Brodie, Dr. R. Bright, and many other good observers, have seen gangrene appear one or two days after an injury to the spine. It is certainly impossible to admit that a cessation of circulation could suffice to produce gangrene in so short a time. It is not pressure or the irritation caused by urine which have accelerated the sloughing process in some of those cases. At least, it is not so in dogs; as, when there is paraplegia in a dog from an injury to the spinal cord, it falls on its belly, the hind limbs being separated one from the other, and pressing on the ground by their antero-internal surface. There is neither pressure nor the possibility of irritation by urine, on the sacrum. Thus the so-called bed-sore, in that case, does not appear where there is pressure, and does appear where there is none. Neither is it owing to the lack of a supposed trophic influence that gangrene supervenes then, as it does not appear if the spinal cord is completely destroyed, instead of being irritated. I have seen normal, regular development, *in length*, of the hind legs of two kittens which had had the dorso-lumbar enlargement of the spinal cord completely destroyed. There was no other alteration of nutrition in the limb, except lack of development *in breadth*.

Neither the perfectly well established influence of the vaso-motor nervous system, nor the influence of the supposed trophic nerves, can explain a large number of physiological and pathological facts. They require a completely different explanation. Some of them tend to establish the views that the nervous system can affect nutrition either in increasing the exchanges between tissues and blood, or in decreasing or arresting altogether those changes. Other facts establish the view that vital properties in nervous and muscular tissues can be changed considerably by a purely dynamic influence—*i. e.*, without the intervention of blood. I will only mention a few of the great many facts which have led me to these views.

As regards the arrest—the suspension—of exchanges between tissues and blood, it is made quite evident in that singular kind of death which takes place sometimes when the medulla oblongata is suddenly injured. In animals, especially, I have, in such cases, seen the temperature fall at once and rapidly, the blood reddish instead of black in veins, notwithstanding the cessation of breathing and a rather contracted state of blood-vessels. These effects are so clearly due to a nervous influence, that, if the spinal cord has been divided above the origin of the nerves of the hind limbs, the injury to the medulla oblongata only produces its effects in the head and the anterior parts of the body. If, as I found a year ago, the head of an animal is suddenly turned down so that the chin comes into contact with the chest, the movements of the heart and of respiration are at once considerably diminished, the temperature falls rapidly, and the venous blood becomes reddish. In this case, as I have proved, there is an irritation of the medulla oblongata and of the upper part of the spinal cord. This cause is so powerful, that, in a case of traumatic fever in a guinea-pig, I have quickly succeeded in obtaining a lowering of animal heat, so that, instead of fever-heat (99.7°), there was, for a long time, in the rectum, a temperature lower than the normal (87.5°).

As regards a purely dynamic change of properties of muscles and nervous tissues, I will simply state that, besides the well-known phenomena of inhibition, I have found a kind of facts absolutely opposite to those in which there is inhibition. I will, for instance, mention the production of hyperæsthesia, of increase of motor power in cerebral tissues, in nerves or in muscles—all occurring even when blood could not take a share in the rapid or sudden increase of power that certain irritations produce in parts quite distant from those irritated.

ON SUPRAPUBIC LUXATION OF THE FEMUR.

By WILLIAM STOKES, M.D., F.R.C.S.I.,
Professor of Surgery, Royal College of Surgeons of Ireland.

THE opportunities for examining the parts mainly concerned after pubic luxations of the femur, or “ilio-pubic luxations”, as Malgaigne and Nélaton have, with perhaps greater accuracy, described them, occur with great rarity. This assertion can be verified by inspection of the chief pathological museums of this and other countries. The preparation which I venture to submit to the notice of this Section illustrates a rare form of this injury, and an inspection of it will doubtless be interesting to the members present. The peculiarity or exceptional character of the case consisted in the fact that the head of the femur was not displaced on the os pubis, or above or below the inferior spine of the ilium, as is the case in the few specimens of pubic luxation that are in four of the leading pathological museums of London, *viz.*, those of the College of Surgeons, St. Bartholomew's, St. George's, and Guy's; but the head of the bone lay above the os pubis and within the pelvis. It

