March 28th. Marked dulness was found in the right flank.

March 30th. He had another rigor, commencing at 9.45 A.M., and lasting thirty minutes. Temperature 105.2 deg. at 11.15 A.M.; pulse 120.—9 P.M. He was sweating profusely. Temperature 96.6 deg. The iodide of potassium was omitted, and five grains of quinine ordered in pills thrice daily.

April 2nd. The right base was dull from the angle of the scapula. The respiratory sounds were rather feeble. The left base was rather flat on percussion. Pulse 92; evening temperature 100.2 deg.

April 17th. There was not much change since the last note. He was made an out-patient at his own request.

April 20th. On the afternoon of this day, he was seized at home with severe pain in the abdomen. He vomited frequently; and, when seen by a medical man, he was in a state of collapse. He died the same evening.

NECROPSY.—A *post mortem* examination was obtained with difficulty. Leave was only given to open the abdomen. On cutting through the abdominal wall, the sac of an enormous hydatid, full of fluid and vesicles of various sizes, was found. The sac had evidently undergone suppuration. The diaphragm was cut through, and recent pericarditis discovered. The wall of the parent hydatid cyst was cartilaginous in consistence, and quite a quarter of an inch thick. No cause could be discovered for the needle of the aspirator not having reached the sac.

REMARKS.—This case was a very puzzling one. The history of it was certainly in favour of its being one of hydatids, and yet the three aspirations yielded negative results. Against its being cancer there was a history of eighteen years' duration, and the patient had not wasted. In favour of cancer were the great enlargement of the liver and the hard nodulated feel of its upper surface; also the man's age. In favour of hydatids were the history of the case and the absence of emaciation; against them, the absence of the hydatid fremitus, the negative results of the exploratory punctures, and the jaundice. The history of the case was against its being syphilitic, although the rash on the man's skin looked suspicious. Why the three exploratory punctures so signally failed to reach the fluid in the cyst, it is difficult to explain. At the first operation, it was noted at the time that the needle was inserted to the depth of three inches and a half. At the last operation, no note was made of the depth; but I distinctly remember its being plunged well in, for I know from experience the importance of a deep insertion. This is the only case of hydatid tumour which has been under my care which has not recovered. I am still at a loss to explain my want of success in this case. I shall be glad if any member present can suggest an explanation of it.

ON THE MORBID HISTOLOGY OF THE SPINAL CORD IN FIVE CASES OF INSANITY.

By RINGROSE ATKINS, M.A., M.D.,

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[Concluded from page 136 of last number.]

CASE V.—M. G., male, aged about 38, was transferred to the asylum from the union workhouse on January 25th, 1877. It was believed that he had recently returned from America; but any particulars regarding his history appear not to have been elicited. He had no family or friends. He was stated to have had two paroxysms of mental excitement previously to his admission to the asylum, the first dating from January 20th, 1877, during which he had attempted to burn himself by catching the bars of a fireplace. On admission, there was considerable restlessness, with moderate excitement and general incoherence. He kept constantly moving about; was frequently sleepless, knocking during the night at the door of his room. He fancied his mother and relations were in his vicinity, and made efforts to get to them by endeavouring to open doors, etc. He spoke in a slow hesitating manner, without any modulation of the voice, and answered questions generally in an unconnected and rambling style. His memory seemed much impaired; he could give no particulars whatever regarding his history. In appearance he was tolerably healthy-looking; his features were stupid and solid, with a fixed and somewhat vacant gaze. He moved about in an uncertain unsteady way, and could not walk in a straight line for any distance. There was a similar unsteadiness, almost amounting to a tremor, in the upper limbs and facial muscles. He was untidy in his habits and person. For a month after admission, there was a general improvement in his mental condition; he became more coherent and brighter, neater in his habits, and began to help in

the working of his ward. On the morning of February 20th, 1877, he became again quite suddenly stupid and demented, sat silent and indifferent to what was going on around him, and did not appear now to understand anything said to him. When he spoke, he did so in the same drawing toneless manner already noted, but in a more marked degree, and his movements were altogether slower and more clumsy than before. From this date until April 1st, he became gradually feebler and more demented. On that date, a hæmatoma began to develop in the concha of the left ear.

