being of a thin, ichorous nature, irritates the surrounding integuments to a considerable degree. His health is suffering; the bowels are confined, he is thirsty, has slight pyrexia; with some little cough. To have a dose of house medicine.

17th.—The medicine has relieved the bowels, but he still suffers thirst and anorexia; complains also of headache, watchfulness, and night-sweats. The swelling of the shoulder is diminished, and the acromion process is now prominent, and the shoulder flattened above in consequence of wasting of the deltoid. The head of the bone can consequently be more plainly felt, and its expansion is considerable and beyond question. The sinus continues to discharge freely, as does also the seton. To omit the quinine for a couple of days.

21st.—Health somewhat improved; appetite returned; thirst diminished; pulse 84, soft; skin cool and moist; tongue clean; bowels open. The joint is in much the same condition as at last report. To resume the quinine.

28th.—Says he feels better, but thinks the air of the hospital disagrees with him. Has symptoms of hectic fever, not fully established at present. He shows signs of general emaciation, but his appetite remains pretty good, and he has nearly lost his thirst. The night perspirations are diminished. Has no pain in the shoulder, the limb being kept at perfect rest, but the seton is a source of uneasiness to him, and Mr. Solly therefore ordered it to be removed.

Jan. 4, 1854.—His general health is improving; the shoulder remains in much the same condition; the seton is healing; the sinus continues to give exit to a thin purulent fluid.

The next case to which I must direct your attention is interesting, in the first place, as contrasted with the last, in reference to the origin of the disease. A direct injury, we shall find, has been the immediate cause of the mischief. We need not warn our friends to avoid blows, but still we may be useful to them by telling them not to consider any blow over a joint a trifling matter.

There is no science to which the old and homely proverb of "a stitch in time saves nine," is more applicable than in the treatment of diseased joints; very mild treatment will often subdue that disease in its onset which the most active fails to control when the disease has been neglected some weeks.

Inflammation of the Articular Cartilages of the Right Shoulder-joint.—James S——, a porter, aged fifty years, was admitted into Abraham's Ward, under Mr. Solly, on the 22nd of November, 1853. Ten weeks ago he fell heavily upon the right shoulder, which in a day or two presented appearances of having sustained a severe bruise. He suffered some pain in the joint, but nothing to alarm him, though he found himself unable to raise a weight

without considerable pain. He continued at his work for a fortnight, and then found the weakness and uneasiness upon motion considerably increased, and began at the same time to experience pain when the joint was at rest; some trifling swelling also occurred. This condition of things prevented him from following his employment, and he gave it up in the hopes that rest would soon put all to rights.

He has now been out of employment eight weeks, but has found no improvement in the state of his shoulder; has observed that the arm has become weaker every day, and not only has the swelling subsided, but there has been gradual wasting of the muscles about the joint.

From this account you will perceive that the inflammatory action did not run on to suppuration, or even increased secretion of synovia into the joint. There has been some swelling, but this has been trifling, and has soon subsided. The form of the head of the humerus has not been altered by fibrinous deposit. But still, observe, the form of the shoulder is altered, its rotundity is lost; the point of the acromion projects unnaturally on the diseased side.

What is the pathological explanation of all this? Simply that the muscles in the neighbourhood of the joints have wasted, but especially that beautifully modelled mass of flesh, the deltoid.

Why do these muscles waste? Because they have not been used. This certainly is the cause of the change, but this is not all. Nature always teaches us aright, if we only take the trouble to read her book with thought and patience.

I believe that the absorption of muscular fibre in the neighbourhood of a diseased joint is a conservative action to keep that joint at rest; and if we follow this lesson as we ought to do, we shall do more for the poor joint than by all the counter-irritation that was ever invented. I do not mean to imply that the benefit derived from counter-irritation is trifling, but that the rest is the most important, and the use of blisters, setons, and moxas secondary.

He is a broad-built, but very thin man, with a sallow, rather unhealthy aspect, but stated that he has always enjoyed tolerably good health. He has some slight power of motion, but each move-

ment is productive of uneasiness, more especially abduction of the arm. He does not appear to suffer any increased pain when pretty firm pressure is made upon the head of the humerus in front, but he winces when the fingers are firmly pressed on the posterior part. Passive rotation of the bone upon its axis is not irksome, but he complains of severe pain when the head of the humerus is percussed, so as to bring it sharply in contact with the glenoid cavity of the scapula.

Nov. 23.—Mr. Solly saw him to-day, and diagnosed the case as one of inflammation of the articular cartilages. He ordered full diet, the arm to be kept at rest, a seton to be inserted behind the joint. The seton was introduced as directed, and is now suppurating very freely. There is much less pain in the joint; none when the arm is at perfect rest, and considerably less upon motion. To have the arm confined to the side, and the elbow supported by means of a broad roller.

Dec. 7.—Feels that the joint is much better; has suffered no pain since last report, and thinks he could make much more extended use of the arm than before admission, without any uneasiness, were he allowed to attempt it. Seton discharging pus freely.

Dec. 14.—Going on very well. Has no pain, except when the head of the humerus is struck. The appearance of the joint is much the same as upon admission; if anything, emaciation has advanced slightly; a copious discharge takes place from the seton; general health tolerably good.

Dec. 21.—In statu quo. Feels confident that he could use the arm without inconvenience were he allowed to go without the bandage. Percussion of the head of the humerus, and firm pressure on the posterior part of the glenoid cavity, do not give so much pain as formerly. There is a little irritation set up by the seton, which Mr. Solly desired to be removed.

Inflammation of the articular cartilages frequently follows synovitis, but it may, as in this case, arise as a specific disease, and be limited to a portion of the joint. These cases are generally very obstinate. The ulceration of the cartilage often extends to the bone, and caries is the consequence. Matter is formed in the joints which, finding its way out, forms a fistulous communication through the skin, and discharges externally. In old-standing cases of this kind you will find many such openings; and if by means of the probe you can detect extensive carious disease, which appears to affect your patient's health so as to endanger his life, it would be your duty to operate. I do not, however, mean to limit the propriety of operating to cases in which the patient's life is in danger, as there are cases in which

the joint is so disabled as to be useless, where you are justified in excising the head of the bone; but still you must be cautious—the shoulder-joint must not be interfered with lightly; and you should ascertain, by careful watching, the character of the constitution of your patient before you touch him. You must not admit a patient one day and operate the next. You must study his constitutional tendencies. As I have frequently said, in one man you may remove a large joint with impunity, in another you can hardly open an abscess without kindling a flame of constitutional irritation which will carry him to his grave in spite of the most judicious treatment. I do not mean to say that you can always predicate the effect which an operation will have upon a patient; but long-continued observation in the wards of a large hospital will materially assist your judgment, and guide to a conclusion which will generally be accurate. You may judge a good deal by the usual manner and countenance of a man. A quiet phlegmatic mien is generally accompanied with a quiet equable pulse, and with a nervous excitable manner you almost always find the heart irritable, and the pulse vacillating. As regards complexion, I should prefer rather a muddy hue, if the red blood is not entirely obscured, to the transparent skin, which shows the crimson current in all its superficial channels; but it is difficult to describe in words all these shades of difference. I must call your attention again to it in our visits to the bedside.

On two occasions I have excised the head of the humerus for long-standing disease of the joint, and in both successfully.

The first case was that of a female, named Catherine C——, aged twenty-seven. She was admitted on the 12th of April, 1849. I operated on her some time in June, but unfortunately the notes of the case have been lost; but I am able to state by memory that the operation was perfectly successful, and that she left the hospital quite well on the 25th of August, 1849.

The second case was peculiarly interesting. The

patient was a remarkably fine man, thirty-five years of age. He had been a pitman in the colleries near Newcastle, and after having been in the infirmary under that prime old surgeon, Sir John Fife, determined to try what London could do for him. He walked all the way up from Newcastle, and arrived here in pretty good condition. He was a tall, strong, healthy-looking man, with a ruddy, not hectic, complexion, and a quiet determined manner; pulse firm and equable. His condition on admission was thus described by my dresser, Mr. Craven:—

Disease of the Head of the Humerus.—Terence M'C——, aged thirty-five, admitted into George's Ward, under the care of Mr. Solly, April 12, 1849.

Present appearance.—Anteriorly there is a sinus a little above the lower margin of the pectoralis major, about the middle of a line extending from the nipple to the shoulder-joint. A probe passed into this opening reaches up to the shoulder-joint, but without impinging upon any exposed bone, and opening No. 1. There is another opening, with a scab over it, on the anterior part of the arm, opposite the insertion of the deltoid; there is a third completely in the axilla; a fourth at the back of the arm, even with the lower margin of the deltoid; and a fifth over the infra-spinous fossa, about two inches above the inferior angle. A probe passed through all these openings reaches more or less to the shoulder-joint. The general rotundity of the shoulder is rather lost, the deltoid being shrunk. The acromion appears to project more than natural. He can move his arm backwards and forwards without any pain, and he can raise it with the scapula; but if you attempt to move it, fixing the scapula at the same time, he is in great pain.

History.—About fifteen months ago he first felt a pain just at the insertion of the deltoid, and a difficulty in moving the arm; the difficulty was greater than the pain. He continued his work for two months. He states that he never had a blow on the part, and he does not know what to attribute it to except exposure to cold and wet. When he left off his work, the arm and shoulder were swollen, and a large quantity of matter formed, which was evacuated by opening No. 3. This opening healed, and he went to his work again in June last. It ulcerated again, and a large quantity of matter escaped; and on the 17th of August he went into the Newcastle Infirmary, under the care of Sir John Fife, where stimulating lotions were injected into the sinuses, which had the effect of diminishing the discharge. The openings Nos. 2, 3, 4, 5, were formed after the original opening was healed up, and there was a considerable quantity of matter came from them. Diseased bone can be distinctly felt with a probe at the bottom of two of the sinuses.

I shall not detain you with any daily notes of this case, but merely detail the general course and result. On his admission, I gave him the iodide of potassium in the infusion of gentian, and after watching his condition very carefully, and several consultations with my friend, Mr. Green, I determined to excise the caput humeri. On the 2nd of June he was brought into the theatre. I made a semicircular incision through the deltoid down to the capsule of the joint, which was next divided, and then the head of the bone protruded from the socket was excised with a small saw through the anatomical neck of the bone. The whole operation only occupied a few minutes. The flap of skin and deltoid was kept in contact by eight sutures, strapping and roller. The greater part of the wound healed by the first intention in a few days, but two sinuses remained open for some weeks. He left the hospital quite well on the 16th of February, 1850, with a very useful arm. The treasurer and almoners kindly paid his passage back to Newcastle, and sent him on his way rejoicing. In this case the glenoid cavity of the scapula was quite healthy, but the head of the humerus was soft and carious.

In the performance of this operation, you must be careful not to excise too much of the bone; the less the better, so that you remove all the disease.

In the next case that I have which I think is fitting for operation, I shall in all probability use the gouge in preference to the saw, but of course I shall be guided by the state in which I find the head of the bone. If the greater part of the head is diseased, I should then prefer the use of the saw; but on this subject I shall have more to say to you when we arrive at the elbow-joint; and in illustration of this part of my subject, I have, as you know, one very interesting case at present in the hospital.

Fractures ununited. I have had three or four cases of ununited fractures in which I have cut down on the seat of fracture, and after removing the fibrous tissue which forms the false joint, made a new and, so to speak,

raw surface of bone. The limb was then placed in splints and bound firmly up, and the result has been union. One of these cases possesses sufficient interest to deserve a separate account. In none of these cases have I used either the ivory pegs or a wire suture. I cannot speak either for or against such treatment.

M. L——, æt. 20, was pitched out of a dog-cart with immense force against a wall, the left side of the head and the left arm receiving the whole force of the blow. The head was cut, and severe concussion of the brain with meningitis followed. The left humerus was broken. The fracture was compound, splintered and comminuted. Severe raving delirium followed the injury to the head, a short account of which I have given elsewhere in illustration of the value of blood-letting.

During the delirium, which lasted four or five days, he flung his arm about like a flail. During the first twenty-four hours it was placed in ordinary straight splints, which but slightly controlled it. I saw the case, I think, on the second day after the accident, and at once ordered a tin splint to be made with a shoulder piece, to fasten it securely to the trunk, and a tray for the fore-arm. The splint was so arranged as not to interfere with the wound, which was on the inner side of the upper arm. I dressed the wound three or four times during the first month, but I was only in attendance as the consulting surgeon. The charge of the case devolved upon the two surgeons who were in regular attendance upon the family; and when I inquired about the progress of the arm, I was told that nothing could be more satisfactory.

On the 25th of December, *i. e.* about seven months from the date of the injury, I saw this gentleman again in consultation with his usual medical attendant. There was no union. The arm could be moved, and without much pain, in any direction, at the seat of fracture, two inches above the elbow-joint. There was, in fact, a false joint, with overlapping bones.

An operation was agreed upon on the 29th. I per-

formed it under the influence of chloroform. My first incision was semilunar, the convexity upwards, just over what appeared to be the lower end of the upper fragment of the humerus. This incision exposed a sharp spiculum. Above it, the bone was smooth and shining, exhibiting no attempt even to form callus.

This bony spike was separated from the lower fragment by muscular and tendinous fibres. With a pair of strong cutting forceps about a quarter of an inch of this bony point was cut off. With the scalpel the tissues which, surrounding the upper portion, separating the upper and lower fragments, were removed. With a bone chisel I denuded completely about half an inch of the oblique fractured edge of both the upper and lower fragments. I thus obtained two tolerably extensive surfaces of raw healthy bone. I brought them together, and having thus a good extent of opposing bone surface, I placed ligatures on two freely bleeding vessels, and closed the wound with sutures. A pasteboard splint, previously prepared, kept the parts in close apposition. After a lapse of two months I had the satisfaction of finding that the union was complete.

LECTURE XXXV.

A Case of Compound Dislocation of the Astragalus.

Gentlemen,—One of the most interesting and practically instructive cases which we have had this season is a case of compound dislocation of the astragalus.[1]

This form of accident rarely occurs; I do not remember having ever seen one exactly like it.

The consideration of it involves many points of great practical interest, which I will endeavour to bring forward seriatim, after I have read to you a general outline of the case, which is very clearly reported by Mr. Hartnoll.

Case of Compound Dislocation of the Astragalus.—John Lambert, æt. 42, labourer; stout and muscular conformation; bilious temperament, and sallow complexion; was admitted Nov. 4, 1845, into George's Ward, under Mr. Green, with a compound dislocation inwards of the astragalus from the os calcis. He is married, and has several children: has been a drinking man nearly all his life. Has had a cough for some few weeks, but cannot give any particular reason for its occurrence. In March last was attacked with rheumatic fever, and became on that account an in-patient of Guy's Hospital; was ill altogether sixteen weeks; was not bled.

This important fact regarding the intemperate habits of this man was not elicited until after our consultation. For though we questioned him very closely on this point, he positively assured us that he never took more than a pint of beer a day. He, indeed, stated that his general health was remarkably good, also concealing the attack of rheumatism which occurred ten months previously. There was a calmness of manner and clear straightforward way of expressing himself which gave an authority to his history of him-

[1] Feb. 13, 1846.

self which we now find it did not deserve. These circumstances may appear too trivial to dwell upon in a lecture, but they are of such importance that I trust you will always consider them in cases of compound fracture.

The injury was caused by a heavy iron girder, of the weight of ten tons, falling upon the limb, and crushing it against another similar girder; thus nipping the part, as it were, between the two blades of a pair of scissors.

On examination the accident appeared of the nature of a compound dislocation of the tibia inwards, with fracture of the fibula. The foot was everted; the outer edge of the sole inclined upwards, the inner edge downwards. On the inner side of the foot there was a lacerated wound of the integuments, extending from below the internal malleolus, about three inches in length, forwards on to the instep. The integuments were contused and lacerated to a great degree on the outer side, the wound extending from above the outer malleolus across the foot to the metacarpal bone of the second toe, a large flap of skin having been torn up, and a deep chasm exposed beneath; on both sides the tendons were exposed. The anterior and posterior tibial arteries were not injured, and their pulsation could be distinctly felt, though anteriorly only a narrow bridle of skin, about an inch and a half in width, was left between the two wounds, connecting the skin of the leg with that of the foot.

The inner malleolus, though not bare, projected through the wound on the inner side. On the outer side, the fibula, which was fractured about two inches above the external malleolus, was completely exposed. Reduction was attempted by Mr. Solly, who visited the man a short time after admission, but with no avail. On consultation between Mr. South, Mr. Mackmurdo, Mr. Solly, and Mr. Travers, it was determined that an attempt should be made to save the limb, to saw off the extremity of the tibia, and to reduce the dislocation.

For this purpose the man was placed upon the table;

the wound on the inner side dilated, and the internal malleolus laid bare. The tendon of the flexor digitorum communis was drawn aside by a retractor; while that of the tibialis posticus being so much on the stretch as not to allow of retraction, was divided. At this stage it was discovered that the prominent projection of bone on the inner side was a portion of the astragalus, in natural connection with the tibia, but separated from the os calcis and navicular bone. It was therefore determined to remove this bone, which was accomplished without any apparent difficulty, though it required great care to avoid the division of either the anterior or posterior tibial arteries, and the foot was then easily brought into its natural position. The integuments were now brought together by sutures, and strips of adhesive plaster; the patient sent to bed, and the limb confined in a swing box.

To have Tinct. Opii, ♏xl.

Nov. 5.—Has slept tolerably well; wound easy; tongue white; pulse 96; cough troublesome. Ordered—Mist. Effervescens c. Tr. Scillæ; gin, ℥iv. The chest to be painted every night with tincture of iodine. Milk diet; beef-tea; opiate at night.

Nov. 6.—Pulse 96, and rather weak; tongue whitish; feels very drowsy; bowels not open.

The opium to be omitted at night, and to have brandy ℥ij. instead.

Mr. Solly removed the sutures and plaster from the wound, and applied a poultice.

Nov. 7.—Pulse 88; tongue clean and dry; bowels not open. Ordered—Pulv. Rhæi c. Cal. gr. x. nocte. Mutton chop, and porter two pints.

Nov. 8.—Feels very low and weak; has no appetite; pulse 90, feeble; tongue morbidly clean, tip and edges bright scarlet; bowels freely open. To have the following draught (ordered by Mr. Green)—℞ Mist. Camph. ℥jss.; Ammon. Carb. gr. v.; Tinct. Opii, ♏x. 6tis horis.

Nov. 9.—Pulse 86, feeble; tongue very dry and rugous, of the same scarlet hue; occasional rigors. Ordered—Port wine, ℥iv. Eggs.

The wound on the inner side is suppurating, but on the outer side there is an extensive slough, of the size of the palm of the hand.

To have the solution of chloride of soda applied to the outer wound.

Nov. 10.—Has been very restless during the night; pulse 90,

feeble; tongue the same. Ordered—Brandy, ℥iv. in addition to the wine, and an opiate at night.

Nov. 11.—Pulse 90; tongue the same; lips parched; has been very restless during the night; bowels open. To have—℞ Opii ♏xl. nocte: to be repeated if restless.

A dull red inflammation of a very low character extends around the wound, and several dull red streaks can be traced along the course of the absorbents over the thigh.

Nov. 12.—Slept better during the night; pulse the same; tongue the same; skin dry; has pain in his limbs; the wrist of the right arm considerably swollen, red, and painful; urine rather high coloured.

The quantity of stimulus he now takes is, porter, 3 pints; brandy, ℥iv.; wine, ℥vj.; besides eggs, beaf-tea, and chops.

Nov. 17.—Continues much the same. The wound is very sloughy, especially on the outer side. Mr. Solly removed the lower end of the fibula, which was quite dead, and likewise some sloughy portions of the peronei muscles.

Nov. 18.—Tongue still morbidly red, though moist; pulse weak. Quantity of stimulus increased to—porter, 4 pints; brandy, ℥vj.; wine, ℥viij.

Nov. 21.—Skin is moister; tongue moister and not tremulous, though still red at the tip and edges; pulse 96, weak; both wounds granulating, looking healthy, but with no excessive discharge.

Nov. 22.—Mr. Green saw him to-day, and thought him in a better state, and likely now to bear the operation of having his leg removed, which he proposed, but the man would not consent. In the course of the evening, however, he did consent, and Mr. Solly, about half-past nine P.M., amputated the leg below the knee, performing the circular operation. He bore the operation well, but lost a considerable quantity of blood, as the tournequet was shifted by the struggles of the patient.

11 P.M.—Feels comfortable. To have—℞ Opii ℥j. statim, and to be repeated if necessary.

Nov. 23.—Has dozed at intervals during the night; pulse quick; skin rather dry; tongue more natural in appearance, though a little dry. Opiate at night.

Nov. 27.—Has slept but little during the night, and mutters in his sleep; tongue rather dry. It was thought to be the opium that caused him to lie so watchful. He was therefore ordered instead ℞ Hyoscyami, ℥j. ex Mist. Camph. nocte, et repet. si opus sit—Pergat.

Nov. 28.—The hyoscyamus has not had the desired effect of composing him. He had the dose repeated during the night. Tongue dry, and again becoming preternaturally red; perspires very freely; stump to be poulticed. To have Morph. Mur. gr. ¼ nocte.

Nov. 29.—Perspiration profuse; the integument of the right side and hip is considerably swollen, and pits upon pressure.

Nov. 30.—Swelling extending upwards towards the axilla;

pulse weak; tongue rather tremulous; bowels have been relieved once; quantity of wine increased to ℥x. His cough being troublesome, Mr. Solly ordered him the following—℞ Decoct. Senegæ ℥ij.; Ammon. Carb. gr. v. Tr. Scillæ ʒss. in 6tis horis.

Dec. 2.—The swelling extends now down over the right thigh; his tongue is red and tremulous, and can scarcely be protruded from the mouth.

Dec. 3.—Mr. Solly made an opening into the swelling near the hip, and gave exit to about three pints of very offensive unhealthy-looking pus. The stump looks tolerably healthy, and there is a free discharge. Quantity of wine increased to ℥xij.

Dec. 4.—Tongue a little moister; pulse 100, very weak; skin dry, though at times bathed in a profuse perspiration.

Dec. 5.—Is in no pain; the right thigh is swollen to twice its natural size, and pits upon pressure; the swelling has likewise extended round to the opposite side and thigh; the integument has a brawny feel, and yields under the pressure of the finger like dough. Pergat.

Dec. 8.—Integuments over the left buttock look dark, and in a sloughing condition. The poor fellow sank in an exhausted state on the 12th, without any change in his symptoms. No post-mortem examination was allowed.

On dissecting the foot we found that the edges of the astragalus, where the bone articulates with the navicular, had been broken off, and left attached by ligaments with that bone; in the same manner the posterior lip of the bone which had been broken off was left attached to the posterior surface of the tibia. The inner lip of the astragalus, that portion which overlaps the tuberosity of the os calcis, was also broken off.

These fractures of the bone are interesting in a physiological point of view, as showing the greater resistance of the ligament than the osseous tissue.

The first praetical point worthy of our attention is the form of dislocation. It was not what it appeared to be; namely, a compound dislocation of the ankle-joint, which though not a common accident is not so rare as this dislocation of the astragalus.

I do not find any case exactly similar to it, either in Sir A. Cooper's works, or in Mr. Turner's Treatise on Dislocations of the Astragalus.[1] This treatise, gentlemen, is well worthy of your perusal; it reflects great

[1] Anatomico-Chirurgical Observations on Dislocations, by Thomas Turner. 1843.

credit on any surgeon who is so actively engaged in private practice as Mr. Turner is, to take so much pains to collect statistical information on this important subject as he has done. In regard to the rarity of the injury, I refer more particularly to the displacement of the astragalus from the os calcis, and the retention of it to the tibia. The astragalus is not unfrequently dislocated, but then it is generally separated from the tibia.

Sir A. Cooper mentions one case somewhat similar, the particulars of which were given to him by Mr. South.

The patient, aged forty-five, an Irish labourer, of intemperate habits: accident occasioned by a blow on the heel from the falling of a piece of stone.

The parts were in the following state: a wound extending from opposite the middle of the base of the tibia round the upper part of the instep, to the external malleolus, which exposed the articulating surface of the astragalus with the navicular bone on the fore part, as well as that with the os calcis on the outside, from both of which bones it was displaced; its connection with the tibia and fibula, however, was undisturbed. The reduction was effected by extending the foot, and rotating it outwards; the wound was brought together with straps of adhesive plaster. This patient recovered, and he left the hospital able to walk tolerably well, having been in the hospital about five months and a half. But in this case it is to be remembered that there were no fractures, and only one wound.

A reviewer of Mr. Turner's paper in the *British and Foreign Quarterly Review* bears his testimony to the rarity of this form of accident: he says, "We believe there are very few cases of the kind on record, and we ourselves are only acquainted with another" (referring to that of Sir A. Cooper as the first), which is recorded by Dr. Macdonald, *Dublin Journal of Medical Science.*"[1]

This case is entitled, "Simple and complete dislocation of the astragalus from the os calcis and navicular bone,

[1] Vol. xiv. p. 235.

upon the dorsum of the latter, without disturbance of the relations between the tibia, fibula, and astragalus, and without fracture of any of these bones: the case of Richard Carmichael, the celebrated Dublin surgeon."

The accident was occasioned by the weight of the body being received by the anterior portion of the foot, as it struck the ground; his horse falling, but without his losing his seat. The following was the deformity observed: the toes were turned outwards, the inner edge of the foot forming an angle of about 30° with its natural direction; the sole was slightly turned outwards, and the outer edge slightly elevated; the concavity of the tendo Achillis posteriorly was manifestly increased, and the heel lengthened: on grasping the soft parts between the tendo Achillis and tibia, they found the distance between these parts much greater than in the other foot. The absence of the hard projection which would have been formed by the upper articulating surface of the astragalus, had it passed backwards with the other tarsal bones, was evident; the malleoli were perfectly defined; below and before the inner there was a hard prominence, over which the skin was tense, formed by the inner surface of the astragalus, brought into relief by the dislocation and the slight cohesion of the foot. Much the most striking part of the deformity consisted in a prominence on the dorsum of the foot. Immediately in front of the tibia it presented a flat surface, broad enough to receive the finger, and from which there was an abrupt descent upon the anterior part of the tarsus. Over this projection caused by the head of the astragalus thrown on the upper surface of the scaphoid and cuneiform bones, the integuments were so tense that it was evident a very small additional force would have driven it through the skin. In this last particular there was a striking difference between this case and Lambert's, where there was no tension of the skin over the astragalus; the lacerated wounds on both sides preventing its occurrence.

They attempted to reduce this accident without the pulleys, but failing, used this power, and succeeded.

Mr. Carmichael stated that the use of them was much less painful than the jerks of unassisted muscular force.

Dr. Macdonell says,—

"With respect to the rareness of this dislocation, none of my surgical friends have met with another case, and, after a diligent search, I cannot say positively that I have found a single case of the same accident. Sir A. Cooper, Boyer, Chelius, and Gibson have not recorded it."

The following interesting case, which was under Mr. Shaw and Mr. Arnott, so much resembles, in many particulars, that of Lambert, that I shall abbreviate it,[1] leaving you to refer to the excellent report itself, if you wish for further particulars.

Frederick Moore, æt. 22, a brewer's drayman, was received into the Middlesex Hospital, December 26, 1836, with a compound dislocation of the astragalus of the right foot. He fell into a cellar, a height of about three yards; the right foot was twisted under him. There was an open wound, about three inches and a half in length, on the inside of the foot, a little under the inner malleolus, and extending obliquely from the upper part of the instep, in the direction of the heel. The anterior articulating surface of the head of the astragalus projected nearly an inch through the wound, but it still retained its natural connections with the tibia and fibula; but the capsular ligament of the ankle-joint was lacerated horizontally. The tendon of the tibialis posticus was dislocated and thrown backwards, as in the case at Guy's, to which I shall again refer, while that of the flexor communis was dislocated backwards. The fibula was fractured close to the ankle-joint.

The most careful and judicious efforts possible, without the use of the pulleys, were made at reduction, but without success. It was then determined, after consultation, to remove the astragalus. This was found so difficult that they were obliged to use the strong bone scissors and the chisel and mallet, and cut it into pieces before they could detach it. The leg was laid on an outside splint, and the knee bent.

He ultimately recovered, but after a long and dangerous illness, cough, erysipelas, absorbent inflammation, collection of pus over the trochanter, &c.

On July 11 he left the hospital, able to walk tolerably well; that is, rather more than six months from the time of admission.

Mr. Turner excludes this form of dislocation from his list, limiting the term "dislocation" of the astragalus to

[1] Med. Gaz. vol. xx. p. 588.

that separation of this bone from its natural attachments in which we find that *all* the articular surfaces must in some degree be displaced. If the astragalus be separated from the bones of the leg, and still retain its connection with the bones of the tarsus, the accident is a luxation of the ankle-joint. If the astragalus retain its natural attachments with the tibia and fibula, but happen to be torn from the os navicularis or the os calcis, or both, it would not be a dislocation of the astragalus, but a diastasis, or disjunction of one or both of the bones from the astragalus. I think that there would be an advantage in thus limiting the term "dislocation" of the astragalus to the more or less displacement of *all* the articular surfaces; if it were generally adopted, it would be found inconvenient. It is true that we do not thus employ the term in reference to other bones; for instance, we speak of dislocation of the humerus at the shoulder-joint, though its articular surfaces at the elbow-joint are in perfect apposition, and so on.

Thus I think it is strictly correct to describe this accident as a dislocation of the astragalus from the os calcis and navicular bone, though its connections with the tibia remain undisturbed; but then we refer to a particular joint.

Considering the rarity of this accident, it is curious, in connection with this case, that a very similar accident should have been lately admitted into Guy's. In this instance the accident was a simple dislocation of the astragalus from the os calcis and navicular bone; the astragalus retaining its connection with the tibia and fibula, without fracture of these bones, but with fracture of the cuboid bone. All attempts at reduction were unavailing; constitutional symptoms of serious injury and irritation of the nervous system, threatening life, supervened. Amputation was performed, and, in addition to the dislocation of the bones, the tendon of the tibialis posticus was found thrown out of its natural groove on to the front of the tibia, and the flexor communis digitorum from the same groove into that of the flexor longus pollicis. The tibia and astragalus

were, in fact, held by these tendons so firmly, that it would have been impossible to have reduced the dislocation without dividing them. The posterior tibial nerve was violently stretched by the projection of the tibia; and this accounts for the derangement of the nervous system. The patient did not survive the injury and operation many days.

I have dwelt very fully on the rarity of the accident, in the hope that you may remember during the rest of your professional career that such an accident does sometimes occur, and that if you should be called suddenly to so serious an injury of the foot and ankle as to require you to deliberate on the propriety of amputating or not, you will assist your judgment with the recollection of this case and its results.

This form of dislocation was new to me, and I did not put it into the balance in weighing the arguments *pro* and *con* amputation. I candidly confess that if we had, I think it would have just turned it in favour of amputation of the limb; for the dissecting out of the astragalus from the socket of the tibia is certainly a more serious operation than sawing off the end of the tibia. It is true that the astragalus has been frequently removed in compound dislocations, and the patient recovered; but I think, on looking back to all the circumstances of this case, that it added so much to the already extensive injury of the soft parts, that if a similar case were to come before me, I should not be tempted to try by such means to save the limb.

I would, indeed, advise you, in any analogous case, where you might consider it necessary to remove the astragalus, or saw off the end of the tibia, in order to return the bones to their place, never to make a fresh incision to effect it, if you have already an extensive wound in another direction. If you cannot remove the astragalus without so doing, then remove the whole leg in preference. In the case we have just been considering, there was already an extensive lacerated wound on the outside of the foot; but this wound was not in a direction to admit of either the removal of the

base of the tibia through it, or the astragalus; and though there was a wound on the inner side, still this wound did not communicate with either of the above-mentioned bones. In order to extract the astragalus, it was necessary to carry this wound down to them, which most undoubtedly added much to the previous injury, and danger of constitutional irritation.

I have remarked, that in those cases in which the astragalus has been successfully removed, it has been removed rather through an original wound, or a dilatation of the original one, or in cases of simple dislocation, where of course only one wound need be made for the purpose.

When I first saw this man, I was, after carefully examining the limb, strongly impressed with the idea that amputation of it was necessary to save his life; and my principal reason for thinking so was, that, in addition to the very extensive wound of the skin and soft parts on the outside of the foot, and the severe injury to the ankle-joint, and free exposure of its articular surface in that direction, there was a long lacerated wound of the integuments also on the inner side, that this wound did not communicate with the joint. Nevertheless, I felt that it was a very difficult case to decide upon: for the loss of a limb, to a labouring man especially, is too serious a matter to determine on without great consideration and deliberation. Under these circumstances I was glad to obtain the advice of my colleagues, Mr. South, Mr. Mackmurdo, and Mr. Travers, who were then in the hospital: they all considered that I ought to try and save his limb; and as I did not feel sufficient confidence that my first impression was the correct one, I determined to act in accordance with their advice. The next point to be determined was how to reduce the dislocation. I had tried ordinary extension, but could not make the least impression. Mr. South advised my sawing off the end of the tibia, as recommended and performed by Sir Astley Cooper and Mr. Henry Cline. I therefore laid bare the inner malleolus, and cut through the deltoid ligament; and it was not until I had done

so that I found that the astragalus was still attached to the end of the tibia, and dislocated from the os calcis. Under these circumstances I removed this bone, which was already detached from the os calcis and navicular bone, and after this the tibia was easily replaced. The operation was very painful, though it did not occupy any length of time.

It will be found that in general the results of *complete extirpation* of the astragalus have certainly been encouraging, notwithstanding the serious nature of the accident which demands this formidable operation. Mr. Turner states that—

"In thirteen cases out of eighteen, a very useful limb remained; in one only was there true anchylosis; and death occurred in four cases. In no simple case was there a fatal result. It is, therefore, to be presumed that death happened rather from the conjoint injuries which the soft parts sustained by the violence which produced the compound and complicated luxation of the bone, or by the force used in attempts at reduction, or both united, than from the operation itself; and there is a weighty argument in support of this opinion, in the fact that the cause of death in the four examples was diffuse cellular inflammation, extensive suppuration, sloughing, &c., the latter being the sequel of the former: and as affording additional evidence of this truth, it may be mentioned that in three out of the four cases the accident was *compound* and *uncomplicated*, therefore cases where there was no division of the effects of force, but a direct concentration of it on the joints and surrounding textures. That the degree of injury which the soft circumjacent tissues receive has a material effect in influencing the result, is further demonstrated by the fact that dislocations in the anterior and posterior aspects of the foot do much better than lateral luxations, as they are not usually accompanied with so much laceration of the ligaments, tendons, fasciæ, and skin, in the former as in the latter localities."

Mr. Turner says,—

"In partial cases, whether simple, or simple and complicated, should attempts at reduction fail, there must be no operative interference. In partial and compound, or compound and complicated (reduction failing), excision, if practicable, of the protruded portion of the bone should be performed.

"It is, however, to be remembered that this practice does not apply to *partial* and *simple* dislocation of the astragalus in *any* direction; for the justifiability of operation in partial luxation, when there is no external wound having a direct communication with

the displaced bone, is very questionable. The practical proceeding in complete and simple, or simple and complicated dislocation, will be determined by the position of the bone; if its protrusion be direct, in reference to its axis, and cannot be reduced by moderate efforts, the case ought to be left to nature, because, although the chances are against its remaining passive, it will be well to wait the event; and should the skin inflame and other matters predicate the tendency to ulcerate through, it will be better to save the patient this source of irritation, by an incision over the site of the astragalus, and leave the extrication of the bone to the efforts of nature, or at all events until it is so loose as to be easily extracted."

The following cases from Sir A. Cooper demonstrate that persons do recover from injuries nearly as serious as those of Lambert's, without amputation of the leg:—

"Case II. p. 259.—The tibia and a part of the astragalus protruded at the inner ankle. I immediately returned the parts into their natural situation; five weeks afterwards a portion of the astragalus separated; and another piece a week afterwards, which when joined formed the ball of that bone. Recovered. Good limb.

"III.—Tibia thrown inwards, astragalus shattered into a number of pieces, loose and unconnected portions removed; recovered: well at the end of nine months. For his years he has a useful limb.

"IX. p. 371.—Compound discolation of the tibia outwards; the tibia and fibula have penetrated through the integuments at the outer ankle, and were lying on the outside of the foot; the articulatory surface of the astragalus had penetrated through the integuments of the inner ankle, showing, on a view of the case, the foot nearly reversed; the bones were reduced without much difficulty, and the man did well. Antiphlogistic plan was strictly pursued. Lot. Plumbi."

This case resembles Lambert's in the double wound. Sir A. Cooper says,—

"I have known no case of death when the extremities of the bones have been sawn off, although I shall have occasion to mention some in which the cases terminated fatally when this was not done."

But these observations lead me to another important practical point involved in this case, but on which time will not allow me to attempt to treat in this lecture. It is the question of primary or secondary amputation as a general rule in cases of compound fracture. In this individual case, I must say that I think the man

would have had a much better chance of recovery if the leg had been amputated in the first instance instead of removing the astragalus, and waiting. My reason for thinking so is the power of reparation which was exhibited in the wounds of the foot, the way in which the sloughs were thrown off, and the healthy granulations that sprang up, and, considering the amount of injury, the slight constitutional irritation which arose; and, if all this went on favourably with such extensive injuries, can we doubt, with a simple amputation of the leg, that there would not have been less suppuration and less constitutional irritation? Indeed, one reason for considering the amputation necessary after all was, that he must sink under the enormous amount of suppuration which was going on, and that he had not sufficient strength to repair the injury, and not from threatening of life by constitutional irritation. I cannot lay the flattering unction to my soul, and believe that there was any organic disease existing previous to the accident, though his constitution was certainly impaired by intemperate habits, which materially influenced the result. It is true that he had a troublesome cough when he came in, but it did not arise from disease of the lungs, and I have relieved worse coughs in cases of compound and other fractures without difficulty. The heart's action was normal throughout; and as for his stomach and digestive organs in general, they never failed him from first to last.

It would have added very much to the illustrative character of this case if we could have had a post-mortem examination, but this was obstinately refused. In the absence of this evidence, I must be contented to give you my opinion of his pathological condition. The details of its daily progress have described the signs of absorbent inflammation, and the secondary purulent deposit which followed in both femoral and gluteal regions. From the state of his respiratory system I suspect that shortly before his death the same was deposited either in the lungs or on the pleura, as you have lately seen in another fatal case of compound

fracture, which we have had the opportunity of examining.

But as our time has expired, I will conclude by observing that Colles, late of Dublin, an excellent practical surgeon, is not in favour of amputation for compound dislocation of the ankle, and he thus expresses himself in his Lectures :—

"The man to whom I was pupil was very fond of amputation for every kind of compound fracture, and he operated as well and as dexterously as any man I ever saw, yet I never saw a patient on whom he operated for this kind of case that did not die in consequence—every one of them: they got sickness of the stomach, which never left them; a tumid abdomen, &c. All the experience I have had tends to show the ill tendency of early amputation in compound fractures. If you must amputate wait at least until the symptomatic fever has subsided. If there is a necessity to amputate after hectic fever has set in, which, as I have already said, may occur, the hectic will immediately subside after the operation, provided the fever be not owing more to constitutional than local causes: a man, who was in perfect health the moment before he met with an accident, and from which he got a severe shock, is not a fit subject for an immediate operation."

LECTURE XXXVI.

On Anchylosis, Carcinoma Mamma, Diseased Bone, etc.

Gentlemen,—In a former lecture I stated that I had only amputated twice for disease of the knee-joint since I have acted as surgeon to this hospital. I believe that I have succeeded in procuring anchylosis in every other case in which the disease could not be arrested before the joint was obliterated. There is now in the hospital a good illustration of this result. The patient in this case is an Irishman, aged thirty-nine, who was admitted under my care on March 14th, 1854. He had suffered from some disease of the joint for three years. During this period he had been at different intervals under the care of a hospital surgeon, getting better when under treatment, and going back as soon as he left the hospital.

On admission his knee was very much swollen; the swelling was pale, characteristic of ulceration of the cartilages, and hence its familiar title, "white swelling." He could bend it partially, but with great pain. He suffered from a constant distressing gnawing sensation over the external semilunar cartilage and corresponding head of the tibia, where there was a lump, distinguishable from the fluctuating swelling of the rest of the joint. During his sojourn here under my care, he had eleven issues, made with potassa fusa; and to this constant repetition of the caustic I attribute his recovery. I do not believe that there is so much advantage from the *suppuration* which follows the removal of the eschar as there is from the counter-irritation primarily excited by burning. As a general rule, I prefer, therefore, the repetition of it to an issue kept open with peas. He has not been in

the hospital the whole of the time since March, as he was presented, during my short absence from town in August, by one of my colleagues, who found him so much better that he thought the joint quite sound. A few days' labour, however, brought him back, when I was obliged to have recourse to counter-irritation. This time I used the seton, as there was very little space for another issue. The knee is now free from pain, and with the assistance of crutches he can get about very well. The two joints are nearly the same size, and the limbs nearly the same length. The tibia is slightly flexed, and in a direct line with the femur. He is to leave the hospital on Tuesday next.

In the above instance the limb is anchylosed in such a position that it will be very useful to him. Sometimes it happens, either from want of attention on the part of the surgeon, or such severe constitutional irritation accompanying the progress of the disease as to prevent his retaining the limb in a right direction, that the leg becomes anchylosed at such an angle with the thigh that the foot scarcely touches the ground, and at the same time the leg is twisted out of the straight line. If such cases come before you, they must not be considered hopeless. If the disease is entirely gone, and the joint obliterated, you may break through the anchylosing bands, and straighten the limb. Many of you will remember a successful case of this kind last summer, but as some of you did not see it, I will read you the notes briefly.

Thos. B——, aged twenty, cheesemonger, was admitted under my care on the 19th of June, 1855. His left knee is perfectly fixed and immovable; the leg is bent upon the thigh, so as only to allow the toes to touch the ground. The foot and leg are not in a straight line with the thigh, but twisted outwards, so that the deformity is very considerable. The patella is adherent to the external condyle. There is no pain, tenderness, or swelling of the joint; but the limb is quite useless to him. The history is, that this condition of the joint followed an attack of acute inflammation, which was treated during a sojourn of twenty-one weeks in a metropolitan hospital. His general health is good.

In my first examination of this joint I thought that

the division of the ham-string muscles would materially assist me in straightening the limb, as they were in a state of great tension; but when he was placed completely under the influence of chloroform this disappeared, and a true osseous anchylosis alone retained the leg in its false position. This bony anchylosis was, with some force, completely broken through, and the rending asunder of the bones was distinctly audible throughout the theatre with a loud crack, and the limb was straight. After his removal to bed, and before he had completely recovered his consciousness, the limb was firmly bound to a long back splint, with a foot-piece, such as we use for fractured patella. Ordered, cold lotion over the knee; calomel, two grains; opium, one grain, immediately.—Evening: Complains of the tightness of the bandage; otherwise his leg is easy. The bandage was loosened.

June 24th.—The following day there was a little swelling in the situation of the joint, but not much; no pain in it since the bandage was altered; pulse 90; skin rather hot; tongue furred; bowels costive. To have a black draught immediately. Now you will naturally be astonished to hear of so little local mischief—of so little constitutional disturbance—after such violence, for violence it was, though necessary for the object to be attained.—Evening: The bowels not opened. Repeat the aperient.

25th.—Free evacuation of the bowels; had a good night; says his knee feels very comfortable; pulse 84; no thirst; tongue foulish; appetite good; knee rather swollen.

26th.—Ordered the leg to be readjusted on one of Liston's tin splints, in a slightly flexed position.

27th.—Less swelling of the joint; a little ecchymosis on the inner side of the knee; bowels open; less pain.

28th.—Tongue clean; pulse quiet; no heat of skin; knee easy; swelling abated; appetite good; and sleeps well.

July 12th.—Since last report he has gone on well; has been confined to bed. The knee has been free from pain; and there has been no constitutional disturbance. To-day, that is, nineteen days from the date of the operation, the splint was altogether removed. He has not much power in flexing the leg himself; but I can do so to a limited extent. There is no pain or tenderness in the joint. In about a week from this date he left the hospital quite well, with a very useful limb.

I have lately had an important, anxious case in private, in which there was necrosed bone requiring

an operation for its removal. The case was interesting, in the first instance, as one of those severe compound fractures affecting the wrist-joint which our forefathers used almost invariably to amputate; and, secondly, it was interesting in showing the value of the simple operation in cutting short the tedious and debilitating process of exfoliation.

On June 20th, 1855, I was called down to see R. D——, aged fifteen, who had fallen from a tree, about twenty feet from the ground. The nurse, who was sitting in the garden, saw him fall; she says he pitched head foremost, with his left arm extended. This was driven by the force of the fall into the ground, as shown by the hole in the earth, and the stains of blood. I was there about an hour after the accident, and found him with the hand extended backwards, the radius protruding through a wound in the skin on the anterior face of the forearm, just above the wrist-joint. He was pale, but collected, and not suffering so much pain as might have been expected. He was a high-couraged, determined boy. Dr. Elliott, whom I met in consultation, then put him under the influence of chloroform, while I endeavoured to replace the bone by forcibly flexing and drawing down the hand, the forearm and upper arm being fixed; and though I was assisted by two strong men, I could not succeed in doing so. Fearing the consequences to the wrist-joint, already seriously injured, I determined to remove the end of the radius by means of the metacarpal saw. This was accomplished without difficulty, taking away a piece about the eighth of an inch in thickness. After this I was able to return it with ease. The extremity of the portion removed was not covered by cartilage, though it had the form of the base of the radius; the accident therefore was, strictly speaking, a fracture through the epiphysis. It was completely denuded of periosteum. I placed it supine on a well-padded splint prepared beforehand for the purpose. This was secured with a roller, leaving the wound on the front of the forearm bare; the whole was laid on a pillow, with a bladder of ice, in contact with the wound, suspended from above the bed.

June 20th, 10 P.M.—Restless and feverish, complaining of some pain about the elbow, but not much in the wound. Ordered Battley's solution, twenty minims; calomel, two grains; compound rhubarb pill, five grains.

21st, half-past 4. — Did not sleep much; has been wandering, talking rather wildly, but immediately recovers himself on being spoken to. He is naturally a very excitable boy. Tongue furred; pulse rapid. To take the carbonate of ammonia in an effervescing mixture.

22nd, 9 A.M.—Had rather a better night. Removed the splint, and replaced it with a similar one. Wound looks healthy; no erysipelatous inflammation round it; less pain.

23rd, 3 P.M.—Decidedly better night; quite rational; no wandering. Had the Battley's solution, twenty minims, as before. Less pain; bowels open; tongue clean and more moist. Has taken a little chicken for dinner. To continue the effervescing ammonia, and the opium if he does not sleep.

24th.—Much the same; motions offensive; restless. To take two grains of calomel, and one grain of opium, at night.

25th.—Has had a very restless night; motions more natural; erysipelatous inflammation up the arm; bullæ at the elbow; wound bulging; suppuration commencing; tongue red and clean; aphthæ in the mouth; very irritable; appetite bad. To leave off the effervescing ammonia, and to take quinine, one grain, and dilute sulphuric acid, ten minims, twice a day; lead lotion to the arm; continue lint and cold water with the ice; morphia, quarter of a grain, at 6 P.M.

It is not necessary to continue my daily notes, as the case went on pretty well, notwithstanding some suppuration at the upper third of the arm, which it was necessary to relieve with an opening. At the beginning of November, finding that the original wound would not heal, the granulations having that unhealthy glassy appearance indicative of diseased bone beneath, I determined to examine it with a probe. This examination detecting exposed bone, the patient was narcotized with chloroform, and the whole of the lower end of the radius, about an inch and a half long, removed. This piece of necrosed bone was easily detached; it was thin and eroded. I have no doubt that the periosteum had been stripped off at the time of the accident; or rather, that the bone was detached from the periosteum, which, being left in the arm, will generate new bone, and that a useful arm may still be obtained. I have, however, impressed upon my patient the necessity of moving his fingers as much as possible every day. At present he has very little power over them, but this will come by use. I consider it of the greatest importance that union should be averted between the tendons and the developing bone; and as soon as the space left by the removal of the dead bone is more filled by the living, I shall commence the motions of pronation and supination, otherwise all use of the wrist-joint will be lost. As long as the sequestrum remained it was hardly possible for the

flexor muscles to act; the sharp edge of it lay completely across the path of these tendons.

Jan. 1st.—All the wounds are quite healed.

This lad's recovery has been so complete, that he was admitted as an ensign in the Indian army—has been serving there most efficiently. The last I heard of him was that he had been married.

The next case, that I must have some conversation with you about, is one of those horrible instances of sprouting cauliflower cancer, which the surgeon is occasionally called upon to remove, in compassion for the distressing condition of the patient. This form of cancer has been called by some writers the soft cancer, in distinction to scirrhous, or hard cancer; by others, carcinoma medullare, or brain-like cancer; fungus hæmatoides, or bleeding fungus. It is that form of malignant disease which is more certain to return after an operation than any other; yet, notwithstanding this, it is often our duty to operate, not with the hope of saving life, but with the certainty of removing a loathsome mass, which makes life wretched. In many of these cases, the operation prolongs life, though not to the natural period of man. The rule which I have found, on the whole, the most safe and judicious, in regard to amputation of the breast for malignant disease, is this—to operate in all cases before the surrounding glands are implicated, and while the patient's health is not so much impaired as to render the immediate effects of the operation dangerous;—to operate in cases like the present, where the growth of the disease is more rapid than the inroads upon the health of the sufferer; where a loathsome mass goes on sprouting, bleeding, ulcerating, discharging, and sloughing, to the infinite disgust and distress of its victim; where there appears no prospect of death putting a speedy end to her agony; and where the powers of life are so unequivocal that the operation does not threaten any immediate danger.

The cases in which I would not operate are those

cases of scirrhous, stony cancer, which have been advancing slowly, silently, and painlessly for years, without much observation or anxiety on the part of the patient, and without any knowledge on the part of the friends; where a mass has gradually been formed, implicating not merely the whole mamma, but also the glands in the axilla, and sometimes the glands above the clavicle; attached to the pectoral muscle, and even to the intercostal muscles and ribs, before the surgeon sees it at all. In such instances it is no charity to operate. The disease often remains dormant for years, or it extends inwardly, with little outward ulceration; the patient at last sinks gently into the grave, from the constitutional depression of the disease, and not from a local drain. I would not operate when the patient is old and feeble, when the immediate effect of the operation is doubtful.

When the patient whose case I am about to relate first came into the hospital, the disease had advanced so far into the axilla that the removal of the whole of it was out of the question, and her pallid countenance, wan features, and general appearance of debility, seemed to preclude the idea of amputating such an enormous mass of active disease without extinguishing the vital flame. However, as her sojourn with us was prolonged, so her general health improved; but the disease advanced with rapid strides, till at last I could not in charity resist the desire to relieve her by one broad cut, believing, and the event has proved I was right, that I could do it without endangering her life. One of our old physicians here—I think it was Dr. Fordyce—said, "Thank God for opium!" May we not indeed say, "Thank God for chloroform!" in such cases as this? The operation was performed without her knowledge, and she slept the same night better than she had done for months, and she has now a healthy wound instead of a festering mass of corruption. Having once determined to operate in this case, I could not for a moment think of postponing it to our usual day.

It is a good rule, in all large hospitals, to have a regular day for the performance of operations. It

brings the surgeons together; and while the patients have the wisdom of a multitude of counsellors, the pupils do not miss the instruction which they have come up to London to receive. But there are cases which humanity forbids to bend to this arrangement; and this was one of them. I will now proceed to give you a few details of this case, which is reported by Mr. Wood.

Eleanor P——, aged forty-two, married, was admitted on August 15th, 1855, under the care of Mr. Solly. She has had eight children, all of whom she has reared by the breast. Her last confinement was on May 16th, 1854, and her breast was then quite well. She suckled her child. About last Christmas she first perceived pain in the axilla and shoulder, very similar, she says, to cramp, and it used to come on about 7 P.M. When the pain came on, her husband used to rub her shoulder, and she fancied it did her good. She next perceived that when she ran up or down stairs it caused pain in her left breast. The same was induced by any exertion, causing her breast to move about. During this time she was suckling her child. The pain in her shoulder gradually became worse, extending down her arm, preventing her from sewing; the pain in her breast also became aggravated, hurting her not only when exerting herself, but also when she was still. She says that on feeling her mamma there was no defined tumour, but the whole breast was larger, felt soft and elastic, and she thought it had something to do with her suckling. In June last she became an out-patient of this hospital, the symptoms above stated having in the meantime much increased. Her breast was larger, had the same feel, and the skin covering it was not in the least discoloured. A fortnight afterwards one of the dressers made an opening into it with a lancet, and placed a bit of lint in the wound: no pus or other fluid escaped, and the lint was removed next day. She then went to Margate for a month. The wound in her breast did not heal, but a fungous mass began to sprout out of it. She then put herself under medical care, and in about a fortnight was so ill as to be unable to walk. The day after she returned home another fungus sprouted from the opposite side of her mamma, and the day before her admission they coalesced.

On admission the diseased mass was larger than a teacup, and presented a true specimen of malignant disease. Her axillary glands were enlarged. The discharge was thin and very copious, saturating her linen, and smelling very offensively. Occasionally hæmorrhage would take place from the surface, generally to no great quantity, but once it was very profuse. The pain was constant, very severe, destroying sleep, extending all over the shoulder and down her left arm. Her general health was bad, no appetite, profuse sweats, great languor and debility. She looked

quite cachectic, and had an expression of countenance peculiar to her malignant disease.

The treatment consisted of quinine, with morphia at night, to procure sleep. She then took the chloride of bromine, in doses of a quarter of a grain, but without relief, and subsequently cod-liver oil, with increased doses of morphia. Opium lotion was applied topically; also Arnott's apparatus for compression. Chloride of soda lotion, to cure the offensive smell, sometimes on lint, sometimes in a poultice. She was placed on full diet, and then on mixed, with wine, brandy, eggs, beef-tea, &c., as she best fancied. In spite of all this, the fungus increased to several times its size on admission, the pain became, if possible, worse, and the discharge more profuse, and she again became weaker, and more worn down by the disease.

Under these circumstances, Mr. Solly thought it best to remove the entire diseased mass, not with the hope of curing her, but simply to relieve her from her agony and the profuse, foul discharge, which, soaking her linen, made her miserable and loathsome.

Nov. 14th.—Having obtained the patient's consent, Mr. Solly to-day removed the whole of it, making his incision in the surrounding apparently sound skin, and dissecting it off the pectoralis major, which was, however, clearly infiltrated by cancerous deposit. Hæmorrhage was profuse, and seven or eight arteries were secured. The operation was performed under chloroform, and she was carried to bed in an extremely weak state. One grain of hydrate of morphia to be taken immediately. 5 P.M., After wandering for a little time from the combined effects of chloroform and morphia, she fell asleep, and awoke refreshed. Her skin is now warm, and her pulse has somewhat rallied. She has vomited since the operation, and she still feels very faint. Wine, one ounce. 9 P.M.—Circulation restored, and she feels very comfortable. Repeat morphia. Wet lint to wound.

15th.—No pain on the breast or arm; slept well; complains of pain across the epigastrium.

16th.—Pain in the region of the liver, and a tumour can be felt there, very tender, extending across the right hypochondrium, to the epigastrium; its lower border is well defined; bowels costive.

17th.—The lint placed on the wound after the operation cannot be removed, as it adheres so firmly to the surface.

22nd.—Put her under the influence of chloroform, and removed the lint adhering to the surface of the wound, it being found next to impossible to do it without, as the attempt caused her such agony; sleeps well; tumour in the abdomen about the same; bowels open.

24th.—Tumour in the abdomen larger and more tender, especially in the epigastric region; wound looks very healthy; bowels very costive. To have an enema at night, composed of two ounces of decoction of aloes. To have fish to-morrow morning.

26th.—Bowels well opened ; tumour in the epigastrium smaller ; liver feels enlarged as before; sleeps well, but is troubled by ear-ache.

28th.—Wound looks very healthy ; complains of more pain in the epigastrium, accompanied by tenderness and soreness of that region ; bowels not opened since the discontinuance of the enema ; appetite good. Repeat decoction of aloes at night.

30th.—Bowels open every day ; tumour in the epigastrium smaller, and less uneasiness ; wound looks very healthy, beginning to cicatrize.

The progress of this case since the operation up to the present time amply justifies its performance. I am now sorry that I did not operate on her sooner after her admission. I know that the disease is not eradicated, but I hope that it will take an inward course, which is far less distressing to its victim, and the liver seems to be the seat of it. The chloride of bromine has been recommended as a specific in cancer. I have only as yet tried it in two cases, but in neither have I seen any beneficial result. In some cases, I have thought that Dr. Arnott's apparatus has retarded the growth of this disease, and that in open cancer it has rendered the ulcer less offensive. On the whole, I have, however, been disappointed in its effect, and I seldom employ it now in any case.

In the performance of these operations, you must not attempt to save much skin with the idea of getting the wound to heal rapidly with the first intention. When the disease returns externally, it is generally on the skin which forms the edge of the cicatrix, looking as if we might have prevented it if we had taken a little more of the integument. You must also be very careful to dissect the pectoral muscle very cleanly ; do not leave any cellular tissue over it. In making your first incision, remember that you make it below the mamma, and then the blood flows away from your knife, so that you see each tissue more distinctly as you expose it. Examine carefully the surface of the wound, in order to satisfy yourself that you have left no palpable piece behind. Also make a section of the tumour. This enables you to see if you have removed a circle of healthy cellular tissue beyond its margin.

These cases, in private practice, are the most disagreeable and unsatisfactory that you can have to do with. Of course, your conduct will be guided alone by a strict sense of duty: you will neither be tempted to operate on account of the fee, nor tempted to refuse on account of the discredit which follows in consequence of a return of the disease. You will calmly consider what is on the whole best for your patient, swayed neither by her fears nor those of her friends, nor by the prejudices of the practitioner in attendance, if such there be to contend with. It is most important that the patient herself should not know all your fears and all your doubts; it is most important that one or more judicious friends should know your real opinion. In these melancholy cases the husband is seldom the person who can be trusted. Fortunately for us, as no man living can say positively that the disease must return and must be fatal, we are justified in giving the sufferer the benefit of the doubt, particularly when hope itself may be the means of prolonging, if not of saving, life.

LECTURE XXXVII.

On Diseases of the Joints.

Gentlemen,—The ankle and tarsal joints must next afford us matter for reflection. The numerous cases we have lately had of diseases of the foot have given you ample opportunities of observing the line of treatment which I have found most successful, but I think that our time will not be lost if we review some of these cases in detail.

Not many years ago disease of the ankle-joint, or scrofulous diseases of the tarsal bones, almost invariably led to amputation of the leg below the knee; but now we are able, in many cases formerly considered hopeless, to save the foot; and this is accomplished by the removal of carious bone by means of the gouge, acting on the same principle that guides the dental surgeon in the treatment of carious teeth; and I feel convinced that, if the scalpel and the gouge were more frequently in the hands of the surgeon, he would be less frequently called upon to employ the amputating knife and the saw.

I will read to you some brief notes of what I dare say some of you have called my pet case, from the interest with which you must have perceived that I have watched it, and the pleasure I have evinced in pointing it out as we visited the wards. Certainly one of the greatest boons that the discovery of chloroform has conferred on surgery is the impunity with which we are able to operate in these cases. All these painful operations must be more or less experimental, for as we cannot be certain of their perfect success, we should not have ventured so far into this hallowed path of con-

servative surgery without the support of chloroform. There is one great difficulty attending the treatment of these cases in private practice, which does not occur in our public hospitals—I mean the want of patience on the part of the patients and their friends. These cases are always tedious, lasting a long while, and frequently making but little preceptible progress from day to day, or even from week to week. The patient to whom I have already referred has been in the hospital two years and a half, and all his wounds are only just healed. But I will give you an outline of his case.

James S——, aged fifteen, was admitted into George's Ward, under my care, on the 16th of March, 1852. He was a scrofulous-looking boy, flabby, but not emaciated; the glands of the neck were swollen, and at some points had ulcerated; there was also a chain of small ulcers under the chin, extending nearly from one ear to the other. Both feet were swollen; in constant and severe pain; there were several sinuses, with unhealthy, sluggish, purple edges, surrounding the ankle-joints of both feet. At the bottom of these sinuses carious bone could be felt.

History.—The left foot became painful and swelled about two years previous to his admission, and the right foot soon suffered in the same way. He attributed the attack to cold and damp. He was soon unable to walk from pain in the ankle-joint and across the instep, nor could he bear any pressure over the joint. He says that he then observed large red lumps form over both ankles on the left foot and on the outer side of the right one. These abscesses were poulticed for a short time, and then they burst. They have never healed in the slightest degree from this time.

He states that he was under the care of a gentleman at Stroud, who did not probe the wounds; but that about five months previous to admission, another surgeon from Fort Pitt, who carefully examined the ankles, stated that there was diseased bone, and that in all probability he would have to lose both his feet.

My first object on his admission was to improve his general health before submitting him to any operation; and having accomplished this by means of cod-liver oil and a generous diet, I had him first in the operating theatre on the 16th of June, 1852. On this occasion, I cut down over the external malleolus of the left foot, and removed the whole of the external malleolus, a portion of the astragalus, and the articulating surface at the end of the tibia, laying open freely the ankle-joint. The

chasm which was thus made was certainly a frightful one, and I confess that I trembled for the after consequences; but as the operation was performed under chloroform, there was no suffering. He had an opiate at night, and slept pretty well. I found him the next day more free from pain than previous to the operation; indeed, I have generally remarked that this is the case after the removal of carious bone, however severe the operation may have appeared at the time. The wound soon assumed a healthy appearance, suppurating freely, and throwing up florid and vigorous granulations.

On the 2nd of July, I performed nearly this same operation on the right foot, with equal success; and on the 2nd of October, finding that there was still some carious bone in the left foot, I again operated, on this occasion removing a large portion of the os calcis; and early in April of this year, I was again obliged to operate on the right foot, removing some carious bone from the os calcis.

The wounds and sinuses were all healed about the commencement of last August—that is, just thirteen months and a half from the performance of the first operation; and now, early in October, he can walk well with the assistance of a stick; the feet are both quite sound, and for a scrofulous subject is really a healthy-looking boy.

These casts will show those of you who did not witness the operations the extent of the incisions, and give you some idea of the chasms which have been filled up.

Now you must not suppose, gentlemen, that you will be equally successful in all such cases, and you must watch them with great care, seeing that the health of your patient does not suffer from the operation or the discharge which follows. You must be prepared to have recourse to amputation, if you think your patient requires such mutilation to save his life. You must watch the condition of the tongue, and let it guide you in the administration of tonics. If you find it getting brown or dry, you abstain from quinine and its compeers, and

give the effervescing mixtures, taking care at the same time to keep the bowels open. If there is much thirst, with fever and depression, you will find brandy with soda-water useful, adding the carbonate of ammonia to the effervescing mixture. If there is restlessness at night, give morphia, with an aperient, in the morning; also calomel, if the liver is sluggish.

The next case that I have to relate occurred in my private practice, and I think it affords equal encouragement to follow this line of conservative surgery. The subject of it was a young lady, aged fourteen, who sprained her foot at a boarding school when dancing. She was rather strumous, though her parents were both remarkably strong and healthy. She states, when she first sprained her foot she paid no attention to it, though after a little while she suffered excruciating pain at night. I saw her first about two months after the receipt of the injury. She was then pale and thin, with a quick, irritable, feeble pulse, extremely nervous and anxious. The right foot was swollen across the instep to at least double the size of the other foot; there were two open abscesses, with nasty, unhealthy, purple edges over the chain of cuneiform bones, which could be felt distinctly with the probe to be in a state of caries.

On the 11th of May, 1852, assisted by my friends, Mr. Martin, of Reigate, and Mr. Chaldecott, of Dorking, the chloroform having been administered by Mr. Carpenter, I made an incision on the inside of the foot, about two inches in length, directly through the abscesses down to the bone. I found the cuneiforme medium detached, floating in pus. I gouged away the greater part of the cuneiforme internum and a portion of the cuneiforme externum.

On the day following the operation she expressed herself much relieved, almost free from the pain which she had suffered up to that time. On the 12th of June I removed some more carious bone, principally from the metatarsal bone of the great toe. She took the cod-liver oil and a very nourishing diet, porter, &c.; occasionally hyoscyamus at night.

In the following September she left the neighbourhood of London, and went down into Devonshire, to be under the care of Mr. James, of Exeter, and Mr. Pycroft, of Kenton, from whose notes I may make the following extracts :—

"Very soon after her arrival in Devonshire she began to mend, the discharge from the abscesses lessened, and the external sores healed to a considerable extent, whilst her general health and strength rapidly improved. About six months since, a fresh abscess broke on the outside of the foot, near the cuboid bone, and the probe passed through it grated upon the bone. She suffered severe pain for several days previous to this, but since she has had neither pain nor tenderness, and the foot will bear handling roughly. These three abscesses are still open, but on probing them to-day I did not touch bone. The discharge from them is good healthy yellow pus, and slight in quantity; the sores look well, and are less in size; the foot is an inch less in circumference. She has rapidly gained flesh, is as stout and well-looking as most girls of her age; she has excellent spirits and appetite; can walk on her crutches three miles over our hilly country; suffers no pain whatever; in fact, she tells me she forgets her foot. She is, and has been for two months past, able to bear her weight on the diseased foot, though I do not allow her to do so."

From this account I feel confident of her ultimate recovery.

