blished for physiological research, we cannot hope to do much in the way of advancing the scientific basis of medicine. When we consider what is done by Germany, and see her now *facile princeps* in war, as also in all that relates to the advancement of science, we must bestir ourselves if we are to maintain the position among the nations which we persuade ourselves we hold. A step in the right direction has been taken by the Council of the College of Surgeons. They now require of all those who present themselves for examination satisfactory proof that they have made themselves acquainted with the principles and methods of experimental research.

The next thing that requires to be done is the establishment of laboratories for that purpose. This is now being effected. In this way we hope soon to see a new era inaugurated in the prospects of scientific medicine in this country: for when all our students have it in their power to learn the methods of physiological investigation, and their practical application to therapeutics, we shall be the better able to sift fact from tradition and hypothesis, to clear up what is doubtful, and sweep away the fallacies on which quacks flourish and by which medicine is disgraced.

CASE OF IDIOPATHIC MYELITIS.

By MARTIN G. B. OXLEY, L.K.Q.C.P.I.,

Physician to the Liverpool Infirmary for Children.

THOS. McDERMOT, aged 11, a strong healthy-looking boy, was admitted to the Infirmary on February 24th, 1870. He stated that, about one week before admission, pains commenced in the small of his back, and gradually extended round his body on both sides, as high in front as the umbilicus. The pains were very much worse at night, preventing him from sleeping. Micturition was frequent, giving him temporary relief. Walking caused severe pain. He had received no injury, and was in perfect health previously to the attack.

On admission, his condition was as follows. The pulse was 120; the tongue coated; the skin hot. His countenance was expressive of great pain. The body was inclined slightly forward. He was unable to assume the erect posture. He could not walk without causing great increase of pain. The pain over the lower dorsal vertebrae was very severe; it extended round the abdomen and down the lower extremities, and was greatly increased by pressure over the spinous processes. Micturition was very frequent. The bowels were costive. Sensibility was nowhere impaired. The skin was red over the lower dorsal vertebra.

February 26th. Pulse 116; temperature 103.2. He seemed much worse, and had profuse perspirations. The pain was constant in the legs, and there was slight hyperæsthesia. Constant pain, increased by pressure, continued in the back. He jumped up frequently in the night and cried out with pain. Incontinence of urine, constipation, and priapism, now existed.

March 3rd. There was complete paralysis of the lower extremities; anaesthesia extended upwards as far as the seventh intercostal space in front and the fifth dorsal vertebra behind, above which slight hyperæsthesia existed. The feces and urine were passed involuntarily. The priapism continued. He had a burning pain in the back, increased by pressure. The temperature in the groin was 102.1; in the axilla 100.4. Bedsores were forming over the sacrum and the trochanters of the thigh-bones. All the symptoms continued unchanged till April, when the bed-sores were rapidly extending, completely exposing the sacrum posteriorly, and the trochanters and head of the femur on each side. He died on April 18th.

Post Mortem Examination.—Inflammatory lymph extended over the lower dorsal portion of the spinal cord. The membranes here were very much injected, and partially adherent to bone, particularly posteriorly. On laying open the membranes, nothing abnormal was observed. A longitudinal incision of the cord showed white softening to the extent of half an inch opposite the fifth dorsal vertebra; and whitish fluid exuded here. The vertebrae were perfectly healthy. On removing the calvaria, the dura mater was not so vascular as is usual. There was slight subarachnoid effusion, general over the upper surface. At several points along the longitudinal fissure, clusters of minute white nodules resembling tubercle were situated on the arachnoid. The substance of the brain, on section, seemed very anæmic. At the base, slight adhesions and a few minute white nodules were observed. The bladder was found firmly contracted. In its walls, at the apex, was an abscess of the size of a hazel-nut. The interior of the bladder was ulcerated. The ureters were greatly dilated. The pelvis of the kidney was much enlarged and ulcerated. Points and patches of a brown colour with gritty particles, were scattered here and there through the substance of the kidneys. The renal structure was very pale; and numerous abscesses were present on the surface of both kidneys.

ON THE SHOULDER-TIP PAIN, AND OTHER SYMPATHETIC PAINS, IN DISEASES OF THE LIVER.*

By DENNIS EMBLETON, M.D.,

Physician to the Infirmary, Newcastle-upon-Tyne.

