

by means of which, the construction of institutions as answering to the pressing wants, was impeded, and we notice with satisfaction that the general councils of 1859 have been signalised by a return to the just appreciation of facts; and if the cause of the insane has not conquered all the sympathies to which it has a right, antagonism is extinguished, and the future presents a better promise.

J. H. B.

Two Cases illustrative of two distinct forms of Mania, with general Paralysis. By KENNETH McLEOD, A.M., M.D., Certified Student in Medical Psychology and Mental Diseases, of the University of Edinburgh, and Assistant Medical Officer of the Durham County Asylum, Sedgfield.

(Communicated by Professor LAYCOCK.)

DR. McLEOD to PROFESSOR LAYCOCK.

DURHAM COUNTY ASYLUM;
Oct. 15, 1861.

MY DEAR DR. LAYCOCK,—I am sorry that owing to constant occupation of my time by asylum engagements, I have not been able sooner to forward the cases of which I promised you a detailed history. This I have been at some pains in ascertaining as accurately as possible, and regret that I have not been able to put my materials into a more polished form. Both of them seem to be very typical examples of the forms of general paralysis which you differentiate, namely, the alcoholic and diathetic. Each affords a most perfect example of the sequence by which, from a perfect *arthritic* health, and sound arthritic modes of psychological manifestation, the invasion of paralysis gradually proceeded to sap and extinguish life.

Both appear to me to be pure examples of the mode of decline to death in each. Faculties never very brilliant or developed to any extent, but eminently sound and normal in modes of action, gradually became enfeebled, and ultimately erased without the repetition, or optimism, which finds a rudimentary homologue in the accumulating propensities recorded in both cases.

The development of the emotional and animal in Case I, and the automatic acts in Case II, are perhaps the phenomena of greatest interest and importance. The pathological appearances seem to me also to correspond with and throw a very interesting light on the manifestations during life. The automatic manifestations which I

have detailed in Case II, and which I might have exemplified much more largely, bear, I think, on two points—

1. The often-observed fact of the remembrance in age of cerebral acts, which took place while cerebration was in all its vigour, rather than of recent impressions, which coincide with feeble organismic change.

2. This fact and the general consideration of the automatic acts themselves demonstrate the purely physiological nature of memory, which has always been claimed by the metaphysicians as exclusively within their province. There was memory in *representation*, instead of *presentation*, as satisfactory a manifestation of *reflex* cerebration as could be.

Another interesting case bearing on this matter has come under my notice.

A sea captain, after a long and anxious voyage, got into a state of physical depression, and profound mental gloominess, melancholia of the most pronounced nature, regarding present, past, and future, and investing all in misery and darkness. He was "treated" by blisters, mercury, and low diet! Of course he got worse, and as he grew weaker he began to show symptoms of exactly the same sort of reflex representation. He fancied he was on board ship at night, and talked and acted accordingly. After his admission into the asylum he was treated vigorously by stimulants, strychnia, and lots of beef-tea. The automatic acts left him, he is now fairly into the *redux* phenomenon of melancholia, insisting on his poverty and wretchedness. As formerly, he never talked at all with reference to external relations. I hope his doing so now may be a token of ultimate recovery.

Trusting that the cases though hurriedly and too imperfectly related, may be of some service to you as illustrations of your views of the pathology of general paralysis,

I remain, yours most sincerely,

KENNETH McLEOD.

To PROFESSOR LAYCOCK, Edinburgh.

CASE 1. Mania with general paralysis (dietetic) after paroxysmal drunkenness and syphilis. No optimism: propensity to collect and accumulate; appetite for food and stimulants exalted; instinct for personal cleanliness abolished; recurrent attacks of apoplexy. After death chronic disease of cerebro-spinal membranes; no atheroma.

