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HANDBOOK No. 10

(2nd Edition)

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GENERAL PREFACE

The series of Handbooks (of which a list is given on last page of cover) is produced by the Ministry of Home Security with the assistance of other Government Departments and bodies concerned.

The measures for safeguarding the civil population against the effects of air attack are a necessary part of the defence organisation of every country. Preparations to minimise the consequence of attack from the air cannot be improvised on the spur of the moment, but must be made, if they are to be effective, well in advance.

These Handbooks are primarily intended to describe the preparations which must be made by each member of the Civil Defence Services in training himself for his duties, both as an individual and as one of a team, what that training should be, and how it can best be organised and given.

INTRODUCTION

Among the responsibilities placed upon scheme-making authorities by the Air Raid Precautions Act, 1937, and the Air Raid Precautions (General Schemes) Regulations, 1938, was that of setting up casualty services to operate in time of war.

It is unnecessary to stress the importance of such services both from the humanitarian point of view and from the point of view of the favourable effect on public morale of the knowledge that casualties will receive first aid attention and will be removed for surgical treatment and nursing without delay.

The efforts of individuals, however great in number or skilled and devoted, will be less effective than those of a Service trained for the tasks it will be called upon to perform and organised into disciplined units.

This publication is concerned with the training and work of those parties whose duty it is to deal with casualties where they occur and to pass them on to establishments capable of providing appropriate treatment and care.

The principles governing the disposal of casualties are explained in Chapter III.

Parties are stationed at depots situated at suitable points throughout the district (see Chapter II, section 2).

On receiving information that casualties have occurred, they proceed to the scene of the incident with their transport to administer first aid and to arrange for the removal of cases to a First Aid Post or to a Hospital, as may be appropriate.

In most centres of population buildings have been adapted and equipped as First Aid Posts, and in many places Mobile First Aid Units have been provided. The latter are of two types:—

(*a*) the ordinary type which consists of personnel and equipment conveyed in a van and is used to set up as a First Aid Post in a building or in the open or to reinforce an overworked fixed Post;

(*b*) the light Mobile First Aid Unit consisting of a doctor and two nurses each provided with a haversack containing essential equipment which goes in a light car direct to the scene of an incident. The car may be driven by the doctor, or a third nurse.

Appropriate cases are sent to the nearest Hospital capable of receiving them, from which, if it is in a dangerous area, they may be transferred as soon as possible to other Hospitals situated in districts less liable to attack. In these latter Hospitals they would be retained for more prolonged treatment and nursing.

December, 1942.

PART I.—TRAINING OF PARTIES IN FIRST AID

CHAPTER I

Scheme-making Authorities are responsible for the following matters connected with such parties.

Enrolment

The enrolment of personnel, including persons who may already be members of one or other of the existing first aid organisations (St. John Ambulance Brigade, the detachments of the British Red Cross Society or the St. Andrew's Ambulance Corps).

In some areas where there is real difficulty in recruiting men for the service it has been agreed that where parties cannot be brought up to strength by the recruitment of men, women who are in all respects considered suitable for the work may be recruited, particularly as drivers, but this is an exceptional measure.

Difficulties of accommodation and of hours of duty may make it difficult to engage women whole-time as members of parties, and where these difficulties cannot readily be overcome, women have been recruited on a part-time basis only, their stand-by duties being arranged on a rota.

Where recruitment of women has been permitted, it is subject to the proviso that they should be employed primarily on first aid work or driving and not for lifting casualties or for carrying stretchers.

Elementary Training

Prior to their allocation to parties these enrolled members undergo a course of elementary training.

This stage represents the basic training of every Civil Defence worker and sets the standard for all newly enrolled personnel. It consists of elementary training in Civil Defence organisation, first aid and anti-gas measures, incendiary bomb control and protection against high explosive bombs.

Second Stage Training

This stage is intended to raise the standard of knowledge acquired in the first stage and to give war-time technical training in the work of the service in which the recruit has been enrolled as given below:—

(1) *Instruction and Certification in First Aid.*

A certificate in first aid must be held or obtained by personnel for first aid party work. The certificates of the following bodies are recognised as a suitable qualification.

The St. John Ambulance Association.
The St. Andrew's Ambulance Association.
The British Red Cross Society.
The London County Council.
The National Fire Brigade Association.

Classes should be arranged for personnel who are not in possession of certificates.

(2) *Instruction in anti-gas Measures.*

Team Training and Collective Training

Team training is the training of individual workers as members of a team and leads up to the practising together of teams of the same service, or Collective Training.

Combined Training

This form of training involves the co-operation of parties with other organised Civil Defence services by means of Combined Exercises.

Practical and Collective Training

The Local Authority may make its own arrangements directly or may arrange to make use of the normal organisation and training activities of local units of the first aid bodies. Responsibility and command, however, remain with the Local Authority.

It is emphasised that this Service plays a most important part in the working of the Civil Defence Services as a whole; its members must be technically well instructed and well trained in their duties in order that they may collaborate to the best possible advantage with the other Services, under the general direction of the local Controller.

Not only can they do much by the exercise of their technical skill to mitigate suffering and to save life, but, by proper decision as to the initial disposal of each case, they can help to maintain the smooth running of the Casualty Service machine. If they are less good than the best, suffering may be inadequately relieved and lives may be lost.

If the decision as to initial disposal is faulty, the whole Service will be handicapped.

Inter-Service Training

(1) *With Rescue and Decontamination parties:—*

Experience in air raids has shown how useful it would have been if whole-time and, as far as possible, part-time members of First Aid, Rescue and Decontamination Services had been familiar with and able to undertake each other's duties, at all events to a limited extent. The advantage which would result from this has frequently been apparent at incidents when one of these Services has been overtaxed, while members of the other two have had perforce to remain unemployed owing to lack of knowledge of the work upon which the first Service was engaged.

