Much, therefore, as we may be tempted to adduce variations in the muscular system as additional arguments in favour of the evolution of man and animals from a common origin, it is perhaps more philosophical to refrain for the present, and to leave the mind unfettered by the bias attendant upon the consideration of this great subject, which, in the present epoch of scientific inquiry, tends rather too much to engross the thoughts, and which sometimes casts too strong a shadow upon the work, and too obviously obscures the view, of the investigators of Nature.

MUSCLES OF ABDOMEN.

I will consider, first, the varieties in the muscles of the trunk, commencing with those of the abdomen. They are few and infrequent, in accordance with the simple disposition of these muscles, with their comparatively slight deviation from the primitive, unstratified, or partially stratified, transversely segmented layer, which we find in the Cryptobranch, and with the little variation in structure, associated with little variation in function, which they present in different animals.

The most noteworthy varieties are the occasional persistence of inscriptions in the obliquus externus in the neighbourhood of the lower ribs, and contiguous with their cartilages. In one of these inscriptions a piece of cartilage was found by Henle. It may seem rather remarkable that such inscriptions are not more frequently met with in this and the other abdominal muscles; but it must be remembered that in the lower animals the disappearance of the transverse septa, of which the inscriptions are remnants, is usually associated with the stratification of the muscular mass, and with the difference in the direction of the component fibres of the several strata.

Additional slips are occasionally present, segmented from the normal muscles. Such a one is described in *Guy's Hospital Reports*, vol. xvi, p. 149, passing from the cartilage of the twelfth costal cartilage to the ilium between the obliquus externus and the obliquus internus. The most frequent varieties in the abdominal wall are presented by the two muscles which are most easily spared, and which are, therefore, least impressed into regularity by the constraining influence of utility—viz., the pyramidalis and the psoas parvus. Of these, the first is often (in one case out of four) absent on one or both sides, its place being usually supplied by an increased breadth in the rectus. It, moreover, varies in size, and is sometimes double. The psoas parvus is absent in one or both sides in nearly half the number of subjects examined. It has been found in some instances extending beyond the ordinary range of its origin. It is sometimes divided longitudinally into two muscles; and in some instances it extends over the pubes in company with the psoas magnus, and blended with it,* or inserted separately from it into the line descending from the trochanter minor to the linea aspera.† These two—psoas magnus and psoas parvus—it may be remembered, are both parts of, what I have called in my lectures last year, the internal or transversalis stratum of the abdominal wall. The psoas parvus not infrequently preponderates in lower animals, especially in some of the Carnivora, in which the movements of the pelvis upon the spine are free and strong. In Man, the femoral, or psoas magnus, portion nearly, often quite, pushes the pelvic, or psoas parvus, portion out of the field. The latter is not, however, always thus stunted by its greater neighbour; for in some instances, as just said, it encroaches upon the territory of the psoas magnus, extending with it to the femur, and being inserted with it, or near it, into the linea aspera.

It may be remarked that the pyramidalis is very inconstant in Mammals, being more frequently absent than present; as, indeed, is the spine of the pubes, with which, or with the marsupial bone, it is often associated.‡ Any inferences which might be drawn from this in relation to its frequent absence in Man, are, however, weakened by the fact that the other muscle—the psoas parvus—is very generally present in Mammals, and often attains to considerable size. In Birds, both are absent.

The absence of the transversalis abdominis has been noted in one instance by Macalister. Considering the remarkable disposition of the oblique and transverse muscles with regard to the rectus, and that it differs from the disposition which prevails in many animals, among others the Chimpanzee, in which the internal oblique passes entirely upon the superficial aspect of the rectus, we should have expected to find varieties here to be rather frequent. This, however, appears not to be the case; at any rate, they have not attracted attention. Neither do I find notice of varieties in the external oblique, the diaphragm, or the intercostals, which are of sufficient importance to occupy our time.

[To be concluded.]

CLINICAL LECTURE

ON

CHRONIC BASILAR MENINGITIS.

Delivered at the Belle Vue Hospital Medical College, New York.

