

desirable, because they foment their wounds ; but few care to carry out the principle more efficiently by the use of the constricting bandage or suction cup. A few layers of wet lint over a wound seems to be a pitifully inadequate method of producing hyperæmia in a deeply infected limb. One can only hope that the rejection of the more adequate methods of producing passive hyperæmia by English surgeons is based on something more reasonable than the Teutonic advocacy of this treatment.

THE 2nd WESTERN GENERAL HOSPITAL.

By WILLIAM THORBURN, MANCHESTER.

Any survey of the methods of dealing with the wounded in the present war would be incomplete without some account of the large territorial hospitals which have been established in this country, and the 2nd Western General Hospital at Manchester may perhaps be taken as a type of its fellows, especially as it has had occasion to deal with an exceptionally large number of cases.

The city of Manchester lends itself with peculiar facility to the establishment of such a hospital. Strategically it is secured against attack from the east both by the North Sea and by the Pennine Range, while on the west it is closely united with Liverpool, which again, of all great English seaports, occupies the position least exposed to naval attack. From the point of view of transport, Manchester is almost the central point of the British Islands, the distances to London, Edinburgh, Dublin, Cardiff, Bristol, Glasgow and Belfast being so nearly identical that the extreme variation by the shortest routes does not exceed fifty miles, and hence it is a comparatively easy matter to send back all cured cases to their depots. The number of railway stations is large, and they are grouped in a circle of about a quarter of a mile radius around the centre of the town. The streets are almost absolutely level and covered with a network of tramways, facilitating conveyance of the wounded, and access by their friends. Lastly, the enormous population of south-east Lancashire has called into existence not only a large number of civil hospitals with a proportionate number of practitioners accustomed to deal with the injuries of a mining and manufacturing population ; but also an almost unlimited reserve of large public buildings capable of rapid conversion into hospitals. It is probably due to a more or less conscious appreciation of these facts that the 2nd Western General Hospital has been so largely used.

The general scheme for the preparation of territorial hospitals is due to the foresight of Sir Alfred Keogh, who called their framework into being about 1908. In time of peace the personnel of the 'hospital' consists of a commanding officer, a 'secretary and registrar,' a (non-medical) quartermaster, and forty-three non-commissioned officers and men, all of whom receive some training annually in existing military hospitals. In addition to these is an *à la suite* staff of officers and a principal matron, with ninety-one nurses available on mobilization. The *à la suite* staff of the 2nd Western comprised twenty-five officers, and was mainly supplied by the honorary staff of the Manchester

Royal Infirmary, which again is with few exceptions the medical teaching staff of the Manchester University. The nurses were enrolled from local hospitals, and the principal matron was the lady superintendent of the Manchester Royal Infirmary.

During peace the location and working of the hospital had been fully considered by a committee of the East Lancashire Territorial Association in conjunction with the officers of the permanent staff, and many details had been arranged long before the war. The size of the hospital was defined by Army regulations as one of 520 beds, but the committee considered it wise to prepare for an extension to at least 1,000 beds, and this forethought has been abundantly justified by results. Buildings were selected, and it was intended

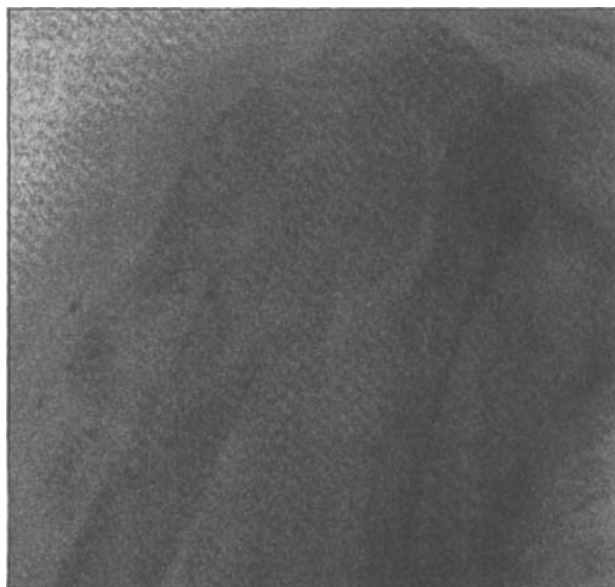


FIG. 275.—SHRAPNEL WOUND.
Comminuted fracture of upper end of humerus. Limb amputated.
(Capt. Herschel Harris.)

to use as the principal hospital the municipal School of Technology, with the adjacent Central Higher Grade School as an accessory, nurses being located in two Halls of Residence for university students, about a mile away. Contracts were also in existence with various large local firms for the supply of beds, food, drugs, surgical material and other necessities.

