A letter to Sir Benjamin C. Brodie ... containing a critical inquiry into his "Lectures illustrative of certain local nervous affections" / by William Goodlad.

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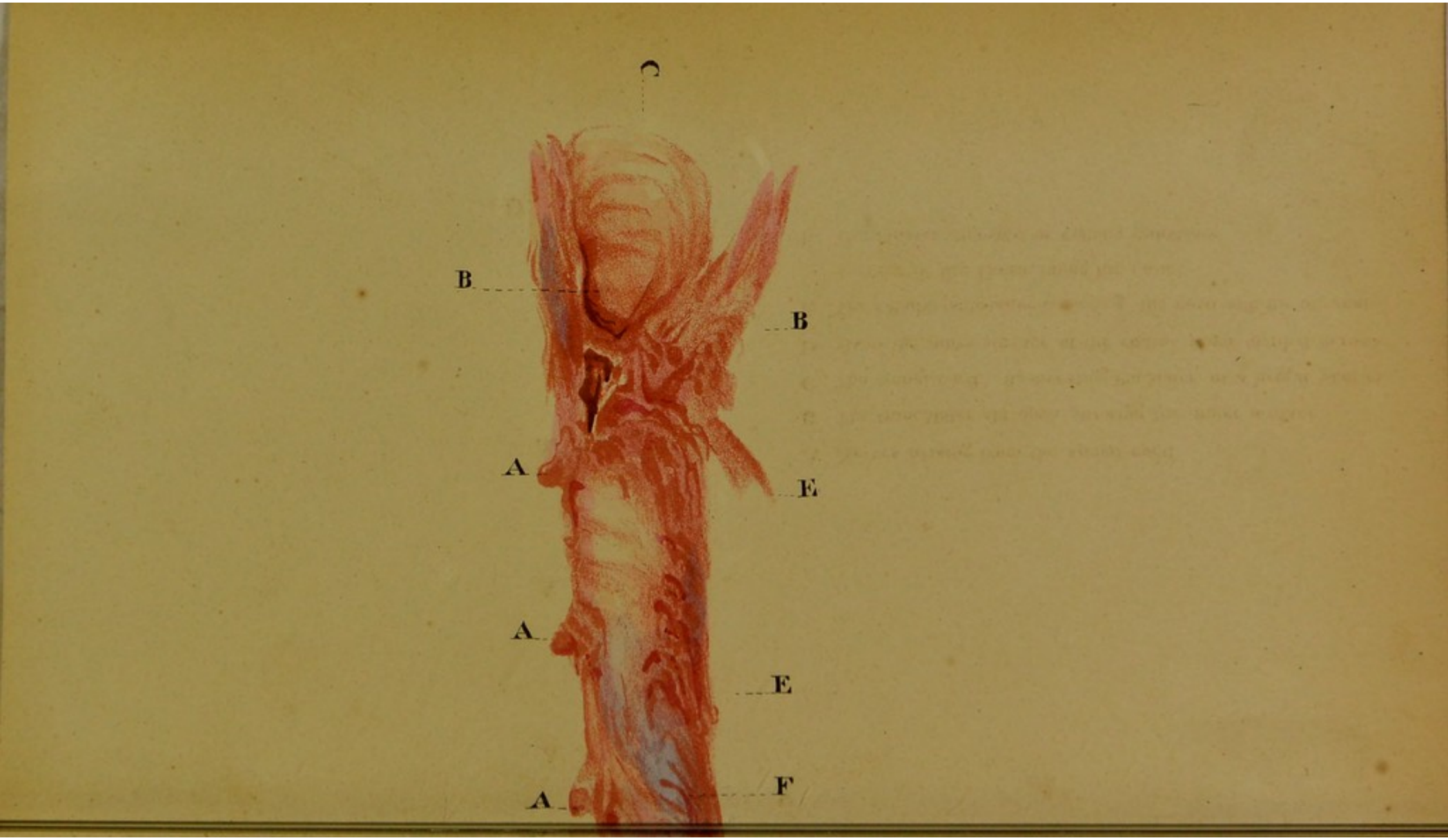
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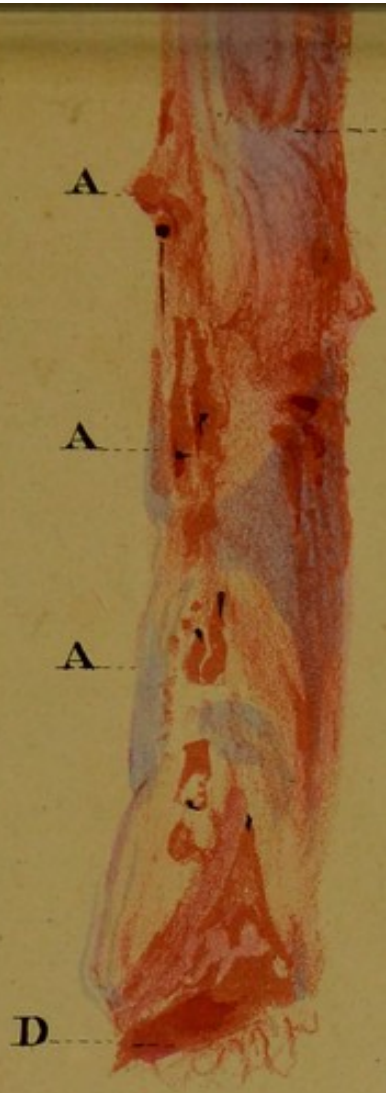

A. Nerves arising from the spinal cord.

B. The Dura Mater slit open shewing the inner surface.

C. The spinal cord _ its investing Pia-Mater of a bright Scarlet

D. Shews the inner surface of the coats, when divided across.

E. The Cellular substance connecting the cord with the internal surface of the Thera, lining the Canal

F. Dura mater divested of Cellular substance.

With the Author's respects

A LETTER

TO

SIR BENJAMIN C. BRODIE, BART., F.R.S.,

SERGEANT SURGEON TO THE KING,
AND SURGEON TO SAINT GEORGE'S HOSPITAL;

CONTAINING A CRITICAL INQUIRY

INTO HIS

"LECTURES

ILLUSTRATIVE OF CERTAIN

LOCAL NERVOUS AFFECTIONS."

BY

WILLIAM GOODLAD,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS AND OF THE ROYAL MEDICO CHIRURGICAL SOCIETY, LONDON;
OF THE LITERARY AND PHILOSOPHICAL SOCIETY IN MANCHESTER, ETC.

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TO

EDWARD HOLME, ESQ., M.D., F.L.S.,

LATE

SENIOR PHYSICIAN TO THE MANCHESTER ROYAL INFIRMARY, DISPENSARY, LUNATIC HOSPITAL, AND ASYLUM:

WHOSE

SIMPLE AND PRECISE VIEWS OF DISEASE,

AND WHOSE

HONORABLE AND INDEPENDANT CONDUCT IN THE PRACTICE OF HIS PROFESSION;

NOT LESS THAN HIS VARIED AND EXTENSIVE LEARNING,

ENTITLE HIM TO THAT

EMINENCE AMONGST HIS BRETHREN, WHICH HE HAS SO LONG ENJOYED:

THE FOLLOWING PAGES ARE DEDICATED

BY HIS FRIEND

THE AUTHOR.

ADVERTISEMENT.

Some apology seems necessary for presenting to the Public observations on doctrines which have been so long submitted to its judgment, and have obtained so large a share of that confidence which the talents and industry of the Author entitle him to expect. Having, however, during many years observation and inquiry into diseases of this nature, entertained different views, I deem it best to pursue the most direct means of testing their accuracy; after having waited in the hope that others more capable would have performed it.

Although fully conscious of my own incompetency to do justice to this subject, I hope the

reader will discover nothing which is not dictated by an anxious wish for the discovery of truth, and a desire to promote the best interests of the profession.

I wish it to be understood, that in every instance where individual cases are given, they appear to me to have been supported by many others tending to establish the same principle, though I deem it unnecessary to detail them. These observations have extended far beyond my expectation, and this circumstance will, I hope, justify the omission of some cases which, whilst the work was in progress, I intended to have added.

Mosley-street, Manchester,
April 13th, 1840.

"I do not flatter myself so far as to think that what I have here delivered, should be credited upon the authority of my slender judgment. And in reality, I have ever so lightly esteemed the sentiments of the generality of mankind, that I may always reasonably suspect my own when they clash with those of others; and I should be upon my guard in this case too, if my reasonings were not unanimously supported by practical observations. For setting aside these, what appears reasonable to me or any other person, may perhaps be nothing more than the shadow of reason, that is, barely opinion. And the more I converse with men, the more I am convinced how dangerous it is for persons of the acutest understanding to rack their brains in making a strict search into any art or science, unless matter of fact be constituted the judge and test of truth and falsity."

WALLIS'S SYDENHAM, vol. II. p. 68.

TO

SIR BENJAMIN BRODIE, BART.

SIR,

In the summer of 1821, a young lady who had been paralytic in the lower extremities, was taken by her friends to an eminent Surgeon in London, that he might suggest some means, not hitherto tried, for the removal of what weakness remained in them. She was then able to walk, though not to a great distance; she took exercise regularly when the weather permitted, but complained of fatigue in the back and aching in the legs, which were still often cold, after walking beyond a limited period. In other respects her health was good—her functions regularly performed. She had latterly been the patient of a noted "spine doctor" in the country, whose ointment she had used for several months with little benefit.

The spine was examined for curvature, but being found perfectly straight, she returned from London, assured, that she had never had complaint there, and that the pain and difficulty of moving, had arisen from irritation in the kidneys.

Her complaint had its origin apparently from an accidental fall on the back, in crossing a brook;

when she came with some violence with the lower part of the spine on one of the stepping stones, placed there to facilitate her crossing. She was a good deal injured by the fall, but after resting some time continued her excursion.

From this time she complained of pain in the back, which was followed by twitchings in the muscles of the extremities: by gradually increasing numbness in the legs, with less and less power in them; and at length she could neither lift a leg from the ground, nor, if walking was attempted, could the legs sustain the least weight: her extremities were constantly cold and insensible to external impressions.

It is not necessary in this place to dwell on the treatment which was pursued. After some months, sensation and the power of motion returned. The tenderness along the spine, which was confined to the lower dorsal and to the first and second lumbar vertebræ, decreased at the same time; the extremities gradually became warmer, and the patient, progressively but slowly, recovered her power over them: walking, as I have already stated, with perfect ease, though fatigued after a certain time.

Having superintended the treatment of this case in its early stages; and having attributed the symptoms I have endeavoured to describe to effusion, or compression of the spinal chord, the natural effect of local injury; I confess I saw no reason for changing that opinion; especially as I was unable to discover any disease or disorder of

the kidneys which would produce those symptoms. I felt satisfied indeed, that the Surgeon in question, though of great eminence, had not sufficiently distinguished between complaints in this part, which arise, independently of disease in the bone, and "Potts disorder," which has its origin in them.

At the period I have mentioned, few practitioners were, I believe, sufficiently alive to this distinction; and I have often felt anxious to discover, how far, the teachers of Surgery or of Medicine, in London, directed the attention of their pupils to this, then neglected, source of disease; and I read your "Lectures" with great interest, as likely to furnish information on the subject.

The relation which this portion of the nervous system possesses with the rest of the body, by nerves connected with it on the one hand, and with every viscus in the body on the other; would, a priori, seem to claim for it, great consideration in any work professing to treat of nervous disorders. The laws which you have enforced, and which regulate the functions of the brain, are equally applicable to every portion of the spinal chord. Injuries, when insufficient to destroy or impede the functions of the bones which cover it; or the ligaments which tie those bones together; are, nevertheless, followed by disorder in this delicate structure, as well as by complaints in other and distant organs.

It is this fact, which cannot be disputed, to

which the Surgeon to whom I have already alluded was inattentive, when he delivered the opinion I have quoted. Had he investigated carefully, he would have found the principal indications of disease below that portion of the spine, which furnishes twigs, to the renal plexus: and I may observe also, that the loss of function was confined to the nerves of sensation and of motion: the kidneys being in no degree affected.

But I venture to claim for the spinal chord and for the parts immediately adjacent to it, an importance in the production of disordered feelings in other parts, to a far greater extent. If this claim be well founded, we may be well excused for regretting that its influence forms so small a portion of consideration in the Lectures in question: so small indeed as nearly to be passed over; although it may, I apprehend, be demonstrated in most of those cases which are considered anomalous.

In your elevated position in the profession; with your extensive opportunities for investigating disease; with undoubted zeal; and with the almost unlimited confidence of your professional brethren and of the public; the doctrines you teach and the practice you enforce are of great importance and extend through a wide sphere. If in any degree erroneous, the consequences of those errors can scarcely be calculated. Yet I should not have ventured to address you concerning them, had I not found your theories were adopted and copied into works which extend further than your own school. There appeared energy enough in

the medical literature of the day to produce a different result. Practitioners are now generally aware of the importance of this class of diseases, and many also look to this origin for them: but to those who have only authority for their guide, it may still be important to question many of the positions you lay down; and I hope you cannot object to the inquiry, if conducted, as it ought to be, for the attainment of truth. Indeed, when we are informed that these diseases "meet us at every turn;" when "the diagnosis" is declared even by you to be "really difficult;" when it requires "a very minute observation" and "much exercise of judgment to understand the real nature of the case," "so as to be enabled to determine where the primary disease is situated, and in what it consists;"* "when it becomes a matter for consideration if the limb must be amputated or the nerve divided," and "where it is deemed necessary to remove the limb" almost bit by bit and joint by joint, until nearly every particle of nerve which can convey sensation is taken away: this uncertainty and these facts justify, I hope, any attempt, however humble, which can possibly tend to throw light on the obscurity on the one hand, or lessen the misery on the other.

It is then, with no feeling of disrespect that I remark how little practical information your Lectures contain; and how small the hope of benefit

* Lectures illustrative of certain Local Nervous Affections, by Sir B. Brodie, Bart., &c. p. 26.

we derive from the doctrines there inculcated. We "must be satisfied to wait, and watch the further progress of the disease;"* we are to "be satisfied that we can do as much as our neighbours;"† "where nothing better can be done," "we may endeavour to mitigate the patient's sufferings by the use of the local vapour bath," "by the application of the opium or hemlock, or what is still better, the belladonna plaster;"‡ though it is declared elsewhere that "we shall do little good by such a loose and empirical mode of practice."‖ "When the limb is alternately hot and cold," and "whilst hot," we are taught to expect "excellent effects" "from a compress applied wet, with a cold spirituous lotion;" and when the limb has become cold, "a thick woollen stocking is to be drawn over it,"§ "and then an oiled silk covering over the worsted stocking, so as to confine the heat and perspiration."¶

"When the symptoms appear in the form of muscular spasms or paralysis, according to my experience," you say, "remedies are of little avail."** "The spasms may subside spontaneously, but they are not to be relieved by art."†† "It is different, however, with nervous pains; and for these, local applications of belladonna, or hemlock; stimulating liniments, combined with laudanum, may be employed with advantage; removing the pain perhaps for a time, perhaps

* Lectures, p. 26. † Ib. p. 24. ‡ Ib. p. 27. ‖ Ib. p. 23.
§ Ib. p. 78. ¶ Ib. ** Ib. p. 32. †† Ib.

permanently, although the disease on which the pain depends is slowly but progressively advancing."*

If we pass over this "loose and empirical mode of treatment," relieving pain "permanently" whilst the disease is "advancing," and seek for diagnostic signs, which may enable us to distinguish nervous affections from others—we are told, that "nervous pains" may, "in the first instance, be readily distinguished from those produced by inflammation by the absence of throbbing, by their not being increased by pressure; by their being no evident turgescence of the small vessels."† Yet, when "a lady labours under inflammation of her leg," "the whole leg being swollen from the toes to the knee," "the skin being red," "painful," and "tender,"‡ (there being therefore evident turgescence of the vessels, and this turgescence the first symptom,) we are taught that it ought to be considered "as belonging to the class of nervous affections."

If we seek from the character of the pain, to distinguish its origin, we are told that "nervous pains give no indication of the seat of the disease:"‖ that, "as far as your own experience has yet gone," "the character which the pain assumes, teaches us but little as to the origin of the disease, or the remedies by which it is to be cured:" that "the pains vary, not only in degree but in

* Lectures, p. 33. † Ib. pp. 17, 18. ‡ Ib. p. 31. ‖ Ib. p. 19.

kind:"* that "they are sometimes described as dull and wearying;" "at others, and more frequently, as sharp, darting, and stabbing:"† and, "that it is not possible, judging from the kind of pain, to pronounce that it arises from this or that cause, or that it is to be cured by this or that remedy."‡ So that, after all, we are left without a guide, and are compelled, so far as is seen hitherto, to trust to "loose and empirical practice" in the one case, and to leave the patient to his or her fate in the other.

Laying aside these objections, your hearers might conclude with some degree of reason, that the cause for "nervous pains," for "involuntary muscular motion," and for "paralysis," might be found at the extreme points of the nerves, where, indeed, the pain is always experienced; or in the muscles, to which their ramifications extend.

But you teach, what I am not prepared to dispute, that "the natural sensations of a part, may be increased, diminished, or otherwise perverted, although no disease exists in it which our senses are able to discover either before or after death;"‖ and if we look for causes at that extremity of the nerves which connect them with the brain, or with the spinal chord, we learn that, "though in many of these cases, the cause of irritation seems to operate on the same part of the sensorium," "at other times *it has no determined seat.*" That "it may affect at first one portion of the

* Lectures, p. 19. † Ib. p. 17. ‡ Ib. p. 20. ‖ Ib. p. 2.

brain to which a certain function belongs, and then it may affect another portion whose function is entirely different, and the symptoms vary accordingly."*

It seems necessary to condense into as small a compass as possible, the reasons you assign for this diversity of feelings, this incertitude in practice, and want of control over these disorders. Yet, as they are illustrated by many cases, it cannot be wrong to lay one of these before the reader, and direct his attention to it.

"A lady consulted me concerning symptoms which were ascribed to a stricture of the œsophagus. She was unable to swallow the smallest morsel of solid food, so that she was compelled to subsist entirely on liquids, and even these she swallowed with great difficulty. These symptoms had been coming on for upwards of three years. I introduced a full-sized œsophagus bougie, which entered the stomach without meeting the slightest impediment. From this and other circumstances I was led to conclude that the difficulty of deglutition was merely a symptom of some other disease. The lady's face was bleached, as if she had suffered from repeated attacks of hæmorrhage, and her feet were in some degree œdematous. On inquiry I found that she had long laboured under internal piles, from which had taken place repeated discharges of blood. To this last disease then I directed my chief attention, prescribing a cold

* Lectures, pp. 7, 8.

lavement to be injected every morning; and at the same time a solution of the sulphate of iron, and sulphate of quinine, to be taken three times daily, by the mouth. When this plan had been persevered in for three weeks the piles were much relieved; they no longer protruded externally; there had been no recurrence of hæmorrhage; her cheeks were less pale; and she swallowed with comparative facility. At the end of six weeks more the piles occasioned very little inconvenience; she had lost no more blood; her general health was much improved; and there was so little difficulty of deglutition that I had no hesitation in recommending that, after her return to the country, she should swallow a bolus of Ward's paste three times daily, with a view to the cure of the hæmorrhoidal disease." *

I have quoted this case at length because it furnishes you with the following reflections:— "The pathological history of these local nervous affections constitutes in itself a most curious and interesting object of research; but it has another and still stronger claim on your attention. Your patient wishes to be cured: he has of course no other reason for consulting you. Now you may supply yourself with a list of what are called nervous remedies; prescribing for example the carbonate of iron first, changing that for the extract of belladonna, and that for something else, trust-

* Lectures, pp. 22, 23.

ing that accident will at last enable you to hit on the right expedient."*

I have already shewn that you condemn this application of chance remedies; but it is not I hope trespassing on the fair limits of criticism to remark; that this case, and most others, furnish us with no better clue. The "pathological history of these cases" does not seem to be given. There always appears some link in the chain of circumstances which is withheld. We have no remedy administered in the most diverse states of the system, but quinine. In inflammation of the leg and in paralysis of the pharynx and œsophagus, the same remedy is a specific. And it is frequently difficult to trace, the connexion, as it is in this case, between the cause assigned, and the effect produced. "Difficulty of deglutition" may be "merely a symptom of some other disease;" but is neither a necessary, nor a common sequence to "attacks of hæmorrhage," to "œdematous feet," nor to "internal piles." Why any, or all of these, were accompanied, as in this case, with symptoms resembling stricture; or with difficulty of swallowing from any other cause, no where appears.

Those cases of pain and of convulsive action which are attributed to external causes, and are described in your first Lecture, are important and instructive. They serve to illustrate the effects arising from injury or disease affecting the trunk of a nerve; but in other instances "the different

* Lectures, p. 23.

circumstances under which they occur," their origin "from such different causes," "their great variety of character," preclude more than "a general notion," and the rest is left to that "experience" which in after life will enable your pupils "to supply the deficiency."*

Now if your unlimited experience has led you to conclude that "remedies are of no avail;" "that we must wait and watch the progress of symptoms;" "that muscular spasms are not to be relieved by art:" if we are "to content ourselves with a warm stocking, and over that stocking a silk oilcase," there seems little inducement for others to "investigate pathologically" in similar cases. It may never occur to them that whilst they "wait and watch," "the disease is advancing," for you assure them that "many of these cases have nothing in their history connected with any morbid growth or morbid change of structure," and with that assurance they will see reason to rest satisfied. Such is said to be the character of hysteria. It simulates diseases of morbid growth. It is said to be found in all structures, and assumes all shapes. If then we can consider these affections dependant on hysteria, there seems no need of further inquiry. All cases, whatever their nature, if incapable of explanation, may thus be considered hysterical; the laxity of description, the seat of the disease, the character of the symptoms, the nature of the

* Lectures, p. 16.

pain, all avail nothing, if the term hysteria can be applied to them.

Yet if, as I hope to shew, in hands like yours this doctrine leads to false conclusions, and dangerous, because inert, practice; if under this name disorganization creeps on whilst the practitioner is "waiting;" and if your Lectures establish this fact; it requires little more to point out the necessity of confining this term to its legitimate meaning; and of warning those who may come after us of a fact so important.

