

of, occurred lately. The patient, a young lady, had a needle in the ribbon around her waist, which accidentally run into the hand near the wrist, and broke. The family surgeon had to be sent for to remove it. Severe pain was experienced at the time, and continued for some time afterwards. She became on the following day (I believe) amaurotic of one eye, and of the other also in a few days after.

This and the first species of amaurosis are the only instances, as far as I have observed, that are ever remittent, intermittent, or periodical. For those cases which depend on the greater clearness of one day, or part of it, over that of any other, are not to be considered either as remittent, or periodical, as they obviously depend on the degree of light presented to the eye, and not on any variation of the powers of vision. They also admit of being oftener cured than any of the other species, because they do not depend on any organic change of the eye, or its appendages, and hence it is that the pupil in them is always jet black.

Treatment. It is in this species of amaurosis that the emetopurgative plan of Scarpa, and Richter will be found most serviceable. If, as sometimes happens, the amaurosis should have succeeded a hearty meal, and there is reason to suppose that the disease is produced by it, an emetic should be administered, and repeated at proper intervals.* The bowels ought also be kept freely open, with pills composed of calomel and colocynth, or any other strong purgative.

When worms are the supposed cause of the affection, medicines calculated to remove these should be administered. A combination of calomel and scammony I have found a most valuable anthelmintic. Turpentine enemata are also highly beneficial.

The treatment of sympathetic amaurosis from wounds, must be regulated by existing symptoms. The free division of the part as recommended by Beer and others in amaurosis consequent on wounds of the superciliary nerves should not be lost sight of, as in some cases of the above description, it has been found serviceable. Strict attention must also be paid to the state of the alimentary canal.

[To be continued.],

III. On *Tetanus*; with Cases. By THOMAS ADAM, Surgeon, Barrhead.

It is my conviction, that the morbid anatomy, the nature, and the seat of that disease, which, from the symptoms, has

* See Richter's Observations.

obtained the name of tetanus, are very imperfectly known : and such I believe to be the opinion of the profession in general. Undoubtedly there has been no lack of theories or hypotheses as to the nature or proximate cause of the disease ; but there appears to me to have been a want of sufficiently numerous and well authenticated materials out of which to construct a sound theory : and, moreover, in the case of the authors of many of them, a neglect of the caution, comprehensive observation, and logical deductions, which are essential to the ascertaining of sound principles, whether in pathology or any other science.

I have consulted a variety of authors upon the disease ; but I have found scarcely any two agreeing as to what they have observed upon dissection, or in their opinions as to the nature or the seat of the affection. While there is a want of uniformity of opinion upon these fundamental topics, no other consequence could be anticipated, but a similar want of uniformity in the indications and modes of treatment. And, accordingly, there has been a very great variety in the therapeutic means. Perhaps a few specimens of this variety in opinion and practice may not be inappropriate.

Mr. Egan, assistant-surgeon, 12th Royal Lancers, says, that Mr. Castley, the veterinary surgeon, assured him, that, upon dissecting horses, who had died of this disease, he has often found the theca of the medulla spinalis discoloured, as well as its covering derived from the pia mater, both exhibiting unequivocal marks of inflammation. Mr. Egan says, that the liver, and occasionally the lungs, have often been found more or less diseased. This gentleman relates a case of traumatic tetanus in a horse, which he treated by blistering along the spine and administering tobacco enemata. The case was treated successfully.

Mr. Swan of Lincoln * gives the results of the dissection of the bodies of three persons who had died of tetanus, in all of which, he found a morbid appearance of the ganglia of the sympathetic nerve—increased vascularity. He thinks that the irritation also extends to the cerebral and spinal nerves. From the appearances on dissection, he cannot help concluding, “ that there is a state of parts bordering on inflammation, and therefore, that general blood-letting is indicated.” He proposes a trial of the compound powder of ipecac. which Dr. Latham had strongly recommended before him. † Lobstein and Frank had previously observed similar appear-

* An Essay on Tetanus, founded on Cases and Experiments. Lond. 1825.

† Med. Trans. of Lond. College of Phys. vol. iv.

ances in the ganglia of the sympathetic, and ascribed to this fact an equal importance.

Mr. Marshall* has given three cases of traumatic tetanus, in one of which, he tried copious bleeding and large doses of opium, and enemata of tobacco in the other two, without success. On dissection, no particular morbid appearances were perceived, except a darker colour than natural of the voluntary muscles.