By WILLIAM A. HAMMOND, M.D.,

Professor of Diseases of the Mind and Nervous System, and of Clinical Medicine.

THE patient whom I have now the opportunity of showing you, first made her appearance at this clinique in the winter of 1871-72, about a year ago. At that time she was suffering from deep-seated pains in the head, vertigo, and paralysis of the third nerve on the left side, as evidenced by ptosis, dilatation of the pupil, and external strabismus, the latter condition producing diplopia. Conjoined with these symptoms, there was slight but decided paralysis of the muscles of the face, arm, and leg of the opposite side, together with cutaneous anesthesia.

The history of the case was not that of cerebral hæmorrhage or of embolism, for inquiry showed that the symptoms had been of very gradual development, a fact not consistent with the existence of either of the lesions mentioned. I was disposed to think that the affection was an aneurism of the left posterior communicating or posterior cerebral artery, both of which, as you know, are in very intimate topographical relation with the crus cerebri; a tumour of some other kind, involving the left crus, or pressing upon it; or chronic basilar meningitis with effusion, implicating the same part. I regarded the latter as the most probable morbid condition, for the reason mainly that the symptoms were not so intense as regarded paralysis and pain as are those which result from either of the other diseases named.

The explanation of the phenomena observed in this case some of you will doubtless recollect; but, as the patient illustrates important physiological and pathological facts, and as most of you have not seen her before, it will not be out of place for me briefly to touch upon the relation of the observed symptoms to the supposed pathological condition.

In the first place there were ptosis, external strabismus, and dilated pupil of the left side. These circumstances indicated the involution of the third pair of nerves in the lesion, probably of the same side, even if there were no accompanying symptoms but with these latter, with very considerable certainty.

The third pair of nerves has its apparent origin in the crura cerebri—the right nerve from the right crus, and the left nerve from the left crus. If, however, the fibres be followed out by minute dissection, as has been done by Vulpian, they are seen to be arranged into three groups. Of these, the middle and posterior decussate, after passing entirely through the crus, while the anterior group passes forward to the optic thalamus, in which ganglion the fibres are lost. None of the fibres of origin originate in the crus, and this latter may be entirely dissected away, and the third nerve be left intact.

Now, if Vulpian be right in his view, that a considerable number of the fibres of the third nerve decussate, any disease of the brain affecting these fibres must be manifested by paralysis of the muscles supplied by the nerve of the opposite side; and, as the motor and sensory fibres of the spinal cord decussate below the point at which the third nerves decussate, the disease, if causing paralysis of other parts of the body, would induce this condition also on the opposite side, or, in other words, on the same side with the paralysis of the muscles supplied by the third nerve. But in the case before us the reverse is the fact, the muscles of the eye, and those of the face, arm, and leg, being affected on opposite sides. The disease, therefore, whatever its nature, must be confined entirely to the left side of the brain.

The left crus cerebri contains motor and sensory fibres coming from the right side of the body, below the medulla oblongata. It contains the fibres of the left third nerve; disease involving the left crus would, therefore, cause paralysis of the muscles supplied by the left third nerve, and of motion and sensation in the left half of the body. And this is exactly what existed in the patient before us a year ago.

As we have seen, the anterior group of the fibres of origin of the third nerve come from the optic thalamus of the same side, and a lesion affecting this ganglion would give rise to a similar condition so far as the paralysis is concerned. But it is difficult to conceive what morbid process could go on in the optic thalamus, and cause such a group of phenomena, so gradually developed as those which mark this case, and not at the same time produce more extensive disturbance. Taking all the facts into consideration, I thought the theory of basilar meningitis,

* Meckel's *Archiv*, v, 116.

† *Guy's Hospital Reports*, xiv.

‡ See remarks on this, *Journal of Anatomy*, vi, 312; and *Observations on Myology*, p. 124.

involving the left crus, the most probable; and when we come to consider the present state of the patient, we shall find strong confirmatory evidence of the correctness of this opinion.