In page 59 of your Lectures you remark, "I have seen several cases of a singular affection of the hand and wrist, which manifestly belongs to the class of cases (Hysteria) of which we are now treating. It occurs in females who have a disposition to hysteria, especially in those who have suffered from mental anxiety and over exertion." After some further observations, to which I may refer the reader to your Lectures, you add, "I attended a lady who laboured under the symptoms I have just described, with the late Dr. Luke. She left London on a visit to the Continent, without any amendment having taken place. I saw her again after a lapse of four or five years; the muscles of the fore-arm were at this time wasted and paralytic; the whole hand was shrivelled and useless; the fingers permanently contracted towards the palm of the hand; the nails thin and scabrous."*

* Lectures, p. 60.

Another hysterical patient "had oppression and difficulty of breathing, occasional twitchings of the muscles of the face, and any sudden motion of the hand aggravated all these symptoms, and threw her into a state approaching to that of syncope, in which she was almost unconscious of all that happened, lying with the eyes wide open, and at last recovering with an hysterical sobbing. Her pulse was feeble, beating 120 strokes in a minute. Forty ounces of urine were drawn off from the bladder by the catheter, but without any relief to the other symptoms; the tongue became black and dry; the pulse more feeble; the belly tympanitic; the alvine evacuations of a black colour. Then there was hiccough and vomiting; she became weaker and weaker, and died after the lapse of fourteen days from her admission into the hospital.

"After death the thoracic and abdominal viscera were carefully examined, but no morbid appearances were found in any one of them, with the exception of the very peculiar condition of the bladder, which was described formerly, and two ulcers of the mucous membrane of the ileum."* The state of the first of these organs is thus described: "the bladder was found of a very large size, of a dark and almost black colour: *there were only slight vestiges of its natural structure left*, the muscular fibres being very much wasted, and the internal membrane presenting the ap-

* Lectures, p. 68.

pearance of a very thin film, which was readily separated from the parts below. The dark colour of the bladder did not seem to arise from mortification, there being no fœtor, and, with the exception of the black colour, no indication of it."*

The disease in these cases was connected with, and terminated in a morbid change of structure. The latter is characterised by you "a neglected" case of hysteria; but if hysteria does not terminate in, and does not "lead to morbid change of structure," all those cases in your Lectures which have such a termination ought to have been excluded from the class, and the treatment too becomes in those cases very questionable. Such a theory, indeed, necessarily leads to inert treatment. Nothing but the doctrine could justify, if that could, a distension of the bladder till forty ounces of urine were withdrawn from it: and any doctrine which justifies, or appears to justify such "neglect," should surely be received with extreme caution, however high the authority which promulgates it.

That the opinion justifies the practice, is evident from other parts of your Lectures. "Females who labour under hysterical retention of urine, if left to themselves, usually recover in the course of a short space of time; sometimes almost suddenly; but if the catheter be employed, their recovery may be protracted to an indefinite

* Lectures, p. 50.

period."* "We may lay it down as a general rule, that in these cases the catheter should not be had recourse to; and the only exceptions to it are in those extreme cases *in which paralysis has taken place*, and the bladder is likely to become diseased if not artificially relieved."†

The result of this doctrine was, that a patient died, after fourteen days' residence in a hospital, with "the bladder of a very large size;" "with only slight vestiges of its natural structure;" "the internal membrane like a thick film only, and readily separated from the parts below:" and as if, in contradiction to previous opinions you admit that "the mucous membrane becomes affected with chronic inflammation, secreting the usual adhesive mucus;" and "that even worse consequences may ensue than these."

But it is scarcely to be admitted that the symptoms during life, viz., "the black and dry tongue," "the pulse 120, more and more feeble," "the belly tympanitic," "the hiccough and vomiting," any more than the examination after death, give the least sanction to this doctrine of hysteria.

Those who are conversant, as you are, with the effects of distended bladder with stricture, when extravasation has taken place; or with others where the practitioner, misled perhaps by the dribbling of urine, has neglected and overlooked the enormously distended bladder; who have witnessed the brown or black tongue, the low muttering deli-

* Lectures, p. 50. † Ib.

rium, the quick pulse "more and more feeble" in such cases; will be able to trace a more intimate connexion between the bladder of "a dark colour, almost black," and the symptoms during life; and would have sought for no further evidence of disorganization, than this "distended" bladder of a "black colour," these attenuated coats, and this easy separation of them.

The doctrine of hysteria in this case obtrudes itself into the whole history. From any thing shewn in the relation of it, to the contrary, the whole train of symptoms arose, as is most probable, from paralysis of these "attenuated fibres:" not paralysis arising from distension only, but the effect of disease in other parts.

The origin and progress of this state were overlooked from this preconceived opinion in the mind of the practitioner; and the practice accorded with it: for though forty ounces of urine were drawn off, we are no where informed that this operation was repeated, nor how many of the fourteen days elapsed either before or after this operation: but we are told that the bladder after death was of "a very large size," and the conclusion therefore is irresistible, that it was not repeated at all, or not with sufficient frequency.

If this case had been set up as a beacon to warn your pupils of the danger of the doctrine of hysteria, it could scarcely have been more instructive; and it is precisely because it furnishes an alarming proof, how, even when united with the greatest intelligence, this theory leads to fatal

consequences, that it becomes an imperative duty to examine it. And hence it is, that when you say "there was no sign of mortification but the black colour," and infer that the colour was not dependant on that cause, since there was no fœtor; it seems right to remind you that in strangulated hernia there is often "no fœtor," though the intestine is found "almost black;" and that where it is so, and especially where "the coats are easily separated from each other," no Surgeon has ever questioned, either that mortification already existed; or that the part was on the verge of mortification.

If this case had depended on organic disease originally, its progress would, it is believed, have been precisely what is here narrated; and in the case before alluded to, in the patient whose hand became "shrivelled and useless," the disease proceeded, by slow degrees indeed, but still proceeded to loss of function and structure: the fore-arm being entirely useless in the one case, as the bladder was powerless in the other. The "shrivelled muscles" and the "attenuated muscular fibres," could not have been more perfect specimens from organic disease, than they are thus described, although only the consequence of an affection having no such tendency.

Anticipating some such objection, you ask, "is there any sufficient evidence that symptoms so various and dissimilar as some of those which have been described, depend on one and the

same cause?"* and you refer to Sydenham's Observations on Hysteria, in which he has endeavoured "to point out the symptoms which may mislead the medical," as you, "following his example," endeavour "to point out those which may mislead the surgical reader."†

If science rested on authority, it would be difficult to mention any name which could command greater attention. No one who considers the incalculable benefit arising from his treatment of small pox, will hesitate to give to Sydenham, and to his name, every respect and consideration.

But it is not certain that the revival of his opinions on hysterical disorders will add to this feeling; and it will, I apprehend, be admitted by all who examine his treatise on that subject, that he has confounded diseases which "have a tendency to produce morbid change of structure, with those which have not:" and that the theory which appeared to him to justify such a combination, is now, and I must add, justly exploded. Indeed, he no where confines the diseases which he calls hysterical within these limits, if loss of function be the precursor to loss of structure. For after attributing hysteria to "irregular motions of the animal spirits," he adds, "whence they are hurried with violence, and too copiously to a particular part, occasioning convulsions and pain, and *destroying the functions of the respective organs*

* Lectures, p. 64. † Ib. p. 65.

which they enter into, and of those also whence they came."

It is curious that though Sydenham's authority is assumed, the original and the copy frequently differ, even in essential points. In these Lectures you declare, that in paralysis arising from hysteria, "it is not that the muscles have lost their power, but that the function of volition is not exercised;"* the patient could, therefore, walk if she willed it. Sydenham, on the other hand, declares that "the positive command of the proudest stoic would not sooner relieve in hysteria, than the tooth-ache would be prevented by a person's firmly resolving not to suffer his teeth to ache."†

You say, "that hysterical complaints are connected with laxity of tissue."‡ Sydenham, who is your guide, says "one species of the disease which is commonly entitled strangulation of the womb, or fits of the mother, happens most frequently to such women as are of a very sanguine and robust constitution."‖ Sydenham adds also, "hysteria attacks the head and causes an apoplexy, which also terminates in hœmiplegia;"§ "exactly like that kind of apoplexy which proves fatal to some aged and corpulent persons:" but you aver, as we have seen, that the paralysis arising from hysteria differs from that produced by other causes, "by the want of exercising volition" in the one case, and the loss of it in the other.

* Lectures, p. 48. † Wallis's Sydenham, vol. II. p. 123. ‡ Lectures, p. 71. ‖ Wallis's Sydenham, vol. II. p. 108. § Ib. vol. II. p. 106.

Sydenham, indeed, says "that the apoplexy of hysteric women proceeds from a different cause;" but he rather hazards an opinion than establishes a fact, when he assigns, and it is the only reason which he gives in support of it, "that it seizes them frequently after a difficult delivery attended with great loss of blood." "The apoplexy of aged and corpulent persons," frequently occurs also after loss of blood, and as often, perhaps, from "some violent commotion of the mind." But whether this be so or not, it will be observed that, in his opinion, the effect is precisely similar, whether arising from hysteria, or from other causes.

Sydenham maintains that there are two indications of hysteria: "the passing of green matter from the stomach and bowels, and a large secretion of limpid urine." You pass over both these symptoms without notice, except in one instance, which is contradictory to the authority of Sydenham. "In aggravated cases of hysteria, it is not uncommon to find the urine depositing a large quantity of lithic acid in the form of sand, or the urine may be voided high coloured, depositing a pink amorphous sediment;"* and this discrepancy becomes the more striking, when we find on the one hand the urine considered a cause of hysteria,† in the other an effect only.

I have already remarked that Sydenham classes many disorders under the term "hysteria," which

* Lectures, p. 76. † Ib. pp. 76, 77.

would have been more correctly omitted. It will be sufficient for my purpose to adduce the following:—

"Sometimes," says he, "attacking the parts beneath the scrobiculus cordis, in a violent manner it occasions extreme pain like the iliac-passion, and is attended with a copious vomiting of a certain green matter nearly resembling what is usually termed porraceous bile; and sometimes this matter is of an uncommon colour, and frequently after the pain and vomiting have continued several days and greatly debilitated the patient, the fit is at length terminated by an universal jaundice."* Now, graphic as this description is, there are few practitioners of the present day who would consider an attack such as is here described, connected with hysteria. The pain and vomiting followed by jaundice much more nearly resemble an attack of gall-stone, and but for the "porraceous bile," one of Sydenham's characteristic symptoms of hysteria, would probably have been so considered by him.

In another place this author proceeds to say, that "a woman of slender and weakly constitution is happily delivered, and in a few days after is persuaded to sit up in bed." "The patient is immediately seized with hysteric disorder, and as it increases, the lochiœ are first diminished, and then entirely suppressed, and their unseasonable stoppage is succeeded by a

* Wallis's Sydenham, vol. II. p. 108.

numerous train of symptoms which soon prove fatal."*

Should doubts arise whether this so called "hysteric disorder" "which soon proves fatal," is not in fact a concise history of puerperal peritonitis; these doubts will be removed by the account given afterwards, by this great and good man, when speaking of the treatment necessary to be followed in such cases; and in the same lucid manner, he narrates the symptoms of puerperal mania, puerperal convulsions, phlebitis or phlegmatia dolens, all of which he describes as "frequently fatal," and yet attributes them to an "overflow of the spirits producing hysteria."

It can scarcely be necessary to compare Sydenham's opinions on hysteria, with the definition of it given by other authors: it will be sufficient to note that neither Vogel, nor Sauvage, nor Cullen, agree with his doctrines on this subject; and that those amongst them who give to this term the greatest latitude; and all by whom it has been considered a sufficient explanation of what could not be understood; agree chiefly in this, that diseases are simulated, which if real, would be accompanied with great danger. Whereas under this term of an "hysterical constitution" you describe, and attribute to this state of the system, diseases actually existing, requiring the most active treatment, where the sufferings are not simulated, but where the patient implores for the

* Wallis's Sydenham, vol. II. p. 164.

removal of a limb, as affording the only hope and only chance of being relieved from pain which is insupportable; and class them with others arising from a weak mind, a disordered imagination, or from wicked propensities. Sydenham's authority, great as that is, should scarcely be deemed sufficient to justify any opinion which attributes these and the variety of ailments which you describe "to the same state of the system;"* and his doctrines, if they justify such a conclusion, seem calculated to "mislead," not to instruct, the surgical practitioner.

Whatever is the cause of hysteria, or with what part of the system soever it may be connected, all authors are agreed in its fugitive character; the patient being restored to the usual state of health on the paroxysm subsiding; every mental and bodily function being performed with the same activity as before the attack, whatever that activity and power may have been. One of the latest and one of the most learned amongst medical writers defines hysteria "convulsive struggling, alternately remitting and exacerbating, rumbling in the bowels, sense of suffocation, drowsiness, urine copious and limpid, temper fickle." The same author expressly states, after Sydenham, though with greater latitude still, "that there is no frame that may not become a prey to the species of spasmodic action we are now describing; and that the most violent instances of hysteric struggle that

* Lectures, p. 65.

occur to us, are in young women of the most robust and masculine constitution."* If this definition and this description of what we now call hysteria be correct, we may safely assume that wherever there is permanent loss of function, and especially of structure, the case is not hysterical.

That which in its own nature is not permanent, cannot explain states of action which are so: the enlarged liver and spleen found with ague, are nevertheless morbid changes of structure, which it would neither be correct in principle to speak of as ague, nor safe in practice to treat as such.

Nor can it be philosophical to consider all functions which are disordered, and all parts which are disorganised, as "hysteria," or effects of an "hysterical constitution," merely because there existed previously in the same individual, or may co-exist, "a spasmodic action" of particular muscles, accompanied with "rumbling in the bowels," with "a fickle temper" and "a large flow of limpid urine."

If this be once admitted, there is no limit beyond which it may not be carried: the more especially since there is no constitution which may not be subject to it. And if all diseases which arise in constitutions of "delicate organization," or with laxity of fibre, whether "laxity of the nervous system," or "laxity of other parts unconnected with

* Good's Study of Medicine, vol. 3. p. 531.

the nervous system," are to be considered hysterical, phthisis pulmonalis, which above all other diseases is connected with delicate organization and laxity of fibre, must be considered hysterical when the patient has previously suffered from hysteria; and scrofula, and scurvy, and every other disease must be considered, by a parity of reasoning, hysterical diseases, and be treated accordingly.

Such are a few of the objections which have presented themselves to my mind, to the doctrines of hysteria, whether as given by you, or by Sydenham. Differing as they do from each other, they each embrace so wide a sphere that Sydenham's declaration of the frequency of these complaints can excite little surprise. This author's views are, indeed, though ill-defined, and embracing diseases which cannot be considered belonging to hysteria, as it is now described by medical writers, so far correct, that the symptoms he relates, many of them at least, arise from alternations in the uterine system: whereas you admit that the diseases the subject of your Lectures have no such origin,—but on the contrary, are dependant on states of the nervous system, which you no where explain. You confine them within no limit; but admit that all degrees of disorder, constitutional or local, may arise from a state of the system which you call hysterical: and as we learn best to appreciate other men's doctrines, by their rise and progress in their own minds, I shall beg to transcribe the cases given by you which "first

led you to suspect the real origin of the symptoms which you had not comprehended formerly."*

"I was consulted concerning a young lady who complained of severe pain and a morbid tenderness of the knee, in the first instance attended with no perceptible enlargement of the joint. The remedies which, with such knowledge as I then possessed, I was led to recommend gave her no relief; and after some time a slight degree of tumefaction took place, depending, as it seemed, either on a fulness of the small vessels, or on effusion of lymph or serum into the subcutaneous cellular texture. She had been in this state for a considerable time, when she was seized with a succession of violent paroxysms of hysteria, which terminated in an hysterical affection of the brain; so that she lay in a state approaching to that of coma, with dilatation of the pupils of the eyes.

"She was now attended by the late Dr. Babington and myself. I do not undertake to say whether the disease yielded to the remedies employed, or reached its natural termination; but, from one or other of these causes, the patient recovered of the last mentioned symptoms, and from that time she never complained of her knee. Not long afterwards, another young lady was brought to me, labouring under what had been supposed to be a scrofulous disease of the wrist. The resemblance of this case to that of the last mentioned patient led me to doubt the correctness of this

* Lectures, p. 34.

opinion, and the results proved my doubts to be not without foundation. She also was seized with a succession of violent paroxysms of hysteria; and when, after the lapse of many days, she recovered from them, the disease of the wrist had vanished. It seemed impossible to doubt, that in each of these cases there was some connexion between the local symptoms and the constitutional disease under which the patient laboured; and a great number of other cases, which fell under my observation afterwards, confirmed me in the opinion; that where there is that state of the general system, whatever it may be, which produces the phœnomena of hysteria, it is not uncommon for a particular joint to be affected with pain and morbid sensibility, such as may lead a superficial observer to believe that it is the seat of some serious local disease, although no such disease in reality exists."*

It would be as idle to deny the importance of these cases, as to dispute the opinion with which the relation of them concludes. Pain in a joint is often witnessed, which has led, and does lead, superficial observers to believe it the seat of local disease, which does not exist there. Even in this day it is not very uncommon to find the knee wrapped up for pain there, the disease being in the hip. But the conclusion does not therefore follow, that there is not local disease existing in other parts, which gives rise to the local pain;

* Lectures, pp. 35, 36.

nor that this disease "has no determined seat," because a fit of hysteria, or a comatose state of the brain follows, and cures it. On the contrary, it may be assumed as an axiom which will bear universal application, that wherever there is continued pain, there is increased vascular action somewhere; the discovery of the seat of which becomes the duty of the practitioner. I shall endeavour to illustrate this subject hereafter; my present object is to remark what might, in other hands, be considered the hasty inferences drawn here, by the existence of hysteria.

It is one of the doctrines of John Hunter, that no constitution, and no part of the system, can support two actions at the same time. The results you describe would therefore have occurred, if the local pain and the local swelling had arisen from other than hysterical causes, as they would also, if the constitutional disturbance had arisen from typhus, or from any disease severe enough to have changed, perhaps temporarily, perhaps permanently, whatever local disorder had existed previously. This is daily witnessed, but is no proof of their identity. A man who had an intense pain in the face, resisting all common remedies, was seized with erisipelatous inflammation, which was so violent as to endanger his life, accompanied with great tumefaction and great delirium; he recovered with difficulty, and from that time had no return of the pain in the face: would it, therefore, be correct to say that the primary disease was an erisipelatous disease, arising

from an erisipelatous constitution? Supposing another case occurred, which you will find related in one of the early numbers of the Edinburgh Medical and Surgical Journal: a man subject to epilepsy for many years, fell in one of these fits under the fire grate, the whole scalp being extensively burnt, and afterwards sloughing. The patient recovered after suffering severely, and after a copious discharge from the injured surface. Does the cure which took place in consequence prove the identity of the two actions—the cause and the cure?

A man with herpetic eruption on the skin, was seized with typhus, the nature of which cannot be doubted. On his recovery, the herpetic eruption was removed, and did not return. Are the two diseases, therefore, synonymous? Again, it is so commonly observed, as to be proverbial, that small pox "cleanses the blood," as it is said, by removing for ever all previous eruptions. Does this again prove their identity?

I submit that the evidence you adduce in the cases above quoted, is no greater proof of the identity of the two diseases than in those instanced here, and that their identity is not proved in this relation of them. On the other hand, if we admit that the pain in the one case, and the swelling in the other, were the effects of local disease, it matters not where, any additional cause, sufficient to influence the whole system, would either give great activity to a complaint already existing; or if of sufficient violence would supersede it. Your

cases prove a part of this position, but they seem to me to prove nothing more.

Other difficulties present themselves. Epilepsy it is well known, occurs with hysteria, the paroxysms of which often approach to, and indeed terminate in the former disease. If the reasoning already alluded to so often, be admitted; epilepsy becomes in this case an hysterical disorder, whether it precedes, accompanies, or follows "fits of the mother." Again, asthma accompanies, and alternates with epilepsy, as will be noted in these pages: that asthma which is unaccompanied with any other disease, and which like epilepsy attacks the patient at uncertain intervals, and like hysteria leaves him on its decline with every function unimpaired. Asthma must, therefore, be a consequence of hysteria, and of an hysterical constitution. These are results of the doctrine you advance, which cannot be disputed. But they require much more than is stated, to explain the connexion which, no doubt, exists between them. They are distinct diseases, arise from distinct states of the nervous system; and no man would, in this day, be considered a pathologist who confounded them together under one name, or considered them the consequence of similar actions. Yet, hysteria and asthma are not more opposite than "severe pain" or "morbid tenderness in the knee," and that state of the brain denoted by a largely "dilated pupil:" that state, which you call "an hysterical state of the brain," denoting compression of the nerves arising from it, and venous

congestion in the vessels of that organ. From hysteria to epilepsy, as well as from epilepsy to asthma, a change in the local actions must take place before the phenomena arising from them can be accounted for; as there must also, I apprehend, before acute pain in one nerve can be transmuted to compression of another; these changes being necessarily discovered and traced before the "pathological history" of them can be understood.

It would be both important and instructive to inquire how much injury would be inflicted on the practice of medicine, or of surgery, if the terms "hysteria" and "hysterical constitution" were exploded from medical writings. It is at least certain that the use of them appears to reconcile doctrines, which otherwise seem inconsistent with each other. Thus where constitutional causes are assigned as the origin of complaints which have been permanent for months, and even for years; we should generally, I believe, expect that a long course of remedial measures would be necessary to remove them. Yet if they are hysterical, we find that "a sudden snap," "the fall off a donkey," "the removal of a molar tooth," or even "turning in bed," is sufficient for a cure: and the conclusion seems therefore irresistible, that the complaints in these cases, of whatever nature, had a local origin, might arise in any constitution, and were cured by local means.

You state to your pupils "that the success of their practice mainly depends on these circum-

stances, whether they are able to discover the seat of the disease, and whether, if it be discovered, it is of such a nature as to be under the influence of remedies."* This doctrine of hysteria, I apprehend, affords little assistance in such an inquiry. So far as we learn, the cases which are so considered, were not cured the more permanently, nor relieved the sooner, with this view of their origin: practically, we are quite as much, if not more in the dark, than before this cause was imputed to them: and there seems little advantage obtained by applying this term to local diseases of any kind. It is not even insinuated that Doctor Seymour's hœmiplegic patient was less paralysed, because he considered her case "hysterical." So far as we learn, the doctrine led to no more successful practice, and the maltreatment, if such it were, was not more, nor apparently less injurious than it would have been, if the disease were not hysterical. The soft parts gave way and sloughed, from the pressure of the body, or from "the treatment," precisely as they would have done if the complaint had arisen from fractured spine or from effusion into it. In the case already quoted, the hand was not the less shrivelled, nor the fingers the less contracted, nor the muscles less palsied, nor the whole limb less useless, than they would have been with disease in the part, however active, or however great its "tendency to disorganization."