History.—W. L., was the son of a strong stout Northumbrian farmer. He belonged to a very healthy and long-lived family, in whose history mental aberration was unknown. He was brought up to the trade of a miner, and worked in that capacity in Wales until the year

1855. As a young man he was of strong arthritic habit, well built, and muscular, possessed of large features, ruddy complexion, rather inclining to the vascular. He was an unusually active and efficient workman, energetic and persevering, and earned as good wages as the exercise of his trade admitted. His intellectual powers were never of a high order, and had not been developed to any extent by education, but they were characterised by soundness and steadiness, and exhibited no eccentricity or partial abnormal development. His original disposition was warm and kindly. His appreciation of religious, social, family and self relations, were healthy, and the correlative duties of these normally performed. Gradually, however, he yielded to drunken and dissolute habits, and towards the end of his stay in Wales was so mastered by alcoholic and sexual appetites, that he had become a hard habitual inebriate, and contracted a severe attack of syphilis. In order to get rid of the latter he submitted himself to the treatment of a quack, who administered large quantities of medicine, mercury, it is believed, among the rest, which rather aggravated than allayed his malady.

In the year 1855 he became a stone-quarrier, and came to live near Newcastle. Here he took small contracts or "jobs," and while he kept sober made excellent wages; he spent all these in drink, which now held him as a slave. His life was an alternation of very hard work, good resolutions, and temporary sobriety, and occasional drunken sprees, broken resolutions, riot, and excitement. His temper and disposition gradually underwent a change. He became emotional, habitually excitable, occasionally violent, and very quarrelsome, entertained suspicions of his fellow-workmen, and not unfrequently fought with them. His intellect began to yield to his passions, and rational forbearance to give place to violent manifestations of irritability and temper.

In the year 1856, he had an apoplectiform attack of the following nature. He had been very much overheated, and in that state took a copious draught of cold water. Immediately thereafter he fell down insensible; was taken home, remained in a state of coma for about an hour, and gradually recovered, retaining, however, slight paralysis of the right side, and exhibiting still more acutely symptoms of intellectual degeneration, and the predominance of passion and appetite.

In 1857 he was admitted into the Bath Lane Asylum, Newcastle, under the care of Dr. Smith. He then presented the symptoms of general paralysis. His articulation was very much affected, words imperfectly uttered, and syllables run into each other. His gait was feeble and uncertain, the right foot being more tremulous and out of control of volition than the left. He was admitted with a pair of black eyes bearing evidence of an excitability which characterised him to the last, and an irritability which did not allow the slightest

interference or thwarting to pass unresented. He laboured under intellectual torpor. His memory was bad, and particular incidents lost in more general recollections. He exhibited no optimism or any symptoms of that multiplication or repetition, which is the fundamental feature of the psychological manifestations of the insane paralytic. He was, however, an inveterate accumulator, bringing together all sorts of things, secreting them, and retaining them by every artifice. He was ready to steal when occasion offered. His appetite was voracious, and not by any means nice as to what he eat. On his admission, and for some time after, he laboured under a discharge from the urethra, and had two or three small sores upon his penis. His bowels were, at the same time, very loose. Not insensible to the calls of nature, he frequently made for the water-closet, but dark, gruelly, noxious stools, came flowing away involuntarily, and he was, consequently, a disagreeable dirty patient.

He remained in the Bath Lane Asylum until its patients were transferred to the Durham County Asylum at Sedgefield in 1858, in which institution he was retained until the end of that year. During this time he was treated by antisyphilitics, astringents, tonics, stimulants, and a generous diet. His condition fluctuated. At one time he was very helpless and paralysed, almost unable to talk or walk, with a voracious appetite and severe bowel complaint. At another time he was more lively, talkative, and stronger. His bowels became more regular, evacuations less frequent, more consistent, and under his control, the urethral discharge disappeared, and his mental and physical health so improved that he obtained, towards the end of the year 1858, a month's leave of absence on trial, and was at the end of it considered fit for discharge.

