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Reminiscences Of The Welsh Hospital In South Africa (Springfontein And Pretoria)

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were no spots, and the joints were not affected. The bowels were irregular, sometimes requiring an aperient; the tongue for the most part was clean, but was for a short time thickly coated. Towards the latter part of the pyrexial period the patient lost flesh and became anæmic. Convalescence was slow, and he did not recover his usual health before the end of July.

Treatment.—He was treated with quinine, salol, and tonics without appreciable result.

Examination of the Blood.—His blood was examined by me on two occasions, once about the middle and once towards the end of the pyrexial stage. Malaria parasites were not found, and the blood did not agglutinate the typhoid bacillus in dilution of 1 to 20. In the early part of December, four months after complete recovery, Dr. Dodgson examined the blood, and found that it agglutinated the Malta fever coccus in dilution of 1 to 40.

CASE II.—A civil medical officer, aged 28, was admitted into the Yeomanry Hospital at Pretoria on October 5th.

History.—He arrived at Capetown in July, was at Deelfontein for a few weeks, and had since been in Pretoria. He had not been abroad before. He had never had enteric fever and had not been inoculated. He suffered from diarrhoea shortly after arriving in South Africa, and the motions have been liquid or pulaceous ever since.

Early Symptoms.—For a week before admission he was laid up with malaise and pyrexia, the temperature rising to 101° or 102° in the evening and falling to normal in the morning. On admission (October 5th) there were no physical signs, but he complained of pain in the back of the neck, which lasted for a few days and then disappeared. On October 18th the spleen could be felt just below the costal margin, and the tongue was slightly dry and brown. On October 24th the spleen was a trifle larger; the tongue was now moist but still brown.

Examination of Blood.—On October 27th the blood was examined by Dr. Dodgson; it agglutinated the Malta fever coccus in dilution of 1 to 80, but gave no reaction with the typhoid bacillus.

Progress.—Up to this period the patient had not felt ill, and with the exception of slight enlargement of the spleen there was no physical sign. The temperature had run an irregular course, being normal during part of each day, but always being raised to 101° or 102° some time or other in the day. On the morning of October 28th the temperature was normal, but from that time it gradually rose and reached 104° on the evening of October 31st. From October 29th until November 9th there was continuous pyrexia, the temperature varying between 100° and 103° . On November 10th the temperature was normal, and continued so with the exception of a rise to 103° on November 11th, and slighter rises on November 13th, 14th, and 17th. During the period between October 28th and November 10th the patient felt ill and became emaciated, and his condition gave rise to anxiety. There was no definite physical sign with the exception of gradual enlargement of the spleen. This organ on November 11th could be felt nearly 3 inches below the costal margin, and was decidedly hard.

Second Examination of the Blood.—The blood was examined by Dr. Dodgson on November 11th, when it agglutinated the Malta fever coccus in dilution of 1 to 60, but gave no reaction with the typhoid bacillus.

Recovery.—After November 11th the spleen rapidly diminished in size, and in a few days no enlargement could be made out. The patient gradually improved, and he was discharged on December 11th from the hospital, whence he proceeded to Capetown. After a few weeks he had quite returned to his normal state of health. During the illness the abdomen was never distended, and there were no typical enteric spots. The motions were sometimes liquid and sometimes pulaceous, and were never typical of enteric fever.

Treatment.—He was treated with quinine, sodium salicylate, salol, arsenic, potassium iodide, and other drugs without appreciable effect.

I feel sure from clinical observation that neither of these patients was the subject of enteric fever, and this is supported by the negative result with the agglutination test. In both cases, towards the end of the pyrexial period, the question of general tuberculosis was raised, and in Case II the hard, enlarged spleen was in favour of such a diagnosis. The complete recovery which ensued put general tuberculosis, however, out of court.

I think that these cases resemble Malta fever more closely than any other disease. The only absolutely certain means of determining Malta fever is to obtain the cocci from the spleen, but in lieu of this we have the positive test of the agglutination of the cocci by the blood. I do not know how far this test is reliable, and consequently I do not know how much value to place upon it.

Nearly a year ago, when I was in Kimberley, I heard of cases which I considered to be most probably Malta fever, so that it is not unlikely that this disease occurs in South Africa.