* Lectures, p. 27.

In the case of "the young lady" whom you were "requested to visit so early as the year 1818,"* her sufferings were not less real, nor less acute, than they would have been from other than "hysterical" causes. When she permitted is not the proper term, but importuned for amputation; and when after amputation "she suffered more than ever with intense pain" and "violent convulsive action of the muscles which move the thigh upon the pelvis;" it could afford her little consolation to learn that her pains were considered hysterical; and what is of much greater importance, it gave no facility to her medical attendant to relieve them. Neither in this case, nor in the one mentioned by Mr. Soden of Bath; nor in the heart-rending one related by Mr. Mayo, where amputation, after amputation was submitted to, even to the hip joint, and not till then with any benefit; does the theory you advance, lead to one practical idea, which can either illustrate the cause of the disease, explain its progress, or improve the treatment. You speak with uncertainty of these measures, but suggest no others. You appear, indeed, to insinuate that in all of them the patient had better have been left to his or her fate.

"It must be acknowledged,"† you say, "that these and other similar cases which might be enumerated, seem to be quite conclusive against all attempts to relieve these hysterical disorders by an operation;" and after adducing others "on

* Lectures, p. 81. † Ib. p. 83.

the other side of the question," you add, "until we know more of these cases than is now recorded, it is impossible for us to determine whether they did, or did not, belong to the class of hysterical affections. Even if they did, the question still remains; how long did the patients remain under the observation of the Surgeons afterwards; and was a cure really obtained, or was there simply a commutation of one hysterical affection for another?"* After this quotation I cannot be accused, I hope, of misrepresentation in decrying the practical tendency of these doctrines, since the existence of hysteria, it would appear, precludes all hope of cure; and it cannot, therefore, but be serviceable to inquire, if another view of these diseases may not be more beneficial and more accurate.

In this place, however, I shall only remind you that it is as often necessary to inquire, whether there is any cause of irritation "*at the origin of a nerve*, affecting both the trunk and branches," as it is "in the trunk of the nerve," before we can satisfy ourselves that there is no "cause sufficient to account for the symptoms which are met with in the part to which its ultimate fibres are distributed;"† and I feel confident that neither of the excellent Surgeons whose names you have quoted, will take exception, if I remark, that in no one of these instances does it appear, that the inquiry, whether there was, or was not, such a

* Lectures, p. 84. † Ib. p. 4.

cause existing, was ever instituted; nor if I add, also, my confident belief, that if the inquiry had been made, an adequate cause would have been discovered.

Now, if such a cause did exist, and could have been detected, as I hope to shew, by tenderness in that part of the spine whence the affected nerves had their origin; the amputation of the limb can only be compared to the practice of that Surgeon mentioned by you;* who, with a wound in the ham, amputated the leg, "not above the knee and above the injury, but below the knee and below the injury."

But to waive for the present all objection to this view of diseases, and to the description of constitution, to which they are attributed; it seems difficult to connect "laxity of tissue" and "defective circulation," and "sloughs" arising from this cause, "resembling what are found when a nerve has been divided;" with "neuralgic pains," with symptoms resembling "inflammation of synovial membranes," or with "intense pain in the mammœ," for which the whole of that gland has been extirpated without relief.

The latter are neither the common, nor the accidental consequences of, nor symptoms which denote "a deficient generation of nervous energy." Neither is the skin, "when exquisitely sensible," nor does "pain" of any kind, not even "hysteric pain," afford any confirmation of the opinion I have

* Lectures, p. 25.

quoted, or explain this connexion: and, as if to shew the insufficiency of the opinions already alluded to, we find other causes of hysteria brought into notice, "the unhealthy state of the urine seeming to be the cause rather than the effect of hysterical disorders" "in very aggravated cases." In these cases "it is not unusual to find the urine depositing a large quantity of lithic acid, in the form of sand," or "the urine may be voided high coloured, depositing a pink amorphous sediment, abounding in the lithate of ammonia."*

It will be difficult to prove that the deposition either of lithic acid, or more especially of the lithate of ammonia, is a symptom, or one of the consequences of "a delicate constitution," or of a "want of nervous energy;" the formation and deposition of them, being the effect of high animalization. In proof of which they are to be obtained, only, in large quantities from the urine of carnivorous animals, that of herbivorous ones, being comparatively free from them. It seems much more accurate to consider diabetic urine, loaded as it is with saccharine matter, an effect of weakened nervous powers. But to the mere presence of any of these articles in the passages of the urinary organs, no such effect as hysteria can be attributed, at least it seems a new doctrine which requires great talents to establish.

Even where, as in cases of suppression, that fluid passes into the circulation, every portion of the

* Lectures, pp. 76, 77.

nervous system, at least every part of the blood, being saturated with it, so that it exudes from the emunctories of the skin; we hear of no such effect as hysteria being produced. On the other hand, where irritating substances exist in the bladder, producing great disorder in that organ, and even destruction of its coats; hysterical disorders do not usually follow.

In lectures delivered to students, the teacher may consider it a duty to address them as if all were ignorant; and to arrange his matter so as to impress the facts upon their minds, rather than class them under distinct heads. Lectures are therefore very often, and very properly, somewhat desultory; which renders it difficult to observe any regular order in commenting upon them, and thus I refer again to that part of your discourse where you speak of these diseases "having no determined seat."* This is so like the doctrine of chance, that we cannot feel surprise, though we may be permitted to regret, that in the latter pages of your book you broadly establish it. "Debility," you say, "is induced by various causes,"† and then the disease "assumes one form or other, as *accident* directs its influence to one or another part of the system."

A few cases are related where the changes of disordered action and of disordered feeling appear to justify this doctrine of nervous diseases having "no determined seat." The first case is that of

* Lectures, pp. 7, 8. † Ib. p. 71.

"a gentleman who laboured under a most severe pain, referred to the left side of the face, to which those whom he consulted gave the name of tic doloreux."* "While under the influence of this pain he was suddenly seized with a pain in the calf of the left leg, having precisely the same character with that which he had before experienced in the face." "When the pain in the leg attacked him, that in the face did not subside altogether, but it abated so much that he suffered little or no inconvenience from it. At the end of a few days, as the latter pain left the leg, it returned with its usual severity in the face."†

The next case is that of a lady with "spasmodic wry neck," "followed by a state of mental depression amounting to insanity, from which, after the whole of the second year, she recovered, and the wry neck returned:" and the case of another lady is furnished, "in whom a neuralgic affection of the spine alternated with insanity."‡

It can scarcely escape observation, that if the pain in the face, in the first of these cases, denoted the existence of disease in one part of the brain; the pain in the leg by no means justifies the inference attempted to be drawn from it, that it was connected with, or depended on, the disease having shifted to another part of the brain; or was in any degree connected with that organ. If the mental depression in the second case was connected with the brain, the wry neck arose

* Lectures, p. 8. † Ib. ‡ Ib.

probably from disorder in another part of the nervous system; disease in both being by no means incompatible. And the same observation applies to the third case, "neuralgic affection of the spine" affording no proof of disease in the brain, and still less of that disease having "no determined seat." The existence of disease, or of disorder of any kind, for more than two years, would, a priori, afford evidence to the contrary: and the decline of one chain of action, and the substitution of another, only proves that disease existed in that part of the nervous system on which the powers of the mind depend; as well, as in another, from which nerves arise that are distributed to muscular fibre: their alternation being the effect of local circumstances, which were not observed, and which perhaps it would have been difficult to discover. We have your authority that even tumours in the brain do not produce permanent disorder; but the absence of whatever symptoms they occasion, affords no evidence of their removal: still less would such a construction of disease be accurate, if symptoms arose, dependant on disease in other portions of that organ, which were called into activity by other agencies.

The next case requires a more extended consideration. "A gentleman laboured under a scrofulous disease of the hip, producing caries of the bones and suppuration within the joint. The following symptoms existed in addition to those which the same disease usually produces. The smallest motion of the thigh induced an attack of

excruciating pain amounting to agony, attended with violent spasmodic contraction of the muscles which move the thigh. The limb was jerked in a most remarkable manner for several minutes, and the volition of the patient had no controul over these distressing movements. After some time, a tumour began to present externally in the anterior part of the limb, raising the femoral artery, which lay pulsating on its surface. Combined with the disease of the hip joint, there were scrofulous tubercles and abscesses of the lungs, and of this last mentioned disease he died: the attacks of pain and spasm having subsided for six or eight weeks before this event took place. Having the opportunity of doing so, I did not fail to examine the diseased hip, and the parts connected with it, with the greatest care. The bones composing it were soft, so that they were readily divided with a scalpel. The cancelli contained a yellow cheesy matter; and the cartilages had been destroyed by ulceration. The tumour was formed by an abscess, situated among the muscles of the thigh, on the anterior part below the hip joint, but communicating with it. Two lymphatic glands, enlarged to the size of large walnuts, were found situated beneath the skin, on the anterior part of the thigh below the outer extremity of Poupart's ligament. It so happened that a considerable branch of the lumbar nerves lay over each of these enlarged glands; being thus kept stretched and tense in the same manner as the strings of a violin are stretched over the bridge of the instrument. These nerves

had the same origin with those which supply the muscles on the anterior and inner part of the thigh, and the peculiar circumstances under which they were placed, seemed to afford a sufficient explanation of the peculiar symptoms under which the patient laboured. Nor is the view of the case different, if we refer the symptoms to the pressure of the abscess, since this affected the nerves partially; whereas the convulsive action of the muscles was general, and the psoas magnus muscle, which was situated above the abscess, was not less liable to spasm than those which were situated below."*

Casting all theory aside, what are the symptoms you would lead your pupils to expect from disease in the hip joint; "where the bones composing it were so soft as to be readily divided by a scalpel;" where "the least motion of the muscles which move the joint" had to act on "ulcerated cartilage" and on exposed cancelli; where "an abscess extending through the joint" and "among the muscles," was joined with inflammatory action in every texture; where the bones afforded no fulcrum, being too soft to form one, and too tender to bear the pressure of muscles, which, from this cause, if from no other, were no longer under the control of the will? The answer is given in another part of your Lectures, where you speak of the "peculiar and painful startings arising from diseased joints."† "Excru-

* Lectures, pp. 9, 10, 11. † Ib. p. 38.

ciating pain, amounting to agony," is an invariable attendant on disease of the joints, and more especially of the hip joint than of any other; its existence here, then, should scarcely have been admitted amongst "unusual symptoms," and the spasmodic action of the muscles which move the limb is an universal, or almost universal attendant on disease of the large joints, where "the bones are soft" and "the cartilages are destroyed." "The man who was admitted into St. George's Hospital in the year 1808,* complaining of pain inside of his knee," the effect of "aneurism of the femoral artery;" to the pressure of which upon "some branches of the anterior crural nerve," his pain was attributed;† had none of these "spasmodic contraction of the muscles:" neither was his limb "jerked in this most remarkable manner for several minutes," "the volition of the patient having no control over these distressing and extraordinary movements."‡ The gentleman's case, which is given page 5, and who, "in the year 1816, began to suffer a gnawing pain in the left leg, referred to the course of the peroneal nerve from the foot to the knee, the pain becoming by degrees very severe and occupying at the same time a larger portion of the limb:"‖ although his complaints were occasioned by "a large solid tumour attached to the left side of the lumbar vertebræ," large enough indeed to occasion "dropsy of the belly and anasarca

* Lectures, p. 4. † Ib. p. 5. ‡ Ib. p. 9. ‖ Ib. p. 5.

of the lower limbs,"* and "extending into the pelvis," yet it furnishes no symptoms resembling those already described as so peculiarly distressing. It is for this reason I venture to call in question the position laid down by you,† "that the symptoms in the three cases are to be accounted for on the same principle." Granting for a moment that in the case quoted here at length, the nerves were more stretched; more "like a string over the bridge of a fiddle;" the pressure upon the nerve must have been in proportion to this stretching of it, if it arose from the size of the tumour; and pressure produces a loss of sensation and of motion, not an increase of either. There is, then, something wanting to complete the "pathological history;" something which will account for the existence of irregular action of the muscles in one of these cases and not in the others, unless the disease in the joint to which you say they did not belong will explain them, before we can consent to be guided by that light which you say they elicit.

Besides, the limb "was jerked in a most remarkable manner" before the tumour on the thigh appeared. It was only "after some time" "that a tumour began to present itself on the anterior part of the thigh." The "attacks of pain amounting to agony, and violent spasmodic contraction of the muscles which move the thigh" having previously existed; they could not have been

* Lectures, p. 5. † Ib. p. 9.

occasioned either by the enlarged glands, or by the stretching of the nerves over them; and, if the violent pains were neither contemporaneous with the swelling, nor with the enlarged glands; if they existed before either of the latter, and subsided though they were present; it is, I think, at least doubtful whether the inference is correct which ascribes the symptoms to such a cause; especially since the disease was otherwise extensive enough to account for them. The mere stretching of a nerve over a tumour is not necessarily attended with any symptoms of this nature. In the case of a patient from whose neck I removed a deep seated tumour the size of a small melon, the first stroke of the knife exposed the par vagum and the descendens noni passing over its surface, "stretched like a string over the bow of a violin," without one unpleasant symptom having occurred in any organ, and without the disturbance of any function.

But there are other circumstances arising out of this case which make it important. The first axiom you establish in the Lectures, and the first duty you teach your pupils,* I have already quoted. "The first thing you will ask yourselves, will be, whether there is any cause of irritation affecting the trunk of the nerve above, sufficient to account for the symptoms which are met with in the part to which its ultimate fibres are distributed." You say nothing here of irritation in the

* Lectures, p. 4.

trunk of a nerve producing convulsive actions *above* the part affected. It is "to the ultimate fibres" of that nerve or nerves, which pass over the disease and participate in it, we are directed to look for whatever phenomena may arise. If this direction be followed, the cause of "convulsive twitchings" in the "psoas magnus" (situated above the disease) must be sought for from another source, even though furnished with branches from the same nerve. And it is, because it is important to establish principles, without which these disorders never can be either understood or properly treated; that I venture to raise the question, whether irritating causes affecting the trunk of a motor nerve, produce the same disordered action in the branches of that nerve, *which are given off above the disease*, as it is admitted they do in the more distant ones?

In the eye, a double action being necessary for the performance of a single function, distinct nerves are furnished for that purpose. Light admitted into the eye, and images implanted on the retina, excite a particular sensation in the brain; which is, we believe, reflected through a distinct nerve to the iris, the contraction of which is regulated by the quantity of light admitted; and by the susceptibility of these portions of the nervous system. If either of these nerves be diseased, or if there be disease at the point of their connexion with the brain, or in any intervening part, the whole function of the eye is injured or destroyed; and is thus lost, because

"for the sympathetic action of different parts, it is necessary that there be an uninterrupted portion of healthy nervous matter between the nerves."*

But a quantity of light which in the eye of one individual will produce only contraction of the pupil, will in another excite actions in other organs. This is exemplified in those, who it is well known, can only receive a limited quantity of light into the eye, without exciting irritation in the schneiderian membrane, followed by sneezing. But in these cases of extended sympathies, there is great reason for apprehending disordered action in the brain; or in some other of the nervous masses; and the case of sneezing related by you,† where there were also pains in the palate, and creeping of worms over the face, is an excellent illustration of the fact.

In other cases the sympathies thus created exist between parts having different functions, though connected with, or consecutive of each other. The swelling of the mammary glands from the presence of an ovum within the uterus, and the secretion of milk which accompanies and follows its expulsion, is a case in point to which it is needless to advert. It has been remarked by high authority, and the remark seems well founded, in many instances, that these sympathies are facilitated between nerves having a contiguous origin; but in others, as has been instanced, in pregnancy

* Alison's Physiology. † Lectures, p. 61.

and in sneezing, there is evidently a selection made. This is so well illustrated in a work, the merits of which require no support from me, that I need no longer dwell upon it.*

In all the cases already mentioned, the reflected action is not witnessed in the branches of those nerves primarily excited, but in the branches of nerves having a distinct origin; and it is very doubtful whether this law does not prevail universally. I cannot recal to mind a single instance where the irritating cause being applied along the trunk of a nerve, has excited reaction in the branches of the same nerve, given off nearer to the sensorium than the original disease; and, unless sufficient proof to the contrary is produced, the doctrine endeavoured to be established in the case already quoted, falls to the ground. Even in the teething of children, when convulsions arise from it, the impression is made on the brain through a sentient branch, and is reflected to the motory branches of the same nerve, or to the branches of other nerves, as a part only of the general system, "those branches having a distinct origin from the brain." In like manner, if the nerves passing over the diseased hip had been sentient instead of motory nerves; had had a different instead of the same origin; and *if disease existed in the brain or in the spinal marrow*, the involuntary action of muscles might have arisen as a natural, and perhaps a necessary consequence;

* Outlines of Physiology, by W. P. Alison, M.D.

but in such a case, the "convulsive twitchings" would not, it is conceived, have taken place merely "on the least movement of the limb."

These opinions are consonant with what we witness in diseases of other parts, and especially in those dependant on the arterial system. The cæliac artery supplies blood to several organs of great importance, yet inflammation is excited in the minute branches in any one of those organs; and though, as we believe, they receive an additional supply of blood and are excited to greater activity, the other branches of that artery participate only therein as other parts of the system do, which are furnished by blood from very different sources and at a great distance: but if there be a general or constitutional disturbance, affecting the action of the heart and large arteries, all these branches participate in it, as they would also participate in the local disease if sufficient to influence the whole vascular system.

A whitlow in one finger produces no pain in the others, neither will a carious tooth excite pain in any *higher* branch of the same nerve, until the general arterial system is excited to increased activity.

In like manner the sympathies so often alluded to take place the more readily, if the original exciting cause be sufficient to influence the whole system. This, at least, is correct in pregnancy, the general condition of which is inflammatory, the pulse being quickened, and the blood commonly exhibiting a buffy coat: and in cases where

this disposition is deficient or entirely wanting, the mammæ remain flaccid, and lactation is never perfectly performed after delivery.

Croup, also, which is oftener a consequence of irritation in the gums than is commonly imagined, is always, when it arises from that cause, so far, at least, as my experience has gone, preceded by a quick pulse and other signs of constitutional disturbance.

In many cases of this disease, something more takes place than a mere general constitutional disturbance. The brain takes on a leading character, and the progress of disease there becomes conspicuous, and often furnishes the most serious symptoms. All the signs of croup having disappeared, the practitioner, by overlooking this new feature in the case, may and often does allow the symptoms to proceed until he is suddenly surprised by effusion into the cavities of the brain. Whereas, the quickened and disordered respiration, the restlessness and anxiety of disease, the cries of distress, the hot skin and quickened pulse, for some of these symptoms are always present, denote the progressive approach of mischief. This is especially the case, if the whole attention has been directed in the first instance to the difficulty of breathing only; the original source of irritation having been overlooked, and the coverings of the teeth permitted to remain distended; and this, though foreign to your Lectures, is necessarily connected with the subject, and will not, I hope, be considered unimportant.

It may, I think, be advanced as an axiom, that disease, or disorder of any kind, in the larger masses of the nervous system, controls the sympathetic action of distant parts, and creates new ones: thus rendering explicable what you well remark, we "may perceive at once" would be otherwise "extraordinary." I allude to the sympathetic disorders in parts "having no direct communication with each other," "that will afford a reasonable explanation of the occurrence of the sympathetic pain." You believe "it is in the brain itself" that this communication is made, but no where inform us under what circumstances. And even this opinion we may be permitted to question, except to a limited extent where the nerves arise immediately from it, when we consider the nature and tendency of the experiments of Flourens and Majendie, who endeavour to shew, indeed, that the spinal chord and the medulla oblongata are the only parts of the larger masses of the nervous system especially concerned in sensation; and this, if correct, as is well observed, "renders it probable that many, if not all, sympathetic actions are dependant on these parts."*

With these preliminary observations, I may venture to quote, and endeavour to analize, a few of the cases furnished by you which seem most anomalous.

"A gentleman awoke in the middle of the night,

* Alison's Outlines of Physiology, p. 388.

labouring under a severe pain of one foot; at the same time that some other sensations, to which he was not unaccustomed, indicated the existence of an unusual quantity of acid in the stomach. To relieve the latter, he swallowed a large dose of an alkaline medicine. Immediately on the acid in the stomach having been thus neutralised, the pain in the foot left him."*

"The late Dr. Wollaston ate some ice cream after dinner, which his stomach seemed incapable of digesting. Some time afterwards, when he left the dinner table to go to the drawing room, he found himself lame from a violent pain in the ancle. Suddenly he became sick, the ice cream was rejected from the stomach; and this was followed by an instantaneous relief from the pain in the foot."†

These cases, with others, are intended to illustrate another position, viz., "that an impression made on one part of the body will produce a nervous affection elsewhere, at a distance from the original seat of the disease," "and where no obvious explanation of the fact presents itself."‡

It no where appears where the "original disease" in these cases is to be found; for there can, I apprehend, be no question, that disorder existed in the case of Dr. Wollaston before he took ice cream, and that there was such a disposition to disease as to render that a very imprudent article of diet. The previous and the succeeding history

* Lectures, p. 11. † Ib. 12. ‡ Ib. p. 11.

of these individuals is not given; but it may, perhaps, be gathered from the small portion afforded, that though there was derangement of the stomach, there was no disease there: the complaint "manifested itself," indeed, "at the extremities of the nerves" in both cases, but the cause of that manifestation existed at their origin with the spinal chord: and believing this, the phenomena are very simple and very explicable.

The presence of noxious substances in the stomach, produced irritation in the nervous branches ramified on its surface, and this being conveyed to the spinal chord, did not proceed as "accident" directed, but was transmitted to and influenced another part of that substance, more susceptible of impression than the rest, and this susceptibility again "manifested itself" at the extremities of those nerves which arose from it. There seems no reason for believing that "the brain" was influenced in any degree, in this transmission of disorders to distant parts; and it is not hazarding too much if we add, that no state of the brain and no disorder in it will account for them. But if there had existed any disposition to disease in the vascular system of that organ; or even any greater activity in the vessels than their function required; the secondary affection, if I may so term it, would have been exhibited at the extremities of nerves arising from it; and the symptoms would have been varied accordingly.

