but since subcutaneous injection was introduced this method is rarely employed.

OBSERVATION OF EFFECTS.—After the drug has been administered, we allow the animal to move freely about, but prevent frogs from escaping by covering them with a large bell-jar. We then see whether the animal is restless or disinclined to move; whether its movements are perfectly performed or unsteady; whether or not its legs seem weak and paralysed, or convulsive movements or involuntary twitchings be present; whether its heart-beats or pulse, and respirations, are quick or slow, strong or weak; whether there is vomiting or purging diuresis; salivation; or dryness of the mouth; flow of tears, or dry conjunctiva; and whether the pupil be contracted or dilated. If the animal seem asleep, we pinch it to ascertain if reflex action continue after voluntary motion is gone; and if respiration cease, we ascertain if the heart still continue to beat. As soon as possible after death, we open the animal and see if the heart still be beating. If it have stopped, we note whether its cavities are full or empty, its walls flaccid or firm, and try whether it will still contract or not on pinching or scratching it, or on irritating it by an electric current. We observe whether the veins are turgid or empty, the lungs pale or congested, the stomach and intestines quiet or in active peristaltic movement, the spleen large or contracted, the bladder full or empty; and the urine may be tested for sugar.

INTERPRETATION OF RESULTS.—If we find in the course of these experiments that voluntary motion is increased or lessened, we may naturally conclude that the activity of the cerebrum is increased or diminished, unless the increase of motion should depend on pain, or its diminution on impairment of the motor apparatus. Unsteady movements, paralysis or convulsions, impaired reflex action on pinching, or stoppage of respiration before the heart, point to the spinal cord, to the nerves, or to the muscles; while quick or slow, strong or weak pulse, or stoppage of the heart before the respiration, point to the vaso-motor system or cardiac nerves; increased or diminished secretion, to secreting nerves; and full or empty bladder, and diminished or increased peristalsis, to the motor nerves of the bladder or intestine. We then try the effect of a small dose, and note in what respects it differs from that of a large one. We thus ascertain in a general way what the organ is, which is chiefly acted on by any drug, and afterwards proceed to investigate the nature of the action by a farther series of experiments.

MINIMUM FATAL DOSE.—If the drug be poisonous, we then try to ascertain the minimum fatal dose. For this purpose we weigh an animal and inject into it a dose which we think will not prove fatal, wait a short while, and then inject more till death is produced. We then reckon how much of the drug has been injected for every pound weight of the animal. We take another animal, and inject into it *at once* a quantity which will be somewhat smaller for its body-weight than that given to the first. The reason why a somewhat smaller quantity should be taken is, that some time was allowed in the former experiment for the excretion of part of the poison between each dose. If this amount prove fatal, we must give a still smaller quantity to another animal; but, if not, we must give more till we find the smallest quantity which will kill.

VARIOUS CHANNELS OF ADMINISTRATION.—The next point to be determined is, whether the effects are the same when given by the mouth or rectum, or other mucous surfaces, as by subcutaneous injection. If we should find, as Bernard did with curare, that a substance which is active when injected subcutaneously or into a vein, has no effect when introduced into the mouth, rectum, eye, or bladder, we must determine whether this is due to want of absorption or to decomposition of the drug by the secretions with which it becomes mixed. This is done by mixing it with these secretions, such as urine or gastric juice, allowing it to stand some time at the temperature of the body, and then injecting the mixture subcutaneously, and observing whether the usual effect is produced or not; or by ligaturing the ureters to prevent excretion.

EXCRETION.—Lastly, we examine in what manner it is excreted from the body. As most solids are excreted by the kidney, we generally restrict this process to evaporating the urine, or testing it either chemically or by injecting some of the extract into another animal.

[To be continued.]

DR. H. O. STEPHENS, having resigned as Resident Medical Superintendent of the Bristol Lunatic Asylum, Stapleton, has obtained from the Town Council of Bristol a retiring allowance of £250 per annum upon the recommendation of the Committee of Visitors and the Commissioners in Lunacy, the latter of whom spoke in high terms of Dr. Stephens's "devotion to his duties and the success which had attended his efforts."