“In some instances,” says Dr. Craigie,† “the state of capillary injection (of the spinal cord) appears to give rise to tetanic symptoms. This fact, which was observed by Dr. Robert Reid in Ireland,‡ Duchatelet, Martinet,§ and Ollivier,¶ in France, and by Dr. Duncan, jun. in the stage of suppuration,¶¶ has led to the recent revival of an opinion originally proposed by Galen, and reproduced in modern times by Fernel, Willis, and Hoffmann,—that tetanus depends on a morbid state of the spinal cord, or its membranous coverings.” Dr. Craigie does not think this inference entitled to rank as one of the established principles of pathology: for the same morbid condition of the spinal cord may be found without any tetanic spasms.

Mr. Marks, near Bristol, treated a case successfully by means of large bleedings, cuppings near the spine, and free purging.**

In the *Med. and Phys. Journal*, December, 1821, is a successful case, which was treated by copious bleeding, free purgation, and the warm bath.

In the *Medical Repository*, Nos. 101-2, Dr. Kennedy has related two cases. One case terminated fatally, and on dissection, the stomach, duodenum, liver, spleen, pericardium, and heart, were found extensively disorganized; but there was no inspection of the brain or spinal cord. The second case terminated favourably, under the care of Dr. K. and the late Dr. Nimmo. By the result, say the Drs., “our opinion of the advantages derivable, in tetanus, from judicious depletion, vascular and alvine, was practically illustrated and confirmed.”

Mr. B. Hutchison has stated a case,†† in which the cure

* *Medical Topography of Ceylon*. Lond. 1821.

† *Elements of Gen. and Pathol. Anatomy*. Edin. 1828.

‡ On the Nature and Treatment of Tetanus and Hydrophobia. Dublin, 1817.

§ *Recherches sur l'Inflammation de l'Arachnoïde Cerebrale et Spinale*, &c. Paris, 1821.

¶ *De la Moëlle Epinière et de ses Maladies*, &c. Paris, 1824.

¶¶ *Edin. Med. and Surg. Journ.* v. xvii. p. 332.

** *Med. Chir. Review*, vol. i.

†† *Med. and Phys. Journal*, No. 288.

seems principally attributable to 3 ozs. of ol. terebinth. ζ i. in an enema, and ζ ii. by the mouth.

In the 3d vol. of the Dublin Hospital Reports, is related a case by Dr. O'Beirne, who ascribes its successful termination to the use of tobacco enemata. In his observations upon the disease, he gives us the information, that, of about 200 cases, which he witnessed in the Peninsular army, not one recovered. Dr. O'B. says, that worms are very often found in the intestines, and he thinks, that they are more frequently the cause of this disease than is generally supposed.

In the 1st vol. of the Edinburgh Medico-Chirurgical Transactions, is a paper by Dr. Anderson, Trinidad, "on the use of tobacco in tetanus." But of the two cases which he relates as cases of tetanus successfully treated by tobacco, the one was merely trismus, and the other merely convulsive startings of the arm. In vol. 2d are other two cases, one of which terminated favourably under the use of tobacco and purgatives.

In the 4th vol. of the Dublin Transactions, Mr. Carmichael has published six cases of tetanus, with the results. Of these, only one terminated favourably. In the treatment, blood-letting, purgatives, laudanum, mercurial inunction, the vapour-bath, and tartar emetic ointment to the spine, were employed; but the cure seems to be principally attributed to the free use of punch. Of the five cases that died, only two were opened. In neither could any morbid appearances be detected in the spinal marrow or its sheath. After observing the bad success of the means hitherto employed, Mr. Carmichael suggests the following: "From the general failure of the plans hitherto employed, I shall feel no hesitation (however hypothetical these views may appear to some) in giving a full trial, in such cases of tetanus, as may next happen to come under my care, to alcohol in any of its various combinations—æther largely exhibited both in the form of draught and enema, and combined with opium; the tartar emetic ointment rubbed upon the abdomen, and at the same time, promoting the action of the bowels by castor oil and turpentine."*

Dr. Hosack of New York cured a case by the administration of 3 gallons of Madeira wine in a few days; the dose being ζ ii. every hour. †

Dr. Reese of Baltimore has published ‡ the particulars of a case of traumatic tetanus, in which the disease seemed to be controlled by a caustic issue applied to the spine along its

* Dublin Transactions, v. iv. p. 292.

† New York Med. Repos. for 1799.

‡ American Med. Recorder, July 1825.

whole length. Prussic acid and laudanum were also used, but the former in such small quantities, as could conduce, in all probability, but little to the favourable termination. It was used at the suggestion of Professor Pattison.