If with this predisposition to disease the immediate cause of disturbance had, in these cases,

been "manifested" in the feet, the secondary affection would have been exhibited by disorder in the stomach in the one case, or by affection of the brain in the other; and in this way only can we explain the symptoms witnessed daily in gout, in phlebitis, and in other diseases.

There is no reason to believe that the symptoms were the consequence of disease in the part to which the pain was referred. No disorder of the stomach which is known, would account for Dr. Wollaston's pains in the foot: and "sickness," and "heartburn," and "acidity" are all observed, as "in the stomach of a gentleman," without being followed by pain in the instep; and it is, I venture to repeat, this intermediate state which is necessarily passed over in your Lectures unexplained, because not "easily explicable" by the theory of hysteria, if hysterical affections have "no determined seat."

I hope to demonstrate that there is local disorder existing between the parts primarily and secondarily affected in these cases, and that the same laws are observed, whether the roots of the nerves affected have a "contiguous" or a distant origin. I need only refer to your Lectures to prove this most important practical fact. The gentleman with pain in the instep, combined with stricture; and the lady who consulted you "with pain beginning in the left ancle," "labouring also under internal piles;"* are instances which no

* Lectures, pp. 12, 13.

one can doubt whose attention has been directed to this source of disorder; and it is this state of the circulation, and this predisposition to local disease, which also prevents, by its intervention, the consent of parts which it is important for the animal economy should exist, and which does exist, in a healthy state of the system.

I shall hereafter enter more fully into this subject when treating of inflammatory diseases arising from this source, and only to be relieved, I believe, by attention to this, their origin: but it cannot be void of interest, if we mention here circumstances of daily occurrence, and direct attention to them.

A woman "of a delicate constitution," as Sydenham would say, is safely delivered after a harassing and protracted labour, the labour pains having been inefficient, and the sufferings great. The action of the uterus hitherto irregular, continues so, and hour-glass contraction is the next proof of it; this gives way, and the placenta is separated: but even after a first child, after-pains come on, and increase, and become constant. Symptoms of inflammation in the uterus and in the peritoneum succeed on the third day; the lochiæ cease altogether, or are greatly deficient; and the milk, which had begun to flow, is also entirely suppressed; the consent between these parts, which nature intended should exist for the benefit of the offspring, is arrested; and all this mischief may be traced to, and can only be relieved, or at least may be most effectually relieved,

by removing tenderness in the spinal column at the origin of the lumbar nerves; the disordered state of which has been "manifesting itself," where you teach your pupils it should exist, at the extremities of the nerves, which have their origin there.

A female having suffered from frequent attacks of intense head-ache, with tightness, giddiness, and intolerance of light, marries and becomes pregnant. Her health during this state is much improved, for the vascular activity in the brain, or its membranes, is relieved by its direction to the uterus.

For the first twenty-four hours after delivery there is no unfavourable symptom, but after this time the breasts become distended and the pulse quickened, and as this advances, the disposition to disorder in the brain returns. In other cases severe shiverings usher in the secretion of milk, as is believed, followed by a hot skin and great vascular excitement. Instead of the breasts becoming more distended, mania supervenes in either case, and the secretion of milk is entirely suspended. The maniacal disorder continues some weeks, or even months, and as it disappears the secretion of milk returns, and in many cases the lochial discharge also. Every practitioner in midwifry will recognise this series of symptoms, and the restoration of the natural functions as the disorder which interrupted them subsides; but they are witnessed also, where the intellectual faculties have been cultivated at the expense of

the bodily powers, and where the vascular activity in the brain has not amounted to pain.

The following case tends to prove that disorder in the spinal column not only exists, but exists in different stages in the various parts of it. I shall best give my opinions by quoting from a letter to a medical friend, whose friendship and opinions are of great value.

"I send for your examination a young lady, whose case will, I think, interest you: nearly the whole of the spinal column being excessively tender, and appearing to me to denote disorder there, which extends to, and may be traced along, the nerves of the lower extremities, affecting the power of the muscles there. You will find the greatest tenderness over the lower dorsal and the lumbar vertebræ; and pressure at the ischiatic notch, and along the nerves, gives great pain. The disordered action, which may be traced along the nerves of the extremities, exists also in the bowels, which are sometimes exceedingly painful, the skin over them hot and burning, though the bowels are always torpid. The symptoms observed in the viscera are an indication of what is going on within the spinal canal, where there is, I doubt not, partial effusion, the consequence of increased vascular action; but the compression is incomplete, and the complaint going on."

"In the higher part of the column this increased action appears unmixed, producing gastrodynia, &c.; whereas if there were compression there, there would be loss of appetite, with

impaired digestive powers, and the tongue would be covered with a thick slimy white coat, which no purgative will remove. To this, which was written in 1822, I shall only add, that an intimate acquaintance with the subject of it for thirty years, enables me to clear her of all tendency to hysteria."

A young lady who for several years had been subject to severe head-aches, cold feet, tightness in the head, as if an iron band was drawn around it, with frequent giddiness, and occasionally with a want of control over her own thoughts, the head being also drawn backwards, was imprudent enough to have two teeth stopped which were decayed. She had frequently complained of uncomfortable feelings, and numbness in the limbs. Some time after the operation on the teeth, she had an attack of inflammation in the socket of one situated in the lower jaw, which produced intense pain in the face; but to this symptom was also added, pain in the back of the head and in the neck, with loss of feeling in the arm and leg on the opposite side, sometimes accompanied with considerable pain there, and especially with pain along the portio dura of the same side. The removal of the tooth, leeching, and the exhibition of hydrocyanic acid, gradually removed these painful attacks, but the relief was only gradual.

The following case appears to demonstrate that local disorder in the spinal column, when in a more active state, requires only a slight constitutional disturbance to give activity to it.

A boy, aged fifteen, of under growth, an operative in a cotton mill, had his hand caught by machinery, by which the tendons were laid bare, and the integuments extensively lacerated. The injury done, however, was not great enough to justify the removal of his hand, which was covered with simple dressings. Considerable inflammation ensued, but it was confined to the hand, the pulse remaining quiet, and the tongue moderately clean. His bowels were well moved, and cold applications were applied to the injured part. In the evening of the third day, the boy complained of soreness about the throat, and of some difficulty in swallowing. A poultice was then substituted for the evaporating washes. On the following morning, the whole muscular system was labouring under tetanus. I now learnt that this boy had suffered from epilepsy for several years, that his attacks were frequent, that sometimes he had several in the same day, and even in rapid succession; and since there was no evidence of disease in the brain, I immediately directed my attention to the spinal column, and found pressure over the fourth, fifth, and sixth dorsal vertebræ gave acute pain. The pulse being wiry, though small, I felt justified in directing a large cupping glass to be applied over the tender part of the spine, and to be exhausted as much as possible; hoping that the sudden impression thus made would control the action of the muscles, as I had seen "excellent effects" from it in spasmodic cough, which nothing else would influence. I waited to witness

the result, and on the application of the glass, the boy gave one cry of pain, his breathing was suspended, his pulse became almost instantly imperceptible, his lips livid, and before the glass could be removed the boy was dead; although this was accomplished with as much expedition as possible.

Subsequent experience has convinced me that neither the origin of the complaint here, nor the effects arising from the treatment, are singular facts. I have seen many cases since, where disorder evinced by local tenderness having existed many years, the powers of life would have sunk under this degree of pressure; and it is scarcely less a moral, than a practical duty to mention it: "guided by the light" which this case furnishes, we shall find ample room for suspecting that a similar state of the spinal chord existed in the cases related by you; and thus understand how "an injury done to one nerve produces reaction in every muscle of the body" in one case, although corresponding injury in another, having no local disorder at the origin of the injured nerve, passes away producing no such symptoms. Thus, when "a young lady, eleven or twelve years of age, pricked the fore-finger of her left hand with the point of a pair of scissors," no such effect as "the fore-arm being fixed by muscular contraction at a right angle with the arm," would have been produced "on the following day," neither would the "strange convulsive movements of the hand and fore-arm" have followed, if there had not been

already a tendency to disease at the origin of the injured nerves, as well as of those where reaction was evinced.

Without such a cause existing for these symptoms, neither the "sickness" nor "vomiting" can be accounted for, even if we admit that an injury inflicted at the extremity of one nerve, will produce convulsive actions *per se* in other and higher branches of the same nerve; a doctrine, the validity of which, as has been observed already, I am not prepared to admit. Neither, I believe, would "the other limbs" have been "affected in the same manner," so that "it was impossible for the patient to walk, or even to stand;"* nor would the "diaphragm, or masseter muscle" have been affected; nor would any other of these symptoms, so well described, have been "manifested" without a local disease in the larger nervous masses. At least, I have never seen such an occurrence, though, as will be seen hereafter, conjoined with such a state of the system, they are occasionally met with. All these observations apply with equal force to the case of the female who was admitted into St. George's Hospital with fracture of the fore-arm;† the particulars of which I need not repeat. In these cases, as well as in the case of Dr. Wollaston and of "a gentleman," there existed sufficient nervous influence to perform the ordinary functions of life, with something like an approach to health; but a mine existed,

* Lectures, p. 57. † Ib. p. 58.

which "a little spark" would kindle, but which can, I believe, in every case be detected.

Many physiologists, even of the present day (amongst whom I cannot forbear to mention my very talented friend, Dr. William Charles Henry*), believe that the spinal chord serves only for the transmission of impressions made upon it through the sentient nerves on the one hand, again to be transmitted through it from the brain on the other. With regard to the functions of organic life, this can scarcely be admitted, when we consider that the spinal chord precedes even in man the formation of the brain, and when we remember also that children, in other respects perfectly formed, have been born without the latter organ. So far as regards those functions which are dependant on mental operations, as volition, &c., this theory is no doubt perfectly correct; but changes take place in the nervous system, which take voluntary muscles from under the influence of the will, and that these actions may arise in any part of the spinal chord is every day demonstrated.

I seek not to disprove the doctrines of Sir Charles Bell, but I am constrained to say, that in practice I have not met with any case which appeared to me to justify the conclusions he has drawn, nor any thing which seemed to prove the doctrines of those physiologists who give to the ganglionic portion of the nervous system, any great

* Report of the British Association for the Advancement of Science, vol. III.

or important power in regulating sympathetic disease, independant of that which is received by and transmitted through them, from other sources. The relative importance of the different parts of this system in regulating and producing disorders, is not well understood; but I beg to remark, that the views which are here advanced seem to be consonant with physiological facts, which are now generally admitted. Thus the section of the portio dura would prevent the dilatation of the nostrils. It would not, however, influence the opening of the glottis; but if there were any portion of the nervous mass, between the nerves to which these separate functions belong, which had either too much or too little blood, and which was in any degree prone to disease, the effects would be witnessed at the extremities of both these nerves, and the double function would be impeded.

This is not the time for entering into this question fully; I shall proceed, therefore, to prove that the different portions of the spinal chord have the power of *creating* disordered action like the brain, and that this may arise in any part of it, independant of any other; the effects of which are observed only at the extremities of those nerves connected with it.

A respectable female, aged fifty-two years, was seized with violent convulsive twitchings in the lower extremities, for which, after they had existed some hours, she requested my attendance on the fifth of February, 1819.

I found her seated in bed with the perspiration running down her face, and over every part of her body. The convulsive actions had just ceased, but she complained of soreness, head-ache, weariness, and thirst; and had a full labouring pulse. I took sixteen ounces of blood from the arm in a full stream, which produced no faintness, and had scarcely applied a bandage around it, when the complaint returned, the legs being drawn up to the body and again extended with extreme velocity. The attack lasted many minutes, and consisted of this alternate contraction and relaxation in the flexor and extensor muscles of the legs and thighs, which terminated by the muscles forming the calf of the leg drawing up the heel, as it were, in spite of the efforts of their antagonists. Her respites were of short duration. Another and another attack followed, equal in violence to those which had preceded them, and exhausted the patient exceedingly: she fell back on the bed bathed in perspiration, to be again roused to exertions which she could neither control nor influence.

Her head, as I have already observed, was painful, but it was rather the effect of violent exertion, than of complaint there. She had enjoyed uninterrupted health during nearly the whole of her life, had required no medical assistance for many years, and was seized suddenly without any premonitory symptoms. Her bowels were regularly acted upon up to the period of her attack; her intellects and senses were unimpaired; her

tongue was furred, but not considerably; her urine was somewhat higher coloured than natural, and during the night had been rather scanty.

I directed ten grains of calomel and a grain and a half of opium to be given immediately, and repeated doses of purgative medicine after it, which, however, did not bring away plentiful evacuations. On the following day I found her still suffering. The paroxysms had neither yielded in violence nor in frequency, and had allowed her little sleep. I ordered a large dose of calomel and jalap to be given immediately, with salts and senna every four hours afterwards; a warm bath and an opiate at bed time. On this day I carefully examined the abdomen, hoping to trace there some irregularity in structure, or appearance; but there was no symptom of disease in, nor tenderness of the stomach, liver, spleen, intestines, uterus, or bladder; pressure being alike borne with impunity in every part. Menstruation had ceased many years; there had neither been leucorrhœa, nor any other symptom of disease there; the woman was easy in her circumstances, and had not suffered from any mental anxiety. The head was even more free from pain, the pupils dilated and contracted naturally; there was no intolerance of light, no noise in the ears; the pulse was regular, though hurried by the violent exertions; there was no difficulty of breathing; recumbency in any position was borne with the like indifference; there was no cough, no giddiness. In short, I could discover nothing but the

scanty alvine secretions and the slightly furred tongue, by which to be guided.

Another day passed not only without benefit, but with an aggravation of every symptom. The pulse had become permanently quick and weak, and it was evident that if these dreadful exertions continued much longer, some viscus or some vessels must give way, and effusion be the consequence. The bowels had been opened frequently, but not freely; the opiate had procured no rest; the urine was high coloured and scanty, partly arising, perhaps, from the perspiration, which both before and after the bath was excessive. Whilst in the bath she had no paroxysms, but they recurred immediately on her rising out of it with unabated violence. I was deterred from using the lancet, partly from the ill success which had resulted from my first trial of it, and now also from the reduced powers. I did not venture to repeat the warm bath, fearing the effects of any measure which would quicken the circulation; and though the alvine secretions were scanty, they were not unhealthy: yet it seemed that every other function was regularly performed, and I determined, therefore, to persevere in the use of gentle aperient medicines, combined with calomel and opium, in repeated doses.

Recollecting, however, that I had made no examination of the kidneys, I wished to ascertain whether any trace of disease, or of the presence of calculus, could be discovered there, thinking it possible the convulsive actions might arise from

either of these causes, as worms in the intestines are said to produce them, though no pain is experienced. I discovered no tenderness, nor any other trace of disorder, over the kidneys; but on pressing upon the neighbouring spinous process of the vertebra, the patient cried out "there," and immediately a strong convulsive action commenced and pursued its usual course. Allowing the paroxysm to subside, I pressed again upon the spinous processes of several contiguous vertebræ, and each time produced a paroxysm; considerable tenderness being also complained of both from pressure and percussion. Satisfied of the connexion between this tenderness and the convulsive action in the muscles, I directed eighteen leeches to be applied exactly over the spinous processes, or in the interspace between them, and continued the sulphate of magnesia in small doses.

On my next visit I found that shortly after the leeches were applied, the convulsive action ceased, and that the patient had passed a tranquil night. Though weak, she was free from complaint; and continued so till the month of October following, when I was again called to her. At this time I found her labouring under convulsive actions, of a similar nature with those already described. Not only were the legs brought rapidly towards the pelvis, and then immediately extended with great violence, but the arms also were similarly acted upon; the palms of the hands being placed in contact, the elbows bent and pressed firmly against the sides to restrain them as much as possible,

notwithstanding which a violent and rapid flexion and extension of the fore-arm kept pace with the motion of the legs. I tried, by using the greatest force, to restrain these motions, holding the arms more firmly to the sides, and confining the hands; but no force I could exert was sufficient, the arms moved through a smaller space indeed, but were otherwise kept in motion whenever the legs were acted upon, the motions being simultaneous.

The eschars which remained after caustic issues, which had now been allowed to heal, were a sufficient guide to the original seat of disorder; and though neither pressure nor percussion there brought on an attack as heretofore, the benefit derived from the leeches formerly applied there, induced me to search further, and an extended examination discovered the same sensitiveness on pressure over the fourth, fifth, and sixth vertebræ of the back, which had previously existed in the lowest of those vertebræ, and in those of the loins. Percussion and pressure alike gave pain, and each blow brought on a convulsive paroxysm. I next tried to arrest the motion of the arms, by pressing on the axillary nerves, and this, as well as pressure along the nerves above the elbow joint, immediately produced a suspension of the action; and what appeared singular, was, that the motion of the legs ceased also. So that by striking on the back, and pressing on the nerves alternately, the convulsive action could be excited or arrested at pleasure. I gave one dose of

calomel and jalap, and directed twenty leeches to be applied exactly over the tender part of the spine, which again relieved her from the attack; but as she had what she called "threatenings" for several weeks, I directed a repetition of them in smaller quantities, giving no medicine and restraining the patient only to mild diet, and confining her to the house.

On the 29th of June, 1823, I was again requested to visit this patient. Nearly three years had elapsed, during which she had pursued her usual avocations without difficulty. For several preceding days, however, she had felt less active, but could assign no reason for it, when suddenly in the morning of this day, she again experienced an attack similar to those I have already endeavoured to describe, but much more extensive. Almost every muscle of the body was now brought into the most violent contraction. The order in which they commenced was very uncertain. Sometimes the muscles around the lips would play, and draw and distort the mouth into various forms, changing with incredible rapidity, and distorting the lower part of the face especially. After this action had continued a few seconds, changing its phases incessantly; on a sudden, and in the least possible space of time which can be conceived; the head would be seized, brought backwards towards the spine, and immediately again towards the chest, and this motion was conjoined with the flexion and extension of the muscles of the fore-arm and legs,

which I have before endeavoured to describe, and which were moved with wonderful rapidity and violence, and kept pace with the motion of the head.

As suddenly again this would cease, and the head instead of performing the nodding motion, would be whirled round, as it were with a sudden and irresistible force, the chin being carried round from shoulder to shoulder with a degree of rapidity, which before I had no conception could have been accomplished or sustained. This again was often accompanied with, or followed by, violent contraction of the latissimus dorsi and pectoralis muscles of one side, and the paroxysm of whirling seemed by this means to be arrested, and thus terminated, perhaps; or at other times, and most frequently, the abdominal muscles followed and forced the diaphragm into the chest, and the air through the air passages with great violence; or the lower jaw became stiffened, the muscles belonging to it rigid, the head would be seized by the muscles of the neck, and drawn backwards with the vertex to the bed, the back being curved so that sometimes the nates, at other times only the heels and the head, rested upon the bed. As these muscles relaxed, the paroxysm terminated for a short time, only to be succeeded by some other parts of the tragedy, again performed in endless variety and with uncertain succession; differing, indeed, in nothing but the uncertainty of their commencement, their order of succession, and how they ended.

I had never witnessed sufferings like these, and dreading to exasperate them by any manual investigation, I contented myself with directing the reapplication of leeches to the spine, directing the attendants to be guided by the marks of those applied before with such immediate benefit. I again directed a full dose to be given of calomel and opium, and an opiate at bed time, if the bowels were opened previously by castor oil.

I was called to her on the following morning at an early hour; she had passed, it was reported, a dreadful night, and when I reached her at six, a.m., she was greatly exhausted. The perspiration ran in streams down her face, as it had done during the whole of the preceding day. The calomel and opium had given her a few hours respite, but the paroxysms returned about one, p.m., and had continued with unabated violence till they sent for me, a period of fifteen hours.

This fifteen hours of suffering, and the dreadful perspirations which the violent exertion had produced, were necessarily followed by great exhaustion. Notwithstanding which, I made another and a more extended examination of the spine than hitherto, beginning at the lower part of it, and proceeding upwards. In the lower part of the back, no paroxysm was excited even by considerable pressure, nor was the result more satisfactory in the upper part. In the act of supporting her in bed, my hand pressed rather suddenly upon the neck, near its attachment to the head, which immediately twisted round, sending the chin to

each shoulder alternately, and this was followed by convulsion of every muscle in the body successively, as I have already described. The slightest pressure brought on a fresh attack; twenty leeches were again applied, each leech producing a similar effect as it pierced the skin, but effectually relieving her by the time they were filled; after which she obtained several hours of uninterrupted sleep, and had no return. The leeches were repeated occasionally for some weeks, though in much smaller numbers. No medicine of any kind was administered.

This patient continued free from complaint until March, 1824, when she was again afflicted. The same treatment was pursued with similar good effects, and she continued quite well till October, 1839, being then seventy-three years of age, when she again suffered from a similar attack. I have not been informed of the precise nature of this seizure, nor to what extent she suffered, but leeches and other topical remedies were had recourse to, and again she was restored to health, so that until December, 1839, she was able to walk three or four, and even, on one occasion, six miles without inconvenience.

In the month of December she was last seized; the heart, on this occasion, became affected; her pulse intermitting every third or fourth beat: she suffered also from violent convulsive action in different parts of the body, under which she sunk.

With some difficulty an examination of the

body was obtained; and the state of the spinal canal was first, and, indeed, chiefly investigated. After dissecting the integuments, the bones were exposed, and the spinous processes of two vertebræ of the back were sawn through; one of the transverse processes was also sawn across, and into the opening made by their removal, the point of a gardener's pruning shears was introduced, by which means the processes of the vertebræ of the back and the whole of the spinous processes of the vertebræ of the neck were divided, and the canal laid open with as little injury or disturbance to the parts as possible. This being done, the chord came into view, and exhibited, in detached portions of its surface, very considerable vascularity. The veins were turgid, and seen passing from the canal; but the difference between the veins and arteries was very distinguishable, from the colour of their contents. In removing the transverse and spinous processes, as far as was practicable and necessary, the very delicate cellular substance which ties the medulla spinalis to the membrane lining the bones was necessarily torn away, remaining attached to the portions of bone which were removed; the inner surface of which appeared from this cause to be very vascular. Although some portions of this, the posterior aspect of the dura mater, were, as I have stated, very vascular, this was by no means universal, some portions of that membrane presenting a natural appearance. The vessels were short, and ran parallel to the length of the chord.