He was brought back to the asylum on the 9th of April, 1859, being at that time thirty-nine years of age. He had resumed his former employment, but at the same time had gone back to his former habits. He had been drunk for a whole fortnight before his admission, had conceived a violent enmity against one of his fellow workmen, whom he thought it his duty to kill, had threatened to kill his wife, and "had ordered a large hot-house for a small garden."

After his admission, the following facts were noted:

I. *General health.*—The respiratory and circulatory symptoms were ascertained to be normal.

His teeth were large and good, but worn on one side by the use of the tobacco pipe, a habit which he indulged in great excess. His gums were spongy, tonsils enlarged, and ulcerated. His appetite was excessive, his digestion apparently good, and bowels open frequently—once or twice a day—stools being dark and offensive.

There were several small chancres and excoriations around the corona glandis, and on his back and chest was an abundant eruption of syphilitic herpes, which had existed for four years.

II. *Mental manifestations.*

1. *Presentative faculties.* (1.) The corporeal presentative faculties, or faculties of sensation and sense were normal. To the last he retained the sensibility of every part of his body, and seemed to see, hear, taste, and smell. There was, however, slight irregularity of the left pupil, which did not contract so readily as the right.

(2.) The faculties of subjective presentation, attention or apperception and memory, were both impaired, feeble, and imperfect in their modes of action.

Continued attention in conversation, or work, he was incapable of commanding, and circumstantial recollection was equally impossible, general events being remembered, and those more and more faultily and generally, and particular incidents forgotten.

2.—*Representative faculties.*

(1.) *Gesture* and muscular motion were feeble, uncertain, and consisted rather of a series of jerks than a continuous muscular motion. He was very unsteady on his legs, seemingly afraid to trust them, and frequently fell or settled down on them. The right leg and arm were always observed to be worse than the left, and the latter he generally held in his left hand. Emotion aggravated his uncertainty of gait, but when his food was set on a table near him, so strong was his appetite for it that he always scrambled and struggled to it.

(2.) His *expression*, generally blank and unmeaning, frequently assumed a look of pain and suffering, tears starting into his eyes, and his features assuming a most doleful expression. The facial muscles, and those of mastication, moved feebly, and also in a spasmodic jerking way.

(3.) *Speech* was with great difficulty accomplished, and articulation gasping and spasmodic. The effort to talk rendered the attempt more futile, and any emotion had also the effect of disguising by disorganising the word or totally aborting its utterance.

III. *Ideation*, including association and comparison of ideas, seemed to be very slowly accomplished, giving evidence of exceedingly feeble cerebration.

IV. *Volition*, as signifying mental and corporeal dynamical action, was very slow in evolution, fitful and spasmodic. Emotional exhibitions were frequent and apparently severe.

V. The faculties of relation, which have not, within the walls of an asylum, a stimulus to action, seemed in him to suffer from the general paralysis. He was unconcerned as to where he was, though occasionally he spoke of his wife with much emotion. Appetites for food and nervine stimulants were voracious, and sense of personal cleanliness and instinctive desire to get rid of excreta, very much perverted and depraved.

From this time the progress of his case was one of decline. His accumulating propensities were as strong as ever, and it was observed

that when he recovered a little he selected for accumulation articles of more value. Three times he became suddenly paralysed, totally unable to walk or speak, and after each of these attacks became physically weaker, and mentally more demented.

When I saw him for the first time in the beginning of August, 1861, the power of voluntary motion and representation was almost gone. He lay mostly on his right side, passed his excreta frequently in bed, ravenously gulped up his food and drink, could not talk, though his attempts to speak resulted in a whining cry, accompanied by a miserable, distracted look. His body was covered with large pustules, surrounded by an inflamed indurated base or areola, and his hips and back were disfigured by deep sloughing bed-sores. He was plied sedulously with nutrients and stimulants, and all possible attention was paid to his cleanliness and comfort; but his vital functions became more and more feeble, his sores spread and became gangrenous, his bowels torpid, and pulse fluttering and rapid.