Hitherto, first aid parties have not been so heavily pressed after raids as have the rescue parties, whose work of extricating persons trapped in debris, cellars, basements, etc., and the recovery of bodies may extend over several days and nights after incidents have occurred. Where these rescue operations have been handicapped by a shortage of rescue personnel, first aid parties trained in rescue work would have provided an effective supplement to accelerate the release of the casualties.

They should also have a knowledge of decontamination procedure, for lacking this, in the event of gas being used, their work at an incident might be delayed on account of the absence of trained decontamination squads.

Similarly, members of the Decontamination Service should have a knowledge of first aid and rescue work.

This is a most important point to remember, as the main object of the Civil Defence Casualty Services is to save life and mitigate suffering; every improvement in training, organisation and technique will do much towards the attainment of this object.

An additional and important reason for the adoption of this course is the need for securing the fullest use of available man-power.

Schools have been instituted in most Regions (and Districts in Scotland) where training is given to party leaders and others holding responsible positions.

The courses of instruction last generally for one week and consist of first aid instruction, based on air raid experience, for first aid party leaders and supplementary rescue training for rescue party leaders.

Standard official training in their own subjects is thus provided for the leaders of both services and the weekly courses in first aid and rescue work run concurrently so that it is possible to bring both services together for certain parts of the training.

Inter-service training proper, that is, the training of one Service in the work of another is left to be carried out locally and not at the Regional level.

The general principle is that instructors and leaders in each Service, after

attending a course of instruction, should give instruction locally in their own work to the leaders and parties of other Services. Thus, a first aid party leader, who has attended the training school instructs not only his own party but rescue party leaders and members of rescue parties in the special first aid training received at the school; similarly, the rescue party leaders instruct other services in rescue work. It is not intended that this inter-service training should be confined to these two Services but that it should also be extended to the Decontamination Service, while decontamination work will also be taught locally to other Services by Civil Defence instructors.

(2) *With other Casualty Service Units:—*

When individuals have been trained in their duties as a party, the next stage is the training of all the units of a local Casualty Service to work together as part of the general scheme.

Daylight training should precede night training or exercises in which all the Civil Defence Services are engaged.

Combined training with other Casualty Service units might take the following form:—

Parties, Ambulances, First Aid Posts, Mobile Cleansing Units and Casualty Receiving Hospitals, together with the local Control Centre and necessary intercommunications, should be manned. Groups of casualties should be placed simultaneously at different parts of the area and messages sent to the local Control Centre. Parties and their transport should be despatched and cases handled as in air raids, being received and dealt with at First Aid Posts and at Hospitals.

Co-ordination of Civil Defence Casualty Services with Home Guard Medical Organisation

(1) *The Role of the Home Guard.*

The Home Guard is a static force which at present has no transport or signals of its own. Its main duty is the local defence of strong points. It is not anticipated that any Unit of this force will be moved from its base for any appreciable distance (e.g. 2 or 3 miles). Medical arrangements can therefore be predetermined, and this should be the invariable rule.

(2) *General.*

During periods of enemy action, other than invasion, casualties among the armed forces are dealt with as casualties among the civilian population, unless they occur in certain W.D. enclosed areas, e.g. barracks, when the Civil Defence Authorities are only responsible if the Military specifically call for their assistance.

(3) *Invasion.*

Only where Home Guard units are fighting near Regular Army troops will it be possible for Army Medical facilities to be available for Home Guard casualties. Apart from such occasions, the Home Guard will act in co-operation with the Civil Defence Authorities as explained below.

(4) *Medical Organisation of Home Guard.*

(*a*) *Home Guard Casualty Collecting Posts:—*

These are selected in accordance with the tactical plan and are normally on a platoon basis. If there is a suitably located Civil Defence First Aid Post or Point it will naturally be used as the Home Guard Casualty Collecting Post; in this case the Home Guard Medical Orderly Corporal will be attached as the Home Guard representative.

Where no Civil Defence First Aid Post or Point is available, the Civil Defence Authority may be asked to set up a Post or Point. If this cannot be done, the Home Guard Casualty Collecting Post will be established at a suitable site adjacent to a road, not more than 500 yards from the firing line and, if possible, affording reasonable protection for casualties, e.g. a private house, barn, or air-raid shelter. The War Organisation of the British Red Cross Society and

the Order of St. John of Jerusalem, Scottish branch British Red Cross Society, St. Andrew's Ambulance Association, or the Women's Voluntary Services, may be prepared to help with staffing or equipment. Whenever possible the Home Guard Casualty Collecting Post should be in telephonic communication with the local Civil Defence Central Control and with the nearest Warden's Post. It is important that the location of all Home Guard Casualty Collecting Posts should be notified to the A.R.P. Controller as soon as they are established.

All Home Guard casualties must pass through a Home Guard Casualty Collecting Post. If this is located at a Civil Defence First Aid Post or Point, the Home Guard Medical Orderly Corporal attached as the Home Guard representative will be responsible for recording Home Guard casualties. They will also be included in the normal record of casualties kept at the Civil Defence post or point.

(*b*) *Home Guard Regimental Aid Posts:—*

In the case of certain outlying battalions where Civil Defence Casualty facilities cannot be provided, Home Guard Regimental Aid Posts are established, and each is in the charge of a Home Guard Medical Officer. The number of these posts, which necessitate the continuous attendance of a doctor during operations, must be kept as low as possible and the possibility of using Civil Defence Mobile First Aid Units should be kept in mind. A Home Guard Regimental Aid Post corresponds to a Civil Defence First Aid Post. The evacuation of casualties from Home Guard Regimental Aid Posts is the responsibility of the Civil Defence Authorities, or the Military, whichever is nearer. (See para. 7 below.)

(*c*) *Medical Orderlies and Stretcher Bearers:—*

(i) One Medical Orderly (Sergeant) is trained for each battalion. He supervises the medical personnel and equipment in the battalion and, where a Home Guard Regimental Aid Post is established, takes charge, under the Medical Officer.