At the outbreak of the war the personnel consisted of the commanding officer, Lt.-Col. J. W. Smith, surgeon to the Manchester Infirmary and professor of systematic surgery in the university, who had obtained military experience in No. 9 General Hospital at Bloemfontein during the South African War; the registrar, Major F. H. Westmacott, who had had a long experience as a volunteer and territorial officer, and the quartermaster, Lieut. F. B. Wild.

Mobilization of the hospital was ordered on Thursday, Aug. 6, and these three officers, with 48 non-commissioned officers and men, were at once called up, an additional 66 men being rapidly enlisted so as to bring the total of non-commissioned officers and men up to the regulation strength of 109. The authorities of the Manchester Infirmary provided temporarily for the lodging of these men, and many of the orderlies were enabled to obtain considerable



FIG. 276.—SHRAPNEL WOUND.

Comminuted fracture of femur. The fleshy parts were frightfully mangled. Amputation. (*Capt. Herschel Harris.*)

experience by being drafted into the wards and operating theatres for instructional purposes. The *à la suite* staff was naturally not required at this early date, but on Aug. 8 the writer, and two days later Lt.-Col. Reynolds were 'called up,' so that a senior physician and surgeon were able to assist in organizing their respective departments. Our first duty was to consider the preparation of buildings, and we received the greatest assistance from Major

Niven, the medical officer of health for Manchester, from all the municipal authorities, and from Lt.-Col. Cunliffe, who is an architect by profession.

It was at once found that, since the preparation of the mobilization scheme, the School of Technology had been equipped with a large amount of valuable and unwieldy apparatus which made its occupation difficult, while the subsidiary Central Higher Grade School had been greatly extended. During the first few days these and other buildings were carefully inspected, and, in consultation with the municipal authorities, it was decided to abandon the School of Technology, to make the principal hospital in the Central School, and

to add to its 450 beds a secondary hospital in a building about three hundred yards away known as the Day Training College. Of the two Halls of Residence intended for nurses, one was immediately abandoned as not being required; the other—Hulme Hall—was used until towards the end of September, when the approach of the University session rendered very urgent its reversion to its ordinary purposes, and the nurses were transferred to a home offered by the authorities of the convent of our Lady of the Cénacle. This is a newly-erected building intended as a retreat for women, and is admirably suited for the present purpose.

During Aug. 8, 9 and 10, a full statement was prepared of the alterations which would be required in the Central School and the Day Training College. These included the provision of baths, lavatories, closets, urinals, sinks and hoists, with improvements in the arrangements for cooking, hot-water supply, and similar matters, and the disposal of rooms for stores, offices, wards, operating theatres and the like. Reports were sent to the

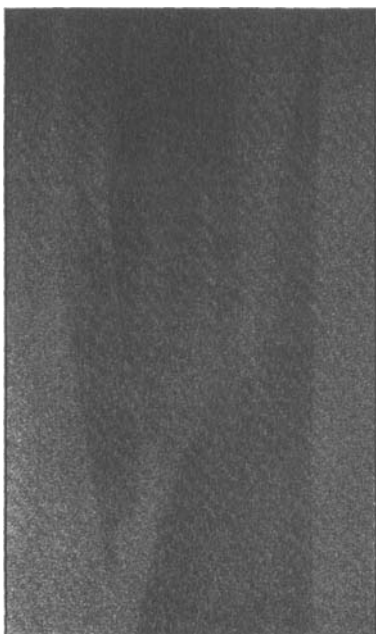


FIG. 277.—COMMUNED FRACTURE OF FEMUR FROM A BULLET.
Part of the casing is still in the bone.
(Capt. Herschel Harris.)

general commanding the Western military district at Chester, and all structural alterations were then fully discussed with Major Sayer, R.E. They were finally carried out by local contractors under the direction of the Royal Engineers. Work was in full progress during the second week of August.