The medulla was then cut across about the eighth dorsal vertebra, and was raised very carefully from its situation, the cellular membrane being dissected carefully, and the nerves being divided, so that no violence was done to the parts. The anterior surface of the dura mater, covering the spinal column, presented one entire vascular mass, and the connexion between it and the membrane lining the canal was more intimate than natural.

This great vascularity was most striking and most extensive on the external surface of that membrane, where flocculent masses of a bright scarlet were seen floating from it. In some parts, this outer surface being removed, the dura mater, properly so called, was observed of a paler colour beneath it, whilst at those portions of the surface where the nerves are detached, or at the point of union between the nerve and the spinal chord, to speak more correctly, the vascularity was greatest, and congeries of vessels were seen extending from nerve to nerve on each side, though to shew this in the plate more clearly, the nerves on one side only are brought into view.

At the upper part of the chord, when detached, the dura mater was slit for some distance, shewing the inner surface of that membrane, as well as the exterior surface of the pia mater, the immediate investing membrane of the chord, which again was denuded to a small extent, and was nearly of a natural appearance at its upper extremity, although at its division in the middle of the back, the

redness was nearly universal. Fearing to injure this part, it was detached before the upper portion of the spinal column, the medulla oblongata, and the cerebellum were exposed. To perform the latter carefully was a labour of some time, but the result was even more interesting. The dura mater covering the medulla oblongata was ecchymosed, like the conjunctiva after a blow, and was scarcely less vascular; I hoped to have exhibited it, in another drawing, but in removing the posterior part of the cranium to trace this appearance, an angle of the bone was forced through it, and it was lost. In this stage more than one ounce and a half of water escaped, and as the head of the subject hung down, and was the most depending part, it is almost beyond a doubt that this fluid came from within the spinal portion of the dura mater, though the violence committed at that moment precludes the possibility of demonstration.

Returning then to that portion of the canal from which the spinal chord had been detached, there were observed, what it was first supposed was on the surface of the theca, distinct patches, as if of extravasated blood: one of these patches, the size of the finger nail, being of the brightest scarlet, although a contiguous one was purple, and the latter could be traced to larger veins leading from the cavity. This vascularity was between the theca and the bodies of the vertebræ, or of the intervertebral substance, and well illustrates a fact for which I am indebted to my

friend, Mr. John Boutflower, to whom it occurred to witness a dissection, where the death of a patient was occasioned by effusion of blood between the bodies of the vertebræ and the theca. In this case, however, there was no escape from the vessels.

Early in the month of June, 1819, some months, therefore, after the preceding case occurred, it was communicated to a professional friend, who immediately expressed his intention of ascertaining whether a similar cause existed in a patient then under his care, afflicted with what my friend called "spasms," of so violent a nature, so intractable, and so little benefitted by any means which he or others could devise, that it had often occurred to him how merciful it would be to shorten life, rather than continue to suffer so dreadfully.

This patient was described as a woman of very strong mind, and of very considerable information on medical subjects; and when my friend proposed to her on the following day to examine her spine, she "scouted the idea," "for she had no pain and no complaint there;" but she added, "I have pain in the shoulder, as I have often told you, connected with diseased liver, but no other pain of any kind." The examination was, however, submitted to; and my friend began to "thump" the spinous processes, beginning at the nape of the neck, and going downwards, desiring her at the same time to tell him if he gave her pain. "No," "no," "no," "not the least," "not

the least;" and again she remonstrated against pursuing the investigation further. Whilst in the act of doing so, he struck one of the spinous processes, and immediately an expression of great pain and of bitter reproach followed.

The patient submitted to a plentiful leeching, which was repeated; her complaint vanished, she went into the country; and before going there my friend gave me this account, and concluded it with remarking, "I can now thump her spine with impunity, and she is quite well."

After remaining in the country three weeks, she walked home, a distance of ten miles, on a very hot day; fatigued herself afterwards by preparing for a large dinner party, and suffered a relapse. Sixty, and then eighty drops of laudanum were given, not only without procuring sleep but with no perceptible abatement of her sufferings. Thirty leeches were then applied, and the complaint again disappeared: in a few hours she fell asleep, slept uninterruptedly for six hours, and awoke free from pain.

I attended the servant of a gentleman, who had been struck on the head by a horse, by which the skull was fractured and the right parietal bone depressed; but as the symptoms did not denote derangement from that cause, but from increased vascular action, the fractured bones were not removed till the third day, when a somewhat violent convulsion, with loss of consciousness, seemed to indicate the propriety of it.

After a long confinement, the patient recovered

with perfect mental powers, but a deficiency in the vision of one eye, shewn chiefly in measuring distances, rendering him unfit for his situation as house servant, he was removed to a farm.

He continued to enjoy uninterrupted health until 1822, six years after the accident, when I was desired to visit him. He had suffered from an epileptic fit, from which, when I arrived, he was recovering. His eyes were suffused; his pulse labouring; and connecting this attack with his injury, I took blood from the arm, gave him active purgative medicine, recommended milk diet, abstinence from fermented liquors, and a seton. The head was shaved, and cold cloths applied to it. But the fits recurred, and increased in violence; and any treatment I could devise, seemed only to add to that violence. The head was cupped, he had blisters behind the ears and to the neck; mercury was given, until ptyalism was produced; salts of iron and of copper, belladonna, bark, nitrate of silver, were each tried in succession; but the fits recurred even with more frequency: the last seizure continued three days, during which he was never conscious, coma and convulsions following each other in succession.

This attack left him with a weakness in the left arm, and a permanent contraction of the flexor muscles of that hand; the ends of the fingers being drawn into the palm of the hand, where they remained until extended with the other, and when extended, they became again immediately flexed, if the force which extended them was

taken away. He complained also of numbness in this hand and arm, and in the whole of the corresponding leg.

For many months he had not been more than three weeks without an attack of epilepsy. I had long considered these symptoms the effect either of spiculæ, of bony matter, of irritation, or of disease in the brain or its membranes; originating in, or connected with, the fractured skull; which it seemed could not be reached by remedies. The weakness and numbness in the limbs, and contraction in the muscles, seemed to verify this supposition; and the more so, since the fracture and the weakness of the limbs were on opposite sides of the body.

At this period I examined his spine, and after a careful investigation I could only discover one part, near the highest portion of the scapula, at all tender; but over this, hopeless as the case seemed, a cupping glass was applied, and twelve ounces of blood abstracted. He took also three grains of calomel and one scruple of jalap, after which he had no medicine administered to him of any kind. He returned to me in a week, and fancied that when the fingers were extended, by the assistance of the other hand, they retracted less suddenly and with less force. He thought also that there was less numbness. I was sceptical on these points, but he invariably answered, "Oh, I am better;" "I am better."

He was again cupped, and again a third time, in the same part; after which a blister was applied

over the surface, and was kept open by savine cerate, but not until after the contraction of the fingers had disappeared. After the blister was healed, leeches were applied accurately to the vertebræ, where there was still some tenderness, and were repeated occasionally for some time, "when he felt giddy or uncomfortable:" a seton was also inserted, and from the first abstraction of blood from the spine to the present time, a period little short of twenty years, he has followed the laborious employment of a farmer's servant, without the least interruption to his health, excepting on one occasion, when he had disordered stomach, cardialgia, &c.

It is not my intention to pursue this subject, or it would be easy to relate other cases of a like nature. Those already given will be sufficient, perhaps, to prove that the abstraction of blood from the spine is not attended with the disastrous consequences which you think attends it, and that life is neither shortened nor rendered miserable by this practice. On the contrary, they go far to prove the existence of local disease adequate for the production of all the symptoms you consider hysterical, and requiring for its removal both decisive and judicious treatment.

"In those cases in which the local nervous affection depends on an organic disease of the brain or spinal marrow, it is evident that the patient has no chance of an actual cure."* It is

* Lectures, p. 32.

then an important duty to detect disorder in those parts, and to prevent that disorder degenerating into disease: and if again, to illustrate this subject, we admit the existence of disorder in that part of the spinal marrow to which the nerves are connected, or in that portion of the membranes contained in the canal, through which they pass, and by which they are enveloped; it will necessarily follow, and this is admitted and taught by you, that this disorder, of whatever nature, will become cognizant at their extremities only. The spinal chord, though a source of sensation in, and of sympathy between other parts, is not sensitive in the common acceptation of that term; the nerves arising from it being influenced by impressions of which the mind is not conscious, and the memory has no trace.

This, at least, is the case in disorders of these parts, for neither in the case related at page 63, which I have watched for upwards of twenty years, nor in those which follow (pages 76 and 77), had there been the least pain in the back; and where disorder is confined to the anterior column of the medulla spinalis, and to the nerves connected with it, such an event is not likely to ensue. It is only when the disease extends by continuous sympathy to the ligaments, that pain on motion is experienced; and only when it extends to the origin of the sentient nerves, that there is an increase of perception amounting to pain in other parts. Whether the disordered action is confined to the muscles of one part, or extends to many,

depends on the extent of the original cause; but innumerable cases may be related, where distant and distinct parts of the column labor under complaint, the intermediate portions being healthy, and where impressions made at the extremity of the nerves connected with one of these portions, will be transmitted to and produce disordered feeling, or disordered action, at the extremities of the others.

Now, as it is well known, and the fact will be explained hereafter, that an increased momentum of arterial blood, or a deficiency of that fluid, will alike produce actions in voluntary muscles, and render them involuntary; so the very existence of a degree of sensitiveness in any part amounting to pain, if there be no disease at the extremities of nerves, or along their course, and either of the latter will at all times be cognizant to our senses, not only justifies us in considering, but directs us to consider it the consequence of an irregularity in the distribution of that fluid at their origin, on which sensation depends. Different states of the blood circulating in these parts will increase the susceptibility of sentient nerves, or destroy it.

But it is scarcely necessary to recall to mind these plain physiological facts, and refer to them as explanatory of different states of disorder, if we are to admit what your Lectures tend to establish, that in an hysterical constitution "the nervous system is differently constituted," and is, therefore, not dependant on those laws which regulate it in

others. This is a doctrine so widely at variance with all we know, that unsupported, as it appears, by anything beyond conjecture, it can scarcely be admitted until substantiated by other evidence; yet the inculcation of such an opinion satisfactorily accounts for the entire omission in your Lectures, of any facts which can tend to establish the maxim already quoted. The maxim is admitted as a fact, but is only illustrated in one case, although it constitutes the most valuable portion of your book. Indeed, from that part of your Lectures where you first speak of "hysteria" and of "hysterical constitutions," you appear entirely to overlook that, which you teach your pupils should govern their inquiries into the origin of this class of diseases.

You quote the opinion of Sir H. Halford,* that "tic doloreux in the face arises from irritation of the nerves, occasioned by a portion of dead or carious bone," and give one case to strengthen that which you admit it is "probable in many cases occurs."† It requires only the admission of this fact, and an acknowledgment of what no one will deny, that a similar cause operating near the source of the spinal nerves, will produce the same or a like effect, and all the phenomena of what you call hysteria are accounted for: and we are justified in believing, that the disorders in the cases quoted by you have this origin, until it is proved by investigation that such a cause does

* Lectures, p. 19. † Ib.

not exist, and unless it can be shewn also that there are some symptoms which such a condition will not explain.

If we take the most important and the most melancholy amongst them, what but "intense pain," or "involuntary action of the muscles," could ensue from any increase of arterial activity existing at the origin of the nerves? and where should this pain be experienced, if not where it existed, viz., at the extremities of the nerves? and why, if the disease were elsewhere than at the origin of the nerves, did not the removal of the limb remove the complaint also? The belief that the cause of these complaints "will be found in the brain," "if dissected after the method of Reil," and the opinion founded on this doctrine, that all sympathies have their existence there; and that the spinal chord serves only to *transmit* impressions, enables us to understand this omission. For if the natural consequence of inflammation is, as in most other cases, effusion, and if from effusion, paralysis follows, do not your Lectures furnish us with sufficient proofs of such a termination? You observe, it is true, and you consider the distinction new and important enough to be printed in italics, that volition is not lost, but is not exercised: but, if this be true, it does not constitute hysteria, but insanity. A better definition of many cases of insanity could not be given than that the power of volition remaining, it is believed to be lost, and in consequence of that belief is not exercised. This doctrine also leads

to another dilemma, for the first attempt at cure is in one case an effort of the will; but in another, as far as we learn, the first attempt at curing the patient is the removal of the limb; and we may find further, that in cases which simulate stricture in the œsophagus, this, the first effort at cure, takes place, for the patient swallows food; but the effort does not remove the disorder, which it ought to do, if, as you state, it arises from hysteria, and if this effort is all which is wanting.

In the interesting and melancholy cases alluded to already, where, "after amputation of the leg, the most acute pain and violent convulsive action of the muscles, which move the thigh on the pelvis, ensued;" if these symptoms had had their origin in the trunk of the nerves, tenderness and other signs of inflammation would have existed in the part; and if at the extremities of the nerves, direct proofs of inflammation would have been present: for the same laws which are witnessed at the origin of the nerves, are strictly followed throughout their course and at their extremities. Besides, and I venture again to direct attention to a matter which is practically of such great importance, not only is there an entire absence of all evidence which tends to prove the existence, in these cases, of disease, either along the trunk or at the extremities of the nerves, but if any such cause had existed, unattended with disorder at their origin, no such effects as those described would, I believe, have been witnessed.

This observation will also, I apprehend, apply to that part of your Lectures, where you observe that "the mucous membrane of the stomach and intestines presents a very extended surface, on which a multitude of nervous filaments are distributed, maintaining an extensive sympathy between these organs and the rest of the system. This membrane is subject to various causes of irritation, to which nervous affections shewing themselves, even in distant parts of the body, may not unfrequently be traced. Hence it is, that these diseases are in some instances relieved, by an adherence to a well regulated diet, by the exhibition of purgatives, of what are called alterative medicines, and of others which tend to improve disordered secretions of the stomach and liver."* I know no state of "the mucous membrane of the stomach and bowels," which either necessarily or commonly produces the effects attributed to it.

You admit the existence of tenderness along the spinal column, and of symptoms connected with it which you call hysterical, and it is right, therefore, to give your account at some length.

"Hysterical affections, in which the symptoms are referred to the spine, are of very frequent occurrence. Such cases are, in many instances, mistaken for those of ulceration of the intervertebral cartilages and bodies of the vertebræ; and in consequence of this unfortunate impression on the minds of the medical attendants, I have known

* Lectures, p. 28.

not a few, but very numerous instances of young ladies being condemned to the horizontal posture, and even to the torture of caustic issues and setons, for several successive years, in whom air, and exercise, and cheerful occupation would probably have produced a cure in the course of a few months."

"In these cases the patient complains of pain and tenderness in the back, to which one or more of the following symptoms may be superadded:— pains in the limbs, especially in the lower limbs; a sense of constriction of the chest; involuntary spasms of the muscles, sometimes induced by change of position, at other times occurring without any very evident cause; a sense of weakness in the lower limbs, so that they are scarcely capable of supporting the weight of the body; and even actual paralysis; difficulty of voiding the urine. When the patient first complains of pain in the back, it must be acknowledged that there is more difficulty in forming a positive diagnosis; but the difficulty vanishes afterwards, so that none but a superficial observer can have any doubt as to the real nature of the disease. The pain in the back is seldom confined to a single spot, but it extends to different regions of the spine, and it not unfrequently shifts its place from one part to another. The tenderness in the spine is peculiar. The morbid sensibility is chiefly in the skin, and the patient for the most part flinches more when the skin is even slightly pinched, than when pressure is made on the vertebræ themselves. The

pain in the majority of cases is more severe than in those of real vertebral disease; and the spasms of the muscles have a near resemblance to those of chorea."*

This medical testimony is important. "Air, and exercise, and cheerful occupation" are means assigned, for there are no other, for the cure of "actual paralysis;" and these remedies are to remove what in other places you assure us admits of no cure, even the alleviation of symptoms, or their removal, being "simply a commutation of one set of symptoms for another;"† and this "air, and exercise, and cheerful occupation" are to remove complaints which you consider "manifestly depend on an original malconformation of the nervous system."‡

Other practitioners have formed different opinions, and "have subjected their patients to the torture of caustic issues and setons,"‖ though without mistaking the cases so treated, for "ulceration of the intervertebral cartilages and bodies of the vertebræ:" and what is the "torture" of caustic issues, when compared with the amputation of the limb? and what the evils arising from topical bleeding, when compared with "actual paralysis?" If our sensibilities are to be excited, and our conduct to be regulated by them; if the torture inflicted is to be the criterion of wisdom, or of the want of it; of superficial observation, or of sagacity and penetration; the balance is even,

* Lectures, pp. 46, 47, 48. † Ib. p. 84. ‡ Ib. p. 73. ‖ Ib.

according to your Lectures, greatly in favor of the more merciful practice of caustic issues. There is no mercy in allowing "actual paralysis" to supervene; no loss of power from local blood letting can be equal to this entire loss of function, over which remedies have no power.

You conclude your Lectures with a caution to your pupils, which may be applied here: "I have told you that it is most important that you should not mistake cases of nervous affection for those of real local disease. It is equally important that you should not mistake the latter for the former; whenever you are in doubt, be careful that you do not employ any kind of treatment which would be injurious, if local disease existed."*

The condemnation of caustic issues cannot be accordant with these precepts: they cannot be "injurious if local disease exists;" and what greater signs of local disease can be furnished than those related by you of "a more acute pain, and a greater sensitiveness," and of these symptoms occupying a greater extent, than would be witnessed, even if the bones or the cartilages between the bones were ulcerated.

But if this picture is presented to us in another light, what is it? "Actual paralysis," "convulsive actions as in chorea," and an admission that although local pains may be alleviated by the "belladonna plaster," and by other empirical treatment, even whilst the "disease is advanc-

* Lectures, p. 88.

ing," yet, and let this be remembered, that "where the symptoms appear in the form of muscular spasms or paralysis, according to your experience, remedies are of little avail;" "the spasms may subside spontaneously, but are not to be relieved by art."*

But let us look further: in one case of violent muscular contraction, one hundred and twenty leeches were applied in one week to the spine, not "with an aggravation of all the symptoms," but with instantaneous relief, and the removal of convulsive actions in the muscles for years. This fact alone furnishes prima facie evidence of the nature of the complaint; and if local disorder, deep seated local disorder, should exist; not of the bones, or cartilages, or ligaments, but in more important organs than these, what are the plasters of belladonna, of opium, or of hemlock to effect, directed as they are to be applied to the extremities of the nerves where it is acknowledged there is pain, but where the complaint is not to be sought for, according to your own doctrines already so often quoted? It is not even insinuated that the paralysis of these cases can be relieved by any other than moral means, or by exercise; it is the spasms only which "may subside spontaneously."

You inform your pupils that "a short delay will enable them to understand the exact nature of the case;"† now if the nature of a disease is to be

* Lectures, p. 32. † Ib. p. 88.

judged of by its effects, I may again ask, what is the natural, the unvarying effect of effusion into the spine but "paralysis;" what more indicative of inflammation than pain and tenderness; and how should that inflammation terminate but by effusion? The whole chain of circumstances related by you are thus accounted for.

But the sensitive skin covering the spine is indicative of hysteria! Under ordinary circumstances, the skin becomes more sensitive by participating in deep seated disease, but in other cases it is a proof only of more acute perception at the extremities of nerves; perception not arising from disorder at the extremities of the nerves, but from causes existing elsewhere. Now the nerves distributed to the skin in the back, do not arise in that part of the spine which is contiguous to their distribution. The nerves after being separated from the chord, pass for some space within the canal before emerging from it; so that there may be great tenderness in the skin, evidenced by pinching it, over one vertebra, whilst the disease giving rise to it is situated in another part of the medulla; and the practitioner may easily be misled, if he disregards this fact. But if tenderness be complained of by pressure or percussion, and the skin over that part be drawn aside, the tenderness will remain precisely as before this experiment, and indicates the seat of the disorder.

I need not remark that the nerves emerging from the cavity of the spinal canal, pass to distant parts of the body in entire bundles, leaving

scarcely a filament behind to connect them by symptoms to the part whence, in common expression, they are said to have their origin. So that what you call hysteric pains in the hip, the knee, or in other parts, even if originating in this canal, can only afford evidence of such an origin by the pain exhibited in distant parts of the body. Hence "hysteric pains," so called, if referred to the knee, "exhibit great tenderness in the joint, but the patient suffers more from pinching the skin than from pressure;"* clearly denoting that there is no disease in the part; but however important this may be considered as a practical fact, it by no means follows that such effects cannot be witnessed without hysteria, that they are limited to any constitution, or that the structure of the nervous system differs from the structure of the same parts in other individuals.

It cannot be denied that "great tenderness in any joint" is the result of disorder, and it is the duty of the Surgeon to distinguish whether it is a sign of deeper seated mischief in the joint, or of one not less pernicious, perhaps, elsewhere; for though you teach your pupils that these pains, and the complaints connected with them, have no morbid tendency, I am compelled to repeat that you furnish them with numerous instances where the effects are as melancholy, and as far from the reach of remedies, as if connected with diseased bone or with disorganization of any kind.

* Lectures, p. 40.

If, after a careful examination of the hip, or of any other joint, and of the muscles connected with it, no adequate cause of pain can be discovered there, it surely becomes an imperative duty, and it is the only one remaining, to ascertain whether any and what cause exists in the course of the nerves, and if there be no such cause discoverable, the practitioner may safely rely upon finding it where it very frequently, nay by much the most frequently, exists, viz., at the point of connexion which those nerves possess with larger masses of the nervous system, it matters not whether in the brain or in the spinal marrow, the same effects follow. The tenderness of the skin, both here and in the spine, may alike be disregarded: it is sometimes permanent, at others fugitive; but in either case it is an indication only, where disorder may be found by tracing the nerves distributed on these parts to their origin.