This carious disease of the tarsal bones is often induced by what is called a sprain. A simple sprain, pathologically speaking, is a stretching of a ligament to the extent of laceration of some of its fibres. In a scrofulous subject the bones are morbidly soft, so that the osseous tissue is torn, as well as the ligamentous, and this laceration is the primary cause of the caries. In considering the anatomy of the ligaments of the foot in relation to these injuries, let me remind you of the joints between the astragalus and os calcis, and the strong interosseous ligament which fills up the hollow between the two joints, by which these bones are united. The articulating surfaces are almost flat; the joints are not strengthened by any projecting lips, like the two strong malleoli at the ankle-joint. In all the balancing motions of the body the strain upon this ligament must be enormous. Its very bulk and strength demonstrates

how much is required of it. When you dissect these ligaments of the foot, mind you have a good look at it, so that you will remember it when you are in practice. You will often find the attachments of this ligament the seat of disease, and, as the pus which is secreted from the carious bone finds its way most readily upwards towards the ankle-joint, this disease has often been mistaken for disease of the ankle-joint, and an erroneous operation performed. You will therefore see the importance of a correct diagnosis as regards the course of your operation; but it is also important in reference to your prognosis, for you will see that if the ankle-joint is sound your patient, in the event of his recovering with an anchylosed calcano-astragaloid joint, will still retain the motions of the ankle-joint.

The next cases to be related illustrate these observations. The first is one in which some years ago I performed the operation of amputation, believing—and in this belief my colleagues concurred—that it was necessary to save life. I do not hesitate to say that, with my present experience of what may be done by the gouge and scalpel, the limb might have been preserved. It was the examination of this foot that led me to perform the operations of which I shall give some further examples in this day's lecture.

William B——, aged nine, a sickly-looking boy, and of a strumous diathesis.

History.—About eighteen months previous to my being consulted, he stepped off the curbstone, and twisted his ankle. On reaching home he felt some pain in the joint, and the foot swelled the same evening; but still the discomfort was so slight that he did not have any advice for three months. He was then placed under the care of a surgeon for three months more; after that he was admitted into Guy's Hospital, in which institution he remained nine months. During his sojourn there an abscess formed, and was opened, and he was removed by his mother, because, as she said, the surgeons told her he must have his leg off. The poor little fellow now came under my care, and I admitted him into this hospital. For eleven months I combated the local disease by the usual remedies, and did all I could to recover his constitutional power, but to no purpose; and as he was evidently sinking I amputated his limb, and he soon recovered from the operation, and in a short time left the hospital quite well.

Examination of the foot.—Two fistulous openings on each side of the tendo Achillis; ankle-joint sound; softening, ulceration, and disintegration of the interosseous ligament between the astragalus and os calcis; caries of the upper part of the os calcis in the situation of the posterior astragalo-calcanoid articulation; caries and absorption of the corresponding portion of the astragalus embedded in the os calcis; anterior and a little to the outer side of this—that is, just at the point of the inferior attachment of the interosseous ligament—there is a small osseous sequestrum, about the size of a filbert.

Now all this mischief was evidently the result of the sprain, and I concluded that the sequestrum just described was more or less detached by the forcible torsion of the interosseous ligament. In scrofulous subjects the bone is softer and more yielding than the ligamentous tissue. This form of injury is, I believe, more common than is usually suspected, and I fear that many a foot has been amputated for disease of the ankle-joint when that joint has been sound, and the disease has really existed in the calcano-astragaloid joint.

Mary Ann M—— aged thirty-two (but looks much older), married, was admitted into Queen's Ward, under Mr. Solly, April 12, 1853. She has never been very strong, but has never suffered from serious illness of any kind. About six months ago, she began to suffer very severe pain in the right ankle; this she attributed to a sprain which she had received three weeks ago, although she had been suffering no inconvenience in the interval. The outer side of the foot, about and below the ankle, began to swell soon after the pain commenced, and also became red upon the surface. The redness and pain extended some distance up the leg at first, but this soon went away by fomentation. About a month after she first began to suffer pain (the swelling and redness having continued as at first), a small abscess formed below the outer malleolus, which soon broke and discharged a very small quantity of pus; the opening which was thus effected has continued up to the present time, and has been followed by two or three others in the immediate vicinity. Lately, too, she has had some similar openings on the inner side of the foot; none of them discharge much pus. Her general health has suffered much during her illness; she looks pale and anæmic, and feels low; besides this, however, she appears older than her age would lead us to suppose. The ankle as a whole is very much swollen, but the principal part of this is below the end of the fibula, and on the outer side of the os calcis; in fact, the malleoli can both be felt plainly, although there is slight swelling

on each side. No fluctuation can be felt in the intervals of the ligament of the joint, nor has she any pain on pressure there. She cannot walk on account of the jar which is communicated to the whole foot. The swelling on the outer part of the os calcis is soft, quaggy, and not particularly circumscribed; upon its surface are several ulcerated openings. A probe passes some depth in two of these, and at the bottom soft and carious bone is felt, which seems to belong partly to the astragalus, but principally to the os calcis. She has not noticed any scales of bone come away with the poultices which had been applied previous to her admission. One of the openings on the inner part of the foot leads to a sinus of about one inch long, which runs backwards horizontally and superficially, but does not go towards bone; one or two of the others go more inwards towards the joint, but not near bone. Cod-liver oil, one drachm, twice a day; porter; slice of meat.

April 23rd.—A long semilunar incision was made from near the insertion of the tendo Achillis to about the middle of the fifth metatarsal bone. Upon cutting deeper a considerable part of the os calcis was found soft and carious, and about one-third of its body, with a small portion of astragalus, was removed by the gouge; there was not much hæmorrhage. The patient had chloroform. The extremities of the wound were afterwards brought together by plaster, but the middle left open.

May 1st.—She has considerably less pain since the operation than she had before it, and free discharge. The outside of the foot too is less swollen. The opening on the inner side remains the same as before. Cannot move the foot, however, without pain. She sleeps well, and considers herself better in health since the operation.

Aug. 30th.—During the period since the last report the openings on the outer side have gradually continued to fill up, and are now quite healed. Her health is considerably improved, and she has even some colour in her cheeks, and says that she is altogether in better condition. Although the openings are healed there is still some puffy swelling, and she has pain when she puts her foot to the ground. A free incision was made on the inner side of the ankle, below the inner malleolus, through a strumous abscess, but no bone removed. The incision healed up afterwards readily, and the sinuses with it.

Was presented Sept. 26th. This patient was anxious to return to her family in the country; I therefore consented, though I stated it would have been better for her to have remained a little longer. Could not bear any weight on the foot, but has no open sores now. Has still some puffiness on the outside, but no tenderness on pressure. Health very good; in fact, better than it had been for some time.

The details of the above cases point very forcibly to the serious consequences occasionally resulting from sprains. Details of such cases in their early stages

might be accumulated without number. Prevention is better than cure. Always remember that it is the duty of an honest surgeon to keep his patients out of surgery, just as it is the duty of an honest lawyer to keep his clients out of law. A sprain, especially in a strumous subject, is a very serious matter; and it is for this reason that the almighty Creator has endued the ligaments with such exquisite sensibility. The excruciating pain which follows the undue tension of a ligament teaches the non-professional man to take care of them in his own person, and still more ought it to teach the surgeon to protect and guard them after they have suffered injury. It is for this reason that I recommend, in the first instance, entire rest in all sprains while there is any inflammation; after a few days, I treat it as a fracture, and fix the foot completely either with the gum-bandage, which is on the whole the best, or by means of stiff buff-leather splints. These splints are softened with warm water, and then moulded to the foot. Gutta-percha may also be used if you cannot procure leather thick enough, but I do not like the gutta-percha as well as the leather.

A few days ago I was obliged to remove some carious bone from the os calcis and astragalus of a young gentleman, aged seventeen, who sprained his foot in April, 1852. He was walking quickly out of the garden gate, and catching his foot against a stone, gave it a sudden twist. He says that the pain was very severe; still he did not return to the house, but came up to London.

He first consulted me last year, August, 1852. I found evidence of inflammation in the calcano-astragaloid ligaments and joints. I blistered the foot, and giving alterative medicines, confined him to the house for about two months. I then put on a plaster and leather splint, and allowed him to pursue his studies at King's College; but, unfortunately, this liberty proved too much for him, and inflammation again set in, followed by suppuration, great debility, and emaciation. A gutta-percha splint, a wooden leg with a rest to it, cod-liver oil, and four months at the sea-side, restored

his health so completely that I was able to lay open, without fear, two long sinuses, and gouge out some carious bone. The operation was performed under chloroform, and he tells me that he has been in much less pain than previous to the operation. He has returned again to the sea-side, and in a few months I hope to find all sound.

Harry G——, aged five years, admitted into Queen's Ward, under the care of Mr. Solly, July 19th, 1853. The child did not come under my notice until the commencement of my dressership on the 2nd of August. I then found him presenting the appearance of possessing the strumous diathesis in an eminent degree. He has light hair and eyes, and a peculiarly delicate, transparent skin; but there is no enlargement of the glands, nor other distinctive marks of scrofulous disease. The integuments of the right foot below the ankle are rather congested; the foot is swollen from a considerable quantity of inflammatory deposit in the neighbourhood of the heel, destroying the contour of this part of the foot. A small fistulous opening exists just over the outer malleolus, from which a slight fungous growth proceeds, and a purulent discharge exudes. A probe introduced into this papilla readily passes down to the os calcis, which is felt to be in a carious condition. The child seems in tolerable health for so delicate a subject; his appetite is good, and he sleeps well.

History.—The only history which can be learned concerning his disease is, that for the past three months he has complained of his right foot, which became tender and swollen, and it was soon ascertained that he was unable to walk about as usual, the disinclination to place the foot to the ground increasing daily. A small abscess formed just below the outer malleolus; the skin gave way after a little time, and a little pus was discharged. A fistulous opening remained, through which a small quantity of pus has continued to discharge up to this date.

August 20th.—Mr. Solly desired the child to be conveyed into the operating theatre, and to be placed under the influence of chloroform. This having been done, he made a longitudinal incision of about two inches and a half in extent over the situation of the os calcis, and below the papilla alluded to. This incision extended down to the bone, and, with the gouge, Mr. Solly removed the whole of the caries which involved the entire posterior half of the calcaneum. A piece of lint was introduced into the wound, and the child was removed to bed, and a warm poultice applied.

22nd.—The foot is considerably swollen, and the wound is discharging freely. The child continued in good health, having suffered no ill effects from the inhalation of the chloroform.

27th.—Going on well. The wound granulating.

Sept. 26th.—Granulations of the wound on a level with the surrounding skin; cicatrization has commenced; still a slight discharge of pus.

Oct. 10th.—About the same. Wound closing. The papilla is in the same state as before the operation, still discharging a little pus. The foot presents a better appearance, but there is still a good deal of inflammatory deposit in the neighbourhood of the diseased spot. The child's health continues very good.

Nov. 2nd.—Improving daily.

You must not imagine that these cases are always successful. The following was lately under my care at George's Ward, and the constitutional irritation produced by my first operation was such that I was afraid I should lose my patient. I was therefore obliged to amputate. You will perceive by the details that he was beyond the middle period of life, and there is no question that what the system will bear at twenty it would resent at fifty. You must therefore, in considering the propriety of operating, bear in mind the age of your patient, and after you have performed the operation watch your patient most carefully. This man was of an anxious temperament, and he had been cast down a good deal by long-continued disease.

T. H——, shopman, aged fifty-two, admitted into George's Ward on the 26th of May, 1852; disease of ankle-joint; is married, and has a large family. He is of quite temperate habits, and his health has been uniformly good, until September last, when he was laid aside for about ten days on account of fever and general indisposition. He returned to work, but for some time was unfit for full occupation. Towards the latter end of October he experienced pain in the instep and ankles, with swelling of the part; the pain felt as though the bone was being bored with some instrument; it persisted through November and December, when he became a patient of Mr. Solly. The ankle was strapped at different times, but he did not rest the limb, and being more than usually engaged at this time—Christmas—the pain became much aggravated, and he was obliged to desist from work. In January an abscess made its appearance, and was opened; and for six weeks the limb was kept at rest on a gutta-percha splint. Subsequently two more abscesses were opened. When admitted there were openings both on the inner and outer side of the joint, the inner one extending to the front of the joint, where some carious bone could be felt. The joint was considerably swollen, the foot extended, and he complained of a good deal of pain, especially when moved; there was not a very copious discharge from the openings.

On the 18th of June, Mr. Solly made a longitudinal incision in front of the joint, and, with the gouge, removed some carious bone from the end of the tibia and the astragalus.

July 10th.—He has not been relieved by the operation, and during the past week he has complained of loss of appetite and debility; there is free suppuration from the wound, and the least movement of the joint gives him excessive pain. Under these circumstances, I was afraid of my patient sinking, and, with the concurrence of my colleague, Mr. Green, I amputated the limb to-day at the junction of the middle and lower third, only, therefore, a little above the ankle-joint. I gave him this long stump to enable him to have a cork leg. The circular operation was adopted; there was free bleeding, from the difficulty found in tying the post-tibial artery, which had retracted very much. Three vessels were ligatured, the edges brought together by sutures and isinglass.—Evening: He has not slept, but is quiet, and there has been but little oozing; pulse 110, soft; stump cool. Ordered, forty minims of tincture of opium immediately; soda-water; repeat opium in the evening.

11th.—Tincture of opium, forty minims at night. He was feeling sick last night, for which the soda-water was ordered. To-day he is feeling better; has had a quiet night, dozing at intervals; not in much pain; skin comfortable; pulse 106, quiet; tongue little white; bowels not open.

12th.—Ordered, aromatic spirit of ammonia, half a drachm; compound tincture of cardamoms, and tincture of rhubarb, of each two drachms; peppermint-water, two ounces. In the evening, tincture of opium, forty minims; the mixture to be taken occasionally. He was complaining last night of flatulence and abdominal pain; and the bowels not having been opened, he took at midnight a small dose of castor oil, with twenty minims of tincture of opium, and has passed a large quantity of gas, but no motion. He has passed his urine well since yesterday morning. He still suffers much pain in the abdomen, but no tenderness on tympanites.

13th.—Ice to the stump; a little hæmorrhage; pulse 104, soft; tongue white and a little dry; skin comfortable, and stump free from heat, and looking well. The bowels have been relieved this morning, but in consequence the stump was somewhat disturbed, and hæmorrhage has occurred to the extent of about an ounce. The stump was elevated, and ice applied for a short time; it is rather tense and swollen, but not to any considerable degree. There is no unusual heat of skin; pulse 96, soft; appetite bad; tongue flabby and coated. He is much more free from pain; passes urine well.

14th.—Has had a tolerable night, without opium; stump looking pretty well; strapping removed, sutures cut, and the edges brought together by a single broad slip, leaving the angles free.

18th.—The stump is discharging freely, and there is a little sloughing at either angle. Some large pieces of coagula were removed this morning. He has not had any opiate since the night

before last, and his rest last night was much disturbed by flatulence and griping. His bowels have been lately open, and he is now easier; appetite is improving; tongue clean and moist; skin comfortable, and no heat or redness above the limb.

20th.—The two ligatures came away yesterday. He is doing well in every respect.

30th.—The angles of the flaps have closed, but the intervening part has been prevented from sloughs of coagula and a very free discharge; there has been some tendency to burrowing upwards, there being some spots of redness and tenderness; the edges have been kept together a little by strapping, and poultices applied over the end; health remains good; tongue clean.

Aug. 7th.—In dressing the stump both yesterday and to-day, a long piece of slough has been removed, looking like intermuscular fascia; there is very free discharge of pus, which has burrowed some distance up the leg, and can be squeezed out; the bandage has been applied more firmly in consequence; the edges of the flaps are looking well, and only about half the extent of the wound remains to heal. He is complaining of loss of appetite and general weakness. Sleeps tolerably.

11th.—He has been dressed and out of bed the last three days, and is now in better spirits; tongue clean; appetite improved; rather less discharge from the wound. From this date he went on well, and he is now able to walk with an artificial limb so well that a stranger would not discover his loss.

This case demonstrates that after the middle period of life conservative surgery has not the same prospect of success as at an earlier period; but I do not adduce the case to discourage your attempting it, but merely to warn you to be ultimately prepared for the more serious operation.

Nevertheless, from all these various cases, I think you must agree with me in concluding that conservative surgery is the best surgery, and that we should all strive to promote its progress.

LECTURE XXXVIII.

On Amputation in Cases of Severe Injury.

Gentlemen,—The number of severe injuries to the extremities requiring amputation, which have been admitted under my care since the commencement of this medical session, induces me to bring the subject before you.

I know no more responsible position in which a surgeon is placed than when he is called upon to decide the question whether amputation is necessary to save the life of his patient? He has to balance calmly and deliberately, always remembering that, even in a surgical point of view, it is more honourable to save a limb than to remove it, however dexterously the operation may have been performed. That master in our profession, John Hunter, says, speaking of operations,—

"This part of surgery is a reflection on the healing art; it is a tacit acknowledgment of the insufficiency of surgery: it is like an armed savage who attempts to get that by force which a civilized man would get by stratagem. No surgeon should approach the victim of his operation without a sacred dread and reluctance, and should be superior to that popular *éclat* generally attending painful operations only because they are so, or because they are expensive to the patient."

Having once, on sufficient grounds, decided to operate, your decision should be so fixed in your own mind that you will not allow yourselves to waver or regret the result, whatever that result may be. The surgeon will, of course, allow the judgment of others to have its due force in assisting him to his conclusion. But if, after duly weighing the whole subject, he sees

what to him appears sufficient reason to differ from them, he will do so firmly, not allowing the fear of giving offence to weigh in the balance. But he must not form his judgment rashly; he must strengthen his own experience with that of his forefathers; and the more he has taken pains to make himself acquainted with their *facts*, the more likely he is to have a clear view of the bearings of each individual case which comes before him. If, gentlemen, you have only been in the habit of reading modern works on surgery, and take up the writings of those who have left us some little time, you will be surprised and delighted with the terseness of the style, and the immense mass of experience which many of the old surgeons exhibit in their admirable treatises. You cannot learn how to practise your profession by reading, but reading will make you think more of that which you see at the bedside, and remember better those facts in surgery which are brought before your notice in the wards of the hospital. There are many accidents of so serious a character that it requires but little deliberation to decide as to the course which it is necessary to pursue, and under this class may certainly be included the two cases of compound facture of the ankle-joint, in which I was obliged to remove the legs below the knee. But there are many practical points of interest involved in these cases, to which I will direct your attention in my next lecture.

The two following cases bear more immediately upon the question of amputation or non-amputation in cases which will admit of doubt as to the necessity of the operation. As regards the propriety of operation in the first case there was very considerable difference of opinion; and some augured that the result would be unfavourable. The reasons which determined me not to amputate I shall give you after you have heard the two cases.[1] The second case was lately before your notice, as I believe that most of you were present at the operation.

[1] Reported by Mr. Walker.

John Cochlin, æt. 14, admitted on Monday night, April 25th, at half-past ten o'clock, with a lacerated wound on the inner side of the foot, extending nearly from the malleolus to the extremity of the great toe, and transversely on the side of the foot, and slightly on the dorsum, in which direction the skin was extensively separated, so that the little finger could be passed in for some distance; there was also fracture of the metatarsal bone of the second toe. The lacerated wound on the inner side opened the joint of the metatarsal bone of the great toe and the cuneiforme internum, but very little separation of the articular surfaces; and the tibia was fractured just above the internal malleolus. It was caused by the wheel of a waggon passing over his foot, having slipped while endeavouring to get into it. Mr. Solly ordered tinct. opii. ℥xx., statim sumend. et ol. ricini cras mane. Cold water and lint to be applied over the foot.

26th.—Has had a restless night; bowels open well after taking castor-oil; pulse 40, weak; skin hot and dry; very little hæmorrhage from the wound, which is commencing to swell round the ankle. To continue the water-dressing.

27th.—Slept at intervals during the night; ankle rather more swollen; complains of more pain in the foot, and the wound looks healthy. Ordered to take the mist. effervescens with tinct. aurant. ʒij., et ammon. carb. gr. iv. ter die. A warm bread-and-water poultice to be applied over the foot.

Skin hot; tongue furred, and moist; pulse 65, small.

28th.—Feels not in quite so much pain in the leg and foot; had a restless night; appetite very bad. Has had a little broth for dinner. To continue the same medicines and poultice.

29th.—Foot in more pain to-day, and ankle and leg more swollen; bowels open once; skin hot and dry.

30th.—Had a better night; much the same as yesterday. Pulv. rhei c. cal. gr. x. hâc nocte, as his bowels are rather costive.

May 2nd.—Meat and a pint of porter for dinner; wound looks healthy and discharges matter; bowels open twice from powder.

3rd.—Had rather a better night; says his foot is in rather more pain; suppuration freely commenced; pulse 84; tongue moist, and very much furred.

4th.—Wound to-day looks much the same; granulations healthy, covering the surface of the wound.

6th.—Very considerable change; tongue very much furred; pulse quick and irritable; erysipelatous inflammation of a dullish colour extending up the leg, with a decided line of demarcation between the wound and healthy skin; leg swollen and œdematous: a free incision was made over the tendons of the gastrocnemius.

7th.—Complains of great pain in the foot; countenance bad, and general appearance unfavourable; very restless; pulse 76, without power; no appetite, tongue more furred and dryer; inflammation extending up the leg; wound looking unhealthy; discharge very free and acrid: an incision was made, about two inches in length, about three inches above the original wound;

this did not bleed very freely: expressed himself much relieved; bowels have been open twice; motions healthy.

8th.—Has had a restless night, but says he feels rather better; pulse small, and 100; bowels open once; inflammation on the leg rather decreased; ankle rather more puffy and swollen.

From his appearance this morning I began to fear that he would sink if amputation were not performed. I therefore had a consultation with Mr. Tyrrell on the subject, and we decided that we might go on, at any rate, for a day or two without danger to life: he recommended a free incision to be made above the internal malleolus. This was done to the extent of three inches. From the opening there was a considerable discharge of matter. He expressed himself relieved. Ordered him to take liq. cinchon. ℥xx.; acid. sulph. dilut. ℥xx.; syr. ℥j; ter die in aquâ, and to have an oatmeal poultice, to be applied over the foot, and to extend up the leg nearly to the knee; to have fish for diet, and ℥ij. brandy daily.

9th.—Had rather a better night; leg not quite so much swollen, and inflammation rather diminished; pulse 96, small; bowels open once; skin hot.

10th.—Had a much better night; pulse 93, small; says his foot is in less pain; inflammation much less, and swelling decreased; wound on the foot looks much the same as yesterday; discharge healthy; appetite better; tongue not so much furred.

12th.—Considerable discharge from the wound; granulations healthy.

Continues the same medicines, and has meat daily.

13th.—Leg rather more inflamed; a small incision was made in the internal malleolus to liberate the skin which was constricted round the ankle, from the foot being more swollen; tongue furred and moist; pulse 100, small, and weak.

16th.—Foot in less pain; swelling on the dorsum of it rather decreased; considerable healthy discharge; a few strips of plaster to be applied from the heel to the great toe, and transversely across the wound with a piece of lint, the size of the sore beneath; inflammation on the leg rather less.

Continues wine and meat daily, and likewise the same medicine.

17th.—Says he feels rather better; foot and leg in less pain; granulations and discharges healthy; tongue moist, and not so much furred; pulse small, but rather more power; strapping applied as yesterday; no irritation produced from it; wound on the whole looks better.

19th.—Much the same; a small puncture was made on the

dorsum of the foot, for the escape of a small collection of matter, the foot strapped as before, and poultice over it.

21st.—Rather better; ankle and foot less swollen; considerable discharge; tongue moist; appetite rather better; bowels open once to-day.

23rd.—Complains of pain on the right side, occasioned partly by his lying on that side; and bowels not being open quite so freely as necessary, to take pil. hyd. gr. j.; pil. rhei co. gr. iv. h. s.

24th.—Complains of more pain in his right side, and is ordered to have a mustard poultice to it; bowels have been open once, but motions not healthy; skin hot; pulse quick, 110, weak; wound looks rather better; discharge not so great. Repeat the same pill to-night.

25th.—Rather better than yesterday: pain in side nearly subsided; tongue furred, and moist; rather more discharge from the dorsum of the foot, and from a small opening on the external malleolus; was ordered to be put in a swing-box, so as to alter the position of the limb, and to allow the wound on the ankle to heal. The strapping to be applied as before.

26th.—Pain in the side quite subsided to-day; had a good night; pulse not so quick, but still wanting power; limb looks improving, and feels, he says, more comfortable from change of position.

30th.—Going on very comfortably.

June 10th.—Improving gradually in health; appetite very good, and gaining strength; granulating surface on the wound looks healthy, and less discharge. Continues his wine, porter, and meat, daily.

21st.—Removed out of the swing-box, as the wound on the inner malleolus was nearly well, and the dorsum of the foot a great deal better, which is dressed daily with strapping. The poultice to be left off.

30th.—Has improved in health very much lately; is able to get about with a crutch; foot dressed daily.

July 14th.—The wound is now about the size of half-a-crown; granulations rather high, which have been touched with sulphate of copper.

Aug. 4th.—Wound on the dorsum of the foot quite healed, but a sore about the size of a shilling has made its appearance on the inner malleolus, from his using his foot too much. Was ordered to be poulticed, and to keep his bed.

20th.—Wound quite healed, and discharged well.

The observations I have to make regarding the propriety of amputation in such cases I will postpone until I have detailed to you another case exhibiting a similar injury to an older man. But with regard to the treatment, there are one or two medical points of importance illustrated by it. First, the local applica-

tion of cold water. I have always found this by far the best, in the first instance, especially where there is any tendency to hæmorrhage, as there was in this case; the use of purgatives containing a small quantity of mercury. I have often found that a purge of calomel and rhubarb will act much more decidedly as a sedative, allaying pain and giving sleep, than a full dose of opium with confined bowels. I object to salts and senna in these cases, as liable to produce diarrhœa. The advantage of making free incisions, where there is much swelling, was also shown. In fact, amputation was averted by free incisions made not merely to allow of the escape of pus, but to relieve tension. You will also see the value of stimulants, such as brandy, ammonia, and bark, though given to a lad unaccustomed to them. We find the swing-box, into which the limb was placed after active inflammation and suppuration had subsided, an excellent adjunct where rest is essential, and much confinement, by means of splints or bandages, impossible. We must now direct our attention to another case, which exhibits not the power, but the weakness, of surgery.

William Peters, bricklayer, æt. 50, tolerably healthy-looking man.

December 7th.—Was admitted half-past 2 P.M. with the following injury, which was occasioned by a heavy piece of timber falling edgeways on the dorsum of the foot, about two hours previous to admission. The second, third, and fourth metatarsal bones, with the phalanxes of the corresponding toes, were smashed so entirely, that on feeling these toes, there was nothing but the integuments left, like the fingers of an empty glove. The bones had been, as it were, squeezed out of their coverings. The skin and soft parts on the dorsum were much bruised; the first phalanx of the great toe was broken, and there was an extensive laceration on the sole of the foot, extending for about four inches on the inner side, over the abductor pollicis; the little toe was uninjured.

After examining the foot carefully, I felt convinced that if the injured portion were left, such extensive sloughing, and its consequent constitutional inflammation, would ensue, as must endanger the man's life.

I therefore determined to remove it, and the patient readily agreed to the operation.

The little toe, and the metatarsal bone of the great toe, being both entire, I determined to leave them, and merely remove the central portion of the foot, as by this mode of proceeding I should still have the most important points of support, namely, the balls of the great toe, and the little toe, and the attachment of the anterior and posterior tibial muscles, as well as the peronei. I also determined not to remove the metatarsal bones at their articulations, as I consider it always desirable to avoid opening joints, and leaving the articulating surfaces to granulate.

Operation.—I first pushed a small catlin into the metatarsal space, between the great toe and second toe, and cut my way out through the sole of the foot. I next made a similar incision between the little toe, and that next to it; then united the two incisions above, by a circular incision across the dorsum of the foot about midway between the superior and inferior extremities of the metatarsal bones. I next run my catlin horizontally from the outside of the foot to the inner, through the integuments of the sole, dividing downwards to the toes. By this incision the inferior flap was completed. I next cleared the bones, and divided, with Hay's metacarpal saw, the second metatarsal bone, and then removed the third and fourth, which were broken off and easily separated. The fourth was fractured much higher up than the rest, and I deemed it advisable to divide the third and second on a level with it. Ligatures were placed on the anterior tibial and plantar arteries.

As there was still a little oozing, though not apparently from any large branch, I placed a piece of lint, with cold water, over the wound, and a roller round the foot, and sent him to bed.

About two hours afterwards, when I went to dress the wound, I found there had been a good deal of bleeding, that is, about a pint. I then proceeded to search for other vessels, and applied four ligatures, though with considerable difficulty, as they were muscular branches. I put in one suture, and again dressed it with lint and cold water, by which the flaps were approximated: a roller round the foot brought the two sides pretty close together. The inferior flap was rather short. Tinct. opii, ℥xl.; spirit. ammon. aromat. ʒj. ex. mist. camph. To be taken in an hour's time, when the ward is quiet.

Dec. 9th.—Says he is pretty comfortable, though he did not get much sleep; feels very thirsty; pulse good; tongue clean. Ordered to take a little red wine and water occasionally, and repeat the draught at night.

Dec. 10th.—Going on well; pulse good; tongue clean; did not disturb the stump. Ordered, Pulv. rhei c. cal. gr. x. hora somni, et mist. sennæ co. cras mane. Mutton chop and porter; poultice to the stump, over the dressing.

11th.—Has had rather a restless night; bowels open twice this morning; healthy motions; tongue clean; says he is comfortable; countenance good; rather thirsty. I dressed the stump in the following way:—First, removed the old roller, and then applied some lint dipped in the lotio sodæ chloratis over the exposed surfaces, which were just beginning to suppurate. I then put a roller round the toes, by which they were considerably approximated; this roller I continued up the foot and round the ankle.

To continue the same nourishment, and to have the anodyne at night if restless.

13th.—Going on well in every respect.

The case of John Cochlin shows how much reproductive power there is in the young; and if we contrast it with the second, that of William Peters, you will perceive that, as regards the severity of the injury, it was greater in the one in which I saved the limb than in that in which I performed the operation. What, then, constituted the difference in the cases which led to the different line of practice? Simply the difference of age and constitution. The one was a healthy boy just out of the Union workhouse, where, of course, his habits could not have been intemperate, and only 14 years old. The other was a man of 50, and a labourer in the neighbourhood of London. I say, a labourer in the neighbourhood of London, for I am sorry to say that, as a general rule, the habits of these men are bad. They, for the most part, spend their money more in drinking than in wholesome food; and I am, *à priori*, afraid of them. I have no doubt that if in practice in the country, I were to meet with such an accident occurring to an agricultural labourer, I might attempt to save the limb with perfect safety: of course, I am supposing that the man is not removed into a London atmosphere, but remains in the country, and has the benefit of a pure air during the period of his confinement. The difference of age and constitution were the grounds for the different plan of treatment.

In detailing the case of the older man, I called your attention to the question of the situation you should choose for the removal of the injured part, and my reasons for selecting the spot which I did; for in all injuries of the hand and foot it is astonishing how much is gained if you can preserve even only a single finger or toe.

LECTURE XXXIX.

On Amputation in Cases of Severe Injury.

Gentlemen,—We must this day consider the termination of the case of William Peters, the operation on whose foot I described in my last lecture. The end has been fatal, as most of you are aware. I will now endeavour to put you in possession of the facts of his case since the last report.

After carefully considering all his symptoms, and the probable causes of his death, we must see what light the dissection of his body will throw upon those symptoms during life.

Dec. 14th.—The great toe is discoloured. The sore looks healthy, and the tongue is clean and moist.

15th.—Great toe more discoloured; it is quite black, and will evidently separate, as the line of demarcation is distinct. Though not red, the wound is rather sloughy.

He does not look so well; he is very anxious about himself, and is never satisfied with anything.

16th, 10 A.M.—He had violent shivering this morning; the dresser found, on inquiry, that he had not made water for about fifteen hours. He did not complain himself, but the sister sent for the dresser. Mr. B. Travers, jun., was there at the time, and passed the catheter, with some difficulty, on account of spasm.

I saw him at 3 P.M. at the request of the dresser, on account of his rigors and muttering delirium. His tongue was not quite so moist; his pulse was weaker and quicker. I ordered him—ammon. carbon. gr. v.; tinct. aurant. ʒij.; tinct. opii. ♏xv.; ex misturâ camphoræ 6ta horâ. Increase the quantity of brandy and wine to ℥viij. each.

I saw him again at 10 P.M. Much worse: countenance pale and anxious; he was rambling and delirious, but he knew me when I spoke to him. Pulse weak and quick.

17th.—Much worse. Great toe quite black; the whole foot looks pale and flabby; the wounds are dirty and sloughy. The left upper extremity is swollen from the hand inclusive up to the middle of the upper arm, discoloured in patches, very tense.

Tongue slightly dry, but not furred; pulse weak and rapid; countenance miserable. As Mr. Green was going round at the time I paid my visit, I got him to see Peters. He did not suggest any alteration in the treatment, and he feared that nothing would avail him.

10 P.M.—Worse; he is sinking, but quite sensible; and, though there is a wildness in his eye and general appearance, he is not delirious. He had been throwing his arms about, and drawing up his feet, picking the bedclothes, wandering in his mind a little at intervals, and then talking quite sensibly to his wife. The same appearance has commenced on the right arm as already observed on the left. I learned from the sister that the first appearance of gangrene was in a round purple spot just above the elbow, and the wrist was swollen. She first observed it at 8 A.M., and is certain there was nothing the night before. As she washed him regularly, I have no doubt of the truth of her report.

He died quietly, about 1 A.M.

From the time this poor fellow was admitted, to the hour of his death, he was, to use the words of the sister, "in a perpetual fidget, never satisfied with anything, but continually dwelling upon the loss of his property."

Now that you have heard the state of the man detailed up to the moment of his dissolution, your proper inquiry is, What is this state—how is it to be designated — upon what structural changes does it depend—what causes have produced these changes? It is very seldom that such a case occurs, and its rarity and fatal character render it pre-eminently interesting. This man's condition has been admirably described by my old master, Mr. Travers. I am not aware that any surgical writer has so clearly pointed out its characteristics. This is a case of pure *gangrenous inflammation*, and must be distinguished from simple gangrene. The affected limb is black, dry, shrivelled, and insensible, cut off from the sound and healthy portion of the limb by a barrier of adhesive inflammation, which is marked on the surface by a red line, upon which ulceration supervenes, and the dead and useless portion is thrown off from the living system. In gangrenous inflammation no such barrier is set up. The part affected is swollen, discoloured in patches, vesicated, moist, and insensible, without any line of demarcation.

The appearance presented by the arms of this poor fellow was exactly that which you see in a subject which has died in very hot weather, and in which decomposition has taken place with great rapidity. But I must read to you Mr. Travers's own words:—

"Gangrenous inflammation, then, is distinguished from gangrene, in being, whether primary or secondary, a constitutional and not a simply local action; not that any local process can be conducted without more or less involving and depending upon the constitution for its event. Like erysipelas, it sometimes appears without any obvious cause; and at others is superadded to a lesion, or an inflammation already existing, and not previously affecting a character of destruction. Gangrenous inflammation is rare; whereas gangrene is very common. They are seen asunder, when the inflammation stops short of actual disorganization and loss of substance; as we say, 'threatening,' or, 'on the very verge of gangrene;' or when the powers of life fail during the first stage of the action, as is not very unusual. In some most acute cases of gangrenous inflammation no further change than a deep and extensive discoloration of the part affected, with a sensible loss of temperature, occurs; in fact, a stagnation of its circulation. I have seen large surfaces, as the arm and corresponding part of the trunk, and one of the lower extremities, and in fact one-half of the body, thus attacked. In these cases the highest degree of delirious excitement passes rapidly into the state of dissolution, as described by Mr. Hunter.

"Acute gangrenous inflammation is commonly more dangerous, from the typhoid fever which attends it, and the rapid, even sudden, prostration of strength, than from the existence or extent of the destructive action upon the part. It is always accompanied with much excitement of the nervous, and habitual loading of the pulmonary and venous system. The loss of balance on the venous side of the circulation is apparent in the undue change of the blood in the capillaries, and the early effusion of their contents upon all the exhalent surfaces. The cases of gangrenous inflammation more commonly met with are those in which phlyctenæ and discoloured patches precede the actual death of a portion of the soft parts. These are more hopeful in proportion as the previous state is apparent; and admits, as in the case of over-repletion or starvation, of a gradual correction of the errors of the system."

How strikingly the case before us proves the correctness of Mr. Travers' views regarding the constitutional character of this affection!

The gangrenous inflammation is not even an extension of the original injury. It attacks a part entirely remote from it. It commences in the hand, and

extends upwards to the trunk. The leg and thigh of the injured extremity are not even swollen.

The rapidity with which this affection progressed is also worthy of notice. On the 13th he was going on well in every respect. On the 14th the great toe is discoloured, but the wound looks healthy, and the tongue is clean and moist. On the 15th, the wound, for the first time, looks sloughy; he complains of thirst, but the tongue is clean, and the pulse rather quick, without much power. On the 16th he is much worse, has shiverings, retention of urine, and, during the night, the hand and arm begin to swell, and he dies at twelve o'clock at night on the 17th; not in a state of violent delirium, but perfectly sensible, and conscious of all around him.

I have no hesitation in designating it a case of true gangrenous inflammation. Our next consideration naturally is, what is the cause of this condition. Is it occasioned by diseased viscera? Are the organs of vegetative life so altered in their structure, that, under the shock of the operation, conjoined to the accident, they have failed in the execution of their duty? These cases certainly are generally the result of a previously diseased organism. But I think, if such were the case in this instance, that he would not have gone on so well for the first seven days after the receipt of the injury. Besides, there has been no indication of disease of the brain, or of the heart, or the lungs. I examined these carefully during life, and could detect no lesion. The bowels have been scarcely disturbed; in fact, there has been no reason whatever to conclude that there was any disease of any of the chylopoietic viscera. And the circumstance of his not having voided his urine, I attribute rather to that deficiency of power in the bladder, which frequently precedes dissolution, than to any disease of these organs. So that I really do not expect, gentlemen, that we shall find any morbid appearances in any of the viscera.

Thus, we again revert to the question of the proximate cause of this gangrenous inflammation.

Anxiety of mind I believe to have been the principal cause of this poor fellow's dissolution, acting upon a system shaken by a severe accident and painful operation, accompanied with some loss of blood; for though the operation itself did not occupy many seconds, the searching for the small arteries afterwards did, and gave him a great deal of pain.

The whole quantity of blood lost, from first to last, could not have exceeded 24 ounces; I should think it was hardly so much, but it is difficult to estimate it. This quantity will, however, often produce, in combination with other causes, very serious effects; indeed, you cannot be too careful in restraining hæmorrhage. It is easy enough to take blood away, but very difficult, in these cases, to restore it just when the nervous system requires it. We next, then, come to the moral causes; and as I regard these of the greatest importance, not merely in this case, but in every case of operation, I shall dwell for a few minutes upon them. He was naturally an irritable, though a kind man. He had been once in the possession of property in houses, which brought him in an income of 350*l.* per annum. By an error of his own, (I believe the fact of his building four houses on a piece of land where the terms of lease allowed only three,) he lost the greater part of his property, and was left with only 40*l.* a year. Under these circumstances, he procured employment as a common labourer in Woolwich dockyard. His first question, soon after the operation and dressing the limb was concluded, was, "Shall I recover, sir, for I have a wife and children, and I wish to make my will so as to provide for them?" And although I told him then that I had no doubt of his recovery, he never seemed to expect it himself; he was always, to use a common expression, out of heart. Only contrast the difference of manner of this poor fellow and that of Burn; the one always cheerful, and confident of recovery, and the other downcast and desponding. If Burn had had the temperament of Peters, he must have sunk long ago. My firm conviction is, that there is no

visceral disease, and that mental anxiety occurring in a system shaken by injury and loss of blood is the cause of death; but you will soon see more for yourselves in the dead-house. As we have, however, another body to examine to-day, I must say a few words about his case, as well as that of Burn, to which I have already adverted.

James Burn was admitted on the 10th of November, with a compound fracture of the tibia and fibula. There was a wound on both sides of the leg, about three inches in length, communicating with the fractured bones, which were both comminuted, and the tibia split down into the ankle-joint. The accident was occasioned by the fall of a heavy weight of iron on the leg. The extent of injury did not allow one to doubt as to the necessity of removing the limb, which was done, as most of you saw, in the ordinary manner. Since the operation, he has been nearly carried off by diarrhœa, but which is now entirely checked, and the stump healing kindly, so that I need not detain you with any further particulars.

You will most of you remember that I had scarcely concluded the above operation, when another poor fellow was admitted with a very similar injury. This was Joseph Blackman, whose body we shall inspect to-day.

This man was sixty-two years of age, a brewer's servant, a stout, flabby, unhealthy-looking man, with chronic bronchitis; so that a more unfavourable subject could not have been selected for operation. But the injury was so severe that amputation alone afforded a hope of saving his life. The accident was occasioned by the fall of a barrel of beer. The tibia and fibula were broken into the ankle-joint, which was laid open, and the astragalus completely smashed; the wound of the soft parts extending on both sides of the joint. He complained also of his back, which had been bruised by the fall. I removed the limb just below the knee-joint, in the usual way, with a circular incision.

I made the flap entirely of skin, cutting through the muscles even all round.

The arteries were easily found. I put on five ligatures; there was very little blood lost. I dressed the stump about an hour after amputation, uniting the edges with sutures and three broad stripes of plaister.

Ordered—Tinct. opii. ℥x.; spirit. am. arom. ʒj.; mist. camph. Hâc nocte repetanda si opus sit. This draught was repeated.

19th.—He took eighty minims of opium; passed a good night; expressed himself comfortable in the morning; pulse 143; his

cough is very troublesome; he says it shakes him sadly. There is a loud sonorous bronchial râle over the upper part of the chest.

Ordered—Empl. lyttæ amplum pectori. Pil. ipecac. c. conio gr. v. 6ta. horæ. Linctus pro tussi. Bowels have been opened; motions healthy. Repr. haustus.

20th.—Looks well, and says he is comfortable; pulse 124, full; back better; stump looks well; cough much easier; the blister not yet removed; says he does not mind it.

I need hardly tell you that I consider it no light matter to apply a blister to a patient so soon after such a serious operation; but as it was evident to me that unless I could arrest the bronchial inflammation the poor fellow must sink, I was certain that this was the best remedial agent that could be employed.

21st: 1 P.M.—Says he is in no pain, but that his cough is rather troublesome; breathing not quite so freely as yesterday.

11 P.M.—I was sent for by the dresser in consequence of his having a severe attack of dyspnœa. When I saw him I found him breathing with great difficulty; considerable mucous râle in his trachea; loud bronchial râle all over the chest; countenance anxious and distressed; cold perspiration; pulse 130, not so full as yesterday, but with a fair volume under the finger. The assistant apothecary, who had seen him, ordered him spirit. æth. sulph. c. ℥j.; mist. camph. 6ta. horæ; and another blister to the chest. Of the medicine he had had one dose about twenty minutes before I saw him.

I ordered him to be cupped between the scapulæ, and continue the medicine: the next dose to be given in four hours. I watched the effect of the cupping; after four ounces had been taken it produced an effect upon the pulse, diminishing it in volume, and adding to its frequency, making it 140. I stopped the bleeding after adding seven ounces. He does not look as if he could live many hours.

21st: 9 A.M.—Breathing relieved. Is decidedly better this morning. Stump is unhealthy; very deficient in action; pulse 120, medium strength. Ordered brandy ℥ij. in arrow-root. Pil. scillæ co. gr. 6ta. horæ.

22nd.—Much the same. The chest, where it is not sore with the blister, to be painted with the tincture of iodine.

23rd: 9 A.M.—Dozing; had the opiate draught last night; has been slightly delirious during the night. Expresses himself comfortable; his breathing is decidedly better. Did not disturb the stump. The sister thinks that the iodine relieves the breathing. Ordered, Decoct. senegæ ℥ij.; ammon. carbon. gr. v. 6ta. horâ; brandy ℥ij. Beef tea.

4 P.M.—Breathing better; cough easier; less pain in his back;

pulse better; dressed the stump; a little more action in it, but still sloughy. Ordered repr. haust. Omit pil. scillæ.

24th.—Better in every respect. Mr. Tyrrell recommended one pint of porter in addition to the other matters.

25th.—Stump sloughy. Lot. soda chlor. Gin ʒiv. daily.

27th.—Not worse. Has passed a quiet night; did not have the opiate, but a strong glass of gin and water; breathing easy.

December 3rd.—Stump still sloughy; brandy ʒvi.

6th.—Has gone on pretty well; stump healthy; slough separating; cough more troublesome. Ordered to omit the porter. Empl. lyttæ to the chest.

7th.—Has had a good night; cough much better.

8th.—Day thick and foggy; cough more troublesome.

9th.—Day very foggy; cough very troublesome; has had a very bad night; stump tolerably healthy.

10th: 9 A.M.—Cough very troublesome; large quantity of mucus in the trachea; has been very restless, rambling all night long; pulse quick.

4 P.M.—Worse: mucus increased; breathing very difficult; pulse rapid, but not very weak. Ordered c. cruenta inter scapulas ad ʒiv. or ʒvi.

Some glasses to be put on dry; four ounces were taken, and gave some relief.

11th.—No better; breathing very difficult. To leave off the pills, and take the sulphuric æther in camphor again.

12th.—Much worse; breathing so laborious that he looks as if he could not live many hours.

13th.—A beautiful warm sunshiny day; a little better.

14th and 15th.—Not much change; stump healing.

16th.—Much the same; rather weaker, and cough troublesome, but the stump is healing.

17th.—He died suddenly this morning, apparently suffocated by the collection of mucus in the trachea.

In the daily reports, the state of the bowels has not been mentioned, as the motions were regular and healthy.

The practical point of interest was the complication of the case by the chronic bronchitis, which, however, was so much relieved by treatment, that his wife said at one time that his cough was better than it had been for some time. The general principle of the treatment was local depletion and counter-irritation, with general support. With regard to the medicine, he derived very decided benefit from the decoction of senega, ʒij., with ammonia gr. v. every six hours. He was a good deal influenced by the state of the weather, but his vital

powers were evidently not sufficiently good to resist the depressing effects of the disease. The stump, though sloughy at first, had become healthy, and was advancing towards union at the time of his death, which occurred just a month from the time of the operation.

[Mr. Solly then proceeded with the pupils to the dead-house, and the following report is given by Dr. Thomas Williams, who inspected the bodies.]

Joseph Blackman, æt. 64, Isaac's Ward, admitted November 18th; died December 17th; examined on the 29th, 1842.

Appearance of the Body.—One month since this man underwent the operation of amputation of the leg, performed by Mr. Solly. The anterior segment of the flap had undergone sloughing to such an extent that the denuded tibia projected beyond the stump, but the edges of the flap approximated posteriorly, and imperfect adhesions had taken place. The chest was unusually prominent and resonant, except at the lower and posterior part.

Head.—The calvarium was adherent to the dura mater. Mr. Solly, in his remarks upon the case to the pupils, observed, "that this adherence of the dura mater to the skull was a circumstance very seldom met with in old age; and when it occurred at this period of life, he regarded it as indicative of increased vascular action." The case of the skull contained a little larger quantity of fluid than usual. The arachnoid presented the character of uniform opacity. The large blood-vessels at the base presented in their coats numerous points of ossification. The brain itself was healthy. Hemispherical ganglion pale.

Chest.—The heart, on its right side, was slightly dilated—the left ventricle somewhat hypertrophied. The mitral valves were slightly thickened, but quite flexible. The ascending portion of the aortic arch was somewhat dilated. The lungs were prominent, and retained the dilated state proper to that of full inspiration. In structure, both lungs were spongy, but not crepitant. Although no pneumonic consolidation could be anywhere discovered, repeated pressure would not empty the bronchial vessels of air. In every portion examined, extensive evidences of bronchitis were observed; even the minute branches of the bronchi were charged with a large quantity of frothy serous fluid. Mr. Solly observed that this was precisely the condition which his examination before death had led him to anticipate. In the substance of the inferior lobes of the lung, circumscribed patches could be felt, which Mr. Solly pointed out as examples of *lobular* pneumonia, supervening upon the attack of bronchitis, resulting from continuity of structure.

For the most part the terminal vessels of the lung were permanently filled with air, although the bronchial ramifications were considerably obstructed with fluid. This condition I have observed to be almost always the *post-mortem* consequences which an acute attack of bronchitis leaves behind. It can scarcely be called

emphysema, although the vesicles are dilated, and the character of percussion unusually resonant.

Abdomen.—The liver was somewhat enlarged from engorgement, but not otherwise unhealthy.

The stomach was contracted into a comparatively narrow tube. The pyloric half was smaller in calibre than the duodenum. The cardiac half was larger. From the middle of the lesser curvature, an irregular lobulated tumour proceeded, which occupied nearly the whole cavity of the lesser omentum. It consisted of several almost independent globular portions; united, however, to each other by continuity of structure. The tumour extended downwards, behind the stomach, as far as the superior edge of the pancreas. After the examination of the sections, Mr. Solly distinguished this tumour as a good example of encephaloid carcinoma. After the inspection of the mucous lining of the stomach, he remarked that the reason there were no symptoms of this disease during life, was the limited extent to which this membrane of the body was involved, and in all probability that even this was very recent, and the fact that the tumour did not obstruct either the cardiac or pyloric orifices. That it did not attract the eye to the region of the epigastrium, they saw was explained by the mechanical circumstances of the flat and expanded form of the tumour, overspread, too, by the left and large portion of the right lobe of the liver.

Mr. Solly said that it was a singular circumstance that even the attention of the patient himself had never been directed to the seat of the tumour by any of those acute, shooting, and lancinating pains which, for the most part, characterize the origin and progress of this form of malignant disease.

No mark of morbid change could be found in any of the other viscera.

Taken from the post-mortem record, St. Thomas's Hospital:—

William Peters, aged 50 (William's Ward), admitted December 8, under Mr. Tyrrell; died December 17; examined on the 19th.

Appearance.—The body was sound, well formed, and muscular. The toes of the left foot had been removed by amputation performed by Mr. Solly. There was no discolouration of surface of the lower extremities. No induration could be discovered in the veins leading from the stump. The left arm was considerably swollen from the shoulders to the fingers. In several places the cuticle had been raised by effusion. The colour of the arm was dark livid.

Head.—Mr. Solly has reported to me that no pathological evidences were to be found in the brain, which was examined by himself.

Chest.—Heart and lungs healthy, with the exception of a slight hypertrophy of the left ventricle.

The lining membranes of all the cavities stained with blood, but not inflamed.

Abdomen.—The liver was healthy.

The intestines were tympanitic; from the duodenum to the

sigmoid flexure they were distended to about three times the natural diameter. There were no changes of structure.

Spleen.—Dark, and chequered with green patches. This organ was more decomposed than any of the other viscera.

Vessels.—The large vessels, veins, and arteries of the trunk were examined. The lining membrane of the thoracic aorta was more vascular than usual. The larger veins, the axillary and subclavian, presented a similar but obvious vascularity, but there was no fibrinous effusion; and Mr. Solly did not consider the colour as indicative of inflammatory action, but rather of sanguineous transudation. The anterior tibial and femoral vessels of the left leg were examined without discovering any decided mark of morbid change.

Arm.—The skin of mortified arm could be readily stripped away. The subcutaneous tissue was greatly extended, and infiltrated with a dark-coloured serum. The whole appearance was that of a putrid subject which had been dead many days. There was no actual disorganization of the structures of the arm; that is, all the anatomical elements—muscles, vessels, nerves, fascia, &c.—could be separately examined. It was observed that the veins were larger and more dilated than in the healthy state. The blood which they contained was partly liquid and partly coagulated. The coats of some of the larger vessels of the trunk were found to contain a few atheromatous deposits.

LECTURE XL.

Partial Amputation of the Hand.

Gentlemen,—A hand crushed by machinery, lately admitted into this hospital, and operated on by me, gives a text for some observations on partial amputations. To many of you, who, in all probability, will settle down as provincial surgeons, this subject is of the greatest importance, for upon your knowledge and judgment will often depend the fate of a hand smashed by the accidental discharge of firearms, or the explosion of the gunpowder-flask. I am quite certain, even from what I have seen in this hospital, that many a hand has been sacrificed which might have been partially saved.

I will now read to you the notes of the case taken by the dresser, Mr. Drake :—

Henry S——, aged thirty-seven, engine-driver, was admitted into Abraham's Ward at 8.30 A.M., on the 15th of Oct., 1858, having smashed his hand in some cog-wheels of an engine. When admitted he was bleeding profusely, and pressure on the brachial artery was necessary to arrest it. On examination, the index, middle, and ring fingers of the right hand were found to be completely smashed. The thumb had wholly escaped, and the little finger partially so, there being here merely laceration, with some bruising at the last phalanx. There was also laceration extending into the palm of the hand for some distance. I immediately amputated the three smashed fingers ; but retained the thumb and little finger. The flaps were brought together, and a roller applied. There was subsequently slight hæmorrhage, which was easily stopped by the application of ice, and keeping the hand in an upright posture. Forty minims of tincture of opium were ordered immediately, with two ounces of brandy, and beef-tea.

Oct. 16.—The patient passed a tolerable night, and appeared easy this morning.

18th.—The dressing was changed yesterday, and a few small sloughs appeared at the edge of the wound. When I saw him, I ordered rhubarb and calomel powder, one scruple, and senna mixture in the morning.

19th.—A considerable amount of suppuration is established and the wound looks generally healthy. Mixed diet and a pint of porter were ordered.

23rd.—The wound looks very healthy, and is healing fast. His health is good.

30th.—There is decided gangrene of the last two phalanges of the little finger, but the rest of the wound looks healthy. All the ligatures have come away.

Nov. 3rd.—I removed the gangrenous parts of the little finger.

10th.—The parts are all healthy, and much of the wound has healed. He is able to move the stump of the little finger pretty freely, and thinks he will be able to perform his accustomed work by its use.

16th.—The wound was nearly healed, and certainly a very useful hand will result. The movements of the thumb are quite natural, and there is much movement capable of being performed by the little finger.

In this case, the first appearance presented by the hand was that of a complete smash—a black and bruised mass of bloody flesh and bones; the whole hand, with the exception of the thumb, being implicated. Now I am afraid that the extent of bruising and laceration of the palm of the hand would have induced some surgeons in the country to believe in the necessity of removing the whole at the wrist-joint. It is true that in this case, in striving to save the little finger, I attempted more than I could accomplish. The extremity of that portion of the hand sloughed, and I was obliged to remove the two lowest phalanges. Still the man was not injured by the attempt; and it is to this practical point that I wish especially to direct your attention. I was able to preserve, as you see, enough to serve as a very useful hand. The value of such a mutilated hand, imperfect as it appears, I will prove to you by the introduction of a patient on whom I performed a somewhat similar operation thirteen years ago. I shall also bring forward some cases which have occurred in the practice of my colleague, Mr. Ambler, one of the surgeons of the West Herts In-

firmary; and that of the house-surgeon, Mr. Sutcliffe, who was formerly one of my pupils here.

Supposing a patient is brought into the hospital with a crushed limb, whether the upper or lower extremity, you are obliged to amputate in order to save life. The patient could not endure the physical suffering, and the constitutional irritation involved in such an injury, if it be left in the hands of nature to separate by a sphacelating gangrenous process, or in other words, by mortification.

You must not, however, suppose that I mean to advise you to amputate in every injury of the upper or lower extremity where the bone has been crushed. An exception to such a general rule occurs to me at once. About two or three years ago, one of the porters on the South-Eastern line was brought under my care with a compound fracture of the bones of the forearm. The radius in this case was completely smashed, the central two-thirds were broken into at least fifty pieces, and the wound extended nearly the whole length of the radius. My patient was a young and healthy-looking man, so I determined to try and save the arm. In this attempt I succeeded. It is true it was a long and tedious business; but I am frequently rewarded for all my trouble by seeing the man doing his duty at the London-bridge terminus as actively and efficiently as any other porter there. Nevertheless, as a general rule, you cannot save the limb when the principal bones and soft parts have been broken, crushed, and lacerated.

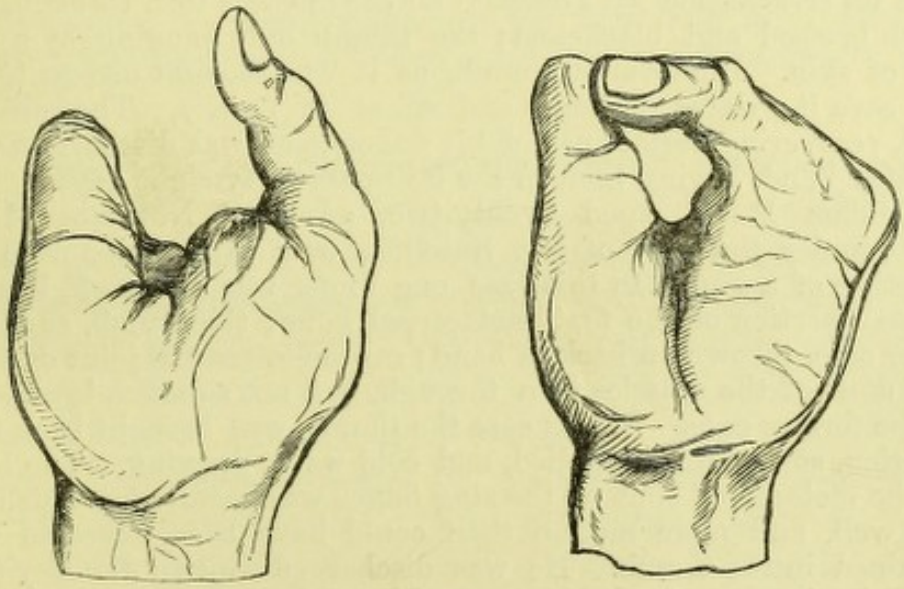
I must not now stop to tell you the rules that should guide you in the necessity or not for amputation at the thigh, leg, or arm; for I doubt not that before the session has expired I shall have cases under my care which will serve as illustrations of this subject. The general rule, and not the exceptions, is all I wish to call your attention to now—that the same character of injury to a large limb which necessitates amputation does not do so in a smaller one, such as the fingers, thumb, or even a portion of the hand itself.

For instance, suppose in one of these crushing injuries of the hand, whether by machinery or by the force of gunpowder and shot, the thumb is wrenched out of its joint, with the carpus and all the muscles of the ball of the thumb torn through, though not quite detached, still united by some skin and cellular tissue, and the dorsal arteries intact, you ought not to remove that thumb with your knife, but you should replace it in its normal position, and thus try to save it. If you fail, and gangrene ensues, your patient is no worse; if you succeed, your patient retains a useful hand, though all his fingers may have been carried to the winds It is astonishing how well these cases do, even when the connecting medium left seems to be little more than a narrow piece of dirty lacerated skin.

The case to which I first referred as having encouraged me to save this man's hand, and many others since, was admitted under my care in April, 1845, rather more than thirteen years ago. On admission he was seen by one of my late colleagues as well as myself, and nothing perhaps will more convince you of the formidable appearance of the injury, than the fact that this colleague thought me very imprudent in attempting to save any portion of the hand, and urged me to amputate at the wrist-joint. I will read to you briefly the short notes that I took at the time, and afterwards you shall see the man himself, and the use he can make of his hand.

Robert H——, aged 33, married; six children; temperate habits; lives pretty well; pressman; came to St. Thomas's Hospital, on Wednesday, April 2nd, 1845, with extensive injury of the hand. On admission, I found all the fingers crushed; the thumb remained entire; the skin was torn and stripped off about half-way up, on the back of the hand; the edge of the laceration extended transversely from the thumb to the inner side of the hand. The palm of the hand was opened; there had been some hæmorrhage, but it was not bleeding much when I saw him. The accident happened in the following manner: he was applying grease to the cogs of a wheel in a printing-machine, when the hand was drawn in, and crushed between the two wheels, tearing off the extremities of two fingers, and retaining them in the machinery.

From the severity of the injury, it was very evident that amputation of some kind was necessary. The only point to decide was, whether it was possible to save any portion of the hand, or whether the whole should be removed at the wrist-joint. Finding the metacarpal bone supporting the little finger entire, and the whole of the thumb, I determined to save them. I made an incision with the small catlin posteriorly along the edge of the lacerated wound; anteriorly, I was able to preserve more skin, and from the palm of the hand I made my flap. I then sawed through the three larger metacarpal bones very near to their heads, leaving that of the little finger entire. He had no bad symptoms during the healing process. The flaps did not unite by the first intention, and the wound was some time in healing, but it ultimately did so in a sound, healthy manner.



When he first left the hospital, which was about two months from the time of his admission, he had little or no power of moving the stump formed by the metacarpal bone of the little finger, and he could hardly believe that he would ever gain any power over it, but on March 11th, 1846, about nine months after the operation, he had the power of approximating it to the thumb, and holding your hand between the two so

firmly, that it was very difficult to break the connection. Since this time he has resumed his occupation as pressman, and does his work as well as ever.

There is a cast of the hand in the museum of St. Thomas's Hospital.

[Mr. Solly now introduced the man into the theatre, for the purpose of showing the immense power he had obtained over his thumb and new little finger. The accompanying woodcut gives a very good idea of the hand.]

I will next read to you the cases which occurred at the West Herts Infirmary, from the notes of our house surgeon, Mr. Sutcliffe.

Cases of Injury to the Hand, admitted into the West Herts Infirmary.—Albert S——, aged twenty-nine, admitted April 4th, 1856, under the care of Mr. Ambler, with lacerated hand from the bursting of a gun. Compound fracture of little and ring fingers; thumb thrown on back of hand; head of metacarpal bone displaced from its articulation with carpus; all the muscles torn through, and much bruised and blackened; the thumb only hanging by a thin slip of skin. Removal of thumb, as it was thought useless to try and save it; water dressing and splint to fingers. The case did well, recovering perfect use of his fingers, and was discharged well on May 22nd, having been in the infirmary forty-eight days.

William F——, aged twenty-two, admitted November 13th, 1856, under the care of Mr. Sutcliffe, with injury also from the bursting of a gun. In this case one finger was blown off, leaving a small portion of the first metacarpal bone; the thumb, as in the other case, thrown on back of hand; carpo-metacarpal joint opened, and most of the muscles torn through, but not so much bruised as in the former case. In this case the thumb was brought back into position, some sutures applied, and cold water dressing. The head of the metacarpal bone of the ring finger was removed. This case did well, and more motion than could have been expected was obtained in the thumb. He was discharged well on January 8th, 1857, having been in the infirmary fifty-eight days.

William P——, aged thirteen, admitted Feb. 26th, 1857, under the care of Mr. Ambler, with injury to hand by machinery. The fore, middle, and ring fingers all completely crushed, as well as the palm of the hand, almost to the carpus, but not extending into that articulation; the thumb was hanging loose; the little finger not injured. The whole of the three injured fingers were removed, with the metacarpal bones, leaving the heads; the thumb and little finger approximated and fixed with sutures; cold water dressing applied. The case did well, and was discharged cured on April 9th, having been in the infirmary forty-seven days.

David H——, aged twenty-seven, admitted on September 30, 1858, under the care of Mr. Ambler. Whilst riding on a cart laden with corn, the horse became restive; in attempting to get donw, he slipped with his hand under the wheel, crushing the metacarpal bones of the fore and middle finger, extending into the carpo-metacarpal joints; the integuments much torn; the thumb nearly separated; carpo-metacarpal joint opened. The whole of the two metacarpal bones and fingers were removed, the thumb approximated to the ring finger, sutures and cold water dressing applied. Some inflammation extended from the wrist up the arm; matter formed, requiring to be liberated. The case ultimately did well, and is all but healed; motion is returning in the fingers and thumb. He has been in the infirmary forty-six days.

In the case of William F——, although the thumb was so nearly off, he got very good motion in it after using it a few months, and was able to drive, his employment being that of a groom.

William P——, who had only the thumb and little finger left, was able to hold a knife, and to feed himself with great facility, and did not seem to feel much the loss of so great a portion of the hand.

David H——'s case is going on well, and will be the best of the "lot." The thumb is now quite united, and he is beginning to be able to move it. The swelling of the wrist and arm, which has been great, has almost subsided. He will be discharged in about a week.

These cases, gentlemen, are good instances of the best kind of conservative surgery, and I hope that they will encourage those of you who are intending to practise in the country, to go and do likewise. No shooting season ever passes without some amount of injury to the extremities of her Majesty's liege subjects. The hand is frequently the seat of injury, and I am sure that many hands have been amputated which might have been saved. In such cases do not amputate the whole hand if there is any portion of the thumb or fingers left entire. If you are not bold enough to rest upon your own judgment, be honest enough to send for another opinion to assist it.

LECTURE XLI.

On Diseases of the Superior Maxilla requiring Operation.

When we consider the numerous textures which enter into the composition of the human mouth, and the many important parts which it plays in the animal economy, we need not be surprised to find it the subject of very various diseases. In the course of my clinical lectures I shall have many opportunities of bringing most of them under your notice, and contrasting one with the other. To-day I shall direct your attention to those tumours of the superior maxillary bone which require operation for their removal.

These tumours are very various, both in origin, progress, and effect. They may originate from the teeth, the gums, the mucous membrane of the mouth, of the nose, or of the nasal cavities, as the antrum Highmorianum, &c.

Those which occupy the antrum, as being the most serious, shall be first attended to, and the following case, reported by Mr. Hartnoll, is a good illustration of one class of these diseases.

Osteo-fibrous Tumour of the Superior Maxillary Bone; removed by Mr. Solly.—James Forstike, æt. 17, farm-labourer, a stout and healthy-looking lad, ruddy complexion, of healthy parents, was admitted November 1, 1845, into Henry's Ward, under Mr. Green, with an enlargement of the right cheek.

