tion returns to its place, and a tunnel is left, less in diameter than the bullet which formed it. There is no fissuring, but the exit opening has a bevelled margin.

In the bones of the horse there is, immediately under the articular cartilage, a layer of dense brittle bone, which, when struck, breaks into cuboid fragments, and becomes traversed by wide gaping fissures, which destroy the joint. There is a similar material in some of the human bones, and I have seen a fracture of the astragalus with all the characteristics described.

When the bullet strikes the compact shaft of a long bone, it produces, as a rule, extensive fissuring and little comminution. Many and large unremoved splinters, but few and small displaced and free ones result. Fissures from fractures of the shafts of bones frequently run into the neighbouring joints, and their courses may be either direct from the point struck, or from the point of junction of two intervening fissures. From what is here stated, it will be seen that a joint is less likely to be invaded by fissures when the injury is in the true cancellous tissue, than when it is in the compact shaft.

If, now, the foregoing descriptions of the injuries produced by rifle-bullets are correct, it must be admitted that its wounds represent comparatively little destruction of tissue, and are, from their nature, prone to heal with comparative ease and rapidity.

This conclusion was borne out by what I saw at Netley of rifle-wounds received in South Africa; and, as far as I have been able to learn among the wounded in Egypt, there have been observed more cases of rapid and uncomplicated healing of even severe gunshot wounds than took place before the rifle-bullet was in use.

At Port Said three gunshot-wounds came under my notice, which showed some of the points to which I have referred. At the same time two Egyptians and a mule were wounded by rifle-bullets, and, curiously enough, in each case the wound was in one or other thigh. In the cases of the men, the bullets struck their limbs somewhat obliquely, did not penetrate deeply, and, on account of involving chiefly the skin and subcutaneous cellular tissue, produced a good deal of laceration, and left open wounds. In the case of the mule, however, the bullet struck perpendicularly on the muscular mass of the thigh in front of the bone, and the animal attracted attention on account of lameness; but it was only after a good deal of searching that the very small entrance and exit-openings of the wound, from which there was no hæmorrhage, were found. The mule shared in the attention bestowed on the men, and pieces of lint and carbolic oil were applied, and bandaged on its wounds. The dressings did not remain on long, and were never reapplied, but in two or three days the animal was at its work, only showing slight lameness, and the wounds were not observable.

These cases showed that, in oblique superficial wounds, the rifle-bullet may produce much destruction of tissue; while, when it strikes a muscular mass fairly, though it penetrates deeply, its wound soon heals.

Now, with regard to the early treatment of rifle-bullet wounds, the principles which should be followed are already being recognised in military surgery, and in reference to them I make no pretension of originality. I believe, however, that it will further their acceptance to show how the practice which is being found most successful is in harmony with a knowledge of the nature of the wounds.

There should be no opening up or examination with finger or probe of these wounds. Many superficial flesh-wounds and compound fractures, where the bone is near the surface, are open after being produced; but, as a rule, where the bullet traverses muscle, with or without fracture of bone, its track closes after it, and the injury becomes practically subcutaneous.

When in wounds of the extremities there is injury of bone, the fracture should be fixed at the earliest opportunity. In such injuries, I believe, the importance of this principle cannot be overstated; and it would be well if not only the medical officers who treat, but the sailors and soldiers who suffer, were impressed with the same belief. The latter should be instructed, on having a leg or arm broken by a bullet, to keep it if possible completely at rest until they come under medical care. Remember what I have shown to be the character of rifle-bullet fractures. They are extensively fissured, but slightly comminuted. The fragments are held together by periosteum, a far from strong membrane, which probably at every movement, even the most gentle, is partly rent. With want of attention or recognition of this principle, it is easily seen, how these fractures, through rough or careless handling, become most serious injuries, and so have acquired the bad character which they possess.

These two principles I consider by far the most important in the treatment of rifle-bullet wounds, which are the immense majority of those received in modern warfare; but the kind of dressing that is

first applied is not a matter of indifference, or the system of treatment which is subsequently adopted. At the present time, it is the general opinion of military surgeons that the Listerian antiseptic system cannot, in its entirety, be carried out at the front. I am one of those who are not deeply dejected at the fact, and who do not see that the advancement of the early treatment of gunshot-wounds is inseparably bound up with the successful working of Listerism in the field. In my opinion, all that is required of a first dressing is that it shall support and protect without irritating; and the dry absorbent pads, now gaining great favour in surgical practice, when properly applied, seem to satisfy these conditions. I should rather labour to perfect a means of quickly and effectually immobilising gunshot-fractures, than one of carrying carbolic acid spray at the butts of the rifles.

Great success, which has been attributed to antiseptic treatment, followed the practice of certain surgeons, most notably Dr. C. Réyher, when attending to the Russian wounded in the late Russo-Turkish war. That much praise is due to these gentlemen for the splendid work which they did, no one will for a moment deny. They have extended our view of the range of the possibilities of military surgery; but that their exceptional results depended altogether on a more thorough application of the antiseptic system, is questionable.