From this time forwards the Central Higher Grade School became the principal hospital. The building is entirely modern and in perfect repair. It is situated about a quarter of a mile from Mayfield station, at which all wounded have been hitherto detained, but it is equally near to the other principal stations in the city. It stands between a canal and a small square or garden which has been handed over by the city authorities for the use of the wounded, and it is thus comparatively quiet, while one end of the long range of buildings, with its entrance, stands in a wide thoroughfare with a line of tramways. The

building itself has four floors and a basement, the latter being used for stores, cooking, etc.; the first three floors are allotted to wards and offices, and the top one is reserved for the residence of orderlies. Each floor is traversed from end to end by a long wide corridor with numerous staircases, and a hoist capable of carrying two stretchers has been placed near the entrance. The various classrooms allow of wards for some 450 beds with all necessary accessories. This building has been continuously occupied by patients since Aug. 16; here are situated the main offices and stores; here the majority of surgical cases are first admitted and the majority of operations performed. The Day Training College already referred to was occupied at a slightly later date, and not being provided with an operating theatre, has been used mainly for medical cases and the slighter injuries. By Nov. 2 it was found necessary to add to the available accommodation a third building nearly a mile away. This last is a newly-built School of Domestic Economy, and has 236 beds as well as all offices and an operating theatre; it is under the superintendence of Lt.-Col. Southam, honorary consulting surgeon to the Manchester Infirmary.

In addition to these buildings, which constitute the 2nd Western General Hospital properly so-called, additional beds have been provided from time to time by the civil hospitals. These are not under military control, but all those in Manchester and Salford are staffed, at least in part, by the same individuals as the military hospital, and there is thus close continuity of treatment and observation. The civil hospitals are also largely used for cases requiring operation, and patients are now transferred there for most operations other than those required for injury (hernia, varix, removal of semilunar cartilages, etc.). In times of pressure cases are also sent directly from the train to the civil hospitals, and we thus find that in Manchester and Salford alone we have at present the following number of available beds* :—

2ND WESTERN GENERAL HOSPITAL.

	BEDS
Central School (Whitworth Street)	455
Day Training College (Princess Street)	154
School of Domestic Economy (High Street, C.-on-M.) ..	234
Total ..	843

CIVIL HOSPITALS IN MANCHESTER AND SALFORD WHICH HAVE ALLOTTED BEDS FOR THE WOUNDED.

	BEDS
Manchester Royal Infirmary (Oxford Road)	145
Manchester Royal Infirmary (Roby Street)	55
Salford Royal Hospital	130
Ancoats Hospital (Mill Street)	20
Crumpsall Union Hospital	250
Withington Union Hospital	240
Royal Eye Hospital	19
Total ..	859

To these beds we have also to add those of existing hospitals in the neighbourhood of Manchester, most of which have been used for cases which could

* All the figures quoted in this paper are corrected up to Nov. 30, 1914. Slight changes frequently occur.

be transferred at an early date from the central institutions but which were considered too serious to be sent to Red Cross hospitals. The beds thus available, with the distances of the various towns from Manchester, are approximately as follows :—

BEDS AVAILABLE IN EXISTING HOSPITALS
ADJACENT TO MANCHESTER.

		DISTANCE FROM MANCHESTER		BEDS
Oldham Infirmary	..	6 miles	..	40
Macclesfield Infirmary	..	18 "	..	30
Warrington Infirmary	..	18 "	..	25
Wigan Infirmary	..	18 "	..	24
Stockport Infirmary	..	6 "	..	20
Ashton-under-Lyne Infirmary	..	6 "	..	20
Blackburn Infirmary	..	24 "	..	20
Eccles and Patricroft Hospital	..	4 "	..	14
Leigh Infirmary	..	13 "	..	12
Ashton Union Hospital	..	6 "	..	12
Northwich Infirmary	..	20 "	..	10
Winsford Infirmary	..	30 "	..	10
Bury Military Hospital	..	11 "	..	25
Ashton Military Hospital	..	6 "	..	25
Total				287

And lastly, the 2nd Western Hospital has had the invaluable aid of numerous Red Cross hospitals equipped by private effort in almost every district of S.E. Lancashire and N.E. Cheshire, admirably organized by Col. Coates, C.B., and capable of accommodating some 1,100 patients. The medical service of these hospitals is provided by local practitioners, and they are not under the care of the staff of the 2nd Western General Hospital, but they have enabled the latter to deal with much larger numbers of cases than they could otherwise have done.