Two other cases which I have seen out here resembled Case II in many respects. In neither case did the blood agglutinate the typhoid bacillus, and in one case it failed to agglutinate the Malta fever coccus, but in the other case this test was not applied.

Pretoria, March 12th, 1901.

PRESENTATION.—A handsome writing table was recently presented on the occasion of his marriage to Dr. Charles Herbert Gunson, the House-Surgeon of the North Cambridgeshire Hospital, by the trustees, Committee of Management, honorary medical officers, matron, nurses, and staff of the hospital.

REMINISCENCES OF THE WELSH HOSPITAL IN SOUTH AFRICA (SPRINGFONTEIN AND PRETORIA).

Abstract of Addresses delivered before the Barry Medical Society, January 16th, 1901; and the Cardiff Medical Society, March 1st.

By J. LYNN THOMAS, F.R.C.S.ENG.,

Senior Surgeon to the late Welsh Military Hospital; Honorary Surgeon to the *Hamadryad* Hospital, to the Cardiff Infirmary, etc.

I HAVE already recorded my views¹ regarding the organisation of and the work done by the Royal Army Medical Corps in South Africa, and now we have perused the Report of the Royal Commission which was sent out to investigate the sensational and adverse charges made by a member of the British Parliament against it, and are pleased to find that it is in harmony with the verdict of the majority of the civil surgeons, who had ample opportunities and time to observe and to study the work done by that branch of our profession.

Methods of Pitching Hospital Marquees.

[After exhibiting a lantern slide showing the appearance of a hospital pitched according to the plan described in Regulations and Instructions for Encampments and Cantonments, Mr. Thomas showed one of the Welsh hospitals which was pitched according to a method introduced and carried out by Lieutenant-Colonel A. H. Keogh, R.A.M.C., the able administrator of the Welsh Hospital.] I venture to draw especial attention to this method (Fig. 1), as it presents some important and decided advantages over the "regulation plan" (Fig. 2).

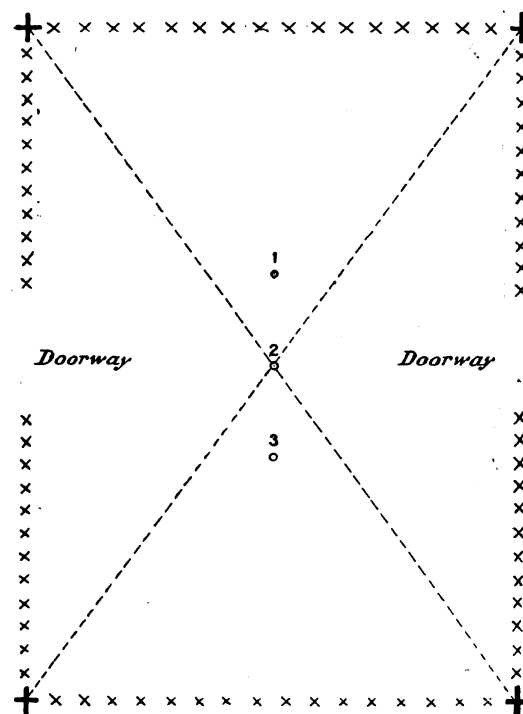


Fig. 1.—Lieutenant-Colonel Keogh's method. Ground plan of the pegs: + weather line pegs; x bracing line pegs; 1, 2, 3, position of the three standard poles.

Fig. 1 is a ground plan of the pegs of the marquee according to Colonel Keogh's method. The first thing to do is to fix the weather-line pegs which form the angles or corners of a rectangular parallelogram, the sides of which are 50 feet by 33 feet, that is, the regulation distances of the weather-line pegs. The next step is to find the point of intersection of the diagonals by means of two pieces of string, and place the centre of the ridge pole upon it. The strings are then

fixed to the weather-line pegs to form the sides of the parallelogram, and the small pegs for the bracing lines are driven in a straight line along the string about 2 feet apart, one being left blank in the centre of sides for the doorway. The ground plan is now ready, and the further procedure about the raising of the marquee is carried out in the usual manner.