April 19th.—He was reported to have had a "weakness" this morning, but was not convulsed. At the morning visit, he was found more stupid and demented, stating that he felt sick; but nothing further could be ascertained from him. When requested to protrude the tongue, he was unable to do so immediately; but, after some lolling movements within the mouth, the organ was jerked out rapidly and abruptly, and was with apparent difficulty kept protruded, being fixed by the teeth clenching it. There were marked unsteadiness and fibrillary twitching of the organ, and it was retracted in the same jerky spasmodic manner. The speech was drawing. There was no loss of motor power in the arms and legs when in the recumbent posture. Reflex irritability was preserved, and painful sensations were but little diminished. When placed on his feet, he was weak and tottering, and emaciation was progressing. The hæmatoma was increasing.

May 12th.—Physical and mental deterioration were progressively advancing, his condition being now as follows. A. *Motorial Symptoms*.—His gait was very unsteady and tottering. He could not move in an even line, but swerved from side to side, and, if not watched, would overbalance himself and fall. The movements of the upper limbs did not appear to be interfered with; the grasp was equal and fairly powerful in each hand when he made a strong effort. The tongue was protruded abruptly and convulsively, and, when so, he appeared to have lost all control over its movements, the organ jerking from side to side and up and down until he steadied it by grasping the organ between the teeth. He spoke in the same drawing manner, clipping some of his words and prolonging the last syllables of others. When roused to excitement, he spoke with greater force and distinctness for a short time. There was a barely noticeable tremor of the lips when speaking, and none when at rest. B. *Sensorial Symptoms*.—Tactile sensibility did not appear to be notably impaired, at least as far as the coarse recognition of the pricking of the skin went, as, when this was done, he endeavoured to draw away the part pricked, or to remove the source of the irritation. Reflex excitability was less powerful in the right than in the left leg. C. *Electric Condition*.—On applying the primary current of a double-celled Stöhrer's induction-coil with the index half drawn out, the extensors of the foot responded feebly; the adductors and hamstring muscles contracted normally, as did the muscles of the arms and face. The current appeared to be felt powerfully, as he cried out lustily, became excited, and endeavoured to remove the electrodes. D. *Condition of the Pupils*.—Previously to the examination, the right pupil was dilated and much larger than the left. After the application of the current, both pupils were found to be equal and widely dilated. On bringing a candle now before the eyes, the left immediately contracted, the right remaining immovable, and, on the removal of the light, the left again expanded; but, in a short time, the pupils again regained their former unequal condition. E. *General Bodily Condition*.—The patient was much emaciated, with a cold dry skin, and a tendency on the slightest rub to the formation of superficial sores. On the upper surface of each buttock was a sore larger than a crown-piece, the right being covered with a black eschar, the left denuded; both were surrounded by an erythematous patch. The patient's appetite was at times ravenous. He was very wet and dirty in his habits, both nightly and daily, and appeared to have quite lost control over the sphincters. He was generally quiet by night. The heart-sounds over the apex were slightly muffled; no *bruit*; its action was rapid. At the mid-sternum and over the base, the second sound was "knocking" in character. The respiratory murmur was normal. F. *Mental Condition*.—The man was very demented, almost fatuous. When spoken to, he did not appear to realise what was said in the slightest, and rarely replied directly to any questions, generally muttering incoherently.

May 15th.—The hæmatoma on the left ear had suppurated, and was incised, a quantity of dirty pus mixed with blood being evacuated, the tumour immediately collapsing. The incision appeared to give no pain. The constant tremor of the limbs, with twitching of the individual muscles, was now very noticeable. He could not progress unassisted, and all his movements were clumsy and unsteady. There was deep mental hebetude and almost constant drowsiness.

May 17th.—He was reported to be lying in a semi-somnolent condition; muscular twitchings persistent; he did not utter a sound; the ear-tumour was again filling out. Respiration was unaffected.

