CASES
ILLUSTRATIVE OF SOME CONSEQUENCES
OF
LOCAL INJURY.

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ALTHOUGH amongst the examples which I am about to relate some appear to possess sufficient individual interest to be worthy of preservation, even in an isolated form, I have thought that their value might be increased by their being brought together for the illustration of a principle, though but little originality may be found in the comments appended to them.

When a local injury is known to have been inflicted, and the extent of mischief is ascertained, either as affecting some important organ or as implicating merely parts of less moment, various trains of symptoms are expected to follow in accordance with the results of experience in other cases of similar description. It is not my object to trench on the province of the surgeon by noticing such cases. There are also injuries which, though comparatively very slight in themselves, are attended with the operation of an influence capable of producing the most violent and acute symptoms, frequently causing the speedy death of the sufferer, and apparently dependent on some morbid poison either introduced from without, or generated in the patients themselves, in consequence of some temporary peculiarity of constitution. Of such cases, which have formed the subject of excellent articles on constitutional irritation, it is likewise my intention

not to speak, although much constitutional irritation was doubtless present in some of the instances to be given in this communication.

In the cases which I am about to detail, the local result of the injuries may be divided into two distinct groups—the one in which the effects had more or less the character of common inflammation, though probably not unconnected with the operation of a morbid poison; the other distinguished by the production of an adventitious structure, having the character of malignant disease.

First Group.

Case I.—R. M. was about 45 years of age, an active and energetic man of business, of spare habit of body. Though not appearing robust, his health had scarcely ever been interrupted. It was discovered, but not until after the examination of the body, that rather more than two months before his death he had fallen down upon the edge of the curbstone in one of the streets of London, and had at the same time narrowly escaped being run over by a cabriolet. It did not appear that he was sensible of having received much injury by this fall. He seemed to think much more of his escape than of any mischief actually received, and was not detained from business by the accident.

About six or seven weeks after this, he was actively engaged one morning in aiding as well as directing the making of alterations in a part of his grounds, which much heated and fatigued him. In this state he went to town on the outside of a coach, imperfectly protected, and it is believed that he was exposed to wet as well as to cold. In the evening he looked chilly and distressed; he felt obstinately cold, and was disinclined for any exertion. He also felt severe pain in the right side, corresponding to the spot at which the effects of injury were afterwards discovered. Zealous attention to his business induced him, notwithstanding, to go to town, when he was again somewhat exposed to wet and cold.

The following day he was confined to the house; but after

this, business being brought to him by his clerk, he went through arduous mental exertions. A blister applied over the seat of pain, aperients and effervescing salines, afforded him considerable relief, and he made no more complaint of pain in the side, but continued in a febrile state, marked with great debility; yet he was able to eat, and partook of animal food. After an aperient, the pulse became extremely low and weak. Two half-glasses of claret, which afforded him immediate relief, were followed by a most disproportionate excitement. He was perfectly correct in the perception of facts, but reasoned erroneously upon them. He pronounced himself quite well, and would not take medicines or submit to remedial measures. From this state, which did not last long, he seemed much relieved by sleep. Slighter paroxysms occurred two or three times, but in the intervals he was perfectly rational.

On the second morning after the appearance of mental disturbance, he passed into a state of coma or stupor, with stertorous breathing, and a feeble and very rapid pulse. He appeared, in short, to be moribund. A small quantity of ammonia was introduced into his mouth, and swallowed, after which he considerably revived. He transiently complained of a little pain in the left arm and leg. The former he thought that he had sprained; the latter he supposed had been subjected to pressure, but it did not appear to have received any injury. On examination, a small partial induration was found near the calf of the leg; it was slightly sensitive on pressure, but seemed to be an affair of little moment. It slowly increased, and, the day before death, occasioned considerable pain. He also suffered, at the same time, from the effects of a sinapism once applied to his feet, which produced a little vesication. After the first appearance of mental aberration, and as soon as he could be prevailed upon to take medicine, small doses of calomel were given every three or four hours, with the occasional addition of a little tartarised antimony and an opiate. The next evening he was seen by Dr. Bright, in conjunction with his

former attendants, Dr. Hull and myself. The calomel was increased to two grains, given about every two hours. The antimony and opium were also directed to be continued; but, the prevailing disposition to sleep appearing to render them needless, they were given only twice and in small quantity. Thick cold arrow-root, water, and a little beef-tea, were almost the sole ingesta. The bowels were not active for two days, and the urine was secreted very sparingly. The bowels were afterwards copiously relieved by an enema. From that time they acted repeatedly, and became rather irritable. The kidneys and bladder acted more freely. The calomel was suspended, and the beef-tea and arrow-root continued. Until the patient's bowels had been relieved, he lay for many hours, without changing position, upon his back. He was afterwards moved from one bed to another, which, though it increased his comfort, greatly exhausted him. The head was generally hot, requiring evaporating lotions. The face was rather flushed; the expression of countenance was generally composed; the breathing, though quick, seemed easy, and without movement of the *alæ nasi*. There was however, at times, a little stertor during sleep or somnolence. When the latter state was most profound, the pupils were remarked to be greatly contracted. The tongue was generally moist, with a white fur on its surface, which, on one occasion, was rather thick. There was no preternatural redness of its tip or edges. The pulse was regular, but inordinately quick—generally 120, sometimes upwards of 130, rarely 110, but, on one occasion, a little lower. The resonance of the chest and the respiration were quite natural. The abdomen was generally free from tenderness or tumefaction, but, within a short time of death, there was a little distention. Vomiting also occurred twice or three times before death. Small pustules, or maturing vesicles, on the body and limbs were only noticed a short time before death. The skin was often of a genial warmth, but not in a profuse perspiration. From twenty to twenty-five grains of calomel had been given.

The *examination* was made about twenty-four hours after death. The body was thin, and, about the extremities, might almost be considered as emaciated. On different parts of the trunk and extremities there were scattered a few small vesicles, filled with puriform fluid. They resembled ecthyma, without the areola. There was a small subcutaneous tumour near the head of the right fibula. It was soft, and, when opened, gave exit to a little thick, soiled pus. A tumour of a similar character, but much larger, at the upper part of the left calf, was not opened.