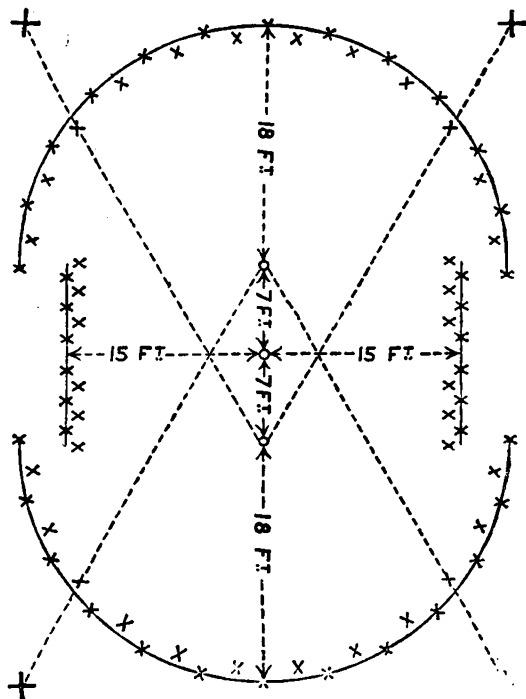


Fig. 2.—From Manual Royal Army Medical Corps, 1899. Ground plan of the pegs of the marquee, showing direction of weather lines. + weather line pegs; x bracing line pegs.

The regulation method is difficult to carry out quickly, as there are many complex measurements to be attended to, and the weather-line pegs are the last to be driven in, whilst they are the first to be driven in in Keogh's method, and they seem to me to be the key to the whole plan of the hospital. The width of the avenues of locomotion from front to

rear and from flank to flank is determined upon by fixing the weather line pegs. There is very little trouble in grasping the principle of placing any number of parallelograms of definite sizes in straight lines at definite intervals, whilst the chances of going wrong are reduced to a minimum.

The advantages of Keogh's plan over the present regulation method may be summed up under the following headings:

1. It is simple to understand.
2. The camp is more easily kept clean on account of having a single row of pegs which admit a brush between them.
3. The camp looks smarter.

And lastly, but not the least in importance, there is more room inside the marquee, because the rounded corners of the marquee are raised higher on account of the longer pull of the bracing lines and the difficulty of arranging six or eight oblong beds conveniently into a more or less oval marquee (Clinton Dent) is to a certain extent overcome by Keogh's method. My own bias is for the regulation marquee.

TYPES OF BULLETS AND WOUNDS PRODUCED BY THEM.

Fig. 3 shows the different types of bullets I came across, and with most of them, I feel sure, you are already acquainted.

It is hardly necessary to reiterate the fact that wounds inflicted by ricochet bullets are severe, or that the lesions of an expanding bullet are most disastrous after penetrating bone. While those of the Lee-Metford and Mauser are of a comparatively trivial character. I cannot refrain from relating the case of a Colonial trooper who was shot through the right posterior triangle of the neck, the bullet entering an inch and a-half above the centre of the clavicle and emerging through the centre at the middle of the sternum, the only symptom being a transitory feeling of uselessness of the right upper extremity with a sensation of a "hot flush" running down the limb. Recovery was complete and rapid without any paresis. I am inclined to attribute the sensations of the patient to being caused by the hydrodynamical displacement of the fluid of the tissues in front and around the bullet upon the brachial plexus during its transit, whilst the relative harmlessness of the bullet to important structures may be explained to a certain degree by the fluid wave immediately in front of the bullet partly separating, or bluntly dissecting or pushing aside the movable structures, such as veins, arteries and nerves. Boys many years ago photographed the air-waves which precede and accompany bullets travelling through air, and one cannot but infer, *et analogia*, the existence of a fluid-wave preceding the bullet travelling through the body; such a "fluid-wave" acting as a blunt dissector would assist us greatly in explaining the extraordinary immunity of important structures from injury in the direct course of a bullet.