CLINICAL LECTURE

ON A

CASE OF STRUMOUS OPHTHALMIA, AND ON ONE OF SCIATICA.

By C. HANDFIELD JONES, M.B.CANTAB., F.R.S.,
Physician to St. Mary's Hospital.

GENTLEMEN,—The two cases which I bring before you to-day may seem sufficiently diverse; yet I think, on a little consideration, you will see that the differences are superficial; and that, beneath an external dissimilarity, there exist some very real resemblances. The chief reason, however, why I have put them together, is to afford me the opportunity of saying a few words as to the management of tedious and difficult neuroses.

CASE I.—E. W., aged 10, admitted June 19th, 1869, was transferred to my care July 5th, 1869. She stated that she had suffered with her eyes since she was twelve months old. They had been cured two or three times, and had again become diseased. She was in St. George's Hospital for seven months in the summer of 1868, and, when discharged, she could see pretty well. This improvement continued four months, and then her eyes passed into their present state. She said that a cataract was removed from each eye while in St. George's. She had previously been in Moorfields Hospital. She suffered from toothache at times, but had no other special ailment. There were two or three markedly decayed teeth, but she ate her food fairly well. Her photophobia was extreme. When I first saw her, she sat before me with both eyes bandaged up thickly, and also her hands over her eyes. She affirmed that she saw light when her hands were removed. The first few days after she came in, she used to lie with her head buried in the bedclothes; she did not do this now. She was, of course, in a darkened ward. She never opened her eyes day or night. She did not sleep soundly at night, but often woke up. Much lacrymation occurred. When questioned, she said distinctly that it was the light that hurt her eyes; she was more comfortable in the dark. The urine was pale, feebly acid, not albuminous; pulse 123, weak.

September 10th. She was put under the influence of chloroform, but it was with difficulty that anaesthesia was produced. The lids, on being everted, were found non-granular; their lining membrane very red. An opacity was found on the left cornea; none on the right.—Nov. 5th. By this date she had left off her shade, and walked about all day without it. There was much contraction of the corrugator supercilii muscles, much frowning and lacrymation; the latter occurred especially when she was questioned by myself or clerk, but not when the ward-sister spoke to her. She also sneezed a great deal. By December 4th, she had improved much in general condition, had got fat and strong, and went then to a convalescent home at Hanwell. From this she returned in a month greatly improved. She looked up steadily, and faced the light quite well. There was nothing apparently amiss, except some tinea tarsi of the right side. She remained now as an out-patient till March 19th, when her eyes were becoming irritable again, as she was ill fed and cared for. There were moderate opacities on both corneae; nevertheless, she could make out a pattern of leaves and sprigs etched on glass. Since then I have not seen her.

The amount of improvement obtained in this case was very great, but it came very slowly, especially at first, and was interrupted by frequent relapses. Again and again one felt inclined to give up the treatment in despair. But the result proved that, with fair play, a cure was perfectly feasible, and that perseverance in the use of appropriate means was all that was requisite. I should weary you if I enumerated all the remedies that were employed; I need only say that they were nutritious food and the ordinary stimulants and tonics, frequently varied, and aided to some extent by local applications. Of the latter, I think free douching with cold water had the best effect. Instillation of strong solution of sulphate of atropia did good for a few days only; nor did aconite lotion or chloroform-vapour avail perceptibly. Some temporary benefit was obtained by the extraction of some decayed teeth, but it was of short duration. A fair trial was given to bromide of potassium when the disorder was at its worst, but it had no good effect; neither had small doses of potassio-tartrate of antimony, which are much praised by Dr. Mackenzie. When convalescence was fairly commenced, much good was done by change to a purer air; and I doubt not that this would have been of great benefit at an earlier period. The nutritious diet was of course a necessity; but I by no

means think that it alone would have sufficed for recovery. The moral of the history is self-evident; but I will again refer to it at the close of the lecture.