(ii) One Medical Orderly (Corporal) is trained for each platoon. He is in charge of the Home Guard Casualty Collecting Post and is responsible for the platoon first aid equipment. He is also responsible for the maintenance and submission of records of all Home Guard casualties which pass through his post, whether independent of or located in a Civil Defence First Aid Post or Point (see para. 4 (*a*) third subparagraph).

Home Guard Stretcher bearers will be used at Home Guard Casualty Collecting Posts according to the operational requirements.

(iii) Stretcher Bearers are trained on a basis of eight for each platoon of approximately 100 men.

(5) *First Aid Training.*

All personnel of the Home Guard are trained in essential first aid.

(6) *Treatment of Casualties.*

Immediate first aid treatment for Home Guard casualties and their care until they reach the Civil Defence Organisation are the responsibility of the Home Guard.

(7) *Evacuation of Casualties.*

Home Guard casualties are directed or brought from the firing line either to Home Guard Regimental Aid Posts or to Home Guard Casualty Collecting Posts.

At Home Guard Regimental Aid Posts and Home Guard Casualty Collecting Posts they receive treatment and are either returned to duty or sent to Civil Defence First Aid Posts or to Hospitals. The N.C.Os. in charge of these Home Guard Posts, having casualties for evacuation, inform the local A.R.P. Controller, either direct or through the nearest Wardens' Post, of the number and nature of the casualties and the location of the post. They will not ask for the despatch of Civil Defence transport if, to their knowledge, the military situation in the vicinity is likely to preclude its safe arrival.

At Civil Defence First Aid Posts or Points, Home Guard casualties will be dealt with under normal Civil Defence arrangements.

The Local Authority, on receiving a call for transport, will verify from the nearest Military Commander that it is safe to send the transport without undue risk of its capture by the enemy or of its interfering with the movements of troops.

It is left to the Local Authority at the Control Centre to decide what transport and personnel should be sent, i.e. ambulance vehicles for stretcher cases, sitting case cars for sitting cases, personnel for loading, etc.

(8) *Loading of Casualties.*

It is the responsibility of the Home Guard to load their casualties on to Civil Defence vehicles at Home Guard Casualty Collecting Posts or Home Guard Regimental Aid Posts after which the responsibility for their care devolves on the Civil Defence Authorities.

In the event of sufficient personnel of the Home Guard not being available for loading purposes, the N.C.O. in charge of the post, when calling for transport, informs the Local Authority concerned, who will then, if possible, despatch sufficient Civil Defence personnel with the vehicles to act as loaders.

Casualties will be taken to:—

(i) Civil Defence First Aid Posts—by sitting case cars

or

(ii) Civil Emergency Medical Service or Military Hospitals—by Civil Defence ambulance vehicles.

(9) *Interim Care of Casualties.*

As casualties may require to be held for some hours before they are evacuated, it is essential that arrangements are made for their comfort and the provision of shelter, warmth, hot drinks, etc.

It is the responsibility of all Military and Home Guard Officers to keep in touch with officers in charge of Civil Defence arrangements, particularly A.R.P. Controllers and Medical Officers of Health, who in their turn should be fully conversant with Home Guard arrangements. This will ensure efficient co-operation.

CHAPTER II

2. GENERAL DESCRIPTION OF THE WORK OF THE PARTIES IN WAR

Before proceeding to discuss the selection, allocation and practical training of the personnel, it is desirable to outline the work to be performed and the organisation of the system.

Stationing and despatch of Parties

Parties are raised, trained and maintained on the scales notified to each Local Authority. Those on duty are stationed in Depots distributed over an area so that any part of it can be reached by one or more parties with the minimum delay. These Depots are in telephonic communication with the local Control Centre.

In the London Region the one-time stretcher parties are now organised and equipped as light rescue parties of five men each, including a leader and driver.

The number of parties allotted to each Depot depends on local conditions but in urban areas is never less than two. Sufficient transport is authorised and should be available at the Depots for moving the parties. Suitable reserves are necessary.

From these Depots parties go out, as required, on the receipt of a message from the local Control Centre, or exceptionally, as the result of direct appeals

from Wardens, Police, etc. When a party goes out in response to a direct call the Control Centre must always be notified.

Arrangements must be made for ambulance vehicles to proceed with or closely follow the parties.

Ambulance vehicles include amongst their equipment four stretchers, eight blankets, four hot water bottles, one large Thomas's splint, and sandbags for the immobilisation of fractures.

Stores and equipment for parties

When coming on duty at his Depot, the leader inspects the party's haversack, the articles to be carried in the vehicles, and each man's water-bottle and pouch. Each man is responsible for coming on duty with his pouch filled and in proper condition, and with his water-bottle filled with fresh, clean water.

During action, personnel may draw, from the vehicles or the party's haversack, articles which they have expended or which are not included in the pouch.

After a period of activity, each member reports to the leader deficiencies in his pouch. The leader is responsible for their restocking.

Stretcher cases sent to Hospitals, or under exceptional circumstances to First Aid Posts, remain on the stretchers on which they were originally placed.

Immediately the ambulance vehicle has unloaded, its attendant draws from dumps or stores at the Hospital or Post, stretchers, blankets, tourniquets, splints, etc., to replace those passed in with the casualties, and returns with these articles.

It is for the Local Authority and Medical Superintendents of Class IA and Class IB Hospitals to see that arrangements are made for this immediate exchange of non-expendable articles in such a way that no time is lost and no vehicle returns to its party or Depot short of any of these essential items.

It is for the Staff Officer in charge of parties generally to satisfy himself on these points and to arrange for reserve stores to be held at Depots for replenishing pouches and haversacks.

Personnel have the above details explained to them and are instructed in the care of the articles.

They are of course reminded of the need for clean hands and nails, both when handling first aid materials and when attending to the wounded.