The dura mater appeared to adhere with more than the usual firmness to the calvaria. Nothing remarkable was observed in the arachnoid. There was but a small quantity of serum beneath it, and the pia mater seemed to be more closely applied to the surface of the brain than is usual, but was readily removed from it without lesion. The external layer of the cortical substance might be separated in pieces of considerable size from the subjacent layer. Incisions into its cortical substance, nearly at right angles to its surface, exhibited the layers of the cineritious substance, at some parts, very distinctly; and, at one particular spot, there seemed to be an evident, but very partial, softening, by which the separation before mentioned was favoured. The substance of the brain generally appeared healthy. There was only a moderate quantity of fluid in the ventricles.

The right pleura was generally free from adhesions, and perfectly so at the anterior part, at which the lungs and pleura appeared quite healthy, except that the former might be rather too pale from a general slight emphysema. There was some old partial pleuritic adhesion posteriorly and laterally. There was besides, the evidence of recent pleuritis near the same spot, which was the seat of the following very remarkable morbid appearance: The pleura costalis corresponding to one of the ribs, probably the fifth or sixth, from its anterior extremity to its angle, as well as that corresponding to a greater part of the intercostal space, immediately above and below, was elevated by purulent deposits of various

sizes, generally assuming a rounded figure, but much disposed to be confluent. Few, if any, had perforated the pleura; but the opposed pleura pulmonalis, as before stated, was at this part, which corresponded with the interlobar fissure, slightly attached, by adhesion and presented several purulent deposits resembling those beneath the pleura costalis: it cannot be positively stated, whether they were here upon or beneath the serous membrane: it is believed that they occupied both positions. The immediately adjoining portions of both lobes were in a state of recent hepatization. On turning back the integuments from the right side of the chest, the muscular structure corresponding to the before-mentioned internal disorganization was found to be thickly sprinkled with similar but smaller purulent deposits. The left pleura exhibited no trace of old or recent inflammation. The pleural cavity was remarkably free from fluid. The lung was generally crepitant and of a pale colour, being slightly emphysematous. The heart and pericardium were quite healthy.

There was a small quantity of semi-transparent lymph between the convolutions of the intestines at the lower part of the middle region of the abdomen; but there was very little fluid effusion. There was no appearance of old peritonitis. The mucous membrane of the stomach was considerably reddened with dendritic injections towards the cardiac extremity. In other parts there was a little dusky discoloration; but the most remarkable appearance was that of numerous small, scattered depressions, occupying several square inches at and near the small curvature of the stomach. They were probably the enlarged orifices of follicles, and their number and relative situation favoured this idea, since these spots appeared to correspond with other appearances which have been regarded as connected with follicles of the stomach. In the deepest of these depressions there appeared to have been a loss of substance, which seemed the result rather of solution than of ulceration; a circumstance which further favours the idea of their depending upon follicles.

Case II.—On Friday, the 24th of March, T. F. called in

the assistance of his medical friend, in consequence of a smart pain, occupying a space scarcely larger than a sixpence, a little below the right knee on the outside. Although the pain was of a distressing description, nothing was discovered by the sight or touch, nor was there any notable tenderness on pressure. The patient made no complaint of ill-health, but his tongue showed that this was not perfectly good. He had felt the pain a day or two before, but not so as to prevent his going about; and in London, about ten miles from his home, he had taken a very smart dose of jalap. Fomentations were ordered, and a dose of alterative medicine. The pain, notwithstanding, continued unabated, although there was still no difficulty in moving the joint, and the general health was scarcely complained of. The application of leeches procured immediate relief.

There was, however, considerable languor and great debility; yet not such as to prevent the patient from driving himself three or four miles from his own house. This was just about a week before his death. Shortly after the application of leeches, first the knee, and then the limb generally, became considerably swollen, but no fluctuation or venous or lymphatic inflammation was discovered. Oppressive pain and tightness of the head being complained of, and evident febrile disturbance being present, blood was taken from the arm with great but transient relief. The crassamentum was loose and soft; it occupied the entire diameter of the vessel, and had a slight sily coat. The pain and swelling of the limb increased with aggravation of the general symptoms, and some delirium came on. Dr. Dowler saw him in consultation, when it was determined to apply a moderate blister above the knee. Hæmorrhage from the nose occurred once or twice, and the general symptoms were those of low typhoid fever. A high degree of delirium was present for some time before death, and great oppression of breathing was likewise noticed. I was sent for on the morning of the 28th; but the patient had expired before I arrived. From the symptoms which were then detailed to me, I was induced

to suspect the formation of a purulent deposit from previous lesion, as in the case of R. M., and, on inquiring, was informed that T. F., about six weeks before his death, had repeatedly used great exertion in contending with a restive horse, in which he persevered, notwithstanding the fatigue and tremor which it caused. On one of these occasions the animal rearing, he either threw himself off, or fell upon a grassy bank, down which he rolled. He made little or no complaint of suffering from the accident, and continued his various exercises as before ; and on one occasion had a day's fishing, when he was some hours walking and standing. Subsequently to his death, it was stated that some time prior to his complaining of pain near the knee, he had transiently exhibited an altered and peculiar state of mind. He was observed to disfigure a book which he had previously prized and preserved with the greatest care, and once or twice he transiently laid aside his usual kindness of disposition.

The inspection was made by J. J. Adams, in the presence of Dr. Dowler, J. Clark, and myself.

The arachnoid was rather thick than otherwise, but without conclusive evidence of recent inflammation. The pia mater was little injected, but infiltrated with serum. The brain appeared rather pale ; the convolutions were deep, and their surface had a very irregular, slightly uneven or coddled appearance. In some parts the outer layer of the cortical substance readily separated as a pellicle. The substance of the brain appeared throughout remarkably healthy, was of good uniform firmness, and pretty readily separated in the direction of its fibres. There were some cysts on the plexus choroides on both sides, and a rather large quantity of serum in the ventricles.

The pleuræ were remarkably free from adhesions, there being only a few of old standing towards the lower part. The lungs themselves were very slightly emphysematous. Each, when cut into, was found to have a portion of a dark olive brown colour, infiltrated with fluid of the same colour, highly lacerable, and emitting an offensive and peculiar odour, not

precisely that of gangrene. Other parts of the lungs were of the ordinary livid colour, and infiltrated with bloody serum. A considerable warmth was perceived in the lungs, when every part of the body was nearly or quite cold.