About ten months since, according to the lad's statement, the first double tooth of the upper jaw on the right side began to decay, and was accompanied with a great deal of pain; the tooth was extracted, but with no relief of the pain. A short time after this another tooth was drawn, but still the pain remained. About the same time the right side of the face began to swell, and became extremely painful, the pain being of a sharp pricking nature. Leeches and hot fomentations were had recourse to, which to a

certain degree, diminished both the pain and the swelling. It soon, however, again began to increase, though gradually, and without much pain. He then became an out-patient of the Ipswich Hospital, under Mr. Bartlett, a gentleman who formerly dressed for Mr. Green, who extracted the second molar tooth of the affected side, and passed a probe up into the socket; blood, however, only flowed. After being an out-patient of the hospital four months, Mr. Bartlett recommended him to come to St. Thomas's.

Condition before the Operation.—He has a considerable enlargement of the right cheek. The surface of the swelling is irregular, and very firm; not uniformly puffy or discoloured. The integument and subcutaneous cellular tissue are healthy. On opening the mouth the tumour may be seen protruding the right gum downwards, to the extent of an inch; it also involves the palatine process of the bone as far as the mesial line, and bulging over the line, but not occupying the bone on the opposite side; this portion does not project downwards so low as the alveolar portion. And in this respect it differs from abscess of the antrum, where this process itself bulges downwards. There is only one molar tooth remaining on this side, and there is a small point of healthy ulceration over one of the alveolar cavities, where it has apparently been punctured. Mr. Solly, who examined the case in the taking-in room, pronounced it one of osteo-cartilaginous tumour of the antrum. Mr. Green, having confirmed Mr. Solly's opinion of its nature, recommended the removal of the superior maxilla, which was performed by Mr. Solly on the 8th of November, 1845.

Operation.—He commenced his incision at the inner angle of the eye, and carried it downwards round the alar cartilage of the nose into the mouth, cutting through the upper lip, a little to the outside of the mesial line. He then cut from the outer angle of the mouth upwards to the zygoma. The lining membrane of the mouth was next divided horizontally over the alveolar cavities, and the flap dissected upwards from the surface of the superior maxillary bone to the margin of the orbit. The inferior oblique muscle of the eye was divided, and the contents of the orbit separated from its floor. The alveolar process was divided perpendicularly in the mesial line with a small saw, the right central incisor tooth having been previously removed, and then the malar bone, at its junction with the maxillary, was divided with the same instrument. The internal angular process of the superior maxilla was next cut through with a pair of cutting pliers. Mr. Solly next divided the bony palate of the superior maxillary bone with a pair of strong scissors, made by Weiss. He then laid hold of the bone firmly, turned it downwards, cut through its posterior connections of this bone to the palatine bone with a scalpel, and dislodged it. The whole operation did not occupy more than eight minutes.

A good deal of blood was lost during the operation, and the vessels at the posterior part of the wound bled very freely; the hæmorrhage, however, was arrested by introducing pieces of dry lint and German tinder into the back part of the wound, and

making firm pressure there. After waiting half an hour, and finding, on the removal of the pressure, the hæmorrhage still continued, Mr. Solly applied the actual cautery, on account of the vessels from which the bleeding proceeded lying so deep and concealed as not to allow of a ligature being placed upon them. A piece of German tinder, dipped in a saturated solution of alum, was then applied, and slight pressure maintained for another hour, when all hæmorrhage ceased; after which the wound was dressed, the edges being brought together by sutures and strips of isinglass plaister.

Nov. 8th, day of operation, 10 P.M.—Quiet and comfortable; says he is free from pain. Pulse quick; skin hot. Ordered, Calomel, gr. ij.; Tinct. opii, ♏xxx. m. s. c. mane.

9th.—Bowels have been opened once.

1 A.M.—Hæmorrhage came on, and he lost about eight ounces of blood. It was arrested by introducing pieces of dry lint into the back of the wound.

10th.—Sutures removed, and wound dressed. Wound healing.

12th.—Doing well.

13th.—Pulse quick and feeble. The integument on the forehead a little red and puffy. Ordered, cold lotion to the forehead; port-wine ℥vj.; eggs.

14th.—Erysipelas better; pulse firmer.

15th.—Doing well. Ordered, mutton-chop.

19th.—The external wound is quite healed. The internal is filling up, and granulating kindly. Discharge healthy.

At this time (Dec. 8th) he is nearly well. The internal wound is almost healed, and entirely filled up, even with the palatine process of the superior maxilla of the opposite side, and glazed over with mucous membrane, except at a point just opposite to the junction of the palatine process of the superior maxilla of the opposite side with the horizontal plate of the palate bone, where there is an opening into the right nostril about the size of a small marble, and which, perhaps, would just admit the point of the little finger. There is no discharge.

He has progressed favourably since the operation. The only occurrence worth noticing is, that he has had occasional attacks of erysipelas, but which have been very slight, and confined to the integument of the forehead and cheek of the affected side, and have yielded under mild treatment, such as cold lotion, laxatives, and a moderate allowance of wine, with farinaceous diet. There is very little, if any, disfigurement. The cheek

on that side (the right) is a little sunk, and there is a slight prominence of the malar bone. The contour of the lips is not perfectly even, owing to a dropping, or falling in, of the flap from a want of support behind; this will be improved in great measure by the contraction of the cicatrix. His speech, too, is somewhat affected, as a natural consequence of the operation, but this is remedied by closing the aperture into the nostril.

Since the operation, gentlemen, I have carefully examined the structure and connection of this tumour. The following is the result of my observations:—It appears to have sprung from the alveolar processes of the first molar and incisor teeth within the antrum; it is not attached to any other portion of this cavity, though it entirely fills it up. It lies upon the palatine process of the superior maxillary, which is roughened by the absorbent action set up by its pressure, and thus reduced to merely the substance of a thin card. The tumour is in contact with the floor of the orbit, but distinct from it. Posteriorly it is nodulated; the nodules round, smooth, and perfect, showing that the whole has been removed entire.

A section having been made through the centre, its structure appears to be distinctly fibro-cartilaginous, with a slight admixture of osseous particles.

When I first came to these hospitals in 1822, and for some years subsequently, all tumours and morbid growths of the superior maxilla were either considered by the surgeon as hopeless diseases, over which he had no power, and the poor patient was abandoned to an inevitably fatal result; or they were barbarously burnt away bit by bit, or torn piecemeal from their attachments. But in the present day every practical surgeon knows that there are certain forms of disease, incurable by medicine, for which the superior maxilla may be removed with every prospect of success. There are other kinds of so malignant a character that their removal is not justifiable.

This operation is, indeed, one quite of modern date.

It is not true, as asserted by Velpeau and many other modern authors, and I suppose copied from one to the other, that Acoluthus performed it in 1693; he merely cut and burnt away piecemeal, and on successive occasions, an echondromatous tumour of the superior maxilla, which is a very different matter to the removal of the entire bone, as will be seen from the following account. Bordenave, in a paper entitled *Précis d'Observations sur les Maladies du Sinus Maxillaires*, the first part of which is published in the fourth volume of the *Transactions of the Académie Royale de Chirurgie*, and the second in the sixth, 1744, states—

"That Acoluthus, physician of Breslaw, reports, in the 'Mémoires de l'Académie des Curieux de la Nature,' that a woman, about 30 years of age, came, in 1693, from Silesia, in Poland, for advice regarding a particular disease of the maxillary sinus.

"The mass of the tumour was very hard; it filled the greater part of the cavity of the palate, and included in its interior all the teeth of the left side. To facilitate operation in this case, the opening of the mouth was enlarged, by making an incision across the cheek, commencing at the commissure of the lips. By means of this incision the external part of the circumference of the tumour could be reached. It had the consistence of very hard cartilage, yielding with difficulty to the efforts of the operator. He was able, however, to remove two or three teeth with a tolerably large portion of the superior maxillary bone. This part, however, was not above half the tumour, and it was only possible to remove piecemeal the rest that filled up the palatine fossa. The operation was long and laborious, and, according to the expression of the observer, one of the most cruel he had ever seen. The actual cautery was applied upon the orifice of those vessels which might give rise to hæmorrhage, and also to the fungoid flesh. These last circumstances show, that one cannot eradicate this tumour at one time, and that it is by the application of efficacious remedies for several days, that we must reach the desired end. The actual cautery was employed on several successive days, and at different times.

"He had then excrescences at the part only where the tumour had taken origin. An attentive research showed them to be some detached portions of carious bone; the extraction of which was followed by a rapid and complete recovery."

Mons. Velpeau[1] says, "That the *Bulletins de la Faculté de Médecine* prove that Dupuytren performed the first operation for the removal of the upper jaw in

[1] Med. Oper. vol. ii. p. 626.

1819, and a second in 1824; but that his operation was merely that of amputating or excising the bone," and that to Mons. Gensoul, surgeon in chief to the Hôtel Dieu, Lyons, is due the credit of "having imagined a proceeding which allows of the disarticulation of the jaw upon fixed and precise rules."

On the other hand, Mr. Liston says,[1]

"The merit of suggesting the possibility and advantage of removing the entire superior maxillary bone, when the seat of disease, is without doubt due to Professor Lizars, for several years my colleague in the Edinburgh Royal Infirmary."

As I think that the history of this operation cannot but prove interesting to you, I shall not hesitate to quote the very words in which Lizars first proposed to the surgical profession the performance of it.

"All cases[2] that have come within my own knowledge (with the exception of one), wherein these sarcomatous tumours have been removed by laying open the antrum, have either returned, or terminated fatally. I am therefore decidedly of opinion that unless we remove the whole diseased surface, which can only be done by taking away the entire maxillary bone, we merely tamper with the disease, put our patient to excruciating suffering, and ultimately to death. The inferior maxillary bone has now been nearly entirely removed for osteo-sarcoma with success, and I see no difficulty in accomplishing the same with one of the superior maxillary. We secure the common carotid for other tumours of the face, and aneurism by anastomosis; and why not do it for so loathsome and fatal a disease as this? The steps or plan I would suggest for so fatal a disease are, first to secure the trunk of the common carotid of the affected side; next to make an incision through the cheek, from the angle of the mouth backwards, or inward to the masseter muscle, carefully avoiding the parotid duct; then to divide the lining membrane of the mouth, and to separate the soft parts from the bone upwards to the floor of the orbit, thereby to detach the half of the velum palati from the palate bone. Having thus divested the bone to be removed of its soft covering, the mesial incisor tooth of the affected side is to be removed; then the one superior maxillary bone is to be separated from the other at the mystacial and longitudinal palatine sutures, and also the one palatine bone from the other at the same palatine suture, as the latter bone will also require to be removed, either by the forceps of Mr. Liston or a saw; thirdly,

[1] Medico-Chirurgical Transactions, Series 2, vol. ii.

[2] A System of Anatomical Plates, accompanied with Descriptions and Physiological and Surgical Observations. Part ix. Organs of Sense. 1826. Page 57. Date of Preface, Dec. 24, 1825.

the nasal process of the superior maxillary bone should be cut across with the forceps; fourthly, its malar process, where it joins the cheek-bone; fifthly, the eye, with its muscles and cellular cushion, being carefully held up by a spatula, the floor of the orbit is to be cleared of its soft connections, and the superior maxillary bone separated from the lacrymal and ethmoid bones with a strong scalpel. The only objects now holding the diseased mass are the pterygoid processes of the sphenoid bone with the pterygoid muscles. These bony processes will readily yield by compressing or shaking the anterior part of the bone, or they may be divided by the forceps, and the muscles cut with the knife. The bone or bones are frequently so soft in this disease as to be easily cut with a knife or scissors. After the bone with the diseased tumour has been removed, the flap is to be carefully replaced, and the wound in the cheek held together by one or two stitches, adhesive plaster, and bandage. In no other way do I see that this formidable disease can ever be eradicated, and those who have had the misery to witness the exposure of the antrum by laying open the cheek, and the alternate cutting and cauterizing, and afterwards the protracted treatment by the cautery, the inflammation, the offensive suppuration, and the hectic fever, which supervene, and ultimately carry off the patient, will listen to any means which hold out a prospect of a happier result."

Gensoul[1] himself refers to Lizars in the following words, which show that he was not aware how much credit is due to our Scotch brother :—

"Mr. Lizars of Edinburgh has, it is said, since 1827, successfully removed different tumours from the maxillary sinus. I could not find out what method he followed, though I have run over all the numbers of the English *Lancet* from 1827 to 1829. However, I doubt not but that the operation was preceded by tying the external carotid artery, since in the English journal which I have just cited from (the *Lancet*, 1831), I have found the history of the removal of the superior maxillary, practised the 17th of November, 1830, by Mr. Scott, surgeon to the London Hospital."

It appears to me clear from this, that Gensoul really believed that he first originated this operation in its present complete form, and therefore his observations are interesting.

After stating the objectionable mode of proceeding, namely, that of cutting away the disease bit by bit, he goes on to say, that in order to make clear the difference.

[1] Lettre Chirurgicale sur quelques maladies graves du sinus maxillaire et de l'os maxillaire inferieur, par Th. Gensoul, Chirurgien en Chef de l'Hotel Dieu de Lyons. Accompagnée d'un Atlas de huit planches, in folio, à Paris. Chez Baillière, 1833.

which exists between the operative proceeding that he would advise and that which is generally adopted in the present day, he would compare it with that adopted for the cure of cancer of the breast; which disease every operator endeavours to remove by cutting through the sound parts.

He determined to apply this principle to the treatment of incurable diseases of the superior maxilla. The course of proceeding which he followed was founded on an examination of the anatomical connections of the bone.

He performed his first operation in 1827; and though we are justified in giving to our own countryman the credit of first *suggesting* the performance of the operation in a perfect manner, we must award to Mons. Gensoul the credit of having first performed it, which he did on the 29th of May, 1827. Lizars first attempted it in the December following, but without being able to complete the operation, in consequence of the hæmorrhage which ensued, notwithstanding a ligature had been previously placed on the carotid artery.

As you have seen the operation performed I need hardly state that it is a formidable operation, and one which should be carefully pondered over first; but on this point I would rather quote the opinions of others, than lay any stress on my own, and thus magnify the difficulties of an operation which I have just performed.

Dr. O'Shaughnessy, who has written an excellent little pamphlet on this subject, says:—

"I know of no operation which requires on the part of the surgeon a more perfect knowledge of the region in which the disease is seated, which compels him to fix in his mind every step he is about to take, and to calculate every change of plan which an altered state of the parts, as they are exposed, may require him to make in the progress of the operation, than the excision of the superior maxilla. I would therefore recommend the young surgeon, before proceeding to this operation, to refresh his recollection of the anatomy of the region, *practically if possible*. He should ponder well over the parts he is about to cut through—the thickness of the bones to be divided, and the depth of the incision to be made; and then lay down a plan for himself according to the nature of the case, with a fixed determination not to deviate from it, as far as circumstances

will admit of. I offer this advice from experience, as I know the value of it. Had I not taken all the precautions I here recommend on the first occasion I extirpated the upper jaw, I feel convinced I hardly could have completed it, from the variety of circumstances that occurred during the operation, which the directions and descriptions given in books did not prepare me for, and in fact, which cannot be described. No surgeon should attempt this operation unless he had one assistant on whose firmness and judgment he may safely rely."

I think that the profession is much indebted to Mr. Liston for the decisive manner in which he has distinguished those diseases of the superior maxilla which ought to be removed, and those which it is useless to touch.

He points out very forcibly that the want of success which has attended the operation for the removal of the superior maxilla has arisen from a want of proper discrimination between those cases in which the operation is justifiable, and those in which it is not.

His description of the kind of tumour which we ought to remove corresponds so closely with the appearances presented in the case just related, that I cannot refrain from quoting it.[1]

" But the superior maxilla is found now and then to be involved in a tumour of a more simple and manageable nature, commencing in the osseous structure or periosteum. Some rare cases, also, of extensive deposit of very hard osseous matter, ultimately filling up the cavities and fossæ of these bones, are occasionally met with. The fibrous, or fibrinous tumours, as they are more properly denominated by that indefatigable pathologist Mr. Kiernan, are very traceable to some external injury, to which, indeed, the majority of enlargements of parts and new growths are to be attributed, and are comparatively of slow growth.

" The simple tumour, whether involving the upper or lower jaw, differs in consistence, and in form also, from those soft lardaceous or pulpy and brain-like masses, whose soft appearance and progress I have shortly alluded to. They attain, though slowly, a great size; they present a *globular* or *botryoidal* form; displace the surrounding hard and soft parts; project from the countenance; and, deranging the features, produce great deformity. The skin may be thinned and pervaded by enlarged venous branches; it is discoloured, but not incorporated, even in an advanced stage, with the morbid mass, nor are any of the surrounding tissues conta-

[1] Loc. cit.

minated. The projection towards the mouth often large, and passing down by the side of the opposed teeth and jaw, is hard and elastic, and conveys the feeling of brawn interspersed with bony particles; but it is covered by a continuation of the mucous cavity, slightly thickened and altered, furnishing an inconsiderable discharge, and that neither offensive nor of a bad quality. This growth in the mouth presents indentations made by the teeth, with which it comes in contact. The hard palate, when the upper jaw is involved, is generally covered by a thick layer of tumour which lies over, and also in contact with, but is not adherent to it, nor to the gums supporting the teeth of the opposite side. It obscures the view of the velum and fauces, and, by impeding the functions of respiration, makes the patient very uncomfortable, renders his supply of nourishment incomplete, and even puts his life in jeopardy. The tumour of the lower jaw, again, by the displacement of the tongue and interruption of the performance of its functions is equally inconvenient and dangerous. In the records of surgery I can find very few such tumours described as affecting the superior maxilla, and my inquiries respecting the cases which have been subjected to operation, which are as yet unpublished, lead me to conclude that the diseases interfered with have not been all of this benign and tractable nature. In many of these the morbid actions have not ceased; the growth has been reproduced, and the patients have not been in any way benefited by the operation."

Mr. Liston mentions, in his lectures published in the *Lancet*, that he—

"Has extirpated the upper jaw to remove fibrous tumours nine or ten times, without the loss of a single patient. It is an operation more successful than the amputation of the leg, or, at all events, of the thigh, and it is attended with as little risk."

But remember, that when this operation was first proposed and performed by the surgical profession, it indeed was a very dangerous one; and, judging by the observations that were made at that time, it was generally fatal, and it is only since the principles laid down by Mr. Liston, regarding the diagnosis of these tumours, have been carried out, that the operation has become generally successful. Mr. Syme, in a letter dated June 16th, 1829,[1] states,—

"That the attempts made to accomplish this amputation of the superior maxilla have hitherto failed, but chiefly owing to the

[1] Published in the 32nd volume of the Edinburgh Med. and Surg. Journal.

uncontrollable hæmorrhage, which, I have heard, obliged one operator to desist even after he had tied both carotids."

In regard to a ligature on the carotid artery previous to the removal of these tumours, Mr. Liston[1] observes, that—

"The suffering of the patient is thus much prolonged without his safety being at all enhanced, or the dissection of the tumour in any way facilitated. The flow of blood is quite as effectually commanded by pressure with the fingers on the common carotid on the affected side."

In two cases in which Mr. Scott, of the London Hospital, operated, he tied the carotid in the first, and there was very little hæmorrhage, and no ligatures required afterwards; in the second case[2] pressure was made over the carotid artery at first, but the hæmorrhage was so great that it became necessary to secure the vessel by ligature.

Dec. 3, 1831.—Mr. Earle removed the superior maxilla.

The patient, Mary Cane, æt. 45, had enjoyed good health; received a blow on the right cheek.

The diseased mass projects some distance from the mouth, which it nearly fills; that portion which is seen in the left side of the mouth is movable, having no connection with the left superior maxillary bone. Offensive smell; difficult deglutition; no enlargement of cervical glands.

Mr. Earle passed a strong flat ligature round the common carotid, and tied it with a slip knot so gently as not to divide the inner coats of the vessel; a small portion of cork being interposed to act as a tournequet and facilitate the removal of the ligature at the conclusion of the operation, should it be found that any ill consequences to the brain resulted from its application.

The rest of the operation was performed in the usual way, the bone being cut through with Liston's forceps.

No hæmorrhage took place during the operation; the ligature was then loosened, when some slight bleeding was apparent from the internal maxillary artery. As the patient was rather faint, it was apprehended hæmorrhage might increase: and as no bad effects have resulted from the temporary compression, a common silk ligature was connected with the flat one, which was withdrawn, and the artery finally secured in the usual manner.

December 9.—The patient is going on as well as possible.

[1] Op. Surg. p. 164.

[2] Med. Gaz. vol. ix. p. 514.

The tumour was of a firm sarcomatous structure, with spiculæ of bone intermixed; that which projected into the mouth was of a softer texture, and approached in character to the medullary sarcoma.

From these and other cases which might be adduced, it would appear that a ligature on the carotid artery is of advantage in some cases for the safe performance of the operation. But, then, I believe it is only necessary in those cases where the tumour is of a fungoid character, and has attained a considerable size; in fact, that it is only necessary in those cases in which it is not right to operate at all.

Let me, then, impress upon you the importance of carefully distinguishing the nature of the tumour before you decide upon an operation. It is true that there are cases in which it is not easy to decide this question in the early stages of the disease; but if you do come to the conclusion that the disease is strictly soft cancer, do not be tempted to remove it in the hope of saving your patient, for I know nothing more distressing, both to the poor sufferer himself and the operating surgeon, than the ultimate recurrence of the disease.

One exception may be made to the rule of not removing the superior maxilla when it is the seat of encephaloid disease, and it is, when the tumour is so small that the whole bone may be removed without cutting into the diseased portion.

Mr. Liston says,—

"I have in my collection a tumour of this description; it was removed very early, and before there was any threatening of fungus, or the wall of the antrum had given way. It was taken from a young lad, who went through the operation very well, and was alive and without any return of the disease five or six years afterwards."

In our diagnosis of these tumours we are partly guided by the rapidity or slowness of their growth: fungoid disease always advancing with rapid strides, and the non-malignant solid tumour progressing slowly.

In Fostike's case the only unfavourable symptom which the tumour presented was the apparent rapidity

of its growth. According to our patient's statement it commenced only ten months ago, at which time the first double tooth on the right side began to decay, and shortly after the right side of the face began to swell. But our dissection of the tumour shows that it sprang from the front of the jaw, and from thence passed backwards; so that in all probability it had been growing slowly within the antrum for some months before it reached the fangs of the molar teeth; and this view of it does away with the idea of its rapid growth; for the growth of these tumours is not attended with pain, until they press upon, and interfere with, the more sensitive structures.

The healthy condition of the gums and the integuments of the cheek contrast strongly with their appearance in another case, to which your attention has been lately directed, of disease of the superior maxilla. I refer to the case of necrosis of the bone, and abscess of the antrum, which was in the same ward. There the cheek was swollen and discoloured, and the gums spongy and purple red. It is true that the palatine process projected into the mouth something as in Fostike's case, but it was elastic to the touch, and not firm and unyielding.

From all that has now been said, you will, I trust, understand the distinction between an incurable and uncontrollable disease of the bone—one which ultimately destroys the patient by its physical effect upon the organs of digestion and respiration, and a malignant disease, which is so constitutional that if removed in one part it will return in another, which cannot therefore be extirpated by operation. From the progress of this case since the operation, we have had every proof that our diagnosis of the nature of this disease is the correct one, and I confidently trust that we are right in believing that by operative interference a fellow mortal has been rescued from a painful and lingering death.

He lived many years after the operation, and I believe is still alive.

Jan. 3, 1846.—This patient left the hospital to-day quite well. There is a very small aperture, about the size of two split peas, in the roof of the mouth, just anterior to the palatine process of the palate bone. This has been covered with a silver plate and sponge, and the lad speaks as well as ever. There is very little deformity of the face.

LECTURE XLII.

On Hernia.

Gentlemen,—Since our last meeting I have had several interesting cases of hernia under my care, to which I must call your attention. No two cases of hernia are exactly alike; they all have their individual characteristics. Almost every fresh case teaches you some new point in the treatment of this wide-spread ailment. It is not one of those surgical diseases that, when you are in practice for yourselves in the country, you can shift on to the shoulders of another. You will be required and expected to act promptly. Upon the accuracy of your judgment, and the skill of your hands, will often rest the life of your fellow creatures. I feel, therefore, that no apology is necessary for bringing these cases before you.

S. W——, aged sixty-three, publican, was admitted on September 28, into Abraham's Ward. For several years he had noticed a small painless compressible swelling in the right groin; when and how it first appeared he did not know. He never suspected rupture, and had never worn a truss. On the morning of the 26th, when at stool, he felt a little pain in his right groin, but thought no more of it until, when going up a hill a little later in the day, his attention was again directed to the part by an increased pain there, and he noticed the swelling to be somewhat larger than usual. He also began to feel some pain at the lower part of the abdomen. Fearing he was going to have a "bowel attack," he called in a medical man, who gave him medicine accordingly. He did not mention to him at this time the existence of the hernia.

This simple detail of symptoms reminds me of what I so often met with when I acted as surgeon to the Truss Society—namely, how frequently individuals in the middle and poorer ranks of society suffer from hernial protrusion without being aware of the nature of

that protrusion, or the danger to which it subjects them. This ignorance cannot, of course, be entirely remedied; but if you are aware that it frequently exists, it may induce you to make inquiries which otherwise you might consider needless. Again: you will often find patients aware that they are the subjects of hernia, but attach no importance to it because "it is so small." As examiner to some life assurance offices, where a small additional premium is charged on account of the extra risk arising from the existence of hernia, I often find the proposer object to this on the same ground. But the fact is, a small rupture is more dangerous in one respect than a large one. It is true that it is not so liable to protrusion; it is more easily retained in the abdominal cavity by a well-adjusted truss; but if by any accident it does escape, then it is much more liable to strangulation. The pertinacity with which some women will conceal the fact that they are suffering from rupture—yea, even from positive strangulated rupture, knowing all the while the seriousness of the disease—is perfectly marvellous, as the following fact will prove:—The housekeeper of a public library in the City so successfully concealed the real nature of her ailment from her medical attendants, that she died of unrelieved strangulated femoral hernia. On her death-bed she begged her attendant if she should ever become the subject of the same disease at any period of life to conceal it from her doctors. Her attendant became her successor in the office of housekeeper. Many years after she also became the subject of femoral hernia; and, although she knew that her late mistress had by concealment been the cause of her own death, yet she herself pursued the same course so obstinately, and so successfully, that when I was called in to operate it was too late, as the gut had already sloughed; and thus she fell a victim to her own false sense of modesty. I learned this after her death. The historian Gibbon had an inguinal hernia, which he concealed for many years. On his return to England, in the autumn of 1793, he consulted Sir Walter Farquhar. A part of

the colon, and the whole of the omentum, had descended into the scrotum, which hung down nearly as low as the knees. The sac, which contained fluid, was tapped. A few days afterwards, the 14th of January, 1794, he sank without pain, in the fifty-seventh year of his age.

During the night of the 26th, Samuel W—— continued in a good deal of pain; was restless and sleepless.

On the morning of the 27th, he spoke of the swelling to his medical attendant, who at once recognized it as a rupture, and made two or three attempts to return it by the taxis, but failed; nor did he succeed with the aid of the warm bath. The patient ate nothing during the day; in the afternoon sickness of a bilious character came on; the abdominal pain increased, and continued during the night, so that he again got no sleep.

On the 28th he came into the hospital. On examination, there was a small swelling, situated just above the middle of Poupart's ligament; not painful when handled; compressible; not transmitting any impulse to the hand when he coughed. The taxis was applied, and also ice, but both failed to reduce it. He had had no sickness this morning, and was not suffering from much depression; but still, although these symptoms were not urgent, Mr. Solly determined to prevent all risk by operating.

In this case, some of the symptoms were those of strangulated hernia, but not all; the vomiting was not stercoraceous nor feculent; the tumour did not give unequivocal evidence of its intestinal contents or connection with the abdomen; there was no protrusion on coughing. It did not feel so tense or so elastic as a strangulated hernia. In feel it was almost like an enlarged inguinal gland. Nevertheless, I considered it my duty to cut down upon it at once, without waiting for more urgent symptoms, even at the risk of exposing simply an enlarged gland, and, as some good-natured friend might say, my own ignorance. Never hesitate in a case of this kind: if there is a strangulated hernia, the incision may save a human life; if there is not, very little inconvenience will be felt.

The patient declined to take chloroform. One incision, parallel to the mesial line of the body, was made over the supposed position of the neck of the sac, which was found deeply imbedded in adipose and cellular tissue.

The constriction was removed without opening the sac, by dividing a few of the ligamentous fibres at the junction of Poupart's and Gimbernat's ligaments, and the bowel returned. The edges of the wound were then brought together by two sutures, and pressure maintained to prevent a fresh protrusion, by a pad of lint and long roller carefully applied.

The smallness of the sac, covered by an enlarged gland and a considerable quantity of adipose tissue, accounted for the sensation experienced by the touch, and the extreme tightness of the stricture, shutting up entirely all communication with the abdomen, prevented any sense of impulse upon coughing. Therefore, the very circumstance which obscured this diagnostic sign of hernia rendered the case more perilous to the patient. From the smallness of the sac, I suspect that the whole calibre of the gut was not included in it. When this is the case, the symptoms are often so much masked that I have seen cases where the operation has been, in consequence, postponed, until a fatal termination has decided the real nature of the case.

You learn from the report that I did not open the sac. If there is one point in surgical practice, of the propriety of which I am more thoroughly convinced than another, it is that of not opening the sac, as a rule. There are cases, and upon these I will dwell in a future lecture, in which it is not merely advisable, but absolutely necessary, but where you are able to perform the operation without exposing the gut, I am sure you increase the chances of a favourable result at least tenfold.

This operation is not as easy as it appears, and when you first attempt it, the probability is that you will not succeed. You will find it easier if you use the common probe-pointed bistoury than with the long probe-pointed hernia knife, and the bistoury is the safer instrument to use. I firmly believe that in this case the mode of performing the operation just turned the balance between recovery and death. As you will perceive, from the subsequent history of the case, his life trembled in the

balance, and a very little more in the adverse scale would have sunk it on the wrong side.

Towards evening sickness came on, and continued during the first part of the night. Half a grain of hydrochloride of morphia, with two grains of calomel, were administered, and in six hours the calomel repeated without the opium.

Sept. 29th.—Bowels not open. He is feeling no particular pain in the abdomen. To have a grain of calomel and a quarter of a grain of opium every six hours. Towards evening sickness returned. He was ordered bicarbonate of soda, half a drachm; and hydrocyanic acid, two minims; peppermint water, one ounce, immediately. This, however, did not allay the sickness, which continued nearly the whole night, and in the morning (30th) assumed an almost fecal character; this, however, ceased, and towards evening it became again more bilious. Bowels not open.

Oct. 1st.—He was getting depressed from the continuance of the sickness. Abdominal pain also increased. A common enema was administered by Mr. Solly's direction, a mustard poultice applied to the surface of the abdomen, and afterwards the stone fomentations. The enema was returned, and the bowels were unopened by it. He had, however, no return of the sickness.

I must direct your attention to the employment of an enema in this case. As a general rule, do not give aperients after the operation for hernia, or use enemata. In almost all the cases of strangulated hernia which come to the London hospitals, purgatives have been previously given *ad libitum*. In truth, so charged are the guts with these powerfully persuasive medicines, that, after the mechanical obstruction to the feculent discharge has been removed by an operation, down come the alvine secretions like a torrent, and your patient is positively washed into his grave by a super-cathartic diarrhœa.

Your after-treatment must, then, in some measure, be regulated by what has been administered previous to your treatment. Generally speaking, you will find opiates more called for than cathartics. After I have finished with this case, I will detail one that occurred last season in illustration of this treatment. In ordering the enema, in this case, I did not do so because I was anxious to see the bowels opened, and that most substantial of all proofs rendered, that the operation, as an operation, was successful, but because the continued

vomiting was evidently endangering, by its depressing effect, the life of my aged patient. Indeed, at this time, his whole condition was so critical, and his symptoms so threatening, that an intelligent practitioner from the country, who saw him with me, could not help saying that his end was not far off; and was not a little surprised when I told him, when we met again during the following week, that he was convalescent. The enema arrested the sickness, and proved its usefulness.

2nd.—Bowels still unopened. Two ounces of compound senna mixture, and enema repeated. When this was rejected, the contents of the lower bowel were evacuated. No return of sickness.

3rd.—Passed a better night. Enema repeated. Copious motion followed, and twice afterwards. To take compound rhubarb pill, ten grains, every night.

From this date his recovery has been uninterrupted: bowels regularly open—rather too much so; so that he only takes the aperient pill now and then. The wound has not healed by first intention, but is rapidly filling up by granulation. He has since left the hospital quite well, with a well-fitting truss adapted to the opening.

The next case to which I call your attention in connection with the subject of hernia is also one that illustrates the advantage of not opening the sac, nor using cathartics immediately after the operation, and not considering a case hopeless though the patient is almost moribund before you commence your operation.

Dennis B——, aged thirty, a tailor, was admitted on the 2nd of March, 1857, at 4.30 P.M., with an inguinal hernia on the left side. He stated that he had been the subject of hernia for the last twelve years, but that he had no trouble with it till five days previous to his admission, when he could not return it. Symptoms of strangulation appeared on the second day, that is, on the 27th of February, in the form of stercoraceous vomiting.

The hernia, fortunately for him, had not been interfered with previous to his admission. I say fortunately, for the great fatality which attends the operation for strangulated hernia in hospital practice is mainly to be attributed to well-meant but most injurious persistence in the use of the taxis, before they are sent to the

hospital as a *dernier ressort.* He had taken a little medicine given him by a chemist, but without its being productive of any result.

When admitted, he appeared to be almost in a dying state. His pulse could scarcely be felt at the wrist; his countenance was haggard and anxious; he could scarcely answer any questions, both from inability to understand and difficulty in articulating.

The tumour, which was about the size of an egg, was tense and tender to the touch, but the skin was not discoloured. Ice was applied in the first instance, but this, in his semi-conscious state, he endeavoured to remove.

When I first saw him, shortly after his admission, I soon found that the sac was far too tender to admit of any continued attempt at reduction by the taxis, and I dare not touch him with a knife, as I thought that the loss of even a few drops of blood would extinguish the feeble flame of life, which was then flickering in the socket. I ordered him some brandy, to be given every ten minutes or quarter of an hour; and I saw him again in a couple of hours. He had now rallied; the pulse had become tolerably distinct, and he was a little more conscious. Under these circumstances, I determined to operate. The operation might save his life; without it, there was no chance. A surgeon is not justified in considering for one moment what may be the effect on his reputation if it fail.

I proceeded in the operation in my usual way: nipping up the skin and superficial fascia so as to form a fold transverse to the neck of the sac. A pointed knife thrust through the fold divides it at once. The pain of such incision is much less and more rapid than the old method of cutting down on the surface of the sac. This plan, however, as I have already stated, is not adapted to cases which have been operated on before at the same spot. This incision laid bare the fascia propria, or spermatic fascia, which being divided enabled me to liberate the stricture without opening the sac. The wound was brought together by sutures, a

pad of lint and roller was applied, and more brandy cautiously administered. About half an hour after the operation he became delirious, and was obliged to be retained in bed by force. Was ordered half a drachm of tincture of opium immediately, and to be repeated in four hours if necessary. He continued in this state till 10 P.M., when he fell asleep. Pulse fuller and softer.

March 3rd.—He has slept the greater part of the night, and this morning appears to be still slightly under the influence of opium, being drowsy and his pupils contracted. Pulse much improved. —Evening: Seems a good deal better. Countenance less cadaverous; pulse still improved; does not complain of pain, but is very thirsty; takes his nourishment pretty well.

4th.—Better this morning; does not complain of any pain, and the abdomen is not tender when touched; wound looks healthy. Ordered, two grains of calomel and half a grain of opium every six hours.

6th.—The bowels were open, for the first time since the operation, to-day—the fourth from the date of its performance.

7th.—Going on well; the bowels have been again relieved this morning.

23rd.—Convalescing rapidly; the wound has quite healed.

30th.—He has now his truss, gets about the ward, and will be presented to-day.

There are still several cases of hernia, the details of which are interesting, to which your attention shall be called at our next meeting.

LECTURE XLIII.

On Hernia.—*Continued.*

Gentlemen,—Continuing the subject of hernia, I have a few more cases to relate to you, which illustrate some practical points in the treatment of this chameleon-like disease. The ruptures, as they are called in popular language, though there is nothing really ruptured in their production, which I spoke of in my last lecture, were protrusions through natural openings in the abdominal walls. The first came through the aperture from the femoral vessels; the second through the inguinal ring, the exit door of the spermatic cord. But the hernia to which I have now to call your attention is one which has escaped from the belly in consequence of a deficiency in the walls of that cavity, caused by their partial destruction, and the operation which I performed was not to relieve a strangulated gut, but to supply the defective wall, and thus endeavour to prevent the future descent of the hernia. This form of hernia is called, in distinction to the inguinal, femoral, umbilical, and other herniæ which protrude through natural openings, a ventral hernia, for the radical cure of which the operation was intended.

Large Reducible Ventral Hernia; Operation.—Elizabeth H——, aged twenty-nine, admitted into No. 16, Queen's Ward, May 6th, 1857. She states that a week before her last confinement but one, she received a blow in the right iliac region, of which she took no more than a casual notice at the time; but, after her confinement, she found that an abscess was forming in the parietes of the abdomen, just above the right groin, which in six weeks opened, and discharged a large quantity of matter. Before it had healed, she began to get about and attend to her ordinary duties, and, simultaneously with its healing, a swelling commenced in the part, which soon attained a very large size; increasing if she stood much, and subsiding on her lying down. Just before her last confinement it

attained its maximum size, the discharge also increasing in quantity, and the discharging surface in extent. Since this confinement it has remained tolerably stationary, and the greater part of the sore has healed, leaving on the surface four small ulcers. Her general health does not appear to have suffered much. She could never wear a truss with any efficiency or comfort, from the large size of the rupture.

On admission, a large ventral hernia occupies the right iliac region; the integument ulcerated at four points; the bowel returns completely when she lies down, and leaves a large loose bag of skin. She had weaned her infant on the day of admission, and there was a good deal of pain, redness, heat, and swelling affecting both mammæ, so that for the first few days no operation was attempted. One scruple of powdered rhubarb with calomel was ordered, and zinc ointment to the sores.

On the 23rd, the milk having "dispersed," and the sores being healed, Mr. Solly dissected off an elliptical piece of the integument, embracing nearly the whole of the loose skin left, when the bowel was returned. At two points where the peritoneum was completely adherent, corresponding to cicatrices externally, that cavity was opened, the edges of the skin were afterwards brought together by nine sutures, and strapping, and a compress and roller applied. Two grains of calomel and one grain of opium were given her soon after, and repeated in the evening, and other antiphlogistic measures adopted.

24th.—She complains of some but not much pain on pressure over the abdomen; the pulse is quiet, the tongue pale, but not much furred. She has vomited once, and feels somewhat better for it.

26th.—Three sutures were removed. No symptom of peritonitis has occurred. She feels comfortable, though depressed.

27th.—The remaining sutures were removed; the wound is healing favourably.

28th.—She complains of a little cough. On examining the chest, some dulness was discovered beneath the left clavicle. A cantharides blister was applied.

31st.—The blister has relieved the cough considerably. The wound is nicely granulating. A pad of lint, strapping, and roller, are the local measures adopted.

June 9th.—Cicatrization proceeding well, except at two points, where there seems to be some burrowing, but nothing extensive; graduated compresses were applied.

15th.—Extent of burrowing much reduced.

22nd.—A truss has been fitted; and though cicatrization is not complete, by her own desire she was made an out-patient, as she wanted to go home to attend to her family. Her general health is much improved.

The truss completely retained the hernia within the abdomen, which it did not previous to my operation.

So far, therefore, she was a great gainer; but at the same time it could not be considered a radical cure. This is a subject to which I shall again direct your attention, when we have any fitting cases in illustration of the operation.

The next case is interesting chiefly from the early age of my patient, who was at the breast, and only a year and three months old. The operation has been performed much earlier. It also adds another to the list of successful cases in which the sac was not opened. Its complication with hydrocele offers another practical point for attention.

It is difficult to ascertain how early this operation has been performed. Neither Sir A. Cooper, Mr. Lawrence, nor Mr. Teale, in their works on Hernia, mention the earliest period of life at which the operation for hernia has been performed. Mr. Lawrence has, however, informed me that he has operated successfully on a child under two months, and that he performed the operation easily, without opening the sac. Mr. Curling, in 1853, operated successfully at nine weeks, on a male infant, for strangulated inguinal hernia, and divided the stricture external to the sac. The case went on favourably, and at the end of a week the child was taken out of the hospital, with the wound nearly healed, though Mr. Curling writes me word that shortly after its discharge the child was attacked with erysipelas, and died. The fatal termination only shows how important it is in these cases to keep them under your care, if the obstinacy of the parents does not interfere, until the cure is quite complete.

Strangulated Inguinal Hernia; Operation. — Richard M——, aged one year and three months and a half (at the breast), was admitted into Queen's Ward, September 25th, 1857. His mother states that when he was eight months old he fell out of bed, and immediately afterwards she noticed a swelling in the scrotum, subsiding when he lay down, and reappearing when put on his legs. The hernia is complicated with hydrocele, though when this first appeared his mother did not know; indeed, she did not know that there was a hydrocele at all. He never wore a truss. His general health has not been affected, except that he wanted to pass urine oftener than he should, and seemed in pain until he had passed it.

On the 23rd, without any assignable cause, the rupture became much larger than it had been at all, and the skin of the scrotum became red and very tender to the touch. A medical practitioner, who was called in, ordered the application of wet rags in the evening of the day (23rd). The bowels were once open, but slightly. He was very restless during the night. The following day the redness, size, and pain of the scrotal tumour were undiminished. He continued very restless, did not care for the breast, and always rejected any milk he took. During this night he continued sleepless, or dozing only by fits, and frequently vomited, the matter ejected assuming a fecal character; the bowels unopened. On the following morning he was brought to St. Thomas's Hospital.

No attempt at reduction had been made before he came in. To this circumstance—namely, the fact that the hernia had not been interfered with, or pressed by the hand of the surgeon—I attribute the recovery of my patient, though the operation was not performed until forty-eight hours had elapsed from the date of strangulation. I was sent for immediately on the admission of the child. The extreme tenderness and inflammation of the scrotum forbade all attempt with the taxis, and I immediately proceeded to the performance of the operation.

On admission there was an evident descent of bowel through the right inguinal canal, and the taxis failed to return it. A small hydrocele occupied the lower part of the tunica vaginalis on the same side. Chloroform was administered, and the operation performed at noon. The constriction was divided without opening the sac, and the bowel returned. The contents of the hydrocele were also evacuated. The edges of the wound were brought together by three sutures, and a pad and roller applied. For the remainder of the day he lay quiet, for the most part dozing; once he was sick. He took the breast pretty well. Towards evening five minims of the syrup of poppies were given. He slept comfortably during the night.

Sept. 26th.—No return of sickness; bowels unopened; stone fomentation applied to the belly. In the night bowels well open, and again on the morning of the 27th.

Since this date the child has progressed very favourably, though

the union of the wound has been retarded by his frequent screaming. Since the operation he has passed his urine quite well.

Oct. 6th.—The bowel came down to-day, but the slightest pressure was sufficient to return it. A truss was ordered. The wound going on well.

10th.—Wound perfectly healed. The child quite well.

In this case you will remark that the bowels were not opened till about thirty hours had elapsed from the date of the operation. I gave no aperient, simply a small dose of opium in the form of syrup of poppies.

M. W——, aged 45, an unmarried lady, of spare habit and quiet disposition, had a slight paralytic seizure, from which she recovered.

July 6th, 1828.—Walked rather farther than usual. On the same day was sick at dinner.

July 7th.—Constipation; pulse 80; skin cool. No relief from aperients.

July 8th.—Bled to the amount of 6 oz. Aperients and enemata. No relief.

July 10th.—Constipation unrelieved. Vomiting of stercoraceous matter.

July 11th.—She died. *Sectio Cadaveris.*—Slight peritonitis, particularly towards the ileum, a portion of which gut had descended into a hernial sac, formed where the vessels and nerves issue through the upper and outer part of the foramen ovale of the pelvis. This sac was big enough to admit the point of the forefinger being inserted into it, and its edge was circumscribed with a sharp margin of fascia. A portion of the intestine, about the size of a hazel nut and of a dark mulberry colour, had become entangled in this small sac. There were no adhesions, and it slipped out of the cavity with a pop. The whole calibre of the gut had not been incarcerated.

LECTURE XLIV.

On Hernia.—*Continued.*

Gentlemen,—On Friday last, a case of strangulated hernia was admitted on which I was obliged to operate. There was nothing peculiar in the case; but it will answer my purpose to bring before you some cases and practical points connected with this important subject.

In my last clinical lecture, I adverted to the scanty records we have of the earliest age at which the operation has been performed. Since then my attention has been called to an account in the *Lancet* for April, 1857, of a successful operation on a child, just over seven weeks old, by Mr. Raynor of Uxbridge. It is not stated whether the sac was opened; but, as nothing is said to the contrary, I conclude it was.

Strangulated Inguinal Hernia; Operation.—Robert H——, aged 35, labourer, admitted into No. 9, Abraham's Ward, February 12th, 1858. He states that he has had a rupture ever since he can remember anything; but that he never wore a truss until two years ago. He has been in the habit of leaving it off at night.

When you adjust trusses on your patients, if they are adults, you may give them leave to remove them at night; but you must always warn them not to do so until they are in the recumbent posture, and impress upon them the importance of putting their hands over the place if they cough, or are obliged to get up during the night. If your patients are young—I mean below the age of puberty—then you should insist upon the truss being worn night and day, as by such continuous pressure you may often cure the disease by obliterating the neck of the sac.

On Friday, at midday, he came downstairs without having put on his truss. [I do not think he will be foolish enough to do so again.] Not feeling well, he was staying at home for the day. His attention was soon drawn to the rupture by its becoming painful; and, on attempting to put it back, he found himself unable to accomplish it. He spent the greater part of the afternoon in attempting its reduction; and, at 5 P.M., went to a surgeon, who also failed. This surgeon then sent for another, who also was unsuccessful. They sent him to the hospital at 8 P.M.

On admission, the taxis was employed, both before and after a warm bath, but to no purpose; then the ice-bag. After this Mr. Solly was sent for, who, finding the scrotum exceedingly tender, determined on operating at once, which he did at 11.30 P.M. The sac was not opened. Chloroform was used. After the operation, two grains of calomel, and half a grain of opium, every six hours.

Feb. 13th.—Has had no sleep, which is often the case after chloroform, but is feeling comfortable; complains of a little tenderness on pressure in the right inguinal region. Ordered a blister.

14th.—Sutures removed; wound healed by first intention; feels comfortable; no unfavourable symptom.

15th.—Bowels opened twice copiously. Convalescent.

He will leave the hospital in a few days. I attribute the rapid recovery in this case to my not opening the sac, and the early date of the operation after the strangulation occurred. The medical gentlemen, whoever they were, deserve credit for their promptitude in sending him to the hospital without delay.

To this case of hernia, which you have had the opportunity of witnessing, I may add two others which, though they occurred a little while back, are so instructive that no apology is necessary for their introduction in this place.

Margaret T——, aged fifty-eight, admitted under my care, December 17th, 1854, into Queen's Ward, St. Thomas's Hospital, at 11 P.M. Single woman, hard-working, large and stout, weighing about sixteen stone, lymphatic temperament. She states that her health has been pretty good, excepting a winter cough. About five years ago, whilst in bed, and after a severe fit of coughing, she first noticed a small tumour at the umbilicus, about the size of a nut. She did not have medical advice; and though told by a neighbour that it was a rupture, she did not heed it. From that time to the present she took no notice of it, though it has gradually increased to the size of an egg. Her bowels have always been regularly opened, and she has never suffered even temporary inconvenience

until about twenty-four hours previous to her admission, when, with a sudden and severe pain, the tumour increased in size.

Her own medical treatment of herself consisted of going to bed, being fomented, and taking a dose of castor oil. The oil was immediately rejected, and the swelling becoming painful towards the afternoon, she sent for a medical man, who of course, you will conclude, attempted to return the vagrant gut, and send it home by pressure into its natural cavity, the abdomen. No, he did not touch it, if the statement of the patient is correct. He looked at it, and ordered some more aperient medicine, which, like her own dose, was rejected.

During the whole night this poor soul continued to vomit, and the tumour becoming more and more painful, he, at last, on the following morning, sent her to the hospital. As I do not know who the medical man was that had charge of the case, my remarks are not personal, but I do hope that each of you, when in practice, will either attend properly to any case of hernia to which you may be called, or send it at once to the nearest hospital.

Dec. 12th, 10 A.M.—On admission, the dresser notes that her countenance was extremely anxious, and she complained of severe pain in the umbilical region. The hernia was plain enough, as large as a man's fist. It was extremely tender, and so painful was the slightest pressure, that the taxis was scarcely attempted. The swelling presented to the touch the irregular knotted feel of omental hernia. The pulse was flagging, though rather wiry; the skin natural; the tongue furred and coated.

Under these circumstances, if the hernia had been either inguinal or femoral, I should at once have proceeded to the operation; but my experience of it in umbilical hernia occurring to old people is so unfavourable, that I always think it right to try the effect of ice to the tumour for a short time, and a mild or gruel enema. I did so in this case, but at the end of three hours, finding no improvement, I proceeded to the operation.

A semicircular incision was made round the left side of the base of the tumour, about four inches in length, dividing the integuments

down to the sac. I then made a small opening in the sac, and divided the stricture on the surface of my finger. I found, as I expected, and had previously mentioned to the pupils, a large mass of omentum with a small knuckle of intestine imbedded in its centre.

The gut was purple, but not gangrenous. The intestine I returned into the abdomen, the omentum I left in the sac. The omentum had evidently been so long out of its natural cavity that to have returned it would have been as bad as inserting any other extraneous substance into the abdomen. I was also afraid, from its appearance, that it might slough, and if so, this effort of nature might be more easily conducted to a successful issue, if the omentum were not within the abdominal cavity, but most assuredly the termination would be fatal if gangrene went on within the abdomen. The edges of the wound were brought together with three sutures, and a light compress of lint retained by strips of plaster. Ordered, calomel, two grains; opium, one grain, immediately; milk diet.

The operation was performed at 1 P.M. The bowels were freely opened at four. At 8 P.M. she went to sleep, and slept comfortably for two hours; she was much refreshed, the pulse improved. No more vomiting.

18th.—Her cough is troublesome, and there is some general tenderness of the abdomen. For the cough I ordered the chest to be painted with the tincture of iodine, to take the cough linctus, and hyoscyamus and grey powder every six hours. In the afternoon, finding her not so well, I ordered, instead of the hyoscyamus and grey powder, two grains of calomel, and half a grain of opium, every four hours. The stone fomentation to the abdomen. In the evening I found the abdominal tenderness greatly diminished. The tongue cleaner; the pulse much softer.

19th.—Decidedly better, but there is a small slough on the surface of the sac. The sutures were removed and a poultice applied. Calomel to be discontinued.

20th.—Slough extended, but there is very little pain; the bowels have been freely relieved; pulse feeble; the omentum exposed and sloughy.

21st.—Has had a restless night. Ordered, twenty minims of tincture of opium; this procured sleep. 2 P.M.—The slough is separating. Ordered, chlorate of potash, one scruple; tincture of opium, five drops; tincture of cardamoms, one drachm, in peppermint water, every four hours, and four glasses of wine.

22nd.—Going on well in every respect; cough much less.

On the 23rd I ordered a slice of meat daily.

On the 29th the whole slough of the omentum had separated, and in about a month the wound had healed, and she left the hospital quite well.

The next case, which I shall relate in the words of my old dresser, Mr. Sweeting, also proves that the

omentum may be left in the sac with advantage to the patient.

History.—He has had hernia for fourteen years, during the whole of which time he has worn a truss, though the tumour has never quite gone back; he has in consequence been wearing the truss on the neck of the tumour.

Now I need hardly say that this was a most dangerous condition, rendering the probability of strangulation much greater than if he had not worn a truss at all. Let me warn you against allowing any of your patients to wear an ill-fitting truss. If after having ordered a truss you find that it does not fit completely, you must assist the instrument maker in altering it, and show him correctly where the pressure is required. This requires a little experience and careful observation.

He has never before had any trouble, as regards his bowels, though several times the tumour increased in size, from vomiting, but the increased swelling has always diminished after a short interval. On Tuesday last (Nov. 7th), six days previous to admission, during a severe paroxysm of coughing, it increased suddenly in size, with severe pain in the abdomen, and sickness. He applied for medical advice. His bowels had not been relieved since the swelling came down, and he was ordered some aperient pills and a draught. These produced no effect. The following day, the tumour still continuing the same, attempts were made to return it by means of the taxis, and a considerable portion (three times as much as is at present down) was returned. This gave him no relief.

Ought not this to warn you of the impropriety of leaving a patient with hernia until you had given him relief? The fact of having diminished the size of the swelling is a matter of no importance whatever if the symptoms remain unrelieved. And a man who would leave his patient in this state under the impression that all was done that could be done, would certainly prove himself to be unworthy of the education he ought to have obtained in his school of surgery.

Up to the time of his admission he has had continued sickness (except a slight interval this morning), and his bowels have not been opened at all. Abdomen has been very tympanitic for the last two days. On Tuesday, when the increase in the rupture took place, it was the size of two fists.

Present state.—On admission he was found to be very much depressed; his hands and feet cold; his pulse small and feeble; but his tongue was not very much coated. He complained of very great pain in the abdomen, and of constant sickness; he was restless, and his aspect peculiarly anxious. He was immediately sent to bed.

On examination a tumour was found in the right groin, the size of a duck's egg, not tense nor painful even on pressure. This condition of the hernial sac, coupled with the great constitutional depression, restlessness, anxiety of countenance, hiccough and sickness, as well as the length of time the gut had been strangulated, made me fear it had become gangrenous. His abdomen, which was very tense and tympanitic, was marked superficially by mustard poultices, &c.

When you are called, gentlemen, to a case of strangulated hernia, I hope you will not leave the marks of mustard poultices on the abdomen.

He vomited two or three times after being removed to the ward, and each time the matter vomited was of a distinctly fecal nature. An injection of castor oil and gruel, which was administered, came away quite colourless ten minutes after being injected, and there was now a good deal of hiccough. Mr. Solly has just seen the patient, and determined to operate immediately.

The enema was ordered and given before I saw him. I mention this because I consider that any treatment, except an operation, in a case of hernia with these symptoms, is useless, and by the delay which it occasions, will render it both dangerous and complicated. In all cases of strangulated hernia with urgent symptoms admitted into the hospital, the surgeon of the week should be sent for immediately. He was removed into the theatre, and the operation proceeded in the usual manner. The coverings of the sac were unusually thick and distinct. On opening the sac, a large quantity of omentum was exposed. I have so frequently dwelt, in these lectures, on the importance of not opening the sac, that you have a right to know why I did so in this case. It illustrates one of the exceptions to the rule. There was great reason to believe that the gut had been so much injured by the stricture, that if not positively gangrenous, it would, nevertheless, be unsafe to return it into the abdomen. So I opened the

sac to see with my own eyes the condition of the intestine.

At first no gut was to be seen, but after extending the incision higher towards the internal ring, a knuckle of intestine, the size of a pigeon's egg, was exposed. This was dark coloured, but firm and sound, not at all gangrenous, as it was feared. The stricture, which was situated at the internal ring, and not very tight, was then relieved, and the intestine returned without difficulty. The omentum, which was firmly attached to the sac by old adhesions, was not returned into the abdomen, but was allowed to remain in the sac.

There has always been some difference of opinion as to the propriety of returning the omentum into the abdomen, of cutting it off, or of allowing it to remain in the sac. It is almost impossible to lay down a rule which will be applicable to every case. When the piece of omentum is small, has contracted no adhesions, and is naturally soft, you can have no doubt regarding its return. But supposing it has contracted extensive adhesions to the sac, as in this case, or that it has become converted into a firm, rough, hardened mass, then I have found it to be the safest plan to leave it in the sac. In one or two cases I have cut it off, and tied the bleeding vessels; but I do not think that those cases have done so well on the average as those where I have left it entire in the sac. I object strongly to a ligature on the whole omental mass. It is a good plan to leave one end of the ligature out of the wound when you tie vessels. The difficulties which attend the management of an omental protrusion adherent to the sac, ought to warn you against neglecting omental herniæ when you first see them. Do not neglect them, but return them into the abdomen at once, and place a truss as soon as possible over the opening. These ruptures produce so little inconvenience, and the inconvenience they produce not being decidedly symptomatic of hernia, but rather like those of ordinary dyspepsia, that patients are not aware that they are ruptured, and medical men sometimes neglect finding it out. The wound was now

closed with sutures and strapping, and a pad and roller placed over all, and he was removed to bed. After returning to bed he vomited once, but he expressed himself as feeling easier, however. Pulse still very feeble. Ordered, calomel, two grains; opium powder, half a grain, every four hours, a blister to be applied to the abdomen.

Nov. 14, 9 A.M.—Much better; was very sick last night (ten or twelve times), and had much hiccough; bowels acted once, about 5 A.M. He is feeble; pulse small, &c., but says he feels tolerably comfortable now. To take powdered opium, one grain; calomel, one grain; mix. To be taken at bedtime.

15th, 10 A.M.—Has had a tolerably good night; bowels have acted twice since last night; pulse 98, quiet, and more power; abdomen much less tympanitic, and less tender on pressure; tongue moist, and but little coated; takes his nourishment well. 2 P.M.—Going on well; bowels have not acted again this morning. 5 P.M.—There is some tendency to diarrhœa. Mr. Solly has, therefore, ordered the calomel and opium to be omitted. Ordered, castor oil, half an ounce; tincture of opium, twenty minims; to be taken immediately. Compound chalk mixture, with opium, one scruple to be taken every four hours.

16th, 10 A.M.—Bowels have acted eight or nine times during the night; they have been quiet, however, since 5 A.M., after having taken five or six doses of chalk medicine; pulse 98, feeble; does not complain of pain; very little tympanitis present. 5 P.M.—Bowels have acted once since the morning; says he feels comfortable.

17th, 10 A.M.—Has had a quiet night; pulse 100, somewhat feeble; bowels quiet; tongue tolerably clean. 3 P.M.—He is complaining of some pain about the wound, especially when he coughs. There is considerable œdema of the scrotum, with a good deal of superficial redness; the edges of the wound are looking angry, and the parts included in the sutures seem inclined to ulcerate. The sutures have, therefore, been removed, and the edges of the wound held in apposition by strapping.

18th.—Has had a fair night; bowels have not acted since yesterday; complains less of uneasiness about the scrotum; the wound seems uniting well. The right testicle is swollen and painful. 3 P.M.—Going on well; Mr. Solly has just seen him.

20th.—Œdema of the scrotum nearly gone; some swelling of the right testicle; wound looking well, and uniting rapidly; pulse 98, improved in power; bowels acted once last night.

21st.—Has had a good night; bowels acted once; wound looking healthy; right testicle softer, and giving less pain; pulse 90, quiet, but feeble; he complains of feeling low, and wishes for meat. To have full diet.

24th.—There is a free discharge of healthy pus from the upper part of the wound; pulse still feeble; bowels comfortable.

Dec. 1.—Not quite so well this morning. The bowels have been relaxed again, and he is low and feeble. To take compound chalk powder and opium, every four hours.

2nd.—Bowels more quiet; pulse stronger; tongue clean; wound looking well; discharge much less.

6th.—Complaining very much to-day of uneasiness about the scrotum. There is considerable swelling about the right side, with distinct fluctuation. 2 P.M.—Mr. Solly has just seen him, and made an opening into the scrotum, when about eight ounces of extremely offensive pus were evacuated. The wound almost healed; the purulent discharge has ceased during the last two days. 5 P.M. —Pain and uneasiness much relieved. Free discharge from the opening.

15th.—There is a thin serous kind of discharge from the opening in the scrotum. Only a small portion of the wound not healed.

18th.—General health much better. Wound going on well.

26th.—Mr. Solly ordered a truss for him to-day.

Jan. 3.—He is now quite well, and only waits for the truss before he discontinues the recumbent posture. The wounds are quite healed. His bowels act regularly; tongue clean; appetite extremely good.

When you have performed the operation for strangulated hernia, it is necessary to apply some kind of pad over the wound, to act as a truss and prevent a recurrence of the disease. This is especially necessary if, as in this case, your patient is troubled with a cough. But you must be careful not to exert too great pressure, nor to leave it on for more than twenty-four or thirty hours at a time, and not even so long as that, unless you find the surrounding skin perfectly sound, *i.e.* without any blush of inflammation, or tenderness. I advert to this on the present occasion, because I think it quite possible that the abscess in the scrotum might have resulted from this pressure, which did not at the time appear to be more than was absolutely necessary to prevent the recurrence of the hernia, but which, from the depressed condition of the patient, rendered him susceptible of suppurative inflammation. But whether the pressure was undue or not, there is a practical hint to be derived from the occurrence of this scrotal abscess.

Cases in which the symptoms of strangulated hernia

are simulated more or less closely by tumours of other descriptions are, as well from their intricacy as the frequency of their occurrence, full of interest to the practical surgeon. Their correct diagnosis is often extremely difficult, and, even to the most experienced, not unfrequently quite impossible. Real herniæ often present very perplexing modifications of the symptoms by which they are usually so well denoted; one or more of the well-known group may be either ill developed, entirely absent, or even reversed. Thus, in some cases, the patient may have experienced no vomiting, or may be quite free from local tenderness, and yet the urgency of the other indications may be such as to demand immediate interference. Constipation, again, is a sign which is subject to frequent variation, and cases not very rarely occur in which the bowels throughout the whole course of the attack act almost as freely as natural. This latter circumstance is easily accounted for by the fact, that in the subjects of habitual costiveness large quantities of fecal matter are liable to accumulate in the lower bowel, the expulsion of which is very likely to be effected either by the intestinal commotion caused by the accident or the measures resorted to by the surgeon. Such being the sources of difficulty and confusion, it is matter for congratulation, that the operation for the relief of strangulation is one comprising in itself so few elements of danger, and that the practical rule—*when in doubt, operate*—is one which involves little or no risk to the sufferer. The exposure of an enlarged inguinal gland, or the opening of an abscess, or an encysted hydrocele, does not in any way add to a patient's danger; if the diagnosis chance to be correct, the operation confers upon him immeasurable benefit, and if it be wrong it leaves him in a condition no worse than before.

In the following interesting case the symptoms were certainly as perplexing as they can well be imagined. For the notes of it we are indebted to Mr. Morton, the dresser of the patient:—

Thomas Hyatt, aged 22, a lighterman of moderately temperate habits, and apparently in robust health, was admitted August 17,

1852. He stated, that nine months previously he had, after a fall with his legs across a rail, perceived for the first time a small and painless swelling in the right scrotum. As it gave him no inconvenience, he subjected it to no treatment; it remained without ever diminishing, in exactly its original condition, until a week ago, when, on the morning after an unusually hard day's work, with an extra allowance of beer, he suddenly found it much increased in size, and slightly tender, though not at all reddened. After a day or two, the tenderness subsided, but the swelling still remained. When admitted, the right side of the scrotum presented a large tumour, the upper part and neck of which was elongated and very hard, whilst at the lowest point the testicle could be felt surrounded by a fluctuating medium which transmitted light. In the upper part of the swelling, which was separated by a definite line from the lower part, no fluctuation could be detected; it felt firm, and was not transparent. No impulse could be detected on coughing, and no decrease took place in the recumbent posture. The scrotum was inflamed, and the whole very tender. There was also a slight degree of superficial tenderness over the whole abdomen; but he was able to bear firm pressure in all parts. During the last few days, he had been repeatedly sick, and his stools, though copious, were very watery. He had some thirst, and was unable to sleep at night on account of severe griping pains. Pulse 88, full, and tolerably firm; tongue somewhat coated.

℞ Pulv. rhei cum cal. ℈i. statim; Mist. sennæ co. pro re natâ sumend.

August 18.—Has vomited this morning; in other respects much the same as yesterday. Hirud. xx. scroto applic.

19th.—This morning he again vomited, but, as before, without much uneasiness at the time; afterwards, however, he complained of severe abdominal pain. The tenderness on slight pressure is increased, and is more decided in the right iliac region than in other parts; firm, steady pressure, however, appears rather to relieve him. The abdomen is very tympanitic, and he is much troubled with flatus. The countenance is anxious; tongue coated; pulse 98, smaller than yesterday, and rather hard; thirst great. The bowels acted this morning, and the stool, though very watery, contained some fecal matter. His urine being retained, a catheter was introduced, and about a pint drawn off. Mr. Lankester, the house surgeon, having been requested to see him early in the morning, prescribed for him a draught containing ether and laudanum, after taking which he evacuated much flatus, and appeared relieved in some respects; the tenderness, however, remained. At noon, he was again sick, and perspired profusely. About 2 P.M., the symptoms having returned, the draught was repeated, and warm fomentations applied to the abdomen with some benefit.

20th.—He has slept a little in the night, but again vomited this morning. He feels, on the whole, more comfortable; has less pain in the abdomen; but the same kind of superficial tenderness still exists. The bowels have been freely open. The scrotum con-

tinues inflamed, and very tender. Mr. Solly ordered him to have ice applied to it, instead of the cold lotion which had previously been employed.

