valescent in a fortnight, having suffered the very smallest amount of inconvenience possible.

These cases are chiefly remarkable on account of forming a series very similar to each other in most important particulars, and in none more than the marked smallness of the mortality, or, indeed, of any serious consequences whatever attending them. The majority recovered rapidly. This fact has been observed in other wars with regard to wounds of the face. We had, also, a very large number of wounds traversing the neck in various directions without injuring important parts. In one case only was the trachea wounded.

CASE XVII.—Farjonel was struck by a ball which entered in front of the left sterno-mastoid muscle, and emerged just above the centre of the right clavicle, wounding the trachea in its passage across the neck. During respiration, the air flowed freely out of each aperture. He made, nevertheless, a good recovery.

There must, doubtless, be many instances of wounds of the front vessels of the neck, but these die immediately, and are never carried off the field at all, while the surgeon has his hands too much occupied with living wounded to have time to examine the injuries received by the dead.

Coming a little lower down in the body, there were under our care three cases in which the clavicle was smashed by a ball, which afterwards wounded the lung. In one of these I found it necessary to excise one third of the clavicle. In a second, the ball was cut out behind, having traversed the lung with a piece of the clavicle sticking in it. These two patients died. The third recovered; in him, the ball, besides fracturing the clavicle, had passed through the infrascapular fossa of the scapula, starring it. In all these there was profuse hæmoptysis.

The longest day must come sometime to an end, and so did the 2nd September. It was only in the evening that we learnt authoritatively what our position really was. General De Wimpffen, who succeeded MacMahon in command of the army, when the latter was shot through the thigh, posted a proclamation in the town, in which he announced that he felt constrained to capitulate in order to avoid an useless massacre; that the whole army could have been destroyed, without being able to reply even to the enemy's fire; and that, further, when on the evening before he had appealed to the courage and devotion of his troops to make a sortie and cut their way out through the German lines, only two thousand men could be found to rally round his standard.

September 3rd.—It was raining heavily all night, and the unfortunate soldiers must have found it difficult to keep their fires alight. They could not have slept much, as nearly all night we heard the confused humming noise which a mass of men so crowded together is sure to make. In the morning they presented a sad and sorry plight. Outside the town we saw the German troops being paraded, and could hear distinctly the huzzas and cheering with which they received the news of their wonderful success when the king passed them in review. About nine in the morning, to the strains of splendid music, the Prussians marched into Sedan, occupying as their head-quarters the Sous-Préfecture, which the unfortunate Emperor and his staff had only left a few hours before. I was particularly struck by the fine appearance of both men and officers, and especially by their horses. They looked more as if they had just left the parade-ground in Berlin than like troops who had been for two months campaigning in the heart of an enemy's country. During the day a little episode, somewhat exciting, took place. A patrol of soldiers came up to take possession of the barracks. Chizelles and I went to the gate to meet them, on which they levelled arms at us. We explained that we had no soldiers amongst us, but only wounded, both French and German, in the barracks. Immediately on receiving our explanations they retired, expressing themselves as perfectly satisfied; and from that time forward we were in no wise interfered with by either the Prussian medical or military authorities, except in one particular, which is a matter requiring an explanation, which I will now make. For the first fortnight we had for the nursing of our patients to depend exclusively upon the service of military *infirmiers*, or nurses. Several of these men were most excellent fellows; some were quite invaluable, having received a thorough training in nursing the sick and dressing wounds at the great French Military Medical School of Val-de-Grâce. Others, again, were as bad as these were good. There is a regular service of *infirmiers* in the army, and these men are held to be inviolable, just as the sick themselves, or the surgeons are, according to the terms of the Geneva Convention, to which both French and Prussians had agreed. Under these circumstances we were made very indignant when, on two occasions, a large number of our *infirmiers* were marched off and sent prisoners to Prussia. The first abstraction took place on September 10th. We then got a fresh supply, with the assurance that these should be left to us; and again on September 15th a large proportion of them were removed, after we had had both times