The heart was rather large, and, like the rest of the body, loaded with fat. The muscular substance of the heart was rather pale, and easily lacerated, which was the character of all the tissues.

There was no appearance of peritoneal disease. The intestines were prodigiously distended with gas: their mucous membrane, as well as that of the stomach, appeared to be healthy. That of the stomach was slightly mammellated, and, at the termination of the ileum, the Peyerian glands were a little elevated, and of a mottled grey colour, indicative of some previous irritation there. The liver was tolerably healthy. The gall-bladder contained a small quantity of dilute saffron-coloured bile. The spleen was small, and in rather a collapsed state, its tunic appearing shrivelled, like that of a calf's spleen. Its substance readily broke down into a lilac-coloured grumous mass. No appearance of inflammation was observed in the femoral vessels. The subcutaneous fat, a little above the knee, was infiltrated with a dirty brown serum. A large collection of purulent matter was discovered, amounting to upwards of a pint. At the outer side of the knee, where it was most superficial, it was of the consistence of cream, and yellowish. More deeply seated, and nearly in contact with the periosteum, it was white, of a firmer consistence, forming, with the cellular membrane through which it was diffused, almost a solid body; whereas the cellular membrane connected with the other portion formed shreds, resembling wetted tow. Somewhat curdy puriform matter was contained within the joint, but it was not discovered to have any communication with the collection of matter external to it. The articular cartilage of the patella was soft, and of a semi-translucent yellow colour, somewhat resembling pale yellow soap, after it has been soaked in water. The cartilage on the femur and tibia was not so sensibly altered.

Case III.—The history of this remarkable case was not complete till after the inspection had been made. The large extent of sloughing cellular membrane, and the collection of imperfect pus, indicated however that some violent *local injury* had been received; and, after careful interrogation, it was ascertained that M. R., about three months previously, whilst in Switzerland, and being in a very early stage of pregnancy, met with a considerable strain, whilst ineffectually endeavouring to avoid a serious fall. At the time, and for some hours after, she felt great pain in her right side, but she insisted on no mention being made of the accident. She subsequently complained, at different times, of pain in the region of the spleen, and very frequently expressed her apprehension that she should not live long, although at that time apparently in good health. She connected this ill-boding with her state of pregnancy, of which she had entertained an extreme horror, and not with the injury which she had received. During her tour, a considerable fæcal accumulation was formed in her bowels, with which she returned home. She was afterwards exposed, without sufficient protection, to cold and draught. This was quickly followed by indisposition, of which the accumulation of fæcal matter, and the consequent bowel-irritation, were the prominent features. The unloading of the bowels was effected without much difficulty; but the expulsion of an ovum, at about the third month, which then took place, was preceded and followed, as well as accompanied, by very considerable and unusual pains in the right inguinal region, which seemed to have an inflammatory character, and suggested the application of leeches. Great irritability of the stomach came on, with urgent vomiting, which had at times a stercoraceous character: at least, the matter rejected was said to resemble the fluid evacuations which passed from the bowels. Both these symptoms were subdued by small doses of opiates, administered by the mouth and anus, by demulcents and mild mercurial doses.

The abdomen was not distended, and was much less sensi-

tive to pressure ; but pain was felt in the back, and in the right leg, when it was moved ; and a flexed position of both legs appeared to be grateful.

The throat was sore. The velum and fauces were covered with a white crust, which was easily removed by a sponge dipped in a weak solution of nitrate of silver ; but it was quickly reproduced, and thus the malady extended to the other parts of the mouth. The breath had a peculiar odour, by no means offensive, and at first resembling that of an infant who has recently taken the breast ; but it became progressively more saccharine, and resembled fresh-ground malt, and, a short time before death, had the smell of caromel, or burnt sugar.

The countenance was neither contracted nor collapsed, but was occasionally flushed. It was seldom indicative of pain, but the patient complained of a feeling of distress and sinking. A little wine at one time afforded relief, but the repetition of it could scarcely be borne. Opium in any form produced inconvenience, and hyosciamus had no good effect. But little sustenance could be administered, except in the liquid form, and in small quantities. Nearly a week before death, a very slight emphysematous crepitation was perceived under the skin, in the iliac regions. Soon after, the same symptom became more distinctly evident along the course of the back, extending as far as the nape and sides of the neck, where it was readily perceived by the patient herself, and produced a sound which was occasionally audible to the bystander. It seemed wholly unattended with pain, and except that the pulse, which had fallen to 100, or a little lower, generally maintained itself at 120, and was small, weak and soft, the symptoms appeared rather remitted than aggravated. Small doses of bark were given, as well as a little wine, and an increased quantity of food was taken and retained by the stomach ; yet it was still chiefly confined to nutritious fluids in small quantities. The extent of emphysema appeared to diminish, though the quantity of air in the middle of the back was sufficient to render it quite tympanitic. It was suspected

that the air had made its escape from a small opening in the cæcum, at a part scarcely covered by peritoneum, so as to pass into the cellular membrane, over the iliacus internus; and a remarkable want of odour in the gas which at times escaped from the anus appeared to account for the absence of severe symptoms. The sore which was formed on the sacrum from pressure, in conjunction with the moisture which was occasionally present, caused pain and inconvenience, and showed no disposition to heal; yet some relief was obtained from nitrate of silver, and from a large soap-plaster, spread upon thick leather, which was applied to a great part of the back. The bowels acted almost spontaneously, scarcely requiring the assistance of a small warm-water enema. The fæces were nearly healthy, at times consistent, but on one occasion quite liquid. The urine, which was rarely deficient, was nearly clear, slightly reddish, and exhaled the odour of new hay, but did not yield anything saccharine when evaporated.

