it is by no means always easy to convince a coroner's jury of this. Owing to the precautions adopted from this patient's admission it was not difficult to show how improbable, to say the least, it was that the injuries could have occurred here, nor could any blame be attached to the workhouse officials. My own view is that the fractures were not of very recent origin. His wife's statement to me, after the patient's death, that he, a blind man, had got out of bed when alone in his bedroom and broken the furniture and used such violence as to break a large hole in the roof, indicates, to my mind, a ready way in which the injuries might have been received. The fractures were all situated from three to four inches from the sternum, and the bones were in such a state of degeneration that they would break up on the slightest pressure. There was no displacement of the broken bones whatever, and no injury to the walls of the chest or respiratory system could be detected, so that it is evident that the fractured ribs could not have in any way contributed to the cause of death, which was, in my opinion, due to the state of the brain. This view was also taken by the jury, who had the advantage of a medical coroner to direct their investigations.

Spinal Sclerosis or Degeneration following Brain-Lesion. By Wm. Julius Mickle, M.D.

This paper deals with a part of the subject only. One of its chief objects is to give examples, occurring in the insane, of spinal sclerosis or degeneration secondary to local encephalic lesions. Another co-ordinate object is to place more fully on record, and exemplify cases forming the links between those thus named and some forms of secondary spinal changes occurring in general paralysis of the insane. But these latter changes, in the form in which they more usually occur in general paralysis, are not dealt with here.

In the following cases, occurring in the insane, only very brief summaries of symptoms and of principal lesions will be attempted.

As far as concerns the cord in the majority of these cases the secondary descending sclerosis, or degeneration, was of *one* lateral column only; in the fourth case it was of *both*, but there was also a diffuse mild sclerosis in all the columns; and in the sixth case, also, these columns were affected on *both* sides. As a rule, the crossed pyramidal tracts were the parts chiefly affected.

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With respect to the primary encephalic lesions; in the first case these were of the convolutional surface, extending into the medullary substance, and destroying some of the out-spread radiations of the internal capsule; in the second there was diffuse disease, not of gross character, especially in the fronto-parietal grey cortex; in the third there was local destruction of some of the convolutions, and of part of a corpus striatum; while in the fourth case, with both lateral columns affected, but chiefly the pons and bulb, the primary local destructive lesions were mainly of parts of both the corpora striata. In the fifth case, part of the temporo-sphenoidal lobe and of the subjacent medullary substance was destroyed, the destruction also invading the lower parietal lobule slightly, while part of the corpus striatum of the same side was degenerate. In the sixth case, destructive lesions of the right corpus striatum, and a smaller one of the left corpus striatum and affecting the internal capsule, anomalous or absent pyramidal decussation in the medulla oblongata, a rounded degenerate tract in the left lateral column, a wedge-shaped one in the right. In the seventh case were a central medullary lesion of right hemisphere, at about level of centrum ovale majus, destruction of parts of right corpus striatum and internal capsule and of parts of left caudate nucleus, sclerosis in left lateral column of cord. In the eighth case, a destructive lesion of parts of a corpus striatum and of internal capsule, and of some medullary brain-substance, was associated with degeneration of part of the corresponding crus cerebri. In the ninth case, considerable atrophy of one cerebral hemisphere, with the lesions of general paralysis more pronounced in it than in the other, was followed by degeneration of the lateral spinal column of the opposite side. With reference to some other points, one or two of these cases have been reported elsewhere.

Case I.—This patient, a soldier, died at the age of 54 years. Mental disease, attributed to sunstroke, had been of more than 12 years' duration, and right hemiplegia and aphasia had coexisted. Paroxysms of excitement, with slight tendency to be violent, destructive, and dirty, came on from time to time.