AUTHORISED EQUIPMENT FOR FIRST AID PARTIES AS AT OCTOBER, 1942

The following is the present authorised scale of issue for First Aid Parties. The list is subject to variation from time to time, and the provision of a number of items is at the discretion of the responsible Local Authority.

INDIVIDUAL EQUIPMENT (PER MAN)

Personal issue.

The following articles may be issued as personal equipment to each man on the effective personnel strength. He must sign a receipt undertaking the responsibility for their safe custody and proper usage, and for their return on demand or when he leaves the service.

1 Steel helmet (Service type, Grade I).
1 Service respirator.
2 Eyeshields (in fibre case).
1 Serge battledress *or* bluette overall.
1 Great coat *or* waterproof cape.
1 Beret.
1 Pair leather boots.
1 Pair leather anklets.

Note.—When women are enrolled, the corresponding uniform garments authorised for them may be provided.

Unit issue.

The following articles may be issued on the basis of unit establishment for use by each man of the shift on duty:—

1 First aid pouch (for contents see below)*
1 Water-bottle with carrier.*
1 Small A.R.P. electric handlamp.
1 Electric spot lamp to clip on helmet.*
1 Pair dust goggles.

* Excluding driver.

Anti-Gas Protective Equipment

1 Light oilskin suit.
1 Oilskin curtain.*
1 Pair rubber anti-gas gloves.†
1 Pair canvas mittens.
1 Pair gumboots.

* To become a personal issue after the first use of gas against this country.
† Except driver for whom oilskin gloves are provided.

First Aid Equipment

1 Haversack and 4 pouches per party.

	Contents of Haversack	*Contents of Pouch*
Bandages, triangular	36	9
Canes for tightening improvised tourniquets	8	3
Cotton wool, 1 oz. pkts.	6	—
Dressings, first aid—large	18	6
—medium	12	6
Labels, casualty identity, pkts. of 20	—	1 pkt.
Lint, unmedicated, in squares about 8 in. by 12 in.	6	—
Ointment, anti-gas 2 oz. jars	8	1
Safety pins (large), cards of 6	8	3
Smelling salts (4 oz. bottles)	1	—
Clasp knife	1	—
Scissors	—	1 pr.
Rubber bandage (for tourniquet)	1	—
*Tourniquet (St. John type)	2	1
*Splints, sectional, wooden, sets	2	—
*Straps for sectional splints	18	—

Each party also carries:—

*Splints, leg, sets	3	*Leather knee pads	2
*Straps for leg splints	21	*Groundsheets (for casualties)	8
Tin box of first aid plaster dressings	1	*Stretchers	4
*Set of webbing bands with handles (for carrying casualties)	1	*Blankets	8
		Respirators, Civilian	4
		Respirator, Child's	1

* These items may be used for training purposes as required.

Rescue Equipment

(for each first aid party trained in rescue work)

5 pairs leather gloves.
4 picks or shovels.
2 debris baskets.

Procedure on arrival at an incident

Officers concerned with the training of parties should familiarise themselves with the operational instructions which have been issued by Local Authorities, and adapt their training to them.

In default of special operational instructions issued by Local Authorities, the following procedure should be observed on the arrival of parties at an incident.

Each party has a recognised leader who takes charge of the situation and directs the activities of the party.

It is of extreme importance that he and his party should immediately report to the Incident Officer, if one is present, or to the Warden in charge of the incident.

At minor incidents (i.e. where damage is not extensive and casualties are few) general control of the situation will usually be exercised by the senior ranking Warden or Police Officer on the spot, according to local arrangements.

At a large or major incident (i.e. where damage is considerable and there are many casualties) general control of the situation will usually be exercised by a specially trained Incident Officer, who may be a Warden or Police Officer.

The Incident Officer acts as the representative on the spot of the Controller and his function is to co-ordinate the effort of the various services so that relief can be provided in the quickest and most efficient manner and the incident cleared up in the shortest possible time. To this end the Incident Officer establishes an Incident Post near a priority telephone (usually a Warden's Post) as a centre of communication at the scene of damage, and keeps Control fully informed of the situation and of the progress of the work of the various services on the spot.

The Leader of each service keeps in constant touch with the Incident Officer at the Incident Post and consults him and also the leaders of other services so far as may be necessary to ensure the harmonious completion of the work.

During the daytime the Incident Post is marked by a blue and white check flag (blue in London); at night, it is marked by two blue lamps placed one above the other.

The Incident Officer himself may be distinguished by an armlet bearing the words " Incident Officer " or by a blue cloth worn over his helmet or in some other prescribed way.

They should also get in touch with the Doctor in charge of a Mobile First Aid Unit, if such be present, or any Doctor at the incident, and work under his direction.

The sequence of action on arrival should be:—

(1) A rapid survey of the situation by the party leader, noting the casualties needing prior attention and those needing extrication.
(2) Such immediate first aid attention as is necessary.
(3) Removal, either direct to the Casualty Receiving Hospital or to a First Aid Post. There will also be certain cases who may be allowed to go home after attention.

Experience affords the following information:—

Of 100 air raid casualties 20–25 will be killed, 20–25 will be seriously wounded and require immediate hospital treatment, 50–60 will be slightly wounded and of these, 5–6 at least, will need hospital treatment.

The party may then have to deal with three main groups of casualties:—

(1) those urgently needing attention in order to prevent imminent death, e.g. cases of severe external haemorrhage or of true asphyxia.
(2) those severely injured and gravely shocked who must have first aid attention in order to make removal possible and to prevent further avoidable shock, which will adversely affect their recovery.
(3) those who after first aid attention can make their own way home or to a First Aid Post.