In the first place, the wounds which they treated were produced by the Peabody-Martini rifle-bullet, the projectile with the smallest wounding diameter of any which up to that time had been used in war.

In the second place, Dr. Réyher, owing to exceptionally favourable circumstances, appears to have been able to observe both the principles which I have mentioned, as the most important in the treatment of the wounds with which he had to deal.

In the third place, with regard to a series of wounded knee-joints, which were most successfully treated by Dr. Réyher, as far as I am aware, no details of the exact position of the wounds have been published. I think I am justified in saying that, from the fact that rifle-bullets generally penetrate the cancellous ends of bones without producing fissures, and from the great difficulty there would be, in the absence of inflammatory symptoms in the joints, of telling whether or not they were really injured, there is a possibility that errors in diagnosis may have been made. This possibility may be very faint; but it must be considered, unless in every case the bullet traversed some part of the plain of articulation, or of the bone close to it.

I wish again to express my admiration of the work done by the surgeons to whom I have referred, and also to submit that, before their exceptional success can be altogether ascribed to antisepticism, the three considerations I have mentioned must be shown to have had no influence in it.

I have had considerable diffidence in bringing forward views which differ somewhat from those held by others, before this section, whose members represent so much learning and experience in surgery, and before its President, Sir William Mac Cormac, himself well skilled in military surgery, to whom, I wish also to add, I chiefly owe the opportunities I have had for gaining any experience I may possess.

Surgeon-Major GRIBBON said there could be no doubt that what the President of the Section had remarked, as to the necessity for having the very simplest form of first dressing on the field, was unquestionable. In Afghanistan he used lint, soaked in tr. benzoin. co. with the best effect. He agreed with Dr. Kirker that the speedy immobilising of gunshot-fractures was the first condition of their successful treatment.

TWO CASES OF PHLEGMASIA DOLENS IN THE RIGHT LOWER EXTREMITY.

Read in the Section of Obstetric Medicine.

By ROBERT ESLEK, M.D.

Senior Surgeon to the Ulster Hospital for Women and Children, Belfast.

THE interest attaching to the two cases of phlegmasia dolens I am about to bring under your notice, consists mainly in both being in the right lower extremity; in both occurring in the same hospital and nearly together; and in the additional fact, that both may be accounted for by position, as both patients lay on the right side during and after labour.

It is not my intention to make any reference to the disease in its general symptoms or treatment.

CASE 1.—On October 30th, 1883, Mrs. C., aged 30, was admitted into the wards of the Ulster Hospital for Women and Children. Her

history was as follows. She had been confined on October 7th of her ninth child. The placenta was retained, and had to be removed. About a week subsequently phlegmasia set in, and the right leg became enormously swollen. When she was admitted to hospital, the pulse was 120, the temperature 102.8°. The usual remedies were applied; the symptoms became aggravated, hectic supervened, and her life seemed to be in the balance. A large pelvic abscess formed, which was opened, and continued to discharge for a month. From this time recovery was rapid and satisfactory; and, at the end of another month, the patient left hospital. The point of interest in connection with this case of phlegmasia in the right leg is, that this patient was unable to lie on her left side, and, as a matter of fact, had been on her right side continuously from the time of her confinement.

CASE II.—Mrs. R., aged 32, was admitted on January 4th, 1884, suffering from phlegmasia in the right leg. She had been delivered of her fourth child seven days previously, had a difficult labour, and considerable hæmorrhage subsequently. This patient, too, persistently lay on her right side, owing to some chest-affection. In her case, the symptoms were less aggravated than in the former, and recovery more rapid; but posture in this case, as in the other, suggested the probable cause, and accounted for the limb involved.

Whether the cause of phlegmasia be absorption of irritating and poisonous matter only, or whether it be absorption and pressure combined, or pressure of the uterus, or of the uterus and colon, on the veins crossing the brim of the pelvis, or thrombus and embolism, or any specific poison, is a question not easily determined; but these two cases go some way, I think, in establishing the doctrine that position, with perhaps mechanical pressure added, will account largely for the limb involved in *post partum* phlegmasia dolens.

Dr. DILL (Belfast) had been for some time much interested in such cases as were so well and so clearly introduced by Dr. Esler. Until he had seen these two cases, he had never seen one of phlegmasia dolens but in the left leg; and, consequently, he was very much impressed with the idea that the disease originated with a specific poison; but he now holds the opinion that phlegmasia dolens was induced, first, by the wearing down of the system from hæmorrhage and irritation of the womb, and somewhat by the position which the patient had kept for a length of time.

The PRESIDENT (Dr. Godson) had seen more cases of phlegmasia in the right leg than in the left; and could, therefore, not accept the position-theory. He thought the uterine hæmorrhage, in both cases, and in one, the removal of the placenta by the hand, much more likely to have been the primary causes of the attacks.

TUMOURS OF THE CEREBELLUM, AND PHENOMENA ASSOCIATED THEREWITH; WITH NOTES OF A CASE, AND PATHOLOGICAL SPECIMEN.