With the gradual extension of the hospital service there has been required a corresponding addition to the *à la suite* staff, and changes have been made from time to time as circumstances dictated. The original staff consisted of thirty-one members, as already stated, but Army regulations only allowed eighteen of these to be called up for duty in a hospital of 520 beds. It was also quite uncertain in the early days of the war what number of patients would be sent to Manchester, and how far these would be medical or surgical. In the months of August and September the staff was therefore worked by 'rosters,' many of the members serving only for a month and being then replaced. The following were permanently required: the commanding officer, the registrar, an officer in charge of the medical and surgical departments, a radiologist (Capt. Bythell), an anæsthetist (Major Wilson), and, from an early date, an adjutant (Capt. Hey). At the present time the medical staff includes twenty-seven members, and has the assistance of two senior students, while in the course of a few days it will be further strengthened by the addition of four resident officers with the rank of lieutenant. Hitherto the only resident has been the orderly officer, his duty being taken daily in rotation by the captains of the *à la suite* staff, many of whom are senior members of the profession and well-known consultants. A strict limitation of duties between the various branches of the profession has of course been quite impossible; many of the

junior physicians have taken charge of minor surgical cases, ophthalmologists and pathologists have acted as orderly officers, a distinguished gynaecologist (Capt. Donald) has charge of surgical wards, and senior surgeons have been at times pressed into the service as anaesthetists to junior physicians. Such departures from the method of working of a civil hospital staff have given rise to no difficulties and no friction; they have frequently proved a source of real interest, and have occasionally given rise to some amusement and no small relief in a time of great strain.

The nursing staff, which is under the charge of Miss Fletcher, aided by the 'principal matron,' Miss Sparshott, has been gradually raised to 141. Many of the 'sisters' are very highly qualified and have held important positions; not a few have been matrons of small hospitals; several have seen military surgery during the Balkan War. It has, however, not been easy to obtain the required numbers, and undoubtedly the hospitals are understaffed in this respect. A heavy responsibility has fallen upon many of the sisters, as there has been no resident staff, while it was quite impossible for the *à la suite* officers to perform the majority of dressings or to carry on all the usual duties of house surgeons.

The staff of orderlies has also been enlarged; many are required for the large amount of necessary correspondence and for preparing various returns, while the constant stream of transfers from one hospital to another has entailed not only clerical work, but also much carrying of stretchers, especially as there is only one hoist in the main building in Whitworth Street, and none at Princess Street or High Street. The present staff consists of 166 non-commissioned officers and men, the original 48 being mobilized territorials, and the remainder enlisted since the war on the terms of 'the New Army.'



FIG. 278.—COMMUNED FRACTURE OF LOWER THIRD OF FEMUR.
Bullet still embedded in limb. (Capt. Herschel Harris.)

The history of the working of the hospital naturally divides itself into two periods—that preceding and that following the arrival of the first trainful of wounded from the overseas forces.

Structural changes at Whitworth Street were commenced about Aug. 12 and not completed until September; but the first patients were admitted on Aug. 16. At that time there were large camps of mobilized territorials in the neighbourhood of Manchester, and especially we had to provide for the East Lancashire division, which was ultimately sent to Egypt. During this period a small number of beds were required for the treatment of the sick and injured among these troops, the cases consisting mainly of the ordinary diseases and injuries of civil life, such as acute abdominal diseases, hernias, falls and kicks from horses, and other troubles. There was also a certain amount of venereal disease; but only 35 cases of gonorrhœa were sent in the course of six weeks from a force of about 20,000 mobilized territorials. During the same period 540 men were admitted for inoculation against typhoid fever. On the whole, the work from about Aug. 15 to Sept. 20 presented no special features, but this period of light pressure was invaluable as allowing the improvised hospital to come gradually into action.

The first train-load of wounded from the overseas forces arrived on Sept. 20, and from this time onwards the arrival of such trains has been so frequent that they are now accepted almost as a matter of daily routine. All our wounded have been disembarked at Southampton, with the exception of Belgian soldiers brought via Folkestone. The journey from Southampton to Manchester occupies about seven hours, and each special train brings from 150 to 200 cases, the numbers being naturally smaller when a large proportion are 'cot' or 'lying down' cases. As these trains rarely start before noon, and are often much later, they generally arrive in the evening, or most frequently during the night, and at the period of greatest pressure a large proportion of the staff were occupied all night in dealing with them.