On the morning of the 14th of August he became thoroughly exhausted and died, the cyanotic condition of his face and extremities immediately before death bearing evidence that a cardiac paralysis and syncope was the immediate cause thereof.

A post-mortem examination was performed on the 15th, at 1 p.m., when the following facts were noted:

I. *External appearances.*—The body generally was very much emaciated, muscles small and soft, and bones easily felt through the attenuated skin.

The cranium was of considerable size, but the forehead was small, narrow, and recedent, the posterior aspect or occipital region of the head being much more prominent and developed. The superciliary ridges were prominent, and features all large and well marked. The bridge of the nose was lofty, and its alæ well formed and of considerable size. The eyes were small, sunken, and dim. The cheek bones very high and prominent. The mouth and jaws were very large, and lips thick, the lower jaw being particularly broad and massive. Those of the teeth which remained were large and well formed, but most of them were either decayed or lost. The gums were blue and spongy; the thorax was symmetrical and well developed, and limbs, though emaciated, gave evidence of original size and strength. Several deep, sloughy ulcerations existed in the regions of the trochanters and sacrum, and there were scattered over the body solitary pustules of large size, and presenting as ulcers and scabs, stages in the process of cure. Around the anal margin was a fringe of external piles, and internally to these appeared a number of purplish elevations of an erectile appearance.

II.—*Cavities and their contents:*

1. The thoracic organs possessed their normal relation to each other.

The *lungs* were both emphysematous, especially the upper lobes and anterior borders of them, the rest being of normal appearance and feel. The pleural surfaces of both were unadherent and thickly studded with minute tubercles, giving the membranes a grainy or sandy feel. The lungs contained no tubercles.

The *heart* was covered by a layer of fat, which was principally deposited in the sulci. Its cavities were of normal relative size, and neither of them contained much blood. The valves were all healthy, and aorta and pulmonary artery sound. The former showed not a trace of atheromatous degeneration. The heart weighed $11\frac{1}{2}$ oz.

2. On opening the abdominal cavity, the epiploon was found in the condition of a membranous apron, devoid of fat and unadherent.

The *liver* weighed 2 lbs. $15\frac{1}{2}$ ounces. The surface of it was striped with an alternation of normal liver brown, and fawn colour, and on the convex surface of the left lobe this latter had a predominance almost to the exclusion of the former. On section the appearance was distinctly that of fatty liver, being a lighter brown than normal, retaining the impression of the finger, having besides an oily feel and appearance.

The *kidneys* presented both of them the physical characters of fatty degeneration, not very grave or far advanced, but which involved the disappearance of one or two of the pyramids. The spleen appeared to be normal, and also the suprarenal capsules and pancreas.

The intestinal canal presented all over it a beautiful arborescent congestion, sometimes so minute as to correspond to the description of capilliform. This was especially marked in the stomach. No organic lesion besides was detected.

III. After sawing off the calvarium in the usual way, on attempting to raise it, it was found to be slightly adherent to, and with considerable difficulty separable from, the surface of the dura mater.

1. *Membranes.*—The dura mater presented an opaque, somewhat pearly appearance, and was possessed of very considerable vascularity, red thickly branching vessels very visibly permeating the surface of it. On both sides it was found to bulge smoothly, and have a bladder-like appearance. This general rotundity of it was, near the longitudinal sinus on both sides, interrupted by dimples or depressions, as if the membrane were somehow tacked down. The bulging, as well as this depressed appearance, was more marked on the right side. Fluctuation was distinctly perceived, and the resistance of the cerebral convolutions felt after depressing the membranes and displacing the fluid. The membranous bag was besides translucent, when a candle was held on the opposite side. On the right side, the dura mater was cut through at the level of the divided skull, and in doing so a large quantity of fluid escaped. The membrane was