OF the group of symptoms ordinarily representing a disease of some internal organ, there are usually a few primary, central, and distinctive members, forming, as it were, the nucleus, and which are directly referable to the organ itself; to these are frequently added others more outlying or peripheral and less characteristic, indicating the influence exerted by the diseased organ upon parts, more or less distant it may be, but more or less importantly connected with it. Parts thus secondarily affected have been said to sympathise with the primarily diseased organ.

The study of the sympathies, morbid or healthy, of the different organs or parts of the body, obscure, intricate, and difficult, has from the earliest ages riveted the attention of Physicians, who in their earnest strivings after truth, have been led astray into the wildest conjectures and vainest hypotheses.

Within the past century, however, an increasing light has been dawning upon this part of our science. Thus we can, to a certain extent, account for the pain in the knee in hip-joint disease, through the connection of the knee and hip-joints by means of branches of the anterior crural and obturator nerves, and so on for other examples.

It must, however, be allowed that these explanations, such as they are, are neither full nor satisfactory; they only show that these pains do occur in certain cases, and that the parts concerned have certain more or less direct nervous interconnections, but they fail to inform us of the nature or essence of the sympathy existing, of the mode in which it is evoked, and of the good, if there be any, that comes of it; and the mystery of sympathy remains as great as before. And yet there can be little doubt that all the sympathetic pains we meet with are susceptible of satisfactory explanation, could we only examine them with sufficient care, and by reference to trustworthy anatomy.

The shoulder-tip pain in liver-disease belongs confessedly to the same category of sympathetic affections as that just named, but I have not been able to find any sufficiently satisfactory explanation of it, even to the extent to which explanation has been carried in the other instances.

The object proposed in this paper is to attempt an explanation which shall be plain and satisfactory, and shall dispel the ancient mystery which hangs around and obscures the morbid sympathy of organs.

As a preliminary, however, it may be interesting to glance at what has been written on the subject, for this pain has received a good share of attention from the time of the father of medicine, and probably long before, down to the present day.

For convenience, several quotations have been placed in foot-notes.

1. *Ancient Authors.*—Hippocrates,† Celsus,‡ Galen, Aretæus,§ Cœlius Aurelianus, ||Paulus Ægineta, ¶ Haly Abbas, and Rhazes, all mention the existence of pain in liver-disease in the shoulder, clavicle, or throat of the right side. Prosper Alpinus** notices it as occurring in the right side of the throat and the right scapula.

* Read in the Medical Section at the Annual Meeting of the British Medical Association in Newcastle-upon-Tyne, August 1870.

† "Pains in the shoulder, which, passing down the arms, occasion torpor and pains, do not usually terminate in deposits, but the patients get better by vomiting black bile. But when the pains remain in the shoulder, or extend to the back, the patients are relieved by vomiting pus or black bile. But if they have more difficulty of breathing, or if there be any unusual colour on the countenance, whether reddish or black, it is to be expected that they will rather spit blood."—(The Genuine Works of Hippocrates, by F. Adams, LL.D., Append. to Prognosis, vol. i, p. 268. Sydenham Society, 1848.)

‡ In Acute Hepatitis.—"Dextrâ parte sub præcordiis vehemens dolor est; idemque ad latus dextrum et ad jugulum humerumque partis ejusdem pervenit; nonnunquam manus quoque dextra torquetur."—(A. Corn. Celsi Med., libri octo, by Milligan, lib. iv, viii.)

§ "The diaphragm and succingens (pleura) are dragged downwards, for from them the liver is suspended as a weight. For this reason, a strong pain extends to the clavicle of the same side."—(Extant Works of Aretæus the Cappadocian, by F. Adams, LL.D. Acute Diseases, book ii, cap. vii, p. 277. Syd. Soc., 1856.)

¶ "The symptoms of scirrhus of the liver are a round circumscribed tumour, felt below the ribs, the colour jaundiced, the urine muddy, pain extending to the throat of the affected side, etc."—"The Seven Books of P. Ægineta, by F. Adams, book iii, p. 566. Syd. Soc., 1848; or, Cœlius Aurelianus de Morbis Acut. et Chron., lib. iii, cap. iv.—De Jecoris. Amstelodami, C1712CCIX.)