May 19th.—He died this morning. Necropsy fourteen hours after death.—Rigor mortis was little marked. There were remains of bed-sores across the buttocks. The body was much emaciated; the pupils were equal and of medium size; the scalp was very thin and easily stripped from the bone; calvarium normal; no adhesions between the dura mater and bone; the dura mater was shrunken and corrugated. About four ounces of sanious serum escaped during the removal of the brain. The dura mater was strongly adherent to the combined arachnoid and pia mater, at each side parallel to the great longitudinal cleft, by pearly lymphoid spots, and over the convolutions by a few filiform bands. The membrane was normal in appearance. The entire brain weighed 1,438.7 grammes; the cerebellum, pons, and medulla 209.4 grammes. The pia mater was thickened and opaque, especially over the sulci of the left hemisphere and at the vertices of each parallel to the longitudinal fissure. The sulci in part were waterlogged. The lateral third and fifth ventricles were widely dilated and filled with clear serum. The corpora striata were small and cedematous; the optic thalami large and prominent. The hemispheres were carefully divided; the left weighed 583.2 grammes, the right 579.2 grammes. The pia mater was firmly adherent to the cortex in the fronto-parietal regions, and, to localise these exactly, the hemispheres were preserved in nitric acid solution, and, after macerating for a fortnight, were stripped, presenting then the appearance now seen. The convolutions were much atrophied, especially in the fronto-parietal regions, and where the adhesions existed the cortex was eroded and roughened, in some parts deeply so. The sulci were wide and shallow. The spinal cord was removed from the cervical enlargement to its termination. In the lower dorsal and lumbar regions, the theca was congested and surrounded by dark fluid blood. The entire membrane appeared to surround the cord loosely. On slitting up and removing the dura mater, the upper dorsal region, for about one inch of its length, was found contracted and softened. The whole lumbar, sacral, and coccygeal regions were similarly softened. On the left lateral surface of the lumbar region, the softened tissue was bulging and almost protruding through the pia mater; below this, for about an inch and a half, the nerve-substance had almost disappeared, being merely covered by the membrane.

Microscopical Examination.—(a) *Pia Mater*: The arterioles were but little affected; the muscular layer of the smaller vessels was relatively thicker than those of the larger. Scattered on the walls of the latter were minute fatty globules and particles of hæmatoidin; there was no excessive nucleation. One group of discoid bodies (similar to those in the last case) was observed in the specimen examined. (b) *Brain*: A prepared section through the left ascending frontal convolution, at its vertex, showed the coats of the vessels confused and slightly thickened, with granules scattered on them. The perivascular spaces were but little dilated, the vessels generally filling them. Many of the pyramidal ganglion-cells were of very large size, and were universally affected with pigmentary degeneration in different stages. The smaller bodies were atrophied and crowded together. The neuroglia was loose and granular, with molecules and masses of finely divided yellow pigment scattered through it. (c) *Medulla and Spinal Cord*: The vessels throughout the entire medulla were widely dilated, especially in the superior half; their coats were surrounded with loose connective tissue and abundantly nucleated. In one section through the fourth ventricle, a dilated vessel visible to the naked eye was seen passing obliquely forwards and outwards from the nucleus of the left hypoglossal nerve; this vessel was in parts varicose, excessively nucleated, and contained a firm plug; the tissue surrounding it (previously to staining) was of a dusky vinous colour. The ganglionic cells of the nuclei of the hypoglossal, vagi, and glossopharyngeal, were for the most part rounded and tuberoso, and either filled with fine yellow pigment or with masses of yellowish-brown granules. The centre of many of the cells appeared of a translucent earthy character, but little tinted, the outline only taking up the carmine; in these, the nucleus had disappeared. The ganglion-cells of the corpus dentatum of the olivary body were similarly affected, but to a less extent. At the bottom of the posterior median fissure, below the level of the olivary bodies, was a patch of complete degeneration, the tissue being reduced to a clear structureless mass crossed in different directions by fine fibrils, and containing great numbers of ovoid and rounded amyloid bodies of large size. In the vicinity of this patch, many of the nerve-cells were reduced to masses of blackish-brown granules previous to their fusiform outline. On a level with the junction of the cord, the central canal was partially obliterated, and the perivascular spaces in its neighbourhood dilated, the contained vessels being smaller than those higher up. The cells were more deeply coloured, less pigmented, and the connective tissue was coarse and molecular, with nuclei scattered through it. Below the cervical enlargement, the same general conditions existed, the vessels being more