Let me now direct your attention to the point which especially characterises the case; viz., the existence of a condition of nervous tissue termed hyperæsthesia—a state unquestionably of excitement, but of excitement, as it has been truly said, without power. *A priori*, we should have supposed that a weak nerve-tissue would have been quiescent and languid, as indeed it often is; but you ought to be fully aware that there is no wilder, intenser excitement than that which is based upon debility and is wholly independent of increased blood-flow to the affected part. In the so-called scrofulous ophthalmia we have an excellent example of this state of hyperæsthesia, whether we regard, according to the modern view, the filaments of the fifth nerve distributed to the cornea to be the seat of disorder, or, according to the older (which I confess I prefer), the retina.

One essential point as regards treatment seems to be whether the photophobia is to be regarded as a primary affection of the retina, analogous to cutaneous hyperæsthesia; or as secondary, depending on reflex irritation derived from the sensory filaments distributed to the cornea, which, when deprived of their investing epithelium, are irritated by the phlyctenulæ or by the lacrymal secretion. While not doubting the excellent effect which may be produced by local applications that restore the conjunctival surface to a healthier state, I cannot assign them more than a secondary place, as it seems clear, from the testimony of the best writers, with which my own experience quite agrees, that in severe cases nothing avails except remedies, mostly of a tonic kind, addressed to the general system. Thus Mr. Soelberg Wells writes of phlyctenular cornetitis, that he has “often found that a prolonged stay at the seaside, together with sea-bathing, tonics, a generous diet, and plenty of out-of-door exercise, will cure cases of photophobia which have obstinately resisted all other remedies.” In many cases, from Dr. Mackenzie’s description, it appears that no phlyctenulæ or ulcers exist, as you remember that none were found in our own. Again, the surprising effects of sudden surprise and fright, as observed by Von Gräfe and Mr. Hutchinson, seem to me scarcely explicable on any other view than that of a primary retinal neurosis. However, it is quite possible that a result may have two causes; and, though I hold the surface-irritation of the eye to be only a secondary cause of photophobia, I am far from advising you to neglect it.

Another day I hope to return to this great subject of hyperæsthesia, and to give you further examples of it. At present, it may suffice that I have called your attention to this striking instance, and given you reasons for regarding it as a primary affection of nerve-tissue, dependent, as Dr. Mackenzie states, on constitutional infirmity.

CASE II.—W. H., aged 73, was admitted December 3rd, 1870. He was a feeble-looking old man, engaged in a laundry. He had been laid up for thirteen weeks, as he stated, with sciatica. He never suffered in this way before, but had rheumatism in the shoulder some years ago. He had never had gout. He had been subject to pain in the back for thirty years.

On examination, I found the lower dorsal and lumbar spines tender to pressure, as well as the sacral, especially the lower. The pain was especially felt between the tuber ischii and the great trochanter, and extended down the back of the limb into the toes. The hip-joint was quite free, and so was the sacro-iliac synchondrosis. The right leg was a little shortened, he said, from neglect in infancy. The sciatica came on suddenly; he could not account for its origin. He turned with great difficulty from one side to the other; he could stand, but hardly walk. The bowels were regular; the tongue was moist and clean. The muscles at the posterior aspect of the thigh were very inert when Faradised. The urine was of specific gravity 1022, not albuminous. His sleep was much disturbed by pain for three weeks after admission. He was most desponding, and had a most dolorous expression, lay constantly in bed, and for a whole month appeared nothing better for all the remedies that were used, except that subcutaneous opiates gave him better nights. On December 28th, he was suffering much pain both at the back of the hip and at the anterior and outer part of the leg, “like a very bad toothache.” Percussion on this part of the leg caused soreness and pain running up the limb. On the 31st, having had an excellent night after a subcutaneous opiate, he woke free from pain; but, as soon as he moved, the pain returned. Pain was not felt now in the hip as long as he lay still, but there was much in the foot and leg. On January 4th, he was up, and admitted that he was better. On the 21st, he was better, and had no pain except when he rested his weight in walking on the limb. On February 10th, he walked without a stick. On February 8th, he showed me a copious lichenoid eruption, itching much, on the anterior tibial region, where the pain like toothache had been, and where he had applied a chloroform and opium lini-