Time should not be spent in elaborate splinting or dressing, the simplest of the appropriate procedures being chosen (for example, in certain cases, " splinting " a fractured leg by securing it to the opposite one; securing a fractured arm to the trunk). Nothing in the way of first aid attention beyond the essential should be attempted. This maxim should not however be applied too rigidly, and the importance of careful handling and of keeping the patient warm must not be overlooked. The interests of the casualty are best served by his rapid comfortable removal to a place where he can obtain shelter and

detailed care; the interests of the community are served by such methods as will clear an affected area in the shortest possible time, sending cases to their proper destination.

As regards initial disposal, categories (*a*) and (*b*), needing removal by wheeled transport, will fall into two groups, and a decision must be taken in each individual case.

Lightly wounded casualties should be despatched to First Aid Posts or nearby Hospitals in sitting case cars. If their condition permits, they may be directed to walk.

Severely wounded (stretcher) cases who need surgical attention urgently, or whose condition makes it essential to reduce handling and movement to a minimum, should be sent direct to Hospital, as normally neither the staff nor the equipment of First Aid Posts are designed to deal with such casualties.

In exceptional circumstances, where it is detrimental to send the casualty direct from the incident to Hospital, owing to difficulties arising from blocked roads or other causes or from long distances, especially in rural areas, it will be necessary to provide temporary accommodation for stretcher cases in a First Aid Post.

If decision as to initial disposal is incorrect, and if hospital cases go to First Aid Posts, handling and transportation of these cases will be doubled, and space will be occupied unnecessarily in ambulance vehicles and First Aid Posts. It is important that these principles should be understood and adopted not only from the point of view of advantage to the patient, but also because the layout, equipment and staffing in the First Aid Posts are based on the assumption that they will deal only with lightly wounded casualties. The basis of decision is further discussed in Section 6.

It must be understood that parties are not merely and solely stretcher bearers. They are to be regarded as trained personnel charged with duties important both for the individual casualty and for the smooth running of the system.

It may happen that there are more casualties requiring wheeled transport than the vehicles of the party or the ambulances available can deal with at once. In this case the leader of the party will decide priority of removal and give instructions to the drivers of the vehicles to return for further loads. If necessary he will ask the Incident Officer, if one is present, to send a messenger or telephone for more ambulances or sitting case cars. Vehicles will proceed either direct to Hospital or to a First Aid Post and will return to the incident or depot as ordered.

Gas Casualties

In the case of wounded or injured who are also grossly contaminated, it is the duty of the party to dab off any spots or splashes of liquid gas visible on the skin, treat the affected areas with anti-gas ointment and remove the contaminated outer clothing. If the face of the casualty is noticed to be splashed with liquid vesicant, then the eyes should be *at once* washed out with water from the water bottle, but it is important that this should be done only when there is definite evidence that the eyes or the face have been splashed with the liquid vesicant, since if it is done for all casualties as a matter of routine the effect would be to delay seriously the handling of casualties as a whole.

In some cases of very severe injury, it may be necessary, in order to save life, to send the casualty direct to Hospital without any attempt at cleansing on the spot, but even in such a case it should be possible to remove most of the outer clothing before loading the casualty into the ambulance.

Uninjured persons who are simply contaminated by liquid gas should be directed by Wardens, Police, etc., to take prompt steps to obtain cleansing for themselves at the nearest house or at a public Gas Cleansing Centre.

Cases of poisoning by phosgene gas do not require cleansing of the person or decontamination of their clothing. Such cases should be sent direct to Hospital as soon as possible as stretcher cases.

Small articles of personal property will accompany the patient. A distinguishing mark, such as a label, should be attached to certain casualties in the circumstances mentioned in Section 8.

Action of Wardens and Police

Wardens and Police, besides giving such help as they can prior to the arrival of parties without, however, allowing this to interfere with their legitimate duties, will assist the party by indicating the number and position of casualties.

General Summary

Members of parties must bear in mind that:—

(1) their technical knowledge and training in first aid should be of a high standard.
(2) they have definite and important responsibilities as individuals.
(3) they are at the same time members of a team and that their team is part of an organised service.

They should remember that first aid should be as simple as possible; that more urgent cases should be dealt with first; that calm, gentle initial handling with reassurance of the patient and keeping him warm have proved of great importance in preventing shock, and that early removal to shelter and skilled attention, either in a First Aid Post or Hospital, is essential.

It is important that parties should keep in touch with the local Control Centre. Parties with their vehicles must be organised and controlled locally to work in close collaboration with other Civil Defence Services.

3. MUTUAL AID AND REINFORCEMENT

See also Air Raid Precautions Training Manual No. 2B (2nd Edition).

Parties may be called out from a Depot to proceed outside their own area to give assistance to parties in heavily raided districts whose own parties are not themselves able to cope with the situation, or to act as reliefs for such parties.

Local operational instructions should already have been issued in regard to this, in which case, Training Officers should be familiar with them and make any adaptations necessary to conform with them. In default of such instructions, the following procedure should be observed for successful operation.

The leader of any such Party will receive his instructions from the Depot Superintendent. He may be told to proceed by a specified route to a given Rendezvous near the raided area where a Rendezvous Officer and trained Guides, provided by the assisted Authority, will be available to meet the incoming party and direct it to its Reinforcement Camp or possibly to a Depot in the raided area to await further instructions before going into action. Alternatively, the leader may be instructed to join a convoy of vehicles proceeding on Reinforcement, in which case he will be told to report at a Starting Point to the Conducting Officer in charge of the convoy. Large convoys are divided into detachments each in charge of a Detachment Leader, who in turn is under the direction of the Conducting Officer.

It is extremely important when parties composed of men and women (see Chapter I, p. 6) are sent as reinforcements, that information regarding the presence of women is sent to the assisted Authority as early as possible so that separate accommodation for each sex can be arranged at the Reinforcement Camp or Depot to which they may proceed.

When several parties of the same Service are proceeding in convoy, they are in charge of a senior member of that Service present in the convoy.