Read in the Section of Physiology and Pathology.

By S. A. K. STRAHAN, M.D.,
Medical Officer to the County Asylum, Northampton.

THE exact part played by the cerebellum in the production of nervous phenomena is not yet determined. Various functions have been attributed to it by physiologists at different times; but, of all these, co-ordination is the only one which now stands unquestioned, and in it we certainly seem to have hit upon one true function of this organ.

The experiments of Flourens, Ferrier, and other practical physiologists, certainly prove that mechanical destruction or irritation of parts of the cerebellum destroys wholly or in part the power of co-ordination in the muscular actions, and especially in those of the lower extremities. But, while injury of a lateral lobe of this organ causes pretty constant phenomena in the laboratory, it is found that disease of a lateral lobe in most cases causes no symptom pointing at all in the direction taken by the mechanically induced phenomena. In fact, it is the rule that in cases of tumour of the cerebellum a clear diagnosis is seldom or never made during life, except in those cases in which the middle lobe is affected.

Aitken, quoting Althaus, puts it shortly thus: "Symptoms occur only when the middle lobe is affected." The study of the minute anatomy of the organ does not clear up this strange absence of symptoms in cases where the central lobe is free; and why mechanical injury should act so very differently from disease we cannot explain, or even very clearly understand.

It may be worth while briefly to record the following case, more especially as it is one of the few in which the symptoms point directly to the seat of disease, and a correct diagnosis is possible.

Charles L., aged 7, was admitted as an idiot into the asylum. He was a small squat boy, with convergent strabismus and some nystagmus. He talked incoherently in a semi-distinct manner, answered simple questions sensibly with "yes" and "no," and made peculiar noises with his mouth at times. He was dirty and destructive in his habits at first, but he improved much in this respect. He always had an awkward gait, although nimble on his feet, and he generally kept the hands and wrists half flexed, as though semi-paralysed. Co-ordination in the hands appeared good, but in the legs it was from the first imperfect; vision was good, and sensation normal.

The family-history is worthy of attention; it was as follows. His grandmother was an epileptic; his mother was an inmate of an asylum; his father had been a certified lunatic on at least one occasion, and an uncle had died in an asylum.

The boy lived five years after his admission into the asylum. After one year's residence, he began to have attacks of vomiting at irregular intervals, which were attributed to over-eating, and a year later he developed what was looked upon as true epilepsy. During the third year of residence, the fits, which had been few, began to increase in number; and he made no mental advance from this time. During the fifth and last year, he became unable to walk safely. His gait was exactly that of a child giddy from turning round; when he got started in a straight line, he would get along pretty well at a kind of half run, but when called back he would stop, sway about, and seem unable to turn for fear of falling. During the six months before death, the giddiness increased, and he was soon totally unable to walk alone, although he could do so fairly well if supported by the hands. Then he became worse, and could not stand alone. If left standing, he swung round and fell. The body did not in its gory movements always swing to the same side; the direction seemed to be determined by the relative position of the body and lower limbs at the time.

A month before death, he was found to be totally blind; but, in consequence of his limited mental development, it was not known when the optic neuritis had set in. Five years after admission (age 12), he was seized with a fit, in which he died from apnoea.

I must mention that, during the last year, when able to walk about, he was noticed to turn round when seized with a fit, and before he fell, he was seen to make more than a complete revolution.

Necropsy.—The arachnoid was thickened generally over hemispheres, and the pia mater, on removal, tore the brain-tissue considerably. The convolutions were somewhat flattened; the grey matter was thin; the sulci were shallow, and the white centres of rather more than the usual consistence; in fact, it was a typical imbecile brain. The brain could not be removed entire, in consequence of adhesion between the posterior part of the cerebellum and the dura mater. The adhesion was sufficiently firm to drag the tumour out of its bed in the surrounding softened brain-tissue. The adhesion was entirely made up of connective tissue; there was no vascular connection. The tumour lay in the centre line, and extended almost equally into each lobe. The surrounding brain-tissue was much softened, and it was impossible to make out even the arbor vitæ on section. The tumour weighed over an ounce, and made up more than a third of the whole cerebellar mass. It occupied the whole depth of the inner and posterior parts of each lateral lobe of the cerebellum, and extended forwards over the roof of the fourth ventricle to the peduncles.

NOTES OF A CASE OF INCONTINENCE OF URINE, FROM MALFORMATION.

By THOMAS MORE MADDEN, M.D., F.R.C.S. Ed.,

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INCONTINENCE of urine, although so common and generally curable an affection amongst children, is by no means, even under ordinary circumstances, unworthy of more consideration than is generally accorded to it in text-books of the diseases of childhood. In many instances, within my own experience, this complaint has proved intractable to medical treatment. Nor does even Time, that great panacea for many of the chronic diseases of youth, as universally effect a cure in such cases as some writers contend. For, in several cases, I have known the most serious consequences result from incurable or uncured incontinence of urine; and I have seen life thus rendered