form of clusters; and, further, their occasional disappearance under an attack of inflammation and suppuration. These latter characters remind us of the small tumours caused by hypertrophy of the sebiparous glands, and which are distinguished by the name of molluscum simplex. And, as a further illustration of the relation of acrochordon to molluscum, it may be mentioned, that it is no uncommon thing to see a tubercle of molluscum simplex converted by the expulsion of the hypertrophied gland into a mere pendulous bag of integument.

The thymium appears to be nothing more than the fibrous wart so common on the hands; while the myrmecia is a broader, deeper, and less prominent variety of the same wart, occurring in the palms of the hands and soles of the feet. I have seen myrmecia chiefly in the thick cuticle of the heel, where it is extremely painful and troublesome. It may be worth while to remember the recommendation of Celsus to treat it by the application of a boiled fig.

[To be continued.]

Original Communications.

PATHOLOGICAL AND PRACTICAL RESEARCHES ON THE VARIOUS FORMS OF PARALYSIS.

By EDWARD MERYON, M.D., F.R.C.P.

[Continued from page 205.]

PARALYSIS FROM MORBID GROWTHS IN AND ABOUT THE SPINAL CORD.

THESE adventitious products occur under various forms, and give rise to a diversity of symptoms, from which we may calculate upon more assistance in determining the functions of each individual portion of the spinal marrow than from any direct experiments, however carefully they may be conducted.

Of all extraneous growths from which paralysis ensues, the most frequent are tubercle and cancer. Neither, however, has been so often observed in the vertebral canal as in the cavity of the cranium; but when either occurs, the slow process of its formation may enable the cord so far to accommodate itself to exceptional pressure or structural disintegration, that the function of the special part which is the seat of lesion is more clearly manifested by its gradual disturbance than by any abrupt change induced by artificial means. The sudden shock and extension of irritation to surrounding parts, necessarily weaken the force of any inference that may be drawn from the result of an experiment.

Tubercle of the cord occurs more frequently in children than in adults, and its attendant symptoms are those of compression and irritation.

CASE. Philippe Oran, aged 29, was admitted into the Hospital St. Antoine, under Dr. Aran, with paraplegia, rigidity of the inferior extremities, anæsthesia of the legs and thighs, and enuresis. He was insensible to tickling on the soles of the feet; but reflex movements were produced thereby. This patient had practised onanism in his youth, and subsequently committed great excesses in venery. He had also been affected several times with syphilis. Percussion over the spine produced considerable pain over the upper third of the dorsal region. He had paroxysms of shivering and fever, and behind the trochanters bed-sores existed. Notwithstanding that the soles of the feet were insensible to tickling, pricking of the skin over the instep was felt acutely.

On examination of the body thirty-five hours after death, a mass of tubercular matter was found to have

burst out of the vertebral canal, and to occupy a space over the fourth dorsal vertebra; but the greater part of the morbid product was contained in the canal, where it pressed upon the cord, which was flattened and softened to the consistence of cream. The osseous lesion existed in the bodies of the third and fourth dorsal vertebrae. (*Comptes Rendus de la Société de Biologie*, 1856, p. 191.)

The relation of the above case is not so explicit as we might desire; but I think we may reasonably infer that the partial anæsthesia was the consequence of pressure on the posterior columns of the spinal cord which were found flattened and soft. The persistence of reflex phenomena, however, and the sensibility to pricking on the instep, would indicate that the impressions of the afferent nerves continued to be transmitted to the central grey matter of the cord.

An interesting case of paraplegia depending on a tumour in the substance of the cord, is described by Dr. McDowell, Professor of Anatomy in the University of Dublin. (*Dublin Quarterly Journal of Medical Science*, November 1861.) The patient, a tin-plate worker, was affected with paraplegia, but regained, in some slight degree, the power of moving the left foot and leg. The foot could be bent and extended, and the leg could be drawn up in bed; the right foot and leg remained utterly powerless. But in the right foot and leg the reflex movements regained well-nigh their normal activity, whilst in the left it was impossible to excite them. Sensibility was equally impaired in both legs.

The difference in the amount of paralysis may be accounted for by the position of the tumour in the right side of the grey substance, where the vesicular portion of the nervous matter possessing the faculty of originating motive power is situated. But how shall we explain the loss of excito-motory phenomena on the left side, unless they depend on the decussating fibres which pass from the anterior cornu on the one side, into the anterior column on the other? The author of the history of the case has accounted for it by the supposition, that reflex motor phenomena are better developed when the influence of the brain is cut off from the spinal cord; but the cases are so numerous in which the reflex phenomena are entirely destroyed when the influence of the brain is entirely cut off, at least after a time, that I am more disposed to regard the disappearance of the phenomena as dependent on a solution of continuity at some point between the afferent and efferent nerves. That volition does exercise a restraining influence there can be no doubt, but the reflex function is not dependent on the abrogation of such influence.