all the trouble of training them, as well as they could be trained, to their work. The annoyance and inconvenience, and loss in every way, both to ourselves and to our patients, can, perhaps, be imagined, but scarcely described. Besides, it seemed a direct violation of the Geneva Convention. What, however, I did not discern till afterwards was, that only those men not regularly inscribed as *infirmiers* were removed. The staff of *infirmiers*, properly so-called, was never interfered with. This statement I make on the authority of the French officier d'Administration, M. Billotte, with whom we were associated, and whose valuable assistance on all occasions I wish to acknowledge in the strongest manner. The Prussian authorities were distinctly *dans leurs droits* in seizing upon those *quasi-infirmiers*. But their action did not on that account embarrass us the less; and when it is considered that there were twelve thousand five hundred wounded French soldiers alone accruing from the battle of Sedan, one cannot help wishing that the Prussian Commandant of Sedan might have been a little less exigent.

We received only twenty-two fresh cases that day (Sept. 3rd), and there were comparatively few out-patients to look after; but, if so, of work inside the Hospital there was no slackness. There were still several cases requiring operation, and many amputations were performed that day. It is unnecessary to go into details about them at present, further than to say that in every instance chloroform was employed; that during the operation bleeding was controlled by digital pressure—the tourniquet I never used; and that the arteries were twisted, not tied, with the exception of the first few cases. Unlimited torsion was the method employed. The amputations were performed by long anterior and shorter posterior flaps cut from without inwards, never formed by transfixion, and embracing only the skin and its subcutaneous connections, or sometimes a thin layer of muscle, but the general mass of muscles was divided by a circular cut of the knife. Wire stitches were employed to unite the edges of the flaps, leaving usually a portion unclosed to allow the easy escape of the discharges. The dressings were very simple, consisting of a few strips of lint dipped in carbolic lotion, or a turn or two of bandage to keep them in their place.

The resections of the elbow and shoulder were done through a single straight incision—in the former case behind the joint, in the latter in front, unless when the scapula was injured, and then the incision was made from behind. The knee-joint resection was made through an oval incision from the front.

CASE OF SUCCESSFUL OPERATION FOR NON-UNION AFTER RUPTURE OF THE LIGAMENTUM PATELLÆ.

By JOHN J. HILL, L.R.C.P.Ed., Government Surgeon, Lambton, New South Wales.

ON May 24th, 1869, Charles V., a miner, aged 20, whilst jumping, felt something give way over his right knee, and immediately found his leg powerless. The knee-cap was pulled upwards four or five inches from its natural position. He was at once seen by an unqualified practitioner, who bandaged the limb and kept him in bed for a few weeks. On his getting up, the leg was found to be useless. His medical attendant then advised him to sit on a table and swing the leg backwards and forwards several times a day. As this did not effect a cure, the limb was put up in starched bandages; but, as no improvement took place, he discarded the bone-setter and consulted several surgeons, who all came to the conclusion that the ligamentum patellæ had been ruptured, and had healed without adhesion between the ruptured portions, and that nothing could now be done for the improvement of the limb except the use of an artificial knee-cap. This was tried, but with very little advantage.

I was then consulted, and, on examination, found the patella about two inches above its natural position, and quite moveable laterally. The lower end of the ligament could not be detected. The patient had no power of extension in the limb, and walked with crutches, dragging the limb after him.

After due consideration, I determined, with the patient's permission, to cut down on the two ends, scarify them, and then bring them together and endeavour to procure adhesion. Accordingly, on August 28th, I made a longitudinal incision, about two inches long, over the knee. I found that the rupture had occurred just at the juncture of the ligament with the lower edge of the patella, and that there was a quantity of adipose tissue intervening and separating the two surfaces. I scarified the ligament, and scraped and notched the edge of the patella; and, having placed the limb on a grooved straight splint running from the heel to the buttock, suspended the lower end in an