Depot Standing Orders for Reinforcements

Normally, daily Routine Orders will be issued in the Depot specifying the party or parties and vehicle or vehicles which are to be ready to go out on

mutual aid or reinforcement, if required, and the names of the Officers to take charge of the parties.

Standing orders concerning such reinforcing parties will be posted up in each Depot and will cover:—

(1) *Personal Equipment.*

The amount of personal kit to be taken by each member of a party that is likely to be away for more than 24 hours:—

Normally, each member will be allowed to take a small suitcase or kitbag to carry a change of underclothing, washing kit, etc. The protective equipment that each must take will also be specified, e.g. helmet, respirator, etc. Anti-gas clothing will be loaded in the vehicle only when proceeding on reinforcement outside the area (this applies until gas is used by the enemy). Members of any party or parties detailed each day for mutual aid or reinforcement should have their kit packed so that they will be ready to leave at short notice.

(2) *Party Equipment.*

The specified quantity of first aid equipment to be carried by each party in the vehicle in which it travels (and not in a separate vehicle, because this might get lost or break down).

Blankets for each member are an essential part of party equipment, particularly in cold weather.

So far as possible, all items of equipment should bear the name of the Authority to which they belong.

(3) *Rations.*

The amount and kind of iron rations to be carried by each member of the party, how they are to be drawn and how they are to be carried in the vehicle.

(4) *Vehicles.*

These must be in thorough going order, with all necessary supplies (of petrol, oil, water, etc.) loaded, tyres in good order and at correct pressure, tools and all necessary spares in good condition.

Spare tins of petrol or petrol coupons will be provided for long journeys, and instructions will be given as to how these are to be drawn.

Drivers must take only those vehicles detailed for the purpose, and not vehicles they may prefer to drive.

(5) *Route Orders.*

Before leaving, each driver must be given written instructions covering the route to be followed; the location of the Starting Point (if one has been fixed, as is the case with vehicles proceeding in convoy) and of the Rendezvous; the time of starting and the ultimate destination (if this is known). He must be informed concerning any road blocks or other dangers.

If vehicles have to join a convoy, the instructions to the driver must cover such matters as speed of leading vehicles, intervals to be kept between vehicles, and methods of keeping together.

If a vehicle is to proceed independently, this must be stated.

Whenever a vehicle is halted at night, it should be drawn off the main road and its lights extinguished or reduced to the minimum compatible with general safety.

(6) *Orders to Leaders.*

Leaders or Officers-in-charge of parties leaving on mutual aid or reinforcement must have clear written instructions covering route orders, etc., as above.

Every leader must have with him a form containing the names of all members of his party and the number of vehicle or vehicles being used for reinforcement. If the party proceeds in convoy, two copies of this form should be handed to the Conducting Officer, who will retain one and hand the other to the Rendezvous Officer.

On arrival at the Rendezvous (near to which facilities for feeding, washing, and sleeping are usually available) the leader of an assisting party proceeding

independently will immediately make contact with the Rendezvous Officer, whose post will be marked by a blue and white striped flag (blue in London), and will obtain from him full directions.

These may require the Party to proceed to a Local Reinforcement Camp or Depot, where they will be deployed in accordance with instructions. If a party forms part of a convoy, the necessary instructions will be obtained by the party leader from the Conducting Officer.

Drivers and personnel on arrival must stand by their vehicles until they are instructed to proceed and are told where they are to report for feeding and billeting, as well as for action.

Whenever vehicles are parked at Starting Points, Rendezvous, or other parking places, it is most important that they should be spaced apart and not be closely congregated.

Usually a guide is provided to conduct the party from the Rendezvous to the Reinforcement Camp or Depot, or perhaps to the incident; in the latter case the leader of the incoming party will make contact with the Incident Officer and the leaders of the Services already on the spot so as to decide on the plan of action.

Normally, no reinforcing party should go into action before making such contact; but, if for any reason contact cannot be made and there is obvious and urgent need for additional assistance and equipment, the reinforcing party will at once set to work under the direction of its own leader, who must notify the local Controller of his arrival as soon as possible.

Reassembly and Return

No reinforcing party should leave its action point without first informing an authorised officer on the spot.

Before leaving, the leader should ensure that all members of the original party are present or accounted for, and he should consult with the driver to ensure that all kit and equipment belonging to the party is re-loaded in the vehicle before departure. If gas has been used it should be ensured that no equipment is stored in a contaminated and untreated condition, and that all proper precautions have been taken with contaminated gear.

Parties that have arrived in convoy will usually reassemble at the Rendezvous before returning to their home area. Leaders will then report to the Conducting Officer for instructions.

Normally, return moves are only made in daylight, and then by the shortest and quickest route.

As soon as a party that has been out on reinforcement returns to its home Depot, the leader must report to the Depot Superintendent who, in turn, will notify the Report Centre. The Leader should report the condition of his party—whether any are missing, whether they require rest, food, etc., and when they are likely to be again ready for duty. A prompt report should be made of any equipment which has been left behind or lost and requires replacement.

On a return move, leaders must exercise discipline to obviate needless loss of stores and equipment and to prevent personnel from being unnecessarily missed and searched for.

Practice is essential.

At every Depot, regular practices should be held to cover the action on alarms, call-out and reinforcements, so that all personnel will know precisely what they have to do, and act with the greatest possible speed.

Every Depot should have posted up a map showing all local Starting Points and Rendezvous Points, so that they can be constantly studied and routes committed to memory.

The Civil Defence Reserve

The establishment of Regional Columns is another step in the same direction. These consist of mobile parties, established at convenient central headquarters

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or depots, which are thoroughly trained in a wide range of Civil Defence duties and provided with a wide range of equipment and efficient transport so that they can move at short notice to reinforce any Service or Services that for the moment are unable themselves to cope with a situation.

