

changed at the proposed seat of puncture, and the elasticity of the lung is quite sufficient to prevent any serious oozing taking place.

The method of procedure may now be considered *seriatim*.

1. What side is to be the seat of puncture? As a rule, I think the right side should be chosen if both sides are equally free of effusion, or are generally engorged. The reason for this is evident when it is remembered that such cases usually lie on that side, and consequently the congestion will be greater, and the rest to the lung afterwards will also be greater than on the left side. 2. The site of puncture should be not higher than the ninth interspace posteriorly. 3. The needle to be used is the largest usually supplied with an aspirator, the parts used being the cannula and the corresponding trocar and fittings, but it will be found advantageous in some cases to use a probe of a size smaller than the cannula. I found the suction by means of the aspirator too powerful in any degree, but there was no inconvenience from its absence, as there was not the slightest tendency in any of the cases for air to be inspired through the cannula—so complete was the congestion. 4. Mode of puncture: This should be done in one thrust, so that there be no danger of one or more small punctures of the lung. If this be not done the patient will cough and be troublesome, as the visceral layer of pleura is very sensitive, but with one thrust there is little or no discomfort. The depth of cannula introduced need not be great at first, and it could only be by great carelessness that any vessel of any size could be injured. The *tactus eruditus* will at once advise the operator of the fact that the end of the cannula is not in a free space containing fluid. 5. The cannula being steadied and the needle withdrawn, the operator should wait for a few seconds to see if any blood flows. If not, the cannula should be moved, so as to produce slight laceration, then slightly withdrawn, and usually there is a free flow. If clotting takes place, the smaller probe should be introduced and the cannula cleared. The probe being smaller, allows of blood to flow, although it may be *in situ*, and keeps any lung tissue from the end of the cannula. 6. The amount of blood to be abstracted varies according to the case and the results produced, it being as a rule less than would be required were venesection adopted. 7. The extraction requires some care. The finger should be placed on the angular aperture of the cannula, and either the needle or probe introduced along the cannula and kept there for a few minutes, to allow of clotting to take place in the lung, and then slowly withdrawn. In this way I have found no subsequent hæmorrhage or pneumothorax, and there has been slight, if any, local pleurisy. 8. The local after-treatment consists in applying a piece of plaster to the puncture, and a bandage if the dyspnoea will admit of it.

While on the subject of puncturing the lungs, I would just remark that the benefit which accrues in some cases of pneumonia, where it is doubtful whether abscess or tubercle is going to supervene, is not apparently sufficiently generally known or practised. Not long ago I was attending a boy who had a five days' croupous pneumonia, and on the seventh there was a relapse which did not resolve. There were all the symptoms pointing to suppuration or the commencement of tuberculosis—sweating, hectic, and lung consolidation, &c. Pleural effusion, serous or purulent, was excluded by exploring, and at the same time the lung was punctured in one or two places. Nothing was obtained except a small quantity of blood and pus cells, but from that day the temperature was never so high and resolution commenced. The change in the percussion note and auscultation in a week's time was remarkable.

In another case in which there were similar symptoms, I aspirated about one drachm and a half of purulent débris from the base of a lung, and though subsequent explorations failed to strike any more, the patient completely recovered. The proceeding is so simple that it should be much more frequently used, and when antiseptic principles are practised the danger is practically *nil* and the results are good. Whether *post hoc* or *propter hoc*, each one must be the judge. The anatomical relations of the chest wall to the lung absolutely preclude the idea of anything approaching direct depletion by means of application to the parietes, thus agreeing with the condition of the liver, and contrasting with that of the kidney, where a certain amount of direct depletion can be effected. This is because of the fact that the kidney lies in, and its vessels have certain anastomoses with, the vessels of the surrounding connective tissue. Whether this method could be used in bad cases of acute pulmonary congestion, in which stimulants and other treat-

ment failed, I cannot say, but under such circumstances I see no reason why it should not be tried—at least, there are no grounds for supposing that it would put the patient in a worse condition. The ultimate result in the latter two of my cases was hardly preventable by human means, but they served to show that pulmonary depletion in a direct way alleviates symptoms which vigorous treatment in other directions had failed to do.