In the progress of the disorder, considerable emaciation took place, and there was a remarkable disappearance of the red particles of the blood, the tongue, fauces and conjunctivæ becoming extremely pale. There was scarcely any disturbance of the intellectual faculties when the patient was awake, or wandering during her sleep, till within the last thirty-six hours, when ptosis, and some other symptoms of oppressed brain, came on. Memory for words failed, rendering the speech incoherent. Prevailing somnolence was occasionally interrupted by screams, and the difficulty of breathing, which the state of the throat materially aggravated, continued for some time after consciousness was apparently at an end.

Examination after death.—The body was that of a tall, remarkably well-made female, very exsanguine, considerably reduced in flesh, though still retaining a fair amount of subcutaneous fat. No external signs of decomposition were apparent.

The head was not opened.

The lungs and pleuræ were remarkably healthy.

The pericardium contained a little fluid, but appeared to be healthy.

The heart was small, remarkably pale, and very flabby, containing no coagula, and very little blood.

The abdominal muscles, especially on the right side, were of a dark, dirty, livid colour, and soft. Towards the right hypogastric region, where their colour was the darkest, their fibres were laid bare, as if dissected. The softened, broken-up, cellular membrane was mixed with a dingy white semi-fluid material, almost grumous. The peritoneal surfaces, both of the parietes and of the viscera, along an irregular line extending a little above the crista of the right ilium, and following the course of the pelvis, but a little above it to the left inguinal region, were feebly glued together, so as to form small cavities containing a dirty whitish grumous substance, of different degrees of consistency. Quite on the right side there was a communication with the intermuscular cavity before mentioned. The grumous and curdy matter was accompanied with air, but with very little liquid. Over the pubes, in contact with the bladder and uterus, it was creamy and puriform. Between the uterus and rectum, the circumscribed cavity was most distended, and contained about a third of a pint of thin, turbid, very light-coloured fluid, mixed with curdy particles. On the left side it was much more limited, following the course of the broad ligament, and implicating the Fallopian tube and ovary. There was a very small circumscribed cavity of similar character, of which rather more than a square inch of the spleen and the corresponding parietes formed the sides. The other portions of the peritoneal surface were effectually shut off from these cavities, notwithstanding the very feeble character of the adhesion by which they were closed. A few recent filamentous adhesions had, however, been formed between some of the convolutions.

The mucous membrane of the stomach was quite pale. No ulcer was seen in any part of the intestinal mucous

membrane. Towards the lower part of the ileum, it was dark and injected, especially along the edges of the valvulæ conniventes. The aggregate glands were barely perceptible. The ileo-colic valve did not exhibit any lesion of structure, but the mucous membrane there, as well as immediately above and below, was of a dark brownish colour. The contents of the intestines were healthy, but small in quantity. The last half-inch of the appendix vermiformis, which formed a part of the wall of the cavity before mentioned, was of a dark colour throughout, but not perforated.

The right ovary, which was large and flat, and the Fallopian tube, which was of a very dark colour, and which also formed a part of the wall of the cavity, were rendered very indistinct by adhesions and morbid deposit. The substance of the ovary appeared healthy, but pale and firm.

The uterus was rather large, in accordance with the recent abortion, of which the dark, livid and irregular mucous membrane bore the evidence. Its substance was quite healthy, but its peritoneal surface concurred in forming the cavity before mentioned.

The left Fallopian tube was more distinct than the right, but it was of a dark colour, and, towards its termination, large; and the character of the fimbriated extremity was lost in what appeared like an irregular circle of dark caruncles. The ovary on this side resembled that on the right.

The liver and kidneys were healthy; but the spleen, besides presenting the spot before mentioned, was large, soft and grumous, though not of a dark colour.

On tracing the cavity behind the peritoneum, on the right side, which, over the iliacus internus, communicated with the peritoneal cavity by several cribriform openings, it was found to extend along the whole course of the psoas muscle. It contained a considerable quantity of dingy white grumous material, which varied in consistence from that of the finest mortar to that of thickish whitewash, and was intermixed with numerous shreds of dead cellular membrane, like wetted tow, but seemed notwithstanding to be perfectly inodorous.

The posterior mediastinum appeared quite healthy, as well as the vertebræ, as far as they were examined.

Second Group.

Case I.—A man was drinking and smoking in a public house, when a scuffle occurred, in which one of the parties engaged pushed the smoker's arm so as to bring the end of his pipe with violence under one of his eyes. The end of the pipe was broken off, but the man was not aware that it was lodged in himself. The small wound under the eyelid completely healed. After a time he suffered so much in his head as to be admitted into Guy's Hospital. In about four months the man died; and, *on examination*, I found two inches of the tobacco pipe lodged along the side of the cavernous sinus.

The dura mater was raised at this part by a small mass of cerebriform matter, about as large as a wild cherry. It appeared to consist of one principal and several smaller tubercles closely in contact with each other. No production of cerebriform matter was discovered in any other part of the body.

Case II.—In the month of December 1826, F. H., a young man about 20 years of age, whilst carrying a barrel of herrings, weighing about 200lbs., made a slip, and, in recovering himself, injured his back. For some time after he felt pains in his limbs, and was unable to walk; but in two or three weeks he recovered this power. He could not carry a weight on one side only, but could do so on both at once, e. g. he could carry two pails, but not one pail, of water. He felt, however, unfit for work, and employed himself in going about with eggs. In the month of April, or the beginning of the month of May 1827, he began to feel pains in his legs, but first in the right, in which the pain extended as low as the knee: some time after the other also became painful. He walked with difficulty, and was unable to void his urine. In the month of June the loss of power in the lower limbs became complete, but sensation remained, and he at times

suffered severe pain in them. Continual recourse was had to the catheter for the evacuation of his bladder. The urine passed was latterly extremely offensive, and he had at times great pain about the region of the bladder. His bowels were rather costive; his general health did not seem to suffer much, yet he became greatly emaciated. His body was drawn forwards, and the spinous processes about the middle of the lumbar vertebræ presented a considerable and progressively increasing projection. There was, however, very little pain at this part except on pressure.

Examination after death.—The head was not opened.

The viscera of the thorax were in the most unblemished state; there was merely a small quantity of clear straw-coloured fluid in the pericardium, which had no appearance of inflammation.

There was a good deal of diffused redness throughout the alimentary canal; but it had more the appearance of congestion than of inflammation.