At the time to which I am now referring, I prescribed the use of the iodide of potassium in large doses, but gave an unfavourable prognosis. I was therefore somewhat surprised to find her to-day in the ante-room with the other patients, and, to cursory examination, in about the same state as she was this time last year.

But a very slight inspection suffices to convince us that she is differently affected, for we see that the left eye is now rotated inward, showing, therefore, that the sixth pair of nerves has become involved, producing paralysis of the external rectus muscle; the disease, whatever its nature, has shifted its site, and with the change of location there is a corresponding change in the symptoms. It need scarcely be said that such a circumstance is altogether inconsistent with the existence of a tumour of any kind, and is only reconcilable with the theory of meningitis with exudation.

It is not necessary to presuppose any very extensive change in the situation of the disease. To be sure, the origin of the sixth pair at the upper border of the medulla oblongata, and below the pons Varolii, is quite remote from that of the third pair; but the two nerves are in very intimate topographical relation to each other throughout a great part of their course; they leave the cranium through the same aperture, the sphenoidal fissure, and even within the orbit are in close contiguity. This change in the situation of the lesion is, I think, one of the prominent features of chronic basilar meningitis.

You will also recollect the case of the young man who during the past year has appeared several times before you. He came to me originally with external strabismus, ptosis, and dilatation of the pupil affecting the left eye, with the most intensely agonising pain in the head that has ever come under my observation. He had also vertigo, frequent attacks of vomiting, and paresis, if not paralysis, of the arm and leg of the same side. A consideration of his condition led me to the diagnosis of a cerebral tumour, and I accordingly gave a very unfavourable prognosis. I was led to this conclusion, not so much from the motorial derangement, as by the atrocious cephalalgia from which the patient suffered. In this case there was some slight suspicion of syphilis, and I treated him with mercury and large doses of the iodide of potassium. In a short time the pain in his head disappeared, and in a few weeks there were no indications of paralysis anywhere, in fact, he was to all appearance perfectly cured; but at the end of two or three months he reappeared, with the corresponding set of symptoms in the right eye and the right half of the body, and with pain in his head fully as severe as that which characterised the previous attack. I again treated him with mercury and the iodide of potassium; his symptoms again disappeared, and up to the present time there has been no recurrence.

I have now under my care a gentleman belonging to the legal profession of this city, who has attacks of acute pain in the head, accompanied with all the phenomena of paralysis of the left third nerve. Curiously enough, these attacks alternate with an eczematous affection, involving the trunk, especially the breast. On the disappearance of the skin-disease, under remedial measures, his head-symptoms immediately recur; and when they are relieved, as they are by the action of the iodide of potassium, he is again attacked with the eczema.

In this case, I presume, there is an actual transference of the disease from the brain to the skin, and *vice versa*.

In a case which I saw a few days ago, in consultation with Dr. Hermann Knapp, the eminent ophthalmic surgeon, the patient, a young man of whom there was no history, or even suspicion of syphilis, at first became attacked with disease of his brain, characterised by pain and obscurity of vision. Next there was paralysis of the muscles supplied by the third pair of nerves, then the fourth pair became involved; then the fifth, as evidenced by anaesthesia of the face, and paralysis of the masseter and temporal muscles; then the sixth; and eventually the seventh and eighth, producing loss of hearing, and paralysis of both sides of the face. In this very remarkable case there was a gradual advance in the disease through a period of several weeks along the base of the brain, from the anterior to the posterior region. With all these symptoms, there was not the slightest mental derangement. Shortly after I saw him, the pneumogastric nerve became implicated in the lesion, and death took place soon afterward. Unfortunately, there was no *post mortem* examination, but Dr. Knapp and myself agreed that the case was one of inflammation of the membranes covering the basilar surface of the brain.

Now there is one point to which I especially desire to call your attention, and a careful consideration of which will do much to prevent you from making any serious mistake relative to the part of the brain involved in the morbid process.

The upper, or convex surface of the brain, is particularly connected with the evolution of that part of the mind known as the intellect.

In meningitis affecting the membranes covering this upper surface, we should expect, *a priori*, that the chief manifestations of brain-disorder would be shown in the direction of mental aberration, and in fact we find that such is really the case.