elevated position, so as to relax the extensor muscles as much as possible. I then adjusted the scarified ends, and, having closed the wound, fixed a leathern collar around the limb above the patella; and by means of lateral cords attached to this and drawn tight beneath the sole of the foot the displaced bone was kept in its natural position. I also fixed another collar around the limb below the knee, and, strapping it tightly to the upper one, forced the lower portion of the ligament into apposition with the patella. Perfect rest was enjoined, and cold water dressing applied around the knee. On the following day, the patient was comfortable and the knee cool; pulse 90. On August 30th, the knee was considerably swollen; the pulse was 100. It was necessary to loosen the straps. On August 31st, this swelling was decreasing; pulse 95. On September 1st, the swelling was gone; pulse 80. After this, all went on well, the wound soon healing. The limb was kept on the splint for six weeks; and, on its removal, I found that he could lift the extended leg off the bed, showing that some adhesion had taken place.

He remained in bed for a fortnight longer, and was then allowed to get up with a straight splint on behind the knee. After a few weeks, this was removed, and the power of extension was found to be perfect. On January 1st, 1870, he resumed his work as a miner, and reports that he finds the leg as strong as the other one.

THE THERAPEUTICS OF THE SEA-SIDE: WITH SPECIAL REFERENCE TO THE NORTH-EAST COAST.*

By GEORGE OLIVER, M.B.Lond., Redcar.

ACCORDING to the experiments of Beneke, it would appear that, when persons from inland places are subjected to the influence of sea-air, and *à fortiori* to sea-bathing combined with sea-air, disintegration of tissue (as indicated by the excretions) is augmented; but this is more than counteracted by the ingestion of new material, so that the body gains in weight and energy. Some difference of opinion has been expressed as to the value and reliability of Beneke's experiments; and though it would be more satisfactory if they were confirmed by further experimental investigation, yet our knowledge of the physical constitution of sea-air, and unbiased observation at the sea-side, corroborate Beneke's conclusions.

Apparently the same end is obtained by sea-air and by sea-bathing—namely, a tonic effect. Yet it would seem more than probable that in some respects the mode of action of sea-air upon the body differs somewhat from that of sea-bathing. Sea-air, for instance, according to Dr. Burdon Sanderson (*British and Foreign Med.-Chir. Review*, Jan. 1856) and other observers, has an evaporating power, on an average, at least twenty per cent. less than that of the air of inland places; it is therefore highly probable that cutaneous and pulmonary evaporation is lessened by sea-air. On the other hand, sea-bathing acts powerfully upon the skin and lungs, moderately upon the kidneys and bowels. We have here possibly a reason why sea-bathing, and in particular tepid and warm sea-water baths, which stimulate the skin more than sea-bathing does, and much more than plain water, should to some extent prove supplemental, or rather corrective, to the action of sea-air, in some instances in which this alone appears to exert a prejudicial influence. I have now and then met with persons from inland localities complaining of loss of appetite, languor, and almost constant headache—apparently sufferers from the direct effects of strong sea-air—who have derived much benefit from warm sea-water baths and sea-bathing. When sea-air appears to disagree, and in particular when the skin is inactive, I frequently prescribe salt water baths, and I am convinced of their utility in such cases.

Perhaps the best and most obvious indication of the beneficial effects of sea-air is an increase of appetite. I have sometimes observed the appetite impaired for a short time after arrival at the coast, as if the primary effects of sea-air were too powerful for the digestive organs; but, after a while, nature generally restores the lost balance, and often with a rebound in the opposite direction. When the appetite remains for many days or weeks below that usual with the individual, notwithstanding careful attention paid to the bowels, and especially when at the same time there exist headache and feelings of lassitude and depression, we suspect that sea-air is acting injuriously. It is very often extremely difficult to trace the causes or conditions which determine the prejudicial effects of sea-air. According to my own observation, they have been most frequently met with in nervous irritable

subjects, whose powers of digestion are habitually feeble, and in particular in delicate females about the age of puberty or at the climacteric period. In such cases, tepid and warm sea-water baths do much good. Now and then, I have found a very liberal allowance of alcoholic stimulants very useful in apparently counteracting the over-powerful effects of sea-air. I have met with several persons who have found stimulants a necessity at the coast, but who, while inland, could do without them. As a rule, when alcoholic beverages can be dispensed with, much more benefit is derived from the sea-side without them.