Mr. Ward, however, has published two cases of tetanus, which were treated successfully by hydrocyanic acid; for instance, five drops every 15 minutes, till the violence of the spasms were allayed.*

Mr. Earle † has suggested a trial of strychnine, in doses, to affect the nervous system.

M. Bronssais ‡ has ridiculed the idea of treating tetanus as a nervous or spasmodic affection by opium, antispasmodics, mercury, cold and warm baths, &c. He recommends to treat it as we would treat arachnitis or spinitis—that is, by applying leeches along the vertebral column, and along those muscles to which an excess of nervous influence is directed. He abstains from opium and purgatives. Treated upon the above principles, M. B. asserts, that the disease has ceased to be half so formidable as it formerly was in the Val de Grace.

Dr. Marsh is inclined to ascribe powerful and beneficial effects to the use of the vapour bath.

The treatment by carbonate of potash and opium, is much in use in Germany, where it is known by the appellation of the “method of Stultz.”

Baron Larrey, in his dissections, in cases of tetanus, found the pharynx and œsophagus much contracted; also numerous lumbrici in the bowels of several patients. ||

Sir A. Cooper does not approve of the practice of amputating which has been tried by Baron Larrey, and other army surgeons, in traumatic tetanus, whether acute or chronic. In chronic tetanus, the medicine which has appeared to Sir A. most useful, is calomel joined with opium. §

Neither does Sir James M'Gregor report favourably of amputation. ¶ Sir James testifies, that of several hundred cases which occurred in the British army during the late campaigns in Spain and Portugal, there were very few which terminated successfully, or in which the remedies, however diversified, seemed to have any beneficial influence after the disease had made any progress. **

* Observations on Tetanus; illustrated by Cases, in which a new and successful mode of treatment has been adopted. By Henry Ward, surgeon. Gloucester, 1825.

† Med. and Phys. Jour. April, 1827.

‡ Journ. de Med. Phys. Feb. 1827.

|| Mem. de Chir. Militaire, v. iii. p. 287.

§ Surgical Essays, Part II. p. 190.

¶ Med. Chir. Trans. vol. vi.

** Ut supra, p. 449.

Dr. Hosack of New York * says, "The cases recorded of the success of tonic medicines, are too numerous to admit of a doubt, that the proximate cause of lock-jaw consists in an exhausted state of the sensorial power, from violent irritation applied to the nervous system: stimulants and tonics are, therefore, the remedies which are best calculated to restore this lost energy. Their failure, I have considered to proceed from the complicated and inert manner in which they have usually been administered." He refers to several cases, beside the one quoted above, in which the salutary operation of wine was observed.†

Mr. Brodie is reported ‡ to have said, that the remedy which he has seen of most service, was the cold affusion. This, I believe, was employed by Hippocrates, and has since been praised by Drs. Cochrane, Wright, Currie, Cullen, and M. Callisen. Sir J. M'Gregor has related a curious case of the combined effect of drenching in the rain and exposure to intense cold. || Mr. B. is also reported to have said, with regard to the pathology of tetanus, that he had never seen "any thing the matter with the medulla spinalis or its membranes." He has, however, witnessed three cases of opisthotonos following injuries of the head, in all of which, matter was found on the medulla oblongata.

In the same volume of the Medical Gazette, p. 383, may be found a case in which the cure seems principally attributed to the external application of acetate of morphia.

In the 3d volume of the Medical Gazette, p. 461, is reported a case, which Dr. Elliotson treated successfully by carbonate of iron, and it is said, that another case was cured by the same means some time previously by Dr. E. A correct report of Dr. Elliotson's experience of the use of sub-carbonate of iron in tetanus, may be found in the 15th volume of the Med. Chir. Transactions.

Dr. Johnson, in his work on Tropical Climates, seems to think, that tetanus depends upon some morbid condition of the spinal cord; and that local abstractions of blood from the spine, blisters, and purgatives, may be most depended upon.

I doubt not, but that various other opinions have been entertained as to the pathology of tetanus, and various other remedies employed for its cure; but I have enumerated a sufficient number of both, to warrant and establish the pro-

* Appendix to Thomas' Pract. of Phys. New York, 1825, p. 1030.

† Ut supra, p. 1034.

‡ Med. Gazette, v. ii. p. 345.

|| Med. Chir. Trans. v. vi. p. 450.

position with which I set out, viz. that the morbid anatomy, seat and nature of tetanus, are not yet ascertained, and that, in consequence, an utter want of uniformity is found in the opinions and practice of those who have studied or treated the disease. In this I am supported by Dr. Abercrombie, who says, "the pathology of it (tetanus) is still involved in great obscurity."*

Is it thus to remain? Are we to rest contented with these opinions, which are no better than conjectures, or with these empirical modes of treatment? Or shall we rescue the subject, or rather ourselves from such a state? If ever we are to be rescued from this state of ignorance—if ever we are to know what is the disease that we have to deal with—or if we are ever to treat it in any other way than empirically, it must be by having a sufficiency of cases and dissections before us, and forming from these, very cautiously, just and logical conclusions.