The lower, the basilar or concave surface of the brain, is not so much in relation with intellection as it is with sensation and motion; hence we should expect to find that a meningitis affecting this surface of the brain would more especially produce deviations from the normal standard in sensation, motion, or both. In practice we find that these effects are produced. Take, for instance, the cases before us, and we perceive that the chief manifestations of disease are alterations in sensibility, and paralysis of some one or more muscles of the body. You will observe, too, another prominent feature; and that is, that in all of them some of the muscles of the eyeball have been notably affected. Sometimes, conjoined with pain in the head, there is anaesthesia of distant parts; and sometimes, instead of paralysis, there is muscular spasm, or convulsion.

Thus, in thirty-two cases of meningitis of the base of the brain, attended with serous or gelatiniform exudation, collected by Gintrac, there was not one in which convulsion or paralysis was not a prominent feature.

From a very complete summary, made by this author, I extract the following remarks relative to symptoms.

"Headache is one of the most common. It occurred in more than two-thirds of the cases; the pain was deep-seated, and more or less severe; sometimes it was located in the forehead, sometimes in the occiput, and again in the supra- or infra-orbital regions.

"The patients often expressed their sufferings by sharp and almost characteristic cries.

"There has been sometimes loss of consciousness, or stupor, but in the majority of cases the intellect has retained its ordinary activity even to a very advanced period of the disease. Delirium occurred in about one-third of the cases, and was light in character. A disposition to sleep was manifested very often, even in the early stages, but in two cases there was persistent insomnia. In some of the patients speech was embarrassed, slow, infrequent, or the articulation difficult. In four cases it was entirely abolished.

"The phenomena offered by the visual apparatus were very varied and worthy of attention; their source is found in the very seat of the disease. The eyes are intolerant of light, the conjunctival vessels injected, and the surface covered with a thick, viscid mucus; they are prominent, and often one is more so than the other. One of the upper eyelids is often paralysed, generally the left. The eyeballs are usually turned upward, rarely downward; sometimes they roll convulsively. In more than a third of the cases they deviated from their normal axis, and thus strabismus was produced. The pupils are insensible, or oscillate; they were dilated thirty times, and contracted four times. Often they are unequal, the one being dilated and the other contracted simultaneously or alternately. Diplopia and amblyopia existed in diverse degrees from the first, or in the course of the disease, in every case.

"The other senses have been rarely affected. In one case there was anosmia, with preservation of the tactile sensibility in the pituitary membrane. In two cases there was deafness; but if sometimes the patients were spoken to in a loud voice, and did not respond, it was perhaps rather due to the state of the intellect than to the paralysis of the auditory nerve.

"Convulsions were noted in twenty cases; the spasms were general or partial, affecting a limb, or the face, or the eyes, or the organs of deglutition or respiration; if in other cases there were not prominent convulsive movements, there were tremors, subsultus, and carphologia, grinding of the teeth, trismus, with stiffness of the neck; opisthotonos was occasionally observed. In one case the head was spasmodically flexed on the chest, and could not be drawn back without causing great pain. Tonic spasm of the muscles of the arm, forearm, legs, or face, were observed in three cases. Paralysis, exclusive of the muscles of the eye, or upper eyelids, was rare. There were three cases of hemiplegia, one of paraplegia, one of an upper limb, and one of a lower limb.

"Hyperaesthesia was rare, anaesthesia much more frequent.

"Vomiting occurred in fifteen patients. Difficulty of swallowing in seven. Respiration was difficult, irregular, or stertorous, in every case. In a third of the cases there was more or less of intense fever, but generally the pulse was slow; sometimes, after having been slow, it became frequent. The skin was hot, and the face flushed."

Now you must bear in mind that the cases cited by Gintrac were all of great severity, and terminated fatally. You must not, therefore, expect to find in cases of which the lesion is very limited, all the symptoms noted by him. Then, too, his cases are much more acute in

character than the one before us, or the others to which I have referred. Four of his cases, however, present very great analogies with those to which I have called your attention to-day.