did not, therefore, belong to any of the three forms of pubic luxation as described by Bigelow, *viz.*, the supraspinous, the subspinous, or that on the os pubis. A twofold interest, accordingly is attached to this apparently exceptional position of the head of the bone: first, in its rarity, in the absence of one of the most characteristic signs of the injury, as described in Sir A. Cooper's work, and in all the surgical text-books, namely, the globular inguinal tumour formed by the head of the bone obliterating the natural fold of the groin; and, lastly, the fact that, in the suprapubic position of the bone, there is a physical impossibility of reducing this luxation by the adoption of any of the usual methods of extension or manipulation.

The following is a brief note of the case. A young man, aged 27, a muscular, well-nourished individual, a float-driver by occupation, was admitted into the Richmond Surgical Hospital on the 30th of last March, at 5 o'clock A.M. He was carried to the hospital by some fellow-workmen, one of whom gave the following account of the accident. He—the patient's companion—was sitting on the shaft of a heavily laden float, the patient occupying the corresponding shaft at the opposite side of the cart. The narrator stated that, while driving, he felt a sudden and violent jolt, and immediately afterwards heard a cry. He stopped the cart, and found his comrade lying on his face on the road. They lifted him up, and, finding that he was wholly unable to walk, brought him at once to the hospital. The patient stated that the cause of his having fallen off the cart was that he had dropped asleep. I found the middle and ring fingers of his left hand so crushed and lacerated, as to require immediate amputation. The slightest movement of the left lower extremity caused him intense pain. After the fingers were amputated, I directed my attention to the hip, where obviously an injury of a very serious character had been sustained. I found the left lower limb everted and greatly abducted. Owing to the great amount of swelling and infiltration in the neighbourhood of the hip, accurate comparative measurements were very difficult to make; but I determined eventually that there was shortening on the injured side to the extent of over an inch. There were much swelling and ecchymosis on the front and inside of the joint, a well-marked depression at the situation of the great trochanter, and a certain fulness in the groin over the pubes, but the head of the bone could not be felt. This circumstance, and the difficulty of making accurate measurements, for the reasons I have already given, were sources of perplexity in making the diagnosis. Eventually, however, I did satisfy myself of the suprapubic and intrapelvic position of the head of the bone, and arrived at a correct appreciation, as far as the displacement was concerned, of the injury.

On the occasion of the amputation of the fingers, the patient took the ether anæsthetic remarkably well, there being no sickness or other accident whatever; and, on the operation being completed, I made an attempt, which, however, was unsuccessful, to reduce the dislocation. In the afternoon of the same day, I visited the patient, and found him still suffering great pain in the region of the hip. He had completely recovered from the effects of the ether. I left him then, having ordered a large poultice on the joint, in order to relieve pain and relax the tissues, with a view to making another attempt next day to reduce the luxation. During the night, the patient became very delirious, and vomited frequently; and, next morning, I found that his pulse had risen to 120, and temperature to 100.6° Fahr., and there was much rapidity of respiration. Having regard to these symptoms, I made (assisted also by my colleagues) an examination of his lungs, and determined that there was evidence of pneumonia, chiefly over the posterior aspect of the left lung. The question then debated was, whether the risk of again putting the patient under the influence of ether would be justifiable. Ultimately, it was determined that the disease had not sufficiently advanced to contraindicate the anæsthetic. It was obvious that all the probabilities were opposed to the attempt at reduction being successful without it; and no local application could be applied to the back of the chest, where the physical signs of pneumonia were chiefly manifest, in the condition in which he was then, as any attempt to move him caused intense suffering at the injured hip; accordingly, it was administered. Before I succeeded in reducing the luxation, I tried various methods. The first was by extension. I applied my left heel in the perinæum, and extended the limb in a direction downwards and outwards. This was unsuccessful. Then I tried manipulation, first by the method recommended by Holmes and Pirrie, namely, by flexion, adduction, and rotation inwards. That failing, I abducted the limb, rotated outwards, extended, and rotated inwards. It then became sufficiently obvious that, owing to the peculiar position of the head of the bone above the os pubis, this method could not succeed. I then raised the head of the bone by first flexing the leg on the thigh, and then placing my left arm underneath his knee; and, making use of the leg as a lever, in that way I lifted up the head of the bone from the

