These quotations are sufficient to shew the great discrepancy and uncertainty of opinion which prevails among the most eminent obstetric writers respecting the *causes* of puerperal convulsions.

As a contrast to this confusion, the views of the discoverer of the functions of the *spinal marrow* may be brought forward. With a few graphic and masterly touches, he stamps the malady as one of the diseases of this division of the nervous system.

"The principal *causes* of puerperal convulsion, besides the *peculiar condition of the uterus itself*, are, indigestible food, a loaded and morbid state of the bowels, a distended condition of the bladder, &c., mental shock or anxiety, muscular effort, hæmorrhage, &c." Dr. Marshall Hall further believes, that all these and similar causes act upon the spinal marrow and its system of excitor and motor nerves. This view of the subject I propose to develop at greater length than Dr. Hall has hitherto done, but in accordance with his physiological and pathological doctrines. One of the chief sources of error respecting the true pathology of puerperal convulsions is, the vague and incorrect idea which is commonly held among practical men respecting the part played by the vascular condition of the brain in their production. As a preliminary step, therefore, it must be of great importance to place this matter on a correct physio-pathological basis.

It may be gathered very plainly, from the quotations given above, that the general opinion is in favour of considering direct or secondary *cerebral congestion* as the grand cause of convulsions in the puerperal state. By this, obstetric writers mean congestion of the *whole* organ, or, at all events, they have never, so far as I am aware, made any attempt to define the part of the brain which must be affected before convulsions can occur, a matter of great moment, both in practice, and as affording a plain rationale of one of the first difficulties which meets us in the inquiry.

It is a well established fact in physiology, that in animals, mechanical irritation of the spinal marrow within the theca vertebralis, of the medulla oblongata, and the corpora quadrigemina, will cause convulsions. It is also well proved that irritation of every other part of the brain and cerebellum may be carried to any extent without producing convulsive action. Loss of voluntary motion may be thus caused, but the involuntary and spinal motions, those which in morbid excess constitute spasm and convulsion, remain unaffected. When the whole of the lobes of the cerebrum and cerebellum have been carefully removed, convulsions may be occasioned to any extent by irritation of the cranial termination of the spinal marrow. All these data have been abundantly proved by the vivisections of Magendie, Schoeps, Flourens, Hertwig, and Dr. M. Hall. In one interesting experiment performed on the dog, Dr. M. Hall found, that while irritation of the brain produced no effect, pinching the dura mater lining the cranium, to which branches of the fifth are distributed, excited convulsions, so that the brain is actually *in-excitor* of spinal action, while the meninges are strongly excitor. The brain, although the sensorium commune, has neither nerves of common sensation nor of excito-motion. This is supported by pathological observation. A tumour gradually developed in the brain itself may excite no cerebral or spinal symptoms, while a spicula of bone on the inner surface of the skull may occasion epilepsy.

It would appear to be a necessary deduction from these facts, that whether we use the term *spinal marrow*, or any other name, we are bound to consider the medulla spinalis and oblongata with the corpora quadrigemina, as forming together one distinct organ—as being a division of the nervous system, which pathologically, as well as physiologically, must be looked on as separate from the brain, cerebellum, and the simple sensory and voluntary nerves of the spinal cord.

Thus, then, we should have,—1. The *cerebral system*, composed of the brain and cerebellum, in connexion with that part of the spinal cord which conveys sensation and voluntary motor power to and from the brain, which might be termed the intra-vertebral cord; and 2. The *spinal system*, consisting of the spinal marrow, (exclusive of that part of it devoted to the transmission of volition and sensation,) together with the medulla oblongata, and the corpora quadrigemina. This division into the cerebral and spinal systems, though they are each of them both cranial and vertebral, as regards anatomical position, the spinal extending into the brain, and the cerebral situated partly within the vertebral canal, is in nowise theoretical, but a matter of fact, admitting of the most severe physiological proof. Indeed, as Professor Grant and Dr. Marshall Hall long ago predicted, it has been found, by Dr. Carpenter and Mr. Newport, that in the invertebrata the excito-motory cord is anatomically distinct from the cord of nerves devoted to sensation and voluntary motion. Such a division is of great moment for the present pathological purposes. It is necessary, as we proceed, to keep the mind close

to the subject, and draw a clear line of demarcation between those parts which belong to each respectively.