thickened and less nucleated, and the cells, while deprived of their processes and rounded, were less granular. In several sections, the grey matter, at the junction of the anterior and posterior cornua, appeared friable and granular, and just posterior to the grey commissure in the left half of the section were two patches of degeneration appearing as minute white spots previous to preparation. The structure of these patches did not differ considerably from that surrounding them, being coarse and molecular; they were, however, separated from it by a circular arrangement of the tissue at their circumference. The most external spot encroached upon and pressed aside the left posterior grey cornu, on its inner edge. In the preparation of the section exhibited, the internal patch fell out, leaving an irregularly circular aperture in the tissue. Many pearly spots (miliary degeneration?) were also scattered through the nerve-fibres and grey matter. In the dorsal region, the same general conditions existed. In several sections, from about the centre of this portion of the cord, was a single large and cleanly edged circular hole, appearing as if punched out of the grey matter either immediately in front of or antero-laterally to the aggregation of nuclei obliterating the central canal. These holes exactly resembled sections through the cystoid cavities formed round varicose vessels, from which the latter had fallen out (*vide* paper in *Medical Examiner*, January 6th, 1876); but they did not here occupy the position of any large or moderate-sized vessel, being situated anteriorly to those ascending through the grey matter. They were quite empty, presenting no trace of granular contents or of any vessel passing into or from them. The ganglion-cells were but little pigmented, being, however, in many instances, deprived of their processes, rounded, and tuberoso, absorbing carmine readily and somewhat clouded. In some sections, they were diminished in number or shrunken, and surrounded with clear spaces. The structure of the posterior cornua was coarse, and, at the junction with the anterior, it was loose and had a broken down appearance, the columns of Clarke being atrophied. The white column presented the same condensed and molecular appearance so often mentioned, with nuclear proliferation and atrophy of the nerve-fibres, especially in the outer laminae. The cord in the lumbar region and beneath it was so softened, that prepared sections could not be made. A teased preparation showed the ganglion-cells to be large, granular, and easily broken by compression, the nerve-tubules being broken down into globules and ovoid bodies, rapidly changing shape, together with granular corpuscles.

Summary.—Dilatation and excessive nucleation of the vessels of the medulla oblongata; fibroid thickening and induration in the lower regions; atrophic degeneration of many of the cells of the bulbar nuclei and those of the anterior cornua of the spinal cord; overgrowth and molecular degeneration of the connective tissue, with atrophy of the nerve-tubules; partial obliteration of the central canal; dilatation of the perivascular spaces, and formation of amyloid bodies in the medulla oblongata.

On a comparison of the histological alterations in the five cases which I have thus recorded, the same general appearances are found to prevail in all, any differences existing being rather of degree than kind, and they are universally of a degenerative nature, implying by this term a change of the normal structures into an altered and more lowly organised tissue, the result of a morbid modification of the physiological process of repair. The occurrence of such degenerations in the spinal cord accompanying lesions in the cerebral cortex renders it interesting to inquire whether the former depend on the latter, and are of that secondary nature originally described by Türk, and more recently studied by Bouchard, Charcot and his pupils, or whether the pathological conditions in both centres depending on the same primary cause ran a coeval course in each independently. M. Pitres, in a recent communication to the Société de Biologie at Paris, based on a large number of observations made at the Salpêtrière in the service of M. Charcot, has shown that very slight cortical lesions, when situated in the motor zone, are sufficient to give rise to secondary degenerations in the spinal cord. Such a case has, within a short time since, been brought before the Dublin Pathological Society by Dr. Robert McDonnell, where a lesion of the third left frontal convolution, causing aphasia, with right hemiplegia, produced a well marked secondary degeneration in the left side of the pons Varolii and medulla oblongata, and in the right side of the cord below the decussation of the pyramids. In two of the cases now under consideration, there were naked-eye cortical lesions situated, wholly in one and partially in the other, in the so-called motor zone, while in all there were structural changes in the elementary constituents of the cortex. So far, then, we have the conditions in the brain stated to be necessary for the production of secondary changes in the lower centres. On referring, however, to the records of cases of true secondary degenerations, we find the latter