4. ARRANGEMENTS FOR PRACTICAL TRAINING IN FIRST AID OF PERSONS SELECTED AND ALLOCATED FOR PARTY WORK

The Staff Officer in charge of First Aid training of Parties

The Medical Officer of Health is primarily responsible for all medical services but the Local Authority often appoints under him a Staff Officer in charge of first aid training.

In such cases, it may be convenient for this Officer to be entrusted with the first stage of individual training as described in Chapter I.

Arrangements for training Civil Defence Parties in First Aid

Local Authorities may either make direct arrangements for the training of their parties or may utilise the existing machinery of the uniformed first aid organisations.

Officers and Instructors

The Civil Defence Service of a Local Authority, in addition to the Staff Officer, in charge of first aid training, must have other subordinate officers, some of whom will be required to act as instructors. Training in first aid is a specialised subject, and great care should be exercised in the selection of these officers.

Whatever arrangements are made for the training of personnel in first aid, direct responsibility for the Service still rests with the Local Authority, who must appoint the senior officers.

Subordinate Officers and Instructors

These should be selected by the Medical Officer of Health in consultation with the Staff Officer in charge of the Service. Appointments should be confined to persons of experience, but not necessarily to members of the existing organisations. The Staff Officer in charge of the Service will post his men to Depots for training.

General Outline of Training Suggested.

The subjects dealt with should include:—

(1) Explanation, demonstration, and practice in dealing with casualties with special reference to types of air raid injuries; counter-shock measures; arrest of haemorrhage; methods of immobilising injured parts; the principles of initial disposal; methods of transportation, including carriage without stretchers, stretcher exercises, and the loading of ambulance vehicles.

(2) Knowledge, preparation and maintenance of material and equipment; system of replacement of stretchers, blankets, tourniquets or splints passed on with casualties.

(3) Knowledge of general Civil Defence casualty service organisation. Specific details of the local scheme; the location of the First Aid Posts and Hospitals, the Depots of parties, and Ambulance and Control Centres.

(4) Combined working as mentioned below.

Indoor and outdoor practice should be held, first in daylight (or with artificial light) and then in the dark. Inter-party and inter-Depot tests and competitions should be arranged on the lines suggested in section 6.

CHAPTER III—PRACTICAL TRAINING IN THE TREATMENT AND HANDLING OF CASES

5. GENERAL PRINCIPLES

The training of parties should be practical and approached in a commonsense and realistic way. Judgment and decision will be needed and must be developed, bearing in mind that the Casualty Services are exposed to great stress during air raids. It is at this time that the full benefit of a training which has been made as realistic as possible will be felt. As a result of such training the units will function as efficient and disciplined units of an organised service.

It cannot be too strongly stressed that training is essential to success. The fullest advantage must be taken of every lull in active enemy raiding to teach parties, as well as all other members of the Civil Defence Casualty Services, the most recent knowledge of the best methods of carrying out their work and to instruct them in recent enemy methods of attack and how these affect the Services.

A sound groundwork of first aid is necessary; this has been given in the instructional classes preceding allocation to a party. Each casualty has to be treated on its merits in such a way that vitality is conserved to stand subsequent movement and further treatment.

In dealing with a casualty, the first thing to consider is: " Is there any immediate danger to life? " This would include:—

(1) Hæmorrhage and shock.
(2) Interference with normal breathing (e.g. pressure on the chest by earth or debris as in a collapsed trench or building; or as a result of contact with a live electric wire; or through obstruction of the air passages).
(3) Proximity to a source of danger to life (e.g. fire; dangerous masonry; moving machinery; exposed wires; or escaping coal gas).

These must be dealt with at once. Bleeding must be controlled; interference with normal breathing must be prevented; the source of danger must be removed from the casualty or the casualty from the source of danger.

The next thing is: " Is he to be moved at once? " It may be necessary to move him in order to prevent further injury, as for example if he is found lying on ground contaminated with persistent gas, to make it possible for his injuries to be reached, or to shift him out of heavy rain or keen wind. A casualty should not be moved unnecessarily, and it must be decided whether treatment is called for prior to moving.

To think of some very simple examples:—

A wounded man, found lying on ground saturated with mustard gas and bleeding severely from the main artery of the leg, needs to have the bleeding controlled before he is removed from the liquid gas.

A casualty with a fractured leg found unconscious in a closed room full of coal-gas from a broken gas-pipe is in immediate danger of his life unless he can be got out quickly, and this should be done irrespective of the general rule not to move a case of fracture until the fracture is attended to.

A wounded man, bleeding severely and with an apparently broken arm, found lying unconscious across a machine with still moving parts, should be removed from the machinery before his haemorrhage and his fracture are attended to.

From the above examples, it will be clear that ordinary common sense is necessary in applying first aid; and that the sequence of action in each case has to be considered according to the circumstances.

Certain general principles apply in all cases, and are here re-stated:—

(1) Severe bleeding must be attended to at the earliest possible moment, no matter what other injuries are present.
(2) The casualty must be removed at once from any source of danger.

(3) Ensure normal breathing; artificial respiration if needed must be started promptly and maintained without intermission.
(4) Shock is a condition of failure of vitality varying in degree from faintness to extreme and dangerous prostration, and is very marked amongst air raid casualties, even affecting those who are uninjured or only slightly injured. Treatment should be given as laid down in Chapter IX.
(5) Death is not to be assumed because signs of life are absent. For example, in a case of true asphyxia it is better to persist in artificial respiration on a corpse than to let a man die for lack of trying. Cases have recovered after breathing has stopped for long periods. To decide that a case is dead is always difficult.
(6) Where there is injury to the abdomen or chest wall, handling and movement should be extremely gentle and reduced to a minimum.
(7) In cases of severe laceration or of fractured bones, the affected parts should be immobilised by the use of splints, or by the simple methods to be described before the patient is moved, subject always to the considerations mentioned above. The greatest care should be taken, especially when a broken bone protrudes.
(8) In all cases, the first consideration is by correct prompt action to save life; the second is to deal with shock; the third to prevent aggravation of the condition, by injudicious movement or careless handling; the fourth to arrange for the removal to shelter and skilled care.