¶ "When the liver is inflamed, there is, in all cases, pain in the right hypochondrium, extending upwards as far as the clavicle."—(The Seven Books of P. Ægin., by F. Adams, LL.D., book iii, sect. xlv, p. 560. Syd. Soc., 1848.—On Affections of the Liver.) See also pp. 567 and 568.

** "Hæc deprehenditur a dolore in dextro hypochondrio tensivo juxta costas spurias (cum quadam illiusce partis gravine) aliquando ad jugulum, et ad scapulam pro-

2. *Modern Authors.*—Almost all agree in mentioning the pain in the shoulder, clavicle, or throat, as an accompaniment of certain liver-diseases, but they differ as to the frequency of its occurrence, and its intensity.

John Hunter, in his *Essays on Gun Shot Wounds*, published in 1794, says:—"From a wound in the liver there will be pain in the part, of the sickly or depressing kind; and if it is in the right lobe, there will be a delusive pain in the right shoulder, or in the left shoulder from a wound in the left lobe." (*The works of John Hunter*, F.R.S., by James F. Palmer, 1837, vol. 3, p. 560.)

The same illustrious Physiologist and Surgeon, in his *Lectures on the Principles of Surgery*, chap. x, On Sympathy, in which he treats copiously of the various kinds of natural and diseased sympathy, mentions more than once the shoulder pain in liver-disease. He says, however, very truly, that the sympathy is not reciprocal, that "the liver never sympathises with the shoulder." (*Ibid.*, vol. 1, p. 317.)

Abercrombie* also mentions the shoulder-pain as occurring in acute and chronic inflammation, and in "Encephaloid Ramollissement" of the liver.

Annesley as well, as having been often observed in hepatitis and abscesses of the liver, and he believed that the pain indicated with certainty that the convex portion of the right lobe was diseased. (*Sketches of Diseases of India, etc.*, 1851.)

W. Thomson† names it as being by some considered as peculiar to hepatitis, but shows that it had been observed also in cases of passing gall-stones, and points out the fact that it had never been properly explained.

Dr. Copland,‡ in his deservedly celebrated *Dictionary of Medicine*, under the head of hepatitis, shows his familiar acquaintance with the pain in question.

The pain is noticed by Sir Thomas Watson§ as occurring in the clavicle and shoulder, not only of the right side, when the right lobe of the liver is diseased, but also of the left side when the left lobe is affected, thus exactly agreeing with what Hunter, as already quoted, says with regard to the pain after gun-shot wounds.

Dr. Budd|| has had his attention pointedly arrested by this pain, and

tenso, qui non nisi in magnis gibbæ partis observari solet, in quâ parte calorem quoque non obscurum sentiunt."—(Prosper Alpin. de Med. Methodica, lib. iv, cap. xiv.—On Hepatitis.)

* *Acute Inflammation.*—There is generally fever, but this is often in a slight degree; there is sometimes jaundice, but this is often entirely wanting; and, frequently, there is pain extending to the right shoulder, but this is by no means a uniform symptom."—(*Pathol. and Pract. Researches on Dis. of Stomach, Intestinal Canal, Liver, etc.*, p. 347, 2nd Edit., Edinb., 1830). *Chronic Inflammation.*—"There is generally a feeling of distension and oppression in the epigastrium and right hypochondrium, often vomiting, and pain, or a dragging sensation referred to the right shoulder."—*Ibid.*, p. 365. *Encephaloid Ramollissement.*—"Pain of the right shoulder is a symptom."—*Ibid.*, p. 362.

† *Tweedie's Library of Medicine*, vol. iv, p. 178, no date, but last vol. of series, 1842.—"It is well known that in hepatic affections, the right shoulder is frequently the seat of sympathetic pain; a fact of which no satisfactory explanation has yet been proposed; nor is it well ascertained what are the affections of the biliary organs in which it occurs. Its frequent occurrence in hepatitis has led to the idea of its being a pathognomonic symptom of this disease. It is, however, far from being uniformly present in this affection, although when it does occur in a case resembling hepatitis in other respects, it may be considered conclusive of the nature of the disease. But though hepatitis may be the affection in which this symptom is most commonly observed, it does not follow that it is exclusively confined to it; most authors concur in stating that it also accompanies the passage of gall-stones through the gall-ducts."