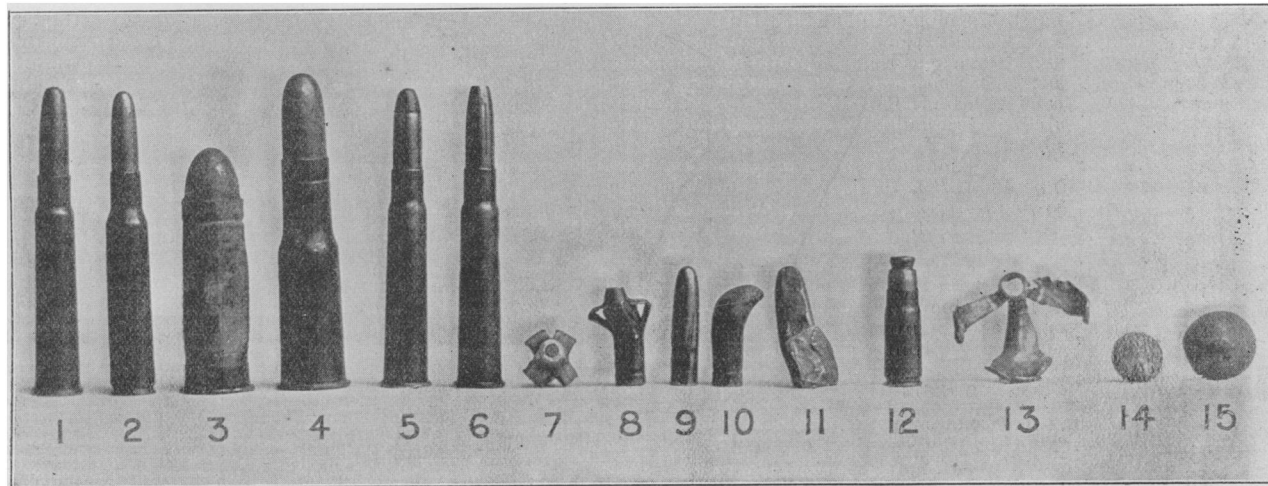


Fig. 3.—1, Lee-Metford cartridge; 2, Mauser cartridge; 3, Snider cartridge (from a Boer farmhouse); 4, Martini-Henry cartridge; 5, Lee-Metford soft-nosed cartridge; 6, Jeffery's cartridge; 7 and 8, Jeffery's expanding bullet seen on end and in profile after slight impact, the hard casing alone has bulged away from the lead core—when such a bullet goes through very thick bone it "mushrooms"; 9, this bullet has taken "the rifling" twice; I came across several such bullets, showing clearly that the rifles were getting worn out from use; 10, "ricochet bullet," the point alone having struck; 11, "ricochet bullet," the side and base having struck; 12, Mauser pistol expanding bullet with case; 13, the case on "thimble" of a bullet picked up on a battlefield; 14 and 15, the two sizes of shrapnel bullets.