Our knowledge of the effects of sea-air on disease is to a large extent corroborative of the results of scientific inquiry into the physiological action of it. Dr. Parkes observes (*The Composition of the Urine, &c.*, p. 115): "The extraordinary tonic and alterative effects of 'sea-air' on the inhabitants of inland places, entitles sea-air to be classed among remedial agents rather than among ordinary physiological conditions." Undoubtedly the term "tonic" embraces in great part the therapeutic action of sea-air; but the experience of the profession has shown it to be specially useful in certain classes of cases.

The climatic conditions of marine health-resorts differ very considerably; even if it were not difficult to draw from them conclusions as to the effects of sea-air *per se*, the practical value of the knowledge gained would be trifling. Hence the results of individual experience will probably be more useful than general remarks concerning the effects of sea-air on disease. I hasten, therefore, to give a brief outline of my own impressions of the therapeutic action of sea-air at Redcar, and Saltburn on the coast of Cleveland. The climate of this portion of Yorkshire is similar to that of the north-east coast line—dry and bracing; and during the spring, keen and irritating to the weak chest. A broad, firm, and sandy beach extends for a distance of about ten miles along the coast; the waves are constantly breaking over it, and charging the air with a fine salt spray. At Redcar, which is nearly on the sea-level, because of a projection of the coast, currents of sea-air are almost constantly circulating over the place; in fact, this is exposed as very few watering-places are to the full influence of the sea; hence the air is nearly always recognised as strongly marine. The beach forms a magnificent natural promenade close to the breaking waves, where undoubtedly sea-air is strongest. At Saltburn we have beautiful rural scenery side by side with all the advantages of the sea-shore—a charming combination, which will secure for the place a most prosperous future.

The coast of Cleveland has appeared to me specially useful in the following classes of cases.

1. *Convalescents*.—Sea-air is undoubtedly more powerful as a restorative agent than is the atmosphere of inland places; it greatly accelerates the production of new tissue, and the collection of lost energy: hence sea-air is a natural tonic agent specially called for during the period of convalescence. Sea-bathing, when judiciously conjoined with it, greatly intensifies its effects.

At Coatham, near Redcar, a Convalescent Home, which accommodates one hundred patients, has been doing good service during the past ten years. The patients are carefully weighed every week. I find that over eighty per cent. of patients admitted make a gain in weight at the expiration of three weeks; and in the majority of these cases the gain is very decided. Nothing can be more satisfactory than the results obtained from the treatment of convalescents in this institution. A large Convalescent Home is being erected at Saltburn-by-the-Sea. In order that the funds of these institutions may be better economised and utilised, it would be very desirable if medical men and subscribers would avoid as much as possible sending such cases as are totally unsuitable for treatment on the north-east coast.

2. *Diseases of Children*.—Seeing that the ordinary action of sea-air, and of sea-bathing, upon the body is to cause the nutrition to resemble that characteristic of the period of growth (*i.e.*, rapid destruction and more rapid construction of tissue), we are not surprised to find that many of the diseases of children, in particular such of them as depend on retardation of the changes involved in nutrition, should be directly counteracted by the health-agents of the sea-side. The almost universal experience of the profession testifies the truth of this position. From my own observation, I am fully convinced that sea-air and sea-bathing exert a powerful influence on nutrition during the period of growth; when defective, they rouse it to a higher degree of activity, and correct morbid tendencies which spring directly from enfeebled formation of tissue. As a rule, the appetite is more frequently increased by sea-air in children than in adults. I have an impression that sea-air sometimes acts injuriously in those cases of children in which the appetite for, and digestion of, food are not considerably improved: at any rate, such cases do not get on so well at the sea-side.

Sea-air on the north-east coast greatly assists blood-formation; probably by stimulating the functions of digestion and assimilation indi-

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