Let us now examine some of the presumed causes of puerperal convulsion, and first of all, the subject of cerebral congestion.

During the pregnant and puerperal states, there is a greater tendency to fulness of the circulation than at other times, and in labour, especially in some of its stages, this vascular plethora particularly affects the head. In the second stage of labour, when the presence of the head of the fœtus in the vagina has excited the reflex action of the expiratory muscles, there is, during every pain, partial or entire closure of the glottis. This interferes with the circulation; and, moreover, during the severe pains, a state of partial asphyxia takes place, as may be seen by the distended state of the veins of the head and neck. The same venous congestion must occur to the spinal marrow, particularly its upper portion, though this has escaped the notice of writers on the subject.

It would follow from the above, that if simple pressure on the cerebral vascular system caused convulsions to as great an extent as obstetric authors generally suppose, they ought certainly to occur far more frequently during the second stage of labour than at any other time. But this is not the fact, as patients frequently fall into convulsions before labour has commenced, or during the first stage, when the respiratory system is undisturbed, or the patient may pass through the second stage of labour, when the disturbance of the circulation is at its maximum, without any sign of convulsion; and they often appear for the first time after delivery has been completed.

These facts alone are, I submit, sufficient to overturn the most generally received opinion as to the *cause* of puerperal convulsions. The error has arisen partly from observing the immense distention of the vessels of the upper part of the body during the paroxysm, and partly from the congestion and serous or sanguineous effusion sometimes found after death. But it can be made clearly evident that these signs are in the great majority of cases not the *causes*, but the *results*, of the disease. Rarely, excepting in convulsions occurring during a pain in the second stage of labour, can the congestion of the brain be fairly considered the *exciting* cause of the convulsions; and even here we have two causes in operation—the irritation of the excitor nerves of the uterus, as well as the vascular fulness.

Bolton-street, 1844.

(To be continued.)

ON AN EXAMPLE OF CEPHALOMATOUS TUMOUR OF THE ABDOMEN, AND ON A CASE OF MELANOSIS.

By ALEXANDER MONTGOMERY, Esq. Surgeon, R.N., and Surgeon to the Civil Government Hospital, Mauritius.

(Communicated to THE LANCET by C. S. Webber, Esq. late Surgeon-Superintendent of the Government Emigrant Ship, the *Sir Charles Napier*.)

THE subject of this case was a boy named David Blackburn, aged five years, the son of an overseer of convicts, formerly a serjeant of the 22nd regiment of foot.

The child is reported to have fallen in March last, when his left side struck against the corner of a table; he suffered very considerable pain for some days, and a tumour made its appearance some time after in the left lumbar region, which continued to enlarge. He was sent to hospital on the 6th August, when it had increased to such an extent as to be mistaken on first view for ascites. The abdomen was much distended, but of an irregular lumpy feel, and on pressure being applied, a tumour was distinctly discovered to occupy the whole cavity, excepting a small portion of the epigastric and right hypochondriac regions. The tumour felt as if divided into two parts by a longitudinal thickened cord, which reached from the left hypochondrium, obliquely downward to the pelvis. A consultation of the medical officers of the garrison was held, and no decisive opinion on the nature of the disease could be formed. All acknowledged that it was a novel case. Longitudinal measurement on left side, 6½ inches; on the right, 5½ inches; transversely, 13 inches; circumference of body, 22¼ inches. The child was rather emaciated, but not so much so as might have been expected from the extent and duration of the disease. Bowels obstinately constipated. Purgatives, hot baths, fomentations, embrocations, with alterative doses of calomel, were tried in vain, as the disease went on increasing; and his parents, seeing no hopes of a recovery, removed him from hospital on the 19th of October. He lingered on until the morning of the 8th instant, when he expired, and on the 9th, I opened the body in the presence of Dr. Shanks, of the 82nd regiment, who had frequently visited the child whilst in hospital.