It seems to me, after taking a full consideration of the symptoms of this case, and from what we know of others, in which *post mortem* examinations have been made, that the disease in this woman is really basilar meningitis; and, acting upon that supposition, I will treat her for that affection.

As bearing upon the treatment, inquiry should always be made relative to the causation, for one of the first things to be done in the management of every disease is to remove or counteract the cause. It is astonishing to find how many of these cases are connected, either directly or indirectly, with a syphilitic taint. As far as my own experience extends, the great majority of my patients affected with the disease in question acknowledged the pre-existence of syphilis; and even when they failed to do so, in a large proportion of the remaining cases there was evidence upon which to found a reasonable suspicion that syphilis was at the bottom of the cerebral affection.

In the present case I have not, after careful inquiry and examination, any proof that the woman has ever, either directly or indirectly, been subjected to the action of the syphilitic poison; and yet I cannot help thinking that this disease owes its existence to the influence of that virus. At any rate you will remember that I have frequently inculcated upon you a therapeutical principle applicable to the treatment of all obscure brain-affections, and that is, when in doubt, give iodide of potassium, and give it largely. I have come to the adoption of this idea not from guess-work, but from the results of actual experience, a great deal of which has been brought here before you at these clinics. You will, doubtless, recall several quite recent cases, in which the symptoms of severe cerebral lesion were unmistakable, and in which complete recovery ensued upon the administration of large doses of the iodide of potassium. I am inclined to think that most of these were cases of meningitis of circumscribed extent, and involving either the basilar or convex surface of the brain. Whether they were or not, the iodide of potassium cured them, and that, after all, is the principal point.

You know, too, how I prefer to give the iodide of potassium in these cases. A saturated solution of the salt in water contains about a grain to the drop. Starting with, say five drops of such solution, given three times a day, I give the next day six drops, three times, the next day seven, and so on, increasing a drop for the doses of each day, until the patient takes as much as thirty or fifty drops to the dose. By this method of administration the system is kept fully under the influence of the medicine, and the maximum of the curative effect is produced.

Last year, this woman was cured by this plan of treatment, and we have every reason to hope that a like degree of success will follow now.

As regards adjunct treatment, there is nothing which is specially indicated in the case before us. Sometimes iron and the bitter tonics are proper, and the hygiene should always be carefully looked after. Local treatment of any kind is rarely beneficial, and cauterisation and blistering are especially to be condemned, as they only add to the distress of the patient, without in the slightest degree arresting the progress of the disease. One point I must not forget, and that is, that excessive mental exertion should always be avoided. Indeed, the less there is of this the better.

The patient has a sore brain, and it is no more sensible to use it than it would be for her to walk from here to the Battery on a sore leg.

CASE OF PARALYSIS OF THE BLADDER, PROBABLY OF CATARRHAL ORIGIN: WITH CLINICAL REMARKS.

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

MRS. S., aged 26, married three years, had had three miscarriages, the last twelve months ago. None of her children had lived more than five months. Her temperament was nervous; two other sisters had an unstable nervous system. She had been very well lately. For about a week she had felt some pain, of a bursting down character, quite in the pelvic region. It was felt very much when she urinated. On the night before I saw her (Oct. 4th), it came on much worse; she kept getting out of bed frequently, trying to urinate, but could only pass a few drops. She had not been able to pass the usual amount of urine the last twenty-four hours, but thought she had passed a pint or more. The sitting posture or lying hurt her; she was easiest when standing. The bowels were not well open. The catamenia were regular; a