ment. On February 11th, the papules had subsided, and a good deal of superficial redness had appeared between them. The foot had become highly oedematous as high as the ankle, and the leg itself was rather swollen. The left leg and foot were quite unaffected. The old pain was very much better. On the 15th, things were much in the same state; there were no enlarged veins on the surface of the leg. He was now ordered to observe the recumbent position, with the right foot a good deal raised. In two days the swelling of the foot and leg had quite subsided, and it did not return again except to a slight amount when his foot was allowed to resume its usual position. The papules, however, continued to be seen on the leg; and there was some eczematous eruption with discharge in the ham. On February 28th, he was discharged, and walked down stairs quite well. During the first month, his treatment consisted of three grains of iodide of potassium and four grains of carbonate of ammonia in an ounce of decoction of cinchona three times a day, with twenty grains of saccharated carbonate of iron three times a day; or of a mixture with a grain of iodide of potassium, and four grains of carbonate of ammonia with tincture of cinchona, tincture of valerian, and infusion of valerian, the iron being continued. Nothing was gained by adding ten minims of oil of turpentine to each dose of the mixture. He was fired with a disc heated in boiling water over the back of the thigh, the buttock, and the sacral region; but the only result was the removal of the tenderness and pain which had been felt over the lower spines. Injections of one-fiftieth of a grain of atropine, podophyllin with colchicum in pills on alternate nights, nitromuriatic acid three times daily, and hypophosphite of lime in ten-grain doses twice daily, availed little or nothing. Faradisation and galvanism were employed a few times; the latter, from an excellent Stohrer’s battery, gave relief for a very short time. Acupuncture was performed with four pins introduced at the back of the hip and three at the anterior part of the leg; but I could observe no improvement from it. On January 1st, he began to take fifteen grains of quinine daily; and on the 16th I gave him, besides, four minims of liquor potassæ arsenitis three times a day with his food. On the 30th, these remedies were replaced by twenty grains of citrate of quinine, ten minims of tincture of nux vomica, and ten minims of spirit of chloroform, three times a day; and cod-liver oil, which he had had before, but had given up as it disagreed, was continued in drachm doses every night. Lastly, on February 17th, arsenical solution was given again in five-minim doses with bark; and the oil was continued.

I regarded the eruption which appeared on the leg during the latter part of the treatment at first as a mere accident, depending on the irritation caused by the liniment; and I believe that the latter was to some extent a *vera causa*. But I think there was more in the matter than this, especially as considerable subcutaneous effusion took place in a part where there was no eruption. The chief cause was, I suspect, a paresis of the vaso-motor nerves of the limb, which relaxed the arteries and impaired the retentive power of the capillaries. As we have strong grounds for regarding neuralgia as a paralysis of cerebro-spinal nerves, it is quite to be expected that the vaso-motor nerves accompanying them shall fall into a like condition. At p. 554 of the second edition of my work, I have recorded a very similar case; in which, however, the eruption ran into erysipelatoid inflammation.

The inert state of the muscles when Faradised shows how the neuralgia had paralysed the motor as well as the sensory nerves; and this seems to be a very frequent, if not a constant, occurrence in all neuralgias. Reproduction of the pain by exertion is another very common event, and suggests the monition that our convalescents from neuralgia should be cautious to economise their feeble powers, and not take too much out of themselves in any way. I have no doubt that intellectual exertion would be as injurious as muscular. A medical man suffering from nervous exhaustion once told me that he found any amount of close thought induce actual pain. Another sufferer, a hard-worked male, mentioned that annoyance would bring on in two or three minutes a rather sharp pain at the left side of the upper part of the head.

Next, as to the all important question of the *origin* of the sciatica, we may be certain, I think, that it was occasioned by primary defect in the nerve or its centre, and was not due to any toxæmia or remote irritation. The two latter are very possible and real causes, and you must never forget them. But our patient showed no traces of gout, or syphilis, or lead-poisoning; and we cured him without removing any cause of irritation. We are, therefore, shut up to the first; and we are confirmed in this view by the fact that we had to do with a poor, feeble, down-hearted old fellow, who had probably never possessed a good stock of nerve-force, and whose circumstances had been such as to depress what little he had.