found to be in some places much thickened and leathery. On raising it, no adhesion was found, until the site of the depression was reached. There it was found to be tacked down by the continuation of large veins, which, gathering in the pia mater from the under surface and sides of the cerebrum, entered the longitudinal sinus, or lateral sinuses or offsets thereof. Around these veins, which were of considerable size and number, the dura mater adhered to the surface of the arachnoid by means of patches of arachnoidal bulbous villi, which entered into and lodged in the substance of the fibrous dura mater. They could be with a little traction pulled out, and left on the visceral surface of the dura mater a fibro-reticular patch, in the meshes of which they were lodged. This mode of adhesion, obtained on both sides in the vicinity of the dura mater principally surrounding the transit of veins from the pia mater into the longitudinal sinus. From the inner surface of the dura mater could be peeled a fine homogeneous transparent membrane; and when removed, a pearly opaque, somewhat blood-stained surface was left. Into the sinus on the free border of the falx numerous veins of different size entered, from behind, before, and from the surface of the corpus callosum, and from the adjoining cerebral convolutions. On the left side the infra dura matral collection of fluid was not so great, nor the general depression of the convolutions so marked. Externally it presented the same appearance as on the other side. On raising it a slight difficulty was experienced, from an adhesion of some parts of its under surface, which seemed to be glued to the opposite arachnoid by a dusky rusty-looking substance. Large veins entered the longitudinal sinus in the same way, and the same mode of adhesion by arachnoidean villi obtained as on the right side.

The under surface of the dura mater was smooth and shining, of a general dusky colour, but presenting here and there oval and rounded patches of a mahogany red, and over the outer and anterior surface of the anterior lobe of the cerebrum a general mahogany brown colour. This latter was found to be occasioned by blood, fluid, and coagulated, contained between two transparent membranes, which seemed to be a continuation and splitting up of a transparent membrane similar to that on the other side, lining, and capable of being separated from the dura mater. On puncturing one of the containing membranes a quantity of blood flowed out, ascertained to be so by the microscope, and in some of the smaller separate patches it was hard and coagulated. The greatest thickness of the layer was a quarter of an inch, and the dimensions of this largest patch over the left brow of the brain was two by one and a half inch. After removing this membrane, another similar one could be stripped off the dura mater also containing smaller blotches. On its removal the fibrous membrane was laid bare.

The *arachnoid* presented over the sulci, and in the bends of the convolutions, a yellowish colour due to thickening and opacity of it. The *pia mater* presented all over the brain excessive vascularity, large dilated venous trunks containing dark blood, conducted from numerous inosculating radicles, on all parts of the brain. There was, however, a more marked congestion over that part of the brain on which the blood-bag described rested. The *pia mater* which dipped between the convolutions was very much injected, receiving very numerous vessels from the underlying substance of the brain. The sulci also lodged large veins, which joined those observed on the surface of the brain.

2. The cerebral convolutions had generally a depressed flattened appearance, and possessed neither the prominence nor plumpness which they ought to have, being rather imbricated over one another. The white substance was found on section to be normal in consistence, but to present on section a very punctated appearance, which was owing to the transverse division of very numerous and comparatively large vessels containing a quantity of dark blood. These could be pulled out, and presented under the microscope no abnormality of their coats. The grey substance was normal as to colour and consistence, and seemingly as to quantity relatively to the atrophied convolutions, though its absolute amount was certainly smaller than it ought to be. It also was permeated by numerous vessels joining those of the *pia mater* in the sulci.

The *right ventricle* contained a considerable quantity of a clear fluid. The surface was all over very vascular, covered by large branches of vessels containing dark blood. These ramified beneath the lining membrane of the ventricles on the surface of the corpus striatum and collected into one trunk which running along its posterior border, disappeared beneath the fornix just as it was joined by another vessel coming along the margin of the fornix from before. The choroid plexus was very large, its free border being rounded and tuberculated, being composed of a knotted congeries of dilated or varicose vessels containing coagula. This condition of it also obtained in the descending cornua.

The *left ventricle* presented exactly the same features.