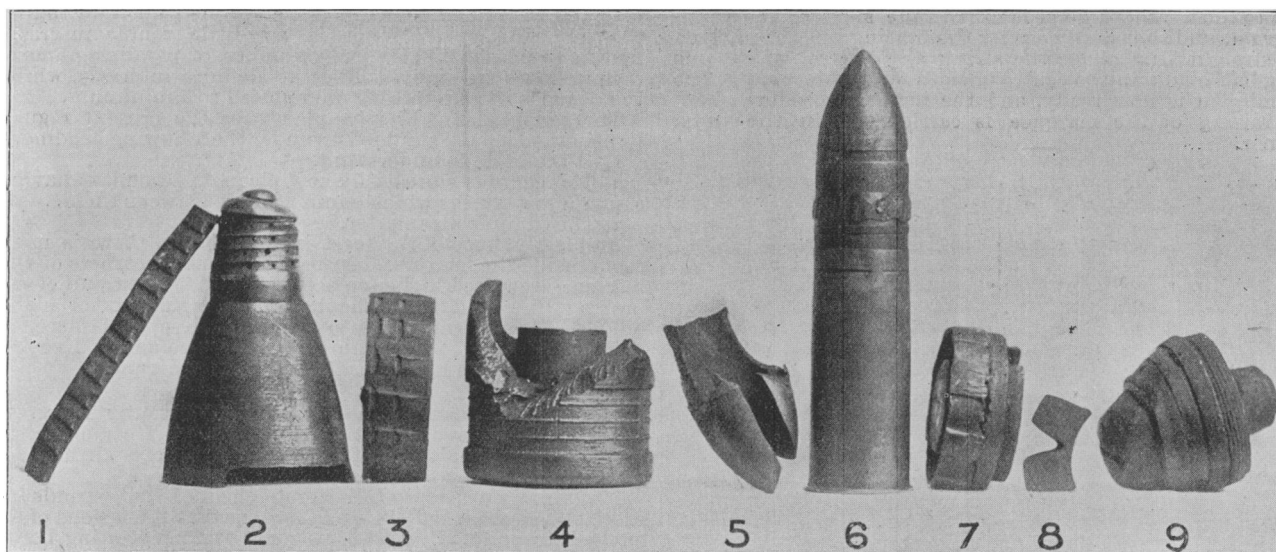


Fig. 4.—1, Driving-band of a Boer shell; 2, the cap of a 15 lb. Boer shell; 3, driving-band of an English shell (the rifling upon the Boer specimen is narrower and deeper than upon the English one, which is broad and shallow); 4, fragment of the base of a shell, driving-band is taken off; 5, an exploded pom-pom shell; 6, pom-pom cartridge; 7, the base of a mountain battery shell; 8, from a Boer "segment shell;" 9, head of a shell that struck an armoured train.

whilst it also explains the very large subcutaneous scars following the passage of a bullet through the tissues on account of the devitalising effect of such a sharp and sudden fluid-wave upon the matrix or more solid portion of the constituents of the body.

Fig. 4 shows specimens of fragments of missiles from machine guns. The character of the wounds caused by these is self-evident.

FORCEPS-TOURNIQUET.

In the paper already referred to,² I mentioned briefly the use of a forceps-tourniquet instead of the ordinary tourniquet, as being in all probability more convenient and reliable for amputations in military surgery, where the surgeon cannot rely upon the help of any skilled assistance to control hæmorrhage. As I have had a few questions addressed to me by private correspondents, I think a few diagrams would assist in rendering more clearly the method of using the tourniquet, than a long description.

Messrs. Mayer and Meltzer have made for me the forceps-tourniquet represented in Fig. 5, and this is the only size I now use for amputations on the young and the old. I had smaller sizes made at first, but further experience showed that they are quite unnecessary, and are not suitable for patients with big or stout limbs, whilst the larger size will do for almost every amputation upon thin or corpulent patients. The causes for removing limbs in military and in civil practice are not often identical, but the methods of amputating are the same, and vary with the bias of the operator concerned. As I have had a larger experience of amputations in civil than in military practice, I trust that the recording of the two following cases will be instructive with reference to the utility of the forceps-tourniquet.

Fig. 6 shows the method of applying the forceps-tourniquet in disarticulation at the hip or in any amputation of the lower extremity. A small skin in-

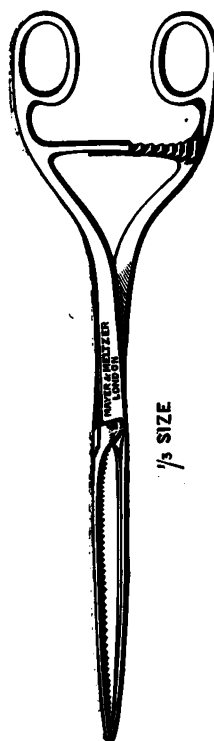


Fig. 5.—Forceps-tourniquet.

cision is made in the front of the thigh 1 to 3 inches below the anterior superior iliac spine according to the size of the limb. The smooth probe-pointed blade is pushed forcibly through the skin incision well down towards the neck of the femur and in a transverse direction towards the spine of the pubes, the serrated blade of the forceps being outside, and when the tourniquet is driven well beyond the line of the common femoral blood vessels it is clamped like an ordinary catch forceps.