The most unequivocal case that I remember to have read of, as showing that the posterior columns of the cord are not the sole channels for the transmission of the impressions of sensation, but that the grey substance is equally subservient to the function, is related by Ollivier. (*Traité de la Moelle Epinière*, tome ii, p. 779, obs. 111; see also p. 693.) In reflecting on this case, it may be well to consider how far the fibres which pass from the posterior cornua into the lateral white columns, may have been implicated.

The subject of the case had a benumbed left arm, together with paraplegia, the loss of sensation in both legs being complete. A tumour existed on the left side of the back, on a level with the inferior angle of the left scapula; and in the very centre of the spinal cord, between the last dorsal and first lumbar vertebrae, an olivary tubercle was found, occupying the space of the grey matter, but leaving the columns of the cord all round it apparently healthy.

The sensation of numbness in the left arm was probably due to pressure on the cutaneous nerves (the nerves of Wrisberg) which proceed from the upper dorsal nerves, in the neighbourhood of the tumour observed on the left side of the back. The convulsive movements and other symptoms of irritation may be referred to the

morbid action, evidence of which existed on the surface of the dura mater; whilst the loss of sensation and motion was caused by pressure exercised on the vesicular nervous matter and the longitudinal tubular fibres of the grey substance, in which pressure the longitudinal white columns of the cord must have eventually participated.

It has been remarked that in paraplegia, dependent on tumours in the grey substance of the cord, anæsthesia sets in at the very beginning of the affection, and proceeds to a greater degree than the loss of the power of motion. Another remarkable feature in such cases is the exaltation of the reflex function in the parts of the cord below the tumour, probably from the irritation occasioned by the adventitious matter, for a very slight provocation will produce the most violent reflex movements.

All this is in strict accordance with the anatomical structure of the parts; and if more evidence be required to the theory which assigns to the longitudinal nerve-fibres in the grey substance of the spinal cord, the transmission of impressions of sensation and of the mandates of the will, it is beautifully supplied by cases in which the grey substance has been destroyed. An instance of this kind has lately been recorded by Dr. Gull, in *Guy's Hospital Reports*, vol. viii, 3rd series, p. 245. The patient was a tailor, who for some months had been unable to extend the little and ring fingers of the right hand, which felt cold and numb. He had shooting pains through the chest, and a sense of tightness across the upper part of it. The inner three fingers of the left hand next became similarly flexed, but without any numbness. The patient sickened with typhus fever and died. On examination of the body, all the organs were healthy except the spinal cord, in the centre of which a large cavity existed, beginning at the fifth cervical vertebra, enlarging downwards to the seventh, and from thence tapering to the fourth dorsal. The columns themselves were healthy.

It is worthy of observation that there is no notice of any paralysis of the inferior extremities, whence we may infer that none of the longitudinal nerve-fibres in the grey substance extend throughout the entire length of the cord; and in another case, described by Ollivier (vol. ii, p. 691, obs. 93), remarkably analogous to the above, the disorganisation of the grey matter appears to have taken place in a downward direction, the symptoms presenting a corresponding extension.

Portal also relates the case of a servant of the Duc de Crouy, who was seized with numbness of the arms and legs, which subsequently lost all power of motion, and became œdematous. On examination after death, a large quantity of fluid was found extravasated in the ventricles of the brain, and a large cavity was discovered in the centre of the spinal cord, extending down to the third dorsal vertebra.

A somewhat similar case is related by Velpeau, in the *Revue Médicale* for 1826, of a woman, aged 56, who gradually, but rapidly, became affected with complete hemiplegia of the left arm and leg, but without loss of feeling. The left arm became œdematous. Her respiration was quick, her voice weak, and her speech somewhat embarrassed. The pulse became feeble, the breathing stertorous, and in a week she died. In the middle of the cervical region, the grey substance on the right side of the cord was converted into matter resembling pus. An abscess, in fact, existed, three inches long and three lines in diameter. On the left side also, and in the corresponding portion of the cord, the grey substance was found in a state of softening, about an inch in extent.