21st.—He again seems easier this morning, and has slept very fairly in the night; he is, however, still troubled with vomiting. The tympanites and abdominal tenderness are both slightly lessened. The scrotum, also, is much less tense, and he has very little tenderness in it. Pulse 98, small, but not hard; skin moist; tongue coated. The bowels are open, and the stools watery.

℞ Cal. gr. ij.; Opii. gr. ss.; Antim. pot. tart. gr. ¼; sextis horis sumend. Cold lotion to the scrotum.

22nd.—The vomiting again recurred this morning, and continued through the day: as usual, however, unaccompanied by any great amount of pain or suffering. The abdominal tenderness is somewhat augmented, though still not nearly so decided as it usually is in cases of peritoneal inflammation. Pulse 112, small, and somewhat hard. Rep. pil. sine antim.

℞ Haust. effervescent, p. r. n. sd.

23rd.—Has slept a little in the night, but is still troubled with vomiting. About noon he became worse, the abdominal tenderness being increased, and more markedly so in the right iliac region. Mr. Solly accordingly now determined to examine the contents of the scrotal tumour; the propriety of doing which had, on a previous occasion, been negatived by the unaccountable character of his symptoms, and the difficulty there was in supposing them to be dependent on intestinal strangulation. On making the incision there gushed out a considerable quantity of very offensive, ill-formed, purulent matter. The finger could be passed freely up to the abdominal ring, and no intestine could be felt. No relief whatever was afforded by the operation. The vomiting continued, and the pain in the abdomen increased; the countenance became more and more anxious, and he suffered much headache and distress. Pulse 124, hard and small. A blister was ordered to be applied to the abdomen.

At 9 P.M. he had become still worse. Pulse very rapid, and tremulous; skin covered with clammy perspiration, and legs cold. As he was teased with almost constant hiccough and vomiting, a draught containing acid. hydrocyan. dil. ♏v. was ordered, but his stomach did not retain it. He continued to sink, and died early on the following morning in an extreme agony, and crying out with excessive pain.

Post-mortem Examination.—The peritoneum exhibited in all parts the results of acute inflammation; its layers were coated with effused lymph, and in its cavity was contained a large quantity of dirty semi-purulent fluid. The intestines in the neighbourhood of the right internal ring were bound down by old adhesions, but not in such a manner as to have occasioned any obstruction to the passage of fecal matters. In the scrotum was found the remains of the much-thickened hernial sac, which had been laid open at the time of the operation. Its communication with the peritoneal

sac was almost entirely closed by lymph, so that the fluid could not be forced from it into the abdomen. In the lowest part of the scrotum was found the testicle, in the tunica vaginalis of which was a quantity of clear serum, thus accounting for the transparency which had, during life, been observed in the most depending part of the tumour. No communication whatever existed between this and the hernial sac.

After a most careful search, no explanation of the occurrence of the peritoneal inflammation could be discovered, all the viscera appearing to be in a condition of health. The case would seem to have been one of a low form of idiopathic peritonitis, and the puzzling scrotal complication to have been due to the simple fact, that a pouch of peritoneum there existed, in the shape of the sac of an old hernia, and which, as was to be expected, participated in the inflammation of the rest of the membrane. The difficulty in diagnosis was caused by the obscure history of the original swelling, and by the circumstance, that neither the character of the pulse, nor the degree of the abdominal tenderness, was such as usually accompanies acute inflammation of the peritoneum.

The next case of strangulated inguinal hernia on which you saw me operate on Tuesday evening, is reported by Mr. Orange, dresser.

William A——, aged seventy, has had an inguinal hernia on both sides, for which he has worn a double truss for about five and twenty years. The hernia on the left side, which is the largest, has never given him any trouble; if from any cause, it descended, he has easily returned it, thus showing that the opening was large; not so with regard to the right hernia, for, on more than one occasion when it had descended, it has given him much pain to replace it.

Now, this little statement of the patient may serve to impress upon your minds that, *cæteris paribus*, a small hernia is more dangerous than a large one. It has often happened to me, when examining candidates for insurance, that they tell me they have a rupture, but that as it is a very small one they suppose it is of no importance, and they are generally very much astonished when I tell them that it is more dangerous to life than a large

one. I always add, that they must be very careful never to leave off the truss, except in a recumbent posture; and if they are obliged to get out of bed during the night, always to place their hand over the opening. I do not mean to say that a large hernia is not more liable to escape than a small one, but I have scarcely seen a hernia which our best instrument makers in London could not command. I speak more particularly of Mr. Bigg and Mr. Lindsay, as I have seen more of their workmanship. In some of the large herniæ this has been extremely difficult, and the spring requires to be so strong that at first the sufferer complains bitterly of the pressure; but you must encourage such to bear it, as, after a few days, the discomfort passes away. For the last eleven years I have been surgeon to the National Truss Society, during which time four thousand persons have received trusses. In the application of the truss you must, however, be very careful that it does not press upon the brim of the pelvis, as this will be extremely and unnecessarily painful; in fact, the truss has no business there at all: it ought to be over the external abdominal ring, and above the linea ilio-pectinea. In some of these large herniæ it is a good plan to lengthen the pad by means of a tongue, carried down into the perinæum, and confined with a strap behind. The danger which a patient incurs by leaving off a truss at all, is shown in the present instance; for we find that he broke his truss, and endeavoured to supply its place with a common bandage.

Last Friday, that is, three days ago, the gut descended when getting up from his dinner, his abdomen being distended with his meal. He thought it would return as usual, and he did not apply for medical relief until this morning, when, he says, he was driven to it by pain, vomiting, and constipation, and the matter when he vomited, being very offensive, alarmed him. His medical adviser gave him a dose of castor oil, and applied the taxis; this failing, he was very wisely sent off to the hospital.

On examination Mr. Orange reports:—

"The hernia was round and about the size of a hen's egg, very hard, situated exactly over the external abdominal ring. It was

not very painful on handling, but it was so hard as scarcely to admit of any movement, and no impulse was given on coughing. The skin over the part was of the natural colour; pulse 96, regular and soft; tongue slightly coated with brown fur. The patient was placed in a warm bath and the taxis applied."

This, I am happy to say, was not continued long; the house surgeon and dresser sent promptly for me. I say happily, because the great reason why the operation for hernia is so frequently fatal in our London hospitals is, that the operation is deferred too long. The patient has frequently had the taxis applied by four or five different persons, at least, before he comes into our hands. There is the medical man to whom he first applies, then his assistant, then his apprentice, if the young gentleman has begun to walk the hospitals, and when the patient comes here he is subject to it by the house surgeon and at least one dresser. The consequence of all this handling is, that the gut becomes more and more congested, next inflamed, and sometimes at last gangrenous. I have found by experience that when a man has long been the subject of hernia, he generally manipulates that hernia better than even the best surgeon, as regards directing its course back again into the abdomen, and that if the patient himself cannot return it, it is very seldom that the doctor can. Of course there are exceptions to every general rule, and these observations do not apply to recent hernia. I have often been amused to see the various positions ruptured individuals will put themselves into to effect their object. They will often raise the pelvis above their head, so as to remove the abdominal viscera from the lower part of the abdomen; they will bend their thighs back upon the belly, and grasping the tumour well with both hands, force it back through the abdominal ring. As a rule, with regard to the necessity for the performance of the operation, you will find that if the sac is excessively tense and hard, and the patient cannot bear any firm pressure on it without wincing, you may be sure there is no time to be lost.

With regard to the operation, I may first call your

attention to the way in which I made my first incision on this occasion ; not that I pretend to any originality in it, but you will find it a good plan to follow. You might observe that I nipped up a fold of skin over the neck of the tumour ; one extremity of the fold I held in my left hand, the other was held by Mr. Fernie, our house surgeon ; and then, running a sharp-pointed bistoury through it, I had at once an incision about an inch and a half long, through the skin and superficial fascia. This incision is thus made more rapidly and with less pain than one with a scalpel cutting down over the face of the tumour ; and in hands unaccustomed to operate there is less danger of opening the sac unintentionally, or even the gut, as I have seen occur before now. You should next divide the other coverings of the sac, using the knife horizontally, having nipped up the tissues in succession with the forceps until you reach the peritoneum. Do not divide this—that is, do not open the sac, if you can avoid it, but divide the stricture external to it, as you saw in my operation on Monday last. The danger of the operation is much less if you do not expose the intestine. I have no hesitation in saying that, as a general rule, it is much better to avoid opening the sac. You might observe that as soon as I had exposed the sac I felt for the stricture with my little finger, and upon that divided the stricture. Always use your finger for this purpose in preference to a director. You will find that the probe-pointed knife is better for this purpose than the ordinary hernia knife ; you are less liable to injure the sac. When you first attempt to perform this operation you will not find it so easy as it looks to divide the stricture external to the sac, and I cannot tell you exactly why. There is a knack in it, which, however, you will soon acquire with a little practice. After having divided the stricture, you gently press the sac between the finger and thumb, and if the contents all *pop* back, if I may so express it, leaving the sac quite empty in your fingers, you may be satisfied with the result ; but if you do not empty the sac, feeling that

something remains behind which you cannot get rid of, you should then open it to discover the cause. Most probably you will find an adherent intestine or portion of omentum; or if the contents of the sac suddenly give way, and the sac feels soft and not empty, you may apprehend a gangrenous intestine, and then you must open the sac. If you are operating in an old-standing hernia, where the patient tells you he has never been able to return the whole, you may be expected to be obliged to open it.

The first time that a pupil sees an operation for hernia he is sure to mistake the sac for the gut, they are so much alike. How are you to distinguish them? There are certain circumstances to attend to which will assist you, but nothing except frequent personal observation of these operations will make you confident of the distinction. Never lose an opportunity while you are here of attending them. When the sac is opened there is an escape of fluid in ninety-nine cases out of a hundred, sometimes more and sometimes less; if therefore there has been no such discharge, you may be nearly certain that you have not opened it; but this is not without an exception, for I have opened a sac which has been so tensely filled by the gut that there was no room for any fluid. The direction of the blood-vessels on the peritoneum is different from those on the gut; they meander about in an arborescent, irregular form. On the surface of the intestine they run at right angles to the canal. Then again, if it be intestine, by drawing it gently forward, you will see the mesentery, but you cannot move the sac from its position.

With regard to the treatment of the wound after you have completed the operation, bring the edges well together; raise them, and with another hand to assist you, put in two or more sutures to keep them in close apposition. Over that place a piece of lint, and then the strapping, as you can thus keep the edges better in contact than with the plaster next to the skin. A figure 8 bandage, nicely and tightly applied, will act as a temporary truss, while the patient is confined in bed.

I always order a dose of calomel, two grains, and opium, one grain, to be given immediately. Do not be anxious to get the bowels open; never mind if they do not act for the next twenty-four hours. If there are any signs of peritonitis, continue the calomel in two-grain doses, but with only half or quarter of a grain of opium. At the end of about thirty hours, if the bowels have not been evacuated, give a simple enema, and if this does not answer, then a dose of castor oil. Of course it is very satisfactory to see the complete success of your operation by the passage of the fæces along the lately strictured gut, but remember that you do not secure the ultimate success which you aim at by forcing the injured intestine to act before its natural circulation is properly restored. And of this you may be certain, that if there is any little local peritonitis, you are doing the most certain thing to diffuse it generally over the peritoneum, by inducing peristaltic action, and carrying the effused lymph through the cavity of the abdomen. This man has gone on without a bad symptom; he is free from pain or tenderness in the abdomen; his tongue is clean, and to this I attach the greatest importance, much more than to the pulse, as an index to any inflammatory mischief. The pulse varies very much in different individuals, and, alone, is a very deceitful guide; in this case it was soft and quiet, and though nearly forty-eight hours have elapsed since the operation, and the bowels are not opened, I feel no anxiety.

The bowels acted comfortably the next day, after a small dose of castor oil, and on the following day the wound was nearly healed.

Four Cases of Intestinal Obstruction, in three of which the Colon was opened in the left Lumbar Region.

(*Read before the Medico-Chirurgical Society, April 12th*, 1864.)

I have been induced to bring the four following cases of intestinal obstruction, three of which were relieved by operations before the Fellows of the Society, because I have recently had reason to think that the treatment of such cases is not so well understood, through the whole of England, as it might be. I believe that the more cases bearing on the pathology of this serious class of diseases are made public, and their treatment discussed, the better it will be for the interest of humanity.

I shall not attempt to supplement Mr. Cæsar Hawkins' valuable collection and analysis of 44 cases of artificial anus, read before the society, Feb. 24, 1852, and recorded in the 35th volume of your Transactions, but I shall limit my observations to my own personal experience.

Men who are ignorant of the nature of Amussat's operation, describe it as dangerous and difficult, whereas, in properly selected cases, it is neither dangerous nor difficult.

By properly selected cases, I mean cases in which there is evidence of obstruction at the upper part of the rectum, or lower part of the sigmoid flexure of the colon, sufficient to distress the patient, and threaten a fatal termination from feculent and tympanitic distension of the intestinal canal, accompanied with physical signs of distension of the descending colon in the lumbar region. When these diagnostic signs are present, the fact of the occasional passage of feculent matter, or even scybala, as large as a walnut, does not

forbid it. I say that the operation ought to be performed in order to alleviate suffering and prolong life.

I am not now referring to those obscure cases of intestinal obstruction, where there is a difficulty in diagnosing the seat of stricture. Though there are cases in which the surgeon has been justified in opening the abdomen for the purpose of discovering the exact seat of obstruction.

The consideration of this part of operative surgery would lead me away from the simpler class of cases to which I now desire to call the attention of the Society.

Of the forty-four cases recorded by Mr. Cæsar Hawkins, the descending colon was opened in twenty-two, and twelve of these are noted as "recovered"—more than one-half.

Two were unrelieved. I conclude that in these cases the operation should not have been performed.

Three were sinking before the operation. In these cases it would appear probable that the operation had been delayed too long.

The stricture being cancerous is no objection to the performance of the operation. In nine of the patients who lived a year, three of them were cancerous. One of them lived three years after the operation.

Of the twenty-one cases operated on successfully (and this includes all the cases related by Mr. Hawkins), there are only two in which peritonitis is said to have followed the operation, without having been excited by the previous disease—and these were cases of abdominal section; not of opening the colon only.

There is scarcely one in which the death is directly assigned to the operation.

Case 1.—The first patient on whom I performed this operation was twenty-eight years of age, and a farm labourer. I admitted him into St. Thomas's Hospital on the 12th of March, 1856.

The disease, which was one of cancer of the rectum, had advanced with unusual rapidity, for, according to the history we were able to obtain, his first symptoms of

disease only showed themselves five months previous to his admission.

Diarrhœa, soon followed by slime and blood, as usual ushered in the disease, and, as usual, it ebbed and flowed—sometimes the obstruction seemed to be complete, and he was obliged to abandon his work, and rest entirely. After a few weeks' rest, the obstruction seemed to be overcome, the bowels acted freely, and large quantities of feculent matter were passed, and the poor fellow resumed his work, thinking that he was quite well again. But, alas! it was only the old, old story. The bowels became again constipated, and the patient soon ceased to pass feculent matter in any appreciable quantity; and what did pass was disguised with sanguinary mucus.

When admitted, he was extremely emaciated, his abdomen frightfully distended, and tympanitic. He was supported by beef-tea and stimulants.

I examined the rectum, and found it impossible to pass even a small-sized elastic catheter, or inject warm water.

As I was not then so well acquainted, as I am now, with the urgency of such symptoms, the comparative facility with which the operation may be performed, and the almost entire absence of immediate danger in the performance of it, I postponed the operation till the third day after his admission. Fortunately the time lost was not seized by the disease to bring about a fatal termination. The gut did not burst, before the propriety of the operation could be agreed upon, as it did in another case I shall have to relate.

On the 15th of March, I opened the descending colon in the left lumbar region. There was a prolonged escape of wind, but scarcely any fæces. I gave him a dose of castor oil shortly after he had recovered from the effect of the chloroform; and, after a few hours, feculent matter began to ooze gradually from the wound.

He improved rapidly in every respect. His appetite returned, but not so the sickness and vomiting. He

left his bed on the sixteenth day from the operation, wearing a tent in the wound.

He progressed favourably for two months and a half, at the end of which time chronic peritonitis occurred, and he died gradually on the 1st of June, 1856.

Case 2.—The next case which I operated on, was a railway clerk, who was sent to me by my friend Mr. Sanger, of Alfriston.

This poor fellow had been suffering from stricture of the rectum for about eighteen months.

The symptoms of the disease came on gradually, little trouble at first, great distress ultimately.

About a month before he came into the hospital, Mr. Sanger passed a rectum bougie, and continued to do so twice a week, up to the 26th of September, 1856—four days previous to his removal from the country.

This plan of treatment failing, and the pain in his bowels being very severe, I admitted him into the hospital by letter. When I met him there on the 30th, I found him in a fearful condition. His face pale, haggard, sallow, and distressed; forehead bedewed with a cold clammy sweat; pulse 120, very feeble; tongue furred; abdomen enormously distended and tympanitic.

I ordered him some restoratives, and fixed to operate the next day.

The operation was performed under chloroform in the usual way, with a transverse incision. A large quantity of feculent matter was evacuated, to the great relief of the patient, whose pulse fell to 100, two hours after the operation. A sponge tent was put into the opening in the intestine.

Oct. 2.—Patient had a good night; is comfortable and free from pain; pulse 94; tongue moist; oozing from wound; takes food well.

3rd.—Better, cheerful; slept well; much fecal matter voided by the wound; pulse 104; abdomen soft; tongue moist.

4th.—Doing well; appetite increasing.

5th.—Two sutures removed.

6th.—Large quantities of fæces discharged; redness of the right hip; tent still retained, being reapplied daily; the wound has not united.

7th.—Improving slowly; appetite not so good.

9th.—Fæces more solid, and less in quantity; sleeps during the day, but not at night.

10th.—Remaining sutures removed; tent not applied to-day.

12th.—Bowels opened every day; takes the yolk of seven eggs.

13th.—Took some meat to-day.

15th.—Doing well; to have a pint of porter; wound gapes widely; all the slough has cleared off; tent not re-applied.

He went on well for some time, till, on the 8th of November, after receiving some bad news, he seemed suddenly to sink. His features became sunken and haggard; the pulse rose to 120, and then to 140. His tongue became brown and dry, and all pain left him. He fainted once, and, after that, fell into a state of approaching collapse, in which he died on the 12th of November—on the thirty-ninth day after the operation nearly six weeks.

No post-mortem was allowed.

Case 3.—My third operation has just been performed on John William Grout, aged fifty-four, living at Tottenham, and occupied as a cashier in the savings bank, Moorfields. A wiry active man, always a temperate liver, and accustomed to a good deal of exercise. His health has, previous to this illness, been invariably good, never having had occasion to receive medical advice for thirty years.

He writes himself that—

His present illness commenced in January, 1863, with a constant desire to go to stool, passing his motions five to seven times a day. Three or four discharges of blood occurred about once a month, accompanied by a puffed and distended state of the belly; and, very soon, violent pains occurred in the chest and head, which lasted for a month, much resembling a severe cold. Aching pains across the lower part of the back (below the loins), and down the back of the thighs were constantly present.

He felt no weakness till the middle of June, when he first placed himself under medical treatment.

At this time his motions were small, thin, and triangular, and they soon became more and more liquid; but the pain and inconvenience he suffered did not prevent his going to business till July. The pain was never very severe, or of a lancinating character in the rectum.

In the beginning of July he consulted me, complain-

ing as above detailed. I ordered simply an aperient of rhubarb and calomel to ascertain the character of the motion and empty the rectum.

On his visit the next day after the aperient, which brought away a little solid as well as fluid matter, he thought himself a little relieved; I now made an examination of the rectum, both by the speculum and the finger, when I discovered an extensive carcinomatous deposit, partly blocking up, but not completely obstructing the bowel. I ordered merely the liq. potassæ ♏ xx t.d. (Brandish's solution.)

On the 14th July he thought himself a little better, but said he had had a violent attack of spasms on the day on which the examination of the rectum was made.

He gives no history of any cancerous or other tumours in his family, nor of the presence of any tubercle among his near relations. In youth he suffered from indigestion owing to irregularity in his diet, but this was soon remedied by care.

From this time, to the commencement of the present year, he was under the care of Dr. Mackenzie, of Chester Place.

He continued able to evacuate his bowels without much distress, till Friday, January 8, when distension of the abdomen occurred, and he thought he could feel his food lodge in the left ilio-lumbar region, just above the level of the iliac crest.

On the 15th his son called on me with a very distressing account of his father's condition. I therefore visited him at Wood Green, Tottenham, and, after a careful examination of his abdomen, and the stricture, I recommended that the descending colon should be opened, but without pressing it on him. He would not consent at the time, but two days afterwards he sent me a message, that he would be glad to have anything done I thought would relieve him. He came into St. Thomas's Hospital on the night of the 18th, having passed no motion since the 8th.

He had no difficulty in making water, nor had there been any actual sickness; but he had experienced some nausea and retching during the last day or two. He

complained of great dyspnœa and distension, and says he does not think he could have lived another day.

He had taken only liquid food since the stoppage.

When the finger was passed into the rectum it came first to a folding inwards of the mucous membrane and whole structure of the walls, but not sufficiently projecting to constitute an impassable stricture. Above this was a mass of large nodules projecting into the bowel, but not seemingly ulcerated or painful; especially hard and horn-like to the front and right sides, one tubercle as large as a good sized thimble, projecting directly into the intestine from the right side, and almost obliterating the canal. The masses on the left side were softer, but similarly nodulated, and this deposit seemed to be continued upwards above where the finger could reach.

The abdomen by percussion was tympanitic, and much distended, but some dulness was perceptible in the right flank. In the left the resonance was clear and unmistakable.

On the 19th, at 9 A.M., the patient was taken into the theatre, and, chloroform having been easily administered, I made an incision midway between the last rib and the iliac crest—horizontal, but inclining rather upwards and outwards—to the extent of about $3\frac{1}{2}$ to 4 inches. Cutting inwards as far as the erector spinæ, I came down upon the quadratus lumborum, which I divided upon a director inwards, making the deep wound about an inch and a half in length. The abdominal fascia I next divided, also upon a director, and came directly upon the bowel.

This was then fixed by means of two silk sutures to the outer and inner edges of the wound; and the intestine opened by means of scissors, midway between the two points of sutures, and directly across their axis.

Hardly any bleeding at all occurred. About three pints of liquid feces were discharged, and there was a continual oozing during the day.

An opium draught was ordered at once. He suffered hardly at all from the operation, and remained quite comfortable for the rest of the day, having expressed intense relief.

At 5 P.M. on the same day he had a small motion by the natural anus, similar in character to that discharged from the back, this was repeated at 7 P.M., and continued escaping during the night, he having no power over the action of the sphincter.

Soft food only was allowed him this day.

The next day (20th January), his pulse was quiet, 86; he had passed a comfortable night, and ate a good breakfast this morning, and a chop for dinner.

He lay almost on his back, his left side being only slightly raised.

A plug of oiled lint was inserted into the opening, but was quickly expelled; it was therefore not thought necessary to keep it in, there being no tendency of the bowel to prolapse. It was, therefore, only inserted for a short time daily to keep the wound patent, but there seemed to be very little tendency for the orifice to become contracted to any inconvenient extent.

On the 25th, the bowel showed signs of prolapsing; an oiled sponge plug was, therefore, fixed to a pad, and maintained in the wound during the day; but a pad alone was found afterwards to be sufficient, and cause less uneasiness, the plug only being inserted occasionally.

He continued discharging fæces by the rectum, and gradually in rather larger quantities than by the artificial anus, but of the same character—liquid, and rather high coloured. Still he had no control over the sphincter. The bladder was quite under command.

He had been very quiet and comfortable, his pulse remaining steadily between 80 and 90, till the 25th, when he seemed much weaker and very low-spirited. There was also a tendency to the formation of bed-sores.

The sutures became loose, and were removed on 29th Jan. and Feb. 1, being ten and twelve days respectively after the operation.

On the 2nd Feb. (thirteen days) he had improved in health and spirits, and sat up for about two hours in the middle of the day. He was, however, still very weak.

He sits up comfortably every day, and looks much better. His appetite is not very good, but he sleeps well. His motions are still passed rather in excess by the natural anus.

On the 7th February Mr. Grout seemed still weaker, but complained of no pain at all. There was a faint, sweet, milky odour from his breath and from the general surface of the body. Pulse 84, not very weak. His face became swollen on the left side, owing, probably, to his having bitten his cheek, and also to the presence of bad teeth, and having caught cold.

Next day (8th) he was still weaker, but yet in no pain. He was troubled with nausea, and vomited the greater part of what he took. His appetite was very bad. He chiefly took wine and milk.

On the 9th his face was more swollen in the morning and his

voice weak and seemingly obstructed, yet he said he had no difficulty in breathing. He found, however, considerable difficulty in swallowing. He was evidently sinking gradually from weakness.

At 8 P.M. he was attacked with great dyspnœa, and there was a good deal of large mucous crepitation in the chest. The dyspnœa and weakness increased rapidly, and he died quietly at 9 P.M. on the same day (9th), it being exactly three weeks after the operation.

Notes of the post-mortem examination made eighteen hours after death, by J. Wale Hicks, M.B., Esq. Feb. 10, 1864.—The body was somewhat emaciated. There was some tumidity of the upper lip and left cheek.

There was a wound in the left loin, nearly transverse in direction—between three and four inches in length, through which a portion of intestine protruded. A bed-sore existed upon the sacrum, and another upon the right hip. The brain and membranes appeared healthy.

At the base of the right lung were some old adhesions. In the anterior part of upper lobe of the left lung was a rounded, soft, cheesy mass of tubercular matter, which was found, under the microscope, to consist of granular matter, with small, irregular, ill-formed cells. The upper lobes of both lungs contained a few cretaceous tubercles, and there were many small miliary tubercles scattered over the surface of the left upper lobe.

The larynx and trachea were healthy.

The bronchial tubes of the right lung were injected, and contained some tenacious mucus; those of the left lung were empty and but slightly injected. Both lungs were somewhat œdematous.

The pericardium, heart, and valves, were healthy. The right ventricle contained some frothy fluid blood, and partially discolorized clot extending into the pulmonary artery; the left cavities contained a little frothy fluid blood, but no clot.

The œsophagus, stomach, and small intestines, appeared healthy.

The cæcum was greatly distended with gas. There was some lymph on its posterior surface, by which it was adherent to the sheath of the right psoas muscle, which sheath contained several ounces of thin fetid pus, with flakes of lymph. The abscess appeared to be on the anterior surface of the muscle, which it compressed, extending up to its origin, but not down into the thigh; the lower end of the abscess-cavity was continued into the true pelvis over the ilio-pectineal line. The dorsal and lumbar vertebræ appeared to be free from disease. No cancerous or other deposit was found in the psoas. The transverse and descending colon were somewhat contracted.

There was a free opening in the descending colon, in the part uncovered by peritoneum; and the edges of this opening were adherent to the edges of the wound in the left loin, before mentioned.

The sigmoid flexure contained several masses of solid fecal matter between the artificial anus and the carcinomatous stricture.

The rectum was imbedded in a firm mass of infiltrated tissues, by which it was adherent to the walls of the pelvis posteriorly and on either side, and also to the bladder in front.

This mass of rectum, bladder, and surrounding deposit was removed from the pelvis, and the rectum cut into. The deposit was then seen to be firm and fibrous looking, and exuding juice on pressure. There was also found a softer growth, projecting inwards around the whole circumference of the bowel so as almost entirely to obstruct it. The mucous membrane was entire over this projection of the tumour, but below it on the left side was a large ulcerated surface, between two and three inches in diameter, over a portion of which the coats of the bowel were entirely destroyed, and the margins adherent to the walls of the pelvis: so that a large opening was made in removing the intestine from the pelvis.

A portion of the scirrhous mass surrounding the rectum showed under the microscope fibrous tissue with cells of various sizes, mostly rounded, and containing minute oil-globules.

The liver contained several masses of scirrhus, from the size of a small orange downwards, most of which presented evidences of commencing degeneration in the central portions. The spleen, supra-renal bodies, kidneys, ureters and bladder, aorta and vena-cava were healthy.

There is one fact developed by the post-mortem examination which is extremely interesting, and to a certain extent bearing upon the question when and why the operation for artificial anus should be performed. I refer to the abscess in the right psoas muscle. This abscess was unconnected with bone, it was, then, no ordinary psoas abscess. I know of no case exactly like it. Was it not an abscess occasioned by the pressure of an over-distended cæcum; and if so, is it not an additional reason for opening the intestine in such cases as soon as severe symptoms of obstruction and distension appear, instead of delaying the operation until your patient is almost moribund?

The cæcum was greatly distended with gas. There was lymph on its posterior surface, and the abscess on the anterior face of the muscle immediately beneath the inflated gut.

Case 4.—The next case to which I wish to call the attention of the Society is one very similar in its history

and progress, up to a certain point, to the three preceding cases. The point at which it diverges is, when in the former cases the operation of opening the colon was performed, in this the unfortunate patient was hurled suddenly into the grave by the bursting of his bowels.

W. C——, æt. 55, Member of the College of Surgeons, a remarkably healthy-looking man, till within a few weeks of his death. A bright, ruddy complexion; capable and accustomed to take a great deal of walking exercise. A free liver, without being intemperate; cheerful, joyous disposition. I had known him most intimately for very many years, and till within a few months of the commencement of that illness, which terminated in his death, he scarcely ever complained of any ailment except occasional attacks of gout. Indeed he walked over to East Grinstead and back to Tunbridge Wells, a distance of nearly thirty miles, about ten days before he first consulted me.

In the spring of 1862, he determined to leave Derbyshire, where he had resided many years, during which time he had attended to an extensive and very active practice. He left Derbyshire solely on account of his wife's health, not having any misgivings regarding his own, though he has since stated, that about a year ago he occasionally felt pains and odd sensations about the lower part of his abdomen, obliging him to stop in his walks and rush off to the water-closet. Occasionally he suffered from irritation of the bladder, and he thought the symptoms might probably arise from the presence of a stone in the bladder, but none was discovered.

My attention was first called to him as an invalid, when I visited Tunbridge Wells on the 25th April, to see a young lady that I had placed under Mr. C——'s care. I then heard that he had been very seriously ill, about fourteen days previously. He described it as a most severe attack of colic, but told me that his father-in-law, a retired medical practitioner, in whom I had often heard him express the greatest confidence, had relieved him. He gave a long and very detailed account of his symptoms, but I will not weary the Society by repeating too much of them. It may be sufficient if I state them briefly, as all practical surgeons, and most London physicians, would recognize the facts at once, as proving the existence of stricture of the large intestine.

Occasional severe constipation, followed by purging and tenesmus. In the intervals between the purging and the positive suspension of feculent discharge, small pipe-like figured motions, seldom larger

than a goose-quill, though sometimes scybalous pieces passed, as large as a walnut. Strange unnatural and prolonged noises within the abdomen, accompanied by more or less pain, but without any expulsion of wind per anus.

From these, and other minor facts, I came most unwillingly to the conclusion that he was the victim of stricture in the rectum, but hoping that I was mistaken, I did not tell him my opinion, though I did one of his intimate friends, but made him promise that he would come up to London, to enable me to have a consultation with another hospital surgeon.

On the 4th of May, he wrote to me regarding the patient I had placed under his care, and at the conclusion of his letter, he said,—

"You know we were going from home the day after you left here. The change had a most remarkable effect on my bowels, so much so, that you would have thought it unwise in me to make use of the prescription you gave me. Eight times to the rear one day; nine the next, and thirteen yesterday. I have taken a warm stomachic with potass. carbon gr. xv. Yesterday I was very feverish at night and could hardly stand, but to-day things seem quieting down, and I feel much better. In the daytime there was a feeling of gout in one of my knuckles, and when I had to get up last night at 1.30. A.M., there was gouty pain in one of my insteps. I wonder if there was anything gouty in some of those *awful* abdominal pains I have been suffering from?"

After this note I was even more anxious that he should come up to London, but he was never well enough to do so. On the 11th of May I received this telegram, "Mr. C——'s dangerously ill. Little hope. Come if you can."

I obeyed the summons at once, but neglected to provide myself with instruments to open the colon, which I certainly expected, from my previous knowledge of the case, I should be required to do.

When I arrived, I found my poor friend in great agony, with general tenderness and distension of the abdomen, but suffering so much, and so much exhausted by suffering, that I was unable to make any examination of the abdomen or rectum. I was therefore obliged to return to town again that night, without doing anything, or even proposing an operation. As, however, the two

medical practitioners that I met in consultation that night did not appear to understand the value of Amussat's operation in such cases, I advised that Mr. Trustram, whom I had long known as one of our best provincial hospital surgeons, should be requested to see him, and I held myself in readiness to attend again at a moment's notice.

When Mr. Trustram saw him, the urgent symptoms had abated, and being relieved, Mr. T—— decided that it would be better to wait and make use of palliatives.

On the 25th of May I received, at Chiselhurst, a message from my servant in London, saying that a telegram had arrived from Tunbridge Wells requesting me to go there immediately, which I did without returning home, and in that way, unfortunately, missed his relation, himself a retired medical man, who had come up to London for the purpose of asking my opinion, who he should take down to consult with me on the case, as he knew that I was extremely anxious about it. He waited for me at my town house, and thus we did not meet. I found Mr. C—— much worse. On this occasion I made an examination of the rectum, with Mr. Trustram, partly by my finger, and partly by means of a soft bougie. I found an obstruction at the upper part of the rectum, and lower part of the sigmoid flexure of colon. He now was able to converse more freely about his sufferings and general symptoms. Without attempting to enter into all the facts he detailed to me, he mentioned one so characteristic of intestinal occlusion, that I must not omit it. He said, "Oh, Solly! the agony I suffered the day before yesterday was *awful*. I could have rolled myself on the floor till I burst. Nothing but the distress of my wife kept me quiet. After that I passed some flatus, and the discharge lasted nearly an hour, but I have passed none since, and fear I shall never do so again!" I then told him of Amussat's operation, and asked him if he would object to it, and he said, No; he would do anything I wished. I then left the room for a few minutes, and when I came back he said he had again passed a small, but very small, quantity

of fæces, which had slightly relieved him, for his abdomen was enormously distended, but the relief was so slight, that I shall always regret I did not, without further delay, and with the assistance of Mr. Trustram, operate upon him that night, as I certainly should have done if he had been an hospital patient. However, I think that great allowance is to be made, if the Society will remember that he was one of my oldest and dearest friends, and that under such circumstances I may be excused for having sought the advice of another hospital surgeon. One of our most experienced practical surgeons visited Mr. C—— with me on the fourth day after this. This surgeon, after carefully considering the whole case, came to the conclusion that the time had not arrived when the operation was justifiable. I then said, that while I bowed to the opinion, I thought it right to put on record, before those who were met at this consultation, what my own opinion was, namely, "that there was a stricture at the sigmoid flexure of colon," and "that whether that stricture arose from malignant disease or not, the operation was called for; that all his sufferings arose from that stricture; that Amussat's operation would relieve him, and that nothing else would."

This opinion was given on the Friday evening, and Mr. C—— died about twenty-four hours afterwards, in great agony, from ruptured intestine.

For the account of the post-mortem appearances, I am indebted to Mr. Trustram, of Tunbridge Wells, who performed the examination.

Autopsy of the late Mr. C——, made June 1, *sixteen hours after death.* (Present.—Drs. Branson, Bell, and Wardell,—Messrs. Trustram and Hicks).

The body was but little emaciated. The abdomen was much distended, and presented a rounded prominence at and around the umbilicus, where the skin was tense and shining, the walls having evidently yielded more particularly at this part to the distending action of the tympanitis. The distension at the sides and towards the lumbar regions was less marked.

At the first incision in the mesial line the small intestines were unavoidably wounded, and a considerable escape of flatus took

place. On prolonging the incision, the intestine was again unavoidably wounded, and from 4 to 6 ounces of thin yellowish fluid escaped. As the incision was carried down the abdomen, the small intestines were very forcibly protruded, and before it had reached six inches, a couple of feet, at least, of intestine had protruded.

The intestine was of the size of an ordinary wrist, had a remarkably clean and glistening aspect; its walls were almost transparent, and as thin as tissue paper, the capillaries on its surface exactly resembled a well-made injection.

It was impossible to proceed with the section of the abdomen till some portion of the gut had been let out.

On the full exposure of the interior of the abdomen, the stomach, which was small and empty, was found lying with its anterior surface in contact with the arch of the diaphragm. The small intestines were more than usually distended, but had everywhere a clean and healthy appearance. The colon, though a good deal distended throughout its entire length, was less so than usual in these cases, but presented externally a healthy appearance. The lower part of its descending portion was more distended and bag-like.

On turning this portion over, a small hole was discovered at its lowest part, from which about half an ounce of feculent matter had escaped. The edges of this opening, which was rather less than a threepenny piece, were as well defined as if it had been punched, showing that its final rupture had not been greatly hastened by the distension.

There were a few old adhesions at the commencement of the descending portion of this gut, but there was no indication whatever in any part of the abdomen of any recent inflammation. The small intestines contained a thin yellowish fluid, but there were no traces of mischief in the mucous coat.

The colon contained a fair quantity of fecal matter, which was about the consistence of thick gruel, with here and there some more solid. The mucous surface was healthy everywhere, excepting about six inches above the perforation.

At the commencment of the sigmoid flexure a mass was discovered occupying the interior of the gut, which on removal measured about two inches and a half in thickness, and three and a half in length, and felt hard and scirrhous. The peritoneal surface of this portion showed no signs of disease, and its muscular coat was still to be clearly seen.

On opening the gut a pulpy lobulated mass was discovered (or, as it might have been more fairly termed, two masses) growing from opposite sides of the gut, the lobes meeting, and fitting into each other like the cogs of a pair of wheels. These lobes were about three on each side. The upper lobe very nearly filled the whole calibre of the intestine. No other morbid condition was found in the abdomen. The rest of the body was not examined.

"Before proceeding to open the abdomen," says Mr. Trustram, "I had introduced a trochar at the spot where Amussat's operation is performed. Its point was forced in the intestine an inch and a half above the diseased mass; and I may add that the post-mortem proved that the patient, as had been expected, sank from the shock of the perforation before any inflammatory action had commenced.

"I cannot forbear remarking that the facts of this post-mortem prove that the patient died from the effects of the obstruction, and not from an advanced condition of the diseased mass, or any other discoverable pathological condition; and that had an operation been performed before ulcerative action had been set up his life would have been prolonged, and he would have been spared that horrible suffering which he underwent during the three last weeks of his life.

"The peculiarity of the abdominal distension during life had given rise to a suspicion in the mind of the patient and myself that there was an obstruction at the lower part of the ileum, but none was discovered; but the impression that the colon was less loaded and distended than is usual in these cases, whilst the small intestines were more so, was fully confirmed."

The cogwheel-like character of the obstruction will explain the reason that there existed some difference of opinion, as to the complete or partial occlusion of the gut. It has been long known to all practical pathologists, that the same intestinal stricture will, even during life, be complete, or not, according to circumstances. For instance, if there be much flatus, or fecal matter, in the colon pressing downwards on a valvular arrangement of the scirrhous deposit, the valve caused by such deposit will be completely closed. The proof of such complete closure rests upon the bursting of the gut, as in this case, and not upon the appearances presented after death. If, however, the operation of opening the intestines be performed, and thus the pressure removed, the morbid valve might again be opened, as in the third case I related, and the feculent

matter again, for a time, pass through its original channel; a fact which, I suppose, in the opinion of some unlearned men might be a proof that the operation ought not to have been performed.

Again, the occlusion may be complete, so complete as in poor C——'s case, that not even wind could pass the barrier during life, but after death, from relaxation of the tissues, there was no complete occlusion, or only partial obstruction, as I suppose, from Dr. Wardell's account, was the condition in this case.

Mr. Quain called attention to this fact in his work on "Diseases of the Rectum," page 270. He says :—

"It is, at the same time, worth noticing, that complete obstruction has happened even where, in the dissection afterwards, there was found to be no inconsiderable space unoccupied by the morbid growth. Full room, for instance, for the passage of the finger through the narrowest part of the bowel. This fact is probably to be accounted for, in part, by the mechanical obstacle afforded by the mucous membrane, turgid with blood, and often puckered and folded at the orifice of the stricture. And in part also, perhaps chiefly, is it to be assigned to the contraction of the muscular coat of the gut."

He then refers, in a note, to a preparation (No. 1271) in the College of Surgeons, presented by Sir W. Blizard, to which is appended the following note,—

"The patient died with great distension of the intestine, and the fæces could not be discharged, though the canal of the rectum was not much contracted."

Mr. Quain's concluding observation seems to point directly to Mr. C——'s case, though written eight years ago.

"We now understand that a slight action of this kind should be enough to close the bowel, where it is already, in a great part, filled with a cancerous mass."

LECTURE XLV.

On Ruptured Bladder.[1]

Benjamin P——, aged twenty-eight, coal-porter, of robust form, and previously in good health, was admitted into George's Ward, at 12 o'clock noon, on Saturday, February 23, 1850, under Mr. Green and Mr. Solly.

History.—At about 5.30 P.M. on the 22nd, while quarrelling with a man in a beer-shop, he was butted by him three times in the inguinal and hypogastric regions. He was knocked down each time, but the third time was unable to get up, and declared that "he had received his death-blow." He said he felt something burst within him, and complained of being in great pain in the belly. At the time of the accident he had not made water for five hours. He was taken home, where he remained in great pain, and unable to pass any water, although he had an inclination. He had never had stricture, and never had any instrument passed; had always been healthy, and, though he had been drinking, he was sober at the time of the accident.

Present state.—Noon, Feb. 23.—Countenance anxious; tongue somewhat dry, and covered with a brown fur; pulse small, quick, compressible; abdomen somewhat tumid; resonant both in the region of the bladder and elsewhere; respiration is chiefly thoracic, scarcely if at all abdominal; he has scrotal hernia on the left side, which he says had never descended below Poupart's ligament previous to the accident. Its reduction was effected easily, though with much pain. Complains of pain on pressure of the abdomen, and is unable to lie on his side, so that it cannot be satisfactorily determined whether or not the peritoneal cavity contains fluid; has passed no water from the time of the accident, but has the desire, and the attempt to do so causes increased pain; complains also of pain in the perinæum. There is no sickness; bowels were relieved freely an hour before admission. A large-sized silver catheter passed easily along the urethra, and appeared just to enter the bladder, when it met with a peculiar resistance. It could not be depressed or rotated, and no urine flowed, so that there were doubts whether it might not be a false passage, and a portion of the previous history incorrect; and on withdrawing it the eyes were found

[1] Reported by Mr. Howell.

clogged with coagulum. It was again introduced, and after a little manipulation a gush of urine took place, which was immediately arrested on turning the catheter sideways to the vessel, although it was neither withdrawn nor pushed farther on. After a little more manœuvring the catheter was passed farther than it had hitherto gone, and urine immediately flowed. The urine, which was of a uniform chocolate colour from admixture with blood, came in a full stream, but with so little impetus that it barely lifted itself above the mouth of the catheter, and at times even ran down its sides. Pressure on the abdomen did not seem to increase its impetus: more than two quarts were drawn off. The urine was not more deeply tinged with blood either at the commencement or termination of the operation. After the removal of the urine he expressed himself a little relieved. While the urine was being withdrawn the finger was passed up the rectum, and the catheter appeared to be so near the finger that it seemed scarcely possible that more than the walls of the rectum could intervene between the two. The introduction of the finger caused much pain. At 1 o'clock he was seen by Mr. Green, who ordered forty leeches to the abdomen, and a gum-elastic catheter to be kept in the bladder; a light bran poultice.

Feb. 23rd.—In much the same condition. Tongue brown, but moist; skin warm, and face perspiring; pulse 132; a small quantity of something like pus exuding by the side of the catheter; never had gonorrhœa; increased tenderness in the perinæum; abdomen relieved by the leeches; an elastic gum catheter kept in the bladder; the urine occasionally exuding in small quantities.

24th. 9 A.M.—Had a restless night, and being in great pain, had thirty minims of tincture of opium. The catheter, which had slipped out, in consequence of the restlessness of the patient, was re-introduced, and about eight ounces of clear urine drawn off, without any relief. Mr. Solly saw him at 9 P.M. Had rather less pain; tongue dry and brown; pulse 152, weak; skin hot. Ordered, forty more leeches to the abdomen; fomentation, poultice, and a blister, afterwards to be dressed with mercury ointment; calomel, two grains, with opium, a quarter of a grain, every two hours. 4 P.M.—Felt easier; pulse 140, very feeble; tongue a little furred and dry; face suffused, and covered with perspiration; more tympanites; urine still exuding, in very small quantity, and clear. 9 P.M.—Much worse, and apparently sinking; surface of body cold and clammy; countenance, pale, sunken, and anxious; pulse 152, extremely feeble; great thirst, but vomits any liquid as soon as taken; abdomen more tympanitic; bowels acting involuntarily; urine still dribbling away slowly, but clear; the catheter does not distress him Ordered, wine, two ounces.

25th.—Perfectly cold and pulseless; pupils very much contracted; continues much the same as in the night. 5.30 P.M. —Died comatose.

Post-mortem Examination.—February 26th, 1 P.M.—Head not

examined. Thoracic viscera healthy. Abdomen; the peritonæum covering the abdominal viscera generally, but more particularly the small intestines, was irregularly congested in patches, and on the surface of some of the congested portions was a small quantity of recent lymph, in thin adherent flakes; this was more particularly seen on the convolutions of the small intestine contained in the pelvic cavity. The parietal peritonæum was healthy, with the exception of slight patches of congestion. In the peritonæum, over the posterior part of the bladder, was a longitudinal rent of an inch and a quarter in length, corresponding to which the muscular and mucous coats of the bladder were lacerated to the same extent, so that a catheter readily entered the peritonæal cavity; the peritonæum in the immediate neighbourhood of the wound, from a half to three quarters of an inch beyond its edges, was coated with a layer of adherent plastic lymph; the membrane was congested for an inch or more beyond the lymph, but there were no other indications of peritonitis. The cavity of the peritonæum contained from two to three ounces of what appeared to be urine rendered turbid by the admixture of a small quantity of lymph, of which a few flakes floated in the fluid. The bladder was firmly contracted. The thick edges of the wound were coated with adherent black coagulum. Liver and kidneys healthy.

Cases of rupture of the bladder, gentlemen, are very uncommon. I do not remember having ever seen a case before, during the twenty-eight years I have been about this hospital. They are almost invariably fatal: I know of only one case on record that recovered. This occurred under the care of Mr. Chaldecott, of Dorking. It is reported in the *Provincial Medical Journal* for 1846.

In this case a catheter was passed and no urine followed; the catheter was not left in the bladder, but was passed every three or four hours, but at first without any urine following. Eighteen hours after the accident, the symptoms of peritonitis had increased to an alarming degree. The belly was painfully swollen and tender; the pulse rapid and feeble; countenance anxious. Mr. Key, who now saw the case, passed a catheter, none having been used for the previous four hours, and about an ounce of bloody urine came through the instrument. His case was pronounced hopeless. A dose of liquor opii gave him some comfortable sleep. After four hours had again elapsed, the catheter drew

off about four ounces of clear urine. From this time the pain, swelling, and heat in the abdomen gradually lessened, and it was evident that the bladder was now healed, as on each introduction the catheter brought away clear urine.

Your treatment of cases of ruptured bladder must, I think, vary according to the period at which you may be first called to them. For instance, if you see such a patient within twenty-four hours of the receipt of injury, I am now disposed to think that you should pass the catheter, and manipulate carefully until the water flows; but after that period I should advise your simply passing the catheter, and if the water does not immediately follow, withdrawing the instrument. You should then direct all your attention to the reduction of inflammation. It will also be your duty to consider whether you should endeavour to relieve your patient by another operation, which shall be presently considered.

But first with regard to the use of the catheter. You must remember that the urine escapes, immediately the bladder is ruptured, into the peritoneal cavity, and the bladder collapses; so that the catheter, when introduced, can only reach the urine in the pelvis through the wound in the bladder. The passage of the instrument through the wound must of course reopen it, and prevent its healing. That urine effused into the peritoneal cavity *may* be absorbed is, I think, proved by Mr. Chaldecott's case. I do not mean to argue against any use of the catheter, but against its being pushed onwards until the urine is met with, or the catheter being retained in the bladder. It may be introduced into the neck of the bladder every four hours, and thus accumulation prevented.

It has been proposed by Mr. Harrison, of Dublin, that "the pelvic cul de sac be tapped from the rectum." Now you all know Harrison's name well; "Harrison on the Arteries" is, or ought to be, as familiar to you as your A B C. His authority as a surgeon deservedly stands high, and any suggestion from such a quarter is

worthy of careful consideration. Mr. Harrison's cases are very instructive, and I shall briefly detail some of their most striking features: at the same time, I must request you to read them over carefully at your leisure.

The first case is especially interesting from the slight depression that followed such an injury, and the way in which the man bore up against it, and it is only to these features of the case that I shall direct your attention: these are important, as they show that the absence of depression and collapse must not deceive you as to the real nature of the lesion.

"Case 1.—A man, aged thirty-five, in perfect health, received a blow on the abdomen; felt excessive pain at the bottom of his belly, so sick and weak as to be scarcely able to stand, but he soon rallied, and walked home without assistance. He dozed occasionally during the night, and the following day felt a little better, and rose as usual to breakfast, but still suffering much pain in the abdomen, and unable to make water. He walked three miles to a surgeon, who introduced a catheter, and drew off five or six ounces of urine; the man walked the same distance home again, drank in the evening, but not to excess; the following morning went to his work as usual, building a stone wall, and did not give in till twelve o'clock in the day, and then walked three miles to his surgeon, but not finding him at home, consoled himself with a glass of whisky instead. Mr. Harrison saw him first on the fifth day from the receipt of injury, and he thus described his condition, and what he did for relief.

"I found him (he says) in a state of great pain and anxiety to pass the urine; the abdomen felt generally full, but not as in ordinary retention of urine; great pain in the hypogastric region and perinæum; frequent desire to go to stool, but has passed nothing solid since Sunday night; the tenesmus and straining to pass urine occur at short intervals, and he is thrown into a paroxysm of excruciating torture; the countenance is very anxious, but not much sunk; the pulse is very quick and hard; has vomited twice, and is very thirsty. I introduced a full-sized silver catheter, and was much disappointed at finding only a few drops of urine escape; I withdrew this instrument, and then passed a small-sized gum-elastic one, and also introduced my finger into the rectum; I then drew off nearly a quart of urine; he expressed himself as somewhat relieved, and his belly felt less tense—however, it continued painful, and with diffused fulness; he vomited, and appeared very weak after the operation, which occupied a considerable time. I remained with him for about two hours; his strength and spirits rallied considerably, and I bled him

largely, and then ordered forty leeches to the abdomen, and fomentations every third hour. This poor fellow lived eight days from the date of the injury."

I will interrupt this history by calling your attention to one point which this case illustrates: I mean, the practice of drawing off the urine from the pelvis by passing the catheter through the bladder into the peritoneal cavity. It is clear that this was done by Mr. Harrison; for until he guided the catheter through the bladder by his finger in the rectum, he could not draw off more than a few ounces, but after that he drew off nearly a quart. I do not mean to say that the issue would have been different if he had not done so, but I do think the post-mortem examination, and the issue of Mr. Chaldecott's case, make it probable, and at any rate confirm my opinion, that it is better to tap the peritoneal cavity through the rectum than through the bladder itself.

The post-mortem is very instructive, but I shall merely relate those points which illustrate the mode of treating these cases that I now believe to be the best. On the whole, however, the traces of inflammation were not those of a very severe or acute form.

There was no fluid in the abdomen. The pelvic region presented a singular appearance; the sigmoid flexure of the colon, the commencement of the rectum, and some of the iliac convolutions, were all closely agglutinated by one smooth yellowish coating of lymph; so that the cavity of the pelvis was perfectly closed, or separated from that of the abdomen. On pressing this septum fluctuation was plainly felt. These adhesions being broken through, the cavity of the pelvis—that is, the peritoneal cul de sac—was then found filled with urine, free from any bloody tinge, but intermingled with flakes or shreds of coagulable lymph: there was nearly a quart of fluid in this situation. The posterior surface of the bladder was now seen, with an oblique fissure through it, about an inch and a half in length: the edges were thickened and slightly adhering to each other. When the cavity of the pelvis was cleared of all the fluid it contained, the whole surface was coated over with a thick layer of lymph, so as to present a smooth, homogeneous appearance, not unlike the cavity of a very large abscess. This was peculiarly thick inferiorly; and in the most depending part, just in front of the rectum, there was a blackish appearance and a soft feel, as if some gangrenous change had commenced. On

removing the pelvic viscera from the subject, no other injury was observable. The interior of the bladder was normal, and presented no trace of inflammation. Between the bladder and the rectum there was great congestion and cellular condensation. The cul de sac of the peritonæum descended very close to the prostate, and was intimately connected to the rectum: the latter intestine, however, appeared perfectly healthy.

In the second case related by Harrison, the man was intemperate, all his symptoms were acute and unequivocal; he died sixty-four hours after the receipt of the injury.

The post-mortem examination is very instructive, showing like the last, how beautifully nature endeavours to limit the inflammatory action of the urine, and how conservative that very action is in shutting the urine off from the general cavity of the abdomen.

I must not detain you much longer. I advise you then, gentlemen, in the treatment of these cases, to pass a catheter into the bladder — but not through the bladder, unless you see them within twenty-four hours of the injury; having done so, I should pass the instrument carefully into the bladder every two or three hours; but if you do not see the case during the first twenty-four or thirty hours, and the signs of extravasation of urine into the cul de sac of the pelvis are unequivocal, I should certainly advise you to puncture the cul de sac as advised by Harrison, and I will describe the operation in his own words.

"It appears to me that paracentesis is still the greatest remedial operative measure we are to look to, but it must be in a totally different situation from that hitherto selected. I should recommend that the pelvic cul de sac be tapped from the rectum, should the parts be in that state in which dissection has shown them in some cases to have been; we may suppose that the pelvic cul de sac is distended with fluid, coated with lymph, and well protruded towards the rectum, or between this and the bladder; that the latter viscus is empty and rather small, and that adhesions have nearly closed the pelvis above and separated it from the abdomen; if a small opening be now made through the rectum into this cul de sac, the irritating fluid may be discharged without injury to any important organ; indeed, the opening into this new and circumscribed cavity cannot even open into or affect the general peritonæum, provided the superior pelvic and vesical adhesions have been perfect; in fact,

a new cavity has been formed, coated internally like an abscess, and containing a foreign and an irritant fluid, and the operation now suggested is merely opening this in the most depending situation. There is no peculiar difficulty in this operation; the patient may either be in bed or on a table, the knees drawn up, and somewhat separated; the finger of the left hand is to be passed up the rectum as far as possible, and pressed against its forepart; the catheter, at this time in the bladder, may also guide the finger, so as to judge of the situation of the cul de sac behind this organ; the canula of the curved trochar is next to be passed along the finger, and when its extremity shall have been well directed against the forepart of the rectum, precisely in the median line of the body, the stylet is then to be passed through it, and the peritonæum opened; some might prefer a long curved knife with a sheath, or with a cutting edge only on its extremity, great care should be observed to perforate in the median line; some of the pelvic blood-vessels may be endangered if there be much deviation to either side. I do not apprehend any injury to the small intestines, as a quantity of effused fluid of adhesive matter must intervene; nor have I seen any of their convolutions in the pelvis, in those cases which I have examined. The fluid being then discharged, the canula may be withdrawn, and the catheter being retained in the bladder, the urine will flow off as it is secreted; the bladder will thus be allowed to remain quiescent, and we may then expect that the rent will soon unite, while the cause of irritation being removed from the abdomen, we may reasonably hope that the further progress of peritonitis may be arrested, and the patient ultimately recover."

Fortunately for humanity, these cases of ruptured bladder are very rare, and I do not hesitate to say that I should not have ventured to advocate so bold and decided a course of treatment in this injury, if I had not watched the course, termination, and post-mortem appearances which follow it in the case we have been considering. But having seen how futile all ordinary methods of treatment are, and having, I think, analyzed fairly the aparent causes of failure, I have now no hesitation in advising this line of treatment, and I trust that the earnest attention you have all given to this case will make you remember it through the anxious, arduous career which is before you, and that its consideration will assist you in the hour of difficulty and danger.

LECTURE XLVI.

On Stricture.

Many a valuable life has fallen a sacrifice to injudicious, unavailing, and not unfrequently rash and violent attempts to overcome strictures of the urethra, where the patient is suffering from the agony of long-continued retention of urine.

Stricture of the urethra might be cured by mild, simple, and almost painless measures, if they were adopted in the early stages of the complaint. It is true that many persons conceal their sufferings even from their medical adviser; but, on the other hand, it must be admitted that patients occasionally suffer from all the effects of stricture of the urethra, and remain under medical treatment for some time, without the medical adviser suspecting the existence of any disease of the urethra. This is a fact well known to every consulting surgeon in London; and, on the other hand, patients will sometimes present themselves with almost all the symptoms of stricture, but in whom no stricture exists.

It is not my intention, gentlemen, in the clinical observations which from time to time I shall offer you on the cases before us, to attempt the minuteness of surgical instruction which is essential to a complete course of surgery. I shall rather endeavour to impress upon your minds some general principles on particular subjects; and you must excuse me if my language is homely and familiar.

During the last summer we have had many cases of urethral disease, and some of them very severe.

The following case is a good illustration :—

John Honor, æt. 45, a housekeeper, married, and by his own account, a steady, sober man, was admitted into Lazarus Ward, St. Thomas's Hospital, under the care of Mr. Solly, Nov. 20, 1848, for a stricture.

He has suffered from this complaint for at least twenty years, so that he says he cannot recollect all the circumstances attending the commencement of the disease; but he remembers that he first observed a difference in the passing of his urine, after a somewhat protracted attack of gonorrhœa, which was treated, he believes, with copaiba—at all events, injections were not employed. This last circumstance is worth noticing, as we generally find stricture results from their use. For the cure of the stricture he has never regularly applied to any medical man; for he says that the stricture is but little trouble to him. The urine does not dribble away from him, neither does it disturb him, generally speaking, more than once during the night, it cuts him a little in its passage, and he is rather long voiding it, but can generally do so without straining; at times, however, and without any apparent cause, he finds that he can only pass very little urine at a time, and this only with considerable straining efforts: under these circumstances he usually sought surgical advice.

On November 19, he came to this hospital; he was apparently suffering but very little pain. On attempting to pass an instrument, a false passage running to the right of the urethra was discovered: this appears to have existed for some years. He first bled copiously from the urethra. The man was sent to the warm bath, but no instrument could be introduced into the bladder. On the morning of the 20th he came into the hospital, and Mr. Solly succeeded in passing a small catgut bougie.

This case, gentlemen, is one of ordinary permanent stricture; that is, one in which the urethral passage is narrowed — strictured by the deposit of adventitious tissue in the course of the canal.

We make use of the term permanent, in contradistinction to the spasmodic stricture, which may arise from simple spasm of the accelerator urinæ muscle; the narrowing of the channel from this cause being only temporary, ceasing with the cessation of spasm in the sphincter muscles. But you must not suppose that you often find these two kinds of stricture perfectly distinct, for you seldom meet with a permanent stricture unaccompanied with more or less spasm of the muscles and of the urethra; and the most common cause of spasmodic stricture is more or less amount of permanent

stricture. You must not suppose from these observations that the distinctions are useless and artificial—more theoretical than practical. Nothing can be of more importance than to remember that they may be isolated, and that they may be combined.

The first time that the urethra receives a bougie, whether there is stricture or not, it will invariably resent it.

It will contract upon the instrument, the sensation of a stricture being communicated to the operator, and if the instrument is forced onwards, the mucous membrane will be lacerated, inflammation set up, and a permanent stricture formed where none existed before. But if, on the other hand, the operator, on finding his sound or bougie clasped by the canal, waits a little while, rests on his oar, and then gently coaxes the instrument onward, the apparent stricture vanishes, and it slips into the bladder with perfect ease.

When there is much spasm of the urethra, a metal instrument is better than a wax bougie.

I will now tell you what I did in Honor's case, as it will convey to you practically my views regarding the treatment of all such cases.

After inquiring what had been done, and finding that he had lost a good deal of blood in the attempts made to pass a bougie,—that no instrument had been passed, and that there was a false passage,—I took a moderate-sized sound, and, passing it gently down the urethra, found that there was some spasm, but not a great deal. Waiting a little, I moved it onward again, till I found it absolutely stopped. After removing it, I took a small catgut bougie, and, passing it gently down, soon found it quitting the natural channel and entering a false passage. Having now ascertained the direction in which this passage ran, I then withdrew the bougie, gave the point a slight bend, and, passing it in again, feeling round the urethra for the pervious spot, but avoiding the false passage, I managed to hit it off; so the instrument slipped into the bladder without using the least pressure or force.

This is the great secret in the use of the thread-sized catgut bougie: it must be handled most delicately, turned in the urethra, something like a cork-screw, till the hole through which the urine escapes from the bladder is pitched upon; and this is immediately felt by the instrument passing forwards without any sensation of obstruction. The catgut bougie must never be used with the idea of breaking down a stricture or pushing through it, but, if I may so express it, coaxing it into the bladder. Whenever you find the bougie spring back, you must stop and give it a little twirl between your forefinger and thumb: you may often have to work for half an hour or more in this way, without being able to hit off the opening; but patience and delicate handling will do a great deal. I assure you it is worth taking some trouble to relieve a fellow-creature effectually of such a serious malady without the use of the knife. Having passed the stricture, and entered the bladder, I desired that the bougie should be retained there for an hour. I attach great importance to the retention of the bougie; and with the catgut bougie there is this additional advantage, that the bougie swells to twice its original size. I attach so much importance to the retention of the bougie, that in private practice I have had an additional room made on purpose for such patients.

In Honor's case the plan has succeeded so well that we can now introduce a fair-sized bougie; and I have just heard that he has left the hospital, considering himself well enough to go to work again.

But there are cases of stricture which no skill or patience on the part of the surgeon can overcome with the aid of the bougie alone; and we have such a case in the house at the present time. I called your attention to it to-day when we were going round, and I will read you the account as taken by Mr. Bull, the dresser.

Stricture of urethra—subsequently, operation through perinæum.—John Carter, æt. 59, a cabinet-maker, much debilitated, and apparently of broken constitution, was admitted under Mr. Solly,

May 9, 1848, with a permanent stricture; his urine is constantly dribbling away, and it is now some years since he had power to void it in a stream. The stricture is situated in the membranous portion of the urethra, and the finest-sized catgut bougie cannot be passed through it. The man does not complain of much pain, but says that his life is rendered miserable by his condition.

Has been the subject of stricture for 20 years: was formerly a sailor on the West India station: 26 years ago, whilst there, he contracted syphilis, and owing to his own neglect, and not adopting proper remedies, the chancres spread over the whole of the glans penis. The sores did not heal for 12 weeks; the result was the loss of a lateral quarter of the glans: the frænum, and the normal orifice of the urethra, were obliterated. Has never had secondary symptoms. Has been accustomed to drink spirits, &c., freely whilst in the service. Found no difficulty in passing his urine until four years after he had been cured of the venereal disease, when (he says) without any assignable cause, the urine gradually ceased to flow in a full stream. He says that about 20 years ago he was under the care of Sir Astley Cooper, who passed a number of different kinds of bougies, and finally, "an armed catheter," which he describes as an instrument having a sharp point that was thrust into the stricture. This last afforded him some relief, but after some time the stricture again became permanent, and up to the present time relief has been only partial. Ordered to dilate, if possible, the stricture, with small catgut bougies, gradually increasing their size, and to take—Inf. buchu, ℥ij.; liq. potass. ♏x. bis die.

June 1.—Up to this there has been little or no improvement.

19th.—Hirudines vj. have been applied to perineum before using the bougie; also warm baths; likewise belladonna smeared upon the instrument, and allowed to remain within the urethra, but without the least effect upon the stricture. I was induced to order the leeches, in consequence of the benefit I have seen derived from them in similar cases; they relieve the congestion of the urethra, relax the muscles, and thus assist the bougie in its onward passage. Belladonna is also very often useful.

July.—During the whole of the month the above treatment was alternately used, but no benefit resulted. The man's breath is bad, and his spirits appear broken by his unhappy condition.

Aug. 10.—A small silver catheter has been (every few days) passed down to the principal stricture, and gentle pressure kept up for some minutes, with some little good, the stricture appearing to relax without bleeding.

20th.—Have succeeded in passing the catheter apparently to the prostatic portion, when the catheter was found to enter the rectum all at once; I suppose by an old opening, for no bleeding followed, nor did it give the man pain.

Sept. 2.—Under the above circumstances, and the impermeability of the stricture, and the impossibility of relieving the patient by palliatives, Mr. Solly determined to cut through the perineum, as being the only chance of giving permanent relief to the man,

though the badness of his health threw some doubt as to the success of the operation.

The patient was placed on the operating table, and bound in the position for lithotomy; Mr. Solly made an incision in the raphe of the perineum, just anterior to the bulb, down upon the catheter. The strictured portion of the urethra was almost cartilaginous, and offered more than ordinary resistance to the knife; but when it had been completely divided, the catheter was readily passed onwards through the prostate into the bladder without giving the patient much pain. About 16 ounces of very fetid muco-purulent urine was passed through the catheter, but without blood.

Now you will find it a matter of great importance to bind your patient, as for lithotomy: it facilitates the operation, which is certainly one of the most difficult in surgery. Indeed, Sir Astley Cooper used to say, that the surgeon intending to perform it ought to have a long summer's day before him.

A No. 12 silver catheter was used: the orifice of the urethra had to be slit open (the old cicatrix preventing its passing), and some little difficulty was experienced in progressing it down the upper part of the urethra, from its constricted state, and the presence of two smaller strictures within its spongy portion.