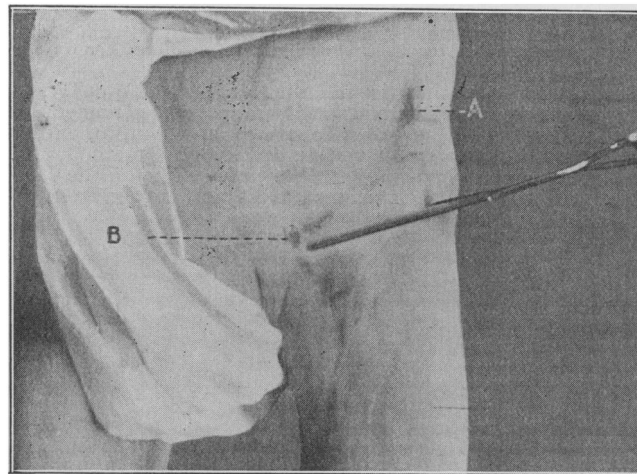


Fig. 6.—Application of forceps-tourniquet for disarticulation of the hip.

CASE I.—A woman, aged 20, had a central myeloid sarcoma of the lower end of the femur, and on October 13th, 1898, I amputated through the lower third of the thigh, controlling the hæmorrhage by the above method. After tying all the visible blood vessels I unloosened the forceps-tourniquet, and an unusually free oozing took place along the linea aspera, and on close examination I discovered that the growth extended upwards and along the linea aspera. The tourniquet was again re-clamped in a second, and after tracing the growth to its upper limit I amputated through the upper third of the thigh, bringing periosteum over the end of the bone and closing all the potential spaces by buried sutures. No drainage; immediate union. The oozing from the face of the stump was practically nil, and although the tourniquet compressed the common femoral vessels and the accompanying nerves for fifty minutes, the only evidence of vasomotor paresis was confined absolutely to the skin under the outer blade of the forceps-tourniquet. This is the longest time that I have had the tourniquet on, and in no single case have I seen any of the oozing which is so commonly seen after the indiarubber or Esmarch's tourniquet.

Fig. 7 shows the method I use for applying the forceps-tourniquet in cases of amputation through the lower third of the humerus by the racket incision.

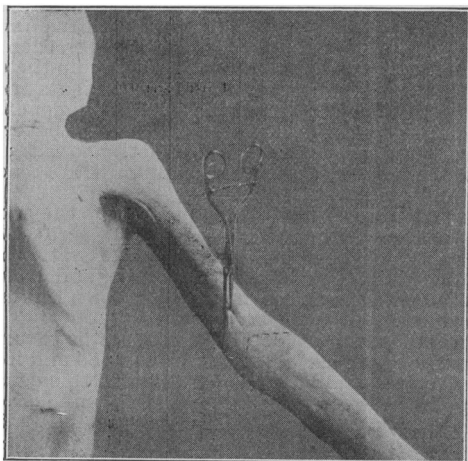


Fig. 7.—Application of forceps-tourniquet to arm.

CASE II.—A gentleman, aged 70, had a very large sarcoma growing in the intermuscular planes of the upper half of the right forearm, and on August 22nd, 1899, I removed the limb immediately above the origin of the forearm muscles from the humerus by, first, making the handle of the racket incision through the skin only, and then pushing in the smooth blade of the tourniquet at the upper end of the incision against the bone, and backwards, until the blade could be felt under the skin posteriorly. It was then clamped, and the operation was completed without any loss of blood, as all the main blood vessels were within the grip of the forceps-tourniquet.

I will not weary the reader with the report of other cases, as the photographs (Figs. 6 and 7) kindly taken for me by my friend, Professor Dixon, illustrate the principles which guide one in applying the tourniquet. Lister's method of depleting a limb before amputation is very easily carried out by introducing the smooth blade of the forceps-tourniquet into its place before elevating the limb, and after the limb has been kept held up for two minutes the blades of the tourniquet are approximated and the handles locked in a second. The rubber band is disappointing with regard to suddenly stopping the circulation, though a limb, especially in stout or muscular patients, because the first two or three turns of the rubber band only stops the venous blood returning whilst the arterial blood is not interfered with until later on, so that in practice it is not at all unlikely that there would be more blood in the limb after applying the rubber band in the elevated position than there was before it was raised, unless the necessary number of turns of the rubber band be applied within a limited time. It is not a very uncommon experience to see a limb venously congested when the rubber band is applied by the inexperienced.

The application of the forceps-tourniquet causes the simultaneous closure of the arterial and venous vessels. In very exceptional cases two tourniquets may be applied, one on each side of the limb, in order to procure absolute bloodlessness.