I have included "the muscles which move the joint," in those parts which it is the duty of the Surgeon to examine, because many of the cases related by you, as cases of hysteria, those especially where the symptoms "vanish all at once,"* appear to have arisen from inflammation of the muscles. I need not say that the large muscles, covering the flat bones, are frequently the seat of inflammatory attacks; and as we all know that muscles when inflamed refuse to act; the distortion of the limbs, the altered position, "the thigh

* Lectures, p. 44.

drawn up to the pelvis," &c., as described by you, are the natural consequences of the action of their antagonists, and "the fall from a donkey," and the sudden impulse given to the contracted muscle from such a cause, would be accompanied with "a sudden snap," as if something had given way, and the patient would walk immediately as you have described; but, whether the cure would be permanent in such a case, depends on the state of the muscles originally producing the distortion.

A gentleman, aged fifty, awoke after passing a night of uninterrupted sleep, with pain in the left hip, by which he was rendered unable to rise from his bed. The pain extended from the loins to the posterior part of the thigh, occupying the whole of the hip, and the least motion of the limb gave him acute pain. After this had existed several weeks, he was advised to disregard the suffering, and to walk; walking was therefore attempted, but the body could not be raised into an upright position without bending the knee, nor could the leg be extended if the body were upright, without great pain. On examining the hip, the toe rested on the ground, in advance of the opposite leg, and the glutæi muscles fell and were flattened as in disease in the acetabulum, or in the joint. Walking was performed by seizing the trousers if the body was upright, but was best performed by resting on two sticks with the back somewhat bent. The greatest impediment was in drawing the limb forward, or in elevating it when

seated. The weight of the body could be borne upon this leg for a short time only, but neither pressure about the joint, nor percussion of the heel, so as to force the head of the thigh bone into the acetabulum, however violent, gave the slightest uneasiness. Besides this evidence, there was also wanting the pain in the knee, witnessed in disease of the hip joint, and whilst at rest, in particular positions, there was occasionally an entire freedom from pain of any kind. One point, a little above the anterior superior spinous process of the ilium, was particularly tender, and the patient almost intuitively, whilst standing upright, placed his left hand over this part to support it. It was this fact which led to the discovery of the cause of all these symptoms, for the tenderness there extended along the whole, or nearly the whole, of the origin of the glutæus externus muscle. A cupping glass was applied there, and fourteen ounces of blood were taken away; the relief from which was almost immediate, and the patient soon recovered. It was only after some time that he remembered having, on the evening before his attack, made a somewhat unusual and sudden exertion, to which no doubt his subsequent ailments were attributable.

A young lady, aged nineteen, was seized with great pain and rigidity in the muscles of the neck, by which the chin was drawn to the left shoulder. She had gone to bed in good health, and had not been exposed to any cause which could account

for it. Cold applications were applied to the neck, the contraction became permanent, and had existed nearly twelve months when I was desired to visit her. The chin was bound down to the clavicle, the sterno-cleido-mastoid muscle on the one side, and the muscles on the posterior part of the neck on the opposite side being alike rigid, and perfectly immoveable. The spine was curved laterally, occasioned by the weight of the head, for which she had been wearing apparatus for some time. She had become accustomed to the position, which gave no pain; but the head could not be moved laterally the eighth of an inch, and the nodding motion was very limited. The general health seemed good, though the complexion was florid, and the extremities cold; there was now no tenderness in any part.

A cap, made of strong materials, was fitted tightly to the head, to which loops, made of strong tape, were fixed; through these loops a cord was passed, to which weights of various sizes were suspended; and the patient being laid flat on a sofa, and the shoulders kept in contact with the surface of it by an assistant, the weights were allowed to hang over the edge, so that the contracted muscles had to sustain the whole, until fatigue was complained of; when the head was forced in a contrary direction, and rotation of it attempted with considerable force. This operation was performed twice, daily; and the patient, at the end of a week, could bring the chin nearly an inch nearer the right shoulder than before. By

persevering with great patience in the plan now mentioned, the head became perfectly straight, and the chin could be brought almost as near to the right shoulder as to the left, although in doing so it was carried nearer to the sternum than was quite natural.

It would be easy to multiply cases of this kind. They are of such frequent occurrence, that the bone-setters, in this part of the kingdom, have obtained great reputation from curing them by sudden or violent extension; representing them at the same time as cases of neglected fracture, or of maltreated dislocations; and, as I see nothing in the cases related by you, in any degree differing from those now given, I am compelled to discard all consideration of hysteria in the former; and before admitting such a doctrine, we should be taught how such consequences can ensue without local disorder in some part, adequate to produce the symptoms, and sufficient, if understood, to explain them. To say that hysteric pains exist as consequences of an hysterical constitution, is only arguing in a circle and explains nothing.

It is argued that inspection after death "does not reveal the mystery," and that "the most minute examination after death brings to light no trace of disease and no change of structure." But the cauliflower excrescence of the uterus is seldom found after death, yet is palpable to the touch during life. Rubeola, when fatal, leaves no trace on the skin after death, if that event takes place before the texture of the scarf skin is

destroyed; and the same observation applies to scarlatina, yet these must be classed amongst inflammatory as well as exanthematous disorders. Even in erysipelas, many cases are on record where no vestige of it could be discovered after life was extinct; and in measles and in scarlatina, the inflammatory action having no tendency to produce effusion, this result of inflammation is not witnessed.

Now though thickening of the coats and effusion of serum into the cavities of the brain are common occurrences, and though enlargement of the vessels which pass through the medullary substance, rising like red points through a white ground, and turgescence of the vessels on its surface, are also commonly observed in examinations after death, effusion of lymph in the substance of the brain is seldom witnessed.

When we reflect upon the structure of the nervous ganglions, as they have been called, which united form the spinal marrow, all of which are divided into pillars, each pillar or column and the nerves connected with it having a distinct function; it will easily be understood why many cases of disease, which during life are cognizable by symptoms, leave no traces in these minute parts, sufficiently prominent to attract notice after death. In this structure, more especially than in all others, disordered action, sufficient to excite disordered feelings in distant parts, long precedes those changes in structure which would meet the eye of the anatomist. The vessels which surround

the spinal column are unavoidably torn away in the act of opening the canal, and all trace of disease in them is lost by this violence. Many of the symptoms observed during life arise from congestion in the venous system, a fact which is verified by symptoms during life; but the venous system is traced with great difficulty, and is, I believe, little attended to in the examination of these parts: and partly from these causes, and especially from the time occupied in the investigation of disease here, we may account for the paucity of facts which necroscopic examinations might be expected to furnish.

Besides, the canal of the spine is not filled with this mass of nervous matter; its connexion, therefore, with surrounding textures is less intimate, and the communication of disorder to them less active in this part than in the brain, and the symptoms of disease within it less cognizant during life on that account; but it cannot be denied that where a train of symptoms is observed, whether combined with local pain or without it, ending in entire loss of function, and this point I am anxious to establish, a physical cause exists exactly in proportion to the symptoms manifested during life. The laws which operate upon the nervous system are constant and uniform through every portion of it, are co-existent with respiratory life and govern all its functions, and it is only by attending to these laws that we are enabled to trace irregular actions, and prevent or retard their consequences.

The circulation of blood in the brain differs from what is observed in most other organs; for the vessels ramify extensively on its surface before dipping into its substance, and in man the circulation is so arranged by the division of the brain into convolutions, that no portion of nervous matter is far distant from its nutrient artery.* It has been remarked that the communication between the vessels on different sides of the brain is so extensive, that the whole mass may be injected from one carotid artery. Now though this observation is correct, the practical conclusions attempted to be drawn from it are without foundation, for the communication takes place in the circle of Willis chiefly, and before the blood-vessels dip into the substance of the brain.

The anatomy of the venous system in the brain proves also that there is little, if any communication between the different arterial branches after they dip within the substance of the brain, for each convolution has not only its nutrient arteries, but its returning veins. So that though distinct arteries proceed from a common source, local disorder exists in the vessels of one convolution, and even in the coats which surround it, which scarcely extends to others. But if congestion takes place in the venous system, the blood from which is poured into one common trunk, obstruction there would operate on the whole mass. The nerves also as they pass from the cavity of the

* Alison's Physiology.

cranium, receive their supply of blood from the membranes which surround the brain, and though there may be disorder in other parts of that structure, individual nerves are often influenced by that part only to which they are connected, or from which they are supplied by blood, and if the arteries in these parts are more active than the rest, the nerves obtain more blood than is necessary for an adequate performance of their function, and display that fact by disordered feeling or disordered action at their extreme point of distribution in distant parts. The iris is supplied with nerves from a part of the brain not far distant from the origin of the optic nerves, yet I have seen the iris moveable, though the patient was blind, and I believe the opinion was well founded, from disorder in the optic nerves; denoting, I conceive, that though there was compression in one part, there was increased activity in the vessels of the other, and proving also, I think, that muscular action continues here as in other parts of the body after consciousness is lost. Paralysis of the eye-lid, and of the eye-lid only, is an every day occurrence. One side of the tongue loses the sense of taste, the remaining half possessing its faculty entire. The face is palsied from compression of the portio dura, though the hearing is perfect. The sense of smell is lost; no other function or faculty being impaired. The disorder in these parts is thus confined within narrow limits, not by adhesive inflammation, as in textures where

the blood vessels are surrounded by cellular membrane, but by division of the arterial system into small portions, each portion being distinct from, and independant of others.

The spinal chord, like the brain, has its blood vessels distributed over its surface, where a very free anastomosis takes place, before they dip into its substance. Like the vessels in the brain, too, the arteries dip into fossæ, and thus every part of the medulla is readily supplied with blood. But a great portion of the medulla spinalis receives its blood from more numerous sources than the brain, each portion or bundle of nervous matter having its distinct nutrient artery sent off from the aorta, and each portion having also its returning veins. Disorders within the spinal canal are not only limited, like those of the brain, by this mode of circulation, but are still further confined; for the ligamentum denticulatum acts like a tentorium, and forms a line of separation by which each portion remains distinct from contiguous ones, either above or below it; and pressure, whether it arises from effusion or congestion, influences one part of the medulla and of the nerves arising from it, although not extensive enough to influence other portions of that substance, or the nerves arising from other parts. In like manner, one fasciculus of nervous matter suffers from inflammatory action without the others, or any of them, participating. In other cases inflammatory action, in which one nerve or one set of nerves participates shall have gone

through its stages, producing effusion and consequent pressure and paralysis of those nerves, whilst the circulation in another contiguous circle shall possess greater activity than is natural; and we have paralysis of one part and pain in another; loss of sensation and increased action of muscles in one individual; or loss of muscular power and increased sensibility in another; asthma and epilepsy in one case, asthma and hemiplegia in others.

I was desired to visit a gentleman at a watering place, who had the whole of the muscles on one side of the body convulsed, the muscles on the other side being as entirely paralytic. The mischief in this case included all the nerves given off below the phrenic nerves; his head was clear, his conversation perfect, his power of swallowing remained, his breathing was not impeded; and the cause of the symptoms was clearly traced to the vertebræ of the neck and of the upper part of the dorsal region, where there was great tenderness; and in the case of a lady, to be mentioned hereafter, the muscles on the one side were threatened with paralysis, and were quite powerless for a limited period, the muscles of the other during the same time being permanently contracted.

The circulation in and around the nerves, it is believed, greatly resembles that in the brain and spinal marrow, and as effusion of blood or of serum between the coats and the substance of the brain would produce paralysis in the nerves arising from that part, so also if the cellular

substance in which a nerve is imbedded were separated from that nerve, paralysis in all the branches given off below the injury would inevitably follow. Sensation, then, cannot exist unless the nerves are not only entire, but are adequately supplied with arterial blood throughout their entire course; and volition, and all sympathetic actions, whether natural or diseased, are entirely dependant on the same cause.

It seems scarcely necessary to adduce any instances in support of this fact, but the following illustrates it.

A man working at the bottom of a coal mine was struck on the arm by a piece of coal, which fell from the mouth of the mine, a distance of sixty yards. The bone was broken, and protruded some inches through the integuments on the inner edge of the biceps muscle. He lost immediately and suddently a large quantity of blood, and when visited there was neither pulsation at the wrist nor perception in the limb. Believing that both artery and nerve were torn asunder, amputation was proposed, and with some difficulty submitted to, twenty hours after the accident. On dissection the artery was found completely torn across, its retracted orifices being plugged by coagula, but the nerve was entire, its neurilema being separated from it to the extent of an inch by blood driven into it from the wounded artery.

The separation of the neurilema from the nerve is not more certainly followed by the loss of perception, than is the circulation of black blood in

the vessels of any portion of the nervous system to the nerves of that part; so that sensation and volition neither depend on the brain alone, nor upon the spinal marrow, but on these conjointly with the nerves; all being alike and entirely dependant on the agency of arterial blood circulating through their vessels.

The greatest part of the blood supplied to the upper portion of the spinal canal is furnished from branches of the vertebral and basillary arteries, and is returned into the lateral sinuses or into the internal jugular veins. The spinal chord, as has already been remarked, does not accurately fill the bony canal which contains it; and partly from this cause, and partly also from this venous connexion with the vessels of the brain, if the return of blood from the latter organ is impeded, the spinal canal forms a reservoir for its collection, and the temporary pressure which would otherwise take place in the former organ is, by this means, prevented.

The spinal chord, even in man, receives a quantity of blood which bears no small proportion to that circulated within the brain, and in many animals the quantity is much greater; but the impediments arising from difficult respiration, from want of power in the heart, from contraction in its apertures, or communications between its sides; from effusion into the cavities of the chest and abdomen; from enlarged viscera, and from the gravid uterus; tend alike to obstruct the circulation in the vessels of this portion of the

spinal canal; and we find the veins larger, and the venous system in this canal more extensive, than in any other part of the body; and greater also in proportion to the quantity of blood admitted, than is found in other parts of the nervous system, in proportion to the weight of nervous matter contained in it.

The spinal canal, unlike the cranium, has many outlets by which the blood can be returned from within its cavity, and be restored to the general circulating mass: every vertebra of the back and loins having apertures for the passage of arterial, as well as for the return of the venous blood, and for the passage of the nerves from that cavity: but in this portion of the column, the venous circulation is dependant on the circulation of blood through the thorax and abdomen.

The vena azygos forms a reservoir for the superabundant blood, like the reservoirs in the circulating system of those animals which live occasionally in water, and this vessel, varying as it does in different individuals, furnishes, by its volume, a criterion to what extent the venous system in this part has required such a reservoir; and though by possessing various outlets the blood contained in the veins is more equally distributed; there is little doubt that the most depending portion, when the body is upright, will soonest suffer from its collection, if there be no local disease in the canal to influence it, and no enlarged viscus to operate locally on the veins within its immediate vicinity.

If we add to these causes for variation the important influence of sleep on the action of the heart, and on the number of inspirations in a minute; the powerful and pernicious effects, in females, of tight lacing, and of other ligatures round their bodies; the light clothing, and even want of covering over their extremities; the not less pernicious exposure of portions of this column, which fashion dictates in this very varying climate; and the powerful excitement which, for many years of female life, exists in the vessels of this part for the secretion of the menstrual fluid; and if to all these we add the pressure of the gravid uterus, and the reflux which must take place on its sudden removal; there seems no difficulty in explaining why what are called nervous diseases are found most frequently in the weaker sex: but each tending to prove their entire dependance upon the state of the circulation at the origin of the nerves.

There are other causes, constantly in operation on the spinal nerves, which do not so immediately pertain to those connected with the brain. The nerves in the former part, as they pass out of the vertebral canal, are surrounded by a net-work of veins, which, if any impediment arise to the transmission of blood through them, easily produce compression there; and, on the other hand, the nerves would be influenced by any additional activity of the arteries as they pass through this foramen.

That this activity does exist as a local cause of

complaint, is proved by circumstances which can every day be demonstrated at the bed-side of the patient; for we witness, daily, symptoms occurring which might easily be mistaken for pleuritis; but which are merely occasioned by irregular and painful action of the intercostal muscles; and, if these symptoms are traced to their origin, there will almost invariably be found indications, which ought never to be slighted, of disorder existing at that point where the blood vessels furnished to the muscles of the ribs are connected with others distributed to the canal of the vertebral column.

Local disorder in the spinal canal is not only evinced by symptoms in distant parts, but the kind of action existing there may be estimated with great accuracy by those symptoms; and as the latter conclusion differs from those which you have drawn, it seems proper to enter more fully into the inquiry.

In the case related already (page 57), the skin over the abdomen was hot and tender, though the bowels were sluggish; denoting, therefore, different states in the circulation at the origin of nerves distributed to these parts. The reverse of this takes place on many occasions, the bowels frequently being painful and irritable, and the skin covering them cold to a degree amounting to pain. From a like cause, and equally explanatory of it, the muscles in the lower extremities are so weak as to support the weight of the body with great difficulty, and fatigue is experienced

from the slightest exertion, whilst the nerves distributed to the skin are in a contrary state, and highly sensitive; and your Lectures furnish cases where the patient "lost the sense of touch in one arm, and fore-arm, and hand, so that the whole limb was benumbed; and in the place of the natural sensations, a sense of heat and burning, recurring at irregular intervals, was witnessed and experienced,"* and where "the whole arm was cold and of a purple colour, and the skin exquisitely sensitive."

Weakness of the muscles, on these occasions, terminate in loss of power: great sensitiveness, in loss of perception. But effusion, productive of this event, as well as venous congestion, which will alike occasion it, takes place in one column, whilst the disorder is in active state in the other; but, in all these stages, the spinal nerves are regulated by the same laws, and influenced by the same powers, which influence the nerves connected with the brain; the medulla spinalis possessing, for all purposes but volition, the same property of exciting action in the nerves connected with it, as the brain possesses over the cerebral nerves.

The same effects, alike arising from the same causes, are witnessed in the head; head-aches, with tightness and oppression there, are both accompanied and preceded by coldness and numbness in the scalp, or by a loss of the power of estimating its size, the head being in some

* Lectures, p. 17.

instances considered much larger, in others much smaller than is natural. If with this state of circulation in the head, there comes on an accession of fever, it is invariably followed, at least I am disposed to consider this an inevitable consequence, by a paroxysm of insanity; for the intellects are preserved so long only as the balance is kept up between the power of perception of external things on the scalp, and the circulation within the brain. Continued head-aches, with external numbness, denote a high degree of compression, to which if feverish excitement is added, this balance is at once destroyed.

If in the instances to which I have recurred, the irritable bowels become inflamed, the skin covering them retains its sense of coldness, until the whole of the arterial system is excited to greater activity, or the local disorder extends by continuous sympathy to the skin covering the disease. But that degree of increased action which, whilst it lasts, is sufficient to restore to the skin its natural sensibility, destroys the irritable state of the bowels, which become sluggish ever afterwards, for a change has taken place in the circulation at the origin of the abdominal nerves, arising from effusion; or venous congestion from this time exists there, and produces the same symptoms.

In the chest, too, the action of the heart being irregular, and it may be quickened, and beating with great violence against the ribs, there being at the same time acute pains in the chest and

difficulty of breathing; the patient is supposed to be labouring under inflammation of that organ, and is bled; the symptoms not yielding, bleeding is repeated, either by the lancet, or by cupping over the region of the heart. A blister is then directed to be kept open by savine cerate, and this also is applied over the region of the heart, where there are still more acute pains with a greater impediment to the breathing. When the blister is healed, or perhaps before that time, the cupping is repeated in a neighbouring part, and fresh discharge is excited even before the skin over the former blister is healed; the consequence of all which is a greater quickening of the pulse, with an aggravation of all the symptoms; or it may be they yield, and the patient recovers, but only partially recovers; for there is from this time palpitation on the least exercise, and the heart gradually beats over a larger surface; dilatation takes place, and the patient dies from effusion into the pericardium, or into the general cavity of the thorax or abdomen, and passive enlargement of the cavities of the heart is found on dissection.

I am recording now what has happened not only to myself, but to others of much greater intelligence: but reverse the picture. A man who had followed a laborious occupation for many years, exposed to weather of all kinds, retired after having acquired a competency, being then nearly sixty years of age, and never having experienced an hour's sickness for the last forty of

that time. Whilst directing some labourers, he was seized with apoplexy, taken into his own residence perfectly without consciousness, and remained many hours unable to swallow. The pupils were insensible, the mouth drawn, and the left leg and arm were palsied, and remained so for some weeks. By degrees, however, he regained his power over the muscles of the face and tongue, and then over those of the leg and hand, but of the latter more slowly. Soon after this time, he complained of some unusual sensations about the chest and of impediment in breathing; and on examination, the heart was found beating over too large a surface. This symptom of disease increased, and effusion took place, the first symptom being œdema. He died from obstructed circulation: his body was opened, and the right ventricle was found greatly enlarged, its walls much thinner than natural. The head was not examined; but there was no vestige of any other disease in the chest.

It must be admitted, I think, that if the symptoms during life, in the former of these instances, be deemed sufficient to explain the state of the heart, they will not in any degree explain those observed in the latter. And it cannot but excite attention, that even in the former case there was no trace of inflammation remaining after death, unless the dilatation of the cavity be such, a doctrine which no one will attempt in this day to establish, especially as the dilatation in the latter case was preceded by no symptom bearing the

least resemblance to such a state. But if in the former case the disordered action, "manifested" by pain at the extremeties of the nerves, exists in the spine, and terminates in effusion *there*, both the cessation of the pain and the subsequent dilatation of the heart become natural and almost necessary consequences; and every phenomenon observed in the second case is, on the same principle, easily explicable. Indeed, I am now satisfied that in passive dilatation of the cavity, the heart is to all intents a palsied muscle, and paralysis there, as in all other cases, takes place as a consequence of effusion into the spinal canal.

The dependance of the action of the heart on the state of the nervous system was beautifully illustrated in a case, the outlines of which, only, I am enabled to give, and for which I am indebted to my talented friend, Doctor Llewellyn Jones, of Chester.

The patient was a female, a lunatic, resident in the Chester County Asylum for some years, in whose head, inspected after death, a large quantity of serous fluid, amounting to many ounces, was collected between the dura mater and the brain; conjoined with which was a regularly organised fleshy substance between the aortic auricle and ventricle, by which the aperture was so much diminished that a moderate sized quill could scarcely be passed through it.

Such a state of the heart would necessarily, if conjoined with no other disease, have been de-

noted by a quick small pulse; and this state of the pulse is one of the most distinguishing characteristics of it. But in this case the pulse was excessively slow, beating often, I believe, less than twenty strokes in a minute.