On arrival, the train is met by a small party of officers with ambulances and orderlies, the ambulances being in part provided by the city police and in part by the British Red Cross Society. A rough classification is made at the station into medical and surgical cases, and these are kept apart, the medical cases being dealt with during the first weeks on one floor of the Whitworth-street Hospital, and later at Princess Street. At the station also special labels are given to cases of venereal disease, or of infective conditions such as scabies, so that these can be at once segregated. On arrival at the hospital the patients are at once told off to the various wards by the medical or surgical field officer in charge, and rapid working is much assisted by preparing beforehand lists of the wards to which they are to go, and fore-warning the nurses. As a rule, some twenty minutes suffices to empty a train at the station, and a similar period is sufficient to distribute all wounded to their wards. Two or three hours are required for undressing the men, removing their clothing for sterilization, feeding and washing them, examining and dealing with their wounds, and filling up all case-sheets, diet-sheets, and accurate returns for the information of the War Office. All this clerical work has hitherto been performed by the *à la suite* staff, and much of it might well have been done by house surgeons or even clerks, leaving senior officers more

time to attend to work for which they are specially qualified, or to obtain some much-needed rest.

The amount of work done by the hospital can be best indicated by the official records up to date. The total number of wounded admitted is 5,560,* 48 of whom were German prisoners, and 1,172 Belgian officers and men. The latter half of October was especially strenuous, 2,800 cases being admitted in fourteen days and—at the end of the month—868 in twenty-six hours. It will be obvious that this could only be done by rapidly transferring the slighter cases from Whitworth Street to other hospitals, and many were so transferred within a few hours of their admission.

Anyone accustomed to hospital administration will appreciate the strain thus thrown upon the registrar's office, especially as to the ordinary work of a civil hospital there is added the necessity of providing clothing for a very large number of the men, of sending convalescents to their depots, of filling up the necessary Army forms, and of holding 'boards' on all cases dismissed from the Army as unfit for further service. Prisoners also required special precautions, and an armed guard had to be provided; while some additional difficulty arose from having 1,200 patients who could speak no English. The ambulance work has naturally been almost continuous both day and night, but has been carried out most thoroughly by Mr. J.

Lyon Stubbs, with the aid of many private cars lent for the purpose, as well as the special ambulances already referred to.

The great majority of the cases admitted up to date have been surgical, for even many of those sent home as 'sick' were invalided for such conditions as hernia, hæmorrhoids, or varix, and the very small amount of actual disease indicates most eloquently the care taken of our troops at the front. The writer has had no personal contact with the medical cases, but is informed by Lt.-Col. Reynolds that they present no special features of interest, and include



FIG. 279.—COMMINUTED FRACTURE OF LOWER THIRD OF FEMUR, caused by shrapnel which had passed through.
(Capt. Herschel Harris.)

* See footnote, page 495.

only the ordinary diseases of civil life. Rheumatism of a subacute type is the most common condition met with ; there have been a few cases of dysenteric diarrhœa, several cases of phthisis, but no zymotic disease whatever, and no case of typhoid fever.

Of the surgical cases, a large majority are wounds by shrapnel, the most serious being due to large fragments of the casing, and others to the contained bullets, which have produced wounds resembling those due to the low-velocity gunshot wounds of a century ago. Many were also due to rifle bullets, fired either from the rifle or machine guns ; while a certain number of injuries resulted from falls of buildings, trenches, guns, etc., or from ordinary accidents. Quite recently we have received a good many cases of frost-bite. I have seen only one bayonet wound (in a German prisoner), and no sabre cuts.

The proportion of very severe wounds has varied much at different periods, and has doubtless been governed by the pressure on base hospitals in France. In the earlier days most of the cases were comparatively slight, but during October they were very severe, and we were receiving large numbers of patients directly from the front, many of whom had had almost no attention : especially was this the case with prisoners and the Belgian soldiers, who had to be brought over in large numbers and in a great emergency. During November there was again a change, as we were then receiving many patients who had been operated upon or otherwise dealt with, and were practically convalescent : up to the end of October hardly any operations had been performed before arrival, and there were many almost untreated compound fractures, injuries of the skull, and other equally serious conditions.

As regards wound infections, every case of open wound has been septic on admission ; on the other hand, the virulence of the sepsis has seldom been great, and we have seen an extraordinary number of undrained and suppurating compound fractures, large joints distended with pus, and other similar conditions, in which there was very little constitutional disturbance and often no fever at all. No systematic bacteriological examination has been practicable, and I have no evidence as to whether this striking association of the most severe local destruction with slight general symptoms has been due to the characters of the organism or to the extraordinary resistance of the men. The fact that it exists has, however, made it necessary to carry out careful local examination of all cases, and to place comparatively little reliance upon temperature charts. Speaking broadly, rifle-bullet wounds of the soft parts have been almost trivial, and have healed very rapidly, but they have shown a marked tendency to recurrent suppuration, probably from their containing fragments of clothing infected with organisms of low pyogenic power. Similarly, minor injuries of bone, such as groove-like 'fractures' and perforations, have healed and then again suppurated ; at the head of the tibia especially, such grooves and perforations without loss of continuity of the bone have been fairly common. For this reason many apparently slight bullet wounds have developed abscesses one or two weeks after healing appeared to be complete, but all such abscesses have been very amenable to treatment by opening and scraping.