pelvis. Then I strongly abducted the limb, and rotated it inwards. By this manœuvre, I succeeded in changing the position of the head of the bone from above the horizontal ramus of the os pubis into the thyroid foramen. Then I rotated outwards, and the bone slipped into the acetabulum. Thus far the operation was most satisfactory, but the result of the case was very tragical. A few minutes after the reduction had been so satisfactorily accomplished, the patient ceased to breathe; and, although every means at our disposal were employed to reanimate him, it was soon sufficiently obvious that life was extinct. Although I think the probabilities are that ether was primarily the cause of death in this case, it is quite possible that other circumstances may have had much to say in bringing about so disastrous a result; first the shock of the primary injury, then the subsequent ones produced by hæmorrhage, the amputations, and the two attempts to effect reduction. Lastly, there is the view as to the cause of death which was suggested to me by Dr. Hayden, namely, that it may have been caused by a pulmonary embolism. There was distinct evidence of phlebitic inflammation in the left femoral vein, and the large number of hæmorrhagic infarctions that were observed in the left lung was eminently suggestive of embolic pneumonia. A large thrombus was found in the femoral vein, and the sudden death may possibly have been due to pulmonary embolism. I regret much that no examination of the pulmonary artery or its branches was made, with a view of determining whether there was an embolic cause for the sudden cessation of the circulation. In truth, however, the available time for making this particular necropsy was, owing to circumstances needless to detail, extremely limited.

Coming to the lesion at the hip, I found the head of the bone in its normal situation. There was an extensive rent in the capsular ligament in the anterior and internal aspect of the joint. There was also a fracture of the horizontal ramus of the os pubis; and here a most interesting problem presents itself, namely, as to whether the fracture was produced by the wheel of the cart, or by the head of the bone striking the horizontal ramus in its passage over and above it; in other words,

Suprapubic Luxation of Femur.—A. Spiculum of Bone from Horizontal Ramus of Os Pubis. B. Head of Femur displaced above Os Pubis.

whether it was what the French surgeons term a *fracture par écrasement* or a *fracture par arrachement*. The former view was the one I at first held, having regard to the great amount of comminution—in truth, pulverisation of the bone. However, on closer consideration of the case, I cannot avoid rejecting my first theory, as the pulverisation of the fractured portion of the bone may have, to a great extent at all events, been caused by the attempts at effecting reduction of the luxation. By a singular coincidence, a second case of pubic luxation, very similar to this one, occurred last session in Dublin, in the practice of Professor Bennett. In it, also, there were pulmonary complications, which were not considered to contraindicate the administration of ether. The patient was on board a steamer, and fell from the gangway, a distance of about five feet. In this case, also, it was impossible to determine with anything like accuracy the position of the head of the bone. Professor Bennett was, as I was in my case, much perplexed to make out why it was that the head of the bone was so indistinct, while all the other phenomena of pubic luxation were present and well marked. When the patient was fully etherised, careful examination detected the position of it; and, by a manœuvre and manipulation similar to the one to which I have drawn attention, the head of the bone was elevated from within the pelvis, and reduction satisfactorily accomplished.