The tongue could not be voluntarily protruded, paresis affected the right side of the face, and in walking the right leg was raised high from the ground, swung round, and, advancing in a shaky manner, the foot was at last placed awkwardly on the ground with the toes turned outwards. The right upper limb was still more palsied, the elbow being flexed, the forearm semi-pronated, and the fingers rigidly flexed into the palm of the hand. Articulate speech was lost, the utterances

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being limited to a few inarticulate, but partly intelligible, sounds and cries. A moderate amount of gesture-language was retained, and the correct names of articles were easily recognised by the patient. Agraphia was present. The palsy was intensified before death, and the gait became slightly hopping, the right arm more rigid.

Abstract of Necropsy.—Several large tracts of the convolutional surface of the left cerebral hemisphere had completely disappeared, leaving behind them only greyish-yellow patches to which the thickened meninges adhered. The parts destroyed included—the whole of the ascending frontal convolution, except a narrow band at its lower end; the ascending parietal, except most of its lower $1\frac{1}{4}$ inch; much of the posterior half of the second frontal; the anterior part of the supra-marginal; the posterior part of the paracentral lobule. The third frontal was destroyed only at its posterior border where it blended with the ascending frontal, and the lesion ceased $\frac{1}{3}$ of an inch behind the perpendicular ramus of the fissura Sylvii; and only the outskirts of the insula were affected.

In the right cerebral hemisphere a similar lesion had destroyed most of the supra-marginal convolution, and part of the middle third of the ascending parietal. Where undestroyed, the grey cortex was atrophied in the anterior regions, especially on the left side. The left basal ganglia were less plump than the right, especially the optic thalamus. The left olfactory bulb and tract were much wasted; the right less. The left cerebral hemisphere weighed $3\frac{3}{8}$ ozs. less than the right.

The left crus cerebri was atrophied, so was the left side of the pons Varolii, a sclerotic patch being seen in its cross-section. Coming to the medulla oblongata, there was grey degeneration and atrophy of the left anterior pyramid, except a few of its outermost fibres. The band of grey degeneration became gradually narrower, below, at the decussation, the grey fibres successively disappearing thereat into the anterior fissure. The grey degeneration was continued downwards in the posterior part of the right lateral column of the spinal cord. There being also *direct* atrophy of the anterior and median part (Türck's) of the left antero-lateral column, but here without very marked induration, or greyness. Spinal meninges opaque and œdematous; much spinal sub-arachnoid serosity, as also cerebral.

Case II.—A soldier, died at the age of 37, of well-marked mental disease after two years' duration, which, however, had previously come on in a slow and insidious manner from syphilis. Soon he became aphasic, demented, dirty in habits, restless, destructive. Paresis existed in the right lower limb, sensibility was fair in the hands. Articulate speech was practically in abeyance. Besides an occasional "yes" or "no," a few ejaculations and broken words were uttered, but these were merely exclamatory and quasi-automatic or emotional in character, and were often oaths or monosyllabic obscene expressions. Amnesia, agraphia, and loss of gesture-language co-existed. Finally, the tongue became rather tremulous and jerky, the patient restless at

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night, sores readily formed on the limbs, marked tremulousness attended every movement, passive motion was resisted, the knees were drawn upwards, the trunk was bent forwards.

Necropsy.—The olfactory bulbs and tracts were somewhat wasted. The cerebral pia-arachnoid was unduly opaque, and œdematous. The left frontal and parietal grey cortex was much atrophied, pale and firmish; the orbital cortex suffered the most. The cortex of the right hemisphere was less affected. The left insula was softer and more friable than the right, and was slightly reddish. The left cerebral hemisphere was of 1oz. less weight than the right.

On both sides the white cerebral substance was rather pale and firm in the anterior region, so were the corpus callosum, fornix, and white substance about the lateral ventricles, the ependyma of which was rather opaque and firm, but there was no obvious coarse lesion of the basal ganglia. There was, however, sclerosis, apparently of a secondary descending nature, in the posterior part of the right lateral column of the spinal cord, particularly in the upper eight inches of its length. The leuco-myelitis was, however, slightly diffused transversely beyond the limits named.

Case III.—J. S., a retired manufacturer, died aged 74, after more than 12 years of mental disease, which, beginning as mental inaptitude with melancholia, had for some years before death been of the form of dementia in which extreme mnemonic failure was the predominant feature. With this, however, there were good temper, cleanliness, politeness, and consideration for others.