Tetanus was met with in the wounded from the region of the Aisne, but is not at present showing itself. Many of these men had received an injection

of antitetanic serum before arrival, and the writer administered prophylactic doses of 500 or 750 units to a large number of cases during the period when the disease was common; of the cases so treated only one developed tetanus, and that in a mild form. One case developed after a bullet-wound of the cervical vertebræ with injury to the spinal cord, but has recovered. In all some fifteen* cases have been met with, and eight of these have been fatal.

I know of only one case of acute emphysematous gangrene, and this was fatal in spite of high amputation; but as with tetanus, it is possible that some non-fatal cases may have occurred.

The treatment of the wounds has naturally been determined by their septic condition, and aseptic surgery has been impossible; for the great majority fomentations have been the main resource, and suppurating cavities have been syringed out, generally with hydrogen peroxide, iodine being almost if not quite invariably used for skin and surface wounds. In some cases continuous irrigation and limb baths have been employed.

In regard to the treatment of foreign bodies, I think that all my colleagues have, like myself, adopted a very conservative line of treatment, and that it is unwise to undertake any extensive operations for their removal. Possibly at a later date, when all sepsis has passed away, many imbedded projectiles may have to be removed; but in the recent cases they are certainly best left alone unless fairly accessible by sinus or otherwise, or obviously dangerous or painful.

Compound fractures, especially in the thigh and humerus, have given much anxiety, but here also treatment has been very conservative. The writer

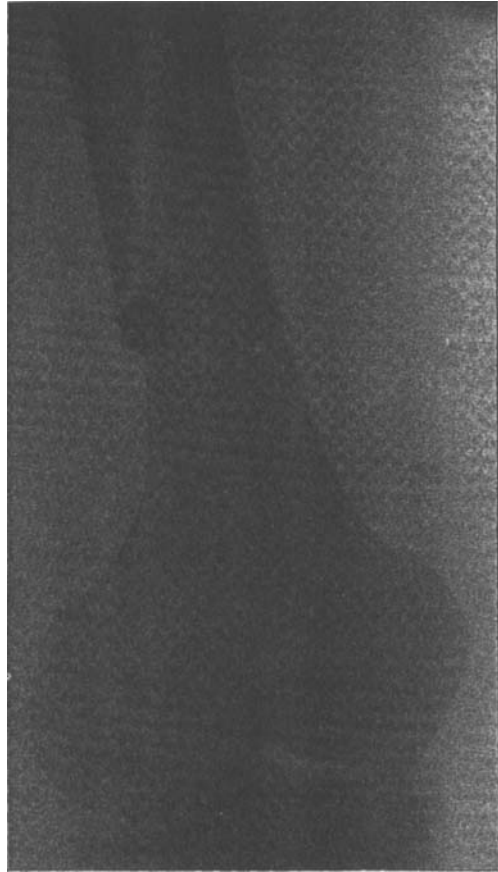


FIG. 280.—COMMUNED FRACTURE OF LOWER THIRD OF FEMUR.
Shrapnel ball *in situ*. (Capt. Herschel Harris.)

* Some non-fatal cases may have escaped notice, as they may have occurred in men admitted to the civil hospitals, and would only appear in the records of the 2nd Western if they died; of the eight recorded deaths, three were in civil hospitals.

has performed but two amputations, with the exception of fingers; and that his colleagues have acted on similar lines is proved by the fact that only thirteen major amputations have been performed. The result of waiting has often been surprisingly good, but the prospects can be much improved and much suffering saved by a temporary wiring of the exposed ends of bones, while all fragments and foreign bodies are removed and free drainage is provided. No doubt in many of these cases union will not occur, and at a later date fixation operations will be necessary.

So few abdominal injuries have arrived in Manchester that no generalizations are possible; but we have seen a good many wounds of the urethra, which again could only be treated on expectant lines.

We have had many interesting injuries of the nervous system; but their full consideration would carry me beyond the scope of the present paper, and the time is, as yet, hardly ripe for a correct estimate as to their results. With the aid of the Red Cross hospitals an endeavour is now being made to collect these cases together and undertake their careful investigation.