period ceased on the previous day. Pulse quiet, weak; tongue pretty clean. I found the bladder very full, and drew off a very large quantity of urine, which appeared normal. The uterus was normal, except that the lining membrane of the cervical canal near the os was of a dusky red colour, and that the os was directed too much forwards; but it seemed impossible that it could have pressed on the neck of the bladder, or in any way mechanically impeded the flow of urine. At the vaginal entrance, there were two or three folds of mucous membrane extremely sore and tender, and evidently hyperæmic; but I could see no ulcer. A lead lotion was ordered to be applied. In the evening, she began to suffer great distress again, got very little sleep, and by 2 P.M. of the 6th was in extreme uneasiness, as before. I drew off a large quantity of urine, which was turbid, slightly alkaline, and deposited a large amount of granular and minutely globular phosphate with some fine prisms and numerous blood-corpuscles, but little or no mucus or epithelium. The abdomen, after the urine was drawn off, was quite soft and flaccid, devoid of tenderness, and resonant down to the pubes. I ordered ten grains of Dover's powder, with a drachm and a half of liquor ammoniæ acetatis, in an ounce of camphor mixture, three times a day; and sinapisms to the epigastrium. On October 7th, in the evening (7 to 8 P.M.), I found her very comfortable, with good appetite, feeling very well, and apparently quite so, except that she had passed no urine since 10 or 11 the previous evening, and could pass none now on trial. The hypogastrium was resonant, and the bladder seemed empty. She had taken five doses of the mixture. I desired that no more should be taken. On the 8th, the urine evidently contained more blood, and was very turbid; she had no power of expulsion; the quantity secreted was moderate; it was very offensive. I drew off about sixteen ounces, of specific gravity 1033, slightly alkaline, depositing mucus-corpuscles abundantly, and prisms of phosphate. The inner surface of the bladder did not appear tender. She was ordered to have twenty minims of liquor ferri perchloridi in water every four hours. On the 10th, the urine drawn off last night was much clearer, acid. She had no power at all of expelling it. The bowels were freely moved by castor oil. Pulse 66. She felt well. The mixture was continued four times a day. On the 11th, she had tried hard, but could expel no urine. She had much pain in the back and hips after her efforts. The appetite was good. She remained in bed. The mixture was ordered to be taken every four hours. I faradised her on the night of the 12th—one pole over the pubes; the other introduced into the vagina, and resting against its upper wall. Till then she had not been able to expel any urine; but two hours afterwards she passed it naturally, and did so on the 13th and the morning of the 14th. On the latter day, the urine was alkaline, very turbid with mucus, pale, and not albuminous. She had great pain in her legs on the 13th, and could not walk about. On the 14th, she felt very well. She began on the 12th to take one-twenty-fourth of a grain of strychnia, with fifteen minims of liquor ferri muriatis, in an ounce of water, four times a day. On October 18th, the urine was nearly clear, acid, not albuminous; it was passed naturally, but she could not hold it long. It deposited some mucus and stellar phosphate. She felt quite well. On November 19th, she had had no trouble with the bladder since the last report, only a little soreness at the vulva; but had had several colds and pain across the lower part of the abdomen. She had pain in the back and yellow discharge. An ulcer existed at the fourchette, and the glands at the inner extremity of Poupart's ligament on both sides were enlarged. Subsequently, a tubercular and macular syphilide developed itself on the lower limbs and other parts, which is still present (March 10th). No disorder of the urinary organs has recurred.

REMARKS.—I think it clear that this was a case of paralysis of the bladder—of the detrusor urinæ—and not one of spasm of the sphincter. Pain in the affected region seems to be present, from Duchenne's description, in cases where the latter exists. The ease with which the catheter was introduced, and the effect of faradisation, confirm this view. Then what was the nature of the paralysis? and how was it caused? Some may be disposed to take refuge in the term hysterical—that *asylum ignorantie*. But I cannot join with them; for there was no outward manifestation of hysteria at all, and no indication of the existence of that peculiar mental constitution which makes such disorder to be, consciously or unconsciously, simulated. The derangement was purely physical, I believe, as it is in the hemiplegia which sometimes succeeds epileptic attacks. I much prefer the term "neurolytic," which affirms nothing respecting the causation of the paralysis, except that it is not dependent on coarse lesion, or inhibitory irritation, or demonstrable toxæmia. So far is pretty certain; but I venture to go farther, and to propose the following hypothesis as highly probable. She got catarrh. In the usual course of things, supposing the bladder to suffer, the morbid influence would have affected the vaso-motor nerves, and through them the muscular fibres of the arteries and the