Twelve months before death left hemiplegia came on suddenly, the seizure being accompanied with some mental confusion, and followed by thick, muffled paralytic speech, but its onset not being associated with any coma or convulsion. After this time the food was apt to collect in, and distend, the left cheek; the left lower limb was increasingly rigid, straight, immovable, with the foot in a talipes equino-varus position; the left upper limb was rigid, acutely flexed at the elbow, with the wrist flexed and abducted, and the fingers tightly flexed into the palm and abducted. There was no ankle-clonus; patellar tendon-reflex was only slight. In the left leg were diminished sensibility or reaction to pinches; in the left arm these were fairly obvious, and in the right limbs perhaps rather too much so. The right leg was usually flexed and abducted. Vision seemed to be impaired or lost towards the right side; the head, too, was sometimes turned to the right, the eyes to the left. Salivary dribbling, urinary incontinence, and dysphagia increased before death, and a sore appeared on the left heel.

Necropsy.—Arteries of brain highly atheromatous. Various parts of the brain had undergone complete destruction, viz.:—(*a*) the middle part of the right paracentral lobule, with another part of the gyrus marginalis adjoining, and part of the gyrus fornicatus; (*b*) the middle of the outer part of the caudate nucleus of the right

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corpus striatum, extending to the internal capsule; (*c*) several superficial patches on the upper surface, adjoining the posterior two thirds of the great longitudinal fissure; (*d*) large destruction on the inferior surface of the left cerebral hemisphere, involving the lobulus lingualis and parts of the fusiform lobule and uncinate or hippocampal gyrus, and extending into the lateral ventricle; (*e*) the posterior median part of the left optic thalamus; (*f*) wasting of the middle and posterior part of the right crus cerebri, and of the pons Varolii; (*g*) a small cavity in mid-depth of the pons, by the right side of its antero-posterior median plane; (*h*) five patches of destructive change on the under surface of the left lateral hemisphere of the cerebellum. Some sclerosis of the posterior part of the left lateral spinal column, and some wasting of the left posterior grey cornu.

Remarks.—Here the spinal sclerosis, apparently, was secondary to the lesion of the right striate body. The explanation of the diminution of knee-jerk may perhaps lie in the atrophy of the left grey cornu neutralizing the effect of the corresponding lateral sclerosis. The sensory affections in this case were not very readily explicable.

Case IV.—A soldier died, æt. 38. Being the subject of a separate communication, this case will be only briefly noted here.

Speech was slow, deliberate, at times mumbling, often somewhat explosive. In walking, there were violent convulsive to-and-fro jerkings at the knee-joint; the legs were planted convulsively, the heels brought down. Latterly the body was bent backward, the arms were abducted, and the fingers extended and rigid, but only during walking. There were some resemblances to, and differences from, both the ataxic and spastic forms of gait. Patellar tendon-reflex was well marked. There was no ankle-clonus. Some failure of tactile sensibility and much failure of thermic sensibility in the feet also occurred, as well as temporary strabismus.

Necropsy.—Atrophy of the 2nd, 6th, 8th, and 9th pairs of cranial nerves, doubtful slight atrophy of the facial nerve. Some general meningeal thickening, &c. Two destructive lesions of the intraventricular part of the left corpus striatum, and one of the right, all extending to the depth of nearly half an inch. General slight wasting of the optic thalami, and a small destroyed patch in the depth of the right one. Bilateral secondary descending sclerosis and atrophy of the pons Varolii and medulla oblongata, so that their anterior surface was shrunken, sunken, and irregular. Atrophy of anterior pillars of oblong medulla, doubtful induration of its posterior columns. Spinal cord pale, unduly firm in all its columns, but perhaps more so in the lateral columns. A somewhat diffuse leuco-myelitis, more pronounced laterally.

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Here the atrophy was mainly of the pons Varolii and medulla oblongata.