Apart from injuries of the brain and spinal cord, of which the number has of course not been great, there have been many examples both of actual gunshot wounds to nerves and also of the 'concussion' injuries which constitute so marked a feature of the present war. Up to the present time the writer is not satisfied that he can judge, on admission, whether paralysis of a nerve is due to actual section or to mere concussion or contusion by the passing of a bullet in its immediate vicinity, and the majority have therefore been kept under observation for several weeks before any decision was arrived at. Under these circumstances a large number of cases of very complete paralysis have resulted in recovery, and the total number in which nerve suture has so far been practised has not been great.

With regard to the traumatic neuroses, we have as yet had but few cases in the hospital, and any deductions at the present moment would be unwise.

Injuries of the chest have been numerous, and we have seen many perforations by rifle bullets. These have, however, presented no special features, and the bullet wounds, as in the case of other penetrating injuries of soft parts, show a remarkable tendency to heal up without serious effects. Profuse hæmoptysis in the first few days has been common, as have effusions of blood into the pleura, but the ultimate results have generally been satisfactory. I am not aware of any operations having been undertaken for intrathoracic conditions except in the case of empyema, which has been treated on ordinary lines. This conservative or expectant treatment has thus again justified itself, as only three deaths have followed wounds of the chest, although it is to be borne in mind that the most serious of these would not reach Manchester.

In concluding this summary of the work of the Hospital, a general idea of the results obtained is best given by stating that among the 5,560 overseas patients treated there have been 16 deaths; that 816 operations have been performed, of which only 13 were major amputations: a large number of the operations have been quite trivial, consisting in removing foreign bodies in superficial situations or through the track by which they have entered, and

many others have consisted of trimming wounds in the hand and foot, cleaning compound fractures, and the like. The skull has been opened five times, the spinal canal once, and the abdomen five times. The eyeball has frequently required enucleation.*

Finally, it may perhaps not be out of place to make a few suggestions, even at this early date, for future guidance in the establishment of a hospital of this type.

The sudden outbreak of the war has shown the absolute necessity of careful preparation in time of peace of some scheme for relieving the wounded. Whether in the future the territorial hospitals with their *à la suite* staffs will or will not be maintained is a matter for the War Office to decide, but if such staffs do continue to exist, it is their absolute duty to be prepared at all times with a thoroughly worked out mobilization scheme as to the buildings to be used and the contracts which will have to be carried out. In a few towns there were available, in August, 1914, large unoccupied civil hospitals which were readily converted into military hospitals; but such a coincidence will naturally only occasionally occur, and in the majority of cases it will be necessary to extemporize as has been done in Manchester.

A good deal of criticism has been bestowed upon the use of educational buildings for this purpose, but it will probably always be found extremely difficult to obtain a sufficient amount of accommodation with at least some conveniences for sanitation and cooking, unless our schools are used for the



FIG. 281.—COMMUNUTED OPEN FRACTURE OF TIBIA AND FIBULA, with a piece of shell case lying *in situ*. (From a Belgian soldier in 2nd Southern General Hospital.)

* As indicated in an earlier footnote, these figures are not quite comparable, as operations performed in civil hospitals do not appear on the records of the 2nd Western, but the totals of admissions and of deaths are correct. It may be interesting to analyze the total of 16 deaths occurring among the approximately 5,000 cases admitted to the three hospitals at Whitworth Street, Princess Street, and High Street, as follows :—

Tetanus	5
Emphysematous gangrene	1
Septic meningitis	2
Other septic conditions	4
Injuries of chest	3
Mania and stupor	1

purpose. The erection of special buildings possesses many advantages, but would have to be arranged for in time of peace, and would certainly be rendered difficult by the general dislocation of work which accompanies mobilization.

In addition to the scheme for the establishment of hospitals, it is also essentially necessary that the staff of nurses and orderlies should be maintained at its proper level, and that as far as possible reserves should be ready to be called up either on mobilization or shortly afterwards.

The *à la suite* staffs of the territorial hospitals have consisted mainly of consultants, who are naturally somewhat senior men and often very busily engaged in practice. So far as the latter point is concerned, the disturbance to work is perhaps less serious than might be anticipated, as no doubt we have all found that private practice, and even civil hospital practice, has been reduced by the war; but it seems to the writer that it would be highly advisable in future to have on the *à la suite* staff a certain number of quite junior medical officers, holding, say, the rank of lieutenant, and with a limited tenure of office so that they may be successively replaced by other junior men. The need of such junior officers has been greatly felt at the 2nd Western Hospital, and it is only now being made good. Especially, however, we have felt the want of a member of the permanent R.A.M.C. Staff. The Army regulations are complicated, and require a good deal of knowledge of elaborate detail. In Manchester we have been peculiarly fortunate in having the services of Major Westmacott, who has made this subject a study for many years; but even under these circumstances we have felt the want of a regular officer, or perhaps, in our case, rather of a thoroughly trained sergeant-major.