The bladder contained a thick puriform offensive fluid tinged with sanies. Its mucous membrane was of a dark livid colour, uneven and ulcerated. The parietes of the bladder, at the anterior part, were ulcerated through, and communicated with a small abscess in the cellular membrane.

One of the middle lumbar vertebræ was so crushed as not to be equal in thickness to the intervertebral spaces between which it was situated. The intervertebral substance seemed to have been little, if at all, injured by the accident.

Rounded masses of fungoid or cerebriform matter, somewhat larger than a chestnut, grew from both sides of the bodies of the vertebræ at this part. A small quantity of similar matter, but more mixed with blood, was found within the vertebral canal, which was rather contracted upon the cauda equina.

Case III.—The malady of W. C., aged about 28, might be dated about eighteen months back, when, in Madeira, he became troubled by the enlargement of the right testicle. Uneasy riding on mules appeared to be the exciting cause; yet it

must be stated that as much as eighteen years before, he received an injury from a blow on the part, and that from that time there had existed a very slight partial induration, productive neither of pain nor of anxiety. It seems not to have interfered with active exertion, of which W. C. had not been sparing as a zealous travelling naturalist. The enlargement of the testicle soon became considerable, and was accompanied by hydrocele. It was attended with great derangement of health, weakness of stomach, distressing pain and great emaciation. No doubt was entertained that the disease was malignant. The disease in the testicle advanced; and a tumour formed in the right iliac fossa and several in the abdomen, producing large and nodulous masses.

Examination of the body.—The abdomen was greatly distended, and the scrotum was about the size of the head of a child of eight or nine years of age. The viscera of the abdomen were displaced by large tumours projecting from the sides of the spines, and extending from the diaphragm to the pelvis. The liver was pushed upwards; and the duodenum remarkably put to the stretch, both in length and in diameter, its size more than equalling that of the wrist of the subject. The biliary ducts were stretched to the length of seven or eight inches, and were also enlarged. Notwithstanding this derangement of situation, the texture of the organs remained healthy. The lining membrane of the stomach was neither thickened nor softened.

Though the enormous masses of tumours presented evidence of the cystiform structure, it was much less distinct than is generally the case, which may be ascribed to the length of time which they had existed. For the most part they exhibited the pale or nearly white colour commonly met with in cerebriiform tumours. Some spots were coloured with blood; but other portions were of an ochre yellow colour, similar to that of an old apoplectic clot, an appearance not uncommon in fungoid tumours of very long standing. One of the largest tumours was in the right inguinal region, and was perhaps more immediately connected with

the disease of the testicle. It was of a deeper colour than the other tumours from the presence of venous blood in the membranous cysts, and also in their broken-down contents.

There was some sanguinolent serum in the tunica vaginalis ; but the chief cause of distention of the scrotum, was the mass of cerebriform and fungoid tumours developed in the right testis or epididymis, leaving only a small and displaced portion of the structure of the organ discoverable.

No cerebriform matter was found in the thoracic duct.

Case IV.—A man of about 32 years of age, who had habitually enjoyed good health, excited the jealousy of his neighbour, who assailed him with a heavy poker, and inflicted a severe blow over the lumbar vertebræ. This caused violent pain at the time ; but when this immediate suffering had subsided, no further inconvenience was experienced until about three years had elapsed, when he was attacked with occasional sharp pain in the loins, shooting down to the bladder and testes, of which the right was most affected. The urine was scanty, high-coloured, and loaded with mucus. It was passed frequently, and with pain in the bladder, testes and glans penis. There was occasional remission of these symptoms ; but the means employed had but little effect, except that a belladonna poultice somewhat assuaged the pain in the testes. In about a month the pain down the thighs became excruciating. The presence of a calculus was suspected ; but on sounding the patient, nothing of the kind was discovered. A caustic issue was formed in the right loin ; in a few days the pains ceased, and the patient could jump about without suffering. The relief was only transient, the pain soon returned ; but nearly quitting the testes and thighs, became extremely severe in the loins and the whole abdomen, in which a firm nodulous tumour was distinctly felt projecting from the spine. It appeared to be attached to the anterior part of the lumbar vertebræ, chiefly on the right side. The patient's general health suffered considerably. He ema-

ciated rapidly, and sunk between three or four months from the time of his seeking medical assistance.

On *examination after death*, all the viscera, including the kidneys, appeared to be healthy ; but a nodulous fungoid or medullary tumour projected forward from the lumbar vertebræ, below the kidneys. It appeared to be attached to the ligamentous structure covering the vertebræ, and pressed upon the lumbar and spermatic nerves. The psoas muscles were also implicated in the disease. Some parts of the tumour, which was described as medullary sarcoma, were breaking down and softening internally.

Case V.—W. C., a gentleman of between 40 and 50 years of age, actively engaged in business, and of regular habits, intending to take his seat in a chair, which a short time previously he had observed to be placed behind him, but which in the interval had been removed, came with violence to the floor. The shock which he received produced but little immediate inconvenience, and did not interfere with his attention to the affairs of his business and family ; but in the course of a few months a remarkable loss of flesh was observed to take place. His meals were followed by pain and inconvenience ; and the food often returned with much mucus. These symptoms persisted and increased, receiving but transient and imperfect relief from any of the means which were employed. A gradual change took place in the form of the patient's back, which, at first, seemed to be merely curved forward as the result of stooping from pain and debility ; but afterwards it became evident that a little above the middle of the dorsal vertebræ the change of direction was more abrupt, so as to produce an angular projection. A small swelling was next observed on each side of the spinous processes, which continued to increase till the patient's death, when they formed a flattened tumour of a rounded figure of about five inches in diameter. In the epigastric region, to the left of the situation of the pylorus, a resistant tumour was detected, which gradually increased in size.

The sufferings of the patient were very great ; but it is

needless here particularly to describe them, as they were the necessary concomitants of organic disease of the stomach and spine.