The patient lost comparatively little blood; his pulse was feeble, and his vital powers low. After having been in bed several hours, his pulse rose, and his skin became warmer.

4 P.M.—A slight oozing of arterial blood, apparently from the bulb, took place, which increased as the skin, &c., became warmer. Cold water dressing did not check the bleeding, and as the patient began to look blanched, the wound was plugged with lint and alum water; by this means the hæmorrhage was checked.

11 P.M.—No further bleeding. The catheter being tied in rather tightly, causes him some inconvenience. Complains of no pain; is not restless, though the parts are swollen and tender to the touch. Pulse feeble, 80. To prevent the patient injuring himself with, or displacing the instrument, the knees were kept up and flexed by a jack-towel, fastened to the head of the bed. ℞ Tr. opii, ♏xl. hâc nocte.

3rd.—No more bleeding. Had some sleep last night; feels quite easy; parts not so hot as last night, but still swollen and tender; pulse very weak; loss of appetite, yet no sickness, but very thirsty; skin warm; looks haggard, and the countenance is shrunken. The urine that comes through the catheter is still most ammoniacal

and turbid, but without blood. Afternoon: Had a griping pain in the bowels, which was relieved by hot flannels; no tenderness about abdomen. Night: Makes no complaint of pain; the parts look a little puffed and discoloured. Is not restless, but does not sleep; pulse still weak; tongue dry and coated.

4th.—Much the same as yesterday.

5th.—Catheter changed by Mr. S——, and repassed without much difficulty; wound looks more healthy. Much feebleness and debility; slept last night without tr. opii; bowels open to-day for the first time since operation; urine still very fetid, with much slimy mucus; no albumen or excess of lithic acid.—Wine ℥iv.

7th.—Is still very feeble, and his pulse is weak; wound going on well, and a slight discharge from it; bowels open; complains of no pain.

9th.—Answers very incoherently; breathing oppressed; is very low and feeble. No pain in perineum; the parts appear tender only from excoriation arising from the urine and discharge which passes. The wound does not look sloughy; bowels open; to take for support—arrow root, eggs, roast meat, and, at his own wish, gin ℥vj. instead of wine.

11th.—On the whole is much better; pulse feeble, 80; answers somewhat irrationally, yet expresses himself better. Wound and perineum a little tender, but not swelled. The urine clear and not so fetid. His respiration is not so hurried as on the 9th.—Cat. lini. perineo.

16th.—Catheter again changed, and repassed without difficulty. Man very feeble. Pulse weak; wound healthy; parts much excoriated from the discharges and urine which passes through perineum.

18th.—Spent a restless night; passes his motions involuntarily; pulse feeble. The wound looks healthy, and is granulating. As the man feels uneasy, the catheter was removed; on its being withdrawn, a little urine passed from the urethra. The man's look is anxious, and his vital powers appear to get lower.

To still continue the gin and other support. The excoriation has been relieved by the application of lot. sodæ carbon.

19th.—Appears more collected, and is in every respect better. No. 11 catheter introduced; wound looks healthy, and is gradually closing; urine still turbid, but not so ammoniacal. A little water still finds its way through the wound. Bowels confined. To take pulv. rhei, c. cal. ℈j.

25th.—Is still exceedingly weak and low; pulse feeble; appetite bad; and he is at times irrational in his replies. The wound is looking healthy, and is slowly healing. The catheter was taken out of the urethra, but the patient has no control over the urine, which passes involuntarily.

29th.—Catheter introduced daily; water still unchanged in character; a good deal of ropy mucus always follows the introduction of the catheter.

Oct. 10.—The patient is still so weak and feeble as to be obliged to keep in bed. The urine still passes freely through the urethra, though he has no control over the stream. The wound in perineo almost closed. A small fistulous opening has appeared on the under surface of the penis, in front of the scrotum, through which the urine oozes. Catheter passed every two days to keep the urethra free.

25th.—The opening in perineum has quite closed; the healing has been accelerated by the occasional application of arg. nit. No. 12 catheter passed thrice a week, for there is some little constriction in the upper part of the urethra. The man is not yet able to leave his bed, from debility, and requires the gin and other stimulants to keep up his strength.

30th.—Fistulous opening in front of the scrotum has rather increased in calibre (about the size of a large pin); caustic and iodine have no effect upon it; urine still thick and containing mucus.

Nov. 10.—The man has gained a little strength, and can with assistance walk down the ward; fistulous opening unimproved, and the urine remains the same; a catheter still required, chiefly as a precautionary measure.

20th.—Man improving in power; the fistulous opening unhealed, though a little lessened in size; urine unchanged. He feels no pain in the bladder, and can now retain his water for about four hours at a time.

Dec. 3.—Improved in every respect; goes down stairs every day; wound in perineum perfectly healthy.

The following case is another illustration of the success which may attend this mode of treating stricture:—

Operation through perineum for stricture.—Thomas Lee, æt. 42, spare make, of an anxious countenance, admitted to Henry's Ward, under Mr. Green and Mr. Solly, June 26, 1843.

Has been the subject of stricture for many years; has undergone treatment at various times for its relief, and at various places, but with only partial success; was last under Mr. Tyrrell (St. Thomas's Hospital), where he remained about six weeks, and was presented about a fortnight after, much relieved. The bougie was passed with much difficulty, but its use was continued until he was presented. He returned on June 26, suffering from retention of urine, but there was nothing very urgent in the case; his pulse was quick, and his countenance rather anxious, but naturally of a nervous temperament; very little pain was complained of, and the bladder was not much distended. A large-sized silver catheter was first made use of, but as it encountered a stricture about three inches from the orifice of the urethra, a smaller one was employed: the stricture was then passed, but a second presented itself about the mem-

branous portion of the urethra, which resisted all efforts to reach the bladder. The warm bath was had recourse to, with the same result as regards the instrument, but it had the effect of procuring partial relief for the patient in the natural way. He was then removed to Henry's Ward, and no further attempt at that time was deemed advisable.

27th.—Was seen by Mr. Solly this morning, who ordered a bougie to be passed each day, commencing with a small one, and gradually increasing the size. To take pulv. rhei, c. cal. ʒj. st. et M. S. co. postea.

30th.—The attempts to pass a bougie have as yet been unsuccessful. The first stricture has, however, been overcome, but the second continues very obstinate; the difficulty is considerably increased by a number of false passages. The stream of water has improved a little, but is much twisted, and cannot be passed in a straight line, inclining either to one side or the other: it is about the size of a small quill. The instrument to be persevered in, and the following medicine to be taken:—℞ Hyd. chlorid. gr. j.; opii, gr. j. o. n. M. S. co.

July 15.—There is much fever to-day; is very restless; the medicines to be discontinued, and to take pulv. jal. co. nocte; ol. ricini mane, and the bougie to be discontinued.

19th.—No instrument has been passed since last report. To apply equal parts of tr. iodin. et opii to perineum; then bal. calid.; after which try and pass a bougie. To take inf. buchu, ʒij.

22nd.—The bougie has been again tried; the smallest one cannot be passed: ordered to have a catgut one passed into the stricture (after quitting a bath), and to remain within the urethra, that by its swelling the stricture may be dilated.

Aug. 8.—No improvement. The catgut bougie has been passed twice or thrice into the stricture, and allowed to remain from thirty to fifty minutes, but no good has resulted. The iodine to the perineum has been discontinued for some days. To take pil. hyd. gr. v. alt. noctibus, M. S. co. mane sumendus.

12th.—As the stricture has been so obstinate, and has not yielded at all to the various remedies employed, it was determined to cut down upon it through the perineum.

Mr. Solly proceeded to operate without further delay.

A full-sized male catheter was passed down to the seat of stricture in the spongy portion of the urethra, just anterior to the bulb (the orifice of the urethra having been enlarged to admit it). An incision was then made in the line of the raphe, on to the point of the instrument, through the stricture into the urethra. The catheter was then passed onwards, but I could not succeed in introducing it into the bladder. I then passed a female catheter with some difficulty into the bladder, and guided by this instrument I was enabled to carry the male one onwards. The instrument was then retained in position by means of a tape passed through the "eyes" of the catheter, which was further carried beneath the thighs, and tied to a bandage around the abdomen.

14th.—Very comfortable this morning; had very little sleep last night.—℞ Morph. mur. gr. ¼ om. n.

16th.—Progressing favourably. To take porter, Oj. and meat daily, increasing morphia to gr. ½. The urine flows through the instrument freely; is clear and healthy.

23rd.—Has complained for a day or two of an uneasy pain in his buttock; upon examination this morning, a bed-sore was discovered over the sacrum, but not an extensive one.

Ordered—Cerat. calamin. to the parts, and to lie on a water bed. All previous medicines to be discontinued, as he is a little feverish, and to have mist. efferves. ter die, and beef tea. The porter to be discontinued. Black wash and poultices have been applied for some days to the perineum, which is healing favourably.

30th.—Has been gradually improving since last reports. To continue as before.

Sept. 9.—Very comfortable; the sore over the sacrum has nearly disappeared. The water continues to flow through the catheter, and is quite natural. Instrument to be withdrawn, and a gum-elastic one introduced.

10th.—In the night the top of the gum-catheter came off, and the instrument slipped from the urethra. The silver one was ordered to be introduced, but as some difficulty was experienced in so doing, it was not persisted in. He passed his water this morning through the urethra in a tolerable stream, but it inclined a little to one side.

11th.—The silver catheter was introduced this morning without difficulty. The porter and meat renewed.

23rd.—The catheter was withdrawn this morning and not returned. Water bed no longer necessary.

30th.—No difficulty in passing the catheter. The wound is nearly healed. The stream of urine is good, and the water looks healthy.

The urine in this case was examined from time to time; it was generally rather alkaline, and at one time there was a good deal of thick mucus deposited. The bougie was employed every day, according to the condition of the patient, who at times was very nervous and irritable, with occasional attacks of fever.

Catheters, both metallic and elastic, were occasionally made use of.

Oct. 2.—Early in this month he was presented quite well.

Nov. 4.—Presented himself this morning at the surgery. A catheter was introduced without the least difficulty.

I have thus related to you two successful cases of the operation in perineo for stricture; but I must now show you the reverse of the picture.

As I told you, when I first mentioned this operation, it is one of the most difficult in surgery; for the urethra is generally so much diseased, and the parts so much altered in structure, that it is extremely difficult to find the vesical portion of the urethra after dividing the stricture, You can scarcely ever see it, and you can only discover it by the touch, either with a probe or a female catheter: sometimes, as in Carter's case, you can pass the same catheter onwards into the bladder with very little difficulty; in other cases, the catheter passes on apparently in the right course, and without using any force, and on withdrawing the stilette the urine flows, so that you feel no doubt of the instrument being in the bladder: the patient is relieved, but in the course of a few days a low fever sets in, and the patient sinks.

LECTURE XLVII.

On Stricture.—*Continued.*

Gentlemen,—We have now ample material to continue our observations on the urinary organs, as you must have observed in your visits with me to the wards since we last met for lecture. Before we direct our attention to new cases, we will say a few words touching some of our old friends. Kain, the man on whom I performed the operation for lithotomy, recovered rapidly: the wound healed in about ten days, but he has suffered from incontinence of urine; for this symptom, which is not a common consequence of lithotomy in the male, I have prescribed the extractum nucis vomicæ, having found it very useful in cases of incontinence from other causes. Many of you will, I think, remember a case that I had, in Lazarus Ward, about six months ago, where the patient, about twenty years of age, wetted his bed every night. This man got perfectly well under this medicine. I had a similar case in private practice just about the same time, equally successful. I give very small doses at first, gradually increasing them. Kain took the eighth of a grain three times a day; he is now taking a grain, and he is improving, though slowly. He can retain his water much better than he could a week ago.

The fistulous opening of the urethra in front of the scrotum, in Carter, did not diminish in size, notwithstanding the repeated application of caustic and tincture of iodine. You are, of course, aware that the difficulty which occurs in the treatment of these fistulæ is from the presence of the urine. This acrid fluid, acting as an irritant, prevents the sore from throwing out healthy

granulations, and it stops the adhesive process. There is always more difficulty in healing a fistulous opening of the urethra in front of the scrotum than behind it. This arises from the deficiency of subcutaneous cellular tissue, and the thinness of the skin: a variety of expedients have been tried to effect this purpose. But to Professor Dieffenbach, of Berlin, is due the credit of having proposed a remedy for this difficulty. He pointed out the necessity of opposing a larger surface for the adhesive action than the edge of the divided skin. He, therefore, instead of merely paring the edges of the wound, dissects up the skin, so as to bring a wider extent of surface into contact. My colleague, Mr. Clark, had a very successful case in which he adopted this plan: you will find an account of it in vol. xxviii. of the *Medico-Chirurgical Transactions*.

On Saturday last, I made a longitudinal incision through the skin, commencing a quarter of an inch above the opening, carrying it downwards in the mesial line, through the centre of it, to the same extent below. I next raised the integuments on each side, and then, after making two parallel incisions to relieve any tension that might occur from erection of the penis, I raised and brought together over the hole the under surface of the integument I had dissected up, and retained them in apposition by means of the quill suture. After this I introduced into the bladder a full-sized catheter, and retained it there. I am sorry to say that the operation entirely failed, and that the urine comes through the wound as bad as ever.

The next case of stricture for our consideration is very instructive, as you will find when I read it to you. You have already seen enough of its treatment in the ward to judge of its importance, and I hope therefore to feel much interest in it.

J. S., policeman, aged 55, came under my care in 1842, suffering very severely from stricture, and especially from that most troublesome consequence, irritable bladder. He said it was most distressing to him; that he was obliged to leave his beat every five minutes to make water. He remained my patient in the hospital about six

months, and left apparently quite well. On this occasion I had very great difficulty in removing the stricture, and I was not then so much in the habit of using the catgut bougie; I employed the caustic bougie twice, as recommended by Sir Everard Home; it was very successful in this case, but it is a dangerous weapon, and I do not recommend it to you; I believe that it often does a great deal of harm. From 1843 till the present time I never saw him as a patient, though I occasionally met him in the street, when he reported himself to me as well.

On the 5th of December, 1848, he was admitted into Henry's Ward, suffering with fistula in ano, stricture, and scrotal abscess. He gives the following account of his case:—

He says that he left the hospital quite cured in 1843, since which time he has had no recurrence of the disease until about 18 months ago, when he was attacked suddenly on his beat with intense pain, which he describes as if a penknife were run into his perineum; he was obliged to desist from duty, and was attended for five months by a surgeon: at this time his water did not dribble away, he could always retain it, but when he wished to evacuate it, it came away in a small stream, and caused him great pain. Under this gentleman's treatment he became quite well, and returned to his duty, which he continued for five months, when he was attacked in precisely the same way, as before, with intense agony in the perineum, and inability to pass his urine, although he says a quarter of an hour previously it came away as well as ever it did in his life. He has been ill ever since, under the treatment of the same surgeon. He says that he was getting better, his surgeon using a No. 6 bougie, until one morning he used a large catheter, No. 12; that he passed this into the bladder, and drew off some water, but that it gave him excruciating pain, so much so that the surgeon was obliged to remove it before he washed his hands.

He says that after this an abscess formed on the left side of the rectum, which was opened about four weeks ago, since which his urine has oozed through the wound. He had no fistula before.

He has also an abscess in the scrotum, which has been coming on for about nine weeks. When he passes his water it comes away in a small stream, frequently broken, and is accompanied by great pain: the greater part, however, passes through the wound made in operating on his fistula.

This case, gentlemen, teaches us one most important point in regard to stricture—namely, that a patient must never consider himself cured for life: a stricture is never cured permanently, it will always return if means are not taken to prevent it. A man who has once had stricture ought either to learn to pass a bougie for himself, or have one passed from time to time by a surgeon.

It also illustrates one of the consequences of stricture—namely, abscesses in the neighbourhood of the urethra, either in front of the deep perineal fascia, or triangular ligament in the perineum, or behind the deep perineal fascia, by the side of the rectum. Poor Stevens had both these miseries combined.

The immediate cause of such abscesses is a point of great interest and importance. They are invariably preceded by ulceration of the mucous membrane of the urethra; the ulcerated point may be but of pin-hole size. It allows a drop or two of urine to escape, and this sets up inflammation in the surrounding cellular tissue: suppuration and abscess soon follow.

Such ulceration is usually the effect of stricture, and if the stricture is a very firm one, and the opening very small, considerable extravasation of urine, and subsequent sloughing, will be the consequence; and I dare say we shall not wait long before we have a case in the house to illustrate this sequence of events, especially at this season of the year, when libations to the jolly god are being indulged in, and the urinary organs have double duty to perform.

But we sometimes meet with abscess in perineo, communicating with the urethra, where there is not nor has been any stricture; and we have a case in the house which is an instance of it, to which I shall soon refer.

To return to Stevens. I found this man on admission suffering a great deal. I attempted to pass a catheter, but as it would not enter easily, I desisted. Finding that there was not a free exit for the matter through its outlet over the tuber ischii, I dilated this fistula, and divided the sphincter ani: this gave free vent to the pus, and on the following day I found him much relieved.

Dec. 14.—I again made an attempt to pass a catheter, No. 4, into the bladder, and succeeded in doing so without using any force; but my patient suffered excessive pain, and he could not bear it to be retained there. I have now no doubt that it did not pass into the bladder by the natural channel, but by the false passage made previous to his admission.

16th.—Has been in great pain since the catheter was passed.

Jan. 3.—I found him this day very low and feverish ; no appetite ; suffering severely from constitutional irritation.

I made, as you saw, a careful examination of the perineal region ; we found the matter burrowing in the scrotum, and pointing on the opposite side to the spot where it had been opened. I passed a catheter down through the bulb and triangular ligament into the membranous portion ; I could then feel the instrument jerk forwards into a false passage : I felt it with the fore-finger of the other hand through the rectum, but the point of the instrument did not enter the rectum, nor indeed did it feel nearer the gut than in the normal state of these parts. I could not pass the instrument by the natural channel into the bladder, at least I judged so by the great pain he suffered, and I know him to be one of those patients who do not cry out before they are hurt. I then took a small wax bougie, and curving it to the shape of the urethra, passed it fortunately along the natural channel into the bladder. The proof of this is the entire absence of pain after its introduction.

In this unfortunate case, for unfortunate it truly is for the poor fellow, you must remember that there are two distinct abscesses and their consequent fistulæ ; the one commencing within the pelvis, posterior to the triangular ligament, and burrowing by the side of the anus, has pointed over the ischium.

From the history you have heard, you cannot doubt that it was the result of a false passage made by the forcible introduction of a large catheter into a previously diseased urethra. This fistula, in consequence of its running by the side of the rectum and sphincter ani, requires the same treatment as a true fistula in ano, and for that reason I divided the sphincter. But this forms but a small and comparatively unimportant part of the treatment. The great difficulty we have to contend with is the false passage and stricture of the urethra ; the second, abscess of the scrotum, through which the urine also passes, and its consequent irritation. The

man's life has been in great danger from constitutional irritation, and its accompanying fever; but having succeeded in passing a wax bougie along the natural channel into the bladder, I hope we shall succeed in ultimately restoring him to health without operative interference. The alternative is a very serious one, for nothing short of laying open the urethra and dividing the stricture from end to end would be of any service. It is astonishing what rest, quiet, protection from atmospheric changes, and total abstinence from all stimulating liquors, will do in these cases; so that I trust we shall see him recover.

The next case to which I have to direct your attention is also one of abscess in perineo, and stricture of the urethra. As a general rule, the relation between these two diseases is very close; the stricture of the urethra arresting the flow of urine, causes irritation and ulceration of the mucous membrane posterior to the stricture. This ulceration may be only, as I have already said, the size of a pin-hole, and only a drop of urine escapes; but this little drop I suspect is often the cause of most severe suffering, and I suspect that this is the explanation of the severe pain that Stevens describes that he felt early in his complaint: when the urine escapes in very small quantity, it produces irritation and abscess, but if the stricture is very tight, and the obstruction complete, then the urethra gives way extensively, and extravasation into the perineal and scrotal section of the cellular tissue, gangrene, with all its baneful results, follow. Perineal abscesses generally communicate with the urethra; but this has not occurred in the following case.

Abscess in Perineo.—Dec. 13, 1848.—S. K., a married man, æt. 37, mariner, leads a free life, but is not a hard drinker, was admitted into Henry's Ward, under the care of Mr. Solly, with an abscess in the perineum.

Previous history.—He states that before the age of 26, he had gonorrhœa several times: these attacks were mostly treated with injections; that soon after this he observed that his urine came in rather a smaller stream, and that at times when passing water he had a cutting pain along the urethra, more particularly after

drinking a little more than usual. He knew these symptoms to denote stricture, and applied to one of the navy surgeons, more in fear of the disease getting worse than because of the inconvenience it gave him at the time. He occasionally had an instrument passed, and soon was able to pass for himself a No. 9 gum elastic catheter, which he did about once in a month. Thus has the stricture continued to give him but very little inconvenience for the last nine years.

On Tuesday, Dec. 5, he had a fit of determination of blood to the head, to which he had been rather subject since having been to the coast of Africa, two years ago, where he had a fever, which rendered him weak and low ever since. He was not bled for this attack, but had six leeches applied to the head. The morning after this fit he had great nausea, with retching, and then shivering fits. He soon became aware of a pain in the perineum, running along to between the testes: this became gradually worse; he lost his appetite, and could not sleep, and had much difficulty in passing water. Leeches were applied to the perineum, poppy fomentations were used; but in vain, he became worse, until he came to the hospital, December 13.

Present appearances.—He is a robust and healthy-looking man, though evidently now worn and ill. The perineum is full, and projecting downwards; the skin is not at all discoloured; sense of fluctuation positive, but deep-seated.

Mr. Solly endeavoured to pass a large catheter, but found that it would not go beyond the bulbous portion; he then made an incision with a double-edged scalpel, about one-seventh of an inch in depth, in the raphe of the perineum, letting out at least about two ounces of a very fetid pus. A catheter was then passed easily into the bladder, and the patient was directed to keep it there as long as he could bear it comfortably. The urine was acid; his tongue was white; pulse 90, and weak. Ordered, liq. potass. ℥x.; inf. buchu, ℥j. ter die.

Mr. Marsack subsequently ordered him liq. opii sedativ. ℥ss.

14th.—He has slept about half an hour in the night, and has much less pain than he had previous to the incision; but complains of great smarting on passing his water, but none comes through the wound.

15th.—He slept fairly last night; his appetite is better, and general appearance much improved; tongue less white; pulse 84 and stronger. The wound begins to granulate. Still complains of great pain when making water, but none comes through the wound.

He has gone on well since the last date, and left the hospital quite well on the 23rd of December.

The way in which I explain this case is thus:—The debilitated state of constitution, and depression of the nervous system caused by anxiety, was the predisposing cause of the suppuration; the irritation of the stricture

determined it to the urethra. I have frequently remarked a connection between mental anxiety and suppuration, which I cannot pretend to explain, but that there is some pathological connection I feel certain. I have known them come together too frequently to be the result of accident. I have seen it repeatedly in the persons of mercantile men, and especially within the last few years.

The next case is one of perineal abscess, communicating with the urethra, but without any stricture. The exciting cause in this instance is gonorrhœa. This is not common. I have scarcely ever seen it before. I will read the history of the case, and also remind you how easily I have just passed a full-sized catheter, showing that there is no stricture.

George Bottomley, aged 44, paper maker, married: gonorrhœa four months ago: abscess formed behind the scrotum. About one month after the commencement broke of itself. Not aware that any urine came through it until a fortnight previous to admission. Never had any stricture or difficulty in making water.

6th.—Passed a catheter without difficulty.

The treatment since he came in has consisted in keeping a catheter constantly in the bladder, and in daily touching the edges of the fistula with nitrate of silver. Under this system the wound has gradually become smaller; still, however, a little urine passes through it.

13th.—The wound has quite healed, and he is nearly well; the catheter has been retained in the bladder up to the present time, having of course been removed from time to time, and a clean one introduced.

There is another case which I wish to bring before your notice to-day, that of John Kibbal, a man who was admitted Oct. 6, with perineal abscess, and whose case I will read to you from the ward book. I saw him shortly after his admission; he was suffering from considerable pain, and as there was no doubt as to the nature of the case, I at once made an incision along the raphe of the perineum from the scrotum nearly to the anus, and this gave exit to a quantity of pus and urine, and afforded him great relief.

You will find in these cases that a free incision is the special treatment, and it is best to commence the incision below, and draw

the knife upward; by so doing you avoid the confined fluids gushing out over you.

It was formerly the practice to pass a catheter through the wound into the bladder, but this is now seldom adopted, and is not attended with any advantage.

In passing an instrument into the bladder after an operation like this (which you need not do for some days), be careful to use it very gently, avoid everything like force, and if you cannot succeed, you will often find by placing the finger in the wound you will be able to aid the passage of the catheter in the right direction; you will recollect it was so in the case under our notice. It used to be the practice to keep the catheter in the bladder until the wound had closed, but this is a proceeding which is wholly unnecessary.

With regard, then, to the treatment of stricture, I will suppose a case of this kind comes to you, the patient complaining of difficulty of micturition, with pain, and occasional inability to pass his urine; I should first recommend you to try a large catheter, and if unsuccessful, try smaller ones; should you not be able to introduce them, I would then at once resort to a catgut bougie of the smallest size, such as are called hair bougies; by bending the point of it a little to one side, and twisting it round, you will, if not at first successful, be generally able to introduce it, but it will often require the exercise of much patience; what, however, I wish to impress upon you most is, to avoid force; you will frequently find a stricture relax under a gentle pressure kept up against it, when a greater amount of force would only render the part more irritable, aggravate the mischief, and render futile any attempt at introduction.

Having then got a hair bougie into the bladder, let it remain for a short time, and it swells, thus dilating somewhat the narrowed canal, and probably on the following day you will succeed with one a size larger.

The deposit, or thickening, which causes the stricture, does not take place to an uniform extent around the calibre of the urethra, and thus the aperture is situated rather to the side of than in the central axis of the urethra, and if you can once discover on which side of the canal the opening is placed, you will afterwards, by bearing this in mind, be able to pass the instrument with less difficulty.

If you have a case of complete retention, you try a catheter or bougie, but use no force, and if there be much difficulty, do not follow the practice of some, who *will* get an instrument in somehow or somewhere, but order a warm bath at once, and, should this be of no avail, give a full dose of opium, which may be combined also with antimony.

In a hearty strong man, even bleeding might be advisable, but you will meet with few cases which will not yield to opium. When, however, such a case does occur, I should recommend you to adopt the operation of puncturing the bladder by the rectum in preference to that of cutting down on and dividing the stricture.

LECTURE XLVIII.

On the Treatment of Stricture by Pressure.

Gentlemen,—The cases to which I shall first direct your attention to-day are two interesting cases of stricture cured rapidly by the use of the long conducting bougie and tube.

In the treatment of stricture, as in the treatment, indeed, of every ill that human flesh is heir to, you must not expect to find one unvarying plan succeed. Each case differs, in some slight, though it may be important, particular. You must not suppose that stricture is to be treated solely by mechanical means. Stricture forms no exception to other strictly surgical diseases: it is not to be cured by a mere handicraftsman—a mere chirurgeon. I do not mean to say that this is a rule without an exception; but I do mean to say, that the surgeon who looks solely to the removal of the local evil runs great risk, in some cases, of killing his patient while he is curing the disease. In other cases, I believe that the surgeon is foiled in his attempt to cure the stricture by simple and unhazardous means, solely because he neglects constitutional—medical treatment; because he neglects to combine the physician with the surgeon in his own practice. I suspect that many a cutting operation for stricture, whether the knife be used within the urethra or without it, might be avoided by patient medical treatment previous to the use of any instrument.

The two cases which I shall now read to you from the notes of my dressers, Mr. Wood and Mr. Way, forcibly illustrate the value, or I should say the necessity, of medical treatment. In the one, you see its

assistance in avoiding the use of the knife; and in the other, the necessity of employing it to avert the constitutional irritation which the use even of dilating instruments will sometimes engender.

I must, however, take this opportunity of saying that, as far as my own experience goes, there is not one case in two hundred, of even very bad strictures, where the knife need be used at all. I do not consider that it should be employed in any case where you can succeed in introducing the thread catgut bougie—that is, in any stricture which is pervious. I believe that the cutting operation for stricture, even when performed by the most skilful operators, is a dangerous proceeding; I believe that when the records of such cases are given to the public we shall be grieved with its fatality. My experience has taught me that, when you can once introduce a bougie into the bladder, you can cure that stricture without cutting it. By the plan which I am now advocating, the adventitious tissue which forms the stricture is rapidly absorbed under the stimulus of pressure, and I believe that this action of the absorbents is a natural and conservative action—a safer action to the patient than the scalpel of the chirurgeon.

When I read Mr. Wakley's observations on the treatment of stricture, I was struck with their good sense and practical bearing. Having, however, for some time past been in the habit of using the small thread catgut bougie successfully in the treatment of stricture, I determined to continue their use instead of the metal instruments of Mr. Wakley, and also to substitute the elastic catheter instead of the silver. I went to my old friend, Mr. Millikin, the instrument maker, in St. Thomas Street, and told him what I wanted, and he at once understood it, told me he would make it, and finished by telling me that Mr. Hutton, of Dublin, had been using similar instruments for years.

Mr. Millikin soon supplied me with long glazed catgut bougies, just double the length of an ordinary bougie, from the size of a mere thread up to that of No. 2 catheter. He also supplied me with elastic

catheters to match them. After I used these catheters for a few months, I improved them, by having them graduated thus :—Some were about the size of a No. 1 at the point and No. 6 at the hilt. Others were as large as No. 3 at the point, and No. 12 at the hilt. Thus I had them made of all sizes, and the plan has answered admirably.

John M——, aged thirty-four, a tall, muscular, and healthy-looking man, a native of England, but who has been residing for the last ten or twelve years as a farmer in America, was admitted under my care Jan. 1, 1856; Mr. Way, dresser; from whom I have derived the following details :—

The patient states that he first contracted gonorrhœa in 1849, about seven years ago; this lasted eighteen months. Shortly after this, he perceived that the stream of urine became smaller. This difficulty went on increasing, but without his seeking relief, until the winter of 1854, when it ceased to flow and only passed in drops.

Let me remark, in reference to this history, that you must not suppose that strictures are invariably the result of long-continued or neglected gonorrhœa. Any circumstance which disturbs the flow of urine from the bladder, and thus induces spasm in the accelerator urina, or muscular coat of the urethra, will induce stricture: stone in the bladder, the passage of gravel in the urine, disease of the prostate, inordinate indulgence in coition in persons advanced in life, onanism, &c. He says :—

"That he applied to ten different surgeons in America for relief, and that he was also in the Buffalo Hospital, but without obtaining it; that the stricture appeared to be impermeable, none being able to introduce either bougie or catheter; that, having read some lectures in the *Lancet* of Mr. Solly's, he determined to come to England to be under his care."

Now, I need hardly say that all accounts from patients must be received *cum grano salis;* but I have quoted the exact words of my dresser, as I think they show the extreme obstinacy of the stricture.

On admission, his urine passed by drops only, causing him severe pain. It occasionally dribbled away without his knowledge. This dribbling away in small quantities is one amongst many instances

of the conservative action of Nature during disease. It is this incontinence of urine, so worrying to the patient, which, in severe stricture, really saves his life. It is like the diarrhœa which accompanies stricture of the rectum, which, though often mistaken for the disease itself, and the first discovered symptom of it, is really a conservative action induced by Nature to prevent fatal constipation. On account of the irritability at the neck of the bladder, he is compelled to micturate a great many times during the day. Pulse natural; skin moist; tongue slightly furred; bowels regular; appetite good; and he sleeps well. Urine alkaline, of a very pale colour, and loaded with phosphates and mucus; specific gravity, 1017.

Jan. 2.—Stricture found to be situated in the membranous portion of urethra, exceedingly tight and unyielding, and could not be penetrated by the smallest catgut bougie. Ordered to keep his bed and to take iodide of mercury, one grain, three times a day, and buchu mixture, an ounce and a half, twice a day. I prescribe the iodide of mercury because I believe that it excites the absorbents to remove abnormal deposits more rapidly than simple mercury.

3rd.—Bougie again tried, but unsuccessfully.

5th.—Pressure over the hypogastric region causes pain; urethra very irritable. Ordered, cupping of the perineum to eight ounces, to be followed by warm fomentations.

6th.—Continue warm fomentations.

7th.—Introduced the bougie as far as the stricture, and allowed it to remain half an hour. Gums sore; to leave off mercury.

8th.—The drops of urine come away larger and much faster. Continue fomentations.

9th.—Repeat the cupping of the perineum to six ounces.

10th.—Complains of severe pain in the hypogastric region, extending in the direction of the ureters, with constant desire to pass urine, but unable to do so.

This pain extending in the direction of the ureters, is always to be regarded with anxiety. When strictures continue for a long while, they almost always induce disease of the kidneys. This disease is not a disease of sympathy. It extends by the ureters continuously to the kidneys. Sometimes as an inflammatory action inducing acute pyelitis, or inflammation of the pelvis of the kidneys; sometimes causing dilatation of the ureters. I have seen them as large, and looking exactly like a portion of the small intestines. The pelvis of the kidneys is also distended, and without being attended with acute inflammation, chronic disease of the kidneys is induced; and the substance of the gland being

gradually absorbed, nothing but a shell of the original organ is left.

Feels languid, and has lost his appetite. Pulse natural, but tongue very much furred. To apply linseed-meal poultices to the perineum and abdomen.

11th.—The pain being allayed, the catgut bougie was again passed, but it made no impression on the stricture.

12th.—Pain in the direction of the ureters still continues. Ordered, twenty leeches to the hypogastric region; and, on account of the alkalinity of the urine, dilute hydrochloric acid, fifteen minims, three times a day, to be added to the buchu mixture.

14th.—Pain much relieved; bowels constipated. To take calomel with colocynth, ten grains, in the form of a pill, immediately.

16th.—Much the same. Ordered, eight leeches every alternate night. These little black gentlemen have proved most valuable allies to the cupping-glasses.

17th.—Introduced a wax bougie, armed with belladonna, as far as the stricture, which caused so much uneasiness that he could not suffer it to remain more than a quarter of an hour. Appetite returned.

Now, though this was one of the most obstinate cases of permanent stricture I ever had to do with, still here, as in every case of stricture, the passage is even further contracted when irritated by the presence of any bougie. Therefore it was that I requested the use of a bougie armed with belladonna. The merest tyro in medicine has seen the effect of belladonna in dilating the pupil of the eye, and it acts in the same way on the muscular coat of the urethra.

18th.—The stricture was to-day penetrated by a very small catgut bougie. At the end of four hours the man unfortunately pulled it out. Could not succeed in passing another. To discontinue applying leeches.

19th.—The passage of the urine pains the urethra very much. Continue warm fomentations.

21st.—Could not succeed in passing a bougie on account of the great irritability of the urethra.

22nd.—The urine comes away in a small stream.

23rd.—At 11 A.M., introduced another wax bougie armed with belladonna as far as the stricture. At 1.30 P.M., the stricture was again passed by Mr. Solly with a long catgut bougie, over which he passed a No. 5 elastic tube, and withdrew the bougie without causing much pain.

24th.—The "tube" has not caused sufficient uneasiness to warrant its removal.

26th.—There is a free discharge of pus by the side of the tube. The tube was to-day withdrawn, and a No. 8 common elastic catheter was passed and fastened, scarcely causing any pain.

29th.—It is perfectly easy; health good.

30th.—A No. 10 catheter introduced.

Feb. 2.—A No. 12 catheter, the largest size that we use, was introduced without any difficulty.

By this brief report you will perceive, gentlemen, that this almost impermeable stricture has been removed in ten days from the passage of the first conducting bougie and catheter.

15th.—The patient has permission to leave his bed. He is able to pass for himself a No. 12 catheter. He is an intelligent man, and I have no doubt that he will pass the instrument regularly, and thus prevent a recurrence of the disease. I generally recommend that a bougie should be passed every other day for the first week or fortnight, depending, of course, on the amount of irritation which the passage of the instrument induces. I recommend afterwards that the periods should be lengthened to once a week, and then once a fortnight, but that the use of the instrument should never be abandoned altogether.

The above case, at the same time that it proves the value of the conducting bougie, also shows the value of medical treatment as an adjunct. I doubt very much if I should have ever succeeded in passing any bougie, even the smallest, if I had not employed local blood-letting freely and repeatedly, the warm bath, constant poultices to the perineum, and last, though not least, mercury and iodine internally.

The next case is equally instructive, though not so easily managed. The subject of it was unfortunately one of those unwise men who injure their constitutions by tippling. Beer, gin, rum, brandy, and any other intoxicating drinks that came to hand, were welcome to him. The same operation which was so successful in the former case was nearly fatal in this. But do not misunderstand me. It was not the nature of the operation, or the peculiar instruments which were used, that produced the effect. The passage of any instrument, either bougie or catheter, would, I believe, have produced the same amount of irritation.

Case of Stricture, with Muco-purulent Urine.

James P——, aged forty-five, a publican and showman, was admitted into Abraham's Ward on the 27th of November, 1855, under my care; Mr. Wood, dresser. He has been a hard drinker all his life, and principally of ale and gin. This is a favourite combination with all hard drinkers, especially brewers' servants. They say that they take the gin to carry off the beer; that the beer does not affect the head so soon. In fact they stimulate the kidneys to assist them in getting rid of the narcotic poison which their unnatural appetites tempt them to imbibe. No wonder, then, that the kidneys and urinary organs become diseased. He has had gonorrhœa seven or eight times. He says that for the last five years his urine has not passed in so copious and full a stream as it ought. Last summer, he travelled in the country with a rifle-shooting booth, which I have no doubt was very attractive in these warlike days. He was much exposed to all vicissitudes of weather, and he lived very irregularly and intemperately. Six months ago, he again had gonorrhœa. For the last four months, he has been troubled with incontinence of urine, slight at first, but soon becoming very frequent; at night, he nearly always wetted his bed. He has been an out-patient at this hospital during the last month. A fortnight ago, he felt tenderness in his perineum. This increased so much as to oblige him to swing his legs far round during progression, to ease the pain it gave him. Micturition caused a severe burning pain in the same part. You will see by this that such peculiar mode of progression is not, therefore, necessarily indicative of disease of the hip or knee joints. Lately, his stricture has become rapidly worse, causing him to strain much in passing urine. Ten days ago, after much straining, he passed from his urethra two gelatinous-looking bodies, of about the length of his finger. This is the only time he has noticed anything abnormal in his urine.

On admission.—He is a stout man, but with the pale flabby face of a gin-drinker. He says he has lately lost flesh; bowels regular; appetite good; pulse quiet. Urine presents an acid reaction, specific gravity 1·16, of a whitish, turbid look, and normal in quantity. He can only retain it in his bladder for a few hours; it then dribbles away. On passing a catheter, a firm stricture was found in the membranous part of the urethra. Hemorrhage followed its introduction. To take immediately, calomel and rhubarb powder; and infusion of buchu, one ounce, twice a day.

Nov. 29.—A very small catgut bougie was to-day insinuated gradually through the stricture, which was very firm. Behind the scrotum, there was extreme tenderness along the track of the urethra, and the passage of the bougie through this part caused great pain. Ordered, sixteen leeches to the perineum, and afterwards a linseed poultice.

30th.—Tenderness in perineum relieved. His urine to-day deposits a large quantity of tenacious, gelatinous-looking mucus,

mixed with purulent matter. No tenderness in the hypogastric region. Apply a bag of hot camomile flowers over the pubes.

Dec. 2.—Easier; the urine presents the same characters. To have a warm bath every other morning.

5th.—Less pain during micturition; stream small and twisted; much less tenderness in the perineum. Hot-water cushion to the pelvis. You will find these hot-water cushions of infinite service in all painful local affections, whether they are accompanied with inflammation or not. I frequently use them.

7th.—Less muco-purulent matter in urine; tenderness in perineum nearly gone.

12th.—Mr. Solly to-day passed a catgut bougie through the stricture, and over that an elastic tube, which was retained in the bladder.

Finding the man so well to-day, I did not hesitate to use the instrument. In all cases, whether the patient is occupying the bed of a public charity or under your care in private practice, it is your duty to lose no time. Still, in surgery, as in the ordinary affairs of life, the old motto is true, "Most haste, worst speed;" and I think it would have been well if I had waited a little longer. Suffers great pain, referred to the perineum and penis, with urgent desire to pass urine, none of which passes through the catheter, though he is continually straining; he has vomited, and is now shivering; pulse small and weak. On removal, the catheter was found plugged up with mucus. This relieved him. When you employ these instruments in cases where there is mucus in the urine, or, in fact, in all cases where you intend to retain the catheter in the bladder, see that there are one or two eyelet-holes on the side, as in an ordinary catheter. The instrument makers do not usually make them with these openings, but catheters are better for this purpose when they have these openings.

Ordered, twelve leeches to the loins.

13th.—Vomiting continues, and it is now bilious; no pain in the loins; pulse rapid and weak; skin hot; tongue furred and dry; bowels costive. To take immediately, calomel and rhubarb powder, one scruple.

14th.—More vomiting and shivering; tongue dry and brown; bowels open; urine acid, and contains less mucus; he complains of

shifting pains in all his limbs; passed a restless night. Repeat rhubarb powder.

15th.—Pulse small and weak; shivering continues, accompanied by headache and dimness of vision; flying pains remain, extending over the whole body; no tenderness about the pelvis; passes urine more freely; bowels well open. Ordered, calomel, two grains; opium, one grain, immediately. An effervescent draught every four hours. The immediate effect produced by the calomel and opium was very striking.

16th.—Better; less pain; tongue moist.

17th. Complains of cough; otherwise better.

19th.—Pains nearly gone; headache; cough better; bowels costive. To have castor oil immediately.

21st.—Much less muco-purulent deposit in urine, and he experiences but little pain in passing it; bowels open; tongue moist. He complains of tightness across the chest, and cough. There is a little rhonchus in some parts of the chest, and occasional crepitation, but nothing important. Three grains of blue pill, and five grains of ipecacuanha and conium every six hours; tincture of iodine to be painted over the chest.

23rd.—Chest symptoms relieved; passes urine more freely. Mercury pill to be omitted.

29th.—Urine clearer, and passed in a better stream; no tenderness of perineum; has a slight attack of rheumatic gout in hands and feet. Lead lotion to the great toe. One grain and a half of the acetous extract of colchicum every six hours.

Jan. 3, 1856.—Micturition causes no pain, but leaves an uneasy sensation which soon passes off; urine now contains very little muco-purulent matter.

7th.—Has had vomiting and profuse diarrhœa early this morning, causing great prostration: this evidently was induced by the colchicum. Was ordered aromatic spirit of ammonia, half a drachm; aromatic confection, ten grains; compound tincture of cardamoms, one drachm; and peppermint water, one ounce and a half, every four hours. Brandy, four ounces. Omit the colchicum. 2 P.M.—Diarrhœa ceased, but he still looks pale and his skin is cold.

13th.—Bowels regular; urine clearer, and no tenderness or pain in passing it.

18th.—Complains of cough and an occasional feeling of oppression at the chest; bowels costive. To take castor oil immediately; ipecacuanha and conium pill, five grains, night and morning; buchu mixture, two ounces, twice a day. Full diet; no beer.

21st.—Much better; got up for the first time.

24th.—Muco-purulent matter in urine increased; stream more copious and straighter, and causes no pain.

30th.—Improving; urine nearly clear, and presents a slightly acid reaction.

Feb. 6.—General health good; urine sometimes quite clear—at others, a little deposit of mucus, and it causes no pain or uneasiness in being voided; stream tolerably free.

There is yet another case in my ward which demonstrates the value of the conducting bougie and tube.

Wm. B——, aged thirty-five, a house-painter, was admitted into Abraham's Ward, No. 2, Mr. Orange, dresser, on Feb. 5, 1856, with stricture of the urethra, which he first had ten years ago, after an attack of gonorrhœa, for which he used injections for some time. At first, it was not very troublesome except after imprudence in drinking, or exposure to cold. Five years ago, after a fresh attack of gonorrhœa, the stricture became so tight as to prevent him from passing any urine except in drops, and with great pain. He was admitted into St. Thomas's Hospital under Mr. Macmurdo, and at that time he appears also to have had perineal abscess, which was opened, and through this opening the urine escaped for some time. At the end of a few days a catheter was passed from the penis, and he was discharged nearly well in eleven weeks. After this he continued to pass an elastic catheter himself frequently, and by this means suffered no inconvenience from the stricture. Having lost this instrument about four months ago, and since that had another slight attack of gonorrhœa, he found the stricture getting tighter, and as the difficulty of passing urine increased, he applied for admission into St. Thomas's Hospital.

How well this history illustrates the importance of occasionally passing a bougie where a stricture has once existed. It has been said that when a stricture has been cured by the knife, such care is unnecessary. I doubt the truth of this assertion; I believe that every stricture will return if it is not attended to, though it is possible that it does not contract again so rapidly when removed by the knife as by the catheter; but of this I am not certain.

On examining the urethra, it was found hardened in the membranous portion, and here there was a cicatrix where a passage had formerly existed. He could pass urine, but in a very small stream, sometimes only by drops, though he had frequent desire to micturate. A small catheter was tried ineffectually. A small, long-conducting catgut bougie was at last introduced into the bladder, and over this an elastic catheter. This was allowed to remain in the bladder for three days.

Feb. 9.—To-day the small catheter was withdrawn, and a No. 6 common elastic catheter introduced.

13th.—No. 9 was passed to-day. When the catheter was withdrawn, the man passed his urine in a good stream. There is considerable discharge of pus from the urethra.

18th.—No. 12 passed to-day, and retained.

I hope, gentlemen, that the relation of these cases will encourage you to avoid the use of the knife in the treatment of stricture. I am quite as ready to use the knife in surgery as any man, if I think the case requires it; but I am quite sure that, as a rule, we ought to avoid its use when other means will attain the same end. The longer you practise your profession the more will this principle be impressed upon your minds. There is another thing to be remembered in the treatment of stricture: never be ashamed to leave the bedside of a patient without succeeding in passing a bougie. The late Mr. Copeland, who was as sound and practical a surgeon as any in his day, said to a patient, who afterwards came under my care, with a very irritable stricture and false passage, "Mind you never place yourself under the care of a surgeon who is afraid to acknowledge that he cannot always succeed in passing a catheter." I am told that a hospital surgeon, now deceased, passed a sleepless night from vexation if he failed to introduce an instrument into the bladder in the presence of his pupils. Such a man must have made many a false passage. Of such a proceeding you should have the most intense horror. Every good surgeon will fail occasionally in the introduction of a bougie, but no good surgeon ought to make a false passage, though a skilful surgeon will sometimes do it, when his temper or his pride rules his hand instead of his reason and his conscience.

In the *Lancet* for April 26, 1856, there is a clinical lecture of mine on the treatment of stricture by pressure, according to the plan advocated by Mr. Thomas Wakley. This plan I modified by substituting the glazed catgut bougie instead of the metal conductor. Since the publication of that lecture I have treated successfully on the same plan, in public and private practice, about 100 cases. In most of these cases I have

retained an elastic catheter in the bladder from a fortnight to three weeks, according to the tightness of the stricture. I believe that the time occupied in the cure of them has been about one-third less than that required by the old method of the simple bougie, or ordinary catheter. In this paper I wish to call the attention of the profession to another modification of this plan. A short time ago a patient suffering from severe stricture was sent me from the country by an intelligent practitioner who had had him under treatment for about six months, without being able to introduce any instrument above No. 1 and No. 1½. The patient, an agricultural labourer, was unable to lay up, and used to walk to the house of the surgeon to have the instrument passed. After his admission into St. Thomas's Hospital, I introduced with great difficulty a small thread-sized catgut bougie. Over this bougie I endeavoured to pass a No. 4 elastic catheter, but it would not follow in the tract of the conductor. The tube bent under the pressure, but would not advance. It was the first time I had ever failed in passing the tubular catheter on into the bladder on the surface of the conducting bougie. I left the bougie in the urethra for about an hour, and by that time the spasm had subsided, and the same catheter passed tolerably easily into the bladder. But when there the spasm prevented the urine from flowing freely, and when it was removed at the end of a week there was the same difficulty in reintroducing it as at first. This determined me to substitute for the elastic catheter an unyielding one of silver, and Mr. Millikin has made for me two tubular silver catheters, the one I used first was graduated from No. 2 to No. 8 at the vesical end. The second was from No. 2 to No. 12. By means of the instruments I obtained suppuration of the stricture, and the poor fellow was completely cured in three weeks; so that he was able to pass an ordinary No. 12 elastic catheter, which I gave him when he left the hospital. It must not be supposed that my object in using the silver catheter instead of the elastic was a firmer tube to push through the stricture. I consider that with

the elastic catheter the surgeon may use quite as much force as is justifiable, and that for this part of the treatment the silver instrument is unnecessary. Its use is then to keep upon the strictured portion a more firm and continuous pressure than the elastic instrument is capable of exercising in the spasmodic or india-rubber variety of stricture, as some have named this obstinate form of the disease, and for which the knife has been so warmly, and, as I believe, so unnecessarily recommended.

I have scarcely anything to add as regards the surgical treatment of stricture (January, 1865). I now treat all these cases by means of the catgut bougie, and elastic tubular catheter. I have been repeatedly sent for to the hospital in cases of retention in which the warm bath and ordinary catheter have failed, and I have been able to pass the bougie and catheter almost without an exception. I remember a case of this kind which I was sent for from Norwich to treat, and the intelligent surgeons who called me were astounded at the facility with which I succeeded. I remember a gentleman from Hong Kong consulting me, who had been under treatment for many months without the surgeon being able to introduce any instrument; when he came to me his urine dribbled away, and his suffering was very great. He took a room at the Green Dragon in Bishopsgate Street. When I went to him with my instruments, he said you must not expect to pass the bougie the first time you attempt it. Of course I told him that I certainly did not. Nevertheless, I managed to slide it in, to his great astonishment and delight, for it gave him very little pain. I secured the catheter in the bladder, and at the end of a fortnight he was able to leave his bed, and I could introduce No. 12 without any difficulty whatever.

Inflammation of the prostate followed by abscess, is fortunately so rare a disease, that I think the accompanying case will be found interesting.

September, 1840.—R. B., after suffering some weeks from gonorrhœa, for which copaiba was administered,

—but at the same time he continued to drink wine, and on one occasion went to sleep on a bench in the open air when heated with dancing, in short, neglecting himself in every way—was attacked with inflammation of the prostate gland.

The first symptoms were successfully combated by the free use of the cupping-glass on the perineum, and over the sacrum. Opiate suppository. Inf. buchu ℥j.; tinct. hyoscyam. ʒj.; liq. potass. ♏x.; ter die. After this the symptoms appeared to be more referable to irritation of the rectum than the bladder, and small piles were protruded when the patient went to stool.

The same general plan of treatment was pursued, with the addition of cold water injections into the rectum every night, and all his symptoms were so decidedly amended, that he went about his professional business as usual. This soon produced a relapse.

All the ordinary remedial agents failed to prevent suppuration. This event was not, however, discovered until one morning on paying my usual visit he told me he was much relieved from pain, but that he had had a most extraordinary discharge of matter from his bowels. I then found that the abscess of the prostate gland had burst into the rectum, and during the course of the day the urine partially escaped by the same opening, but the greater portion was passed by the urethra. The discharge of matter gave great relief. I had a consultation with Mr. Copeland, and we decided not to pass a catheter, but merely to give pil. conii gr. v.; liq. am. ant. ʒij.; syrup. papaveris ℥j.; aq. ℥j. t.d.

Oct. 30.—Consultation with Mr. Copeland; passed a flexible catheter, and found considerable stricture at the bulbous portion. Could not bear it.

Nov. 1.—Passed the catheter again. The urine continued for some little time to pass through the rectum. About the latter end of November he found that he could prevent it passing through the rectum, by pressing on the perineum and on the rectum.

Dec. 28.—He found that the urine no longer passed through the fistulous opening, though for some time afterwards his linen was occasionally stained, having a glazed appearance like starch, which I suppose to have been the fluid of the prostate gland.

There was nothing in the daily details of this case worthy of remark, which, however, as a whole is interesting from the apparent facility with which the fistulous opening healed.

This individual contracted a fresh gonorrhœa about six months afterwards, but fortunately got rid of it without the recurrence of any of his former symptoms.

LECTURE XLIX.

On Lithotomy.

Gentlemen,—There is no operation in surgery equal to lithotomy in the difficulty of its performance, or the uncertainty of its result, from adverse circumstances over which the operator has no control. I express this opinion as the result of thirty-two years' observation in this hospital, from the scattered facts which I have obtained of unsuccessful cases in other institutions, and from the scanty records of private practice.

The disease, for which this operation is the remedy, is attended with such fearful suffering, and the result so surely inevitable, if the surgeon does not step in and avert the fatal blow, that no conscientious man can refuse to do his best, though his services may be sought too late to accomplish his desire.

I shall not, on this occasion, point out to you the cases of stone in the bladder, in which lithotrity is a preferable operation to lithotomy, but I shall reserve this subject for a future meeting.

Before speaking of the operation itself, I have a few words to say of a case which presented some interesting features. The patient when he was first admitted, and for some little time, did not present the ordinary symptoms of stone; I suspected stricture and chronic cystitis. It is peculiarly interesting, as showing how long a stone in the bladder may exist without being detected, and how careful we should be in our diagnosis. He had been under the care of a talented and hospital surgeon in the country, who says, "I sounded him carefully in October, 1847, and subsequently in December and January, and made up my mind that no calculus had

formed—at least, neither myself nor my colleague could detect one."

When you sound for stone, use rather a short and straight instrument at first. Introduce it very slowly and cautiously, so that the point of the instrument sinks into the post prostatic fossa, in which the stone is generally situated. If you do so, you will generally strike the stone at once; but if you sweep a sound, with a good full curve, into the bladder rapidly, you carry your instrument over the stone, and you may turn the point of it all round the bladder in vain. When using the short sound with a short curve you must completely reverse the point of the instrument, and thus you take care and search completely the post prostatic fossa. I will now read the case as taken by my dresser, Mr. Barwell.

Robert Kain, æt. 37, was admitted into Henry's Ward, No. 3 bed, under the care of Mr. Solly, October 8, 1848. He is a tailor, of Chatham, unmarried, and of irregular habits, short and spare, and of a dark complexion.

In August, 1846, he had gonorrhœa, for which he was treated with tr. cubebæ, and the discharge was quickly arrested: this is the last time he had gonorrhœa; he had it once before.

In May, 1847, he was attacked in the following manner:—He had one day held his water too long on the passage from Chatham to London, and when he attempted to void his urine, could not do so for some time, and at last it came in a very small stream. Afterwards he had frequent and great desire to pass it: he could, however, pass but very little at a time, and with great cutting pain along the urethra. He did not observe any peculiarity in the size or shape of the stream, though he remarked that a thick and white slime settled at the bottom of the vessel, and adhered there. This attack lasted three or four days, and then went off, leaving no effects, but in a week the symptoms returned, and have remained with him since. He was treated as for stricture, by the passage of bougies; subsequently by the injection of warm water, which relieved him the most.

When admitted to the hospital, his urethra was in a very irritable state, so that its firm contraction led to the belief that he had had permanent stricture, and only a small catgut bougie could be passed; however, this decreased, so that on November 4, a No. 6 catheter could be passed into the bladder. He is now, November 4, in the following state:—He is frequently troubled with desire to void urine: this he passes in small quantities, with pain in the

urethra, sometimes in either testicle. The urine contains a good deal of thick tenacious mucus, no pus or albumen, but, examined by the microscope, some prismatic crystals are found, apparently triple-phosphate; the prostate gland examined by the rectum is not enlarged, but excessively tender, so that pressure on it causes pain down each thigh, and a desire to pass urine. In passing a catheter, a sensation of roughness is felt just as the instrument is passing into the bladder, probably from thickening or ulceration about the verumontanum or prostate. The patient remarks that when he is upright, walking about, the calls to void urine are less violent than when he is lying down.

The roughness referred to in the above report I experienced in passing the instrument over the verumontanum: it was like the sensation experienced when the catheter passes into a false passage—it was not that of a rough hard body, like a stone. I ordered the man the infusion of buchu, with dilute mineral acids, but, as we can now well understand, without any relief. I then determined to pass down Lallemand's caustic-holding catheter, and unsheath it for a moment over the verumontanum, but on introducing the instrument very carefully, the point struck distinctly on the stone. I then introduced an ordinary sound, and felt it still more decidedly, and by weighing it in the curve of the instrument, and by carrying the point over the surface of the stone, I came to the conclusion that it was a large stone. Mr. Green, who also examined him, confirmed me in this opinion.

The next question to be decided was the desirableness or not of any operation, and what operation should it be? In order to determine this point I had to inquire into the condition of the kidneys. He has never had any pain in the region of these glands, the urine does not contain albumen; it is true it contains a small quantity of the earthy phosphates, but it is not alkaline. I concluded, therefore, that they were sound.

The extreme irritability of the bladder, the possibility of ulceration of the prostate, and the great size of the stone, seemed to preclude the idea of lithotrity.

Besides, there are cases where there is reason to suspect some disease of the kidney, but in which it is your

duty to operate, and give your patient the chance of recovery, rather than leave him to the certainty of a painful lingering death.

I once operated in private practice on a lad thirteen years of age, who had suffered with symptoms of stone for ten years. He was one of the most miserable objects I ever beheld—pale, emaciated, with a countenance betraying the effect of long-continued pain, haggard, and care-worn. The urine was loaded with the earthy phosphate; it was constantly dribbling away. He screamed with pain on the introduction of the sound, though I passed it with the greatest care. It was very clear that a few months must terminate his sufferings if they were not relieved, and I believed that it was my duty to operate; but I determined to share the responsibility of it with some higher authority. As my friend and colleague, Mr. Green, was not quite well at the time, I had a consultation with Sir B. Brodie, who regarded it as a most unfavourable case, but still one in which there was no alternative. I operated on the 19th of March, 1845, in my usual manner, with a beaked knife. He recovered, and, though slowly, without a bad symptom; I gave him, after about a week, the dilute nitro-muriatic acid: the urine soon got clear, and he is now a fine healthy young man.

In my next case with unfavourable symptoms I was not so fortunate. The kidneys were extensively diseased. It is the only case I have lost out of ten that I have operated on during seven years,* one of whom was a man 74 years of age.

I operated on Kain. There was nothing peculiar in the operation, except the great size of the stone, which in circumference equalled a small hen's egg: it weighed ℥j. ℥iij. gr. x. I had some little difficulty in extracting it, for you will remember that in the operation for lithotomy you have a limited space for your incision; you cannot, as in the operation for taking up the femoral artery, for instance, make as long a wound as you like. You are limited by rectum *behind*, the pubic artery on

* 1848.

the *outer* side, by the bulb, with its artery in *front*. If, therefore, having made as large an opening as the space will allow, you will find a difficulty in extracting the stone, you must be patient—you must wait, and you will find the parts relax—you must ease the stone from side to side, and if, as in my case, you find it hitch in the perineum between the bladder and external opening, it will assist you to insert your finger into the rectum below, and abandoning the forceps, insert the scoop above and behind, and thus extract it.

The patient had gone on without a bad symptom ever since the operation.

Lithotomy is one of those operations which many of you, as general practitioners, are not likely to be called upon to perform. It is an operation which I do not advise you to attempt unless placed in such a position that your patient cannot have further advice, or you hold such a post that you are likely to have sufficient practice to become an accomplished operator. But, gentlemen, there are others who may hereafter hold hospital appointments, or have the charge of large unions, whose duty it will be to perform these operations, and to all I am sure the record of cases, successful and unsuccessful, must be interesting. Remember this, that no surgeon can pick his cases; he must take them as they come; he must take the bad with the good. It is his duty to relieve suffering humanity, even at the risk of his reputation. You cannot tell for certain beforehand the amount of existing disease, either in the bladder or kidney; and as, on the one hand, you will sometimes find your honest endeavours to save human life rewarded when you had least reason to expect it; so, on the other hand, you will find your patient sink into the grave when you thought you had a fair prospect of success. I have now operated twenty-seven times, and I have lost five cases. I have taken every case that has presented itself without shrinking.

My first four cases, aged six, twenty-seven, seventeen, and seventy-four years respectively, were successful. Of these, two were most unfavourable subjects for the opera-

tion. One, a man, T——, aged twenty-seven, had suffered from symptoms of stone ever since he was five years of age. Three years previous to his coming under my care he had been subjected to the operation of lithotrity, which was repeated ten times, nine times at short intervals and once a year after. He was in a miserable state when I operated, emaciated and weak, passing large quantities of mucus and phosphates. The other case was an old man, aged seventy-four. He lived some years after the operation.

In my first unfavourable case, aged forty-seven, there was extensive disease of both kidneys. The patient lived twelve days; and nothing but a desire to relieve his sufferings would have induced me to operate.

The next nine cases were successful. Their respective ages were thirteen, thirty-two, twenty-two, three, sixty-five, five, and nineteen; in two cases I am not certain of the exact age, but it was between twenty and thirty. The first was the lad who had suffered for years, to whose case I have already referred.

The next was a man sixty-five years of age, with a large stone, weighing two ounces all but a drachm and a half.

The subject of the next fatal case was a very feeble man, sixty-four years of age, but in appearance and constitution more like seventy-four. He never rallied from the shock of the operation, but sank in twenty-four hours. He had no pain, nor any evidence of peritonitis.

My next nine cases were successful. The ages were five, fifty-four, fifty-six, thirty-eight, eight, twelve, five and a half, sixty, and sixty-three years. Many of them were unhealthy, as well as old men; one of sixty having suffered for eight or nine years. He recovered after a most anxious attendance, assisted by all the resources of this noble institution. The patient whose age was thirty-eight had suffered for many years, living in a remote part of the country where the nature of the disease was not discovered. The stone was coated with fibrine, and was imbedded in pus and

mucus, which followed the knife from the bladder. I need hardly say that this is a most unfavourable circumstance, indicating the probability of ulceration of the mucous membrane, and possibly also of the muscular coat. When, as in some of these cases, the stone is pouched or partially encysted, creating much difficulty in its removal, the operation is attended with great danger; for although, as I believe occurred in this case, the patient being under forty, the ulcer may heal and the patient recover, in most the termination will be fatal, and from no want of skill on the part of the operator. You can understand how this happens. For some time the bladder protects itself by a free discharge of viscid, tenacious mucus, but the stone, increasing in size and weight, remains there unrelieved; either because the patient, as too frequently occurs amongst the lower orders, obstinately refuses to have any operation performed, or (and this alternative seldom, thank God! now occurs in Great Britain) the surgeon fails to detect the nature of the disease. The stone, by constant pressure, sets up ulceration, first in the mucous membrane, and then in the muscular, cellular, and peritoneal coats, till at last, set free in the cavity of the abdomen, it puts an end to both the patient and his sufferings. Now the operator may step in just before the last fatal stage in the ulcerative process has occurred; the cellular tissue and peritoneum may still remain, and these giving way when the forceps are expanded in grasping the stone, he has the credit of killing his patient, which event is really the result of the previous operations of nature.

Case of Calculus Vesicæ (reported by Mr. G. T. Keele, R.N.) —W. E——, aged thirty-four, admitted into Abraham's Ward, under the care of Mr. Solly. He states that he has always enjoyed very good health previous to the advent of his present disease, never having been laid up in bed from illness since he was a boy. His habits are very temperate. His temperament is nervous-lymphatic. The patient's mother has informed the sister of this ward that his father suffered from symptoms of stone in the bladder for twenty years before his death, but would never allow it to be removed. She also states that it was about eight years ago that the patient first suffered from symptoms of stone, and that it was quite four years ago since he was in Guy's Hospital,

and refused to allow Mr. Bransby Cooper to operate on him. Before that time he was a fine, healthy, and very steady young man; but since he went into Guy's Hospital his sufferings have been most intense, and have become much worse lately; and in order to get rid of the pain, he has been in the habit of taking most powerful medicine, which he had liberty to take at Mr. Hooper's laboratory; and also that he has taken to drinking spirits, on an average about a quartern of gin daily, but principally drunk in the night, when the pain was worse. It has also been his custom to smoke nearly all the night whilst laying in bed. This account differs slightly from the patient's own. He states that about five years and a half ago, whilst walking in the Strand, he felt a sudden desire to pass urine, but on going to the urinal found that he was unable to relieve himself. He then directly went to a chemist's, and got some sweet spirits of nitre, which he took, and his urine then passed from him very freely. After that time he frequently noticed a sudden stoppage in the stream whilst passing urine. It becoming more frequent, he told his master, Mr. Hooper, of it, who sounded him, and told him that he had got a stone in his bladder, and advised his going into Guy's Hospital, which he did about four years ago. Mr. B. Cooper sounded him, and wished to operate for removal of the stone, but he (the patient) refused to give his consent, and went out soon afterwards. About two years ago he noticed a deposit of white transparent crystals, like pieces of flint-glass, in his urine; he mentioned it to Mr. Hooper, who advised him to take lime-water, taraxacum, and spirit of nitric ether, which he did, and they soon disappeared. About nine months ago he had an attack of gonorrhœa, which lasted three or four days, and since that time the symptoms, which previously only occasionally troubled him, began to increase; and now, whenever he attempts to pass urine, he is always annoyed by sudden stoppages in the stream, and at the same time feels a heavy weight at the bottom of the abdomen, and the constant straining is very painful to him. He has now made up his mind to the operation, and wishes it performed as soon as possible.