to be localised and defined, while here we find the changes to be diffused, involving the different structures generally, and this, together with the close resemblance to the lesions in the brain, not alone as regards their appearance, but also as regards their apparent pathological sequence, would appear to indicate the occurrence of a general morbid condition taking place concurrently in both centres. The dilatation and subsequent induration and fibrosis of the vessels, the expansion and erosion of the perivascular spaces, the nuclear proliferation, the overgrowth of connective tissue, and the atrophic and degenerative processes in the nerve-elements present throughout, are the conditions almost universally found in the brains of those dying insane, though not peculiar to this class of nervous disease, the pathological sequence being, I believe, as a rule, in the order named; hence it seems probable that the spinal cord may participate simultaneously in the changes occurring in the brain in those thus affected, the degree of involvement of the different structures depending on the stage and persistence of the disease. The number of observations here recorded are, however, far too few in number to give anything like definiteness to this statement. Taken merely as individual examples of general forms of insanity, they simply point to the probability of such being the case. Turning now for a moment to the clinical bearings of the cases under consideration, we find that, although at the outset the forms of mental derangement differed somewhat, yet in all the same mental and physical deterioration finally ensued, death being preceded, at a longer or shorter interval, in each by progressive emaciation, muscular weakness, greater or less disorders of motility and sensibility, with almost entire abeyance of all the mental powers. Correlating these symptoms with the morbid conditions I have described, there would appear to be grounds for associating them in the relation of effect and cause. In addition to the diffused histological change, we find, in the first case, a central sclerosis, visible to the naked eye, affecting the upper dorsal and sacral regions, which displaced the grey columns, without totally destroying them or severing their connections; here there were progressive emaciation and muscular weakness, without any absolute loss of motor power.

In the second case, we meet with a "foyer" of softening confined to the posterior half of the cord in the lower dorsal region, and this was accompanied also with emaciation, tottering gait, a tendency to fall suddenly, and the formation of scattered bed-sores, with constant dribbling from the bladder. In the third case, an atrophic constriction of the cord in the lower dorsal region is met with, and, in this case, there was not that degree of motor impairment which, at first sight, might have been expected. This, however, may probably be explained by the atrophic process being confined to the white columns, the grey matter being only partially affected, many of the cells still retaining their motor function, and being in connection with the nerve-fibres lower down.

In the fourth case, we do not meet with any gross lesion of the cord, and here, although the paresis was far advanced, yet the power of moving the limbs was, to a certain extent, preserved. While, in the fifth case, we find extensive softening in the lumbar and sacral regions, the motor defects being little different from the last. Apart from these coarser changes, which, from their position, could only influence the motor power of the lower limbs, the histological alterations would appear to take some share in the production of the concomitant symptoms. Dr. Leyden, in his work on the *Diseases of the Spinal Cord*, ascribes the muscular weakness, the tremors, and atrophy of old age to pigmentary degeneration of the ganglion-cells of the anterior cornua, together with degenerative atrophy of the white columns and profuse deposits of amyloid bodies.