It is evident that this degree of pressure could not exist in the brain, without influencing the spinal chord; and it scarcely requires the admission of more than can be demonstrated, if we add that this control over the action of the heart can only be effected through the medium of the spinal chord, the connexion of which to the heart, by nervous branches, is much more extensive and more intimate, than exists between the latter organ and the brain.

Cases of inflammation on the surface of the heart, sufficient to impede its action, are frequently witnessed, even in early life, which leave permanent traces of defective power in that organ, denoted by a quick small pulse, by purple and cold extremities, and as a natural consequence of this state of circulation through the nervous system, by sluggish bowels. But the same consequences follow disorders which simulate these diseases only; accompanied as an early symptom by inordinate action of the heart, pains in the sides, difficult and painful respiration, and every other sign of diseased action in the heart itself: sometimes the pain is acute in the left side and contiguous to the heart; at others the pain is in the intercostal muscles on the right side, or being relieved in one side it attacks the other.

Though these symptoms simulate diseased action in the heart, they are not hysterical, for they exist for many days without interruption, and even terminate fatally. Frequently, however, they are relieved, for the remedies which would cure the complaint, if situated in the heart or in the pericardium, relieve this also; and the same languid circulation, the purple and cold extremities, the same sluggish bowels, and in females, the want of the menstrual discharge, or its protraction to a late period and its continued deficiency, accompanied with a difficulty in breathing from any cause which quickens the circulation, are observed in these, as in the preceding cases; but there will be found this great difference; the symptoms, if dependant on diseased action in the heart alone, will be most conspicuous in the most dependant parts, in the feet therefore,—but when the primary disorder has existed in the spine, the symptoms in the heart being only secondary, the adjacent nerves will have suffered from the compression, and either the brachial nerves will thus participate, and the hands be colder and more purple than the feet; or the nerves surrounding the chest will have lost their power, and the respiratory function be additionally impeded from this cause.*

* In organs which derive their nerves from different sources, and are sometimes influenced by disorder in both, there will always, I believe, be discovered collateral symptoms sufficient to guide the practitioner to the principal seat of the complaint; for in the brain, as in the spinal marrow, other nerves will often participate in the disorder. And it is important to notice this, because if pain "referred to one side of the abdomen," "were followed by epilepsy," (Lectures, pp. 6, 7) it would, in my

But the mischief does not end here. Where the pulse remains quick and weak and small, after these attacks, the signs of defective power in the circulating organs being also manifested by the collection of blood in the minute branches of the veins, as I have mentioned; those functions which are dependant on the nerves furnished from, or rather connected with, the lowest part of the spinal column, and where, from position, the congestion is greatest, are performed with least regularity: hence the want of the catamenia and the sluggishness of the lower bowels, especially of the rectum. If the circulation be accelerated, even by emotions of the mind, epilepsy supervenes, as it does also from causes which depress the powers of the heart beyond that extent which has hitherto been borne, but borne, perhaps, with great difficulty. I have lately visited a young lady, whom I attended upwards of six years since, with disordered action of the heart, arising from inflammation there; she is now seventeen years of age, has the state of circulation I have endeavoured to describe, has never menstruated, and is seized with epilepsy. And I have seen the same effects ensue from accidents, followed by great determination to the head, intense pain there, and inordinate action of the heart, which having yielded to

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opinion, clearly denote that diseased action existed at the origin of the nerves which are ramified there. I should, therefore, trace them to their source, and if such a cause were discovered, it would, I think, give rise to well founded suspicion, that the epilepsy also was dependant upon that part, not on the brain.

remedies or to time, were followed by extreme deficiency in the circulating powers, the hands and half of the fore-arm forming a purple zone, constantly present when these extremities are not higher than the rest of the body. In a case I witnessed lately with my friend Dr. Chaytor, the patient had been epileptic; to which disease of the heart, now existing, supervened. In all these instances the disordered action of the heart can be traced to tenderness in the spine, which has long existed, and to that part of it from which the nerves arise; and the progress of disordered action in the heart will be regulated by the progress of the original disease; can neither be prevented nor relieved without attention to this source; and, I think I may add, can only be understood by this connexion.

It is worthy of remark, that, not only in the cases mentioned above, but in others also quoted by you, the parts which are too sensitive, and the muscles whose action becomes independant of volition, derive their nerves from the immediate vicinity of others distributed to parts, the powers of which are impaired. But whether this origin be distant or contiguous, changes take place in their functions by whatever influences the general circulating mass, unless disorganization has actually taken place, or the structure of the nervous masses is on the point of it.

This is often witnessed in asthma, the periodical attacks of which are removed by fever, or by inflammation of any kind which produces fever

so long as that state of the system continues; and as passive dilatation of the heart appears to me to arise from a paralytic affection of the nerves distributed to it, so does asthma, I apprehend, depend on a paralytic state of the muscles, which, in health, elevate the ribs. The confirmed asthmatic in all cases, I believe, inspires by lengthening the chest, not by increasing its diameter, and this is performed by muscles which are considered auxiliary, and which in ordinary cases are so; and their want of power in performing this function is assisted by the abdominal muscles contracting to a great degree, and thereby expelling the atmospheric air from that cavity. Hence the slow dilatation of those parts of the organ of speech which are also concerned in respiration, the length of time occupied in inspiring, the wheezing noise which is produced by it, and the rapidity with which expiration is performed.

In asthma, as I have remarked, the chest is never expanded—it is *lifted;* in affections of any part of the larynx, if sufficient to produce impediment in breathing, this is not the case. In asthma the shoulders are raised, if possible, during the paroxysm, and indeed at all times in those who are permanently asthmatical; but in all cases of impediment from obstruction in the windpipe, the neck is lengthened and the head thrown back to give as direct an access to the passage of the atmospheric air as possible.

The influence of sleep on respiration has been already alluded to, but its influence is scarcely, I

think, sufficiently considered, nor the mode of its operation attended to in these cases. At that period of life, when activity in the arteries gives place to the collection of blood in the venous system, if attention be directed to the circulation in the extremities during sleep, and more especially if the person sleeping be upright and his hands depending, the existence of sleep may be discovered by the livid colour of the extremities, though the face is covered and the breathing unnoticed; and the first proof of returning consciousness is denoted as clearly by the change of colour in the hands, as by the sudden and full inspiration which accompanies it. No one can doubt that a condition of the circulating system, so manifest here, exists in other parts of the body, and throughout the whole nervous system; and the constant seizure of patients with paroxysms of asthma, after sleeping some hours, affords an incontrovertible proof both of the state of the circulation in asthma, and the dependance of what is called spasmodic asthma upon it. On the other hand, if instead of this overloading of black blood, from slow inspiration, the patient inhales an atmosphere of greater rarity than common, the quantity of oxygen existing in that quantity of air which the muscles are able to inhale in a given time, is not sufficient for the quantity of blood passing through the lungs; an imperfectly oxygenated blood is transmitted to the heart and to the nervous system, and is the precursor of another asthmatic struggle on which life seems to depend: and as

dilatation of the heart is preceded in some cases by symptoms resembling inflammation of that organ, as well as produced by pressure from the effusion of blood; so is asthma preceded by symptoms resembling inflammation of the pleura, as well as by others denoting venous congestion.

In asthma which is permanent, effusion has taken place, I conceive, at the origin of the intercostal nerves on both sides; in hemiplegia, at the origin of the nerves on one side only: but asthma follows hemiplegia, and hemiplegia succeeds to asthma, and whether individual cases of these complaints are the result of inflammation, of the escape of blood from the vessels, or of venous congestion, is only to be discovered by their previous history. Yet the degree of difficulty of breathing in asthma, as well as its permanency, is regulated by these causes.

Asthma also is the result of any other cause by which an inordinate quantity of venous blood is collected in the venous system. One of the best marked cases of spasmodic asthma which I have ever witnessed, was in a boy only eleven years of age. He had suffered from the disease some years, and its origin was traced to an immersion in water, by falling over a boat, on which occasion animation was restored with great difficulty.

In other cases, attacks of acute pains in the side, recurring frequently, are not accompanied by either inordinate, or a too frequent action of the heart; these pains, however acute, serving only to raise the number of pulsations in a minute to the

natural standard, and to give to the pulse, which has intermitted before, a regular beat. And there is a difference also, I believe, not only in the state of the circulation within the spine in these cases, when compared with those which I have just endeavoured to describe, but the termination is also different, for with the quickened pulse hypertrophy or epilepsy will supervene; but with a slow pulse, we shall have asthma or paralysis in some part of the body, and in the heart dilatation of the cavities; which seldom occurs, I believe, unless the primary disorder is sufficient to retard the action of the heart, not merely to excite it.

Epilepsy is sometimes followed by asthma, this transmission of disorder from one state to another can only be accounted for, by a change taking place in the spinal system of vessels terminating in effusion there; so also in asthmatical patients, if epilepsy supervenes the change admits of easy explanation, for to effusion or congestion there is also added an increased activity in the arterial system. That such a condition does exist is proved by cases in your Lectures; for how otherwise can we explain the loss of the natural sensations of a limb, in which acute burning pains continue at the same time?

I have spoken of the symptoms as simulating an inflammatory state of the heart, or its coverings, when the primary complaint is situated at the origin of the nerves which are distributed to it. But it cannot be denied that causes existing at the origin of nerves, will excite inflammatory

action at the minute terminations of them in a distant part. Injury of the spinal chord, as was first observed by Flourens, is often seen to affect the circulation in those parts, and those parts only, which have their nerves from the injured portions of the spinal chord; and you have demonstrated, that a ligature applied around the trunk of a nerve, if sufficient to produce irritation, is followed by inflammation in the lungs. So that though in some cases inflammatory actions in distant organs are only simulated, in others that state of the vessels actually exists as a consequence of disease in the spinal canal.

Now with a knowledge of this fact, the truth of which might be established by numerous cases, I am constrained to question the judgment of those practitioners who, forgetting that the heart is connected with a nervous system, and disregarding the consequences which may be attributed to the agency of that system and to the circulation within it, confine their investigations into disorders of that organ, and direct their remedial measures by the ear chiefly. But passing over this subject, it is equally important to remark, that the progress which I have endeavoured to trace of disorder in the heart may be witnessed in other organs, and that it appears impossible to point out any viscus in the body which is not influenced by it.

The knowledge of the existence and the progress of disease in different portions of the spinal medulla, and in which the nerves connected with those parts participate, simplifies the symptoms

observed in a great variety of disorders, and gives a precision to practice which can only be obtained, I believe, by this knowledge. Thus disorders of the uterine organs, and the chain of circumstances, numerous and extensive as they are, which connect these organs with other parts, can only be understood by the admission of corresponding local causes at the origin of nerves connected with them only through the spinal chord; and though I have endeavoured to point out the progress of disorder in one part of the medulla spinalis, and though disorder within the spinal canal is thus limited in many cases, it cannot but be expected that the same state will exist in other parts in which other organs will participate. Thus the nerves of function in one organ, as the stomach, will labor under the same disordered action as those of the heart; and symptoms of indigestion will exist in such cases long before disorders of the heart are manifested, the latter being called into activity by the extension of the complaint in the spine from a severe cold; by inflammation in the lining membrane of the air tubes in the lungs; or by cold applied to the surface of the body, and vice versa.

Where such disorder does exist in different portions of the chord, and in the nerves arising from it, very slight causes applied to the extremities of one set of nerves will immediately operate on the organs connected with the other; and hence, on the approach of menstruation, we have not only pain experienced in those organs connected immedi-

ately with that function, but inordinate vomiting in one case, violent action of the heart, and violent action of the muscles connected with respiration in another. Hence also epilepsy, where there is disposition to disorder in the brain, the medulla oblongata, or as many cases will prove, in other parts of the spinal marrow, or in the coverings if sufficient to operate on the nerves connected with them; those parts being called into activity by irritating causes applied in distant organs, in which, however, without local disorder at the origin of nerves distributed to both organs, they would never have participated.

This is well illustrated in the convulsions which arise during labour, and connected with that function. In most cases of puerperal convulsions, so far as I have witnessed them, previous disorder may be traced, and its existence denoted, by tenderness at the origin of some of those nerves connected with the womb. The act of parturition, and the increased vascular action which is connected with it, are well calculated to give activity to a state of disorder already existing there, although not sufficient to overpower the ordinary functions of any part, without the additional assistance of such a cause.

But it is when other disorders supervene, which not only influence the action of these parts, but extend to the whole system and quicken the general circulation, that we have most reason for apprehension. It is then that disordered actions, long evidenced by disordered feelings or disor-

dered secretions, and which under ordinary circumstances would only gradually approximate to disease, become suddenly conspicuous, take the lead of all other symptoms, and terminate fatally. It matters not where the previous complaints have shewn themselves, nor is it important whether they have been considered nervous, or have approached to the borders of inflammation in individual parts, the same consequences follow. Neither does it import much, whether heretofore the symptoms have manifested themselves in the anterior or posterior columns of the chord, for by great constitutional causes they easily cross to each other, without the intervention of the brain; and this will often be observed in whatever part of the column the disorder has been displayed, whether in the nerves of the stomach, or bowels, or liver, or heart, or uterus, or whether confined to any part of the muscular system.

It seems best to adduce instances which have been witnessed by other practitioners; and I venture to mention, therefore, that of the relative of an eminent Surgeon, who after labouring under symptoms of pleuritis, for which he was bled copiously, recovered from the attack, and was next seized with similarly acute pains in the corresponding part of the opposite side, which gave rise to suspicion that there were exciting causes existing which had not been discovered, and that these were merely symptoms of disorder elsewhere. The spine was therefore examined, and great tenderness discovered over the dorsal ver-

tebræ; to which leeches being applied, he was immediately relieved. He was next seized with acute rheumatism, which attacked the heart, and he died from that cause.

If this were an insulated case, it would be dangerous to draw conclusions from it; but others of a like nature might be quoted, where from fever of any kind individual organs are excited to disease, chiefly because already predisposed to it from causes existing here. Even in the last stages of typhus, when consciousness has nearly ceased, the patient may be roused to the expression of pain from pressure on particular parts of the vertebræ, those especially where disorder has previously existed, and this disease is modified by inflammatory tendency to individual parts from the same cause.

It is in these cases most especially that the previous history of the patient, and the knowledge to be obtained from it, become most important: for in addition to whatever may be deemed necessary for the general state of the system, local measures must be had recourse to, not applied to the part where the pain is experienced, or to the organ which is labouring under disease, but to the origin of the nerves distributed to it, and the greatest caution seems necessary that nothing applied there can give local activity to vessels already too active. A blister, under such circumstances, applied over the tender part of the spine, would be well calculated to destroy the patient.

We have seen already, that the slightest pressure near the seat of the complaint was sufficient to excite convulsive muscular action; and in that case, and in others which I have witnessed, after the convulsions had existed some hours, the same effect would follow the application of even slight causes on any part of the skin, the nerves distributed over which had their origin near the disordered part of the spinal chord.

"Guided by the light of these facts," we may understand how a pain in the "left ankle, extending along the instep towards the little toe and sole of the foot," should be connected with the protrusion of piles, and how the relief of the latter symptom removed the pain also,* without referring it, as you do, to any communication in the brain. It is well known that such actions take place when all influence from the latter organ is destroyed. We may understand, also, how "a particular spot, near the ensiform cartilage," in any patient, may be connected with complaint, and how pressure upon that part should produce "extraordinary and distressing paroxysms."†

It is easy to comprehend also, that the schneiderian membrane may be too sensitive, from causes existing at the origin of the nerves which endue it with consciousness: and that the same cause will extend to branches distributed to the palate, the teeth, and the tongue, "causing very

* Lectures, pp. 13, 14. † Ib. p. 63.

severe pain there."* So, also, in the same manner, I apprehend, we may explain satisfactorily why pressure "on one tender spot, on the anterior surface of the abdomen," should be "followed by violent agitation of the whole person;"† how "local injuries" should be followed by a train of symptoms, either occupying the whole of the injured limb, or should influence distant parts;‡ and how the pain arising from a molar tooth should produce "spasmodic contraction of the muscles of one of the lower limbs," as well as its extraction remove them.‖ Wherever there is a deviation from those actions which in health are dependant on volition, it may safely be considered to arise from, and affords sufficient evidence of disorder existing at the origin of the affected nerves; and this fact cannot, I think, be reiterated too often, nor too strongly impressed on the minds of your pupils.

I may remind you, to how small a sphere the influence even of the largest nervous masses extends; and yet how intimate is that influence in the immediate vicinity of particular nerves; they form insulated spheres as it were, each pursuing its own course, and each regulated by influences which extend only to other parts by habit or disease; and if we apply this principle to practice, there is no difficulty in believing, that the rectum has little sensibility, though the stomach is irritable, nor, that the muscular fibres of the

* Lectures, pp. 61, 62. † Ib. p. 63. ‡ Ib. pp. 55, 57.
‖ Ib. p. 86.

bladder should have lost their power, whilst the neck of the same organ should be more firmly contracted.

Since, in the one case, measures were taken to relieve the irritating effects of piles, and the still more vexatious consequences of a painful tooth by its extraction, it may excite surprise that another organ of the body should be allowed to suffer, until "paralysis has actually taken place," before the Surgeon may be permitted to interfere, though such interference may prevent mischief, which, it is evident, from your own Lectures, he cannot cure.

But, these views, if correct, seem to point out other errors to be shunned, for no practitioner will, I hope, hereafter, remove the cicatrix of a simple wound,* divide the nerves at their extremities, "cutting down to the bone, the more effectually to accomplish it;" and still more, should a teacher of surgery deprecate, at the present day, all thoughts of removing a limb for pains affecting individual nerves, until those nerves have been traced to their origin, and all suspicion of disease there removed. Such is the connexion in the circulation between the bodies of the vertebræ, and the nervous matter contained within the vertebral canal, and the nerves which pass from it, that no violent disorder of any kind can, I feel confident exist there long, without giving indications of its local situation by external sus-

* Lectures, p. 81.

ceptibility on pressure or percussion; as well as other signs, which can never fail, by tracing the nerves to this source. To accomplish this end, and to remove this source of disease, caustic issues will often be required, and rest also, although you deprecate both; not to obtain relief from the weight of the body as in disease of the bones, for the position recommended in those cases would be injurious; but to obviate that additional activity in the circulation which exercise creates, and to subdue inflammatory action.

It is desirable to notice here also, that where caustic is applied, it is most important to avoid all sources of irritation on the eschars; that peas and all other extraneous substances should be withheld from them; that no application of a very stimulating kind should be applied to their surface; and that fresh applications of caustic should be made on alternate sides of the spine, as those already inserted are disposed to heal. The fused potass, if excluded from the atmosphere till used, and then moistened with water, needs only to be rubbed on the parts contiguous to the spinous processes of the vertebræ, as far as the tenderness extends, for the space of one and a half or two minutes. The space over the vertebral column is thus left free for the application of leeches, if necessary.

It is not necessary to pursue this subject further, on this occasion. The principles which appear to me to govern complaints of this class, are sufficiently explained, I hope, already; and it would

be foreign to my purpose to extend the inquiry further. I have ventured to appeal to you for a revision of those opinions, and that practice, which appear to me dangerous and inert: dangerous, because overlooking local causes of disease; and inert, even on your own confession, having no power with such views to limit or control the disorders to which they lead. It would not be difficult, I think, to point out many instances where, from the want of early, more active, and more direct treatment, functions have been irrevocably lost, and the remainder of life embittered; but your own work furnishes a sufficient variety of them, and it seems invidious and unnecessary to say more.

I cannot conclude, however, without expressing my sense of the zeal by which you have always been actuated, and of the candour with which your cases are given; nor without expressing my regret if I should, even in the least degree, have deviated from that course and that courtesy which a love of truth and of my profession dictates.

I have long contemplated a work on the disorders dependant on the nervous system, which it is very unlikely I shall ever finish. I shall be very glad to see such a work from hands more competent than mine; but I must declare my conviction, that it can only be useful by carrying out the views which I now submit to your consideration, and to the judgment of the profession.

I subjoin a few cases, out of many, which will not, I hope, be useless.

CASES.

I was consulted by a gentleman for a pain in the right leg, extending from the groin to the foot. The pain, though constant, was much increased at uncertain intervals; he could walk for a short distance without much additional suffering, and could bear the weight of the body for a short time on this leg, with the foot resting flat on the ground; though in walking he rested on the toe with the knee bent; and when unconstrained and standing, this was his favorite position, this leg being in advance of the other.

The nates was flattened, and the symptoms altogether simulated disease in the hip joint, though there was no tenderness on pressure there. The leg appeared lengthened, but this arose from position; for when the knee was straight, this symptom and the flattening of the glutæi muscles were removed.

Percussion on the trochanter gave no pain, nor did he suffer if the heel were struck with force. He had consulted several practitioners, amongst others a professional friend of mine, in whose skill and discrimination I have great confidence. The complaint was considered neuralgic, and the carbonate of iron exhibited in large doses, but without benefit.

Although I had the advantage of these opinions, I could not conform to them, for with neuralgia

only, there would scarcely have been constant lameness; besides there were night sweats, and other symptoms denoting the approach of hectic fever; and a loss of flesh and strength which could scarcely be accounted for, on that supposition: neither could I discover the least tenderness at the origin of the crural nerves, or along their course in the limb; but on flexing the thigh on the pelvis, and on pressing firmly above Poupart's ligament, and towards the iliac extremity of it, the patient shrunk from the pressure; and on striking the anterior superior and the anterior inferior spinous process of the ilium, great pain was again experienced: and I felt assured that the complaint was situated within the periosteum which covers the inner surface, rather than in the substance, of that bone; and this opinion was corroborated by the absence of all tenderness on the glutæal surface of it. The nerve passing near the inflamed part, and participating in it, accounted satisfactorily for the pain, which certainly resembled those arising from disorders in the neurilema.

A few leeches were first directed to be applied, and afterwards caustic issues, or a seton to be inserted. The patient was also enjoined to remain quiet, to take all weight off the leg, and to take exercise in a carriage only; but none of the latter measures were adopted. The patient continued to walk, and to ride about the country on horseback. An abscess formed, and was punctured below Poupart's ligament; portions of bone were discharged through the aperture, and the

patient sunk at last, worn down with the discharge and constant suffering.*

CASE.