Stoke Newington, N.

## NOTES OF THREE CASES OF SEVERE INJURIES CAUSED BY THE EXPLOSION OF A CANNON DURING A GUY FAWKES' CELEBRATION.

By WM. BERRY, F.R.C.S.I.,

HON. SURGEON TO THE ROYAL ALBERT EDWARD INFIRMARY, WIGAN.

CASE 1. *Impaction of an iron rod in the face; removal; recovery.*—On Nov. 5th, 1889, at 8.30 P.M., I was sent for to see J. G—, aged seventeen years. The messenger informed me that a cannon had exploded, and a piece of iron had gone up his nose, and could not be removed. On my arrival I found him perfectly sensible, reclining on a couch in the kitchen, holding a handkerchief to his forehead, with a round piece of iron apparently projecting for about a quarter of an inch from the left nostril. The left eye appeared pushed forwards, swollen, and partially open; pupil widely dilated. I seized as much of the piece as I could between my finger and thumb, but found it firmly embedded in the face. I then got a handkerchief, and seized the end, and rotated right and left, and I found that with a little exertion I could twist it round, and in a few seconds I succeeded in removing a rod of iron, the upper end or head having been firmly embedded under the left malar bone. This piece of iron is four inches and a half long, the diameter of the head is one inch, and it weighs four ounces and a half; it had entered just below the left nostril, the alveolar process of the left maxillary bone, and had passed obliquely upwards and outwards into the spheno-maxillary fossa, pushing the eyeball forwards and outwards. There was not much hæmorrhage or shock; the pain was great when I plugged the wound with dry lint. On Nov. 6th I removed the plug and syringed with weak carbolic lotion, and plugged with lint soaked in carbolic oil. There was a good deal of oozing the first two days. Small pieces of bone came away with each syringing. The pain over the left eye was very intense, and the eyeball stood out prominently between the half-closed lids. On the 8th the patient had a bad night; he was very restless, and in great pain. The wound was syringed and plugged as usual. He seemed stupid, and was kept in bed with great difficulty. A mixture containing ten-grain doses of bromide of potassium was ordered to be given every two hours, and cold applications to be applied to the head.—9th: Wound looks well and is discharging freely. Patient is getting unruly and difficult to manage. Symptoms of meningitis seem to threaten.—10th: Patient much as usual. Takes plenty of bread-and-milk and beef-tea.—12th: Patient more rational and not so drowsy or difficult to manage. Wound now syringed twice a day only with carbolic lotion, and no plugging.—15th: Symptoms of meningitis are passing off and he takes more notice of what is going on. Thinks he can see light with the left eye.—18th: He improves every day, and can now sit up each day a little; not much discharge from the wound. He improved daily, and my attendance ceased on Dec. 6th, and it was Dec. 31st before he could see with any degree of perfection with the left eye.

CASE 2. *Compound comminuted depressed fracture of the skull; hernia cerebri; death.*—J. R—, aged twenty-one years, was injured at the same time and place as Case 1. He was taken to the Royal Albert Edward Infirmary, and admitted under my care. When I saw him about two hours after the accident he was in the operating theatre, and we found a lacerated wound extending upwards and backwards for about two inches from a point just in front of and above the left ear; in this wound a fragment of bone could be felt and a foreign body seen projecting in the angle of the wound. The wound was enlarged and the foreign body with difficulty extracted by a pair of strong forceps, as it was firmly wedged in the bone. It proved to be a piece of brass, one end of which was solid and the other hollow, to