Lastly, I come to the chief lesson which I would have these two cases teach you, and which I may express in one word—perseverance.

You see that in both instances we had to combat disorder of long standing under many unfavourable circumstances, and that success was obtained in each, not by excogitating some new and peculiar remedy, some antidoloric oil or drops, but by the steady pursuance of a rational method, involving simply the use of old well approved remedies. In both cases, improvement came very slowly; some weeks elapsed before any was apparent; but the ultimate results were fairly satisfactory. Now I want you to lay this well to heart in your future course. You will surely meet with many similar cases; and you will be often puzzled and wearied by them, and tempted to give them up in despair; and, if you allow this to appear, the patient's confidence in you will necessarily be shaken. But be prepared for all this discouragement *ab initio*. Let your patients or their friends know that progress, especially at first, will be very slow, and probably interrupted by numerous relapses; but that, nevertheless, the wished-for result is attainable, if they second your perseverance with patience. Remember that diseased action is much like a railway-train in motion; it cannot be brought to a stand-still all at once, though you apply the breaks and shut off the steam. The momentum acquired cannot be safely neutralised *instantly*, and time is essential to set up counter-actions of a restorative character. To those who with fashionable scepticism may be inclined to suggest that Time is the healer in such cases, and not Art, I reply that all my experience leads me to think that the longer space elapses without the intervention of Art, the longer also must be the period during which remedies must be employed. A sciatica of fourteen days' and one of fourteen weeks' standing are vastly different things. Trousseau embodied the same truth in his aphorism—*longue maladie, longue traitement*. In urging upon you perseverance, I may appeal to the estimates formed by foreigners of our national character, from which I trust you do not intend to degenerate. Napoleon sent this message from the field of Waterloo: "I have beaten the English, but they won't go." A Swiss canon, recounting the attempts made at scaling the Matterhorn, writes: "Les Anglais ne reculent jamais, c'est leur caractère." In both these instances, pluck and tenacity of purpose carried the day; and so they often will, under God's blessing, in the strifes which you have to wage against disease and death.

HYDATIDS OF THE LIVER.*

By EDWARD LONG FOX, M.D., F.R.C.P.,

Physician to the Bristol Royal Infirmary.

At the end of May 1869, a girl, aged 14, was brought as an out-patient to the Bristol Infirmary, and was admitted for a short time as an in-patient, and treated for some months afterwards at home.

The mother gave the following account of her. In July 1866, she had an attack of shingles; and whilst she was under treatment for this, an enlargement of the right side was observed by her medical attendant. No further notice, however, was taken of the swelling until Christmas 1868, when it increased very much, interfered with respiration, and was sometimes the seat of acute pain. In March 1869, she was admitted into the Westminster Hospital, under Dr. Fincham, and hydatids of the liver were diagnosed. She remained there for about six weeks, being measured several times a week, but taking no medicine. It is an interesting point of the case that, during her sojourn in the Westminster Hospital, she craved very much for pork, and was clandestinely supplied by her mother with pork and ham.

In May 1869, her parents removed to Clifton, and thus she fell under my notice.

On admission, she presented the following appearance. She was a fairly nourished girl, short, but rather stout. The upper parts of the abdomen and lower parts of the thorax were occupied by a tumour, quite dull on percussion, smooth, and slightly resilient, extending from the fourth rib on each side downwards to the extent of seven inches, causing a considerable bulging of the right side, especially posteriorly. The tumour in front extended seventeen inches horizontally across the body. The right side of the thorax was about two inches and a half larger than the left. The heart was pushed somewhat upwards, the apex beating about the level of the fourth rib. Respiration was rather rapid, especially if she hurried, or walked upstairs, or lifted anything. Digestion was fair. The urine was healthy. She was now menstruating for the first time. The temperature was slightly raised, probably in consequence of slight peritonitis over the tumour. She liked to eat her meat almost raw. Her mother suffered from tænia solium, and did so for the first time when pregnant with this child.