March 10.—He is in a very excited state, and says that he is obliged to pass urine about every five or ten minutes, and that it is also constantly dribbling away from him. His urine has an acid reaction on litmus paper. To have gin daily. Mr. Solly sounded him, and found a very large stone near to the neck of the bladder, which he thought to be a mulberry calculus. He has been removed to Isaac's Ward.

11th, 1 P.M.—He was brought into the operating theatre, and placed upon the table, and at his own reiterated request he was placed under the influence of chloroform. The perineum was then shaved, and the patient secured in the usual position for lithotomy. Mr. Solly then introduced a full-sized staff, which was held by Mr. Green. Mr. Solly then proceeded to make a very free incision in the perineum, using Mr. Key's knife, and then pushed it into the bladder, cutting the prostate freely. The urine gushed out, and

the forceps was introduced by Mr. Solly on his finger into the bladder, but the stone was not discovered at first.

This part of the report is an error. I had no difficulty in finding the stone, but I could not seize it with the forceps which I first used; the stone being situated in a pouch, and embraced by the coats of the bladder, so that the forceps, being small, would not surround the calculus. When I used the larger pair, I was obliged to dilate the sacculus with them before I could seize the stone, and in doing this I expect that I must have split the peritoneum, the mucous and muscular coats being destroyed by ulceration, as described in the post-mortem account.

Mr. Solly accordingly introduced a larger pair of forceps, and seized the stone, which was lying above the opening, and with moderate force extracted it. The patient was then unbound, and removed to his bed, with his knees still flexed on the abdomen. There was very little hæmorrhage, and it ceased shortly after his removal to bed. 3 P.M.—He is now very low in spirits; countenance pale, and pulse feeble; and is labouring under the effects of the chloroform; a small quantity of urine has flowed through the wound. Ordered, tincture of opium, thirty minims immediately. 5 P.M.—He has been asleep for the last half-hour, but complains of pain in the hypogastric region, and his countenance is anxious. 7.30 P.M.—Mr. Solly saw him, and he was still complaining of pain in the abdomen. To have gin; repeat the opium. 1.45 P.M.—Is now fast asleep, but has been very excited about an hour ago, attacking the sister with bad language, &c. The wound looks nicely; urine passes freely.

12th, 10 A.M.—Mr. Solly saw him. He feels much better; pulse stronger and quicker; the wound looks very healthy; his spirits are greatly improved, and he has no pain in the abdomen. 3 P.M.—Progressing nicely; had some rice for dinner. 10 P.M.—Appears to be going on nicely. As he seems to be sleepy, the opium was not ordered for him.

During this day my poor patient was progressing very satisfactorily, and I had every reason to anticipate a favourable result.

13th, 9 A.M.—He has slept very little during the night, but has been sick twice—once about 11 P.M., and again early this morning, and has also been troubled very much with hiccough, which has abated this morning. 3 P.M.—Mr. Solly saw him. He had been very sick again this morning; tongue white; has no particular pain anywhere; the wound is going on well; he is very restless,

and at his own urgent request Mr. Solly gave him leave to smoke; pulse small and frequent. 7 P.M.—He complains of great pain over the region of the bladder, and has been very sick again; he is in very low spirits; pulse 120, small, and rapid; his bowels have not been open since the operation. 8 P.M.—Mr. Solly saw him. He is still in great pain in the same place, and has been very restless and anxious, and feels very sick. Ordered, creasote, one minim, immediately, and every two hours till the sickness ceases. To have four ounces of brandy. An enema of castor oil immediately; twenty leeches to the hypogastric region; and Battley's solution, thirty minims, to be taken at bedtime. 9 P.M.—He is much the same; is still in great pain; he took the creasote pill, but was very sick soon afterwards; is in a very restless state. 10.30 P.M. —He has been sick again; pulse 120, small, and frequent; there was great difficulty in persuading him to have on the leeches, as he was frightened at the idea of their hurting him, but at last he gave his consent. The enema has been injected, but his bowels have not yet acted. The pain in the hypogastric region is still very bad, and his countenance is expressive of great anxiety. I went to see Mr. Solly, to tell him how he was going on. Mr. Solly directed that a large linseed poultice should be placed over the abdomen when the leeches came off, and, if the sickness continued, to apply a mustard poultice over the stomach. He was to have some ice to suck, as it might relieve the constant thirst and sickness. He has had a glass of brandy. 11.45 P.M.—The leeches have just come off, and have bled pretty freely, and the linseed poultice put on. Is still in great pain, but has not been sick since last noted. Gave him the opium; bowels have not been open.

14th, 12.30 A.M.—The pain in the hypogastric region is very much relieved, but he is suffering very much from constant hiccough. Pulse rapid, and he is very much excited. Gave him a glass of brandy and water, and applied a mustard plaster to the epigastrium. He is very thirsty, constantly wishing to sip cold spring water. 1.30 A.M.—The hiccough was relieved by the remedies used, but the opiate draught has had no effect. He is very excited, and says if he could only sleep he should be better. Rang up Mr. Clapton, and got another opiate draught similar to the last. 3 A.M.—I gave him the second opiate about 2.30 A.M. The hiccough has again returned, and he has been sucking some ice, which he likes very much; bowels have not yet acted. 4 A.M.—The hiccough and nausea have ceased to annoy him, and he is quieter, and seems inclined to sleep. His urine escapes freely through the wound. Pulse still very rapid and feeble. 6 A.M.—Has been asleep for about half an hour, but the sickness and hiccough have again returned; pulse is getting more thready. Brandy has been constantly given to him throughout the night to support his strength. 7 A.M.—The hiccough has ceased. He has been asleep for about twenty minutes, and is not suffering from any particular pain. He feels very weak; his tongue is white; bowels have not yet acted; pulse weaker. He had a cup of coffee and an egg, for which he had expressed a particular desire. 8 A.M.—

His pulse is almost imperceptible, and he is suffering again from hiccough, and is very much frightened at his state; tongue white. Has had some gin. 8.30 A.M.—He is very much changed, and is evidently sinking; his pulse cannot be felt at the wrist; the surface of the body is cold, and he breathes slowly and deeply. To have spirit of compound sulphuric ether immediately. 9 A.M.—He has just expired.

Post-mortem examination. — Appearance: ordinary conformation; in the perineum there was a recent incision, of healthy appearance, made in the operation of lithotomy. Chest: heart and lungs healthy in every respect. Abdomen: the results of recent general peritonitis were evident in all parts of the abdominal cavity; the convolutions of the small intestines were feebly agglutinated by recent lymph, with which also the other viscera were thinly coated; about eight ounces of thin purulent fluid existed in different parts, probably half this quantity in the pelvic cavity, and the rest diffused, but more abundant under the right lobe of the liver than elsewhere: this was probably accidental, as the inflammation was not more intense at this part. In the pelvic cavity, a convolution of the small intestine was feebly adherent to the peritoneal covering of the posterior wall of the bladder to the left side, and on removing this, a wound of the peritoneum, rather more than half an inch in length, was apparent. The peritoneum of the adherent intestine and adjacent portion was more vascular than the rest, presented several patches of ecchymosis, and was coated with a greater abundance of lymph. The corresponding part of the peritoneal coat of the bladder presented less vascularity and lymph than the intestine. The bladder, rectum, and anterior portion of the pelvic bones were now removed and carefully examined. The bladder being laid open, the mucous membrane was seen to be ecchymosed in several parts; the muscular parietes of the bladder were considerably thicker than natural. This viscus was generally contracted. In the posterior wall of the bladder, immediately above the central part of the prostate gland, the mucous membrane was destroyed, and in an ulcerated, shreddy condition. In this situation was a sacculated dilatation or cavity, about an inch in diameter, the muscular parietes of which were also partially destroyed; from the centre of this cavity a direct communication with the abdominal cavity existed through the aperture in the peritoneal covering of the bladder above mentioned. This aperture had evidently not been the result of ulceration; it appeared to me to be the result of an incised wound, extended at either extremity by tearing; its central portion presented clean edges, in which was a slight notch, and its extremities appeared as if torn, but the entire wound might have been a laceration caused by the widening of the forceps whilst in the cavity above adverted to, which cavity might have lodged the calculus. This, however, could not be determined. The incised wound through the left lobe of the prostate gland presented nothing unusual. The kidneys and ureters appeared to be quite healthy. The other abdominal viscera were healthy.

In this case there can be no doubt that the ulceration of the mucous and muscular coats of the vesical pouch, in which the stone had been lying, was induced by the long-continued pressure of this heavy stone. The very presence of the stone in the pouch protected the bladder, if such protection had been necessary, from the point of the knife; and if the rent in the peritoneum had been made by that instrument, the substance of the stone must have been previously perforated; but independent of this, the opening, rather more than half an inch in length, was too large to have been made by the knife, unless the hand had been carried into the pelvis for that purpose.

The next time I operated for stone was on a child of twelve years of age, in the West Herts Infirmary. He was a wretched object, having suffered from symptoms of stone from infancy. In this case I found the stone imbedded in the mucous membrane, and, remembering what had occurred in the last case, I used the scoop with great care instead of the forceps, and thus extracted the stone, as related in a letter to the *Lancet*, May, 1854. The proceeding was so far successful, that there was no rent in the peritoneum; but he died from extensive disease of the kidney.

My next patient was an old man above sixty years, who suffered frightfully for some years. These tortures he endeavoured to mitigate by the constant use of ardent spirits, not in large quantity, so as to produce intoxication, but a little and often. When I first saw this patient I regarded him as a most unfavourable subject for lithotomy, which operation, however, I felt it right to perform, as I was confident that there was too much disease of the bladder for lithotrity, and I could but try to save him. On this occasion I used Blizard's beak-knife purposely, fearing that the same ulcerated condition was present as in the former case, and therefore if he died with an aperture in the bladder it should not be attributed to the knife. It is impossible that any operator could puncture a healthy bladder with a beaked knife, unless determined to do so, and then he

must use so much force that the knife goes through the coats with a jerk, which must be evident to himself and the bystanders. I had some little difficulty in extracting the stone, from its adhesion to the surface of the bladder, and some of its edges were chipped off. One surface, apparently the adherent one, was covered with fibrine, mixed with mucus and blood. This surface of the stone on the following day, when dry, was quite black.

He suffered severely from sickness, which I then attributed to the chloroform, from the time of the operation to his death, which occurred three days after the operation.

At the post-mortem examination, there was general peritonitis, but more especially in the pelvic cavity; extravasation of blood in the posterior vesical cellular tissue, extending into the pelvis; an opening of the bladder into the peritoneal cavity, through which a small quantity of pus escaped, by pressure, from the internal aperture. The muscular parietes of the bladder were rather thick; the mucous membrane had been the seat of chronic inflammation, with superficial ulceration. The kidneys were diseased: morbus Brightii.

The next cases at St. Thomas's are both interesting and very satisfactory. The first was a child, and, after reading the notes, you will perceive that there was nothing particular in the details of the operation; but, in its progress afterwards, the sloughy condition of the wound renders the case one of practical interest, as there was no local cause for it; and, constitutionally, there was nothing in the appearance which gave reason to apprehend it. The way in which the child improved and the wound cleaned under the employment of a very large quantity of stimulants, induces me to believe that such dainties were not quite foreign to its lips, though the parent asserted that no spirits had ever been given; but when a child sips up gin-and-water as kindly as if it were its mother's milk, I think there can be little doubt that the flavour is not new to it.

E. S——, aged two years and eight months, admitted into

Abraham's Ward on the 10th of November, under the care of Mr. Solly.

From the account given by the mother, it appears that the child has never been very healthy. About two months since, she first noticed that he strained a good deal after passing his urine, and he often used to cry as if in pain; his fæces were frequently passed at the same time; his urine at one period was very thick, with a good deal of white sediment; the urine has been much clearer, however, of late. He has never passed any blood with his urine, but on several occasions there has been blood with his motions. He used frequently to be pulling at the end of the penis, and seemed uneasy there. The child was generally tolerably lively, and able to walk about. The symptoms remained much as above until the 10th of November, when he was brought to this hospital as an out-patient. On introducing a sound, a stone of small size could be detected by the grating sensation communicated to the hand; it could not be rung. The elder brother of this child, aged eight years, was taken to Guy's Hospital with similar symptoms, but no stone could be detected. The father, who is now dead, never suffered any symptoms referable to stone. Some of the other brothers and sisters, however, have had similar symptoms.

He is a child of very bad temper, and has been much spoiled at home. He is an ill-nourished, scrofulous-looking individual, with a large and prominent abdomen.

Nov. 17.—The child's health has certainly improved since admission. Mr. Solly has determined to operate to-morrow. Ordered two drachms of castor oil; common enema.

18th.—The patient was brought into the theatre to-day, and placed on the table for operation. The patient being placed under the influence of chloroform, the bladder was cut into by the usual lateral operation, a common scalpel being used, owing to the small size of the stone. Some little difficulty was experienced in removing it from the bladder, as it could not be caught by the forceps; it was subsequently removed by the scoop. There was very little hæmorrhage, and directly after the operation the patient was sent to bed. The stone was a very small one, of elongated form, and apparently of the lithic acid variety. 5 P.M.—The patient has been very unmanageable since the operation, and has been screaming and crying much. 8 P.M.—He has slept two or three hours, and is now quiet; he refuses all food, and seems thirsty; there has been some escape of urine by the opening; bowels have acted once since the operation. Ordered Battley's solution, two minims, immediately.

19th, 10 A.M.—Has had a restless night, and is feverish and irritable this morning; pulse 100; bowels have acted two or three times during the night, and there has been free escape of urine by the wound. 5 P.M.—About the same.

20th, 10 A.M.—Has had a good night, and is much quieter this morning; bowels have acted two or three times; wound looking tolerably healthy. He has taken some milk and bread-and-butter.

26th.—Has not slept much during the night, and is apparently

fretful and in pain. 8 P.M.—Has been very restless all day, but seems inclined to sleep now; the wound looks very unhealthy, with but little action about it.

28th.—The face of the wound is looking pale, and seems inclined to slough in some parts; the edges are everted and inflamed; pulse 100, small and irritable. Mr. Solly has just seen him, and ordered chloride of soda lotion; two ounces of wine and two eggs daily. 8 P.M.—He has been quiet, and slept more during the day; there is now decided sloughing of the face of the wound.

Dec. 3.—The wound is looking pale and flabby, and the edges are swollen, with superficial redness around; the child is fretful and restless. Ordered extra strong beef-tea; gin, two ounces; muriate of iron, five minims, three times a day; solution of the sesquicarbonate of soda to the wound.

5th.—The child is not so well again to-day; the wound looks pale and sluggish, with great tendency to gape; he looks pale and anxious, and does not take his food well; seems much inclined to sleep; all the urine passes by the opening.

6th.—The child is better again to-day; he is cheerful and lively, and takes his food well; the wound is looking cleaner.

10th.—Much better; all the slough has entirely separated, and the wound is granulating well; the child is lively and cheerful; pulse 84, of fair force; tongue clean; takes his food well.

12th.—Going on well.

Jan. 3, 1855.—Since the last report, the patient has been progressing very favourably; the wound is now considerably contracted, and is filling up well from the bottom; a good deal of the urine is now passed by the urethra; the child's general health has much improved; he has gained flesh considerably, and is lively and cheerful.

Feb. 1.—Wound quite healed; child well.

From infancy we pass to old age.

My next patient was sixty-seven years of age, and apparently tottering into the grave: reported by Mr. Sweeting.

History.—He states that his habits have always been temperate, and until his present ailment his health had always been good. About five years ago he first began to complain of dull, aching pain in the loins, with a sensation of weight there. At this time his stomach became irritable, with frequent fits of vomiting. The urine voided was occasionally bloody. Soon after these symptoms he was much troubled by a frequent and often irresistible desire to void his urine, and every attempt to do so always gave him great pain, which was not relieved by evacuation, but, on the contrary, increased. The uneasiness was principally referred to the end of the penis. The urine, whilst flowing in a full stream, would often stop suddenly, causing a great aggravation of pain. All the symptoms have gradually increased, until at last he was obliged to desist from work.

What a sad pity this poor fellow did not apply for medical advice at once, as I take it for granted that in the present day no surgeon could have failed to detect the real cause of all his sufferings.

Present state.—On admission, he was certainly in a most deplorable state. He was so weak and thoroughly prostrated that he was carried from the cab into the ward, not being able to walk even that short distance. He is emaciated, and his countenance very anxious. The action of the heart is feeble and irregular, evidence of disease of the arteries being distinct in the radial. The respiratory action is feeble and imperfect, but otherwise the lungs are sound. He is very anxious to have something done, and is willing to submit to any operation. Mr. Solly, on introducing a sound, immediately struck the stone, and pronounced it to be a large one. The urine is alkaline, and on examination by the microscope, crystals of the triple phosphate are found to be present. Mr. Solly has ordered the patient to keep his bed, and to take infusion of buchu, two ounces. To have full diet, and two ounces of gin daily.

Nov. 25, 1.30 P.M.—The patient was brought into the theatre this morning, and Mr. Solly performed the usual lateral operation. The external openings were made by a common scalpel, the division of the prostate being made by means of Blizard's knife. There was some little difficulty experienced in extracting the stone, which proved to be a very large one, weighing three ounces and a scruple, and composed principally of the triple phosphates. There was a little hæmorrhage after the operation, which was easily arrested by pressure over the pubic artery. Chloroform was not given, the feeble condition of the patient, together with the arterial disease ascertained to be present, rendering its administration inexpedient. 4 P.M.—There is no bleeding; the patient complains of pain in the wound. 8 P.M.—Complains of pain in the belly, and there is tenderness there on pressure, especially at the lower part. Ordered, compound tincture of cardamoms, one drachm; opium, forty minims: to be taken at bedtime. Stone poultice to the abdomen.

26th, 10 A.M.—Has had a tolerably good night, and is now asleep; has not complained so much this morning of pain in the belly; there has been free escape of urine by the wound. To have beef-tea. 4 P.M.—Mr. Solly has just seen the patient; he still complains of pain at the lower part of his belly; pulse 100, feeble; bowels have not acted since the operation; tongue moist and clean. Repeat the opium, if necessary. To have four ounces of gin. 8 P.M.—Tolerably comfortable: still complains a little of pain in the belly; seems inclined to sleep: pulse feeble.

27th, 10 A.M.—Has slept several hours during the night, and is quiet and comfortable this morning; there is still some tenderness at the lower part of the abdomen; the wound looks healthy, and there

is free discharge of urine by it; pulse 98, feeble; bowels have not yet acted. 3 P.M.—Says he feels quite comfortable.

28th.—Has had a quiet night. Pulse 100, very feeble; still tenderness at lower part of abdomen; wound looks healthy; takes his nourishment well; bowels have not yet acted. To take castor oil, half an ounce; wine, two ounces, immediately. 3 P.M.—Much the same. Mr. Solly has just seen him.

29th, 10 A.M.—Has had a good night, he says; indeed, he has slept much more since the operation than he has done for some time. He looks quiet and cheerful. Pulse 98, of improved strength; bowels have acted twice since taking the oil; tongue clean and moist; skin cool; there is free discharge of urine by the opening, and the wound looks very healthy.

Dec. 1.—Going on well. Wound is healing rapidly; no urine passes by the urethra yet; pulse 96, and feeble again. Extra strong beef-tea; wine four ounces; and sago.

4th.—Wound healing well from the bottom; free escape of urine by it; pulse 96, of fair force; bowels have acted. Black lotion to the wound.

5th.—Going on well. Ordered a mutton chop daily.

7th.—Has passed his urine twice to-day through the urethra; wound looking well, and healing rapidly from the bottom.

10th.—Since yesterday morning the whole of his urine has passed naturally. The wound has nearly healed. Pulse ninety-eight, of improved power. Takes his food well. To take a pint of porter and a slice of meat daily.

18th.—There is now only a very small portion of the external wound which has not closed. His general health is good; he takes his food well, and sleeps comfortably.

20th.—Going on well.

The patient left his bed for the first time on the 20th of December, and was progressing favourably up to the 28th, on the evening of which he suffered a rigor, followed by reopening of the wound with discharge of pus and urine; the latter continued to come away in small quantities up to the 6th of January, when it quite ceased, and has not since returned, although there was an extensive opening in the perineum for some time subsequently.

This happened from, I think, the lint not being kept sufficiently at the bottom of the wound so that it healed over its surface. The occurrence is therefore a hint to you, in the treatment of these cases, to persevere in the introduction of the lint to the last.

26th.—Wound quite healed.

27th.—Allowed to get up; he has improved very much in appearance since he entered the hospital, and is now fit to return home; but as the weather is so severe and his comforts at home very small, I shall keep him another week.

This last case should encourage you to endeavour to relieve suffering humanity, even when there is little hope for the patient, and little prospect of adding to your surgical reputation; for the older a man grows in our anxious though interesting profession, the more must he feel his own insufficiency.

The next case is reported by Mr. Carpenter:—

Robert Besgrove, aged 38, a farm labourer, residing at Knightsbridge, in Somersetshire, was admitted into George's Ward, February 11, 1851, with symptoms of stone.

He stated that, seven or eight years since, he was frequently pained after passing water, the stream sometimes suddenly stopping before he had finished, and, at times, small clots of blood appearing in his urine, especially after exertion. Some time after this state of things had continued he was visited by a very acute attack of severe pain in the loins, shooting along the inguinal canal into the scrotum. The pain, on and after passing the urine, continued, and he began to pass small calculi, about the size and shape of carraway comfits, rough, and of a rusty red colour. When quite dry, some of these crumbled to powder, but others permanently retained their form. In the four following years he passed about twenty of these. His health did not suffer much until a few months since, when the last of these small calculi was voided. Since then he has become gradually weaker, and has lost flesh, receiving no benefit from the treatment adopted. He is now obliged to get out of bed to make water several times during the night, and for the last fourteen days he has been unable to retain his urine at all whilst lying on his back. He has once or twice had the testicle enlarge, this happening during or immediately after the attacks of pain in the loins. On admission, he complained of pain along the penis as well as in the perineum, where he said he could sometimes feel the stone. The urine is frequently bloody after exertion, and during micturition the stream sometimes suddenly stops, causing acute pain. He has been in the habit of relieving this condition by passing for himself an elastic bougie, with which he pushed the calculus out of the way. His spirits are low, having been persuaded by his friends that he will never return home again. Latterly he has lost his appetite. The tongue is covered with a thick white fur, and he is rather emaciated. The urine is alkaline, and deposits a thick layer of ropy mucus, which, under the microscope, shows many triple phosphate prisms, and a few crystals of lithic acid; also many blood corpuscles, and what appeared to be a cast of a uriniferous tubule. No crystals of oxalate of lime were seen. On the 13th of February

Mr. Green examined the patient, and caused the sound to ring very audibly upon what he thought to be a large rough stone, probably oxalate of lime. He remarked that it was very likely the patient had been passing triple phosphates ever since the formation of the stone; that the wasting away, the frequent pain in the loins, and inflammation of the testicles, would indicate a renal origin of the calculus, and thus, so far, render the prognosis unfavourable. He prescribed inf. buchu, ℥ij.; acid. nit. dil. ♏xx.; tinct. hyos. ♏xx.; ter in die.

On March the 8th he had considerably improved in his general health, and his sufferings were not so severe. He had a better appetite, firmer flesh, and he was not so emaciated. The urine was still alkaline, but did not contain so much mucus. The operation for removal of the stone had been delayed for some time, on account of the prevalence of erysipelas in the ward; but, this now being obviated, it was performed by Mr. Solly at 1 P.M., Mr. Green holding the staff. It occupied somewhat less than a minute. As the forceps were introduced, a gush of urine passed out. This was very fetid, and mixed with purulent matter. The stone, weighing 1 oz. 4 drs. 6 grs., measured in its long diameter 1½ inch, in its short 1¼ inch. It was rough, composed principally of lithic acid, and imbedded in a coating of coagulated fibrin. There was not much hæmorrhage after the operation, but he became very faint. In the evening slight bleeding still continued. He was free from pain; pulse 120, soft.

On the 10th he was doing well and quite easy, a few streaks of blood coming from the wound. Ordered, wine, ℥iv.; meat; and to resume the buchu mixture, which had been omitted since the operation. The urine still remained somewhat fetid.

He continued to improve until March 16 (except that his urine became very fetid, and the wound foul). In the afternoon of that day there was a sudden gush of arterial blood, and a considerable quantity had been lost before assistance could be rendered. This was stopped by pressure on the trunk of the pudic, which was kept up for two hours. It would appear to have been caused by the separation of a small slough. Towards night he became rather restless and feverish; but this condition passed away, and the next day he was apparently none the worse for the bleeding. Mr. Solly ordered tannin, gr. ij.; opii, gr. ¼; 4tis horis; to omit the buchu mixture.

On the 18th of March, the urine, which flowed freely through the wound, was much less offensive, his health was improved, and the wound itself was much changed for the better in its appearance.

Now, this was as unfavourable a case for operation as you could well have; but we cannot pick our cases, and I felt bound (Mr. Green having kindly transferred the man to my care) to attempt the cure by operation.

The history certainly favoured the idea that there was disease of the kidneys present, and that the numerous calculi which had passed had descended from those organs. But I do not feel certain of this. I think it not improbable that these calculi were from the prostate; and the occasional swelling of the testicles might as well be referred to disease of the prostatic part of the urethra as to disease of the kidneys; for we know how frequently orchitis results from inflammation of that passage, and we are sometimes taught by experience that the mere irritation of this canal by the passage of a bougie is sufficient to produce this sympathetic inflammation. I had lately a case of this kind in my private practice, where the introduction of a cat-gut bougie caused such inflammation of the testis as to necessitate the administration of calomel and opium. The emaciation indeed pointed to renal disease, but might have resulted also from the injurious effect of the stone upon the lining membrane of the bladder; and the man's condition improved very remarkably under the exhibition of the acid mixture. In this hospital it is always the practice to allow a stone patient to remain a week or two in the house previous to operating, in order that he may be prepared for it, and may become somewhat accustomed to the place; and I am sure that to this partly is to be attributed the very favourable result of our cases of lithotomy at this hospital. The present sister of the ward tells me, that out of fifty-five stone patients who have been operated on since she has been here, only four have proved fatal. In the present instance the delay was more than usually extended by the prevalence of erysipelas in the ward, and I am now glad that this delay happened, for I think the man stands a much better chance of recovering from the operation in consequence of the improved state of his health. I performed the operation in my usual method. As soon as I had opened the urethra, I changed the sharp-pointed scalpel for Blizard's beaked knife, with which I entered the bladder and divided the prostate. The operation is of course performed more quickly with one

knife—more quickly for two reasons, firstly, that you do not have to change your instrument; and secondly, that having once cut into the groove of the staff, you have nothing to do but pass your knife onwards into the bladder; whereas, in changing the knife, some hindrance frequently takes place in finding again the opening into the urethra. The best way of obviating this difficulty is to keep the nail of the left fore finger on the opening, and thus guide the probe-pointed knife into the canal. It is important also to use a large staff in this operation, for, of course, the larger the groove the more readily is it hit. I remember being put to some inconvenience in one instance, where the patient was suffering so much that I was induced to operate without having sufficiently dilated a stricture, and was thereby forced to use a small staff. Another cause of difficulty in this case was, that near the termination of the staff there projected into the groove a diaphragm of steel. I thought I had come to the end of the staff, and accordingly cut out; but on introducing my finger (which I always make a point of doing before using the forceps), I found that I had not divided the neck of the bladder. This should teach us carefully to examine our instruments before commencing the operation. But I am sure that this, though not the quickest, is yet the safest plan of the two; for in using but one knife there is a danger, and not an imaginary one; for I have known it happen in more than one instance, that its sharp point may pass too far, and penetrating the posterior wall of the bladder, cause death. Now this cannot happen with Blizard's knife.

In operating on children, where of course a large staff cannot be used, the beak of a large knife dose not slide nicely along the groove of the staff; and I have therefore had a knife made with a smaller beak for operating on the young. In cases of lithotomy similar to the present, though you must watch that inflammation does not come on, yet you must not be in too great dread of it, nor, by submitting your patient to a preventive treatment, increase a weakness already sufficiently great.

In most instances of a like character the patient will very soon require support, and stimulants must be given. This is the result not only of my own experience, but also that of other hospital surgeons. Hæmorrhage occurred in this case nine days after the operation. Now, when bleeding does happen after lithotomy, you must not attempt to stop it by plugging the wound, but must compress the pudic artery against the bone; and this pressure may require to be kept up for many hours. Some years ago I divided the pudic artery whilst operating for fissured anus. In this case I did that which I will never do again, viz. I divided the sphincter from within outwards. The knife, which was very sharp, went quickly through the gristly substance around the gut, and passing too far outwards, wounded the artery. In this case, if I recollect right, pressure was kept up for upwards of forty hours, before I considered the patient safe from a return of the bleeding. You saw, at the operation, that a large quantity of pus followed the removal of the stone; and you will remember, in the history of the case, that the man said he could sometimes feel the stone in the perineum; and I have no doubt that he was right, and that it had formed an abscess in the prostate, in which it was occasionally lodged, and from which it was removed by the elastic bougie, which he was in the habit of using in order to enable him to pass his water. Such extensive disease as this is of course very unfavourable; but I think it most probable, that the operation which has been performed will save his life.

Lithotrity was of course out of the question, for it would have increased the mischief caused by the stone, whereas, by cutting into the bladder, not only was the stone removed, but the abscess it had produced was freely laid open and thus put in the most favourable condition for healing. Lithotrity, however, is in many cases a very good operation, and I recommend it in fit instances in preference to lithotomy. In two or three cases which have been under my care at this hospital, and in which I have deemed the operation applicable,

there has been an unaccountable aversion to it on the part of the patients themselves.

In conclusion, I would warn you, gentlemen, when you go into practice and meet with a stone case, do not waste valuable time in mere palliative measures, but immediately operate, or send the patient to a hospital for operation. Had this been done in the present instance, not only would the man have been saved much severe suffering, but he would have had a much better chance of recovery after the performance of the operation.

LECTURE L.

On Lithotomy.—*Continued.*

Gentlemen,—Since I last addressed you on the subject of stone in the bladder I have had many cases of lithotomy, and some of them of great interest. I will now continue my list of successful and unsuccessful cases from 1855. My list up to that time was published in Vol. I. of *The Lancet* for 1855. At that period I had operated on twenty-seven male patients, and had had five deaths.

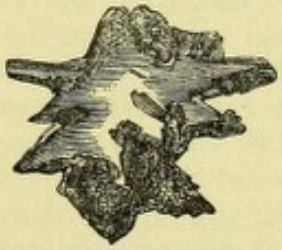
I have now (December, 1861) operated on fifty-four male patients, and have had thirteen deaths. I have operated on three females, and no deaths; making fifty-seven cases and thirteen deaths, or forty-four successful cases. I have never picked my cases, but I have taken them as they were presented, both in private and hospital practice. I am well aware that by so doing my fatal list is much larger than it would have been if I had selected my cases; but, on the other hand, I have every reason to believe that I have saved lives which must have been sacrificed without the operation. One of my successful cases, at the West Herts Infirmary, had been rejected at two hospitals—one a provincial, the other a London.

The instruments which I continue to use are the beak knife (a modification of Blizard's), and Key's knife: the latter I frequently use for children; the beak or probe-pointed knife in the adult. I once used the gorget, but it was in consequence of my knife breaking. I do not see the objections to the gorget which

have been frequently urged against it. Nevertheless, I have no disposition to change my instruments now.

I will detail the cases I have had since 1855 by numbers, as, for reasons that can be understood, I do not wish the private cases to be identified with the peculiar moral circumstances which in some instances appeared to be the direct cause of a fatal result.

No. 28 was a lad nineteen years of age, a London mechanic. He had had obscure symptoms of stone from his earliest recollection—*i. e.* from his fifth year. But the stone was actually detected by a surgeon five years ago, and the reason given for postponing the operation was, that the friends could not afford the expense. At last his sufferings became so frightful that he sought refuge in this the ancient hospitium of St. Mary Overie (now called St. Thomas's Hospital). He was in the hospital for some little time before we could strike the stone with the sound. The operation was per-



formed in the usual way with the probe-pointed knife. There was some little difficulty in finding the stone, for it was small, though spiked; and these spikes account both for his sufferings and the ulceration discovered in the mucous membrane after death, which occurred twenty-three days after the operation, from abscess in the pelvis.

No. 29.—A healthy agricultural labourer, aged forty-one. A large, flat stone. The patient got well in about a month, without a bad symptom.

No. 30.—An old man, aged sixty-one. In this instance I had crushed the stone with the lithotrite about three months previous to the operation for lithotomy. He got such immediate relief from the first three operations with the lithotrite that he positively refused to have it again introduced. Now, I need not, perhaps, tell you that it is impossible to crush a large stone at one or even three *séances* into such complete dust as to allow of its being voided by the urethra. Indeed, your success as a lithotritic operator will depend on your not attempting too much at one time. Let the bladder rest between your successive operations, and you will avoid much of the danger of inflammation. In this case my patient was an ignorant agricultural labourer, and no arguments I could use to

permit me to repeat the operation had the slightest influence on him. He left the West Herts Infirmary worse than he entered it, for he had, I should think, five or six stones instead of one, though he thought himself cured. After remaining out of the hospital about two months, he came back in a most distressing state, and entreated me to cut him. Knowing, of course, that this alone offered the slightest chance for his life, I did so, but only to add another to the fatal column in the list of operations. Many large pieces of lithic acid calculus, and a small perfect one about the size of a bean, were removed from his bladder. For the first four days he progressed favourably. On the fifth day he began to flag; but he lived fourteen days, dying from pyæmia and the resulting pneumonia. There was pus in the kidney; but the bladder was healthy.

No. 31 was an old but hearty man, aged seventy. He recovered without a bad symptom, and is, I believe, still alive—more than six years after the operation.

No. 32.—A boy, six years of age; successful.

No. 33.—Also a boy, only four years old; small stone; successful. This case was watched, as well as many others, by my friend Mr. Sutcliff, late house surgeon at the West Herts Infirmary, but now practising at Ripley. To his judicious after-treatment, and careful nursing night and day, I attribute my almost uniform success in that hospital. I will quote part of his report in the last case, as it illustrates one of the difficulties which occasionally arise after an operation, and which, if not met at once in a proper way, will in all probability set up peritonitis:—"I was called up at 6 A.M., and found that the patient had lost some blood, but as his bowels had acted in the bed it was impossible to say how much. He was very sick, but had passed plenty of urine during the night.—10 A.M.—Very restless; cannot be kept on his back; continually pulling his penis about, and poking his fingers into the wound; bladder becoming distended; passes some urine by the urethra, but with pain—none by the wound. I now passed my finger through the wound into the bladder, after which he very soon expelled, with considerable force, a large smooth clot of blood and a great quantity of urine; the clot weighing more than an ounce, and moulded to the shape of a small contracted bladder. 11 P.M.—Quite comfortable; takes his food well. Urine passes freely by the wound; no pain on pressure over the bladder."

No. 34.—A boy, aged ten years. This case terminated fatally on the twelfth day, from serous apoplexy consequent upon diseased kidneys. I have a very long and good account of the case, taken by my dresser, Mr. Way. From this report I will make some extracts:—

A thin, fair-complexioned, delicate boy. He complains of much pain in the region of the bladder and extremity of the penis, by pulling which the finger and thumb are much soddened; complete incontinence of urine, which is cloudy, alkaline, and contains traces of albumen. The stone was felt at the first

sounding. He was ordered fifteen minims of dilute muriatic acid in the infusion of buchu.

The poor boy's sufferings were fearful; so that on the twelfth day after his admission I operated, whilst the patient was under the influence of chloroform, and extracted an irregular rough stone with sharp points, weighing two drachms and a scruple. The outer surface was phosphatic. At 9 P.M., after the operation, he appeared very comfortable and free from pain. The urine passes freely by the wound.

Jan. 20, 1856 (the day following the operation).—He had a comfortable night, and is now quite easy and cheerful; no tenderness of abdomen; wound healthy; pulse 90; feels hungry. The relief the boy has obtained from the operation, considering the severe pain he suffered previously to it, is very remarkable.

22nd.—Doing well in every respect.

From this date he began to flag; his stomach became irritable; he had hiccough and sleeplessness; and, notwithstanding careful watching and attention of every kind, gradually sank.

26th.—Pulse 150; eyes dull; countenance cadaverous; takes no notice of any one, though perfectly rational; rejects everything but iced water. 11 A.M.—Shrieking, and so furious that he can hardly be kept in bed.

Believing that serous effusion was commencing in the brain, I employed mercury, both by the mouth and skin, and the fatal event was delayed for four days.

30th.—Much worse this morning, having been violently delirious during the greater part of the night; is now insensible and quiet, merely throwing his arms about; does not take anything. He died at 11.15 P.M., having gradually sunk.

Post-mortem Examination. — Height, 3 feet 11 inches; weight, 2 st. 8 lb. — General appearance: There was a healthy-looking wound in the perineum, the result of the operation. The right pupil was dilated; the left somewhat contracted.—Head: The membranes of the brain were healthy, though the vessels were somewhat congested. Very numerous dark vascular points were seen on section of the brain, and its ventricles contained from two to three ounces of clear serous fluid. The inferior vermiform process of the cerebellum was prolonged forwards, and adherent to the valve of Vieussens.—Thorax: The heart and pericardium were

quite healthy, as were also the lungs and pleuræ.—Abdomen: Peritoneum quite healthy. The stomach and small intestines contained seventeen good-sized ascarides lumbricoides; two of these were in the stomach, the rest were found occupying the duodenum, jejunum, and upper portion of the ileum. About the middle of the last-named intestine a small intussusception was found, the upper portion being intruded into the lower for about half an inch. The mere removal of the intestines was sufficient to restore the parts to their proper situation. No products of inflammation were present; nor, after its reduction, was it possible to tell the portion it occupied. In the large intestines a few ascarides vermiculares were found. With these exceptions the intestines were healthy.—The pancreas was healthy, as were likewise the spleen and liver.—Kidneys: These were extensively diseased. The left one was small, and consisted of little else but dilated calices, invested by the cortical substance, which was thin and compressed. The pelvis and calices were filled with a puriform fluid, and their lining membrane was roughened by calcareous deposit. The Malpighian corpuscles and tubes were found to be very much atrophied, their place in some parts being taken by a kind of fibroid deposit. Concretions were also seen scattered through the structure; some had the well-defined prismatic form of triple phosphate, and the action of reagents upon other amorphous masses proved them to have the same composition. The right kidney was much larger than the left, and was somewhat hypertrophied. The cortical substance was pale, and had a larger extent than natural. The medullary in some parts was encroached upon by the dilated calices; in others, its situation was distinctly marked. The tubes in a few parts seemed to contain healthy epithelium, and in their normal proportion; others were gorged with it; but the greater number, perhaps, contained none, its place being taken by a granular blastema. Both ureters were much dilated and their walls thickened. — The bladder was small and contracted. Its muscular walls were very much hypertrophied (about half an inch in thickness). The mucous coat was thickened, and presented patches of superficial ulceration. On the left side, at its anterior and inferior part, was the opening made by the operation. Some calculous matter surrounded it.

No. 35 was an old man in his eightieth year. He was a healthy-looking man; but he sank, as I suppose is not surprising at his great age, from venous hæmorrhage on the third day.

No. 36.—A lad, aged eighteen; got well rapidly.

No. 37.—Aged fifty-six; had had symptoms of stone for five years. The stone removed was a very large one, weighing two ounces and nearly two drachms; but he was quite well again in less than a month.

No. 38.—Aged sixty; got well very rapidly, though the stone was large, weighing one ounce and a half.

No. 39 also recovered, but as the case is interesting

in many ways I will give it you in detail, as reported by Mr. Sutcliffe.

Joseph H——, aged thirty-one, from Chilvers Coton, near Nuneaton, admitted into West Herts Infirmary on 2nd April, 1857, under the care of Mr. Solly. Had always enjoyed good health until about ten or eleven years ago, when he was laid up for nine days with an attack of gravel. He passed a considerable quantity of blood, and suffered much pain, but was relieved by voiding a small calculus by urethra, after which for two years he felt no inconvenience. He then had another attack, and passed two more small stones. He then went on for another year and a half, when he passed several more; some as large as peas. For the last two or three years he has not passed any, but has for a long time had a large quantity of sediment deposited from his urine. About seven years ago a calculus was detected in his bladder by a surgeon at a country infirmary; after which he went to a London hospital. Was seen by Mr. ——, who felt the stone, but did not think the man in a sufficiently healthy state to operate on. He was then suffering from symptoms of phthisis, and was spitting a good deal of blood. The surgeon advised him to return into the country for a time, as he might get into a better state of health.

On admission he was somewhat emaciated; contenance anxious; pulse 100, regular; tongue clean; skin moist; bowels regular. He can retain as much as half a pint of urine at a time in the day, but has to get up two or three times to micturate in the night. Appetite good: has a slight cough, and expectorates a small quantity, but has not spat any blood for two years. The chest was dull on percussion over the upper part of both lungs; respiration harsh and bronchial; but very little healthy murmur. The heart's action was quick, but regular. On examination, the urine had a specific gravity of 1014; it contained much mucus, a little pus, and abundance of triple phosphates; smelt strongly ammoniacal.

On April 7, Mr. Solly having sounded him, both felt and heard a large stone; and, not considering it a suitable case for crushing, he performed the usual lateral operation (the patient being under the influence of chloroform), and removed a large stone weighing one ounce and a drachm (troy). It had a peculiar black smooth appearance, which Mr. Solly did not think a very favourable symptom. After the operation, some rather troublesome hæmorrhage arose, requiring three or four ligatures. He was very sick, and his bowels were freely opened. 6.30 P.M.—Very restless; complained much of pain about wound, and lower part of back; hæmorrhage ceased. Ordered, twenty-five minims of solution of opium immediately; also, to take, three times a day, fifteen minims of dilute nitric acid in one ounce of infusion of diosma. Stone poultice to be applied to the abdomen, and oiled lint in the wound. 8.30 P.M.—Still in much pain; urine flows by the wound. Repeat

sedative draught. 11 P.M.—Easier; dozes for a few minutes at a time.

April 8, 10 A.M.—Slept about an hour during the night; no further hæmorrhage. Tongue dry; pulse very quick; urine flowing freely by the wound. 3 P.M.—Suffering much pain; has passed a little urine by urethra, but more by the wound; abdomen rather tender. Introduced little finger into the wound, when about half a pint of urine was expelled with much force; after which he had some shivering, which went off in about half an hour. 9 P.M.—More comfortable. To repeat sedative draught.

9th.—Slept a good deal better during the night. The urine has flowed freely by wound. Tongue more moist; pulse slower. Takes plenty of barley-water and beef-tea.

11th.—Going on favourably; wound looking healthy; plenty of urine passing; has lost all tenderness over abdomen. Bowels not open. Ordered half an ounce of castor oil.

12th.—Had a good night; bowels freely relieved by the oil. He continues his opiate at night.

16th.—Has gone on without drawback since last note. To-day he has begun to pass some urine by the natural passage: his urine still contains much mucus, is alkaline; specific gravity 1015.

23rd.—Wound fast healing; very little urine now escapes by it.

29th.—Wound all but healed; only a drop or two of urine passed that way, and that only when voiding it by urethra.

30th.—No urine passes by wound; urine continues much in the same condition. Ordered, dilute nitric acid, twenty minims; decoction of pariera brava; three times a day: one pint of porter daily.

May 2nd.—Urine rather improved.

13th.—Wound quite healed; urine less turbid; his general health improved, but expectorates rather more.

21st.—Discharged well.

I have just received a line from this patient, dated Nov. 6, in which he says—

"Sir,—I take up my pen to let you know that I have enjoyed good health since my return from Hemel Hempstead till within a quarter of a year."

Thus it will be seen that this operation gave him about three years' comfort and enjoyment, though I fear, from the conclusion of his note, that he is now suffering from some disease of the kidney.

"I can eat as well as ever; but I am very sore in my right kidney; it pains me very bad for two or three days at a time, and then I am somewhat easier for a few days. My urine is bad, and settles like matter."

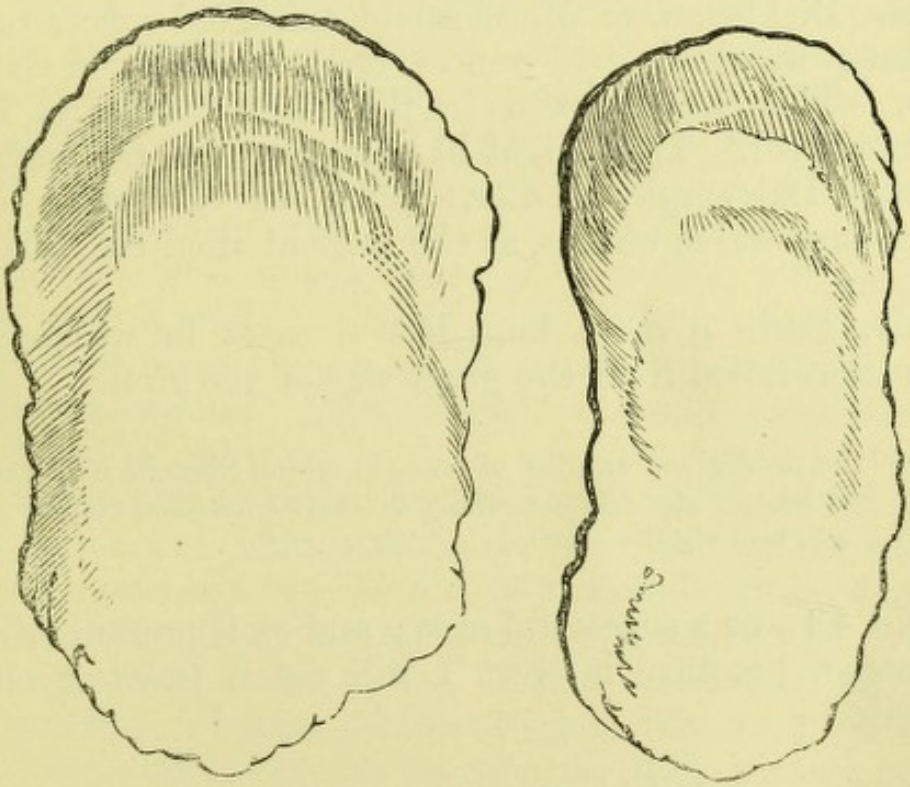
Since this was written he has been admitted under my care. He is pale and thin, and suffering, I fear, from disease in the right kidney; otherwise he seems quite sound, and is free from all pain in his bladder, or any irritability of it.

No. 40.—Aged three years and a half. In this case I used Key's knife, and the patient recovered rapidly.

No. 41.—Five years old; successful.

No. 42.—A healthy-looking man, aged sixty-five; removed successfully a stone weighing two ounces and five drachms.

This was a very large stone, as you will see by the annexed woodcuts, which give a front and side view of



the stone. Nevertheless, there was no particular difficulty in extracting it. Supposing you should find a difficulty in the operation from the size of the stone, you must not hesitate to enlarge your opening by dividing some of the grasping fibres of the bladder over the stone; also take care to push back the bladder off the stone with your finger, instead of dragging it through by main force. It is much better to drop the stone if there is

any great difficulty in extracting it, and alter the axis in which you grasp it, than to use any force. Also press the stone towards the rectum, rather than upwards towards the arch of the pubis.

Mr. Charles Mayo, of Winchester, successfully extracted a stone weighing fourteen ounces two drachms avoirdupois, from a patient, twenty-eight years of age.

"I got the stone to the outlet of the pelvis by means of the forceps, when Mr. Wickham passed a strong iron scoop under the arch of the pubis, which acted as a lever: by their combined action, applied with all the force they could exert, the stone fortunately broke into several large fragments."

Mr. Dickinson, of Macclesfield, extracted successfully a stone weighing ten ounces, from a man aged sixty-two. This was broken in the bladder after it had been opened. The patient had sloughing of the rectum.

Mr. Dalrymple, senior, failed in extracting one weighing twelve ounces, as the patient died the following day.

Mr. Earle gives a long list of cases in which the operation failed from the great size of the stone.

"Of the prodigious number of cases in which Cheselden operated, the three largest stones successfully extracted weighed respectively twelve, ten, and eight ounces."

No. 43 was a successful case; and as it presents some points of practical interest I will detail them at more length:—

F. W——, aged eight, was sent to me by an old student of St. Thomas's, Mr. Rose, of Wycombe. This case was a healthy-looking boy, with none of the cachexia which usually attends this disease in children. I should have operated on him very shortly after his admission if I had not been troubled by the occasional and periodical appearance of erysipelas in the ward. Though each case, as it arose, was immediately removed to the casualty ward, still fresh cases appeared, generally after the interval of a week. Fortunately the boy did not suffer, so that I had not that trouble to worry me, and add to my regret in being obliged to postpone the operation from week to week.

You may perhaps feel surprised, since you have seen the great size of the stone (larger than a pullet's egg, and an ounce in weight), that his sufferings were so slight; but the fact is, that a smaller and rougher stone always induces more pain. A large stone remains quietly in the lower fundus of the bladder; it does not fall over the orifice of the urethra, stopping the flow of urine, and giving rise to those frightful spasmodic attempts to pass it which usually accompany the presence of stone in the bladder in children.

As regards the operation, I performed it with Key's knife, and there was nothing peculiar regarding it. There was a rather free hæmorrhage, but a little pressure in the wound for about five or ten minutes, and exposure to the air, entirely stopped it. For the first forty-eight hours the case was progressing in every respect as well as possible. But on the Tuesday morning—that is, the third day after the operation—a circumstance occurred which alarmed the sister and the house-surgeon as well as the boy, who said he was going to die. The urine came with a sudden forcing gush through the urethra, and at the same time blood in a small quantity flowed from the wound. The passage of urine gave him a good deal of pain.

This is just one of those incidents which every now and then occur after lithotomy. It is, I believe, occasioned by a little tumefaction of the sides of the wound at the neck of the bladder, which prevents the urine flowing through the wound. It is of no importance. Fortunately, I happened to come into the ward just at the time, and I was able to calm my little patient, who is remarkably intelligent, though a very sensitive child. The urine has since found its way through the wound, and he is progressing favourably in every respect.

No. 44 was a boy only five years of age, presenting a very different aspect to the last. He was a miserable, thin, unhealthy-looking child, and his sufferings made me anxious to operate; but the same cause delayed the operation in both cases. In the first-mentioned case my patient was none the worse for the delay; but in the second he was immensely benefited. The child improved

daily in appearance; and the kind, motherly, but judicious care which the late sister Abraham invariably bestowed on all her cases told most favourably on this poor boy. The colour returned to his cheeks, he gained flesh, he lost much of his peevish irritability, and his local sufferings were evidently much less. The bladder became less irritable as he improved in health.

There was no hæmorrhage in this case, and he progressed favourably until the Monday evening, when he became rather feverish and hollow-eyed. He complained of pain at the lower part of the abdomen, and was restless and uncomfortable. He was ordered a little gin and some calomel and opium, with a small dose of castor oil in the morning.

He was better the next day, but still he had no appetite, and refused everything that was offered him—beef-tea, jelly, &c. On the following day the sister found out that he liked porter, so she very wisely gave him a little; and this induced him to take some fish. Since then he has recovered rapidly.

Now, gentlemen, you will find that it is upon judiciously watching these cases, and humouring the fancies of your patient in regard to diet and stimulants, that your success as a lithotomist will often depend.

No. 45 was just one of those cases in which the operation was of no use, though it cannot be said to have been the cause of death. The patient was seventy-two years of age, worn out by the presence of a stone in his bladder undiscovered for many years. This occurred, not through any inattention on the part of his medical adviser, but from circumstances over which he had no control. The fact is that the poor fellow thus diseased, who was a clerk, had been robbing his employers, and the first day that he was absent from his desk his peculations were discovered; so that he had not had a holiday for nearly twenty years. He had been suffering occasionally from bronchitis.

Well, what was to be done? Was I to leave the poor old man to die, with all the misery of a bladder ulcerating from the pressure of a stone, or was I to try by the operation of lithotomy to save his life? I wished to move him to the hospital, but he had a great dread of this from various circumstances, but especially, I suspect, from his peculiar position. So that everything seemed against him. Nevertheless, I determined to operate; and, without any difficulty, I removed two large stones. He went on perfectly well for the first five days, and then sank in about twenty-four hours from a low bronchitic attack.

No. 46.—A delicate-looking boy, aged three years and a half. He got well without any drawbacks.

No. 47 was a diseased old man, aged sixty-two, who died on the third day with ulceration of the bladder, a diseased heart and liver, with gall-stones. He never thoroughly rallied from the chloroform.

No. 48.—This was the youngest child I have ever cut for stone. He was only a year and a half old; but he got well in a very short time.

No. 49 was a child four years old. A rapid recovery.

No. 50.—A patient fifty-six years old. The case proved fatal. This man was plethoric and rather full-blooded; but he had not suffered for more than eighteen months. He did not suffer from any pain in the extremity of the penis, as is usual in such cases, but in the perineum. He was admitted on the 2nd of November, and I operated just a week after his admission. We find it very important to let patients get accustomed to the hospital; they feel at home then, and bear the operation better. I removed a very large flat stone in the usual way, employing the beak-pointed knife. The weight of the calculus was an ounce and a quarter. There was a very free hæmorrhage; but it stopped soon after he was in bed. The first two days he was very well, though occasionally complaining of faintness. On Nov. 11 (the fourth day) there was some abdominal pain; but a little gin-and-water removed it. He slept well, and said he was comfortable. On Nov. 12, at 5 P.M., he felt rather sick, and had return of pain, but no actual vomiting. He complained of weariness, and the colour left his face. His pulse became small and weak. Beef-tea, arrowroot, and gin-and-water were repeatedly given. The stimulants appeared to revive him, but produced no permanent benefit, the pulse continuing very low. The abdominal pain did not increase; but he gradually became weaker till 6 A.M. on the morning of the 13th—*i. e.* the fifth day after the operation—when he died.

The post-mortem examination revealed some peritonitis, with effusion of lymph. The muscular coat of the bladder was much thickened, but there was no ulceration of the mucous coat or extravasation of urine into the abdomen to account for the peritonitis. The edges of the wound made in the bladder for the extraction of the stone were slightly inflamed. The liver was large, and the kidneys were embedded in fat, but not diseased. The lungs were emphysematous and congested; the aortic valves of the heart softened.

In this case, the signs of peritonitis were so masked, and the general debility so great, that we had no reason to employ any active antiphlogistic measure; and I do not think that, if such had been adopted, it would have influenced the result. I believe that it was one of those cases of low peritonitis analogous to erysipelas, and

which occasionally follow parturition in an atmosphere poisoned with erysipelas.

No. 51 was a boy aged three years and a half, on whom I operated in the Hemel Hempstead Infirmary. I used Key's knife, and the child recovered rapidly.

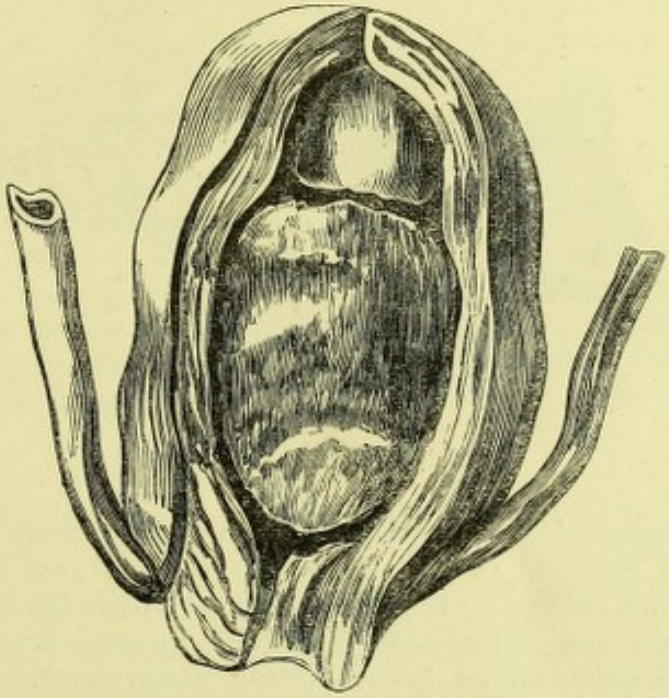
There is one circumstance in regard to the operation which I may here mention—namely, the difficulty there sometimes is in finding the stone after the bladder is opened. Sir James Earle says, "Very early in life I made an observation which has since been of infinite service to me: I remarked that in all those cases which died of the operation the stone had been found with difficulty." In fact, in these cases the bladder must have been bruised; but this need not be. You should always search for the stone with the blades of your forceps closed, using them as a sound; and if this does not succeed, open them very gently so as to slightly stretch the bladder, and if the stone is lodged in any of the folds, it will drop out and fall into the fundus of the bladder, where it may be seized. If this is also unsuccessful, use the curved forceps, and introduce the finger of the other hand into the rectum.

Previous to the performance of the last operation on my list, I had a case of stone in the hospital which was fatal without any operation being attempted, and therefore it does not come into the fatal column. The patient was a child four years of age. He had suffered from symptoms of stone for three years, till at last his parents brought him to the hospital to die. He was admitted on the 14th of January, and died on the 21st of February.

Now, if this boy had been admitted only a few months earlier, I have no doubt that I should have felt it my duty to operate in pity for his sufferings, which were painful to witness; but, from the revelations of the post-mortem examination, the result must have been the same, and another added to my list of fatal cases. The child was pale and emaciated, but for a few days, under the use of tonics and stimulants, the flame

brightened up so much that I trusted the case might not prove hopeless. The improvement, however, was too short-lived to justify any operation.

The bladder was filled by two stones, as exhibited in the annexed woodcut, the lower stone fitting into the upper like a cup and ball, or rather, I should say, like a ball and cup.

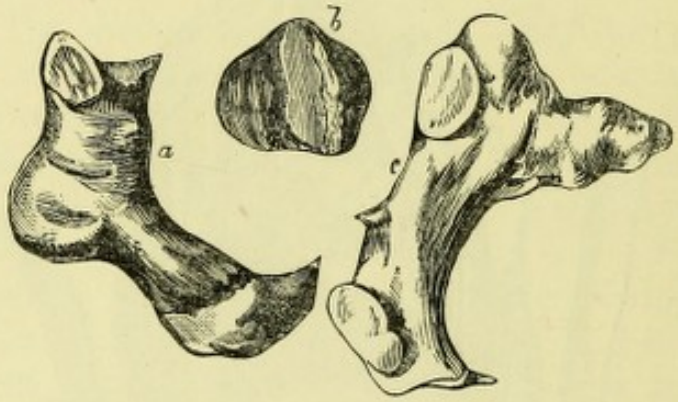


No. 52.—I operated on the 5th of October. Most of you witnessed the operation, in which there was nothing peculiar. I used the probe-pointed knife to open the bladder, and removed the stone with the scoop and finger, as it slipped in the forceps, which its conical shape accounted for. I will, however, proceed to give you some details of the case :—

R. H——, aged twelve years, has been delicate from birth, and has had symptoms of stone since he was four years old. There was a good deal of suffering when admitted, so I ordered him the compound buchu mixture, from which he derived some relief; and with a good nourishing diet his general health improved. The operation was, as usual, performed under the influence of chloroform, and about four hours afterwards he had a draught containing fifteen minims of tincture of opium. On the following day he is

reported to have passed a good night; but his pulse was 120, skin hot and dry, tongue brown, and he was very thirsty: in short, there were all the signs of peritonitis. Ordered, one grain of mercury and half a grain of opium, every four hours; also beef-tea. From this time he went on badly, and died on the fifth day from the date of the operation.

The post-mortem examination showed slight peritonitis in the lower part of the abdomen. The opening into the bladder made by the operation was small, and presented no peculiar appearance; the rest of the mucous surface was quite healthy and uninjured.



The stone removed is marked *b*. In the left kidney there was a long spiked calculus (*a* and *c* represent front and back views), occupying two calices, so that it could not be dislodged without laying them into one. The lining membrane in contact with the stone was so dark-coloured as to be almost gangrenous. This was, I suppose, the real cause of death. It is true that there was no extension of the pyelitis into the bladder, but I cannot believe that this operation would have set up the peritonitis. There was no circumstance attending the operation to excite peritonitis: there was no difficulty or delay in the extraction of the stone; no dragging of the soft parts from the opening being too small, and no incision into the post-vesical cellular tissue from the opening being too large; no injury or ulceration of the mucous membrane of the bladder giving rise to extravasation of urine.

I dare say that many of you will remember that, previous to his death, I suggested the probability of a stone incarcerated in the kidney being the cause of his sufferings after the operation. This opinion was derived partly from the fact that the stone I removed from the bladder had the shape and general characters of a renal calculus, and partly from the history of the case given by his mother. I suppose, therefore, that he died from

sympathetic fever induced by the operation and incarceration of the renal calculus.

The following is the official report of the post-mortem examination by Dr. Montgomery :—

"Robert H——, aged twelve years, admitted into Abraham Ward, September 18, 1861, under the care of Mr. Solly; died October 10, 1861. The body was emaciated. There was a wound in the perineum about an inch long. The boy had been operated upon for stone. The mucous membrane of the larynx and trachea was healthy. The lungs appeared healthy, and their substance was rather dry. The heart and its valves were normal. The liver was somewhat fatty; spleen very soft. In the left kidney there was a large branched calculus, and the substance of the kidney was rarefied; the ureter was not distended. The right kidney was healthy. There was a considerable quantity of yellow, coagulated lymph adherent to the abdominal walls near the pelvis. The bladder and rectum were glued together by recent coagulated lymph. The areolar tissue of the pelvis was extensively inflamed; it was suppurating. The walls of the bladder were considerably thickened."

You will, perhaps, like to ask me whether, if I could have diagnosed the probability of a calculus in the kidney as well as in the bladder, would I still have operated? I answer most decidedly, Yes; and for this reason, that without the operation the poor child must have died in great agony, and that the operation gave him a chance of recovery. No surgeon can be certain that his patient has an incarcerated stone in the kidney, though he might suspect it, and trust to its passing, as the original one did, into the bladder. This has occurred before now, and a surgeon has been unjustly blamed for leaving a calculus in the bladder, when he really only left it in the kidney, where, of course, he could not reach it.

No. 53 was a healthy boy, eight years old. He went on from first to last without a bad symptom.

No. 54 was the boy on whom I had previously operated in the Hemel Hempstead Infirmary. He has again done well.

No. 55.—June 4, 1862. Boy aged 8. Operated on in St. Thomas's Hospital. Used Key's knife; successful.

No. 56.—Jan. 10. Aged 19, at Hemel Hempstead; Key's knife; successful.

No. 57.—Jan. 25. Do. do.

No. 58.—March 11; aged 25; blunt-pointed knife; successful.

No. 59.—April 12. Aged 6; Key's knife; successful.

No. 60.—April 16. Aged 5; Key's knife; successful.

No. 61.—Oct. 4. Aged 56; died on the seventh day, from secondary hæmorrhage. A weak, nervous man.

No. 62.—1864, July 5. Aged —; successful.

No. 63.—July 30. Aged six; successful.

Making altogether 63 cases. 49 recoveries; 14 deaths.

LECTURE LI.

On Purulent Absorption.[1]

Gentlemen, — We have lately had so many cases of purulent absorption, that I feel convinced you will be much interested with a consideration of its pathology and treatment. And though I am convinced that its prevalence at the present time is dependent on some occult atmospheric causes over which we have no control, still it is our duty to study the whole subject with attention, and to add our stock of experience to the general fund.

I have observed lately, both in private practice and in the hospital, that there has been a great tendency to a low form of gangrenous erysipelas, to carbuncles, and to unhealthy inflammations generally.

Gangrenous inflammation has in one or two instances followed trifling operations in the wards of my colleagues, and in my own ward you have seen four or five patients succumb to purulent absorption, or, in other words, poisoning by pus—purulent poisoning.

The first patient, sixty years of age, fell a victim to it after struggling through the shock of a smashed elbow-joint, severe loss of blood, amputation of the arm, a violent blow on the chest, two fractured ribs, bronchitis, and fracture of both bones of the leg. For the first week this poor fellow's life hung upon a thread, and I watched his case with the greatest care and anxiety. His stump nearly healed, and the bones of the leg united; but just when all my efforts to save his life seemed crowned by success, he is suddenly prostrated, as if some subtle poison coursed with the blood

[1] March 15, 1851.

through all his vital organs, and he sinks, like a shadow, into the grave. But you shall be reminded of the progress of the case by a more minute detail of it hereafter.

The second was a poor fellow who was operated on for fistula in ano.

The third case that occurred in my own practice was a compound dislocation of the ankle-joint in an old woman of grossly intemperate habits. She was brought into the hospital in a state of intoxication, and was only saved from delirium tremens by brandy and opium.

The fourth case, and to which I direct your attention to-day, is that of a man previously in good health, the subject of a compound fracture of by no means unusual severity—a form of injury in which we are generally able to save both the limb and life of our patient.

It is always a painful duty when we are obliged to decide to amputate in order to save life, and it is painful to witness a patient sink from an injury which, we believed, might have been repaired without a fatal result. But the occurrence of one fatal result, even if we could not trace it to a cause such as purulent absorption, which we have seen is not removed by amputation, must not deter you from that boldly humane view of these cases which induces you to prefer an anxious and arduous attempt to save a limb to the *éclat* of a skilfully executed operation.

The fact that depositions of pus and lymph in various parts of the body occasionally follow severe injuries and operations has been known to the profession since the days of Morgagni, and many observations have been made on the subject by the continental writers as well as by our own countrymen, but I believe that the true pathological explanation of these phenomena has only lately been given. Mr. Rose, one of the surgeons of St. George's, has published a paper in the *Medico-Chirurgical Transactions* for the year 1828, in which he has collected a great many interesting cases. He, however, agrees with Dessault in attributing them to a disturbance of the nervous system. He says: "They

are to be classed amongst the effects of constitutional irritation arising from local injury, and are certainly striking illustrations of the irregular action in the vascular system to which that irritation may give rise."