form a female screw; it was nearly 2 in. long and  $\frac{3}{4}$  in. in diameter, and weighed  $1\frac{1}{2}$  oz. This had been used as a portion of the charge for the cannon. The bone was very much shattered, and the inner table was more damaged than the outer; one large piece was driven in upon the dura mater, but did not appear to perforate it. Many loose fragments were removed, and a gap was left in the cranium  $2\frac{1}{2}$  in. by  $1\frac{1}{2}$  in. Pulsation was not perceptible through the dura mater. The wound was then washed in carbolic lotion and all bleeding checked, iodoform dusted over it, and a carbolic pad of absorbent wool applied. An ice-bag was applied to the head and a dose of calomel given.—Nov. 6th: Patient unconscious; evening temperature  $100^{\circ}8'$ .—7th: Still unconscious; temperature  $99^{\circ}$ .—8th: Temperature  $100^{\circ}8'$ . Still lies unconscious; pulse slow and full; stertorous breathing and dilated pupils.—9th: Bowels had been well cleared out, but no improvement of symptoms. An incision was made into the dura mater, and a large amount of clot escaped, and the wound was washed out with boracic acid lotion.—10th: Consciousness is partially restored, and he is able to recognise his friends. There is free discharge of blood and serous fluid from the wound, and a portion of brain matter is filling the bony opening.—14th: Improvement continued till to-day. Now he began to have difficulty in expressing himself, using words in their wrong places, and mixing up one word with another. Temperature  $102^{\circ}8'$ , and he became unconscious again. Hernia cerebri was well formed, and we had a fungoid mass two inches square on the scalp. We dusted this with boracic acid powder and applied compresses of lint, but could not keep it down, a portion of it sloughed off and became very foul.—16th: Temperature  $104^{\circ}8'$ . Still unconscious. Quinine and bromide of potassium were now given in full doses.—18th: Slight improvement. Temperature  $102^{\circ}$ . He relapsed again, and on the 22nd the temperature rose to  $104^{\circ}$ . He became very restless, and was quite unconscious. He gradually got worse, and on Nov. 28th a convulsion terminated his existence.

CASE 3. *Severe injuries to left hand, compound fracture of fingers, &c.; recovery.*—W. D—, aged twenty years, was also injured by the same accident, and taken to the Royal Albert Edward Infirmary. On examination, the thumb of the left hand was found to be completely separated at the carpo-metacarpal joint, with the exception of a little skin. The proximal phalangeal joint of the middle finger was laid open, and there was a compound fracture of the middle phalanx of the ring finger. There was much laceration of the soft parts, but the main vessels and tendons had escaped. The hand was much blackened, and apparently burnt with the powder. The thumb was removed and the middle and ring fingers cleaned and fixed in a splint. Iodoform was dusted over the wounds and boracic acid fomentations applied. The evening temperature on Nov. 6th, being  $102^{\circ}6'$ , the hand was immersed in a bath of sanitas solution. There was much sloughing, and the temperature varied till Nov. 12th, when it sank to  $99^{\circ}4'$ . The dressing was now changed to carbolic oil (1 in 20). The ring finger became gangrenous, and was amputated on Nov. 13th, when the remaining injuries and lacerations appeared to be doing well. He was discharged on Nov. 20th at his own request, and it was ascertained that he lost another finger by sloughing.

*Remarks.*—In Case 1 we had severe injuries to deal with, and of such an extent that we could not actually gauge them; for some time I was afraid there might be fracture of the base. Then, again the symptoms of meningitis with risk of effusion had to be taken into consideration. It is remarkable, therefore, that the patient made so complete a recovery with so little trace of the injuries. The only trace of the deformity is a slight dimple under the left nostril in the upper lip. No doubt the careful nursing and his robust constitution contributed in a great measure to his perfect recovery. In Case 2 the comminuted state of the skull and the effusion under the dura mater rendered the case a very serious one from the first. The improvement after opening the dura mater and washing out the clot was very marked, but the extensive hernia cerebri and surrounding meningitis were too much for the patient. Case 3 was only remarkable for the extensive lacerations of the fingers and hand. For the reports of Cases 2 and 3 I wish to acknowledge my indebtedness to Mr. J. A. Barnard, M.R.C.S. and L.R.C.P., our late senior house surgeon, and to Mr. E. C. Lomas, M.B., Ch.B. (Vict.), M.R.C.S., our present senior house surgeon.