Appearances on Dissection.—The circumference of the body

measured 29 inches. There was an obscure sense of fluctuation in the abdomen, but on a puncture being made in the linea alba, not more than a pint of a dirty serous fluid escaped. On laying open the abdomen, the omentum was found to be thin, elongated, of a dark purple colour, and covering an immense encysted tumour of an irregular globular form: on throwing the omentum upwards, the descending colon was found to adhere firmly to the front of the tumour, being pushed forward out of its natural situation, and it proved to be the thickened cord alluded to above. The hand was now passed over the face of the tumour to the left, when it met with resistance at the extremities of the false ribs, from which point the peritoneum was reflected over the tumour, to which it firmly adhered, as if forming the outer tunic of the sac, and was traced round to the lumbar vertebræ, to which it was firmly attached, the small intestines being pushed upwards into the right hypochondrium, so that the tumour actually filled the whole of the abdomen, with the exception of the epigastric and right hypochondriac regions, as already stated. An incision was now made through the peritoneum at its point of adhesion to the ribs, the hand introduced, and the tumour pulled over to the right side, it having no connexion with the lumbar region, or psoas muscle, excepting through the medium of the loose cellular substance; it was, however, firmly bound down to the right side of the lumbar vertebræ, so that this point and the extremities of the ribs were the points of attachment, the tumour occupying the whole of the intermediate space. Not a vestige of the left kidney or mesenteric glands was visible. The tumour, on being removed, weighed 9½ lbs., and contained a soft, pulpy, whitish coloured mass, resembling the medullary portion of the human brains, mixed with a dirty reddish-coloured fluid, a portion of which mass I supposed to be the seat of the kidney, from its reddish-grey colour and radiated appearance resembling the tubulæ of that viscus. There were several tubercles in the liver, containing a brain-like substance, in the centre of which was a small quantity of reddish fluid. The left lung was composed of solid masses of tubercle, each the size of a large turkey's egg, and containing the same kind of soft brain-like mass as that found in the tubercles of the liver.

The subject of this formidable disease was a black, about twenty-nine years of age, a native of Madagascar, by trade a carpenter, the slave of Mr. Bule, of Mahebourg, who gave the following history of his case:—He stated that about eighteen months prior to his being sent to hospital, a small sore, not larger than a herring scale, made its appearance on the sole of the left foot, to which numerous remedies were applied with no good effect; that an ungovernable fungus formed, which daily increased, and at the period of his admission into the hospital, on the 8th of July, 1827, was as large as a common-sized cauliflower, which it resembled in the rough tuberculated appearance of its surface, but was of a deep livid colour, approaching to blue. The foot was much deformed by numerous tubercles, resembling the mulberry fruit; there were also numerous enlarged glands extending from the inner ankle, following the course of the vena saphena to the groin. The inguinal glands were very much enlarged, one being the size of an orange, the integuments covering it of a mottled blue colour. Bowels torpid, health in other respects apparently good, spirits remarkably so. Tumour but little sensible, excepting when a probe was introduced between the tubercles, which produced hæmorrhage, to attacks of which it had been subject.

From this period numerous remedies were applied, as well constitutional as local. The bowels became more regular, but the other symptoms increased, and notwithstanding that the removal of the diseased parts by extirpation appeared to all who saw him the sole chance of saving the man's life, yet he obstinately refused to submit to an operation until the 6th of August, when I amputated below the knee, in the presence of several medical gentlemen. Diseased glands, of a black colour, and hard, firm texture, were discovered, in the course of the operation, situated in the cellular substance, and were removed. The gland in the groin had much increased in size, but the patient would not submit to its removal. The following were the dimensions of the tumour of the foot when removed:—viz., Circumference round the extremities of the toes, sixteen French inches; from the great toe to the little one underneath, twelve and three-quarter inches; at the dorsal bones, twelve and three-quarter inches; the diameter of the tumour, which was of a circular form, eight inches, and its depth, (on an incision being made, separating the great and second toes,) four inches. The surface exposed by this incision resembled the kidney of an ox, but was of a deeper livid colour, and appeared as if composed of a consolidated mass of tubercles, the striated lines of separation being very distinct. The cellular substance beneath the integuments was at least an inch in thickness, firm in texture, and of a purple