The base of the brain presented the same appearance of excessive vascularity, the arteries and veins being numerous and large, the former were normal in their mode of distribution, and neither to unaided sight nor to the microscope exhibited any symptoms of atheroma.

The substance of the brain was carefully examined and no organic alteration of it observed.

The spinal cord was cautiously exposed. The *dura mater* in some places bagged out into bladders containing fluid which could be displaced and the substance of the cord felt. In other places it

seemed to be pinned down to the surface of the cord. On slitting it through it appeared thicker than usual, and in some places was almost leathery. The apposed surfaces of the arachnoid adhered—1. By small thready fibrous bands; and 2, over a patch of surface. In this case both surfaces presented a peculiar dusky uniform mahogany colour, with vessels ramifying beneath it. This appearance was due to a similar phenomenon, a similar collection of sanguineous matter beneath the membrane as was observed in the brain.

Sections were made of the cord at intervals of an inch, and nothing abnormal observed in consistence or relative disposition of grey and white matter.

CASE 2.—Mania with general paralysis (diathetic.) Paralysis at first limited to the speech; no ascertained optimism; propensity to accumulate; reflex cerebral acts. After death extensive atheroma of the cerebral arteries; thickening and chronic congestion of cerebro-spinal membranes.

D. S—, æt. 74, a native of Scotland, was bred up a seaman; he was a very strong, sturdy, muscular man, of medium height, firm, and large physical development. He had never received much education, but by sobriety, industry, and sense, rose to the position of a master mariner. He in this position earned good wages and brought up a large family in respectability and comfort. He plied his vocation incessantly until twelve years ago, when he was forced on account of failure of his eyesight, rendering him unable to see the compass, to give up going to sea. His bodily powers also began to fail, and intellectual faculties to get feeble. His walk became a little tottering, his accent slow and thick, his memory uncertain and treacherous, and his modes of thought childish, and rate of thinking slow. During the first six years of his stay at home he retained a sense of external relation and spoke and acted accordingly, though he was gradually getting decrepid and feeble in powers of motion and conversation. He during this time manifested a tendency to accumulate, but did not express any delusive belief in wealth or social position. He gradually began, however, to lose a sense of where he was, and at first at nights and latterly during the day, spoke and acted as if he were on board ship, commanding his family as if they were the seamen, and handling the furniture of the room, and scrambling on sofas, chairs, &c. as if they were the deck and rigging of a vessel. He uttered his orders in a loud tone, and was very much annoyed that they were not more actively obeyed. As his bodily power declined, and articulation became more paralysed and less easily understood, and mental evolution slower and feebler, his automatic representation corresponding to familiar and habitual former external relation became more complete and incessant. Besides he

became so blind that the actual relation of external objects were shut out, and he often injured himself by coming in contact with these. He at last became so troublesome and unmanageable at home that he had to be sent to a workhouse. There he continued his automatic representations, and imagining that he was on board ship, constantly threw off his coat in the fancied gravity of his exertions; pulled about his bedstead as if he were launching boats, and disturbed the inmates, and by running heedlessly against opposing obstacles endangered himself. He was therefore sent to the Durham County Asylum where he was received on the 9th of July, 1861. He was then 74 years of age.

The symptoms observed on admission were those of general paralysis in a most advanced stage. His presentative faculties objective and subjective were almost completely erased; his senses obtuse and almost lost; attention and memory to all appearance gone. Lost as he seemingly was to present external relation, his ideation or acts of thought corresponding to these were also wanting, and he did not energise in any way either mentally or physically in correlation with existing circumstances. His modes of representation were therefore an acted memory of former relations and circumstances. During the day, he sat, coiling up an imaginary rope, gathering it with the right hand into the left, or walking feebly and distractedly about, wearing a meaningless and rather unhappy expression, trying to articulate words which could seldom be understood, and when they were, referred to something nautical. At night he was very restless. If he was in bed he pulled at the clothes as if they were sails and ropes, and if these were held and the pull rendered more difficult, his exertion correspondingly increased and accompanied by a "Heave oh," sung out in sailor like style. He very often got out of bed, tried to handle it or put his shoulder or back against the side of the room pushing and straining and asking for assistance with a "come away, lads." He also tried to clamber up the window shutter, and was one night found by the night-watch hanging from the top of it by his hands. His appetite was good; bowels frequently open, and fæces passed involuntarily, of slight consistence and very noxious odour.