Referring again to the case of J. C., who, at the time of his admission to the asylum, was over seventy-five years of age, we find with such symptoms conditions quite similar to those mentioned by Leyden. Now, if these degenerative changes are to be accredited with the production of muscular weakness, tremors, etc., in the aged, the occurrence of almost identical lesions with quite similar symptoms in younger subjects, which we find to be the case in the other instances which I have brought forward, appears to afford reasonable grounds for regarding them in the same light; to look, in fact, upon the latter as cases of premature senility. Such cases of progressive wasting and general atrophy taking place in young or middle-aged subjects, without apparent cause, and increasing with greater or less rapidity to a fatal termination, form, in my experience, a considerable item in the death-rate amongst the insane, and the considerations which I have just mentioned would suggest the probable influence which the spinal cord, as well as the brain, may hold in their etiology. Dr. Hammond, in a paper published some time since ("The Brain not the Sole Organ of the Mind": *American Journal of Nervous and Mental Diseases*, January 1876), has advanced, on experimental grounds, the view that

the spinal cord is concerned in the mental functions of perception and volition, and, in the class of cases to which I now allude, these faculties are generally almost completely in abeyance; hence this assertion would appear to derive some support on pathological grounds. The consideration of such speculations is, however, beyond the scope of the present paper.

Returning once more to the cases I have described, we find in the last two examples — unfrequent in Irish asylums — of general paresis. In these, in addition to the lesions common to the others, special conditions exist which are now believed to distinguish this from all other forms of cerebro-mental disease. I allude to the cortical erosions resulting from the localised adhesions of the pia mater in the fronto-parietal regions especially, which can be seen in the specimens on the table preserved in nitric acid solution. These localised cortical lesions, as is now well known, have been recently discussed at length by Dr. Crichton Browne, in the sixth volume of the *West Riding Asylum Reports*, and Dr. Achille Foville, in the *Annales Médico-Psychologiques*, who look upon them as the primary organic alterations in this disease, and ascribe the various symptoms, mental and motor, to their presence. A further point of interest in these two cases is the occurrence of the vascular and degenerative lesions in the bulbar nuclei, which would appear to support the views of M. Voisin regarding the origin of the articulatory defects in this disease. As I have, however, I fear, overstepped the allotted time, and trespassed too far on your patience, I cannot now enter upon these points. My object has been merely to record the appearances I have observed, and, in so doing, I feel that some apology is necessary for the many repetitions which I have had to use in the descriptions of these, and which, I fear, have been wearisome; and I can only conclude with the hope that the specimens and drawings which are exhibited for your inspection may now prove of some little interest.

ON THE TRANSMISSION OF HEREDITARY RESEMBLANCES.

By GEORGE GREGORY, M.D., Great Lever, Bolton.

FOR several years, I have noticed, in hundreds of instances, that the first-born son frequently resembles in facial appearance his mother, or one of her ancestors, most frequently her father. The first-born daughter, in about six out of every seven cases, partakes of her father's likeness, or of his mother's features. When parents have four or five children, the children which follow are most frequently compounds of both parents in personal appearance. A large majority of women have a greater affection for their first-born son than for any other child, sometimes than for all their children. Mothers seldom readily confess this; but, if asked in a confidential sympathetic tone, as though there was nothing improper in having a favourite child, they will generally admit as much as warrants the conclusion to which I have come.

"Can a woman forget the son of her womb", not a son, much less a daughter? Women are influenced more by passion than by principle; they are more partial, and therefore less just, than men.

I was led to make the above comparisons from an observation made, twenty years ago, by one for whom I had great regard, and who had been very unfairly treated by his mother. Whether the frequency of these occurrences, with the proverbial exceptions which attach to, or seem to interrupt, the uniformity of all rules, is sufficient for them to be designated as rules, I am doubtful. I certainly do not claim for them the dignity of a law: which the judicious Hooker defines as "that which doth assign to each thing the kind; that which determineth the force and power; that which doth appoint the form and measure of working: the same we term a law". Hereditary tendency to disease seems to follow, but not with equal frequency, hereditary facial likenesses.

At a meeting of the Achill Dispensary Committee, Newport Union, held on the 23rd ult., Dr. Flannery was appointed medical officer to the Ballycrocy portion of the district, at a salary of £100 per annum, exclusive of registration, vaccination, and sanitary allowances.

At a recent meeting of the guardians of Carrickmacross Union, it was decided to prosecute several parties who had failed either to get their children vaccinated, or, when vaccinated, had neglected to bring them for examination on the eighth day following the operation, as required by law.