My old and much-respected master, Mr. Travers, in an essay of careful research and very extended observation, published with Mr. Cooper in 1818, entitled, "On Wounds and Ligatures of Veins," combats the idea of purulent absorption. He says:—

"Not to insist on the innocuous quality of pus, it should be observed that the most rapidly destructive inflammation is that which has the true adhesive progress in which no pus is secreted." . . . . . "All the mystery of veins is, as I have attempted to show, that they are indisposed to inflame; but when excited, inflame by continuity, and therefore it is that the constitution sympathizes so deeply."

Yet Mr. Travers adduces cases in which the inflammation of the vein was quite circumscribed, and the patient died from secondary suppuration, induced, as I believe, by the absorption of pus.

The attention of the profession was called to this subject by Mr. Arnott in 1829, and his paper is published in the *Medico-Chirurgical Transactions*, vol. xv. He was the first to show that the serious symptoms of phlebitis were owing to absorption of pus, not to the inflammation of the vein extending to the heart, as had been previously supposed. The whole paper is extremely interesting, and well worthy of perusal.

You will find some instructive observations on purulent deposits in Carswell's "Illustrations of Disease."[1] He repudiates the idea of these purulent deposits being the necessary result of phlebitis; he considers that for their formation there must be inflammation somewhere, but the pus circulates in the blood, and thus poisons the whole organism before it is again re-deposited. Dessault propounded the theory, that after injuries of the head, pus was always deposited in the liver; this,

[1] Fasc. viii.

however, has been proved to be a mistake. The lungs and the liver are the most frequent seat of these deposits, and the kidneys the least so. M. D'Arcet, who wrote on purulent deposits in 1842, considers that these deposits are sometimes absorbed, and passed off by the kidneys, rendering the urine at that time albuminous.

The subject of purulent absorption has been admirably treated on by Mr. Henry Lee, in his Jacksonian Prize Essay for 1850. I have read this essay with great pleasure and instruction, and I recommend all of you to read it with attention, and it will be your own fault if you are not the better for it.

It has been shown, that pus, when mixed with the blood, coagulates that fluid, that the action is not a chemical action, but a vital action. And you will at once perceive how beautifully this action is ordained by Nature to prevent purulent absorption. When the vital forces retain their normal power, the blood coagulates at once, and the wound in the vessel is sealed by a firm coagulum of blood while the healing process is going on; but if the vital power of the blood is diminished by disease, then this conservative coagulating action does not take place in time to plug the vessel, and stop the poison at the threshold. The barrier which Nature, in a state of health, erects, to prevent the flow of pus into the veins, is not set up, and the poisonous fluid is carried onward in the current of the circulation.

You must not, however, suppose that the erection of this barrier is interfered with only by disease. It may be, and often is, broken down mechanically. After bleeding in the arm, if the limb is not kept at rest, the plug is not formed, the healing of the wound is interrupted, pus forms, and phlebitis takes place. It is true that the contractile coat of the vein plays its part also in preventing purulent absorption, just as it assists in preventing hæmorrhage, and if the powers of the constitution are weakened by disease or atmospheric causes, so also will the contractile power of the coats of

the vein be deteriorated. But there are some veins so placed that they cannot contract on their contents; these veins are therefore dependent on this vital coagulation of the blood for their safety—I mean, the veins in bones. Hence you will perceive the immense importance of keeping the veins of a fractured limb at rest, when pus is being formed round the broken ends of the bone, and you have reason to fear the occurrence of purulent absorption being promoted by the depressing influences of an impure atmosphere or a weakened constitution.

There is, gentlemen, another depressing agent which, I think, has not been sufficiently insisted upon: I mean, anxiety of mind. I am quite sure that mental anxiety has carried more poor fellows to the grave than any single cause that the surgeon has to contend with. I have repeatedly, and for a long series of years, observed a connection between anxiety of mind and the formation of abscesses. I cannot offer any physiological or pathological explanation of it. I have also observed purulent absorption more frequent in patients who, to use their own phrase, have "had something on their minds." This was certainly the case in the instance of two of the patients to whom I have adverted; I mean the man with compound fracture, and the other with fistula in ano.

You must not suppose, gentlemen, that the veins are the only channels by which pus enters the system. The absorbents are sometimes the traitors that admit this deadly enemy into the citadel of life. There is a case now in the hospital, which on some future occasion I will relate to you, in illustration of this fact.

Purulent absorption by veins has been called phlebitis. But there is this objection to the name, it implies that the process is attended with inflammation of the coats of the vein, which certainly is not always the case. I do not mean to say that veins are never inflamed, or that pus is never absorbed by an inflamed vein; but I do mean, that when pus is absorbed by veins, they are not usually inflamed. I think it would be better to restrict

the term phlebitis to inflammation of the vein, and use the term purulent absorption to the affection we are now considering.

I must next explain to you what becomes of the absorbed pus, and in what way it produces such mischief in the system. The pus globules once admitted into the current of the blood, flow freely through the large systemic veins, until they reach the capillary system of the lungs. It has been stated, that in consequence of these pulmonic capillaries being more minute than the pus globule, that its progress is arrested; that they accumulate till the capillary, no longer bearing the pressure from behind, gives way, and they are extravasated into the parenchyma of the lungs. Here they reproduce their species. I doubt this mechanical explanation; I am more inclined to regard it as an attempt to excrete the poisonous matter, to get rid of it from the system. I believe that this is sometimes effected, and the matter is coughed up, and the patient recovers. At the same time it must be remembered that the pus globule is a living nucleated cell, and as such enjoys an individual existence; it forms new cells, and their accumulation constitutes a new abscess.

The lungs are not the only portions of the organism where this attempt to unload the system occurs. You find secondary abscesses in other situations. In the case I am about to read to you, suppuration took place in the hand. It has been doubted if these abscesses ever occur on the other side of the lungs—that is, in the systemic arteries, unless pus has been previously effused in those organs. There are, however, several cases recorded of abscess in the liver after injuries of the head, without any mention being made of abscess also in the lungs.

The best remedy in these cases is cinchona—not quinine, but the cinchona bark, Battley's Liq.; cinchona in doses of ʒss. every six hours till the head is affected by it; or if not, Battley's Liq., the *tinctura cinchonæ composita*, or Huxham's tincture of bark. If the skin is made dry by it, then add a few minims of vin.

antimoniale to each dose. Port-wine and beef-tea from the first. The patient ought to be purged freely, and diuretics to be given. The antimony ought to make the skin perspire freely. The wound should be poulticed and fomented.

Mr. Arnott, in his paper already referred to, collected thirty-three cases of purulent absorption following injuries of the head. In twenty-one of these, the secondary purulent deposits took place in the abdominal viscera; in five, in the thorax; in six, in the abdomen and thorax conjointly.

In one there was a deposition of pus in the substance of the heart; one, in the kidney; one, in the spleen; one, in the integuments of the back. So that you will perceive by these facts that the lungs are not the only organs where secondary purulent deposits take place.

"The general course of these cases," says Mr. Arnott, "seems to have been this, and in the great majority (twenty-four) it is so stated, that the patient for some time did well, having recovered his consciousness when this had been lost, which was frequently not the case, was free from fever, and the wound suppurating kindly; that afterwards unfavourable symptoms took place, consisting of fevers, rigors, nausea and vomiting, delirium, yellow colour of the skin, and sometimes, shortly before death, pain in the right hypochondrium, or affection of the chest. There was some difference in the period at which these symptoms appeared, but of nineteen cases—the earliest of which was the seventh, and the latest the twenty-fourth day—the average was between the thirteenth and fourteenth day after the accident. The average period of the fatal termination of the same cases was between the twenty-second and twenty-third days, the earliest being on the fifteenth, and the latest on the twenty-seventh, subsequent to the injury."

Having given you this general sketch of what we mean by purulent absorption, I think you will be better prepared to understand the following case. But you will understand that I have only given a general sketch of the subject, not pretending to tell you all that has been written regarding it. I trust that I have interested you in its pathology, and that you will watch every case that occurs in the hospital with greater interest and attention.

Compound Fracture, Purulent Absorption (reported by Mr. Alfred Carpenter).—Henry B——, aged forty, a coachman, said to be temperate, and generally to have good health, was admitted into George's Ward, under Mr. Solly, November 25, 1850, 11 A.M. Twelve hours before this he had been overturned whilst driving, and the carriage fell on him, causing a compound comminuted fracture of the right leg. He was seen by a surgeon, who put the limb in splints, and sent him this morning to the hospital. There is a small wound in the inner side of the leg (about the lower third) which bled profusely at the time of the accident; the lower portion of the tibia is depressed, and between it and the upper portion, which is prominent, there is a space in which the bone is absent, and is probably produced by a comminuted piece of tibia being out of place. There is considerable swelling, and a few small vesicles have arisen from the tightness with which the limb was bound; the fibula is broken also, some inches above the fracture through the tibia, which is oblique. The arteries are uninjured, and a slight hæmorrhage continues from the wound. The leg was placed on an outside splint, and bound gently to it above and below, leaving the wound uncovered, except by a strip of cloth which was pinned tightly round with a compress on the bleeding part; by this means the leg was kept well in position, but the comminuted part does not fill up its proper place.

I believe that the free hæmorrhage took place from the saphena major vein, and you will understand from my previous observations how important this venous wound in all probability was to the patient.

Nov. 26.—He quickly became quite easy, had very little muscular spasm during the night, no further hæmorrhage, pulse quiet.

27th.—Very easy, no pain anywhere.

28th.—Very easy, but occasionally feels a start in the limb, with a little aching pain; cannot void his urine; pulse 88; skin moderately warm.

29th.—A vesicle has formed above the fracture containing clear fluid, the other vesicles have disappeared, the leg feels very easy, is in no pain, and there is but little swelling.

Dec. 1.—Voids his urine naturally; has a little more fever and heat of skin, &c.

4th.—Leg rather more painful, but tongue is cleaner; no heat of skin; slept well, and appetite good. The wound discharges healthy pus, and granulations are springing up.

10th.—The leg has not been quite so easy, and he has been very restless and uncomfortable, constantly raising himself in bed whenever a stranger entered the ward, fearing lest another severe accident should take away the sister's attention from him.

He has also been feeling anxious about his wife, and worrying himself regarding a subscription which had been made for the relief of his family. The consequence has been, that he considerably disturbed the fractured bones, and the upper portion presses seriously against the skin, although the extremity of the bone is quite covered with granulations. The limb was now taken out of the swing-box, and placed on the outer side, by which the upper part of the tibia falls better into its proper position. The appetite continues good, and, notwithstanding his great irritability and nervousness, he seems quite well in health.

12th.—Has had a good deal of pain in his ankle and knee, which he attributes to rheumatism, to which he is subject, and has felt cold occasionally. Pulse is rather small and weak, but not quick, and the tongue is clean; the leg looks healthy, and feels easy; has now a pint of porter daily.

14th.—Has more thirst, and some headache, with a feeling of chilliness, but no actual shivering; the leg looks well and feels easy, but the rheumatic pains in the joints are still present, and make him restless; bowels rather confined, and stomach out of order; skin damp, with an acid perspiration of an offensive odour; he sleeps pretty well till 5 o'clock A.M., when the chilly feeling comes on. Ordered, to leave off the porter; powder of calomel and rhubarb, one scruple; morphia, quarter of a grain every night; an ounce of the senna mixture on the following morning.

From this time I think we must date the purulent absorption. I have no doubt that the saphena vein of the leg, or some of its branches, were injured by the patient's involuntary movements of his limb. The protecting plug of coagulated blood was disturbed, and thus an entrance given to the poisonous pus globule. But we must continue the narration of the case, which is so minutely and correctly given that it affords you a faithful picture of the rise, progress, and termination of the symptoms of purulent absorption.

16th.—Bowels remain confined, and compound senna mixture caused vomiting; tongue coated with a yellow fur, and rather dry; no appetite; dull headache; skin hot; pulse 108, weak; had rigors this morning at five o'clock; the leg looks well, discharges healthy pus, is granulating, and cicatrization has commenced; the bones lie in better apposition, and there is no pain in the fractured part,

but the joints are painful and rather tender. Ordered, slice of mutton daily. Soda water.

17th.—Did not have his morphia, but slept till five o'clock, when shivering disturbed him; now, the skin is hot, although he complains of being cold; bowels have been well opened; tongue dry with a yellow fur; headache and thirst; pulse 100, small and weak; leg and joints quite easy; wound looks well, although the discharge is less. Two hours afterwards the pulse had risen to 130; he seemed very restless, and trembled. Ordered, iodine and gentian mixture. Towards evening the pulse became quieter, dropping to 108; he was more composed, and inclined to sleep. He has disturbed his leg a little by raising his body in bed. Arrowroot and brandy.

18th, 10 A.M. — Last night had a violent shivering fit, which lasted ten minutes; this morning had his usual fit at five o'clock; perspires very freely; frequently sighs, and is rather restless; pulse small and feeble, 126; very little sleep; very thirsty. Ordered, quinine, five grains; sulphuric acid, five minims; tincture of cardamoms, one drachm; extract of infusion of roses: every six hours. Wine and brandy in small doses, frequently, with ground rice. In the evening the pulse was very small, 140, and easily compressed; sighing continues; he complains of a soreness in his leg; the healthy discharge has entirely ceased; the granulations look livid, and the wound seems inclined to discharge; tongue is dry; eyes brilliant; no delirium. Ordered, morphia, half a grain, every night.

19th, 11 A.M.—Quiet night, except occasional pain in leg; no shivering at the usual hour this morning; not so restless; tongue still dry and brown; pulse 100, intermitting every fourth beat; has been a little delirious; bowels have been relieved twice; urine scanty, and high coloured; craves for his nourishment. Brandy and wine increased to five ounces each daily. 9 P.M.—Frequently dozing, not so restless; pulse not intermittent, 120; felt cold once during the day, but no shivering; leg easier, but the wound has the same unhealthy look; face not so anxious; very low-spirited.

20th.—Quiet night, except when disturbed by his bowels acting; has had no rigors; pulse 130, very weak; skin moist; tongue moister than last night; less thirst; no headache; quite rational; a little more action in the sore. The quinine was given in pills, as the acid mixture disturbed his bowels. 9 P.M.—Quiet; bowels comfortable; dozes frequently; sighs, but says he is in no pain; pulse 130; tongue drier.

21st.—Complains of pain in pit of stomach, and in right side, down towards the ilium; he felt this a little yesterday; it is slightly tender, but no alteration is visible; pulse is regular, 130; bowels rather relaxed during the night, and for this he has had compound chalk-mixture; frequent sighing; has but little headache; takes all his nourishment; sore on leg inactive, granulations smooth, slight watery discharge. He had a mustard poultice to the stomach.

22nd.—Had a quiet night; pain somewhat easier, but returns occasionally; respiration is shorter; bowels continue irritable; leg much the same as yesterday, and quite easy; now he is rather restless, but quite rational. There is a red spot on the elbow, and a swelling on the dorsum of carpus of right hand, red and tender, but without decided fluctuation; tongue dry; skin sweating; pulse 126. Ordered, tincture of opium, forty minims, at night.

23rd.—He has had a quiet night, but his conversation is somewhat irrational; does not complain of pain; no shivering; skin wet; pulse 126; tongue dry; sighs frequently; respiration 40; no cough; is very weak; and on account of thick flannels about his chest, the physical signs cannot be perceived. I opened the abscess on the back of the wrist, and let out some ill-formed frothy matter. I regard this deposit of matter on the right hand as an attempt on the part of Nature to get rid of the poison from the system. 9 P.M. —Frequent purging during the last two hours; respiration 56; pulse 136; skin wet; very restless, and low-spirited.

24th, 10 A.M.—The diarrhœa has continued during the night, notwithstanding the chalk mixture. Pulse small, fluttering; tongue smooth; respiration 60; face very pale and anxious. The inner surface of the tibia is now exposed by an enlargement of the sore, which is very dark-coloured, and discharges bloody serum; there is a piece of the bone firm, and above that a piece which seems to be carious, and is quite soft. He complains of a tightness across the chest. 9 P.M.—Pulse more feeble and fluttering; respiration gasping; wound almost black, with black discharge; occasional subsultus tendinum, on the right side, which disturbs the fracture. There is a small swelling of first phalangeal joint of left little finger, containing fluid; the right hand and arm have been poulticed, but the abscess discharges but little; can only swallow small quantities of arrowroot and brandy.

In some experiment by Mr. Gaspard, related by Mr. Lee, it appears that a diarrhœa was set up apparently as a means of getting rid of the offending matter. It is therefore a question whether we are right in attempting to arrest it in such cases. I was induced to do so in this instance from the extreme debility of my patient. But I think it instructive to call your attention to the fact, and thus to tell you that you must not consider it essential to plug up the bowels, as a matter of course, in a case of purulent absorption, without any reference to the strength of your patient.

25th.—Very restless all night; delirious; frequently fails in his speech; general subsultus tendinum; cold perspirations; pulse scarcely felt; diarrhœa; gasping respiration; can scarcely swallow. Died at 7 P.M.

Post-mortem Examination, forty-three hours afterwards, by Dr. Bristow.—The second joint of the left little finger was swollen, and on laying it open an abscess was found within the joint. The right elbow was also swollen, and the cellular tissue infiltrated with pus, the joint being unaffected. There was little attempt at reunion about the fracture, and a large quantity of purulent fluid infiltrated the tissues in its neighbourhood; one of the posterior tibial veins opposite the fracture of the tibia was blocked up, and distended considerably beyond its natural size by coagulated blood; this distention occupied about two inches of the vein; whilst above and below this the vein had its natural appearance and calibre, and was nearly empty. Brain healthy. Chest: a delicate recent layer of false membrane was spread over the posterior part of the left lung, and the pleural cavity contained a small quantity of turbid fluid. The lung generally was congested, but especially the lower lobe, which contained numerous more or less encysted, whitish masses, which appeared to be abscesses in various stages of formation; some of them were distinct, but the majority were harder as if from the presence of fibrine; the lung-structure, to a considerable extent around each, was softened and consolidated. The right pleura contained about a quart of opaque, turbid, yellowish fluid. The entire surface of the pleura was covered by a thick layer of soft flocculent fibrine, this being most abundant towards the posterior part. The right lung was somewhat collapsed, and less congested than its fellow; and a few whitish masses existed at the lower part, similar to those in the opposite lung, but less numerous and less advanced. The pericardium contained a small quantity of semi-opaque reddish serum; and a thin adherent film of lymph covered the origin of the great vessels entirely. The heart itself was apparently healthy. The aorta contained a few specks of atheroma. The peritoneum healthy. The liver was considerably enlarged, its surface pale and smooth, and on section it was found pale and soft throughout, and evidently in a state of fatty degeneration, as shown by the microsope. The spleen large and soft; the kidneys large, soft, and vascular. The remaining organs healthy.

You have now, gentlemen, followed the details of this fatal case, from its commencement to its termination; and I trust they have made such an impression upon you that you would recognise the features of this disease at its very onset on any future occasion. You will see the importance of keeping the parts perfectly at rest. You will understand how, by disturbing the coagulation in an injured vein, you may open the gate to purulent absorption. You will understand the value of supporting the general power of your patient, and thus favouring the healing process, where you have reason

to apprehend purulent absorption. I wish I could also add, you will see, from the treatment of this case, how to avert a fatal issue when the pus has once been admitted into the crimson current. No, gentlemen, we have not learned how this is to be accomplished. I believe that a tonic plan of treatment is the best; but this is all we can say. Nevertheless, sound pathology must lead to sound therapeutics; it is impossible to overrate the importance of a correct diagnosis. The value of a correct prognosis to the patient and his friends is incalculable, and your own reputation is not unfrequently made or marred by it. You will, therefore, remember in a private case of this kind, when the first symptoms of purulent absorption set in, that you warn the friends of your patient of the danger to be apprehended.

LECTURE LII.

On a Case of Absorbent Inflammation.

Gentlemen,—In my last clinical lecture I took the opportunity of addressing to you some remarks on purulent absorption, illustrating them with the histories of three or four cases of the disease which had been under my care at the time. I explained to you how a vein, wounded either by accident or operation, is, under usual circumstances, plugged up by a coagulum, which serves as a barrier to the entrance of the morbid products of inflammation into the circulation; and how, when this barrier was broken down by accident, or in consequence of some dyscratic condition of the blood, was not properly formed, and thus pus was admitted into the vessels, there followed certain symptoms insidious in their character, and almost always, if not universally, fatal in their result. To-day I have to speak of a disease having somewhat analogous symptoms; but happily, in most cases, much less dangerous in its nature, and much more amenable to treatment; I mean, absorbent inflammation—inflammation of the lymphatic vessels and glands. This, like purulent absorption, is frequently ushered in by severe rigors, and arises from some mechanical injury offered to a part where inflammatory changes were previously going on. Like this disease, also, it frequently gives rise to the formation of pus in parts at a considerable distance from the original injury. But here the resemblance ceases. In phlebitis the local mischief, though sufficiently great, is yet the least part of the evil we have to encounter. The blood circulating through the vital organs of the body, carries

to them, in its stream, a noxious material, which, by its further development, must needs spoil their fabric, and thus, by interrupting their functions, cause death. In inflammation of the absorbents, on the other hand, the local affection is the chief ill, the constitution being only secondarily affected. This difference between the two diseases is occasioned by the presence of the numerous absorbent glands through which the lymphatic vessels pass before mixing their contents with the blood. These important organs in the animal economy generally act as efficient barriers to the entrance of pus into the circulation. The purulent fluid having found its way into the absorbent vessels, passes along them until it reaches a gland; here, however, it is stayed, and inducing inflammation and suppuration, is thus eliminated from the system before reaching the more important organs of the body. Nevertheless, absorbent inflammation is still a serious disease; and the fact of its very frequent occurrence after the removal of necrosed bone should warn the surgeon not unnecessarily to interfere with the process of its separation. I will not further describe the symptoms of the disease, for you cannot have them better delineated than in the history of the following case, reported by my dresser, Mr. Carpenter:—

Richard Donovan, aged sixty, a labourer, of intemperate habits, was admitted, under my care, into George's Ward, on the 10th of December, 1851.

Three weeks before admission, a stone fell on the great toe of the left foot, bruising it, and causing hæmorrhage. He continued at work, but was at last obliged to give over, on account of the pain. On admission, the metacarpo-phalangeal joint was laid open, and the head of the metacarpal bone and base of the first phalanx exposed. From the sore there was a foul-smelling sanious discharge. He was rather weak, but his appetite was good. A small piece of dead bone was removed, and a splint placed beneath the toe, to support it. The same treatment was continued, poultices being applied over the sore, until the 28th of December, when, the granulations being flabby, and there being no attempt at reparation, the sulphate of copper was *freely* applied to the ulcer. On the following day (Dec. 29), in the evening, he complained of great pain in the leg, and soon after he had a shivering fit, followed by general uneasiness and agitation, and tenderness up the inner side of the leg and thigh as far as the saphenous opening, where

the glands were enlarged and painful. Now this attack was as long as nineteen days after the removal of the piece of dead bone, so that this could not, with any probability, be regarded as the exciting cause. I am rather inclined to refer it to the very free use of the sulphate of copper on the previous day.

On the 30th of December the pain and tenderness were increased; there was slight redness near the knee-joint, but nowhere else; the pulse was sharp, 112; the tongue coated with a brown fur, and dry. I ordered large poultices to be applied along the leg. Quinæ disulph. gr. ij. ter die; hyd. chlor. gr. xj.; opii, gr. i., st. et rep. horâ somni. Towards evening he had another shivering fit, after which he became easier. On the 31st of December he was better, though still agitated and restless. Red lines were seen running up the leg from the great toe, but the glands in the groin were less tender and painful: the tongue was much furred; pulse 108. To take the pill of opium and calomel nightly. In the afternoon had another shivering fit. On the 1st of January, 1851, the red lines up the leg were diminishing, and the enlargement of the glands gone: had had no rigors. The face was less anxious, and the tongue more moist. In the evening, the toes and foot were attacked with diffuse inflammation; but this, together with the red lines up the leg, and the febrile symptoms, soon vanished; and, on the 5th of January, the toe had resumed its natural appearance, and his usual health was restored. I now removed a small piece of bone from the first phalanx.

The next day (Jan. 6) he had considerable pain along the inside of the thigh and over the patella, where the skin was red and rather swollen: he was feverish, and had an anxious expression.

On the 9th of January, however, these symptoms were gone, and the toe began to assume a healthier appearance, smaller and brighter granulations springing up and encroaching on the exposed bone.

On the 13th of January his health had continued to improve; but a small hard and painful swelling had formed on the inner side of the thigh, just above the knee. The calomel and opium pills were continued until yesterday, when they were omitted, his mouth being slightly affected. He complained of tenesmus and pain in the bowels. For this I ordered him ol. ricini, ℥iss.; tinct. opii, ♏x. statim: and you will find that where, as in this case, tenesmus and pain in the bowels have followed the use of mercury, you will not be able to relieve the patient by means of the mist. cretæ co.; but you must have recourse to castor-oil.

On the 14th the swelling above the patella was opened, and a small quantity of ill-formed pus let out. The tenesmus had been relieved by the ol. ricini, and the exposed bone was nearly covered by granulations. He improved after this, his appetite increasing, and the opened abscess healing kindly. On the 1st of February three small pieces of bone were removed by the forceps without any bleeding or pain. He remained well until the 11th of February, when he had again an intense shivering fit, without any evident

cause, followed by hot skin, furred tongue, and loss of appetite. The toe not altered, but the groin very tender again; pulse 104, soft and weak. Towards evening he became actually delirious, trying to get out of bed and go away. On the 13th the foot was very much inflamed, with red lines running up towards the knee, and tenderness up the inner side of the thigh. Tongue dry and brown, pulse jerking and weak; no appetite; much thirst, and headache. Ordered gr. ij. hyd. chlor.; opii, gr. i. st. et repet. horâ somni. On the 14th he had had a good night, and was much easier, and quite rational; pulse 90, weak; tongue clean. He had lost much of the pain, tenderness, and redness of the limb. On the 15th the appetite was returning; the redness gone; the tongue clean, and the diseased toe looking well. On the 20th, three small pieces of bone, one the size of a pea, were taken away from the head of the metacarpal bone: no bad consequences followed. On the 24th a larger piece of dead bone was removed, apparently the last; and after this the toe healed quickly, and, on the 28th, was completely cicatrized, and he could walk about without pain. The toe was a little shorter than its fellow of the opposite foot, and was very movable, showing a deficiency of bone in the situation of the first phalanx and the metacarpal bone. On the 5th of March he was discharged.

You will remark how strikingly the constitutional symptoms abated in this instance under the administration of calomel and opium. This would not have been the case if the pus had been absorbed by the veins instead of the lymphatics. The result in this instance was that the man lost part of the first phalanx, and a portion of the head of the metacarpal bone. I have seen several cases similar to this, and I am certain that the patient is in a much better condition when this has happened than when the toe has been cut off; for there remains a soft cushion covering the end of the toe, and serving to maintain the point of support there, as well as to prevent that troublesome ulceration which is so frequent a consequence of amputation at the metatarso-phalangeal articulation.

The same principle may be carried out in accidents or disease affecting the fingers, and with still greater advantage, for here the prevention of disfigurement is of much greater consequence. You have seen several cases in which this saving practice has been carried out with great success in our own wards, and of one of them I will just give you an outline. James Bishop, a

healthy lad, aged 14, fell whilst riding the leader of an omnibus from Sydenham, and the wheel of the omnibus passed over his hand. There was a simple fracture of the first phalanx of the fore finger, and a compound fracture of the first phalanx of the ring finger, with considerable laceration of the soft parts in front of its metacarpo-phalangeal joint, which was exposed, and into which the fracture extended. I determined to try and save this finger, and had it fixed with strapping and pasteboard splints. A loose piece of bone, which proved to be the base of the first phalanx, was subsequently removed, and after this the case did very well, and the wound healed quickly. I saw the patient about a year afterwards, and his hand was then so useful and so little disfigured that he had been able to obtain the situation of a groom.

And it is astonishing how much may be done with regard to saving fingers. The reason necessitating amputation in severe injuries or diseases of the larger joints, is the great constitutional irritation consequent on them. In disease of the hip-joint it is this constitutional irritation which proves fatal. But in the case of fingers it is a mere question of time, and though in a labouring man this is sometimes of such consequence as to oblige you to operate, in the higher classes the preservation of the symmetry of the hand more than compensates for the somewhat more lengthened time necessary for the cure. I had lately, in my private practice, a case which caused me a good deal of annoyance. A young gentleman had the misfortune to become the subject of inflammation and suppuration of the joint between the first phalanx and metacarpal bone of the middle finger, resulting in destruction of the cartilages by ulceration. I told him that with time and rest he would recover without the loss of his finger, and allowed him to go down into the country, thinking that the change would benefit his health, and thus expedite the cure. After some little time I had a letter from him, telling me that the surgeon under whose care he was advised amputation. I immediately wrote back,

begging that the finger might not be taken off at any rate without first consulting Sir B. Brodie, or some other surgeon. However, off it came, and an unsightly deformity was entailed upon the patient. Even had an operation been necessary, the excision of the metacarpo-phalangeal joint would have been far preferable to the amputation of the finger.

LECTURE LIII.

On Gunshot Wounds.[1]

Gentlemen,—It is a great pleasure to meet you again in the capacity of teacher—I think I may say, as a teacher of one of the most important branches of the profession—namely, clinical surgery. It will rest with yourselves how long I continue thus to work in this school. If I find that my services appear to be of use to you here, I shall endeavour to bring before you those cases which I believe to be of the most practical importance.

As we are now commencing a session, I think it better to go back a little to those cases which have been of great interest in the hospital, though some of you now in the theatre may not have seen them. The first case to which I shall call your attention is one of rare occurrence in a civil hospital—namely, a wound with a bullet—a gunshot wound. Dupuytren, in his *Leçons Orales*, says: "In the vast domain of surgery there is no subject so complex, no subject which embraces so many practical questions, none of which the diagnosis and treatment demand such extensive knowledge, such rectitude of judgment, such skilfulness in execution, as wounds from military weapons in general, but particularly from fire-arms." The case to which I refer you must have heard of—it is a case that has been before the public and the profession a good deal—it is no novel case; but still there may be many of you who saw the man while he was in the hospital, yet who have not gone through all the particulars of the case with that minuteness which is necessary, in order to understand

[1] November, 1847.

and appreciate its surgical bearings. The patient to whom I refer is George Crawley, who was admitted into this hospital on the 14th of August last, having received a bullet-wound in the face. He is a plethoric man, though his complexion was pale, from loss of blood; he was perfectly sensible, but very much alarmed and agitated. Mr. Barwell, my apprentice, who examined him immediately on his admission, states that he found a dark spot, about the size of a sixpence, just below, and to the outer side of, the right ala nasi. In the centre of this spot he discovered an opening, which was so indistinct, that some of the bystanders who first saw him said at once that no bullet could have entered there. His face was tattooed with gunpowder, showing clearly that the pistol must have been held very close to it. He did not complain of much pain at the time of admission, but he has since said, that at the moment of its infliction he felt as if the whole of his teeth on the right side were loosened and shattered to pieces. Mr. Travers, who was on duty for me at the time, was sent for immediately: before he could arrive, Mr. South entered the ward, and, taking a probe, passed it a short distance into the wound; but, stating that he was afraid to pass it further, did not detect the ball. He expressed his doubt whether the pistol really contained any bullet, and thought it more probable that the wound was occasioned by the wadding. He ordered some lint and cold water to the wound, and a dose of castor oil.

I saw the patient some hours after that, and from the account which he had given to Mr. Barwell, it appeared that he had been shot by an assassin—that the pistol was held only about a foot from his face. Mr. Barwell hearing, also, that the assassin had shot himself immediately afterwards, and that the pistols were in possession of the police, procured one, from which he took the size of the interior of the barrel on a piece of paper, that I might be able to judge of the size of the bullet, and the length of the barrel, which was four inches. All these little points are of great importance, not merely in the diagnosis and treatment

of these cases, but also in a medico-legal and forensic point of view.

When I had heard the history of the case, I carefully examined the mouth, but I found no speck or stain of blood, no laceration of the lining membrane, or other indication of the ball having entered this cavity. I also examined the fauces, but the soft palate, with its pillars, were intact, and the posterior wall of the pharynx presented its natural shining, healthy hue. I could find no breach in the floor of the nose, so that I felt convinced the ball could not have passed beyond the substance of the upper jaw—that it was most probably lodged in the tuberosity of the superior maxillary bone. If you examine this bone, detached from the other bones of the skull, it will appear extraordinary that the ball did not pass through the wall of the antrum; but if you observe it, as here (exhibiting a skull), in connection with the sphenoid bone, you will see that the pterygoid processes would act as strong buttresses to the wall, and arrest its further progress, preventing its crossing the neck. You see the importance of coming to such a conclusion as that. Here we have the position of the wound (exhibiting a skull), just below, and at the other side of the right ala nasi. The ball from the point might have gone directly backwards, and thus crossed the neck either close upon the carotid artery or jugular vein, or some of the large nerves connected with their sheath. You will see here, from an examination of the line of these openings in the skull, first the foramen ovale, then the foramen caroticum, then the foramen jugulare (explaining the same), all in a line, that such might have been the injury inflicted. There was no appearance of effusion of blood into the cellular tissue on that side of the neck. Again, it might have gone a little further inwards, but in that case we should have had a stain, which I looked for in vain, in the posterior wall of the pharynx, or we should have had the pillars of the fauces lacerated; it might have penetrated the mouth, which was uninjured also; it might have passed into the nose, but that was perfect likewise:

therefore, I say, I came to the conclusion, in my own mind, when I took my probe, that the ball must have lodged in the posterior wall of the antrum; within a few moments the probe struck distinctly the metal bullet. Now you will say—how did I know that I struck the bullet? Of course from the sensation; it was metal striking metal. When the probe simply impinged against the wall of the antrum, as it did at first, the sensation of course was different, but by moving it about I struck upon the bullet and felt the metal there, upon just the same principle that a surgeon ascertains the presence of a stone within the bladder. Then he uses a steel sound, in order to discover the stone; and if he knows anything of his profession, he is not satisfied with its striking a hard substance, for we know it will occasionally strike against the sacrum, and from thus striking against the sacrum, it is often said, "I think there is a stone here," when no stone is present. But we are not satisfied unless we feel the ring of metal. Well, then, having thus discovered the bullet, the next question was, the propriety or impropriety of removing it. Mr. Travers, who was with me at the time in the ward, quite agreed with me as to the presence of the bullet.

Then comes the question about the removal of the bullet. It was said that it should not be touched. There are many high authorities on this subject, and if I have time I will refer to some of them. On the other hand, the face of my patient was already decidedly swollen, and the skin in the neighbourhood of the wound was just beginning to assume that pinkish hue which ushers in erysipelas, so that it appeared to me, that if the operation was not performed that night, if the bullet was not at once removed, erysipelas would follow, and the parts would swell so much that there would be difficulty in extracting it; in fact, that I should have, in order to enlarge the wound, to cut through inflamed tissues; and that most likely the performance of the operation would be productive of very considerable constitutional irritation, of which I felt

there was already too much. My patient was very anxious, I could see by his countenance; and from what I heard afterwards, I found this was still more decidedly the case. It was very clear, as long as the bullet remained in his head, he would dwell with painful uncertainty on its probable consequences; that with it sleep would be impossible, and morning would have found him restless, irritable, and feverish. Morning would have found him in that state of irritative fever which Mr. Travers so ably describes in his work on "Constitutional Irritation." These reflections determined me to operate at once; and it was fortunate I so decided, both for my patient's sake and my own reputation. The patient has since told me he should have left the hospital, and got the ball extracted elsewhere. He had determined to do so when, during the afternoon, he had been told that the ball had been extracted from the head of the assassin,—on which he said, "Well, it is very strange if there was no ball in the pistol which he fired at me; it must be lodged somewhere." Having, then, decided upon the performance of the operation, the next question was, the mode in which it should be performed. It was very clear that the opening was not large enough to extract the bullet —at least, the opening was much smaller than the bore of the pistol, as measured by the dresser. Here you see the importance of this little bit of observation. You can quite understand that bone is elastic, particularly in the walls of cavities like the antrum, just as much as wood is elastic. When a ball passes with great rapidity, the walls collapse again. It is a well known fact, with which you are perhaps acquainted, that a cannon-ball passing through the sides of a vessel leaves a much smaller hole than the size of the ball itself, and that the wooden plugs which are prepared to be driven into the holes are smaller than the cannon-ball. It was necessary, then, to enlarge this opening; for I had not merely to get the bullet out, but the bullet-forceps in. Now remember, in all operations about the face, you have not merely to attain the object for which you operate, but also to avoid scars and deformity. All the

little beautiful muscles, which form the principal part of the soft parts of the face, and which by their action produce the varied expression of the countenance,—all those muscles which are connected with the nose, mouth, and eye, have a peculiar and proper direction; and it is of especial importance that their fibres should be followed by the knife. And although scars are of serious consequence chiefly to a female, they ought to be avoided, if possible, in a man. If you cut across a muscle, the muscle retracts, and you have a very large scar, in addition to the inconvenience of a larger opening, very difficult to heal. Care, then, should be taken to remember the direction of the muscles which pass in the neighbourhood of the wound you are going to make; but in addition to that you may as well remember all the lines, fissures, and furrows in the face—as, for instance, this fissure which runs down from the nose to the mouth, and in the same way to the eye, and so on. You will make a much less scar if you carry your knife exactly in that line, than if you cut a little to the outer side, or a little to the inner side. Therefore, before I performed the operation,—before I made the incision through the soft parts, I took the direction of the furrow down from his nose to the angle of his mouth, and cut as nearly as possible in that direction. I then cleared away the soft parts from the bone, from which there was a very smart and free hæmorrhage, and he lost some blood very rapidly. The artery from which the blood flowed freely was the superior coronary. Instead of waiting to put a ligature upon it, I took it with my forceps and twisted it. It may be as well to mention to you now, that that is the best way of commanding hæmorrhage when you are operating. There is always an objection to ligatures in wounds, and this especially applies to any wounds about the face. You generally find, if the artery is not large, that seizing it with your dissecting forceps, and giving it a turn round, will stop the hæmorrhage. This, of course, did not arrest it in the other small branches; the hæmorrhage from them, though very free and copious, was

easily arrested by pressure on the facial artery, where it crosses the masseter muscle. I was then enabled to proceed without any further difficulty from the blood. I had now exposed the bone; but had not an opening in it large enough to get my bullet-forceps in. The bullet-forceps which I used were these (exhibiting the same), which are not the best forceps in the world for such a purpose. The reason why I object to these forceps is this, that there is a much larger scoop here (pointing out the same) than is necessary to extract a bullet; the smaller your forceps the less the opening by which your bullet may be extracted. However, I soon made an opening which was large enough for these forceps, and introducing them without any difficulty, extracted the bullet. Here is the ball (exhibiting the same), which you will observe is considerably flattened on the posterior surface, showing the force with which it struck the bone; but there still projected sufficient to enable me to lay hold of it with the forceps. Having thus extracted the bullet, of course all my patient's anxiety was relieved. He has told me since, with great feeling, that nothing can describe the relief to his mind which was occasioned by the extraction of that bullet. I dwell upon these circumstances particularly, because we find many authorities, as I mentioned before, opposed to the extraction of bullets. Before I proceed further, I will just call your attention to one or two points which are interesting and instructive. In the first place, you will observe how much the bullet is flattened in the posterior part. In the second place, you will observe these deep grooves in it. You will also see lodged in these deep grooves small pieces of bone. These little bits are, I believe, the fangs of the teeth; they have not been examined under the microscope, but I have not the least doubt as to the fact.

Now it certainly does seem extraordinary that a pistol barrel which was four inches in length, held close to the face of a man, so close that his face was tattooed with the gunpowder,—that the bullet from that pistol should not have gone through his head and killed him at once.

It does, I confess, seem extraordinary. But then, those who are conversant with the action of fire-arms know that the ball acquires velocity after it has passed out of the barrel. If this pistol had been held half the distance of the length of this theatre, it would have gone with much greater force than it did when held so close. This is one important point with reference to the action of fire-arms. The other point with regard to this individual bullet is, that it must have raked along the fangs of the teeth in the upper jaw, and the fangs of the teeth saved this man's life; they acted like so many spikes, and they stopped its course. The other anatomical point of importance before referred to—why the bullet did not penetrate further into his head?—is, the existence of those buttresses to the sinus Highmorianum, the pterygoid processes of the sphenoid. I do not mean to say that all these points were present to my mind at the moment I performed the operation, but most of them were, and I bring them all together before you now, that you may remember the circumstances of this individual case for your guidance, in the event of your being ever called upon to treat a similar one. With regard to the after-treatment, I dressed the wound, first approximating the edges of the incised portion. I did not attempt to unite the edges of the bruised portion, because, in the first place, I knew it would be useless, and in the second, if I had succeeded, I should have been afraid of the consequences of inflammatory action in the membrane lining the antrum, and the collection of matter setting up constitutional irritation, and occasioning the necessity of opening the cavity afterwards; therefore I did not attempt to do so. I only wished to close that portion which I made with my knife, therefore I put in a suture, which brought the edges together, and dressed it with isinglass plaster. I prefer isinglass plaster to resin plaster, particularly in all wounds about the face, for this reason, that it is much less likely to excite erysipelas. The lacerated wound that was made by the bullet I simply dressed with cold water. I have already mentioned to you that there was a smart

hæmorrhage from the wound, and that I wished to avoid a ligature. I therefore got the dresser to sit with his finger on the facial artery. By that pressure the hæmorrhage was entirely restrained. I think that pressure was only kept up for half an hour, or an hour at the outside. One of the gentlemen kept watch over the patient the whole night, and he was not left for twenty-four hours after the operation. I ordered him, after the operation, forty minims of the tincture of opium, and twenty minims more if necessary. I generally prefer the tincture to any other preparation, because it is more certain in its operation. After giving him the first dose, the dresser waited an hour, and as his patient was still in an excited state he gave him the second. Bear that in mind, for if the patient were in an excited state after the removal of the ball, and his fears to a certain degree allayed, what would have been his state if the bullet had remained in his jaw like a piece of burning coal? After the second dose of opium he fell asleep, and though he did not sleep much during the night, still he was not restless, and in the morning was tolerably comfortable. I will now continue the report of the case in the dresser's words.

On the 15th, at 9 A.M., two ounces of compound senna mixture were given by Mr. Solly; and at 4 P.M., as the bowels had not been relieved, one scruple of compound jalap powder immediately; also a poultice to the face; a quarter of a grain of morphine if restless.

Now my reason for ordering morphine instead of opium was, that I wished to get his bowels opened, which I feared would not be accomplished if he had the laudanum; though an opiate might give him sleep, still it would be prejudicial, and he would be feverish if his bowels remained unrelieved, therefore I preferred the morphine on this occasion, which was less likely to interfere with the aperient medicine.

16th.—Slept well with the morphine; wound looks healthy; somewhat feverish; bowels not opened. Ordered, four ounces of the compound senna infusion immediately; effervescing mixture every

four hours. 9 P.M.—Going on well in every respect; says he feels less feverish; bowels freely opened; tongue clean; pulse quiet; no pain in the head.

17th.—Better; more quiet; and says his teeth seem to be more firm. The wound is healthy and granulating, but the mucus from the antrum is discharged through the opening. Pads ordered to be applied to check this as much as possible, and to prevent the establishment of a permanent fistula. For this reason I ordered small pads to be applied to the side of the cheek, so as gradually to get the opening to close; the object was to bring on adhesion between the soft parts and the surface of the bone. He did not pass a good night on the 16th; complains of headache; his bowels have been opened. I ordered him a mutton chop.

19th.—Bowels confined; wounds still healing; less mucus discharged. The next point of interest occurred on the

22nd.—Face on the right side is swollen and red; twelve leeches to it, which relieved the pain. A large bread poultice to be applied.

23rd.—Ordered him another powder, and purgative draught. Complains of restlessness and pain; talking of business matters.

28th.—Swelling larger and more painful; the wound is healthy, without any discharge of mucus. Ordered, ten leeches.

29th.—The cheek was more swollen again.

Sept. 1.—I opened the abscess, which contained a large quantity of matter. After this the primary wound healed very rapidly; the operation seemed to assist the primary wound in the healing.

3rd.—He left the hospital, and continued under my care from that time.

5th.—I was obliged to make another opening in the cheek.

In such a case it is better not to hesitate. Of course we are naturally disinclined to make a second opening in a man's face. Every surgeon ought to be excessively jealous of inflicting pain on his patients; still I say, where the matter is evidently collected at the lower part of the cavity, and there is no chance of the upper opening healing, then it is extremely important to make another as soon as possible. He went on well, and the wound healed on the 15th of September, 1847.[1]

Well, gentlemen, I will now quote a few authorities in reference to the extraction of balls. Guthrie says :—

"A very strong reason for the extraction of balls during the first period of treatment, if it can be safely done, is, that they do not always remain harmless, but frequently give rise to distressing or harassing pains in or about the parts, which often oblige

[1] He is still, in the year 1865, quite well, and scarcely at all disfigured.

the sufferer to submit to their extraction at a later period, when their removal is infinitely more difficult, and may be more dangerous, than at the moment of injury."

So far Guthrie's opinion was in favour of the extraction of balls. I merely want to call your attention to the different surgical authorities on this subject, because, after this operation, I met with a great many medical men, who said to me, "I tell you what, Solly, you must be careful about that case; you will have a host of men about you for extracting that ball; you had better have left it alone." If such an impression is general among men in practice, I consider it an important point with regard to your instruction. Ballingall says[1]:—

"The indications in the treatment of gunshot wounds vary considerably, according to the extent of the injury. The principal objects are to remove the ball, if it has lodged, or any extraneous substances which may have been carried with it."

Then there is another quotation on another point:—

"The numerous operations which have of late years been undertaken for the removal of portions of the upper jaw, or of morbid growths in the antrum, afford very remarkable proofs of the liberties which may be taken with these parts, and give us encouragement to undertake the removal of foreign bodies when lodged in this cavity, of which we have, amongst others, interesting examples in Dupuytren's '*Blessures par Armes de Guerre*.' One of the most remarkable cases of this kind is that of C. F——, of the Ceylon Regiment, who carried in his upper jaw, for at least seven or eight years, the breech of his fowling-piece, which, in consequence of bursting in his hand, had entered his forehead between the eyebrows, and lodged in the region of the nares, and projected partly through the palate."

This is just one of those cases which show that balls or foreign substances will remain for a long time lodged in the forehead, without producing very serious mischief. Still, such isolated cases as these are not to guide us in our practice. Now, I am afraid that the following passage in the writings of John Hunter has induced some surgeons to consider that balls may be left with impunity. Believing that such a doctrine is a dangerous one, and requires some explanation, I will read to you

[1] Page 274.

the passage and point out some exceptions. John Hunter says :—

"The present practice is not to regard the balls themselves, and seldom or ever to debate upon their account, or even to search much after them, when the wound is dilated, which shows that opening is not necessary, or at least not made, on account of extraneous bodies. This practice has arisen from experience, for it was found that balls, when obliged to be left, seldom or ever did any harm when at rest, and when not in a vital part ; for balls have been known to lie in the body for years, and are often never found at all, and yet the person has felt no inconvenience."

John Hunter even goes on to say—

"If the ball is only to be felt, and the skin quite sound, I would in that case advise letting it alone till the wound made by the entrance of the lead had inflamed, and was suppurating My reasons for it are these."

He then gives his reasons, which do not appear to me to be sufficiently valid. They may be worth reading, if you have time to do so. You will find them in his work on Surgery, in Palmer's edition.[1] Now the distinction appears to me to be this, with regard to the extraction of balls :—If you feel the ball distinctly with your probe, and at such a depth from the surface that you could lay hold of it with your forceps ; wherever the ball may be, it is your duty to extract it. But if the ball is lodged so deeply in the body, that you cannot possibly ascertain its position, with either your finger or your probe (the former should be preferred), and only guess at it ; and if that ball appears to have taken a lengthened course, among muscles in the neighbourhood of large vessels, or other important points, or passed through cavities—either the cavities of the chest or abdomen—then you are not justified in searching for that ball, dilating the wound, following it down by incision, or any other mode of search. But if the ball be lodged, as in this instance, where you can feel it with your probe, or if it be lodged under the skin, as in the case of the man Overstone, who inflicted this wound on my patient, then I think the surgeon is justified in

[1] Vol. iii. p. 555.

making the opening through the skin, and extracting the ball. If you follow the advice that John Hunter has given, and has impressed upon his pupils by long and, to a certain extent, strong arguments in favour of his line of practice, then even this ball in Overstone ought not to have been extracted. He says distinctly, that the one opening gives rise to so much irritation, that you only cause much more inflammation by making another; and that a bullet which has passed completely through a limb gives rise to much more irritation than any bullet that remains lodged within the frame. As this doctrine appears to me to be somewhat dangerous, particularly as coming from the highest authority that ever wrote or taught in our profession, I have thought it most important to call attention to the exceptions to this rule; to give you reasons for following a practice which I believe to be the most correct practice in cases like the present.

I believe I have now called your attention to all the most important features of this case.

I have another case of gunshot wound to relate to you which has some practical features in it. It was very interesting to me at the time, coming, as it did, shortly after Crawley's case. In both, the bullets took nearly the same course, only that in his case all the large arteries, palatine, &c., escaped.

Nov. 20, 1845.—I was called up at 6 A.M. by Mr. Coward, of Kingsland, to assist him in arresting hæmorrhage in a case in which the arteries of the palate had been wounded.

The patient, aged forty-five, a clerk in the City, had attempted suicide by discharging a pistol at his head, the ball was lodged in the alveolar process of the incisor teeth, in the left superior maxillary bone. Mr. Coward extracted it on Sunday night without much difficulty, as it was superficially though firmly impacted. The ball was roughened and flattened into a trapezoidal form. He went on very well and without any hæmorrhage till yesterday, when Mr. Coward removed some loose pieces of bone with the forceps, but without using the scalpel;

half an hour afterwards it began to bleed, and had continued to bleed more or less until they sent for me. When I arrived I found Mr. Coward, jun., pressing a piece of lint on the palate, and in this way stopping the bleeding, but which returned immediately on his removing the pressure.

As I was uncertain, from the account given me, from what vessel the hæmorrhage proceeded, I first tried if pressure on the common carotid in the neck would control it, but it would not do so. I then removed the lint, &c., from the mouth, and finding the lining membrane covering the front of the palate bulging down like a bag, and the blood welling up from beneath it, I divided it with a bistoury, and laid the cavity open from which the bleeding came. I now found that the palatine process of the superior maxillary was entire, and the nose unopened, and the hæmorrhage, which was very free, proceeded from the palatine arteries which were divided too close to the bone to admit of the application of a ligature. I therefore had an iron skewer heated in the fire, and thus applied the actual cautery; this immediately arrested the hæmorrhage. I did not see this man again, but I learned from Mr. Coward after he paid his visit in the afternoon, that he went on well without any return of hæmorrhage. As, however, he soon after left the neighbourhood, Mr. Coward could not report how the wound healed, but he understood that it had healed up well.

LECTURE LIV.

On Carotid Aneurism.

Cases of carotid aneurism do not occur so frequently, even in these metropolitan hospitals, that we should pass by the one which I am about to relate without dwelling upon the subject of this serious malady.

Aneurism of the carotid artery, to the experienced, conscientious, and reflecting surgeon, presents an aspect most serious, most anxious, and, in many cases, most melancholy. The best operating surgeon must always feel, in approaching a case of carotid aneurism, that, however skilfully the manual portion of his art is executed, the disease may still be beyond his skill, and that his patient will sink like a strong ship in a stormy sea, land in sight, but human aid impotent and unavailing. Every step in the operation which you perform for its cure may have been successful—the immediate effect of that operation may also follow exactly as you could wish —you begin to hope that your patient is out of danger —inflammation attacks the sac, and all the efforts of your professional knowledge are abortive. I say all this before reading the history of the case, the progress of which you have just witnessed, that you may not think lightly of such cases, if they should come before you when you are settled in the country. Your prognosis must be extremely guarded; you must not raise the expectations of friends as to the favourable termination of such cases; of course you should encourage the patient himself, but you must speak very seriously to the patient's relations of his great uncertainty and danger.

C. B——, aged sixty, builder, was admitted in Abraham's Ward,

under Mr. Solly, October 19, 1853. He is about five feet six inches in height, has a short, thick neck, is of a florid complexion, stout, and a general healthy appearance; he has a large tumour on the right side of the neck, extending from about two inches above the clavicle to within an inch of the ear, and in the centre about three inches in width; this tumour pulsates so strongly as to drive the shirt-collar outwards with each beat. He is a man of temperate habits; was never intoxicated; has been in the habit of drinking beer, but not spirits; he has always enjoyed good health till within the last year. Last October and November his wife was very ill; he was continually with her during her illness, and being naturally of a nervous temperament, the anxiety consequent upon that affected his own health; he had a peculiar taste in his mouth, and his appetite failed him; his health gradually declined, till about ten weeks before admission he was so unwell as to be unable to leave his house. At this period he was troubled with diarrhœa, which continued for fourteen days; after this he felt better than he had done for some time. Six weeks prior to admission, the left side of his throat seemed as though it was sore; in a few days this sensation passed to the opposite side, and affected him so much that he could with difficulty swallow. A month before admission, at the upper part of the neck, on the right side, a swelling appeared, which speedily attained the size of a hen's egg. At this time he suffered much pain in his head, especially at the vertex; the pain was of a darting character. There was also great heat in his head, and the only position in which he felt easy was when lying on his back. (He can give no account whatever as to the cause of the tumour; he has never, to his knowledge, strained himself, though he has been in the habit of carrying heavy weights on his shoulder.) Thinking these symptoms were caused by a sore throat, he applied a mustard poultice, of which treatment his medical man approved, who also gave him some embrocation to rub into the tumour; this, however, afforded him no relief. About a week after the appearance of the tumour he was troubled with a hacking cough, the source of irritation appearing to be in the trachea. On the 6th inst., by the advice of his medical attendant, he left home for change of air. Whilst away he consulted another medical man, who immediately pronounced the tumour to be aneurism, and warned him of its serious nature, but he states that he was so busy then that he could not attend to it. After a few days, he returned home. On the 16th inst., he again saw this gentleman, who then told him he must have it operated on forthwith, but the patient, wishing to have further advice, came to Mr. Solly on the 17th, and was admitted into the hospital on the 19th. On the evening of the 20th, he took compound rhubarb pill, ten grains. On the 21st, his bowels were freely opened, he had no head symptoms, and appeared to feel comfortable.

The formation of this aneurism and its increase has been most rapid, and this rapidity of formation must be

borne in mind as a most important feature in aneurism. Mr. Jolliffe Tufnell, in his "Practical Remarks on the Treatment of Aneurism by Compression," [1] mentions a case in which the formation was much more rapid. He says:—

"The whole of the neighbourhood of the joint had been carefully examined by Sir Benjamin Brodie, Dr. Carte, and myself, upon a certain day. The parts were in a natural condition, and the patient had not suffered any pain. Eight days only after this time he came to me complaining of the uneasiness above the knee, and upon examination, I found aneurism the size of a turkey's egg, which in forty hours had increased to the magnitude of a Florence-oil flask."

Now had this man gone to one practitioner at first, and subsequently consulted another, how probable is it that the former would have set down and treated as rheumatism the incipient disease, whilst the latter, with the full evidence before him, would have pointed out the real nature of the case, and most probably given an opinion injurious to the other's reputation. Bear this in recollection, gentlemen; let it shield you from the imputation of carelessness, should such an event happen to yourselves, but let it also prevent you from uttering, on the other hand, what might tarnish a brother's fame. I say this is by no means rare. I can bring five cases to my recollection now, where this disease had acquired considerable size in fourteen days from the first symptom of uneasiness being felt.

"On the 22nd, Mr. Solly operated on the patient by tying the common carotid. Being brought into the operating theatre, he was placed on his back, his head somewhat raised and turned towards his left side, so as to put the right side of the neck on the stretch. Mr. Solly then made an oblique incision from above downwards along the edge of the sterno-cleido mastoid, about two inches and a half in length, from above the sternum, and extending nearly down to the upper edge of that bone. In the first incision, Mr. Solly divided the skin, the platysma, and the superficial fascia of the sterno-mastoid; a retractor was then applied on either side of the wound; then he cut through the deep cervical fascia and the anterior jugular vein, or some of the thyroid veins. The fascia connecting the omo-hyoid with the clavicle was then divided; the

[1] Page 33.

thyroid body, which considerably overlapped the artery, and which was raised at each pulsation, was turned inwards; the sheath was opened over the artery, the descendens noni being avoided; neither the jugular vein nor the par vagum were exposed. The aneurism needle, armed with a ligature, was placed from without inwards round the artery, and the latter was then tied opposite the middle of the thyroid body. The tumour directly diminished in size, and the pulsation entirely ceased. The wound was closed with two sutures and strapping. The situation of the artery was very deep, and more external than is usual. The patient was not under the influence of chloroform, and bore the operation with great firmness.

I have not much to add to the description of the operation thus given by my dresser, Mr. Morgan. The artery was very deep, but I had no difficulty in passing the oblique needle round it without disturbing its connections—a very important point in the performance of this operation. Old John Bell, of Edinburgh, was the first to point out the value of this mode of proceeding. The reason you can easily understand. The healing process is that of union by the first intention; the lining membrane of the artery is cut through by the ligature, and the two cut edges being in contact, are united by the nutritive action of the blood vessels—the vasa vasorum. If, therefore, these vasa vasorum are bruised and torn through, the healing process is prevented. Remember then, gentlemen, that when you have caught the artery with your hook, you are not to treat it like a fish, and draw it up to show the bystanders that you really have hooked it.

The vein was not exposed at all, and this is important, as its exposure will sometimes induce phlebitis. If you make your incision on the inner side of the sheath, you will generally accomplish it.

The last time that my respected colleague, Mr. Green, operated in this hospital, this unfortunately occurred, inducing a fatal termination. I need not say that the operation was skilfully performed. The vein was not even exposed; it is therefore one of the untoward events which you must watch for, and if there is any sign of it, endeavour to arrest it by the application of leeches, and the administration of calomel and opium.

In the application of your ligature, you must be very careful to make your incision on the edge of the mastoid muscle, so as not to injure any of the fibres. I once saw the ligature inserted between the fibres of that muscle, and I believe that it was the cause of an abscess which involved the artery. The case terminated fatally from secondary hæmorrhage. My patient indeed bore the operation with great firmness. I did not employ the chloroform, because I did not wish to disturb the cerebral circulation by such a powerful agent. The ligature itself would do so to a certain extent, and in some instances fatally.

Dr. Norman Chevers published, in the year 1845, an admirable paper, on the effect produced by this interruption to the cerebral circulation, in the thirty-sixth volume of the *Medical Gazette*. He says: "I find fourteen instances in which obliteration of one of the carotid arteries was distinctly followed by great interference with the circulation through the brain which, in eleven cases, produced fatal results." Dr. Chevers concludes this interesting paper with the following:—

"The facts adduced in this paper, it is submitted, prove that the danger of cerebral disorganization should have its weight in the consideration of cases, where it is proposed to secure the common carotid artery; not, indeed, as rendering at all doubtful the propriety of the operation in the majority of cases in which it is at present had recourse to, but as strongly discountenancing it in nearly all instances where the disease, for which it is employed, does not positively threaten the patient's existence, and in every case where other means of treatment can be employed."

After the operation the patient seemed comfortable; his pulse was quiet; he had no head symptoms. Mr. Solly ordered thirty minims of Battley's solution to be given him at 8 P.M., if he was restless; but at that hour he was quite composed, and slept without it. During the night there was very slight oozing of blood from the wound.

23rd, 10 A.M.—Has had a good night; no headache; has relished his breakfast; pulse 76; pulsation is felt in the tumour. 4 P.M.—Pulse 90, soft; face rather flushed; there is slight redness round the wound; his cough is troublesome.

24th, 9 A.M.—Has passed a good night; cough is easier; no head symptoms; pulse 84. Ordered, cough mixture. 4 P.M.—Pulse 96, soft and full; relishes his food; bowels have not been

acted on since Saturday. Ordered, ten grains of rhubarb and calomel powder at bedtime. 9 P.M.—Pulse 102, soft; has dozed a good deal to-day; there has been slight oozing of blood during the day. At one o'clock the sutures were removed, and the wound dressed; it looked healthy.

25th. 9 A.M—Pulse 90; collateral circulation fully established, proved by the circulation in the facial and occipital being easily felt; has slept well; enjoyed his breakfast; cough not so troublesome; there has been no bleeding. 2 P.M.—Pulse 100, soft and compressible; feels easy and comfortable; bowels have been relieved.

26th.—Pulse 84; no headache; bowels have not acted to-day; cough easier.

27th.—Did not sleep well last night, from a disturbance in the ward; pulse 80, and rather bounding in the morning; in the evening it was 88, and less bounding; the wound looks healthy; bowels relieved during the evening; appetite is pretty good.

28th.—Passed a good night; pulse 84; tongue is moist, but brown in the centre; wound looks healthy, and is discharging freely.

29th.—Pulse 85, soft; slept well; bowels have not acted since the 27th; cough is easier; appetite good.

30th.—Passed a comfortable night; cough easier; yesterday afternoon he had an enema, and in the evening ten grains of rhubarb and calomel powder; to-day his bowels have been freely relieved.

31st.—Pulse 86, feels comfortable: had some mutton for dinner for the first time.

Nov. 1.—Improving; pulse 84; no headache; wound is healing kindly.

2nd.—Sleeps well; pulse 80; tongue moist; bowels regular; appetite good; wound does not discharge so much.

3rd.—Going on well; pulse 84; tongue moist; cough less troublesome.

4th.—Last night he had a fit of coughing, but on the whole slept well. At nine o'clock this morning, the fourteenth day, Mr. Solly removed the ligature, which was floating in the wound; pulse 80; tongue moist; there is very slight pulsation in the tumour.

5th.—Has had a good night; cough much less troublesome; appetite good; pulse 82, soft and full; the wound is healing kindly.

6th.—Is improving.

7th.—Is better.

8th.—The tumour is harder than it was, and no pulsation in it; pulse 80; he continues to eat and sleep well; he takes five grains of compound rhubarb pill every night, which keeps his bowels regular.

9th.—Is improving in every respect.

10th.—Is better; wound nearly healed.

From this report it will be seen that his cough be-

came easier, and without any indication of pneumonia, an effect which not unfrequently follows this operation. Professor Miller, of Edinburgh, published an interesting paper on the subject in the January number of the *London and Edinburgh Monthly Journal of Medical Science*. Professor Miller's attention to this source of danger was first directed by M. Robert (de Lamballe), in the Memoirs of the French Academy for 1841.

M. Robert made a series of experiments on the lower animals to show that both carotids may be ligatured simultaneously without destroying life; but these experiments would be very unsafe guides to practice in man. In the lower animals the vertebral arteries are the principal arteries of the brain; for the cerebral lobes, to which the large internal carotids in man are directed, are comparatively so small, that in the lower animals the vessels supplying them also are small, only half the size of the external carotid arteries; but proofs which he produced of the danger to the lungs induced by ligatures on the carotid, are most important, and Professor Miller's conclusions[1] are most valuable. He says :—

"The form of danger to be apprehended is congestion of the lungs; in other words, an unwonted determination of blood to that organ, caused by a sudden and serious disturbance of the due and healthful balance in the arterial circulation, and resulting either in apoplexy of the lungs, if the congestion have occurred rapidly and to a great extent, or in an inflammatory action more or less destructive to the pulmonary texture. To obviate this danger, it will be prudent, more especially in plethoric subjects, to draw blood, the amount varying according to the circumstances of the case, shortly before the performance of the operation, in order to prevent, or at all events diminish, this probable interruption of the arterial balance; and in the after-treatment of the case further bleeding will probably be necessary, either to avert evil consequences from the determination to the lungs, which may have taken place, notwithstanding all precaution, or to limit or abate the morbid action which may have not only threatened but actually occurred. It will not be sufficient to moderate the heart's action and the arterial circulation by antimonials, sedatives, &c.; it is essential that the actual amount of the circulating fluid be diminished."

Let me impress upon you the great importance of

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operating early in all cases of carotid aneurism; or if you should meet with such a case after you have left the hospital some time, and distrust your operating powers in such a difficult case, then seek at any rate, without delay, the advice of some hospital surgeon in whom you have confidence.

The pressure of a carotid aneurism soon begins to irritate the larynx and trachea, and a distressing cough is the consequence. Such a source of irritation of course materially increases the danger in every way. It was the pressure of the tumour which proved fatal in Sir A. Cooper's first case; and you can all understand how the constant jerking of the artery, produced by a violent cough, might interfere with the healing process, and expose the patient to the danger of hæmorrhage, when the ligature had cut through the vessel.

But there is another, and, if possible, more serious objection to delay, and that is, the danger which attends suppuration of a large sac. In a small aneurism the whole of the blood within it will coagulate quickly after the artery leading to it has been tied, and the clot, becoming organized, is more or less absorbed without decomposition and suppuration taking place, which has so frequently led to a fatal issue.

Up to this time all had progressed favourably, but now serious mischief commenced, and though I combated it at its very commencement, it was without avail.

11th.—The neck, in the region of the tumour, is slightly swelled: the swelling extends rather under the chin; there is no redness or pain.

12th.—Swelling rather increased; cough more troublesome; slept nearly all night; bowels rather relaxed. Ordered, twelve leeches; poultice to be applied on the sac in the evening. The tongue was rather brown; pulse 84; swelling not much reduced.