She was under treatment about six months, and month by month gradually decreased in size, until at last no trace of the tumour could

be detected, the diaphragm returning to its proper position. Her medicine all through was iodide of potassium, either alone or in combination with mild tonics. She came to see me a year afterwards, in perfect health.

Besides her recovery, the interesting points in the case are: first, the position of the growth of the hydatid cyst, pushing up against the diaphragm and the ribs, instead of the more yielding walls of the abdomen; and secondly, that recovery took place apparently by the death of the echinococci, from the absorption of iodide of potassium, as it is certain that they were not passed by the stomach, bowels, or bronchial tubes.

Had the patient been a male, the sex in which the diaphragm plays an important part in respiration, the difficulty of breathing would probably have been much more marked.

Frerichs, in advocating surgical measures in cases of this kind, remarks that certain medicines have been employed, which are thought to pass from the blood into the cysts, and to kill their inhabitants. Baumes believed that calomel was endowed with this property; Laennec common salt; and Hawkins iodide of potassium, but as yet (he says) no case is known, in which any such plan of treatment has succeeded.

No doubt, iodide of potassium is often given without success; but I claim this case as an example of absorption of this drug into the cyst. Of course, it may be said that this was an instance of spontaneous death of the parasites, wholly unconnected with the medicines employed. We have in the Infirmary Museum a beautiful specimen of an hydatid cyst of the liver into which a bile-duct discharged itself, and so caused the death of the parasite, and spontaneous cure. But when the disease has advanced as far as in the case before us, spontaneous shrivelling up of the sac is, I believe, unknown. Nor is the other most usual form of cure more common in large hydatid tumours; viz., that in which the acephalocysts are destroyed by the secretion of a thick putty-like material within the sac, a species of caseation.

The iodide of potassium has been used by physicians in this country for many years in these cases. Dr. George Budd mentions it in one of the early editions of his book on the liver, but not with any approval.

CASES OF ALLEGED DISPLACEMENT OF THE UTERUS: WITH REMARKS.*

By C. J. GIBB, M.D.,

Consulting Surgeon to the Newcastle Infirmary.

MR. PRESIDENT,—I would not have promised to lay before you the present cases, had I not felt ashamed to see in the circular calling the January meeting, that, with the exception of Dr. Philipson's valuable Report, no member had a pathological specimen, or even a paper, to communicate to the meeting. It happened that two of the following cases had consulted me that morning; and, the subject being one of great interest, although somewhat out of my line, I thought you would, under the circumstances, excuse my attempting to draw the attention of the Society to it. Three of the five cases have come under my notice during the last month.

CASE I.—A married woman, aged 25, who had had her third child two years previously, consulted me as to the propriety of submitting to the performance of two operations—to set straight, as she said, her twisted womb. She complained of pain under the left ribs, of flatulence, nervous palpitation, and general depression of spirits. She had had all the symptoms at intervals, even before her marriage, and had enjoyed very fair health since her last confinement, until her old symptoms relapsed a few weeks ago. She then consulted a surgeon in her town, whom I know to be emulous of uterine renown. Her complaint proved obstinate in his hands; and a few days before she visited me, he startled her by proposing to perform two operations for the cure of her twisted womb. The word "operation" being rather formidable in her eyes, she came to Newcastle for further advice. I examined her very carefully, and, from her foul tongue, flatulent and distended stomach, pain under the left ribs, and other symptoms, found her suffering from aggravated dyspepsia, dependent very much upon chronic gastritis. Of womb-disorder or displacement there was not a trace. The uterine sound passed up a healthy uterus, in its proper axis, and there was no uterine or ovarian tenderness, nor a trace of any leucorrhœa or of any sexual disorder.

CASE II.—Two years ago, a married gentleman consulted me for chancre. A few weeks afterwards he brought his wife, suffering from a large sloughing chancre on the swollen mouth of the uterus. She

* Read before the Bath and Bristol Branch.

* Read before the Newcastle Medical Society.