

water), closed with silver sutures, and fitted with a drainage-tube (a suitable form of which Mr. Callender had had made). After this, layers of lint dipped in carbolised oil (1 in 12 of olive oil) were laid over the line of incision or over the laceration, and over these a quantity of cotton-wool for warmth and protection. After the dressing the wound was placed in such a position as to secure absolute rest. After the first day the drainage-tube was generally removed, and the dressings were applied as before. No special provision was made for excluding the air. As far as practicable, each case was placed between patients free from wound or discharge; and the wound was cleaned, by means of a camel-hair brush, with a solution of carbolic acid in five parts of spirits of wine. Mr. Callender remarked that in this plan antiseptic treatment was used in a limited way; and that the results which he brought forward showed that, with the exercise of proper care and supervision, patients did as well in a large hospital as anywhere else. Sir John Rose Cormack (Paris) said that he had, during the two sieges of Paris, treated a great variety of the worst description of shot and shell wounds; and he had seen similar cases treated contemporaneously by others; and his firm conviction was, that the success was not so much with the skillful operator, as with the man who patiently and with scrupulous care conducted his dressings, and attended to the hygiene of his patients. Mr. Lister's system was not adopted in the American ambulance, nor in either of the hospitals of which he (Sir John Cormack) had charge; and yet in all these the success was very remarkable. The system which Sir John Cormack adopted (varying it according to circumstances) was to tide over the period of shock by large opiates; to use in all the dressings abundance of *etoupe goudronnee*, or oakum, which, from its antiseptic properties and its power of absorbing the discharges, as well as its elasticity, was used universally in the American and English ambulances. He gently washed the wounds and the surrounding parts at each dressing with creosote water, to remove adherent noxious discharges; and the crevices were carefully cleansed by injecting the same fluid. When necessary and at all possible, incisions were made, and drainage-tubes were used to prevent the accumulation of discharges in crypts or pouches. The very simple and effectual method suggested by Mr. Callender, of lightly brushing out the cavities with a camel-hair pencil, would no doubt have answered as well as, and in some cases perhaps even better than, the syringe. He attributed much of Mr. Lister's success to the general medical and hygienic treatment which that gentleman strenuously carried out, rather than to the niceties and complexities of his special system. In support of his views, Sir John referred to some of his cases of lacerated wounds and amputations, in which, he believed, recovery was mainly attributable to the system which he briefly described, and, in some instances, to the additional precaution of changing the personal and bed-linen once, and sometimes even more frequently, in the course of the day. This had been done in one case where the patient had seventeen lacerated

wounds, and made a good recovery. An additional precaution was generally taken—to wit, having the patients carried out on stretchers to the free breeze of the garden, whenever the weather permitted, so that their bedding and the wards might be cleaned. In addition to this, the floors and beds were regularly watered with creosote water several times a day. Mr. Hey (Leeds) had given Mr. Lister's plan a fair and unprejudiced trial, but repeated experience of it had convinced him that, even when carried out carefully by Mr. Lister's own pupils, the method showed no superiority over a simple plan of treatment, such as that employed by Mr. Callender. He had even seen union delayed in wounds by reason, as it seemed, of the employment of the more elaborate antiseptic dressings, although in other cases it answered all expectations. Mr. Callender, in reply, pointed out that his plan involved absolutely no precautions against the admission of air, and could not, therefore, be considered as a proof of the superiority of Mr. Lister's method of 'antiseptic' treatment.

ESMARCH'S METHOD OF PREVENTING HÆMORRHAGE DURING OPERATIONS.

Professor Billroth writes to the *Wiener Medizinische Wochenschrift*, July 19, 1873, on Esmarch's method of bloodless operations. Billroth says that Esmarch belongs to those German surgeons, of whose communications it may be observed, that the facts therein stated are carefully and accurately recorded; and that, although he did not entertain any doubt as to the truth of Esmarch's observations, he was unable, before he had himself applied the method, fully to realise the complete nature of the local anæmia which might be thus produced. Altogether he had tried it in fourteen cases: two extensive operations on necrosis of the tibia; three resections and extirpation of bone in the foot; two resections of the elbow-joint; two Chopart's amputations; four amputations of the thigh; and one disarticulation of the hip-joint. In twelve of these cases, the result obtained by Esmarch's apparatus was complete and successful. In two cases it was incomplete, for the following reasons. In one instance a large cicatrix on the back of the knee, following a burn, had bent the knee to a right angle with the leg, and hindered the India-rubber band from exercising efficient circular compression; the smaller vessels were closed, but the main artery required to be compressed in the groin; some blood also flowed from the distal vessels. The imperfection might have been remedied by placing a pad in the popliteal space, or, perhaps, applying the compression a little higher up the limb. The second case where the compression was incomplete, was one of disarticulation of the femur, under somewhat peculiar circumstances. A man, aged forty-five, worn out by excess in drink, had amputation of the thigh performed on account of disease in the knee-joint. The patient survived the operation, but the stump did badly, and six months later two inches of bone were excised. The wound still did badly. Billroth determined to split the other side of the stump, separate the periosteum from the bone,

and remove the remaining portion of the femur. The operation was easily accomplished; the India-rubber rope was passed round the perinæum, and over the anterior superior spine of the ilium, thence over the gluteal muscles. The aorta also was compressed. Though the bleeding was much lessened, it was not prevented. Of the fourteen cases, eleven were completely cured, or approaching a cure, at the time when the author wrote. Three patients died; the case of disarticulation of the femur, and two of amputation of the thigh.

Billroth attempted to perform one of these operations without chloroform, supposing that local anæsthesia, as well as local anæmia, might be produced by the constriction, but there was no diminution of the amount of pain produced, at all events immediately; but it is suggested that further experiments in this direction should be made. In cases where amputation is performed for gangrene, or where septic abscesses exist, it may be dangerous to apply the elastic bandage, lest some of the poisonous material be forced into the circulation. Under these circumstances, it would be better to apply the circular compression only.

Mr. William MacCormac says the plan has been now tried in St. Thomas's Hospital in cases of amputation, excision of the knee, operations on necrosis, &c., with unvarying success, not a drop of blood appearing in the wound during the entire period of the operation.

Dr. Arthur Menzel, of Trieste, relates, in the *Gazzetta Medica Italiana-Lombardia* for June 14, a case in which he applied, with success, the method recommended by Esmarch, of Kiel, for preventing hæmorrhage during operations on the lower extremity.

The patient was a tall, thin man, aged sixty-five, who had, on the inner side of the left thigh, at the upper part, a tumour as large as the head of a newly born child. It had been growing five months, and had produced scarcely any pain. It was hard, with an unequal surface, and could be moved laterally, but not upwards or downwards. Dr. Menzel diagnosed the tumour to be malignant, and recommended its removal, which was agreed to by the patient.

A bandage was applied to the limb (except over the tumour), and the thigh was compressed immediately below the groin by four turns of strong India-rubber tubing. An incision ten inches long was then made, and the tumour was found to be intimately adherent to the muscles, especially the semi-membranosus and semitendinosus. The femoral artery and vein, and the saphenous nerve, ran through its centre. The artery and vein were tied at each end of the tumour, which was then removed. There was then found another smaller tumour adherent to the periosteum; this was also removed. The operation (including the time taken in inducing anæsthesia) lasted three-fourths of an hour. Not a drop of blood was lost. In order to see what the bleeding would have been if the elastic tubing had not been applied, Dr. Menzel loosened it for a moment, and immediately the blood began to escape from numerous deeply seated muscular branches. When the elastic ring was removed,