Examination after death.—The bodies of two of the vertebræ were nearly destroyed. The spinal canal was much encroached upon, and considerable masses of fungoid growth protruded from the spinal column, both before and behind. A fungoid tumour, as large as a moderate-sized apple, was situated in the parietes of the stomach towards the pylorus, but not implicating it. Numerous tubercles of similar growth were situated beneath the peritoneum, investing neighbouring parts. A remarkable fact was noticed in the mode of extension of the disease to the parts not contiguous to the primary affection. It was making its appearance in numerous parts of the osseous system, but confining itself to those situations which were in the immediate vicinity of another structure attached to the bone, as in the bodies of the vertebræ, within an eighth or a tenth of an inch of the intervertebral substance, in the transverse processes almost in contact with the cartilages of their articulating surfaces, and in the anterior extremities of the ribs all but in contact with their cartilages. In this situation the incipient disease showed itself in the form of minute cysts, varying in size from that of mignonette-seed to that of hemp-seed. They contained a translucent material of a soft, somewhat colloid consistence, and in some instances of a sanguinolent colour.

Remarks.—We have here two groups of cases essentially differing in their character, yet agreeing in this single particular, that they originated in local injury, inflicted a more or less considerable time before death, yet so obscurely emanating from it that in some instances the connection was only discovered on post-mortem examination. It will perhaps be admitted that such cases are not without interest, as serving to suggest inquiries as to the exciting causes, when cases of anomaly and doubt are brought under our notice. Yet it is not so much on this account that I have been induced to bring them

forward, as to offer—which I do with considerable diffidence—some speculations as to the train of symptoms and the nature of the molecular changes induced.

I shall commence by soliciting attention to the *first group* of detailed cases.

In all the instances related, the immediate effects of the local injury were so transient, that, in the minds both of the patients and of those about them, they were not connected with the fatal symptoms which ensued. After the lapse of a few weeks, some exposure to cold was referred to as inducing febrile disturbance, which, instead of yielding to the ordinary means, became exceedingly severe, and proceeded, with various and anomalous symptoms, to a fatal termination.

In two of the cases, the head and intellectual faculties were materially disturbed; and although, in the third case, neither delirium nor loss of consciousness was noticed until the patient was actually moribund, yet I am inclined to believe, from the settled presentiment of death, and from other peculiarities since remembered, but scarcely noticed at the time, that the mind in this case also was somewhat affected. The constitutional disturbance was such as to excite the suspicion that the brain, the heart, or some important part of the alimentary canal, was in a state of acute inflammation; and, in two of the cases, the severity and rapidity of the symptoms were nearly as great as in cases of dissection and other poisoned wounds.

It becomes a subject of inquiry how this great disturbance is excited, seeing that it may be ascribed either to the production of a morbid poison in the system itself, or to the mechanical irritation of the nervous system by continued and unremitted pressure or distention. The latter opinion may receive some support from the relief afforded by deep incisions in somewhat analogous cases, from the transient relief obtained in the case of W. F. from the application of leeches, which could merely unload some of the smaller vessels in the vicinity, and from the similar relief afforded by taking blood from the arm, which diminished the force of

the arterial current to the affected part. The mitigation of suffering was so short as clearly to indicate that it could only depend on the temporary diminution of tension, whilst the depletion itself was rather injurious than beneficial. I am, however, inclined to give preference to the other supposition, of a morbid poison being generated in the system, analogous to that which operates in dissection-wounds, puerperal fever, cynanche maligna, and the inflammation of the aggregate glands of the ileum, when associated with the most severe and rapid typhoid symptoms. The production of small vesicles, containing puriform fluid, scattered over the surface of the body, and resembling ecthyma, but without the reddened areola, seems to give some support to the idea of a poison. I have noticed the same symptom in other cases of purulent deposit. But it may be said, how is this idea consistent with the fact of the patient going about for so long a period after the accident, without inconvenience, and in apparent health? My reply to this interesting question is, as I readily admit, purely speculative.

It seems to me that the immediate effect of the local injury is so to impair a portion of the animal tissue as to render it incapable of the proper maintainance of those molecular changes by which interstitial absorption and deposition are carried on; in fact, that the part thus damaged is very much in the state in which a portion of bone exists when it is about to become necrosed from injury. The changes which take place in dead animal matter proceed in the injured part very slowly, on account of its being protected against those agents by which such changes are usually promoted; and, in healthy persons, neither in the constitution nor in the tissues immediately surrounding the injured part, is perceptible inconvenience or derangement set up. The same is sometimes the case when a purely foreign body is so lodged. During the existence of this state of things, another exciting cause may come into operation, such as the exposure to cold in the first two cases; and the exposure to cold, and abortion, in the third. In the febrile state produced

by these causes the surrounding structures are no longer able to resist the morbid influence of the previously-injured part, in which chemical changes have been progressively going forward. So modified, it becomes a source of irritation to the parts in contact with it, and the result is common inflammation, or derangement of a more specific kind, modified by the poisonous character of the offending cause, and by the further production of a like cause in the system. When we consider the almost endless variety of principles which the elements of the animal tissues may form by slight differences in their proportions and modes of combination—a fact shown both in health and in disease; in the one case, in the varieties of the tissues; and, in the other, in the numerous kinds of morbid virus—there seems nothing forced or improbable in this supposition of the production of a morbid poison. Yet it may be asked, what are the reasons for even hypothetically supposing anything beyond ordinary inflammation? The rapid progress, the cerebral disturbance, and the remarkable constitutional depression, suggest a similarity to those diseases in which the existence of a morbid virus is supposed to operate. The altered condition of the blood, which, in the cases related, imperfectly coagulated or favoured passive hæmorrhage; the production of vesicles filled with puriform fluid; and, in one case, the peculiar odour which was exhaled,—seem to indicate the operation of a cause acting like a leaven in the system.

The very remarkable odour of malt, or saccharine matter, observed in the case of M. R., appears to be sufficiently interesting to merit a little attention—the more so, as I do not remember to have heard or read any notice of this symptom, although I have repeatedly met with it. Hitherto, I have only noticed it in cases which have proved fatal, and I almost regard it as a certain omen of death. At first I suspected that it might depend on a peculiarity of the system, dependent on the abortion which had taken place. This suspicion was rather strengthened by my next observing it in the following case, in which pregnancy was also prema-

turely and fatally interrupted. I should not here adduce it in detail, merely to illustrate the symptom now under consideration ; but, as an independent case, it seems sufficiently interesting to merit being placed on record.