‡ *Dict. of Med.*, vol. ii, p. 733.—"It is sometimes referred to the top of the right shoulder, frequently to the right shoulder-blade, occasionally to both scapulae. In a few instances, it is felt in the right clavicle and side of the neck. It more rarely affects the left shoulder and shoulder-blade only. When pain is present at the top of the right shoulder, it indicates disease of the right lobe of the liver; but this symptom is often absent." P. 734.—"When the outer surface and part of the right lobe is chiefly affected, the pain is most severe in the right hypochondrium, and at the margins of the ribs, sometimes extending to the right scapula and top of the shoulder. When the concave surface is the seat of disease, sometimes the pain extends to the right shoulder, and right side of the neck." The same testimony may be seen at p. 766, under "Organic Lesions of the Liver."

§ "The pain sometimes extends to the right clavicle, and to the top of the right shoulder. The existence of this pain makes it probable that the inflammation affects the convex surface of the right lobe of the liver. Occasionally, the left shoulder is painful; the left lobe of the liver being involved in the disease."

|| "The pain of the shoulder is far less frequent in such cases (of abscess of the liver) than is generally imagined, but it existed in five of the fifteen cases I had to treat at the *Dreadnought*. In one of these there was a small abscess on the convex surface of the right lobe, and the peritoneum covering the abscess adhered for the space of a shilling to the reflected layer of the peritoneum. There were old adhesions of the lung to the pleura costalis. The lungs were sound. In another, in which the abscess was on the convex surface of the liver, and formed a prominent tumour, the pain of the tumour was so severe as to cause the patient to moan. It continued extremely severe for a long time, and at length was relieved on our opening the abscess. In a third case, where the abscess likewise formed a prominent tumour, the patient complained of an aching pain in the right shoulder, extending to the shoulder-blade, and up the right side of the neck. In a fourth, pain in the shoulder varied in intensity with pain in the right side. When the side was easy, the shoulder was easy also. The two pains were evidently related. In this case there were five or six abscesses of various sizes in the liver—one opened into the lung; another was on the convex surface of the right lobe. In the fifth case, the abscess was single, and was

gives a more definite account of its connection with abscess of the liver, than any other previous author I have consulted. He mentions this pain as occurring also in a case of abdominal aneurism pressing on the liver. The subjoined extracts will be found of considerable interest.

Dr. S. H. Ward, Physician to the *Dreadnought*, among the symptoms tolerably conclusive of abscess of the liver, mentions after "Pain direct, distant pain referable to the right shoulder, and especially localised about the acromion." (*Lancet*, Aug. 1st, 1868.)

Dr. Murchison* notices the pain under the heads of congestion and of cancer, and gives a case of hydatids of the liver implicating the right side of the chest in which the same symptom occurred.

Louis, in his paper on Abscess of the Liver, as quoted by Dr. Budd, states that none of his patients, five in number, had any pain of the shoulder, and he hesitates to believe that this symptom really belongs to disease of the liver. He conjectures that, when present, it may depend on concomitant disease of the lung or pleura. (*Clinique Médicale de l'Hôtel Dieu de Paris*, vol. iii.)

Professor Broussais tells us that in hepatitis, "Les douleurs se propagent quelquefois à l'épaule, au bras droit, et jusque dans la hanche de ce côté." (*Cours de Pathologie et Thérapeutique Générale*, 1835, tom xi, p. 183.)

Professor G. Andral† witnesses to the occasional presence of the pain in acute hepatitis, and to its being then sufficient to make the patient cry out, and to its existence in cases of impacted biliary calculi.

He also notices‡ the pain as one purely sympathetic, and occurring less frequently than had been previously said, but as one at times well marked, and quotes the first case in which he had observed it.

Andral quotes Roche, who states, relatively to inflammation of the convexity of the liver, "C'est seulement dans ce cas qu'elle s'étend à la poitrine, au cou, et l'épaule du même côté;" and Roche quotes, as one of the symptoms given of acute hepatitis by Frank, propagation of pain to the right shoulder and clavicle. (*Dictionnaire de Médecine*, en xv vol., tom ix.)