As a small contribution, in the meantime, towards this very important object, I have translated and condensed from the work of Dr. Michael Funk, a few cases of this disease, with the reports of the necroscopic appearances.†

Case 1st. Francis Leuxner, 18 years of age, and of a vigorous constitution, was employed at a sheep-washing, 26th May, 1819. During the time he was employed, he felt the heat of the sun very strong upon his back. To save a lamb from drowning, he jumped into the water up to the neck. A few days afterwards, after a rigor and hot fit, pains were felt in his neck, and throughout the whole course of his back, and shortly after, the symptoms of trismus made their appearance. Opisthotonos appeared about the 7th or 8th day. He was bled to 30 ozs. had a purgative, and then some opium. The disease proceeded rapidly, without the smallest mitigation from the treatment, and on the morning of the 5th June, death took place amidst convulsions.

On the 6th, the body was opened. The arches of the vertebræ were removed from the first cervical to the last lumbar. In the cervical region, the dura mater was much reddened;—about the first dorsal vertebræ, and under, the canal was filled with extravasated blood, which had also extended some way along the nerves;—the dura mater very red. In the lumbar region this effusion was greatest, and here the dura mater was considerably thickened. When the dura mater was slit open, there flowed out about $\frac{3}{4}$ iss. of dark bloody coloured serum. The spinal cord was now taken out with its coverings, and the dura mater slit up throughout its whole extent. The surface of the

* On the Diseases of the Brain, &c. 1st Ed. p. 396.

† Die Rückenmarks-Entzündung. Inaugural Abhandlung, von Dr. Michael Funk. Zweite verbesserte und durch einen Nachtrag vermehrte Auflage. Bamberg, 1825.

cord was rose red—the origins of the nerves swelled—and the cauda equina much reddened. The cord was harder than natural, and when cut into, was found much reddened. The substance of the sciatic nerve was much reddened, and exhibited a fine net-work of vessels.

Case 2d. Anna Ament, 19 years of age, of a strong constitution, received a wound in one of her fingers, from a splinter of wood. The wound inflamed severely, and an abscess formed, which was opened. A few days afterwards, she exposed herself while warm, to a current of cold air, at an open window. She had rigors, succeeded by a hot stage, pain in the neck, and spasms of the face: opium and carbonate of potash were administered. Next day the spasms and pains were increased, the mouth more closed, with one of its corners distorted, and the pain extended down the back. After a warm bath, the spasms and pain abated, and she could swallow better, but this relaxation was only of short duration. V.S. to ζ xxx. produced no change—the blood was very firm and buffy. In the evening she was again bled to ζ xx. and the finger was amputated. All the symptoms, however, became more severe, the patient expired on the 3d day.

“The distinguished Dr. Hesselbach inspected the body.” In some places, the nerve of the arm was remarkably inflamed. The whole vertebral canal was laid open;—between the dura mater and arachnoid, was contained a pretty large quantity of bloody serum, the vessels were very much injected, and some extravasation throughout the whole course of the spine. The spinal cord had a more than natural firmness, and was, throughout, from medulla oblongata to cauda equina, dyed red.

Case 3d. John Schäfer, aged 59, entered the hospital of Bamberg with typhus fever. Soon after his admission, he was seized with tetanus—severe pains in small of back—and paralysis of both upper and lower extremities: and he died in a state of opisthotonos on the 9th day after his admission. The fever had been very severe.

The dura mater of the spinal cord was much reddened—when slit up, 4 ozs. of bloody serum flowed out—a luxuriant net-work of injected vessels was seen upon the cord—the cauda equina highly reddened—and all the nerves of a pale red colour. The cord, when slit up, was reddish, and a good many bloody points appeared upon the cut surface—it was rather firmer than natural; but in all other respects, perfectly normal.

Case 4th. Eva Wolf, aged 36 years, was admitted into the hospital with typhus. The fever was severe, and with petechiæ. Tetanus seized her, which ended in paralysis, and the patient died on the 22d day, retaining complete consciousness.

The thoracic and abdominal viscera were found in a normal condition:—the dura mater of the cord tightly stretched, and its cavity filled with a great quantity of reddish serum, which flowed when slit up;—the pia mater was much reddened; the cauda equina was pale red;—and the substance of the cord rather firm, and upon being cut, it was found reddish.