M. Rivett, a patient of E. Vincent's of Stratford, who was supposed to be in the fourth month of pregnancy, on turning herself in bed, felt a sudden pain in the lower part of the abdomen, suggesting to her mind the idea that something had given way. She had before occasionally felt pain in the same part. The pain now persisted, though internal and external means were employed to obtain relief. The stomach rejected almost everything which was swallowed, and the bowels were constipated ; but this latter difficulty was progressively overcome by medicine and enemata. The abdomen became distended and tympanitic ; the pulse quick and almost imperceptible ; in fact, she appeared moribund. Small doses of calomel and opium were now ordered every two hours, with warm fomentations to the abdomen, followed by turpentine liniment. The smallest quantities of water, beef-tea, and egg and brandy or soda-water, were supplied at stated intervals only, whilst the warmth at the extremities was to be carefully supported. A mercurial liniment was applied, and a poppy or opium enema was administered. The next day there was some visible improvement. The temperature of the body was maintained ; the pulse full and soft, and the abdomen much less distended ; but the head was a little affected. A larger dose of calomel was given, and some hours afterwards the calomel and opium were resumed. Opium enemata were likewise given, and the bowels becoming relaxed, chalk, opium and starch were on different occasions employed. About this time the urine was retained, and a considerable quantity drawn off with the catheter. But this difficulty did not afterwards recur. The tympanitic distention had nearly or quite disappeared, and some hardness being felt about the right iliac inguinal region, a few leeches were applied. The calomel and opium were suspended, al-

though no affection of the mouth had been perceived. Sick-ness had ceased, and small quantities of beef-tea, rice, gruel and jelly were taken. The irritability of the bowels had so far subsided, that a gentle rhubarb aperient appeared needful, and acted favourably. The patient craved small quantities of meat, had a greatly improved appearance, was cheerful, and seemed so decidedly better in every respect, that further consultation was deferred. This improvement had persisted for nearly three days. The patient, however, not only ventured on the increased diet before mentioned; but, without permission, took a small quantity of porter and green vegetables, and underwent a more thorough arrangement of her person, including washing and change of garments. Whether any of these circumstances are to be regarded as a cause or not, a sudden relapse took place. The mouth and throat became extremely sore, but without the slightest mercurial fœtor; the breath, on the contrary, had rather a saccharine odour (the peculiar sweet smell already alluded to). The bowels were extremely irritable, and small loose bilious evacuations were frequently passed, apparently without mucus. There was so much hæmorrhoidal swelling and tenderness, that the patient could not bear enemata. There was no return of abdominal distention. A small defined resisting body was felt above the pubic region, and was supposed to be the gravid uterus. It had been noticed, as a cause for encouragement, that no threatening of abortion had been apparent. The means resorted for the relief of sickness and tenesmus proved unavailing, and the patient sunk about fourteen days from the time at which rupture of the uterus is supposed to have taken place.

The abdomen only was examined by E. Vincent and his assistant in the presence of myself.

There was little or no effusion into the peritoneum; but the peritoneal surface, the parietes and viscera were of a dark, nearly black, colour, intermixed with shades of livid red, suggesting the idea of intense inflammation with exudation of blood, rather than of a general hæmorrhagic effu-

sion into the cavity of the abdomen. There was some slight recent adhesion between the parietes and viscera. A soft flaccid foetus of about four months, which had evidently been long dead, was found amongst the obscured viscera in the hypogastric region. A large firm coagulum of blood was found in the situation in which the gravid uterus was to be sought, and was removed in conjunction with the uterus. It then appeared that the uterus had ruptured at the back part, where it was extremely thin. The coagulum extended to the interior of the uterus, though the larger part was external to it; and it was not easy to account for its collection into a defined mass in the hypogastric region, unless the membranes of the foetus had contributed to retain it. The uterus had nearly resumed the size and structure of the unimpregnated state.

The viscera, so far as they were examined, exhibited no other appearance of disease than that which was connected with the severe peritoneal inflammation before noticed.

I have distinctly perceived the same saccharine odour in a third case, in which the lady died a few days after premature confinement. But my suspicion of its necessary connection with pregnancy was wholly removed by my meeting with it, in the most remarkable degree, in a lad who died of mesenteric disease, with great irritation of the bowels. The breath exhaled the odour of malt or caromel for many days before death, and the urine smelt like sweet-wort, yet little or no trace of sugar was obtained from it by evaporation. I have perceived the same symptom in an aged patient whose death was caused by a recent attack of apoplexy.

Before I proceed to the consideration of the second group of cases of local injury, a few further short observations regarding the first group seem to be called for. It may be said, in what respect do these cases claim to be distinguished from cases of local injury of every-day occurrence? If they merit to be regarded as peculiar, why are they not more common? And if they are admitted to be both peculiar and rare, what

practical conclusion is to be drawn from them with reference to treatment?

With regard to the first point, I conceive that in ordinary cases of local injury, if not sufficiently severe to cause speedy death, some degree of local inflammation is immediately set up. This either terminates in resolution, and allows the injured part more or less to resume its former state, or, if the inflammation be more severe, produces a boundary between the injured structure and the surrounding parts, and leads to speedy suppuration, an abscess being formed which may be discharged spontaneously, or by artificial means. But instead of this, in the cases of the kind here adduced, none of these processes immediately ensues. Recovery of the injured part does not take place, and no adequate effort is made to separate the neighbouring structures from it. Whether at a later period, when an influence is exerted, common inflammation only is set up, or whether the symptoms are throughout the result of the influence of some morbid poison, I will not attempt to decide.

The rarity of these cases may depend on their occurrence requiring the combination of several peculiar circumstances: a certain amount of injury, neither too great nor too slight; some peculiar insusceptibility in the surrounding parts, and the subsequent application of a further and more general exciting cause preparing the system for the changes which take place at the time when the case comes under medical attendance.

It is not improbable that cases of this kind take place, and are almost unavoidably overlooked, from the difficulty, or even the impossibility, of discovering, after the death of the patient, that any local injury had been received. I suspect that a late excellent member of our profession, my friend Dr. Bevan, may have furnished an instance of this kind.