A lady, aged fifty-six years, was suddenly seized with lameness whilst walking, which rendered it very difficult for her to reach home. Her health had been failing for some months, and occupations which heretofore were only an enjoyment to her, had during this time produced fatigue and occasional pains; but the latter not being confined to any part, excited little attention. After this sudden seizure, however, she experienced very acute pain along the course of the sciatic nerve to the middle of the thigh, and after using various rubefaciants and poultices, prescribed by a physician in extensive practice who visited her, she was sent to Buxton to use the douche there, and whilst at that place I was desired to visit her.

The pain which hitherto had occupied the course of the posterior crural nerve, had become excessively severe on the anterior part of the thigh, and extended to the knee. There was neither tenderness in the hip joint, on the glutæal surface of the ilium, nor along the anterior or posterior crural nerves. The patient could bear

* In another similar case, where an abscess pointed below Poupart's ligament, but on the iliac side of the tendon of the iliacus internus muscle, the case was treated as psoas abscess, the patient laid on his back, and had caustic issues applied, though there was not a vestige of disorder or any tenderness on pressure there; whilst the whole surface of the ilium was exquisitely tender to the touch, and the pain was confined to that bone and to the leg.

the weight of the body on the afflicted limb, with the foot flat upon the ground, without suffering additionally from it; but when this was attempted, the body was bent forward, the back being at right angles with the leg, from which position she could not rise without bending the knee and raising the leg from the ground as the back was straightened.

In this attempt the knee was lifted by the opposite hand, and when an effort was made to walk, the patient seized the garter of the afflicted leg, in the same manner, carried the leg forward, therefore, without any assistance from the muscles in the part, placed it where she wished it to remain, and then brought the right leg after it; the body being bent during this progression, as before noticed.

The movement gave no additional pain if thus accomplished, but the patient had not the least power to raise the limb from the ground, or to carry it forward in any other manner. Finding neither tenderness on pressure at the origin nor along the course of the nerves, and no painful sensation being experienced from striking the heel and pushing the head of the bone into the acetabulum, the nates also corresponding in shape and size, and the legs being of equal length; it appeared pretty evident that the complaint, of whatever nature, was above the hip, and that the muscles which bring the thigh forward in walking must be implicated.

This lady was the mother of many children,

and had lost some flesh; still there had neither been shiverings, nor any other symptom denoting the formation of matter. An examination was next made in the pelvic region, the patient being placed on her back in bed with the thighs flexed on the pelvis, until the soles of the feet were in contact with the bed. The hand being then pressed deep along the inside of the ilium, considerable tenderness was complained of, and a slight enlargement was perceptible. This enlargement was prolonged downwards towards Poupart's ligament and beneath it, projecting there like a small knuckle of intestine, and receiving an impulse on coughing like hernia. Above this point, it appeared to pass deep towards the brim of the pelvis, but was clearly distinguished by rolling the hand over the iliacus internus muscle, by which muscle it appeared to be bound down.

When no impulse was given to it, the portion of the tumour which projected below the ligament, resembled a small enlarged gland, but it was not on the inner side of the vessels like hernia, but beneath them; lifting up the artery from its position, which was felt beating over its surface. During the succeeding ten weeks, the swelling in the groin was well defined and enlarged somewhat, but above that part it could be felt like a thick roll under the hand raising the blood vessels and nerve, and extending laterally near to the anterior process of the ilium, elevating the integuments there and pointing, as if for bursting. Pressure between these points gave

a distinct sense of fluctuation, and I proposed making an opening into it by puncture. Suddenly, however, the tumour became indistinct, partly from œdema, which now occupied the anterior and upper part of the thigh more especially, and gave some obscurity to it; but independantly of this, the tumour disappeared suddenly, and the pain and immobility were in a great measure relieved also. Under these circumstances the patient was reluctant, and the operation was delayed. The œdema also gave way, but as it disappeared the tumour became again more distinct, gradually enlarged, and was now more prominent than before, and more diffuse; did not raise the vessels so directly, but became mixed with them, so that it was difficult sometimes to find the artery. The most projecting point was on the inner side of the ilium, and about equi-distant from the anterior process of that bone and from the brim of the pelvis, into which it seemed to dip or to be lost.

The patient would have consented now to any operation, and I was only waiting a few days in the hope that thereby it would approach nearer to the rim of the abdomen, when I was sent for in great haste, the patient having been seized with intense pain in the bowels accompanied with violent purging of what appeared a serous fluid, coloured by the red particles of the blood, in which was swimming flocculent matter such as is frequently seen in the diarrhœa of children. The pain and purging had continued the whole night,

and the swelling on examination had almost entirely disappeared.

There was great constitutional disturbance, the pulse being weak and tremulous, and beating one hundred and thirty strokes in a minute. Opiates relieved the pain and suppressed the discharge from the bowels, but the patient survived the attack only about thirty-six hours.

The symptoms seemed to indicate that the tumour had burst into the bowels; and both the sudden disappearance of the swelling, and the nature of the discharge, appeared to justify the opinion.

On cutting through the parietes of the abdomen twenty-four hours after death, a few ounces of watery fluid, effused into the cavity, followed the knife. The small intestines had a slight blush over them, and were somewhat inflated; the large intestines were contracted, and nearly empty. With the few ounces of serous fluid which escaped were also mixed particles of purulent matter, and the pressure of the sponge used to absorb it, seemed to increase it, though the pressure was very slight, that the parts might be seen in their natural position. The removal of the purulent matter, which had been poured into the cavity of the abdomen, occupied a long time, but being accomplished, a soft undulating tumour was observed so exactly behind the fallopian tube, the fimbriated extremity of which was spread over its surface, that it seemed doubtful whether the abscess, the apertures through which it had burst

being now visible and in immediate contact with the tube, was not contained in the duplicature of the peritoneum which enfolds it.

But an incision made into the sac, exposed a large cavity, occupying the brim of the pelvis, and dipping down into the basin, to expose which it was necessary to cut through the fibres of the iliacus internus muscle, the fascia of that muscle having bound it down; and behind the tendon of this muscle it had passed under Poupart's ligament, forming the swelling there which I have endeavoured to describe.

The sac of the abscess was well defined, being in contact with the upper part of the sacrum and nearly the whole of the ilium, and extending posteriorly to the superior posterior process of that bone, which was covered with a very thin periosteum. It traversed across the sacrum to the right sacro-iliac fossa. It had made its way also by the outer edge of the psoas magnus muscle to the loins through a narrow aperture, thus accounting most probably for the sudden reduction in the size of the tumour, about three weeks before the death of the patient.

A small portion of the sacrum, in its most projecting point, and of the body of one of the lumbar vertebræ were denuded of periosteum, but this arose evidently from the pressure of the abscess, not from disease; the bone in both instances retaining its texture, and the periosteum being firmly attached around the part which was denuded. The artery nerve and vein were divided in open-

ing the abscess transversely, and their expanded sheath appeared to constitute a portion of its boundary.

This case seems deserving of attention, not only from the obscurity of its early history, but as forming one of a series of cases which it is most important to the patient should be discovered early. Its origin was no doubt deep within the pelvis, as is proved by the early participation of the posterior crural nerve, the pain along that nerve being the leading symptom. The patient was treated for neuralgia, or for rheumatism; and was sent to Buxton for the latter complaint; but it might have been distinguished from the former complaint by entire absence of all tenderness either in the course of the nerve or at its origin, and from the latter, by its situation and course.

I regret that the wishes I expressed of puncturing the abscess were not acceeded to earlier, and when acceeded to, that they were not promptly executed. It would have been easy, I think, to have divided the edge of the abdominal muscles, as in the operation for tying the external iliac artery, have turned the peritoneum aside, and have punctured the abscess behind that membrane: and though, from the extent of the abscess, this proceeding would not have saved the life of the patient, it would, I think, have protracted her existence, and many cases may hereafter occur, in which such a suggestion, if acted upon, may be of great utility.

But to return from this digression, and to

prove that in almost all cases arising from disordered action in the nervous system, there is tenderness to be discovered either at the origin, or along the course of the affected nerves, I may mention a very interesting case, shewn to me by my friend, Mr. Manley, Surgeon, of Tyldesley, in this county. A man fell from a high building, and fractured the arm so severely, that it was deemed necessary to amputate the limb, which was performed, the bone being sawn across, above the fracture, and about four inches from the shoulder joint. The man recovered from the operation, but a pain gradually crept on, which was exceedingly violent, though not constant. It was described by the man, a very intelligent workman, as of two kinds; one by which the stump was "twitched" violently, producing a rapid motion of the limb; the other a much more intense burning pain, extending, as it appeared to him, to the ends of all the fingers; but though the thumb was perceptible, the feeling there "was quite natural and proper." This pain came on every ten minutes, darting with excessive violence, and continued sometimes for a short time, at others four or five minutes.

Had the nerve been included in the ligature which tied the artery, the thumb could scarcely have been free from pain; and the early separation of the ligature precluded such an opinion; besides the excessive tenderness discovered at the origin of the brachial nerves in the spinal column; this tenderness being traced along the

nerve as it passes over the rib, before dipping into the axilla, satisfactorily explains the symptoms. Neither if the complaint had been excited originally by any cause affecting the extremities of the nerve, would it have been distinguished by the patient as of two kinds, until the nervous mass, connected with them, had participated in the disorder.

Whether, in this case, the spinal column had been injured at the time of the accident, or inflammation had arisen there afterwards, from the sudden obstruction to the blood by the ligature around the artery, it is difficult to determine; but if we compare these symptoms with those related, of his own case, so feelingly and so well by the Rev. C. E. Hutchinson,* and for the relief of which he sought advice in every part of Europe; there seems every reason for believing that a similar cause existed in his case also. His pain came on "with numbness in the left arm, attended with a slight pricking sensation;" then "a sharp pain was experienced along the first and middle finger of the left hand;" "it left this part and reappeared in the muscular parts inside the arm, four inches above the elbow;" then came on "a dull tingling in the affected arm," "which may by explained by the familiar term of pins and needles," "which shortly assumed a throbbing and lancinating character." "The pain then entirely left the arm and fixed itself under the

* Narrative of a recovery from tic doloreux, by the Rev. C. E. Hutchinson. London: Rooke and Varty.

ball of the thumb, where it remained permanently for many months."

That the pain had its origin in the spinal column was proved by the fact, that a tourniquet applied round the arm only aggravated the symptoms, operating as amputation would have done in such a case; and the pain continuing so long as diseased action existed at the origin of the sensitive nerves. Yet the only application to the spine was the douche, and we well know what effects may be expected from local pressure, on any part, which is in an active state of inflammation. The whole treatment, though directed by practitioners of the greatest eminence, appears confessedly to have been entirely empirical. It is impossible to say on what other principle strychnine, and electricity, and galvanism could have been prescribed for intense pains; and when suspicion did cross the mind of the practitioner, that disorder might exist in the nervous masses, that suspicion was directed to the brain, and leeches were applied accordingly; though no disorder there could affect the brachial nerves but through the medium of the medulla spinalis, and disorder in the latter would explain them without the brain. That the brain, in this case, was not affected, is further proved by the absence of all signs of disorder in the nerves arising from it.

CASE.

A gentleman consulted me many years ago, complaining of an intolerable pain, confined to

the palmar side of the left thumb. This pain only recurred at uncertain intervals, was of uncertain duration, sometimes remaining only a few minutes, at others several hours; and whenever the pain came on, it was considerably increased by hanging down the arm. After the pain subsided, the thumb was as useful as before, and he was otherwise in good health. In course of time it was discovered that this pain was frequently occasioned by anything pressing, however lightly, on the fore-arm; and on this account, when walking with a lady, he invariably placed her on his right side to avoid the pressure of her arm upon it.

He was next seized with an irregular action of the heart, the pulse intermitting every third, fourth, or sixth stroke. He was seized with this symptom, for the first time, after walking eight or ten miles quickly, during a snow storm. This irregularity was accompanied with no other symptom of disorder, the breathing being natural; and though he sought advice, when convenient, he never pursued any direct treatment.

After several years, during the whole of which his pain existed occasionally, and the pulse remained almost constantly intermitting, the patient suffered from acute pain in the left side, with dry cough and difficulty of breathing. He was bled and blistered freely, took nauseating medicines with so little benefit that apprehensions were entertained he might become consumptive, the pulse having become now quick and regular. It was

at this time that the spine was examined, and great tenderness was found there, extending over the third, fourth, and fifth dorsal vertebræ, for which the patient was freely leeched; the cough yielded, and from that time to the present the pulse has been quite regular, and the pain in the thumb has only recurred once, and then for a few moments only.

CASE.

In 1822, I was desired to visit R— R—, Esq., who was suffering from intense pain, commencing at the lower edge of the gastrocnemius muscle, and extending to the foot and ankle, on the outer edge of which the pain was described as excessively severe. It had existed constantly for ten days and nights, but previously there had been occasional acute pains which had been little attended to.

Examination of the foot produced no aggravation of symptoms; there was neither redness nor swelling, nor was there the least tenderness along the whole course of the nerve from the ischiatic notch to the toes. The spine was therefore examined, and tenderness over three of the lumbar vertebræ discovered, where, after a plentiful leeching and the lapse of several days, a cupping glass was applied and twelve ounces more blood taken. A large blister was applied afterward, and rest still strictly enjoined. The bowels were freely acted upon, and the patient was confined to a spare diet.

As the pain, though very much reduced, had not entirely left him when the blister was healed, another examination was made along the course of the nerve, and more especially at its exit from the pelvis, where it was thought by the patient there was now some tenderness. He was again cupped over this part, the whole limb and the lower part of the back were defended from vicissitudes of temperature, and the patient being entirely relieved resumed his usual habits. After some years the pain returned, but speedily yielded to the same remedies.

CASE.

Miss ——, at 42, suffered from excruciating pain along the whole of the right leg, extending from the glutæus muscle to the outer ankle; at which point it was described as if pierced with red hot needles. These pains were only temporary, leaving in the part a constant aching, increased by motion of any kind, and even by a depending position. Treatment similar to that described in the preceding case was adopted, and with a like result. In this case, however, there was more tenderness along the course of the nerve than in the one already related, and the treatment was modified accordingly.

CASE.

I was consulted by Mrs. ——, of ——, in the county of Derby, who was suffering from pain in the fourth and little fingers of the right hand, on

account of which she had sat up for many nights, not being able to lie down, that position bringing on an aggravation of her pain and rendering it intolerable. She had no pain in any other part, and was quite well when first attacked, but her appetite had now failed, and she was, as she expressed it, "quite worn out."

There was no difficulty in discovering the cause of these symptoms, for even slight pressure on the spine, above the stays, produced a shrinking from the finger, which could not be produced even by great violence elsewhere. Leeches were directed precisely to the spot, and the patient slept the whole of the following night and many nights in succession, and had no recurrence of the pain for some weeks, when after exposure to cold it returned, and a repetition of the same treatment again removed it.

CASE.

I was desired to visit a gentleman, about fifty years of age, into the early history of whose symptoms it is not necessary to enter very fully. He had latterly and for many months suffered from intense head-aches, confined especially to the back of the head and to the neck, but occasionally extending to the whole head; his bowels were costive, his stomach dyspeptic, and his liver inactive; but his appetite was so keen, when in health, that he had difficulty in controlling it.

This gentleman's occupation led him into various parts of the kingdom, and he had been

the patient of Physicians and Surgeons in almost every place which he had visited. He had been bled, cupped, blistered, leeched, and purged by turns. He had taken emetics and stimulants, cordials and sedatives; had lived well, and occasionally had abstained; but one mode of treatment was as inefficacious as another. His head-aches now returned daily, his appetite was impaired, his flesh and strength wasted: in short, he was evidently wasting, but of what disease it seemed difficult to determine, for the opinions were as various as the treatment.

The head-aches were of no common kind. The pain was deep seated and intense; was most distressing at the back of the neck, near its attachment to the head; recurred early every morning, and often left him entirely during the day; but anxiety in business, or exertion of any kind, invariably produced or increased them.

Other symptoms seemed creeping on, which were as formidable as those already in existence. When walking, he complained of more and more prostration of strength; stood often to gasp; though when at rest his breathing was neither difficult nor too frequent. There was no inability to lie down in any position; no pain in the arms; the pulse was regular at all times, beating from eighty to eighty-four in a minute, when at rest; the chest could be filled, on inspiration, most perfectly; yet, when sitting, his elbows were almost invariably on his knees, and his arms pressed forcibly to the abdominal muscles, as if to support

them. There was no indication of disease of the heart; no effusion into any cavity; no increase in the size or hardness of the liver; purging restored its action, though it did not relieve his head; the kidneys were active; the stomach alone remained disordered, but no disorder of the stomach could, I conceived, account for his symptoms, for the severe and periodical head-aches especially.

At this time he had been advised by a very excellent practitioner, resident in a distant town, to visit Cheltenham, and the advice was so urgent and so reiterated, that although anxious to introduce a seton in the neck, he obstinately declined all other remedies until the efficacy of the Cheltenham water had been tested.

Whilst at Cheltenham he took other advice, was put into a bath at 100°, and remained in it until his breathing became so difficult that he was apprehensive of instant death; and many hours intervened before the powers of respiring freely were restored.

He returned from Cheltenham immediately after this, impaired in health, and strength, and spirits; his nights were restless; and the day after his immersion in the bath, a numbness extending to the thumb and forefinger of the left hand appeared, and alarmed him greatly. The opinion I had already formed of mischief in the spinal canal, confined apparently hitherto to the origin of the phrenic nerve, was strengthened by the last named symptoms; clearly denoting an extension of the disorder to the origin of the brachial

nerves. The insertion of a seton at the origin of the phrenic nerve was now again recommended, and submitted to. I was not then sufficiently aware of the consequences arising from a seton inserted deeply near the diseased part, and of the inflammation which accompanies it.

The effect of the operation in this case was most distressing; considerable inflammation ensued, and its progress was marked by so great an increase to the difficulty in breathing, that it became absolutely necessary to remove it. The patient scarcely slept during the whole time the seton remained, though his drowsiness was distressing, and almost every few minutes overcame him so far, that volition was suspended. The moment he ceased to be conscious, the muscles of the chest ceased to act; and when this cessation from breathing had continued as long, perhaps, as two or three ordinary inspirations would have occupied, he darted from his pillow, on which he could lie with comfort whilst he was awake, gasping and staring until consciousness was restored, and the breathing became again gradually tranquillized, when he sunk again; for a moment ceased to be conscious, then ceased to breathe, and awoke in the same agony. During these struggles the finger was kept on the pulse, which was not affected, beating from eighty to eighty-four strokes in a minute. During sleep, or rather after the attempt to obtain it, every effort both of mind and body became necessary to save him from sudden death; and when awake, the dia-

phragm was supported in the manner I have already mentioned, by pressure to prevent its descent into the abdomen, and to assist in supporting the weight of the viscera upon it, as well as to regulate the quantity of air admitted into the chest, and to give to the abdominal muscles additional power of expelling that which was already received.

The next function which suffered was the heart; the pulse became intermitting, and water in the cavity of the pericardium became cognizable to the ear. Œdema also came on, and he died without anything remarkable being noted concerning the manner of his decease.

His body was inspected after death, and the following appearances were noted at the dictation of my friend, Mr. Jordan.

The arachnoid membrane over the cerebellum and medulla oblongata was milky, in considerable portions. The basillary artery was diseased; and on pressing aside the spinal chord, more than an ounce of water flowed from the canal.

The vertebræ of the neck were removed, and traces of inflammatory action were very evident. That portion of the membrane lining the canal where the phrenic nerves pass from it, was of a bright scarlet, as if blood had been effused into the membranes around the nerves. The pericardium contained about three ounces of fluid, but there was no disease of the heart discoverable, and every other viscus was healthy.

CASE.

A young lady was seized with difficulty of breathing, which alarmed her. She could not lie down, but did seem to know why. When seated on the bed her breathing was tranquil, but if desired to lie down, though she complied with the request, she rose suddenly, appeared greatly distressed, and said she should be suffocated. She referred all feelings of distress to the diaphragm, or across the lower part of the chest. She could inspire fully and without pain; her symptoms were considered the effect of imaginary fears, and were treated accordingly.

During the following night she never laid down, yet there were no symptoms which gave character to her complaint, though a more minute investigation was made into them: none of the common symptoms considered hysterical were present; the bowels were therefore attended to, and the apprehensions still expressed, removed, as far as was possible.

On the fourth day the patient, still suffering, complained of great constriction around the neck, and of tenderness on one side of it, where a tumour, situated deeply beneath the fascia of the neck, on the left side, was just discoverable by elevating the shoulder, and was painful on pressure. As this tumour increased, the difficulty of breathing increased also, so that the patient was obliged to obtain sleep in an upright position: the only prominent symptom being a great sense of

constriction in the neck, "an odd feeling" across the diaphragm, and the increase of the tumour.

Matter formed, and the abscess was punctured, as soon as possible, by a very broad shouldered lancet, to prevent its reaccumulation; cold applications were used, and the symptoms vanished.

Two years afterwards this lady married, and after her marriage was again seized with the same symptoms; the abscess again formed, was again punctured, and the breathing again became immediately tranquil.

CASE.

A young unmarried female consulted me, who complained of great pain in the right side, below the lowest rib, with difficulty of breathing; the pain being acute, and increased by deep inspiration. She was bled from the arm and by leeches to the side, to which a blister was then applied, but without benefit. She complained of pain in the shoulder, extending to the neck on the same side, which with the pain in the side and difficulty of breathing, appeared to denote inflammation in the liver. This opinion was strengthened by tenderness there, and by an inability to lie on the left side. Still the pulse was not much quickened, and the tongue was moist; the bowels open, and the discharges natural; and this being accomplished, active measures were discontinued.

In a few days the patient directed attention to a soreness and swelling on the right side of the neck, which had been disregarded hitherto. There

was also considerable redness, attended with so much pain in the side and difficulty of breathing, that leeches were applied there, and this affording no relief, blood was again taken from the arm. The tongue now was dry, and the pulse quick.

Suppuration took place rapidly, and the inflammation abated; the abscess was punctured, as in the former case, and the symptoms immediately yielded.

After some months the gland again enlarged, was followed by the same symptoms, and relieved by the same means.

In this, as in the preceding case, I attributed many of the symptoms to the contiguity of the complaint with the course of the phrenic nerve; for though the tumour was situated below the fascia of the neck, the compression on the larynx was never sufficient to account for them. The symptoms in the latter instance, where the disease was more active and the constitution more vigorous, bordered upon those arising from inflammation in distant parts, if that state of the vessels did not actually exist.

FINIS.

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