colour, extending as high as two inches above the ankle, where the bones were sawed across, to admit of the more easy preservation of the preparation, in order to its being sent to England. From this period the glands in the groin went on increasing in size; yet the stump healed kindly, and was perfectly cured by the 10th of September. On the 24th of October, the gland in the groin had increased to the size of a six-pound shot; a small piece of the integuments on its centre sloughed, but this was not followed by a discharge of matter. The ulcer thus formed resembled an issue made by caustic alkali, but continued gradually to increase in size until it became four inches in diameter, exposing the cellular substance in a sloughing state, forming a most offensive ugly ulcer. Emollient poultices, mineral acids, oil of turpentine, and other detergents and styptics, were alternately applied without the least good effect; an hæmorrhage, to which the wound became subject, was, however, invariably arrested by the latter application. Soon after the formation of the ulcer in the groin, small hard moveable bodies began to make their appearance under the skin in different parts of the trunk and extremities, gradually increasing in size, with a corresponding emaciation and debility, until three o'clock on the evening of the 23rd of January, 1828, when the patient expired. The odour emitted from the ulcer for nearly a month prior to his death was most offensive. The body was inspected the following day, at noon, in the presence of the gentlemen who witnessed the amputation, and who appeared much interested in this extraordinary case. The following were the appearances which presented themselves on dissection:—The ulcer in the groin was four inches in diameter, of a circular form, having a solid elevated margin of two inches in thickness; its surface was covered to the depth of an inch with disorganized cellular substance, beneath which was a solid brainy-looking mass, two inches in thickness, and of the size and form of the ulcer. This brainy substance seemed to be connected with a black firm mass of either cellular substance or diseased consolidated glands, extending to three inches above Poupart's ligament, terminating in a black-coloured mass, the size of a large orange, and containing a fluid resembling that of a cuttle-fish. The abdomen, when laid open, struck all present with astonishment. The cellular substance, posterior to the peritoneum, was thickly studded with small black moveable glandular bodies, about the size of the common garden pea; similar bodies were observable in the cellular substance beneath the pleura. The omentum was equally filled with them, many hanging pendulous; mesenteric glands much enlarged. The liver was also enlarged, of a dark colour, and weighed six pounds; its surface thickly studded with tubercles, some the size of a walnut, others smaller; its substance when cut into seemed as if composed of a solid mass of tubercles. No apparent change in the structure of the stomach or intestines; kidneys elongated and unusually soft; spleen in its natural state; pancreas enlarged; lungs adherent generally; right one solid, small, and tuberculated; the anterior surface of left of a marble grey colour, and beautifully spotted by small bodies resembling black feathers; posteriorly, the lung adhered to the pleura costalis, and was thickly tuberculated. The pericardium contained a large quantity of a turbid yellow-coloured serum. The surface of the heart was covered with tubercles, and its structure so completely changed, that, when removed from the body, it was difficult to distinguish it as a heart. The os innominatum, with a few inches of the thigh bone, and such portion of the soft parts as were considered necessary to shew the relative situation of the disease in the groin, were removed, forming a beautiful preparation. The liver, lungs, and heart, were also removed, forming an equally beautiful preparation, but it is to be regretted that the heat was so intense, (thermometer 88° in the shade,) and rectified spirit so scarce, that both specimens were totally destroyed, arrack, in which they were immersed, being too weak to preserve them.

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REMARKS ON THE COMPOUND NATURE OF CARBON.

By PHILIP B. AYRES, M.D., Lecturer on Chemistry at the Charing Cross Hospital.

Two communications of a very singular character have appeared in *THE LANCET* for September 21st and 28th, in which the writers endeavour to make it appear that carbon is a compound substance. A work by Mr. Rigg is also advertised, bearing the title of "Researches, Chemical and Agricultural," which is occupied by the *demonstration*, "that carbon is a compound substance, made by plants in quantities varying with the circumstances under which they are placed." Mr. Rigg, in his paper