With respect to treatment, I can have little to offer, since in all three cases the symptoms were not connected with local injury until after death; and it was only in the case of T. F. that it was suspected before the examination of the body.

The phenomena presented by the *second group* of cases appear to me to offer a striking contrast with those to which I have adverted in connection with the first group. In the first group the vitality of the injured part appeared so reduced, that neither resolution nor process of repair took place. In the second group, on the contrary, the distinguishing phenomenon is the production of a new growth to which vital organization is essential, although this organization proves itself to be abnormal and injurious. I forbear at present offering an opinion as to the office supposed to be performed by the successive production of nucleated cells in the nutrition of old, as well as in the formation of new, parts, as there can be no question, since the researches of J. Müller, confirmed by the observations of subsequent inquirers, that such cells are present, to a large amount, in structures of the class produced in the cases in question, and probably in many other tissues. Whether the nucleated cells, produced in these cases, invariably present differences distinguishable by the eye, aided by our powerful microscopes, is still questionable; but there can be no doubt that a formative process is set up in connection with them, some of the characters of which I have already had occasion to lay before the Society in former papers. It becomes, therefore, a matter of interesting, though speculative, inquiry, how the infliction of local injury establishes this new but imperfect organization. I believe that all parts, whether old or new, can only be nourished by, or produced from, living material, and that every living cell is produced from a previous cell. If in the first group of cases the local injury was sufficient to destroy life to a small extent, in the second group, without going quite so far, it materially modified the nutrition of the parts by exerting an influence on very minute molecules. It is comparatively indifferent, as respects the present speculation, whether the newly-modified cells take their origin in such as may be proper to the injured tissue itself, or in those of the blood brought to it, for its proper nutrition; in either case the original cells are modified by the circumstances in which they

are placed. I must observe that I here employ the word *cell* as being, in the present state of our science, the recognised appellation of a peculiar class of molecules, including many varieties, from blood corpuscles to those of more irregular figure, and often of much larger size, which are met with in adventitious structures, and more especially in those of malignant character. Although many of their peculiarities have been well described, repeated and careful examination has not left me perfectly satisfied either as to their universally cellular character, or as to the extent of the operation assigned to them.

I repeat that, according to the view I am taking, it is comparatively indifferent whether the cell or corpuscle, which is to become the starting point of a new formation, be a blood disc or a corpuscle belonging to the injured tissue itself: but I conceive that in either case the important circumstance is the fact, that such molecule is modified by its being as it were incubated in a peculiar *nidus*, as the *ovulum* of a working bee may produce a queen instead of a worker, if placed in a particular part of the comb, and treated in a manner suited to produce this result. It is by no means necessary that such transformation should be immediate. A succession of transformations may intervene between the normal corpuscle and the complete production of a heterologue adventitious structure. The researches of embryologists, and more especially of Dr. Martin Barry, have demonstrated the reality and importance of the successive productions of corpuscles from corpuscles, such as are exhibited, first, in the embryo in its simplest form, and subsequently in the several textures of which its growing and superadded parts are composed. If, by these successive productions, the several tissues, such as muscle, cartilage, and the various glands, are, in the normal process, derived from the one original corpuscle which formed the starting point of the new animal, it does not seem inconsistent with probability that the corpuscles of a later generation, placed in altered circumstances, should produce a new variety of structure; and it furnishes an argument in favour of the adventitious growths in question being the result of a *degraded*

as well as *morbid* vitality, that they appear to be independent of those influences which in healthy normal structures regulate form and size, and that, in losing this control, they assume characters which they may possess not only in different tissues of the same body, but even in different species, genera and orders of animals. I have formerly given expression to the same idea, but these considerations connected with the cases brought together in the second group of this paper, seem to afford a good illustration of the principle.

When once the production of morbid corpuscles, suited to the production of a morbid tissue, has taken place, the growth of such structure at the affected part may almost be made the subject of ocular demonstration, but the subsequent appearance of a similar abnormal structure in other parts of the body is still involved in some mystery. The long period during which the disease may remain strictly local seems to indicate that in the healthy system there is some barrier to the ready transfer of the newly-formed morbid molecules to the different parts of the body; but, on the other hand, when the disease has shown itself in different parts, the striking similarity presented by the molecules taken from each of them, strongly favours the idea of family connection, and consequently of transfer.

The determination of the parts of the system in which the secondary formations are to take place is another subject of very interesting inquiry. I do not remember to have ever seen this more strikingly exhibited than in the case of W. C., in which the new growth made its appearance on the confines of the bony tissue, near its junction with cartilage. Other examples of the situation of the secondary appearance of the disease are seen when one breast is attacked after the other; also when the uterus is attacked after the breast, the pancreas after the salivary glands.

Are we to suppose that some pre-disposing cause favours the production *de novo* of the disease in each of these parts, or rather that their peculiarity consists in some power which arrests certain molecules already in the circulation, and that

so arrested, they become fresh starting points for the production of the morbid growth? I incline to the latter opinion, more particularly on account of the remarkable similarity in the microscopic characters of the morbid molecules taken from different parts of the same person.

I may perhaps here be allowed to express a doubt as to the strict propriety of distinguishing these molecules as endogenous and exogenous. I believe that they are all, strictly speaking, endogenous. I suspect that the unity, or multitude of the bright spots or nuclei, is a distinction of more practical importance.

I ventured to allude, at the commencement of these remarks, to the possibility of the function of nucleated cells in the continued nutrition and growth of some structures having been exaggerated, and I may briefly state the ground of this doubt.

In the first place, I have repeatedly sought for such corpuscles in new or growing tissues, without discovering them in any of the transformations ascribed to them. And secondly, as it is not improbable that the *liquor sanguinis* contains in solution hyaline derived from the normal corpuscles of the blood, it seems to render the intervention of other molecules for the supply of the material of growth unnecessary.

I here bring this lengthened paper to a close, after craving the indulgence of the Society, and stating, by way of apology, that having, almost from the commencement of my pathological studies, been impressed both with the difficulty and with the importance of connecting those minute molecular changes which are on the confines of visibility, or even beyond its limits, with those larger results which become the objects of demonstrable morbid anatomy, I have thought that a paper tending, however imperfectly, towards this inquiry, would not be ill-timed in the present state of our science.