These cases are of much interest and importance, as showing how desirable it is, in the reduction of any of the forms of pubic luxation, to relax the ilio-femoral ligament; which can, as this specimen demon-

strates, best be done by abduction of the limb. It was, therefore, a matter of some surprise to me to find, in some of the modern surgical text-books of authority, that adduction, not abduction, is recommended. The effect of this would certainly be not to relax, but to make tense, the ilio-femoral ligament, which, as Professor Bigelow has rightly observed, plays so important a rôle in everting and abducting the limb. The rule given in the text-books to which I have referred is: "Flex the leg on the thigh, and then adduct and rotate inwards." Having regard to the position of the limb, which is always, in pubic luxation, in a condition of abduction, this position should, in order to relax the tissues, be increased, not diminished. By following the rule I have quoted above, and the soundness of which I venture to question, a failure in the attempt at reduction would probably be the result. Flexion of the leg, abduction of the thigh, extension and rotation, first inwards and then outwards, should be the course adopted; and, in the variety of luxation to which I have drawn attention, and to which the term "suprapubic" is not, I think, inappropriate, elevation of the head of the bone in the manner I have described should be had recourse to, previously to rotation.

TUMOUR UNDER LEFT LOBE OF CEREBELLUM.

By D. FERRIER, M.D., F.R.S.,

Assistant Physician to King's College, and to the National Hospital for the Paralysed and Epileptic.

THE patient, the particulars of whose case are here recorded, first came under my observation at King's College Hospital, in August 1877, and continued so at intervals until his admission into the National Hospital for the Paralysed and Epileptic, where he died on August 21st, 1880.

The patient was Henry H., aged 42, a printer by occupation, married, with four children alive and well. His eldest child, a girl aged 17, died over a year ago from cerebral tumour, having become imbecile, blind, and deaf before death. He said he enjoyed good health up to two years ago. He never had syphilis. Two years ago, he began to feel giddy at times. During the last twelve months, this became more marked; and he began to "heave" to one side when walking. He "heaved" to the left, he thought; at least he felt as if he was losing his support on the left side. This tendency to "heave" was observed by others, and he was thought by those who observed him to be intoxicated. This gave him great annoyance and pain, as he was never given to intemperance. He next observed some dimness of vision, particularly in the left eye. He also, for the last six months, began to complain of pain in his head. He pointed to the occipital region as the principal seat of the pain, which, he said, was intensified when he lay on the left side in bed. He had also noticed that his speech had become rather thick during the last two or three months. He had never complained particularly of nausea or sickness since he first began to feel ill. He had gradually become deaf in the left ear.

Condition on Admission.—The patient was spare, somewhat hollow-cheeked, and with an anxious troubled expression. He answered questions very intelligently. He walked with a peculiar stiff gait, holding his head well back, and keeping his legs widely apart, the left straddling outwards more particularly. In his walk, he tended to bear to the right. When asked why he carried his body in this manner, he said he felt as if he was always going down on the left, and held himself towards the right to correct this. He could not stand still with his feet approximated, but staggered backwards and to one side, generally to the right. There was no marked difference in this respect whether his eyes were open or shut. He had no pains in the limbs, and no numbness in the feet. The movements of the arms and hands were in every way normal. The left side of the face acted less strongly than the right, and the left eye could not be closed so firmly as the right. The facial muscles of the left side reacted less energetically to faradisation than on the right. The sensibility of the left side of the face was very much blunted, both as regards tactile and painful stimuli. Speech was thick and slurring, the words running into each other. The movements of the tongue were free, but the left side of the tongue was more rounded in outline than the right and marked by teeth. The faradic contractility of the left side is also less marked than the right. The tactile sensibility of the left side of the tongue was considerably impaired, and taste was entirely abolished on the anterior two-thirds of the left side. Posteriorly, in the region of the glosso-pharyngeal, taste was distinct on both sides. Hearing was entirely abolished in the left ear, both to aerial and cranial vibrations of the tuning-fork. Hearing was normal in the right ear. The movements of the eyeballs were normal in every direction. There was no nystagmus. Sight was fairly normal with both eyes, though it was said to be slightly hazy with the left eye. Ophthalmomo-