13th.—Not passed so good a night; swelling seems softer, and extends further back; cough more troublesome, and he brings up some phlegm; pulse 80. Ordered, hyoscyamus pill and Dover's powder, five grains, three times a day; chloride of mercury, two grains, every three hours. Towards the evening the swelling increased in size, and extended more under the chin. Twelve leeches applied under the jaw.

14th.—Pulse 90; tongue moist; swelling is softer under the

chin; there is no pulsation; cough not so troublesome, though he cannot swallow very readily; appetite not so good. About 7.30 P.M. there was a little oozing of venous blood from the wound near the trachea. At 8.30 Mr. Solly arrived.

When I came, I found my patient was a great deal worse, his countenance extremely anxious, pale, and slightly livid, bedewed with a cold sweat, and his breathing hurried and difficult. It was evident that he would soon be suffocated if he were not immediately relieved. My friend Mr. Le Gros Clark met me in consultation, and I made a small opening in the sac with a bistoury. As only a little venous blood and decomposed serum oozed out, I enlarged the opening downwards to the length of a couple of inches over the sterno-cleido mastoid muscle; and below this muscle I passed the director into the sac, and allowed some more very fetid, decomposed coagula to escape. I then passed my finger into the sac, but still no arterial blood flowed. He was immediately relieved by the operation. A dresser was left in charge of the case, with directions that he should be watched night and day. Ordered, compound spirit of sulphuric ether, compound spirit of aromatic ammonia, of each, one drachm; water, one ounce: make into a draught, to be taken four times a day.

15th.—This morning he was decidedly better; there was slight oozing of serum through the night from the lower wound; his breathing was easier; the swelling under the chin not so great; pulse 92, soft and full; cough troublesome; conntenance not so anxious, and he seemed more cheerful. The nourishment he takes now is entirely liquid, being unable to swallow solid food. Towards evening his circulation acquired more power, pulse being 100, and much fuller than in the morning. At 6.30 P.M. he seemed better; there had been a little oozing of blood through the day from the lower wound. At 7.30 P.M., during one of his fits of coughing, a portion of the coagulum in the sac was displaced, and a jet of arterial blood came out; the finger was immediately placed over the opening in the sac, which controlled the hæmorrhage. The house surgeon, Mr. Complin, was directly sent for. In changing fingers the blood spirted out in a jet as large as the little finger, above three feet from the bed. It was evidently from a large vessel, and came from the upper part of the sac. A sponge dipped in gallic acid was introduced. The

man was much frightened, and for a minute or two was faint, but soon rallied. Mr. Solly came at 8.15 and approved of this treatment.

As there was no difficulty of breathing, I did not think it right further to interfere, considering that it would be better to defer any operation till daylight.

The bleeding, however, still continued, and the pressure was applied; a large portion of the sponge was pushed out; his countenance was bedewed with perspiration; extravasation of blood also took place in the cellular tissue of the neck, and pressing on the larynx, caused difficulty of breathing. Mr. Solly was sent for at 1 A.M.

When I arrived at 2 A.M., finding the difficulty of breathing again very serious, and the danger imminent from hemorrhage, I extended the incision upwards to the pinna of the ear, with the intention of tying the external carotid, if I could reach it, above the sac. I then separated the cellular tissue, between the sterno-mastoid muscle and mastoid process behind, and the lower jaw in front; I inserted my finger deeply into this space, but could not feel any pulsation from either large or small vessels. I then separated the skin very carefully from the surface of the sac on the outer and front part, intending, if possible, to reach the bifurcation of the common carotid internal to the sac anteriorly, but in doing this my finger passed into the sac, which was disorganized and soft, like wetted brown paper; a fresh and frightful gush of arterial blood followed; this was checked by the insertion of a piece of sponge, but I could no longer attempt to go any further in that direction, as the coats of the sac were evidently very imperfect. The incision which I had made upwards relieved the tension, and his breathing became so much easier that, under all circumstances, I determined at any rate to leave him till daylight, and have a consultation of my colleagues. I remained in the hospital all night, but no further hæmorrhage occurred. At 9 A.M., I had a consultation with the senior surgeon, Mr. South, and as he agreed with me that no further operation was justifiable, I therefore contented myself with injecting

a small quantity of the solution of the perchloride of iron. This was done with Anel's syringe, inserted by the side of the sponge, through the coagulum, into the sac.

In pursuing this plan, I felt I was giving him the chance of a fibrinous plug being formed in the bleeding vessel, though I scarcely dared to expect it; but such a result has followed, even where larger vessels have been opened. In the case of the late Mr. Liston, the aortic aneurism, from the effects of which he died, actually burst into the trachea nearly six months before he was carried off, producing at that time a most profuse hæmorrhage; and after death, which event was caused by pressure on the windpipe, three rents between the aneurism and the trachea were discovered, each firmly closed by a fibrinous coagulum.

The use of a solution of the perchloride of iron was first suggested by Dr. Pravaz, in the veterinary school of Lyons. He recommends using only a few drops, and this injected directly into the vessel.

My reasons for not attempting to clear out the coagula from the sac, and tie the bleeding vessel or vessels, was, a belief that in the present state of the patient the gush of blood which must have ensued would have been instantly fatal. I once saw this proceeding attempted in a similar case, and it was followed by instant death. The house surgeon, Mr. Complin, on whose accuracy I knew from experience I could rely, described the jet which he saw as equal to that which would flow from the external carotid at its origin. I ordered three minims of tincture of aconite every sixth hour.

16th, 12.30 A.M.—No more bleeding. Is comfortable, and inclined to sleep. 2.30 A.M.—Pulse, 104, jerking; no bleeding; a dose of aconite just given. 7 A.M.—Pulse 100, not so jerking, and less power; breathing easier; a little serum has been oozing from the wound; occasionally he is incoherent. 10.30 A.M.—Pulse 100, easily compressed; breathing tranquil: much nervous twitching in arms and hands. 11.30 A.M.—Pulse 105, feeble; cough very troublesome; no headache; much troubled with flatus.

17th, 12.30 A.M.—Pulse 100, small and weak; is restless, and picks the bed-clothes; sleeps a good deal; breathing tolerably easy. 3.30 A.M.—Pulse 100, feeble; sleeps quietly; breathing

rather accelerated and laborious. 4.45 A.M.—Pulse 118, small and weak: has slept well; respiration easy: not the slightest hæmorrhage. 10.15 A.M.—Pulse 98; dozes at intervals; cough rather troublesome, with copious expectoration. Gallic acid, five grains, every sixth hour. 1 P.M.—Pulse 100, with rather more power; skin warm and perspiring; expectoration copious; cough is looser. 5 P.M.—Pulse 90; dozes a good deal; expectoration copious. 9 P.M.—Pulse 80, rather more jerking than it was; skin is moist; no hæmorrhage. 10 P.M.—A gush of arterial hæmorrhage arrested by pressure; half an ounce of perchloride of iron injected into the sac; coagulation immediate.

18th, 12.30 A.M.—Cough troublesome; pulse 120; no hæmorrhage. 3.45 A.M.—A gush of arterial blood from lower wound arrested by pressure; three drachms of perchloride of iron injected through the upper wound. His face became pale, and pulse feeble after the hæmorrhage, but he soon rallied; he now takes nothing but toast-and-water. 6 A.M.—Cough troublesome, and there is some difficulty of breathing; pulse 100. 9 A.M.—Has slept a good deal, starting up at times in a nervous, excited manner; the swelling in the neck is increased; respiration more difficult; pulse 100, small and weak. During the last hour has had hiccough. 12 A.M.—Pulse 104, small and feeble; breathing is easy; he dozes a good deal; starts frequently during his sleep. 12.15 P.M.—A gush of dark blood from lower wound arrested by pressure; three drachms of iron injected; coagulation immediate. 1.30 P.M.—A little more blood flowed from the lower wound; stopped on compressing with a sponge; pulse 104, feeble; respiration about twenty-eight in a minute. 3.30 P.M.—Sleeps for short intervals, but wakes with a start; pulse 104, feeble; breathing much the same; is troubled with hiccough; mind is rather wandering. 4.30 P.M.—Pulse 108, feeble; slight oozing of bloody serum from lower wound; has hiccough. 6 P.M.—Pulse 98, feeble; respiration laborious; cough not so troublesome; sleeps a good deal; has partial paralysis of left arm; hiccough not so bad. 7 P.M.—Pulse 94; his mind often wanders; respiration easier; no hiccough; very little oozing of serum; is restless. 8 P.M.—No alteration. 9 P.M.—Pulse 98; hiccough has returned during the last quarter of an hour. 10.30 P.M.—Pulse 100; very restless; respiration difficult; frequent hiccough.

19th, 12.30 A.M.—Pulse 90; has slept pretty well; breathing easier. 3 A.M.—Pulse 90, feeble; sleeps a good deal; breathing stertorous. 4.30 A.M.—Pulse 80, weak and compressible; cough easier, but the dyspnœa is increased; speaks but very little; no hæmorrhage. 5.15 A.M.—Hæmorrhage occurred. Two drachms of perchloride of iron injected. 7.15 A.M.—Has slept for the last two hours; not the least oozing; pulse 120, easily compressed. 9 A.M.—Pulse 120, jerking and very feeble. Medicine stopped. 11 A.M.—Sleeps constantly; pulse 116, very feeble; expectoration copious, easily brought up; at each cough there is a very little oozing of blood from the lower wound; spasmodic twitchings of muscles of

right arm; the left he does not move at all; respiration 42. 1 P.M.—Mouth drawn upwards to the right side; left cheek puffs out at each expiration; the left arm and leg are paralyzed; a very trifling oozing at each cough, some delirium; hiccough; cough produced by taking the smallest quantity of beef-tea; pulse 104, very feeble. 3 P.M.—Hiccough less frequent; pulse 102, feeble; there is still oozing. 5.30 P.M.—Delirium; slight oozing; no hiccough; pulse 108. 10 P.M.—Breathing quick; pulse 100; is conscious; mutters a good deal during sleep. 12 P.M.—Pulse 108; sleeps constantly, but not soundly; has frequent short attacks of hiccough; he is conscious; there is frequently a peculiar and rather violent pulsation in the right infra-clavicular region, nearly synchronous with the pulse, but more irregular; he has some use now in the left leg, but not arm; breathing hurried and difficult.

20th, 3 A.M.—Pulse 100; hiccough; has frequent catching of the right arm and leg; breathing irregular, being at times long, at others quick and laboured. 4 A.M.—A gush of blood (dark) from the lower wound, which was quickly stopped by the injection of the iron; respiration very hurried; pulse 120, very weak; extremities cold. At 7 A.M. he died. He had been comatose since 5 A.M., his breathing gradually becoming more stertorous and feeble, his pulse also getting slower and weaker.

Post-mortem appearances about thirty hours after death.—General appearance: On the right of the neck were two recent incisions—one in the direction of the common carotid artery, commencing a little above the sternum (the carotid artery had been tied in the inferior triangle), and the other below the angle of the jaw, leading into an aneurismal tumour. Head: On the surface of the brain was a considerable quantity of serous effusion, raising the arachnoid over the convexity of the hemispheres. The lateral ventricles were distended with serum. In the substance of the right hemisphere, near to the external surface, were two small abscesses, about a quarter of an inch in diameter—one was situated at the upper part, near the longitudinal fissure; and the other at the base, in the middle cerebral lobe. The pus in these small abscesses was of a greenish-yellow hue. The substance of the brain in all other parts was firm, and of healthy appearance; no indication of softening in any part. Chest: Heart generally healthy, with the exception of some atheromatous patches, and thickening of the mitral, and to a less extent in the aortic valves. The aorta, through the lower part of its thoracic and abdominal portions, was thickly studded with large patches of atheromatous deposit, in a softened condition, in several places. The arch of the aorta was in a less diseased condition. Both lungs were much congested, and had been the seat of chronic bronchitis. The bronchial membrane of the smaller tubes was thickened, congested, and covered with pus. There did not appear to be any purulent deposits in the cellular structure of the lungs. Abdomen: Liver healthy; stomach and intestines healthy. Dissection of the Neck: A firm coagulum in the inferior portion

of the common carotid below the seat of ligature, at which spot the artery was firmly closed, the nerves uninjured. The carotid artery above this spot filled with a firm coagulum up to the sac; a large mass of decomposed coagulum occupying the centre of the neck, and forming a diffused aneurism; some appearance of sac at the division of the common carotid, but very imperfect; the external carotid open in this situation. It was clear, therefore, that the hæmorrhage had come by a recurrent stream from this vessel. A small aneurism at the root of the external carotid on the left side. Lining membrane of larynx congested, but not inflamed; no serous effusion. The aorta was throughout extensively disorganized by atheromatous deposit. In the upper part of the vessel the atheroma is in various stages, but chiefly as deposits of cheese-like matter beneath the internal membrane. In the lumbar region there is considerably more of this material, and some of the patches are softening; some, on the contrary, contain some calcareous deposit. Just above the bifurcation of the vessel the softening has proceeded so far as to destroy both internal and middle coat over a space the size of a sixpence. The surface of this spot looks ragged and foul, and the neighbouring portions of the vessel are stained with blood. The patch is excavated; the edges thickened, looking much like a small phagedænic ulcer; so that not only have the two internal coats given way, but the external is also much thinned, and looks as if an aneurism must have formed at this spot, if the single remaining coat had not been supported by the body of the third lumbar vertebra. Just above this two calcareous plates are deposited beneath the lining membrane.

I think, gentlemen, that before we dismiss this curiously interesting case from our contemplation, it will be instructive to you to consider and compare with it some of the most important cases of carotid aneurism which are upon record, and thus add to the instruction which I trust this case has already afforded you.

Sir Astley (then Mr.) Cooper was the first surgeon who tied the carotid artery for aneurism. This operation he performed on the 1st of November, 1805. The case was brought to him by Mr. Pugh, a general practitioner in the City, and now one of the almoners of this hospital; and I hope that the scientific love which he showed for his profession as a young man will not be forgotten, now that he is in a position to suggest and forward measures of liberality and usefulness to his professional brethren at work in this noble institution.

Mr. Cooper's patient died from inflammation of the sac, which extended along the par vagum to the base of the skull.

"The cause of death was the inflammation of the aneurismal sac and the parts adjacent, by which the tumour increased so as to press on the pharynx and prevent deglutition, and upon the larynx so as to excite violent fits of coughing, and ultimately impede respiration.

"All went on well till the seventh day: applied two ligatures. They separated on the eleventh day. Nerves were not injured."

Mr. Cooper attributed the fatal issue of this case to the great size which the aneurism had attained before he saw it, and he was pleased to have another case sent him by his friend Mr. Young, before the tumour had attained any size, and therefore in 1808 he repeated this operation, and tied with a double ligature. On the third day the swelling became firm, and its contents were gradually absorbed. Its pulsation, though slight, was perceptible more than two months after the operation. The upper ligature came away on the twenty-second day, and the lower on the twenty-third. In less than three months he was discharged cured, and returned to his occupation as a porter. Sir A. Cooper considers the aneurism was seated in the internal carotid artery.

In the same year Mr. Cline tied the artery in this hospital.

"The patient was a strong, middle-aged man. The tumour, which was large, had been particularly rapid in its growth. The other circumstances of the case were by no means favourable. Respiration and deglutition were affected by the pressure of the tumour, which had pushed the larynx from its straight course. The patient had a very frequent and troublesome cough. The pain was confined to the tumour and corresponding side of the face. All these symptoms were relieved twelve hours after the operation. They then returned in increased degree, particularly the cough and difficulty of swallowing, accompanied with much irritative fever, to remove which medicine proved inefficient. The man died on the fourth day after the operation."

In less than a year and a half after Sir Astley tied

the carotid a second time: my old master, Mr. Travers, tied it successfully, for anastomosing aneurism of the orbit. Mr. Green had a successful case in 1832. The tumour small, about the size of a large walnut, on the right side. The patient was sixty-five years of age; his employment was that of a porter, carrying weights on his head; but he was not aware that he had ever strained himself. The operation was performed in the usual way, and the ligature separated on the thirty-fourth day. He suffered from difficulty in swallowing, and some cough. The right tonsil suppurated, and in time all the local symptoms subsided. He left the hospital about five months and a half after the operation.

Mr. Porter, in his interesting lectures on aneurism, relates a case which is very similar to this one of poor B——. The patient was thirty-eight years of age, of low stature, and strong make; he had a very large aneurism, occupying nearly the entire of the left side; the tumour was soft, the blood within very fluid, and of course the pulsation very violent. The disease might be said to have existed but a few days. Only five weeks had elapsed since he first perceived a hard tumour, like a kernel, near the angle of the jaw, perfectly movable, without pain, and, as he stated, without pulsation. In the course of ten or twelve days it became uneasy, but not actually painful, and he poulticed it in the expectation that it would suppurate and break; it, however, increased in size, although slowly, and occasioned a good deal of annoyance in the motions of the head. It had then become distinctly pulsatile. Only seven days before admission, while at work, and after exerting himself considerably, he was suddenly attacked with most excruciating pain, darting from the tumour across the forehead, and towards the vertex. He was immediately obliged to quit his employment and return home, when he discovered that the tumour had increased in size to a surprising extent, and that it pulsated with great violence. He suffered dreadfully for the next three nights, not sleeping, nor even being able to lay down his head. He was then attacked with hoarseness,

which, amounting at times to nearly a total loss of voice, alarmed him so much as to cause him to apply at the hospital for relief, and he was admitted on the day above specified.

"Three days after admission into the hospital, the carotid artery was tied. The pulsation ceased in the tumour, the size diminished, and the patient was relieved on the fifteenth day after admission. The ligature came away, and all went on well till the thirtieth day, when the storm set in." He complained of pain and stiffness in the neck, with headache, furred tongue, and general constitutional derangement. The sac had begun to inflame. On Saturday, the 27th, five weeks after the operation, the pain and swelling of the neck had greatly increased. The sac suppurated, and Mr. Porter says he was prepared to treat it as he had others with uniform success—namely, by a free incision, turning out the coagula, and discharging the matter. All the details of this case are extremely interesting and instructive, but I must hasten to the result. Arterial hæmorrhage followed this incision, which was restrained for a time by pressure, and the sac suppurated freely. Three days after this, a sudden hæmorrhage took place; in the course of a few minutes he lost between forty and fifty ounces of blood. This was arrested, and he lived thirteen days from the first bleeding, expiring at last without a groan. No post-mortem examination was allowed.

Mr. Lyford, of Winchester, relates, in the eleventh volume of the *Medico-Chirurgical Transactions*, a successful case, but here the aneurism was small. The ligature separated at the end of the month. In the same volume there is a deeply interesting but fatal case related by Mr. Coates, of Salisbury, the operator. The tumour was enormous, but all went on well for about a month. On the thirty-second day, inflammation of the sac came on. Leeches, calomel, digitalis, and bleeding were employed. On the thirty-sixth day I find the following note. "9 P.M.—Pulse 90; the inflammatory appearance of the skin much increased;

the size of the tumour much the same, and the anterior part still soft. I determined to discharge the contents, and accordingly made an opening in the prominent part, from which issued about seven ounces of fetid blood mixed with pus. He breathed easier immediately, and was greatly relieved." All went on well again for twenty days, when hæmorrhage took place. This continued at intervals for sixteen days, when he expired. The description of the post-mortem examination is not very clear, but I judge from the account that the hæmorrhage came from the facial. On reviewing the case, he says he thinks that it would have been better to have opened the sac earlier, before the anastomosing vessels became enlarged.

In the tenth volume of the *Transactions of the Medico-Chirurgical Society*, Mr. Vincent relates a case of carotid aneurism, in which he operated Dec. 10, 1818. The sac was small, about the size of a pullet's egg. The termination was fatal from inflammation of the artery above the ligature, and effusion into the surrounding cellular tissue. The ligature separated normally on the twenty-second day. Eleven days after this, and thirty-three days from the date of the operation, the neck began to swell. About eight o'clock on the following evening "he became very ill, complaining of being low and uneasy; had great difficulty of deglutition; a fit of coughing came on, and respiration grew difficult. He was quite sensible. Mr. Lawrence, happening to be at the hospital at this time, saw him, and made an incision into the aneurismal tumour, from which a small quantity of pus and coagulum issued. He expired immediately afterwards."

In returning to my own case, I may, in conclusion, remark that, though the immediate cause of death was the serous effusion and suppuration on the surface of the brain, producing hemiplegic paralysis, and not exhaustion from hæmorrhage, still I regard the loss of blood, though comparatively slight (not more than sixteen or twenty ounces), as the remote cause of his decease.

It has been stated in the early part of this lecture that a ligature on the common carotid has not unfrequently produced disease of the same side of the brain. This disease being of an anæmic character, the result of an imperfect supply of blood, you will therefore easily perceive that any loss of blood from that side of the head would of course contribute to the anæmic condition, and so far contribute to this disorganization of the cerebral substance.

From all the evidence that I have laid before you, it appears that in almost all the cases in which the carotid aneurism has been large, the termination has been fatal. Now, you may observe that in none of these cases has the sac been opened immediately after the operation, and before the recurrent circulation has been established. This proceeding is certainly a very formidable one, and not to be rashly undertaken. It is one very likely to set up severe constitutional irritation. Nevertheless, when we consider the immense amount of irritation induced by the suppuration of a large sac, and the great danger of secondary hæmorrhage after the anastomosing channels are thoroughly dilated, it might prove the least dangerous course to lay open the whole sac immediately after ligaturing the artery, and then tie all branches of the external carotid artery which communicated with that sac.

In this case, it is true that, even if this plan had been adopted and succeeded, it would not have prolonged life for any period, inasmuch as the diseased condition of the coats of the aorta in the abdomen must have soon formed a diffuse aneurism, which would have proved fatal from sudden and unreachable hæmorrhage.

December 16, 1851.—Went to Norwich to consult with Mr. Nichols as to the propriety of tying the carotid artery on the distal side of an aneurism. The patient was a female, æt. fifty-seven, married. On examination I found a pulsating tumour, between the sterno-clavicular attachment of the sterno-cleido-mastoid. It occupied the whole breadth of the muscles. The

pulsatory movement might be seen beyond both the inner and outer edges of that muscle.

The tumour was very soft and yielding; it was movable, but I could not detect any boundary below. It extended upwards for about two inches. There was no bruit whatever in it. The subclavian artery could be felt very distinctly in its course outwards from its exit between the scaleni. Mr. N—— thought he could feel the carotid of its natural calibre below the swelling, but this I showed him was the rounded outer edge of the clavicular portion of the sterno-mastoid, for, on making her bend her head forwards on the chest, this rounded cord raising the finger from the tumour showed that it was the muscle in a state of contraction. There did not appear to be any deposit of coagulum in the sac.

I felt convinced from my examination, that it was an aneurism, that it most probably was an aneurism of the arteria innominata involving a portion of the carotid. It might be an aneurism of the aorta, but I thought not, from its occupying exactly the situation of the carotid and arteria innominata, and not springing at all in the mesial line. I did not recommend any operation, for the following reasons. It was impossible to put a ligature on the proximal side of the aneurism. If the aneurism involved the arteria innominata, it was no use tying the carotid without the subclavian, and as there was no deposit of coagulum in the sac, no preparation made by Nature to obliterate it, an operation on the distal side was doubly hazardous. Mr. N—— agreed that no operation should be performed.

Case of Femoral Aneurism.

James Bywater, æt. thirty-two, carpenter, admitted into Abraham's Ward, December 28, 1860, under the care of Mr. Solly.

History. — He is a healthy-looking man, of light complexion, anæmic countenance, anxious expression, and of an irritable and nervous disposition.

Eighteen months ago he fell from a high building, striking his left side; but did not appear at the time to suffer any serious injury. Shortly after, he observed a small lump in the left thigh about the size of a pea, which gradually increased in size and pulsated,

up to about three weeks ago (the tumour then being about the size of an egg), when he had another fall, and since that time it has enlarged more rapidly and become painful. The tumour is now nearly circular in shape, and measures about four and a half inches from above downwards, and about three and a half inches across.

After his admission a tourenquet was applied over the artery and gentle compression used. Tinct. digit., ℥x.; tinct. opii, ℥xxx.; to be given at night.

29th.—Thigh more painful. Ordered, Tinct. digit. ℥x. ter die, and tinct. opii ℥xxx.

30th.—Ordered an aperient draught. The pressure to be kept up by the tournequet and weights alternately; the artery could not be controlled continuously for more than an hour or two on account of pain and restlessness.

31st.—More painful. Ice to be applied; castor oil to be administered.

Jan. 1.—Pressure having been unsuccessful, the external iliac artery was tied, at 2 P.M., about an inch and a half above Poupart's ligament; pulsation immediately ceased in the tumour; the wound was then brought together by sutures and strapping. Tinct. opii, ℥xxx. n. s.

He was very restless and irritable after the operation, complaining of great pain in the left leg and thigh, which was relieved by slightly flexing it and supporting it with a pillow.

2nd.—Had some sleep, but still very restless. No pulsation in tumour.

3rd.—Slept well, and is tolerably easy.

5th.—Going on well, tumour diminished in size.

9th.—Much better and cheerful. Tumour smaller, soft, and not at all tender.

16th.—General health good; free from pain. Aneurismal sac is smaller and harder, and appears to contain little fluid.

30th.—The ligature was removed by very gentle traction.

Feb. 16.—The wound being healed, except a very small spot, he was permitted to get up and walk about on crutches.

March 9.—Discharged cured.

Case of Aneurism of the Arch of the Aorta.

Oct. 18, 1861.—Mr. Thomas P——, aged 50, of plethoric habit, says he has always enjoyed good health. Met with an accident thirteen years ago (having been thrown out of a gig), by which he broke his leg, and had concussion of the brain; was under medical treatment about six months. Temperate in his habits, accustomed to plenty of air and exercise, formerly rode a great deal on horseback, and never suffered from rheumatism or gout; his father lived to 78, his mother died of dropsy at 50. Mr. P—— complained, about nine months ago, of a gnawing kind of pain on the left side of his chest, extending down the left arm; the pain would be increased on first lying down in bed, accompanied sometimes with a

thumping on the left side of the sternum, but after a short time the symptoms would subside, and he would then fall asleep. Was treated for rheumatism (colchicum and alkalies being given); not getting better, consulted Dr. Barlow, who considered the case of a rheumatic character, accompanied with dilatation of the aorta; the pain has continued up to the present time; about ten days ago a pulsating swelling was observed on the left side of the sternum over the fourth rib, which was pronounced by Mr. Solly to be aortic aneurism.

When I first saw this gentleman he was in great distress from difficulty of breathing and pain in the upper part of the chest. The aneurism had increased so rapidly, and the wall had become so much thinner, that if the disease had advanced at the same rate he could not have lived many weeks.

Oct. 15.—Ordered to be kept perfectly quiet, to live on one flat, and avoid steps or stairs, have a fish and vegetable diet, drink no beer, wine, or spirits, sparingly of water and tea. A plaster of Paris cast to be worn continually over the swelling. General health is good. Pulse 76. Take tinct. digitalis ɱv. three times a day.

Oct. 22.—The treatment has been pursued steadily; he feels much less pain; easier at night; quite cheerful in his manner. Pulse 74, regular; plaster cast applied to swelling; tongue clean; bowels regular; digitalis discontinued, as it produced faintness.

Nov. 1.—Saw Mr. Solly; thinks him a little better; to pursue the same kind of diet. A cast of gutta percha to be worn at night; ice to be applied to aneurism three and four hours a day. Food to be weighed. Pulse 72, regular.

Nov. 2.—A tolerable night, slight pain down the arm. Pulse 72, soft and regular; bread and vegetable diet; tongue clean; ice applied for two hours.

3rd.—Good night; a slight cough from cold; complains of pain over swelling; the cough shakes him; no ice applied to-day; tongue clean. Pulse 70. No medicine.

4th.—Cough much better; ice applied for three hours; slept well. Pulse 74, regular; bread and vegetable diet; no pain in chest and arm; bowels not relieved; to take a pill.

5th.—Slept well; pulse 72, soft and regular; no pain in swelling; fish diet; ice applied for three hours and a half; bowels regular; tongue clean; felt faint last evening during the application of the ice.

6th—Slept well. Slight pain down the left arm. Pulse 75, rather feeble. Bread and vegetable diet. Tongue clean. Ice applied for three hours and three-quarters.

7th.—A good night. Had some pain on the left side of chest in the morning, but much easier in the afternoon; feels a slight constant pain down the left arm. Pulse 72. Ice applied for two hours and three-quarters. Bread and vegetable diet. Tongue clean. An hour's exercise.

8th.—A good night. Pulse 70, regular. Very little pain to-day. Fish diet. Ice applied for three hours. Tongue clean. Had an hour's walk in the garden.

9th.—A good night. Pulse soft and regular. Complains of pain between the shoulder-blades. Bread and vegetable diet. Ice applied for three hours. Walked one hour in the garden. Bowels regular; tongue clean.

10th.—A good night. Pulse 72, regular. Very little pain in chest to-day. Ice applied for three hours. Bread and vegetable diet. Tongue clean.

11th.—A good night. Pulse 70, soft and regular. Complains of a great deal of pain on the left side of chest and arm, which came on in the morning an hour after applying the ice. Tongue clean; bowels regular. Walked in the garden for twenty minutes. Ordered not to apply ice to-morrow. Bread and vegetable diet. Ice applied for three hours.

12th.—A good night. Pulse 72. Complained of pain in left side of chest, but not so severe as yesterday. Tongue clean; bowels regular. Fish diet. No ice applied.

13th.—A good night. Pulse 65. While talking to me, complained of a pain in the aneurism, running through to the back. Bread and vegetable diet. Ice applied for three hours.

N.B.—The pain came on in the morning, soon after the application of the ice.

14th.—A good night. Pulse 72, regular; bowels open; tongue clean. Complains of pain in the aneurism. Went to town to see Mr. Solly. Mr. S—— thinks the wall of the aneurism thicker. Not to apply ice again; go on with the diet. Take tinct. digitalis ℥v. three times a day. To apply six leeches to aneurism, if the pain continues.

15th.—A bad night, with pain of chest, and complaining of pain this morning. Pulse 60, soft and regular. Walked in the garden for half an hour. Took digitalis ℥v. three times a day. Fish diet.

16th.—A good night. Pulse 72, regular; bowels open. Much less pain to-day. Had a sharp pain last evening in the aneurism, about 6 P.M., but it soon passed off, and was easy all night. Bread and vegetable diet. Walked in the garden for an hour. Took digitalis ℥v. three times a day.

17th.—A good night. Had very little pain in chest yesterday, and very trifling to-day. Pulse 71; tongue clean; bowels open. Walked for an hour in the garden. Bread and vegetable diet. Took digitalis ℥v. three times a day.

Nov. 18.—A good night. Pulse 72; free from pain; tongue clean. Walked in the garden for an hour. Bread and vegetable diet; took digitalis ℥v. three times a day; feels a trickling sensation in the aneurism.

19th.—A good night. Pulse 72; free from pain. Walked in the garden for an hour; fish diet; tongue clean; bowels regular; took digitalis ℥v.

Dec. 1.—Colchicum mixture was ordered on account of rheumatic pain in the shoulders, with digitalis at night.

11th.—Was ordered by Mr. Solly, soap plaster applied to the aneurism, which was firmer, from some coagulation having taken place; this treatment was continued, with low diet.

March, 1862.—Complaining of rheumatic pain. Ordered, colchicum with digitalis at night.

8th.—Digitalis discontinued.

April 2.—Aneurism increased in size; suffers much pain. Ordered, Tinct. hyoscyam. ʒj., at night. Pain still very severe in chest; a small blister applied, with morphia, at night; from this date, April 22 to May 6, he gradually became weaker, and sank from pain and exhaustion, the aneurism remaining intact.

The following paper was read before the Medico-Chirurgical Society, November 8, 1859, but not published. Knowing, as I do from above forty years' practical experience at St. Thomas's Hospital, that cases of abdominal aneurism are extremely rare, and frequently rapidly fatal, I feel that no apology is due to my readers for publishing it in full as an important item in my surgical experiences.

I hope that the publication may be the means of helping my professional brethren to control, if not cure, this lamentable disease.

Case of Aneurism of the Abdominal Aorta arrested in its progress, related by Samuel Solly, F.R.S.

On the 16th of October, 1855, I was sent for by a Captain W——. I found a man 30 years of age writhing in pain. I have seldom seen indications of greater or apparently more intolerable agony. He was naturally a handsome man, but his face was thin and sallow, with an occasional flush. He referred his pain to the epigastric region of the abdomen; the pain was not much increased by pressure with the hand, but he could not lie flat on his back without additional suffering. A belladonna plaster over the epigastrium prevented my examining the abdomen satisfactorily. He stated that his bowels were confined, and that the motions had been lumpy. I ordered him a dose of croton oil, and as soon as the bowels had acted freely, a grain of morphia with tincture of aconite, three drops, in water, every four hours; after I had thus prescribed, I learnt that Dr. Watson had seen him previously, and I therefore made an appointment to meet him the next day. In the meantime I made out the following history of his case, partly from his own account, and that of his wife, and partly from a written statement by Dr. Gidney, of Cheltenham, under whose care he had been.

At first I could not ascertain any probable exciting cause of his disease, but, after some questioning, I found that four years and a

half previous to my seeing him, he first suffered from pain in his abdomen, when riding with the hounds a young and very unruly horse who rushed at his fences, overleaping them; the violent exertion required to keep his seat caused severe pain in the abdomen, and as far as he can remember, at the same spot in the abdomen as at present. When he arrived at home in the evening he felt this pain so much, he was obliged to go to bed instead of going out to dinner. From this account I am quite certain that the pain could have been of no ordinary character, as he is a most energetic and active man. He was pretty well again the next day, but says he has never been really strong or hearty since; nevertheless, he did not complain of his back till two years afterwards, and says he did not really suffer much until the last six months, when the pains becoming more frequent, he consulted an eminent London surgeon, who ordered mercury with sarsaparilla and friction to the back, telling him at the same time that he considered it a spinal affection.

This seemed to do some good, but on a hurried journey to Ireland, all his bad symptoms returned, the pains extended through the abdomen to the back and chest, he had frequent nausea and at times vomiting, and almost always pain in the stomach after food or liquids.

Dr. Gidney, when writing to me, on October 18, says, "When I first saw him on the 6th (just twelve days ago) he had violent pain in the back, extending throughout the trunk of the body; his pulse was 92, of good strength; his tongue clean; bowels open. I tried to allay the irritation by hydrocyanic acid, and also with bismuth and morphia; this partially succeeded." Dr. Gidney in the same letter intimates the probability of its being a case of aneurism of the cœliac axis, but without pronouncing a positive opinion.

On the 19th, I met Dr. Watson. Our patient was much relieved by the croton oil, which had acted freely, and he had had a good night's rest with the morphia. The belladonna plaster having been removed, I was able to examine the abdomen, which I did at Dr. Watson's request before he gave me his opinion. I found a distinct pulsating tumour a little above the umbilicus about the bifurcation of the aorta. This pulsation was felt not merely from behind forwards, but laterally also; and this fact had also been observed by Dr. Watson on his previous examination, and to both of us it was the confirming point of the conclusion at which we arrived.

There was a distinct "bruit-de-soufflet" when listened for carefully, both through the stethoscope and by the naked ear. I now felt no doubt that the tumour was an abdominal aneurism; and on stating this opinion to Dr. Watson, he told me it was his also, and that it was almost the only case of the kind out of many cases of supposed abdominal aneurism in which he could arrive positively at such a conclusion. He also stated to me that Mr. Cæsar Hawkins, who had likewise seen the case with him on a previous occasion, differed from him, regarding it as a case of enlarged lumbar glands.

The urine was examined by Mr. Walter Tyrrell: "pale white sediment suspended in a small quantity of mucus, exhibiting under the microscope crystals of the oxalate of lime."

On the 29th of October, Mr. Leggatt, of William Street, Lowndes Square, was called in at the suggestion of Dr. Watson, Mr. Leggatt residing within a few doors of Captain W——. Mr. Leggatt, who has kindly favoured me with his notes, says, "I found him with violent pain in the back. He had taken a grain of morphia at bedtime, and 15 mins. of Battley without effect. I examined the abdomen, but could not satisfy myself of the existence of aneurism. The pulse was quick when I saw him, but it came down under the influence of chloric ether, and small doses of Battley."

About three or four days after this date, when the intestines had been completely emptied by purgatives, Mr. Leggatt satisfied himself of the presence of an aneurism.

Nov. 7.—I found him in a state of dreadful suffering; the pain is now referred more to the back than the abdomen. I agreed with Mr. Leggatt to put him under chloroform, and then raise a blister by means of a heated iron spoon on the side of the lumbar vertebræ opposite the seat of pain, the raw surface to be dressed with morphia.

9th.—The chloroform relieved his pain so entirely that the blister was not dressed that night with morphia, but the pain returning again on the following day recourse was had to the morphia with success.

10th.—I found him again suffering very much, though not quite so bad as on a former occasion. I now met Mr. Hester, of Oxford, who is an old friend of the family; he came to the same conclusion as ourselves, agreed to same palliative plans of treatment, suggesting also a little digitalis three times a day; ordered, ʒj. t. d.

12th.—Dr. Todd met Mr. Leggatt and myself in consultation, and agreed that it was aneurism of the abdominal aorta.

19th.—Met Dr. Todd again. Captain W—— is suffering severely, much altered and worn, had taken scarcely any food, no appetite, and almost constant sickness. Ordered, Creosote, ♏j.; quinine, gr. ij. 6tis horis; tinct. opii, ʒj. ex enemate icienda.

20th.—Met Sir B. Brodie. Mr. Leggatt announced to us that he was now not able to feel any pulsation in the right iliac artery, though up to this time the pulsation has been distinct.

Both Sir B. Brodie and I were satisfied of the correctness of this statement as regarded the artery in its passage over the pubis. I thought that I could feel a slight pulsation at the saphænic opening.

The pulsation in the left iliac and femoral artery was quite distinct, though feeble, but the circulation generally was feeble. He was in a sound sleep, and when awakened he was not in so much pain.

The sickness had been apparently alleviated by the creosote and

quinine, and the sleep induced by an injection of tinct. opii ʒj. per diem.

Sir B. Brodie agreed in the opinion that the disease was aneurism.

29th.—Improving; has been tolerably free from pain since my last visit; does not look so haggard; has taken his food better; no sickness except on the evening of his removal into his present house. This removal was accomplished by means of a Bath chair, the distance not being more than a quarter of a mile, bearing the journey very well. The aneurism is smaller, and the pulsation less distinct, more especially in the left femoral artery. No "bruit." Ordered, Quinine, gr. ij.; acid. sulph. dil. ♏x.; aluminis, gr. x.; syrup. zinzib. ʒj.; inf. ros. ℥j. b. d. This was prescribed with the hope of increasing coagulum in the sac.

Dec. 3.—The medicine having disagreed with him by producing griping pains in the bowels, was abandoned, and he returned to the quinine and creosote.

12th. — Very decidedly improved; gaining flesh; free from pain; sleeps well without any morphia sprinkled on the blistered surface, but he still has the injection of tinct. opii three times every night; the strength of the pulse has increased, and with it a slight bruit in the aneurism, the sac of which is not so large as it was; there is still no pulsation in the right iliac.

Jan. 4.—Has varied from time to time, the pulse becoming fuller and more forcible; has been restrained by a less stimulating diet and digitalis; this latter has, however, been abandoned, as it reproduced the nausea and sickness. On examination to-day, I found the tumour rather more elongated. The pulsation is again very distinct, both from before to behind and laterally. The whirring sound is very distinct, but in addition, I heard very distinctly a whistling sound, which Mr. Leggatt informed me he had heard on several former occasions. To continue the quinine and creosote with ferri sulph. gr. ¼ bis die.

11th. — There has been no change in the aneurism; the pulsation is more distinct than it was a month ago; he has gained a little in flesh and colour; he looks less sallow and haggard.

Meeting Mr. Jolliffe Tufnell, of Dublin, at St. Thomas's Hospital, and knowing the interest he felt in all such cases, and aware of the fact of his having had under his care in Dublin (which so far recovered that the patient, a car driver, was following his vocation for three years after leaving the hospital), I proposed a consultation, which was readily agreed to. Mr. Tufnell agreed most unequivocally as to its being an aneurism, suggesting his being confined entirely to bed, and the recumbent posture, as holding out the best prospect of a recovery. To this I entirely agreed. When I first saw him his sufferings were so great and his health so impaired that I felt such strict confinement would only add to his distress; his general health has now improved so much, that I have no fear of the confinement, and there is this additional reason in favour of it, that with the improvement of his health, and an increase in the force of

his pulsation, it has become more distinct in the tumour; the whirring sounds have returned, and its size has increased.

Jan. 12, 1856.—To have only ℥iv. of meat, ℥viij. of bread, fruit and vegetables of each ℥iij., and ℥xxiv. of water or tea in all, but no stimulants.

I have procured a sofa for him, with a rack movement, that will permit of some little alteration of position without any exertion on his part.

Feb. 6.—Tumour rather larger, pulsation the same; pulse at the wrist not so full; general health improved.

April 20.—He has continued in much the same state from the last date. His general health good, and free from pain. He has now submitted to the starving plan and entire rest for nine weeks. He is desirous of leaving London. I have therefore consented to his getting up from the sofa, but still to keep very quiet.

28th.—I have again examined the aneurism: the pulsation is not so distinct, but it is more diffused, and extends more down towards the right groin. The bruit is not so sharp, but extends lower down, almost to Poupart's ligament. He does not appear any worse for the change in getting up from the sofa. He is very weak, and does not feel any desire to walk. He sleeps well now without opium. The enema at night containing the tinct. opii has been abandoned. His diet is still very spare, and his appetite very moderate. He leaves town to-morrow for Dover.

May 2.—He bore the journey well. I placed him under the care of Mr. Sankey and Dr. Barton.

9th.—Mr. Sankey writes me word: "You will be pleased to hear that Captain W—— is progressing favourably, and that nature is performing a cure no operation could have done."

25th.—Mr. Sankey again writes me on this date, saying, "I yesterday made a most careful examination of Captain W——, and the result is as follows: Pulse 72; tongue clean; bowels act daily; urine deposits a pink sediment. As to aneurism, &c., I can scarcely detect any pulsation below the umbilicus, and none in the external iliac or femoral arteries. I have strenuously advocated the most rigid adherence to your directions as to quiet, diet, &c."

June 2.—Going on well. Report from Dr. Barton: "Bruit de soufflet distinct over a space of about two inches in diameter, being most marked half an inch to the right of the umbilicus. At this spot impulse is also perceptible, but not elsewhere."

The following letter, dated June 6, from a relative who was with him, shows the state he was in at this time:—"He seems very much the same as when I last wrote to you; dreadfully exhausted and weak in the day, although he gets pretty good nights, taking the enema of thirty drops of laudanum. He is carried into the drawing-room for about two hours every day, and the sofa is made up as a bed. He continues the aconite pills, as also the creosote, three times a day, and he is now taking two tablespoonfuls of quinine twice a day. He suffers much from a constant feeling of sickness, and is regularly sick every other day, and sometimes

oftener. He takes very little nourishment during the day, but enjoys his cup of bread and milk at supper, and again in the night, more than anything: he has the lime-water in it, as in London. He has taken ten drops of chloroform and ten of sal volatile here, which I think has relieved him a little for the time. He has not had a fresh blister on since last Thursday, and that was on his stomach. Mr. Barton thought, if he could possibly do without, the better, as of course they must weaken him. Now, when he feels any slight pain in his back, he has an enema of fifteen drops of laudanum in the day. He says himself, he feels weaker than ever he did when in London, and is dreadfully low-spirited.

On the 10th of June I received a note asking if he might have a little table beer. Up to this time the abstemious system had been pretty fully carried out: it was now a little relaxed.

June 15.—The report says he is gaining strength, and goes out every day, but does not use much exertion.

July 9.—I was summoned suddenly to Dover, on account of the intense suffering he was enduring. When I arrived there I found him in the same agony as when I first saw him.

After the date of the last report he was persuaded to accompany Lord Y——, in his yacht, for a cruise to Lymington. He was not absent many days, and did not make any extraordinary exertion while on board; but after landing at Lymington he walked about half a mile, which was more than he had ever done at Dover. From this time his pain had gradually increased until it reached its present intensity. The treatment which had been adopted in London, with perfect success in relieving his pain, had been again tried before my arrival, but without more than temporary relief; viz. chloroform, blistered surface dressed with morphia, opium injected into the rectum. On examination I found that the tumour was decidedly smaller, the pulsation much less distinct, and the sound much fainter. The pulse at the wrist was stronger. He had decidedly gained flesh; was looking healthy; the muscles were firm, and his general condition good.

Under these circumstances I advised V.S. ad ʒxv. He bore the bleeding well; no feeling of faintness; the pulse became much softer, and he was decidedly relieved for a time by the loss of blood. The blood on the next morning exhibited a firm coagulum, slightly cupped and buffed. His pain and sickness had very much returned again. I now recommended a strong aperient, and a blister on the front of the abdomen over the tumour, to be dressed with morphia. On the 12th of July I received the following from Dr. Barton:—

"I am happy in being able to give a *rather* more favourable account of our patient. After applying the morphia to the blistered surface on the stomach he had a very tolerable night, with a good deal of sleep at intervals, and this freedom from pain continued till about three o'clock this afternoon, when it again returned, but not so severely. He has taken very little food, as his stomach is irritable, having vomited twice. The bowels have been very obstinate, but after taking six pills, and having had two injections administered,

they acted twice lately: his tongue is still white, and he complains a good deal of thirst: he has taken the aconite pill you prescribed three times a day."

I did not hear again till the 20th, when Dr. Barton writes:—"On Tuesday last he had a great deal of pain and sickness: the latter was relieved by the creosote pills you recommended, but the pain was very severe and obstinate. There is little doubt the endermic application of the morphia affords him more certain and permanent relief than any other remedy, and for the last three or four days he has had nothing else in the shape of anodyne, either by the mouth or enema; but we keep one blister under another, so as always to have a fresh surface to apply the morphia to. His pulse is quiet; tongue cleaner, and his appetite slightly returning; but the bowels continue obstinate, requiring a good deal to move them. Were the morphia and the blisters to be discontinued, I fear there is little doubt the pain would return. I examined the aneurism to-day with the stethoscope; the pulsation and bruit are certainly more distinct on the *left* side than it was, and less on the right."

The next communication from Dr. Barton was on the 23rd August, when he says—"About a fortnight since I thought the pulsation decidedly greater, and the bruit heard over a larger space, but to-day I thought it less distinct. He has had no *severe* pain for some time past, but complains of great weakness in his back; he is also very desponding about himself. He has had no sickness, and his appetite and general health are better. He expects to leave here on Wednesday, viâ London, for Cheltenham, and you will then have an opportunity of judging for yourself, as he will be in London for a day or so."

As thus intimated, on the 5th September, 1856, I saw Captain W——, on his return from Dover. I found him free from pain; pulse 86, rather jerking, not very full. The form of the aneurismal tumour is less defined, and the bruit de soufflet is less distinct; not taking any medicine except 30 drops of tinct. opii om. nocte.

15th.—He has one glass of wine daily. From this date I never saw my patient again. He consulted, before he left London, I believe, two hospital surgeons and one physician, who told him he had no aneurism. He also, on different occasions, consulted three of the Dublin surgeons, who told him he had no aneurism, and that he might do as he liked in regard to exercise, diet, &c. One of these was the late Sir Phillips Crampton.

In January, 1858, I had a note from Mr. Tufnell, in which, speaking of Captain W——, he says: "He looks well, and is complaining only of pain after meals, especially after breakfast, when, from declension of the stomach, the abdominal pulsation is interfered with, and the aorta pressed upon. His state, as regards the aneurism, is as follows:—No increase in size; walls well protected; tumour three inches in vertical, and four in transverse diameter. Bruit de soufflet in tumour, and carried along left iliac artery. No pulsation in right iliac femoral; anterior and posterior, tibial and collateral, circulation good. No œdema of limb. Heart sounds

natural. He tells me he can ride and drive a drag for sixty miles at a stretch. I advised him to go in medias res."

On the 23rd of January, 1859, I received a note from Dr. Gidney, of Cheltenham, in which he says—"I am sorry I can tell you nothing satisfactory of Captain W——. He has received your letters; but, to tell you the truth, he says you, myself, and Dr. Watson, and Mr. Tufnell, entirely mistook his case: nay, on meeting him the other day I said, 'Well, Captain W——, how is the tumour?' 'There never was a tumour,' said he, rather rudely. 'Oh! Mr. Solly, Dr. W——, and myself felt it—it was as large as the top of my walking-stick.' 'Ah! but Mr. —— said there was no aneurism.'" The consequence was that he recommenced his hunting, driving four-in-hand, &c.; and thus he continued, till the poor fellow died suddenly, at Cowes, on the 8th of August, 1859—just three years from the time when he ceased to consult me.

This event, fortunately, occurred when he was under the care of Dr. Hoffmeister, of Cowes, who, with Dr. Cass, made a post-mortem examination. Dr. Hoffmeister says—"I had been attending Captain W—— for a week previously, during the whole of which time he had been suffering from very severe pain in the back and abdomen. There was marked abdominal pulsation, with a loud bellows murmur. He was occasionally soothed by opiates and chloroform; but on my visiting him on Monday last afternoon, I found him pallid, and dying. It appeared the bowels having acted, he laid down in bed, and immediately afterwards called out from the agony of the pain, and suddenly became deadly pale and faint. I was with him in about five minutes, and he lingered on till nearly one o'clock.

"The cause of Captain C. W——'s death," says Dr. Hoffmeister, "was, on post-mortem examination, found to have been the bursting of an aneurism of the abdominal aorta, immediately above its bifurcation, nearly four inches in length, and between two and three in breadth, the rupture taking place by a small opening at the back part of the aneurism, a little to the inner side, and just above the origin of the left iliac artery. The coats of the aneurism (at the lower part) were plated with ossific deposits, and there were also fibrinous deposits. The cellular tissue behind the viscera was very extensively infiltrated with coagulated blood; vertebræ not diseased." Dr. Hoffmeister adds, in another letter, that "the aneurism did not spring from a small opening in the side of the vessel, but was a general dilatation of the aorta. Captain W—— had been in the habit, for the past three years, of taking active exercise—hunting regularly without inconvenience. He, however, suffered for two, three, or four days, at intervals of about three months, from attacks of obstinate vomiting, attended with similar agonizing pains in the abdomen and loins, as for a week preceded the fatal termination."

From the accounts of his health and habits since he was under my constant care, I cannot help thinking that

if the poor fellow had led a quieter life in every respect—in fact, consented to carry out the same plans by which the character of the aneurism was so much altered that eminent surgeons doubted its existence—he might have lived many years; that the sac would have become firmly consolidated, its cavity obliterated, and the fatal termination averted for a long period.

On Diffuse Aneurism.

Diffuse aneurisms are not very frequent. A student may pass through his curriculum without seeing a case even in one of the largest metropolitan hospitals. An accurate diagnosis is of the greatest importance; nevertheless, the signs are sometimes so obscure that even the best practical surgeons have been deceived. I will relate a few cases which may perhaps assist others in arriving at a correct conclusion in diagnosing the disease, and guide them to the performance of an appropriate operation. If you diagnose a diffuse aneurism in the thigh or leg in its early state, you can generally save both life and limb by applying a ligature to the supplying artery. This must be done without delay, and no time must be lost by attempting to cure the disease by pressure.

The success of treatment by pressure depends upon the aneurismal sac being entire. To apply pressure to the artery which supplies a ruptured aneurismal sac is idle and foolish. Every minute lost is of irrevocable value. Limbs have been lost which might have been saved if the surgeon in attendance had ligatured the artery as soon as he detected the real nature of the disease. The disease seldom comes under the notice of the hospital surgeon until it is too late to tie the artery. The following case, which is related in the *Medical Gazette* for April, 1841, is so much in point that I must quote it very briefly:—

"The individual first noticed a swelling, which throbbed, and was painful, about five weeks previous to his admission under the care of Mr. Quain in University College Hospital, October, 1840. He did not desist from work until fourteen days after the time he first felt it in the popliteal space. It was a hard firm movable mass,

over the course of the femoral artery, discoloured over a portion of its surface, and marked by superficial veins. The patient experienced throbbing pain in it; the leg was considerably swollen; foot benumbed; and the knee, which was stiff, was the seat of a pricking sensation, and the patient had been salivated before his admission, under the idea it was rheumatism. A weak pulsation could be felt; the limb below was quite benumbed. The artery was tied in the thigh by Mr. Quain immediately, *i.e.* on the 15th, and the patient perfectly recovered. The œdema had disappeared by the 25th. The ligature came away on the 3rd of November, that is, twenty days from the date of the operation."

The next case I relate was more obscure, and from its obscurity very instructive.

Diffuse Popliteal Aneurism.

George L——, aged 33, rather tall, light hair, pale, sallow complexion, and considerably emaciated; has been in the silk trade. Admitted into St. Thomas's Hospital 16th of February, 1841, under Mr. Green.

Present State.—The right knee-joint is uniformly swollen, being more than half as large again as the left; not of its natural colour over its anterior and lateral parts, but of a dark livid, and in patches almost of a black appearance; in the popliteal region, where the prominence is greatest, the swelling is elastic to the touch; seems distinctly to convey the idea of fluctuation; no pulsation could be felt; it extends to four or five inches above the joint, beyond this the thigh is much emaciated and considerably smaller than the opposite limb. The leg is flexed, and he has no power of extension; says he has lost all feeling from the knee downwards for the last month; the leg seems perfectly dead to himself, but if pinched he has a sensation, though considerably impaired; the leg and foot are œdematous; the skin tense, but of its natural colour; he complains of a dull aching pain in the neighbourhood of and above the knee-joint, which disturbs his sleep; this is constant, but at times becomes excruciating, throwing him into profuse perspirations, from the effects of which, combined with the pain, he has been gradually losing flesh.

History.—Has of late become much reduced in circumstances, from having led a gay dissipated life, but has always enjoyed good health till attacked with the present complaint. In the beginning of September last (five months since) he had frequent pains about the right ankle-joint; the foot and ankle began to swell; could not assign any cause for this, but considered it of rheumatic origin. The swelling continued to increase; the pain also continued. In the beginning of December the parts behind the knee began to contract, so as to prevent his straightening the joint. Soon after this he perceived a swelling at the back of the knee; a few days

after which the knee became much swollen, the back part being harder than the rest; the pain was often very severe. Has had no shivering fits; no pulsation had ever been observed. Previous to admission into the hospital he had been under the care of a medical man.

Diagnosis.—Mr. Green considered the disease to be of a fungoid character. Mr. —— was of opinion that it was a chronic abscess. It was not considered to present any of the usual characters of aneurism.

Treatment.—Ordered, Pot. iodid. gr. iv.; inf. gentian, fo. ℥iss.; syr. papav. ʒj. ter die.; cat. panis genu applicand.

April 2.—Since he has been in the hospital the swelling on both sides of the knee has very considerably diminished, but the prominence at the back part remains as large as ever, though it diminished slightly a few weeks ago. The leg has been gradually getting harder for the last three weeks; it is now exceedingly hard, and the skin very tense, but of its natural colour; the sides of the knee are also very hard and unyielding. There is a superficial ulcer on the outer ankle, which discharges freely. A large vesication appeared under the knee, which burst, and discharged a quantity of clear fluid.

16th.—In the under part of the tumour a small swelling was perceived, in which Mr. —— made an opening, and a small quantity of dark bloody matter issued. After a few hours hæmorrhage came on, but was arrested by pressure before any considerable quantity of blood was lost.

19th.—A second hæmorrhage came on, but was commanded by pressure.

22nd.—A third and very copious hæmorrhage took place in the night, without the patient being aware of it; and in the morning his bed was found saturated with blood, which was dropping on the floor. Pressure was made, but repeated syncope came on, and he died at 9 A.M., April 23.

27th.—A post-mortem examination showed the tumour to be a false aneurism; the sac, formed by the condensed surrounding tissues, was extremely thick, and contained numerous concentric layers of fibrin, and coagulated in all its various stages. The artery presented a small irregular opening, about the centre of the popliteal space.

The next case is also to be read as a warning voice to avoid the rocks and shoals which beset its progress, though the termination was not fatal like the last.

Diffused Aneurism.

W. S——, aged 33, farmer's labourer, single man. Admitted into Williams' Ward on Tuesday, September 15, 1846, with a large tumour occupying the posterior and interior part of the lower third of the thigh—the popliteal space.

He states that about ten months ago, a piece of timber fell on the anterior part of his thigh just above the patella, which caused pain in that part of the limb for a day or two, but this soon went off, and he has felt nothing of it since. About six months ago, he had pain extending from the ham to the ankle for three or four days, when he perceived a small swelling in the popliteal space. It remained the same size for nearly two months, when after working all day in the wet, he was seized on the following morning with great pain in the tumour and down the leg, since which time the tumour has been gradually enlarging. About ten months ago he felt pulsation in the tumour, which continued for about six weeks, and then disappeared. Has had advice; poultices, lotions, and a blister have been applied, and an opening was made with a lancet, about six weeks ago. The lancet was not put in deep, and only a little blood came out. He appears very much out of health, and his countenance looks pale and haggard, and his features pinched; tongue moist, but coated; pulse weak; appetite pretty good; bowels regular.

Mr. —— made two punctures with an exploring needle, but nothing save a little blood came out.

Ordered, Lotio plumbi; full diet; porter, one pint; milk, do.

Sept. 18, 3 A.M.—He awoke feeling, as he said, as if something had given way in the tumour, and in great pain. The swelling was more tense, and somewhat increased in size; he complained of pain up the course of the artery. There was a lump formed in the night about where the saphena vein dips down into the groin. Tinct. opii, ℥xxv. stat. sumend. 3 P.M. — Pain not so violent, but continuing still up the thigh, and the swelling less tense. ℞ Pulv. rhei. c. cal.

Sept. 19.—Glands in the groin smaller. In other respects much the same.

20th, 10 A.M.—Mr. —— saw him this morning, and ordered him wine ℥iv.; morphia repet. stat. and cataplasm. lini. He appears still the same. 10 P.M.—Says he feels better to-night than he has done for some time. Has had no sleep since taking the morphia. The tumour is much softened by the cataplasm. lini.

22nd, 3 P.M.—An oozing has just commenced from the old lancet wound of a bright red colour, seems to be composed of blood and pus, which continued for about two hours. Pressure was made upon the femoral artery, which relieved his pain, and after a time stopped the oozing. 10 P.M.—Since the last report the swelling has extended nearly into the groin, but upon pressure being made upon the vessel the swelling subsided, and left the tumour of its former size. Mr. —— considered the swelling mere œdema. There is a livid spot near the lancet wound, and the skin appears to be very thin about that part. Mr. —— and Mr. —— saw him, and proposed the operation of amputation as giving him a chance, but to this he would not agree. He has taken the morphia, but has not slept. Ordered, Sp. vini rect. partis j., aquæ, partes ij., pro lotione. Pulse 146.

Sept. 23, 3 A.M.—Oozing came on again, continued but a short time; he expressed a wish to have the limb removed; Mr. —— was therefore sent for; he, however, determined to leave it till Mr. —— returned. He has taken in the night, wine ℥iij., brandy ℥ij. Messrs. ——, ——, and ——, determined that no operation was in the present condition advisable. Mr. —— therefore explained to the patient that he could by no means advise an operation, but that if he himself desired, on his own responsibility, to have the limb removed, no objection would be made. 3 P.M.—He expressed a wish to have the limb removed, and Mr. Solly, in the absence of Mr. ——, amputated the limb about 5.15 P.M., by the double flap operation. The vessels were tied and wet lint applied for about a quarter of an hour, when a general oozing came on from several small arteries at the back part of the stump; ligatures were applied in several places, but in vain, the actual cautery was then resorted to, and pressure kept upon the main trunk for about two hours, and he had no bleeding since. Twice during the time he was on the table the pulse at the wrist disappeared, and he was given up as dead, but was roused by means of stimuli. Soon after 10 P.M. he was taken to bed, his face and lips almost insensible, the pulse at the wrist scarcely perceptible. He had taken since the commencement of the operation nearly a pint of brandy, and half a pint of wine. 11 o'clock.—The stump was dressed; five sutures were put in and strapping applied, a broad roller also from one side of the bed to the other to keep the stump down; he took tinct. opii, 3 ss., which was repeated in the night without producing sleep.

Sept. 24, 9 A.M.—Mr. Solly saw him, and found him much in the same condition. Ordered, Tinct. opii, ♏xx.; ammon. sesquicarb., gr. v.; syrup. zinzib., ʒss.; aq. menth. pip., ℥j. 6tis horis; 4 eggs, jelly, arrowroot; extra strong beef-tea, Oij.; port-wine, ℥viij.; brandy, ℥viij.; tinct. opii, ʒj., horâ somni, et repet. 10 P.M.—Rather more sensible; says he feels as if he could sleep, but as soon as he closes his eyes he gives a convulsive start that draws the stump violently upwards, in consequence of which he is afraid to close his eyes.

25th, 9 P.M.—Took tinct. opii ʒss. at different times last night, without producing sleep. About twelve o'clock he began to be very violent: he put a towel round his throat and attempted to strangle himself, threw his body about, and scratched with his hands at everything within his reach; he drew his stump from under the roller, which was placed across it, and screamed and started in an awful manner. He remained in this state about three-quarters of an hour, requiring six or seven people to hold him down, besides the hand straps. He has only taken two doses of the mixture. Mr. Solly has just seen him; gave him a pint of stout, and ordered morphia hydchlor. gr. j. 2 P.M.—Has had no sleep since the last dose of morphia. 8 P.M.—Mr. Solly saw him again: rep. morph. 11 P.M.—Has been dozing.

26th, 10 A.M.—Has passed another sleepless night. About 12.30 he had another similar attack as the night before, but it was

not so violent, nor did it last so long: morph. hydroch. stat. About seven o'clock he fell asleep, and slept for nearly two hours; he then awoke, took some eggs and wine, and then slept again till soon after ten. He is rambling a great deal, and appears rather restless. His stump was dressed: one broad strap passed over the wound, and a roller applied. There is a great discharge of healthy pus; no attempt anywhere to unite by first intention. Much the same. Ordered, two pints of stout daily. 8 P.M.—Seems inclined to sleep; pulse stronger.

27th, 10 A.M.—Much the same. Pulse a little better. Bowels have not been relieved since 23rd. 10 P.M.—Has evidently been suffering from lodgment of pus; the sutures were taken out, and a poultice of linseed-meal with laudanum applied. Complains of pain at epigastrium. Refused all nourishment this afternoon, but took some brandy and water after the stump was dressed.

28th.—His stump has been dressed; a roller and fresh poultice applied. Has passed a pretty good night. Eaten four oysters. Seems to be much better.

29th.—The stump was dressed to-day; a fresh roller applied; a piece of lint dipped in black wash introduced, and a poultice over all. Several of the sutures have come away. Much better. The nervous twitchings in the stump, of which he has so much complained, have almost entirely disappeared.

30th.—Stump has been dressed. He is much better. Reported by Mr. ——, the dresser.

Oct. 6.—He has gone on well since the last report. The stump has assumed a healthy appearance, and is now dressed simply with strapping and roller. All the remaining ligatures came away this afternoon, including that in the femoral artery.

9th.—Going on well; no hæmorrhage. Discharged cured.

Varicose Aneurism.

H. Chandler, aged seventeen, was admitted into Henry's Ward, on October 15, 1847; complaining that he had a swelling in his thigh, which prevented his doing his work. He is strong and healthy-looking, temperate and regular in his habits.

Whilst engaged at his work (carving), he thrust a gouge into the inner part of his thigh. The wound bled freely; he was taken to the Middlesex Hospital (February, 1846), and remained there for five months. He says that the wound quickly healed, but a small tumour soon made its appearance under the cicatrix. From July, 1846, till now, he has attended to his occupation, and has had his thigh bound up with a roller.

Oct. 15.—At present there is a moderate-sized pulsating tumour on the inner side of the right thigh, over the course, and in the middle third of the femoral artery. Pressure on the artery above causes the pulsation to cease, and the sac to become empty and flaccid. A distinct and loud whirr is heard by means of the stethoscope.

16th.—The artery was tied above the middle of its course in the

usual way; no embarrassment occurred. The edges of the wound were closed by a suture and isinglass plaster. The limb was wrapped in a blanket, and the patient carried to bed. For several hours after the operation the heat of the limb was sensibly increased, but towards night the temperature diminished, and he complained of some pricking pain.

17th.—Has passed rather a restless night; slept a little towards morning. Pulse rather quick; tongue moist and clean. He progressed favourably, and recovered without a bad symptom.

I here bring my labours for the present to a close. The form in which I have presented them to the public, but more especially to my friends and former pupils, will, I hope, recall the happy days of hospital pupilage. As clinical lectures, they profess to relate nothing but that which concerns bedside practice, and the immediate application of the leading principles of surgery. They are, therefore, imperfect, because they do not go into all those details which belong exclusively to the regular course of lectures delivered in the schools. On this account it must be taken for granted that they are chiefly addressed to such as are already in some degree experienced in their profession, and that the beginner, while he cannot fail to gain an insight into the nature of the subjects he will necessarily have to handle, will, nevertheless, discover that he has yet much to learn before he can enter into the spirit and fully appreciate the value of the lessons he might otherwise gather from them. Those who are already engaged in the turmoil of practice will, I believe, agree with me, that it is pleasant in after years to refresh our memories by going back to the events in which we took our parts; to recover something from the lapse of time; to compare the present with the past; to live over again more than a quarter of a century—*grande mortalis ævi spatium;* and, in fine, to communicate to others what we know and think, before the promptings of ambition have ceased to lure us into the expensive luxury of print.

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