One other point will require careful future consideration. The advantages of locating these hospitals in great cities are obvious, and concern especially the facilities of transport and of supply, the presence of the necessary buildings, and of a sufficient number of surgeons and nurses. On the other hand, there are certain marked disadvantages in locating them in our large towns. The temptations open to the convalescent patient are enormously greater than they would be in the country, and although control can readily be exercised in the more central hospitals, it is much more difficult in the case of the smaller institutions.

There has also been a certain amount of difficulty in dealing with the crowds who flock to see the admission of the wounded, and who have required the services of a considerable number of police in order to regulate traffic, ensure ready passage for ambulances and officers, and otherwise preserve order.

But perhaps the most important consideration of all is that a great difficulty might arise if infectious diseases were introduced. As already stated, we did not know at the beginning of the war with what kind of cases we should have to deal, and we do not know now what the future may hold; had the relative proportions of medical and surgical work been reversed, and typhoid fever, dysentery or cholera been rife at the front—conditions which might readily occur in another war—then indeed the 2nd Western General Hospital would have been almost useless, or else a source of no little danger to our civil population.

APPENDIX.

The following constituted the *à la suite* staff of the 2nd Western General Hospital at the beginning of the war :—

Lt.-Colonels—

Southam, F. A., F.R.C.S.
Thorburn, W., F.R.C.S.

Reynolds, E. S., M.D.

Majors—

Griffith, A. H., M.D.
Milligan, Sir Wm., M.D.
Wild, R. B., M.D.
Cox, J. J., M.D.

Burgess, A. H., F.R.C.S.
Ray, J. H., F.R.C.S.
Murray, G. R., M.D.

Captains—

Wilson, A., F.R.C.S.
Williamson, R. T., M.D.
Cunliffe, E. N., M.D.
Wrigley, P. R., F.R.C.S.
Melland, C. H., M.D.
Bythell, W. J. S. M.D.
Moore, F. C., M.D.
Marsden, R. W., M.D.

Wright, G., F.R.C.S.
Loveday, G. E., M.B.
Wharton, J., M.D.
Sellers, A., M.D.
Donald, A., M.D.
Hooton, W. A., M.R.C.S., L.D.S.
Rayner, H. H., F.R.C.S.

Of these, Majors Cox and Wild were withdrawn at an early date for other military duties, and Capt. Hooton has left Manchester. The following additional officers were gazetted as captains on Sept. 9, 1914 :—

Hey, W. H., F.R.C.S.
Buckley, J. P., F.R.C.S.
Tylecote, F. E., M.D.

Core, D. L., M.D.
Wilson, S. R., M.B.

Messrs Ormerod and Wild, senior medical students, have given invaluable assistance, and carried out much of the work of house surgeons.

Finally, since the above was written, there have been added to the staff :—

Captains—

Lund, H., F.R.C.S.
Macalpine, J. B., F.R.C.S.

Ollerenshaw, R., F.R.C.S.

Lieutenants—

Crawshaw, C. W., M.B.
Brentnall, E. S., M.B.

Moritz, S., M.D.

THE 1st SOUTHERN GENERAL HOSPITAL.

BY GILBERT BARLING, BIRMINGHAM,

My impressions extend over a period of fourteen weeks, at the time of writing, the first batch of wounded being received Sept. 1, 1914. The men were nearly all injured during the retreat from Mons, and what struck me most was not the severity so much as the septicity of their wounds, and the harassed nervous systems of the sufferers, to a degree which has not been apparent in any of the later arrivals of wounds coming under my observation. A large proportion of all the wounded are septic, but it seems unreasonable to regard this septicity as preventable or blameworthy: the conditions under which they are inflicted, and the impossibility in many cases of skilled treatment for perhaps twenty-four hours or even longer, suffice to explain why the wounds are septic. One of the most comforting points about them is the rapidity with which they improve under conditions of rest and very simple forms of dressing.

The surgery of the war has provoked anew the battle of antisepsis *v.* asepsis. Cannot the combatants recognize that Lister's immense service