From the time of his admission he became more wasted, helpless, and weak. It was ascertained that he was labouring under disease of the aortic valve, a loud blowing being audible with the first sound of the heart at the base, but the physical examination was rendered very difficult by the constant mumbling of the patient. Latterly he presented œdema of the præcordial region and incipient gangrene of the right great toe. On the 27th August, a severe diarrhœa set in, which was treated without benefit by astringents and sedatives both administered in mixture and by injection. On the morning of the 29th, he was in a moribund condition, scarcely able to breathe, not

at all to articulate, with a scarcely perceptible and very slow pulse. Every moment or two, all the muscles of his body gave a slight convulsive start, and this fitful expenditure of vis nervosa, as it involved the muscles of respiration, interrupted that function by an occasional hiccup.

By galvanism and the free use of stimulants and administration of beef tea at intervals, he was rallied so far as to breathe less laboriously, though still a falling of the lower jaw, and respiratio superior was evident. He now moaned constantly, and once or twice was observed to go through the automatic representation of biting off an imaginary quid of tobacco. Towards the evening of the 30th, a mucous rattle developed itself in the trachea, and breathing became more seldom and laboured, pulse less perceptible, and the heart's action feeble and trembling. Vital activity slowly declined and finally fled at 1.20 of the following morning, death being a consummation of a paralysis of vital functions which had gradually with slow, steady pace, enfeebled, impaired, and destroyed them.

On the morning of the 1st of September, an autopsy was performed, when the following facts were noted:

I. *External appearances.*—The body generally was very much emaciated, and its muscles small and soft. The cranium was large and massive, scalp very sparingly covered with hair; forehead lofty and broad, and its measurements in every way above the average. The superciliary ridges were prominent and well arched. The features symmetrical, well formed, and strongly pronounced. Nose large, straight, and broad; ossa malæ prominent. Mouth and lips large. Eyes placed far apart, but dim from the existence of an arcus senilis which almost entirely covered the cornea. Both jaws were broad and well-developed, and the teeth which remained in them of large size and normal shape. The skin of the face was thick and almost greasy, containing dilated and varicose capillaries. The thorax was broad and well arched, and ribs broad and strong. The bones of the limbs were large, and joints well-formed and healthy. The superficial temporal artery could be seen running tortuously up the temple, and felt hard and firm, and the radial artery also give a cordy, almost calcareous, sensation.

II.—*Cavities and Contents.*

Thorax.—Both lungs were universally attached to the parieties of the chest by pleuritic adhesion, which in some places amounted to a complete amalgamation of the opposing surfaces of membrane by a thick, superposed false membrane. The lungs were to feeling and sight normal in structure, though considerably congested.

The heart was large and flabby; its anterior surface was entirely covered by a layer of fat, marked by reticulations caused by the vessels which passed through it, which was principally deposited in the inter-ventricular and auriculo-ventricular sulci. The coronary

arteries felt hard, and in some places calcareous and gritty. Both were carefully dissected, and found to have undergone a complete atheromatous degeneration of their coats, which in the larger branches existed as a calcific tube covered by the external layer of vessel, which was thus much narrowed in calibre, and in the smaller, as a yellowish, somewhat soft, and buttery thickening of their coats in patches.