Case V.—Died, aged 45, nearly seven years after onset of mental disease and paralysis. Before admission he had been successively under treatment for "primary syphilis," dyspepsia, contusion (52 days), chronic rheumatism, and general debility, and then became mentally affected, of wet and dirty habits, and paralysed (on the left side it was stated, though this may have been an error for the right).

Admitted with indications of syphilis. Speech mumbling, thick, indistinct, paralytic; the patient, moreover, scarcely replying, sometimes not at all, or in gibberish, or by a few shaky words or a short sentence. Demented, with but little facial expression. Paresis of right limbs, none of face. Knee-jerks and plantar reflexes present, and knee-jerks, later on, exaggerated, especially the right. Later on, feeble; body bent to left at times, and at times the left leg the more heavily planted; the gait slow, unsafe, jerky; the grasping power of the hands about equal. Later still, long, somewhat heavy and slow but shaky steps, increased knee-jerk, only slight plantar reflex; tactile sensibility fair in hands and feet. Permanent paresis of right limbs. Paralytic and amnesic articulation and speech. During his last short illness the tongue, face, lips, and palate seemed to be considerably paralysed.

Abstract of Necropsy.—Meninges opaque, slightly thickened, œdematous. Slight scattered adhesion and decortication, with some atrophy and pallor of fronto-parietal cortex. Very slight atrophy and fibrous depression on right caudate nucleus. Depressed patch of yellowish degeneration on middle of left caudate nucleus. Yellowish degeneration and destruction of cortex cerebri in and about the left Sylvian fissure, mainly affecting the first temporal, the posterior half of the second, and extending slightly to the supra-marginal and angular gyri, the parts thus affected having for the most part disappeared, but the anterior inch of the temporal lobe being unaffected. The base of the surface-depression of this lesion was covered by thick adherent membranes, and the back part of the lesion coursed beside the middle and posterior horns of the lateral ventricle, at the junction of which these membranes formed the only ventricular covering, in consequence of the extensive destruction of the white medullary substance of the brain. Left cerebral hemisphere two-and-a-half ounces less in weight than the right. Both lateral columns of the spinal cord somewhat sclerosed, there being also a small circle of grey degeneration in the right post-lateral column at its upper end. Traces of hepatic syphilis.

Case VI.—Died, aged 46; had become mentally affected seven years previously. The history sent with him stated that before admission he had successively been the subject of constitutional syphilis,

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and, later on, a "fit," paralysis agitans, paralysis of the left third cranial nerve, right hemiplegia, general psychical and physical deterioration and decadency.

On admission there were traces of old syphilitic affections, and fresh active ones soon occurred. Slight paralysis existed on the right side of the face; incomplete palsy of the right upper limb, most marked in the hand; and an equal degree of palsy in the right lower limb, the foot being carried very clumsily and planted heavily on the floor, and progression being very slow, difficult, and unsafe. In walking the legs were held stiffly, were jerked forward clumsily; the toes first scraped the floor, then were raised, and were set down clumsily on the floor. The right leg was planted heavily, and was not swung round. The feet were kept considerably separated from each other. He complained of numbness and a pricking sensation in the right arm, and both palsied limbs were at times the seat of severe paroxysmal pain. When he stood for a little while the whole body was agitated by spasmodic tremor. Speech was impaired, mumbling and indistinct, with elision of syllables. He was extremely demented and amnesic, utterly unable to give any correct history of his life, and exhibited much emotional weakness, weeping whenever he felt the pain and often when no such cause existed. From time to time he continued to complain of pain in the head and pain in the palsied limbs. Except that the sharp, shooting pains in the limbs greatly abated, the condition did not change materially from that described, and except that the gait was more of a shaky and jerky character.

Abstract of Necropsy.—Venous, passive congestion of brain, some pial œdema of upper and external surfaces, and considerable intracranial serosity. Traces of diffuse external pachymeningitis. Two patches of old destructive softening, one at the middle and one at the junction of the middle and posterior thirds of the intraventricular aspect of the *right* corpus striatum, and both rather nearer the median than the external border. A small patch of similar softening in the mid-depth of the *left* corpus striatum, and affecting the internal capsule.