Upon pathological cases, then, as well as upon anatomical structure and experimental observations (*Course of Lectures on the Physiology and Pathology of the Central Nervous System*. By C. E. Brown-Séquard, M.D., F.R.S. Lecture IV), it would appear that the central

grey substance of the cord, independent of the vesicular matter which it contains, includes nerve-fibres which are directly or indirectly concerned in motion and sensation. But, upon anatomical grounds alone, there is great reason to infer that it is with the excitomotor or reflex actions that the grey substance is so concerned; for, as in the lower extremities, the reflex actions are more evident than they are in the upper, so the bulk of the grey substance is much greater in the lumbar region than it is in the cervical; and yet the ordinary sensibility of the legs is less acute than that of the arms. Case XIX would have presented an excellent opportunity of observing how far the reflex function was destroyed by the disorganisation of the central portion of the cord; but, beyond the remark that the contraction of the legs was increased when touched, at the time the patient was admitted into the Bicêtre, the narrative conveys no information on this interesting question. Case XVI is more suggestive, because it is more circumstantially described.

That paralysis may ensue from cancerous formations in and about the spinal cord, too many cases have been recorded to admit of the slightest doubt. Still, cancer in the cord is a very rare form of disease, and, like tubercle, is one of a secondary development, other organs being more obnoxious to such morbid growths. The symptoms, too, resemble, in so many respects, those which present themselves in tubercle of the cord, that the diagnosis is dependent rather on the general diathesis of the patient than on any special signs.

The vertebrae themselves may be the seat of the disease, as shown by Dr. Walshe (*Nature and Treatment of Cancer*) in a case where, with the progress of the cancerous infiltration, the bony tissue of the body of a lumbar vertebra had disappeared, and the adventitious substance, reaching the anterior and posterior limits of the cancellated structure, destroyed the compact tissue also, and protruded posteriorly under the dura mater into the spinal canal, and anteriorly under the anterior ligament. It had subsequently grown in front of the spine in an upward and downward direction, so as to reach the bodies of the vertebra next above, and next below.

A remarkable case, published by M. Velpeau (*Archives Générales de Médecine*, Janvier 1825, tome vii, pages 68-82) in 1825, to illustrate Sir Charles Bell's doctrine, has still its interest as regards the relationship existing between the seat of disease and disturbance of function. In this case, the adventitious matter in the anterior of the cord must have so completely destroyed the healthy structure through which it ramified (a process which connective tissue is specially prone to undergo), that the continuity of the complicated links which have been shown to exist between the nerve-fibres were as effectually severed as if they had been divided by a knife.

But in the process, the convulsive movements and pain in the left arm were doubtless due to the irritation set up in the corresponding side of the spinal cord, and transmitted by the motor and sensitive nerves backward to the arm; and in this stage of the disease hyperæsthesia of the arm existed, just as the irritation caused by a section of the lateral and posterior columns of the spinal cord produces hyperæsthesia (Dr. Brown-Séquard, pp. 19-21); but as the destructive influence of the cancerous infiltration progressed, and the vesicular matter of the grey substance of the cord was destroyed, motion, sensation, and the excitomotor actions were destroyed with it. It is probable that the persistent sensibility of the right arm was due to the fifth cervical nerve which sends a branch to the brachial plexus; for, if the least quantity of the central grey matter of the cord had been left, the reflection of irritation from one sensitive nerve to another sensitive nerve would not entirely have ceased, as it did in every nervous branch below the tumour. The extraordinary part of the case was the sud-

den supervention of paraplegia; for, in affections of the spinal cord, where the morbid change is of a chronic nature, the paralytic effects are less abrupt than in injuries or acute disease.

These physiological remarks find a place where some notice should appear in respect of prognosis and treatment; is it necessary, however, to confess that these cases are incurable?

Hydatid cysts have likewise been known to produce fatal paralysis. Five such cases are recorded by Ollivier, and, curiously enough, all occurred in females. In three, the cellular membrane on the external surface of the vertebral column was the primary seat of the parasitic growth, whence it spread in the track of the nerves, through the intervertebral foramen, to the external surface of the dura mater. One of these cases, which fell under the observation of M. Chaussier, is so interesting that I will venture to transcribe it.

An embroiderer, aged 22, after various premonitory symptoms, at the seventh month of her pregnancy, became suddenly paralysed in both lower extremities. Micturition and defecation also became more and more difficult, and less frequent. At the full period, parturition was accomplished without pain, the cries of the child and the rapid diminution of bulk being the only evidence by which the woman was assured of the fact.

All went on well till the fourth day, when an attack of fever came on, and from day to day assumed an aggravated form. On the tenth day she died.

On examination, an hydatid cyst, which had formed on the right side of the bodies of the third and fourth dorsal vertebrae, was found to have insinuated itself into the vertebral canal through the fourth intervertebral foramen.