The *muscular* fibre was pale, soft, and of a light brown, displaced to a great extent by the fatty layer described. The right auricle seemed to be distended out of proportion to the rest, and on laying it open, it was found to contain a firm fibrinous coagulum, which almost completely occupied its cavity, and was attached to and involved in the *musculi pectinati* of the auricle proper and the *chordæ tendineæ* of the tricuspid valve; the other cavities were normal in size, but contained little or no blood. The aortic valve was found to be incompetent, and when exposed the flaps of it were seen to be very much stiffened and thickened by atheromatous changes, in some places almost calcareous. No portion of this was eroded, but they stood out half-closed, and stiffly retained that position. The mitral valve was normal in form, but slightly hardened.

The aorta and its principal branches were thickly studded with calcareous plates projecting into its interior as nodulated roughnesses. This was especially marked where the coronary, carotid, subclavian and innominate left it. The orifice of these vessels being thereby much narrowed.

II. The abdominal peritoneum was void of any adhesions.

1. The stomach showed a considerable amount of chronic congestion, being flaccid almost void of rugæ internally, and having in some places its mucous membrane eroded, and in others reddened by submucous punctiform congestion.

All the rest of the intestinal tube was more or less congested in a ramiform manner, and about two feet of the ileum near its termination inflamed, of a uniform dusky red internally; chiefly covered with mucous and a yellowish colour externally, with occasional more yellow patches.

The mucous membrane was sound throughout its entire length; the colon was very strongly contracted on itself; the longitudinal glands being thus thrown into unusual distinctness.

2. The liver was small of a fawn colour externally, soft and pliable, it was yellowish-brown internally, torn easily asunder, and was evidently far gone in fatty degeneration, a fact which was proved conclusively by microscopic examination. It adhered posteriorly to the right supra-renal capsule, tearing it open and showing it to consist of a cavity filled with a brown pulp. The supra-renal capsule of the opposite side was in the same state.

3. The kidneys were both fatty and the renal arteries atheromatous.

4. The capsule of the spleen was slightly adherent to the sur-

rounding structure. It presented a mottled appearance, its surface being marked by calcareous tubercles and larger nodulated elevations. Its substance was completely disorganized, converted into a pink pulp. This could be easily washed out, leaving the tubercular structure which was seemingly normal. The abdominal aorta and *all* its branches were very far advanced in atheromatous and calcareous change. The psoas muscles were pale, friable and soft, and both presented within them evidences of muscular apoplexy.

III. The *dura mater* adhered firmly to the interior of the cranium, which was of normal thickness. The spinal cord having previously been removed the fluid which must have existed beneath this membrane escaped then. It was found to be very much thickened, more so than in the last case. On removing it veins were found to enter its longitudinal sinus, and in the same way and the same mode of adhesion, by arachnoidean villi, to obtain, though these were manifestly larger and in some cases had completely penetrated the membrane. The mass of the brain looked small and wasted compared with the size of the cranium. The convolutions were flattened and depressed and almost completely hid from the view of the thickening of the arachnoid, and the congestion and the chronic hyperæmia of the pia mater. The former was marked by yellow opacities and raised into numerous bullæ by subarachnoid clear effusion, which also indented as well the subjacent convolutions. The pia mater consisted of large flattened veins running laterally and from below towards the longitudinal sinus, collapsed and receiving numerous branches of considerable size from between the flattened convolutions. Its arteries were round and cordy, very atheromatous, and when divided retaining stiffly this tubular form and containing a red fibrinous coagulum. The bend of the internal carotid artery upon the body of the sphenoid bone was quite calcareous and the caliber of the artery here very much narrowed.

All the branches of the principal cerebral arteries, and those arteries themselves, were also far gone in this degeneration, though it was less pronounced the smaller their size.

The brain was carefully steeped in spirit for future more careful examination, and measures taken to ensure its access to the cerebral substance; but when it was again looked at, so great was the tendency to disorganization, and so feeble its organic structural integrity, that it was throughout much softened. The left middle lobe had been previously observed to have undergone the process of softening, and conversion into a grey pulpy matter which was with the greatest ease removed by the handle of the scalpel.

All the rest of the cerebral substance though friable and wanting in normal firmness and cohesion was comparatively sound.