Case 5th. John Seidlein, aged 36 years, received a wound from a horse's foot upon the left temple. Three days after, he had slight

symptoms of trismus, and fever, with constipation, which were shortly followed by complete opisthotonos, and 7 days after receiving the wound he died.

He had been bled to 2lbs, and the blood had the buffy coat.

The thoracic and abdominal viscera were healthy. The dura mater of the cord appeared upon the stretch, and when divided, a small quantity of serum made its escape. Upon the cord, the vessels were observed very much injected, and even a little light-coloured extravasation upon it;—this inflammation extended to the medulla oblongata;—it was most considerable in the region of the neck, and less so in the cauda equina, although it was pretty much reddened. When cut through the cord showed considerable redness, and a good many bloody points upon the cut surface. In the brain, the vessels were observed considerably enlarged, though not to such a degree as one could pronounce it inflammation.

Case 6th. Sebastian Reh, aged 20 years, of a strong constitution, after having been heated with labour, exposed himself to cold. The following day he had rigors and pains in the neck,—on the 3d day, trismus. In a few days, the pain extended along the whole course of the spine, and he was seized with opisthotonos. He was treated antiphlogistically, and died 7 days after the attack of opisthotonos.

After death, an eruption was observed over the whole of the spine, resembling small blisters and phlyctenæ, but filled with fœtid air. The flesh was flabby, and had a peculiar smell, like that of a bird of prey—a smell which Dr. F. says he has remarked in his dissections of all similar cases. A considerable quantity of serum was found in the vertebral canal externally to the dura mater: in this situation was also found some bloody effusion, (coagulable lymph,) having the consistence of false membrane. Upon slitting open the dura mater, which was reddened, some serum was also found, and upon the cauda equina, some bloody effusion. Upon the cord was a fine net-work of vessels much injected. The cord was harder than natural. No morbid appearances were observed in the brain, or in the thoracic and abdominal viscera.

It would certainly be exceedingly premature to draw any conclusions from these cases; and I therefore leave them, as Dr. Sym has done with his cases in the 9th No. of this Journal, without any comment. They certainly seem to favour the hypothesis which had its origin with Galen, and has since, as we stated above, had a good many supporters. But, notwithstanding the above, and all the other cases which seem to favour this hypothesis, I should deem such hasty generalisation unsafe and unphilosophical. Upon this hypothesis, Dr. Abercrombie has passed the following apparently just judgment: “Upon the whole, however, the truth appears to be, that, though symptoms strictly tetanic do accompany various affections of the spinal cord, the disease properly to be considered as idiopathic tetanus, is entirely of a different nature,

and that the pathology of it is still involved in great obscurity."*

IV. *On the Production of Worms in the Human Body.*† By JOHN SCOULER, M.D. F.L.S. Professor of Nat. Hist. in the Andersonian University.

THE formation of Worms in the bodies of animals is one of the most difficult and recondite subjects which the physiologist has to investigate, and the solution of this complicated problem is of considerable interest to the physician. The ancients accustomed to the bold *a priori* method of investigation, did not hesitate to explain the formation of many animals on the startling hypothesis of equivocal generation. This theory was received by Naturalists as an established truth from the most remote ages, and remained uncontroverted till the time of Redi. The illustrious Italian we have named, enlightened by a profound knowledge of anatomy, and a long series of accurate observations, overturned the ancient ideas concerning the equivocal generation of insects, and also maintained, that intestinal worms were propagated in the same manner as other animals. This view of the question now became the prevailing one, and had the support of Pallas and other distinguished writers, till the old ideas of spontaneous generation were revived and supported with zeal and ingenuity by the zoologists of Germany. Treveranus and Blumenbach, from their observations on the origin of infusory animalcules, and Rudolphi, Bremser, Okin, and a host of others, from their investigations concerning intestinal worms, have arrived at this strange hypothesis; and certainly, an opinion supported by such able hands, requires to be treated with respect and carefully examined.

Before attempting the solution of this problem, we may be permitted to state, that the industry of modern helminthologists has so increased the catalogue of parasitic worms, that upwards of eleven hundred have been enumerated and described, besides many doubtful species, whose characters have not been sufficiently ascertained. Of these worms at least twelve have been found in the human body; six in the intestinal tube and its appendices, and six in the tissue of other organs. To enumerate them would be an unnecessary

* On the Diseases of the Brain, &c. p. 396.

† This paper was read on the 2d ult. before the Glasgow Medical Society.