Here, again, we may associate each and every symptom, in the order of its appearance, with the probable development of the acephalocystic formation. The first sensation of numbness in the right arm was doubtless attributable to pressure on the nerves of Wrisberg, or cutaneous nerves of the arm (the anterior branches of the second and third dorsal nerves), as were the subsequent disturbances of the right eye, and of the vascular system to pressure and irritation of the right sympathetic nerve. I have already had occasion to allude to the influence of the sympathetic on the motions of the eye, and its vaso-motor power is universally admitted. M. Colin, however, has shown that its sensibility is more effectively aroused by pressure than by any other means (*Comptes Rendus*, Mai 13, 1861, p. 969); and Dr. Augustus Waller has pointed out the fact that pressure on the trunk of the nerve gives rise to embarrassed respiration and disturbance of the heart's action (*Proceedings of the Royal Society for 1861*, No. 44, p. 382), symptoms which occurred in the course of the case in question.

It will be observed that up to the seventh month of pregnancy no symptom existed which might not have been caused by pressure on nervous trunks outside the vertebral canal; but the supervention of paraplegia attested the existence of a lesion of the spinal cord itself; and the question is, of what special part? Was it compression of the external white columns or of the internal grey substance to which the paralyzing influence was due? The gradual penetration and intrusion of the cyst seems to favour the idea that it was the former; for, as the pressure was at no time so great as to produce disorganization of the cord, it is reasonable to presume that the longitudinal columns suffered more than the grey substance.

Another interesting phenomenon was the painless, yet effective contraction of the uterus; and herein some light is thrown by the observations of M. Brachet, which render it probable that absolute destruction of the spinal cord is necessary for the perfect inertia of the uterus (*Fonctions du Système Nerveux Ganglionnaire*); hence it would appear that, in paraplegia from simple compres-

sion of the cord, the sensibility of the uterus may be suspended or destroyed, whilst its contractile energy remains undisturbed. And this contractility appears to be of a reflex character, for it may be excited by the application of cold to the surface of the abdomen, by the introduction of the hand, or even by placing the child at the breast.

Whilst, therefore, I am disposed to think that, from pressure on the white columns of the cord, the nervous communication between the brain and uterus was cut off, it appears that an independent reflex action was preserved in the comparatively uninjured portion of the cord, and that to this latter operation the expulsion of the fœtus and the subsequent startings of the legs were due.

[To be continued.]

Transactions of Branches.

SOUTH-EASTERN BRANCH: WEST KENT DISTRICT MEETING.

CASE OF PHTHISIS MASKED IN ITS LAST STAGE BY PRECORDIAL DISTRESS.

By FREDERICK J. BROWN, M.D., Rochester.

[Read September 25th, 1863.]

GEORGE G., aged 45½ years, residing at Chatham, died on September 9th, 1863. The death-certificate was worded "Phthisis"—6 months.

I first saw him on August 12th. He was greatly emaciated, suffering from hectic fever, and perspiring profusely. He complained of pain and a sense of obstruction at the epigastrium, midway between the xiphoid cartilage and the umbilicus. The bowels resisted medicine for four or five days together, then operated once or twice, and again became obstinately confined. There was no complaint of cough. There was no abdominal tumour. His health had declined for two years; but he continued at his work as an artisan until thirteen weeks before his death. He was thought to be suffering under abdominal cancer.

A *post mortem* examination was made twenty-five hours and a half after death. There was extreme emaciation. The stomach and intestines were healthy. The liver was fatty, and presented a nutmeg appearance. The spleen was large and firm. The pancreas was wasted. The kidneys were natural. The right suprarenal capsule was natural; the left one was not examined, through an accidental omission.

Examination of the thorax showed excessive wasting of the heart. This organ did not appear to be more than one-third of its normal size, and it presented a whitish aspect. Its structure was not lacerable. The right lung was strongly adherent at its apex. There was a ragged vomica occupying the upper sixth of the lung. Yellow tubercle was disseminated through the lung, crude in some parts, softened in others. The left lung presented the most extraordinary appearance that I have ever seen. It was wholly adherent, but split up longitudinally into two slips with ragged ulcerated surfaces.

REMARKS. The remarks that I have to make on this case are but few. In the first place, the man was never properly examined during life. The stethoscope was not used at all. This case shows the necessity of examining the lungs in all wasting diseases; and it also shows the danger of jumping at conclusions. This man must have expectorated purulent matter whilst he was engaged at his work; but, being of a quiet disposition, he had maintained a reserve on this subject sufficient to mislead his wife and friends. I would also remark that cancer of the abdominal organs is an unsafe diagnosis in the