Wigan.

## A CASE OF RAYNAUD'S DISEASE.

BY LOUIS E. STEVENSON, M.B., B.C. CANTAB.,  
HOUSE SURGEON TO THE CUMBERLAND INFIRMARY, CARLISLE.

MARGARET L—, aged twenty-five, was admitted to the Cumberland Infirmary under the care of Dr. Lediard on Feb. 12th, 1890, complaining of great pain in her left foot and loss of feeling. On admission it was found that the fore part of her left foot and the ends of the second and third toes of her right foot were gangrenous. The history of her illness was as follows: Three months before admission the right foot began to have attacks of numbness and coldness every other day, and the numbness was followed by blueness and congestion with severe pricking pains, the parts gradually returning to their normal condition. One month before admission the second and third toes of the right foot suddenly became very painful and turned black. Bullæ formed and burst and blood-stained serum exuded. On admission the last phalanx of the second toe and the tip of the third toe were gangrenous, but there was no pain at all in this foot. The dorsum of this foot had a curious, red, mottled appearance. A fortnight before admission the left foot began to be exceedingly painful. For a month before this the foot had suffered in the same way as the right had done from numbness, and subsequently congestion. On admission the fore part of the foot was darkly discoloured with blebs forming on the upper surface. The skin of the dorsum had mottling similar to that of the right foot. She has never suffered from "dead finger;" has never had numbness or congestion of fingers or ears; has eaten rye bread regularly since the age of thirteen. No history of hæmaturia; no history of nervous depression; but she is evidently neurotic, laughing and crying with small stimuli. Is married. Has had three children; two dead; last child eleven months before admission. No menstrual troubles. No inflammatory attack after last child. Does not think she was pulled down in health by last childbirth. Has not been doing hard work lately, and has had no injury to feet. Has had numbness up to the knees in the left leg, up to the groin in the right leg, and cramps in both legs when the feet were numb. Has had no visual troubles; urine normal. Ordered on admission a mixture containing two grains and a half of sulphate of quinine with fifteen minims of hydrobromic acid to half an ounce of water, twice daily.

March 5th: Feet wrapped up in cotton-wool and dressed with iodoform. Good line of demarcation in the left foot. The skin is involved to a greater extent than the deeper structures. The terminal phalanx of the second toe of the right foot has nearly separated, and a small bit at the end of the third toe. Has had no pain in the right foot since admission.—16th: The little toe of the left foot sloughed off.—28th: Sloughs on right foot separated to-day, leaving healthy granulating surfaces beneath.—23rd: The line of demarcation on left foot very well marked. The toes and about three-quarters of an inch of the skin behind them on the dorsal and plantar surfaces separating off. No pain; temperature normal, and no cramps or numbness of the legs since admission. No finger, ear, or nose numbness.—April 1st: Separation taking place in the left foot very well. The heads of the metatarsals are exposed in the granulations. The right foot has almost healed.—11th: Had complete loss of vision, coming on suddenly for two or three minutes to-day, not lasting long enough to admit of ophthalmoscopic examination.—15th: Since the 11th has had two or three attacks of dimness of vision. No pain in connexion with dimness. Toes sloughed away on the 14th.—May 8th: Healing up slowly. After knitting about an hour her eyes feel dim, she says, and she cannot see her work, although when she looks at things at a distance her vision is perfect.—19th: Right foot has a curious mottled appearance, blue, yellow, and red areas intermingled; feels cold as compared to left foot. All toes of the right foot have the appearance of being badly nourished. Mottlings extend up legs almost to knees.—June 3rd: Healed up. Arteries of limbs appear small.—4th: Discharged. To report herself at intervals.

*Remarks.*—I am indebted to Dr. Lediard for permission to publish this case. The chief interest of the case, I think, lies in the visual troubles, which were due to spasm of the arteriæ centrales retinae, and this is a rare phenomenon in