Trousseau§ names the pain as occurring during the passage of gall-stones.

Frerichs|| mentions, in liver-abscess, the pain in the shoulder, scapula, and arm, and says it ceases as soon as the pus finds an outlet.

[To be concluded.]

likewise situated on the convex surface of the right lobe. There was no recent inflammation of the lung or pleura. The pain is usually described as a gnawing, aching pain. There is no swelling or redness of the shoulder, and the pain is not much increased by pressure—sometimes, indeed, it is relieved by holding or pressing the shoulder, but it is often increased by pressure on the liver. This sympathetic pain in the shoulder is occasionally felt in other diseases of the liver—in cases of cancer and of hydatid tumour. In a case of abdominal aneurism, this formed a tumour the size of a man's head immediately behind the liver, which it had very much flattened, but there was no trace of inflammation about the organ. The bodies of the first, second, and third lumbar vertebrae were partially destroyed."—(*On Diseases of the Liver*, p. 105, et seq.)

* *Clinical Lectures on Diseases of the Liver*, etc., 1868. P. 121. *Congestion.*—"The pain and feeling of uneasiness may stretch up to the right shoulder—" P. 190. *Cancer.*—"4. A cancerous liver is almost always painful and tender on pressure, and very often the pain radiates to the shoulder, back, and loins." P. 196. *Case of Cancer of Liver and Ovary.*—"Sudden pain in epigastrium, and right hypochondrium, and both shoulders, accompanied with great languor." "Liver greatly enlarged, and studded all over with cancer-nodules; its interior contained similar matter."

† *Cours de Pathologie Interne*, 1836, tom xi, p. 195.—"Une douleur dans l'hypochondre droit s'étendant souvent à la poitrine, et jusqu'à l'épaule du même côté." *In intense cases.*—"L'hypochondre est d'une sensibilité exquise, la douleur de l'épaule arrache quelquefois des cris au malade." *In cases of biliary calculi.*—"La douleur du dos se prolonge parfois dans le sein droit, le cou, et l'épaule du même côté."

‡ *Clinique Médicale*, 1837, tom iv, pp. 190 and 430.—"Il y a d'autres douleurs qui ne se manifestent plus seulement là où existe le foie, mais en des lieux plus ou moins éloignés; elles sont purement sympathiques, et résultent d'une simple irritation nerveuse. Ainsi on a depuis long temps noté, sans pouvoir trop s'en rendre compte, la douleur fixée à l'épaule droite qui accompagne un certain nombre d'affections du foie; cette douleur nous a paru exister moins souvent qu'on ne l'a dit; cependant dans plus d'un cas nous l'avons observée d'une manière bien tranchée." *Under Obs. 32, of a case of abscess in the right lobe much nearer to the under than the upper surface.*—"Cette observation est la première dans laquelle nous trouvons, au nombre des phénomènes morbides qui se manifestent pendant le cours d'une maladie du foie, la douleur de l'épaule droite." *This was* "Une douleur incommode et continueuse vers l'épaule droite; elle ne cessa pas depuis de se faire plus ou moins sentir."

§ *Clinique Médicale de l'Hôtel Dieu*, 1865, tom iii, p. 219—"Coliques hépatiques. "Calculs biliaires."—"Cette douleur descend dans l'abdomen et en quelques cas comme la colique néphrétique; plus ordinairement elle remonte dans la poitrine, jusqu'au cou, et, phénomène singulier, qui se rencontre chez beaucoup d'individus, elle retentit dans l'épaule droite."

|| *A Clinical Treatise on Diseases of the Liver*, vol. ii, p. 125. New Sydenham Society. Abscess of the Liver.—"In addition to the local pain, there exists in many cases (according to Louis, in 23 out of 163 cases, or in 17 per cent.), a sympathetic pain, usually having its seat in the right shoulder, but sometimes complained of in the scapula and arm; the sensation is that of tightness or tension, and sometimes of an intolerable boring, and it is aggravated by every concussion of the hepatic region. This symptom usually lasts for a few days only, and ceases as soon as the pus finds an outlet." *Cancer of the Liver*, p. 301.—"From time to time the symptoms undergo