In cross sections of the spinal cord there was seen a rounded patch of fawn-grey degeneration and softening in the posterior part of the left lateral column, a systematic degeneration or myelitis. Whereas on the right side the posterior part of the lateral column contained a semi-translucent, partly colourless, partly whitish, but gelatinous-looking, wedge-shaped, systematic degeneration coursing through the cord, and, at least in parts, extending to the surface of the column.

Various scars of syphilis; broncho-pneumonia; encysted gall-stone; loaded colon.

In this case, with right hemiplegia, were lesions of both corpora striata. In the right the destructive lesion was double and larger; in the left, though smaller, it invaded the internal capsule. Ordinarily one would attribute the dextral hemiplegia to the lesion of the left striate body in such case, but there was an unusual condition of affairs

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in this man's medulla oblongata. No regular decussation of the pyramidal strands could be seen, and instead of it there was a smooth bridge of whitish nervous tissue concealing and obliterating the anterior fissure for a short space, so that, with an apparently anomalous course of the fibres conducting downwards from the internal capsule into the lower pyramidal tracts, there may have been a direct paralysis of the right limbs, from lesion of right corpus striatum, owing to the absence of decussation in the medulla oblongata. In the right side, however, the degeneration was in character not unlike a primary one of the cord.

Case VII.—Died, aged 67, about nine months after the onset of insanity, as stated. In youth the head had been injured. For two or three years he had been subject to severe bouts of convulsions, in some of which he nearly died. For a week or two before admission he had been restless, noisy, violent, raving.

On admission, he was feeble, emaciated, demented. Afterwards the gait was slow, shaky, feeble, unstable, with feet wide apart, and left foot, especially, planted in a clumsy manner. Later on, long, tottering, jerky, unsafe, shaky steps. Left leg weaker; frequent micturition. Then, great physical and mental improvement. Then, twitching of left upper limb and of left side of face, soon followed by severe epileptiform seizures; and these were succeeded by marked paresis of the left limbs, but not of face or tongue, and by irregular rapid intermittent heart's action, not corresponding to the irregular pulse, and very soon by some excitement, and inflated, expansive style of conversation, culminating in maniacal excitement.

Later on, sudden left hemiplegia, complete in the arm, marked in the face, and moderate in the leg and tongue; numbness and tingling of left arm. After this, persistent severe pains and rigidity affected the palsied limbs, and he was mentally disturbed. Finally, violent, long-continued, sub-intrant convulsions, affecting, in the first convulsion, the left side mainly; but in the later convulsions mainly the right; and accompanied and followed by greater dilatation of the left pupil than of the right. Coma; death.

Abstract of Necropsy.—Old pachymeningitic adhesions to calvaria. Several destructive lesions of brain, where its substance had softened down and disappeared. In the one affecting the right corpus striatum and capsule there was active connective-tissue growth peripherally, with some slight surrounding induration at points, and vascular walls forming the limits of the destructive lesion, while internally the place of the brain-tissue was occupied by connective tissue strands and by *débris*. The parts affected were:—(1) The white substance above the middle horn of the right lateral ventricle and opposite to the end of the Sylvian fissure and first temporal sulcus. (2) External part of right corpus striatum, and internal capsule adjoining, softened and pulpy. (3) Softening of posterior half-inch of left caudate nucleus.

Some sclerosis of left lateral column of spinal cord at its upper

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part. Cardiac, aortic, coronary, and some cerebral atheroma; somewhat granular kidneys.

Here one lesion was both destructive and irritative, and the convulsions were probably purely symptomatic. The rigidity and pains of left limbs were from myelitis, secondary to the right strio-capsular lesion. It was not quite clear why most of the convulsions in the final bout were dextral.

Case VIII.—Died, aged 55, after insanity of more than 20 years' duration. For many years there was a recurring stoppage in speech, followed by internal effort, and then sudden utterance. Nearly seven years before death he had a sudden attack of paralysis of the right side, and marked impairment of speech, coming on without spasm or loss of consciousness, and he was laid up in bed for a few days. The face and tongue were the parts chiefly paresified, the arm slightly, the leg not decidedly affected.