It was only on one occasion that I had the opportunity of appreciating the value of the forceps-tourniquet in stopping hæmorrhage in cases of injury to the common femoral vessels. The aperture made by a Mauser or a Lee-Netford bullet is large enough to admit the application of the forceps-tourniquet in cases of emergency, and surgeons attached to bearer companies could easily carry one or more tourniquets by clamping them to a loop on the inside of their tunic.

I may be allowed to recapitulate some of the advantages of the forceps-tourniquet over the Esmarch rubber tourniquet:

1. It is not affected by climate.
2. It is easily sterilised.
3. It is most useful in major amputations, such as at the hip-joint or high up the thigh.
4. It does not require an assistant to look after it, for it is under the operator's control.

THE TELEPHONE PROBE.

[Mr. Thomas having demonstrated how to use the telephone probe, remarked that it was better to put the silver plate on

the patient's tongue than to apply it as directed to the patient's skin, because the necessary moisture was always found in the mouth, and consequently the small current developed when the silver probe touched a bullet was more perfectly conducted, but it was necessary to safeguard against letting the silver plate touch any metallic stopping in the teeth. The occurrence of such an accidental conduct might lead the surgeon to follow the probe after a will-o'-the-wisp, for the real cause of the sound would be at the other terminal. The telephone probe was found to be of the highest value possible in locating bullets during an operation, and Mr. Thomas said that it was probably no exaggeration to state that other probes will never see daylight again except in glass cabinets by the side of surgical instruments from Pompeii.]

GENERAL REMARKS.

Over 40 per cent. of the cases admitted into the Welsh Hospital were surgical, and one could not help being struck by the extraordinary uniformity of rapid healing in almost all the cases. A few cases were admitted in a septic condition; but as soon as the necessary incisions were made and drains put in it seems to me that they healed up in a shorter time than they would have done in this country. In addition to being able to carry out modern surgical treatment in all its details, one is forced to recognise that other factors probably played not an unimportant part in the cures. During the five months we were up country we only saw clouds on about half a dozen days: it was sunshine, sunshine, monotonous sunshine. In addition, the very dry condition of the atmosphere must also have played an important part amongst the many factors that are involved in the repair of wounds and in the cure of septic processes. At Springfontein the dry cold nights and the dry hot days brought on soreness of the hands amongst our staff; the epidermis in the natural furrows of the skin slowly and almost painlessly broke down and formed raw, red, and indolent sores, which neither showed any signs of inflammation nor any inclination to heal. A week in the humid atmosphere by the sea cured the sores in two of our sisters.

Our hospital at Springfontein was situated about half a mile from the station, and when a convoy was expected we watched the arrival of the trains, and we found it was not an easy matter to recognise the hospital train at that distance from the ordinary trains, partly on account of the smallness of the size of the red cross painted on the carriages. When we got to Pretoria, and I saw the Princess Christian Hospital train all painted white with red crosses on, we were much impressed at being able to recognise it as a hospital train a very long way off, but not so much by its distinctive cross as by its white colour. It must be a matter of the first importance in modern warfare, with guns and rifles of very long range, to be able to recognise at a glance every hospital train without having to search very carefully with glasses for the presence or absence of the red cross.

In the early days of this campaign it was found by bitter experience that distinguishing marks of the combatant officers from the men were taken advantage of to such a degree by the enemy that the authorities eventually decided upon adopting the principle of mimicry, which in the insect world plays such an important part in the preservation of life, and I feel sure that the idea has occurred to many civil surgeons who have had the honour to assist the Royal Army Medical Corps in their work in the South African campaign that the protection afforded to its members by the wearing of brassard is of very little value. What is wanted is something like a white tunic that can be seen a long way off in order to stamp the *personnel* of the R.A.M.C. as targets never to be shot at in the cause of humanity.

There must have been many an occasion when the wearing of a brassard was perfectly useless as a protection from fire because it happened to be invisible on account of the distance, position of the body, or excitement.

When marching past kopjes which harboured "snipers" one realised the fact that a brassard on the off-side arm was a source of protection and security on a par with that afforded to the ostrich when he buries his head in the sand.

REFERENCES.

- ¹ *Lancet*, November 3rd, 1900. ² *Ibid.*