The speech was soon better again, but there remained an exaggeration of the old condition described above, and with this was connected delusion as to orders from imaginary persons to injure those to whom he spoke. The condition was, perhaps, partly due to a slowness in educating and in bringing into play parts acting in a supplemental or substitutive manner in speech, subsequently to impairment or destruction of other parts.

Abstract of Necropsy.—A destructive lesion, consisting of a confluent pair of patches of softening, disintegration, shrinking and sinking of the outer border of the intra-ventricular part of the left corpus striatum, extending into the white medullary substance, and destroying it nearly as far down as to the grey cortex of the left insula, and extending as far as to affect the upper anterior part of the cerebral peduncle slightly. Below this was a tract of grey degeneration of the inner portion of the crusta or basis of the left crus cerebri. The grey degeneration, however, could not be distinctly traced in the spinal cord.

Case IX.—A chronic case of general paralysis. Two years before death right hemiplegia with aphasia came on suddenly, but without spasm or loss of consciousness. Afterwards there was some twitching and jerking of the right upper limb, and at times twitches and spasmodic jerks of the right lower limb, which, also, was rigidly stiffened when any passive motion of it was attempted. The knee-jerks were vigorous. Never quite disappearing, the hemiplegic condition recurred at times in marked degree, and on these occasions the speech was much implicated.

Abstract of Necropsy.—Brain flabby, soft. Meninges much opacified and somewhat thick and tough. Much adhesion and decortication, especially of the left cerebral hemisphere, of which the summits of all the frontal gyri were affected (except the upper part and lower edge of the ascending frontal), and all the summit-surface

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of the parietal gyri; while the marginal and first occipital gyri, and the posterior fourth part of the temporo-sphenoidal, were considerably affected. Brain much atrophied, especially the left cerebral hemisphere, which weighed 3½ ozs. less than the right. Marked changes of the spinal meninges, of the usual character. Some naked-eye grey degeneration of the posterior part of right lateral column of cord.

In a work on General Paralysis, published in 1880, and on other occasions, I have expressed the view that in general paralysis there is sometimes a systematic sclerosis of cord, or secondary descending systematic myelitis, in an incipient, or nascent, or diffuse form, and secondary to the widespread damage to the brain-cortex, wrought by the lesion of that affection. It may, too, sometimes be secondary to a lesion lower down in the cerebro-spinal axis, and due to a local intensification of the morbid process.

The concluding case in this paper has been inserted as an example of a condition transitional between that of the other cases of the paper and the condition just referred to as often found in general paralysis. It presents an extreme and palpable degree of a condition which in its milder degrees is frequently present.

Dr. G. H. Savage, also, has published several cases of general paralysis with lateral sclerosis.

OCCASIONAL NOTES OF THE QUARTER.

Case of Frederick Marshall.

Much criticism has been offered in the public press on the course pursued in the case of Marshall, alleged to have murdered a girl at Woolwich. He was committed by the magistrates for trial at the Central Criminal Court. When, however, the case came on for hearing, it was found that Marshall had been removed under a warrant of the Home Secretary to the Broadmoor Asylum. The criticism to which we have referred had not only reference to a very minor point—the signing of the warrant of removal by an *Assistant*-Under Secretary of State, but to the removal of an alleged criminal to the criminal lunatic asylum without a jury having decided that he was unable to plead, or the fact of his guilt having been first established.* In reply to the

* Baron Huddleston has more recently taken occasion, when giving judgment in another case, to observe that the whole subject of the Lunacy Law must be reconsidered, and he gives as an illustration of this that "There is a power in our Criminal Law by which a man charged with the gravest offence may, on the certificates of two justices and two medical men, be withdrawn by the Secretary of State from trial; and this also without open examination of witnesses, and without the ordinary test of cross-examination. No doubt at present there may be no probability that a Secretary of State will abuse such a power. But it is an enormous power to give to any person to remove from trial one who has been committed for trial for a serious offence."

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