These general principles apply to all first aid.

6. INITIAL DISPOSAL

Lightly injured cases

Casualties very slightly injured may be able to proceed to their own homes. If they require further treatment they must attend at the Out-patients Departments of certain Hospitals, or if they are insured persons they are entitled to free treatment by their panel doctors.

Many cases although able to walk are not fit to go home direct. They must be directed to First Aid Posts or nearby Hospitals or may be taken there in sitting case cars.

There are other cases who consider themselves fit to walk but who are found to be unfit to do so. These should also be disposed of by means of ambulances to a Hospital or by sitting case cars to a First Aid Post.

Cases requiring transport

First Aid Post casualties comprise those who require attention by a doctor, but who nevertheless are not likely to require in-patient hospital treatment even though temporarily unable to walk far. Where a Hospital is the nearest convenient place, these casualties may be directed there.

Hospital cases comprise those who are likely to require resuscitation or surgical treatment. They should be sent to Hospital direct, straight from the streets. An exception must be made of persons who are too severely injured to stand a long journey until they have received attention from a doctor at a First Aid Post.

If the Hospital is near, all stretcher cases must be taken there direct.

A few examples of hospital cases are:—

(1) All cases of internal haemorrhage; open pneumo-thorax; shattered limbs; grossly lacerated and crushed limbs; abdominal wounds; compound-complicated fractures; fractures of skull, spine, pelvis and thigh; injuries involving the eye; injuries involving the lower jaw and control of tongue.

(2) Cases of severe haemorrhage and of multiple or extensive burns.

(3) Cases in which further shock is likely to supervene; as in persons trapped for long periods under debris, or exposed to cold and wet. In fact all but those with trivial injuries and those who are merely shaken, frightened or

faint. It must not be forgotten that very small external wounds may be associated with severe damage beneath the surface.

(4) Diabetic patients are liable to attacks of sudden illness which may be accompanied by unconsciousness. The Diabetic Association has made arrangements for diabetic patients to be supplied with a special identity disc which will be worn round the neck or wrist and a card which should be carried in the patient's pocket.

If the patient is uninjured and still conscious, he should be given a sugared drink and sent to Hospital as soon as possible.

If the patient is unconscious, he should on no account be given a sugared drink but must be transferred to Hospital at once.

7. INDIVIDUAL AND TEAM PRACTICE; TEAM-TESTS AND COMPETITIONS; ITEMISED MARKING SHEETS

First aid training should include the following exercises which are indicated as suggestions and may be improved upon or added to in the light of experience.

Individual Practice (Indoor and Outdoor)

Training and practice in:—

(1) Diagnosis and need for priority of attention.
(2) Decision as to the first aid treatment required, and its application.
(3) Decision as to initial disposal and priority despatch.

Training in team work within the Unit (Indoor and Outdoor)

The training of parties should proceed on the assumption that each party has been called out to deal with a group of say 10–15 casualties. The procedure should be as in A (*a*), (*b*), and (*c*) above, but in addition, the removal of casualties should be practised, and the use of different methods of lifting and hand carriage in circumstances where stretchers cannot be taken, e.g. in the case of casualties trapped in and extricated from debris, etc. The loading on stretchers and then into Ambulance vehicles should finally be practised.

As training progresses the parties should be divided into three groups, one to act as casualties, one to attend to them and the third to observe and criticise.

Expedients used to facilitate Training

For the above purposes, either casualties should be labelled or the instructor should give a verbal description of the appearance of the injury and of the general appearance of the casualty. A diagnosis or definite statement of the type of injury should not be given. This is to be arrived at by the pupil.

While this is useful it offers little scope for first aid diagnosis by the pupil from his own personal observation of the actual condition and injuries of the casualty.

To remedy this and introduce realism a method of " faking " injuries on a " casualty " has been devised and, wherever it is possible, instruction should be given by this means.

By " faking " is meant the " making up " of a wound or injury to simulate the real thing, in the same way as an actor " makes up " to play his part on the stage.

To produce the desired realism, every detail must be studied and included in the " make up " of the wound or injury, as also of the general appearance of the " casualty " so that he or she may present a lifelike representation of what would actually be found under air raid conditions were he or she to become a casualty.

The co-operation of the subject for " faking " must be obtained so that he or she can play the part by acting as a real casualty would. Most injuries produce swelling in some degree and this is simulated by using a base of

household putty thinned down at the edges with linseed oil. This when " built up " on the surface of the skin produces an appearance of swelling and also acts as a foundation on which to work up further injuries. By covering this with suitable tints of theatrical grease paints the colour of the skin can be matched. If no breakage of the skin has taken place a bruised effect will be present and this can be reproduced by colouring the putty with dark red, blue and black grease paints in this order.

Where a break in the skin is to be reproduced, cuts in the putty are made with a knife, these cuts are then coloured with scarlet grease paint and partially filled with vaseline which has been previously coloured a dark red.

Pieces of wood cut to the required shape or pieces of bone can be used and embedded in the wound to produce the appearance of a compound fracture. Sausage skins or the intestines of animals, obtained from a butcher, and partially inflated, are used to represent the protrusion of intestines from an abdominal wound; cellophane is very useful to simulate blisters and diluted cochineal solution is used as a substitute for blood.

Burns and scalds do not need the putty base and can be reproduced by applying suitable coloured grease paints direct to the skin, leaving pieces of charred paper or clothing adhering to it.

In addition to the above it is very important to " make up " the facial appearance of the " casualty " to produce pallor, cyanosis, flushing or other signs which would be present as the result of an injury. This is done by means of appropriate grease paints and powders, while to produce a semblance of sweating, water can be sprayed on with a scent spray.

The " casualty " having been instructed how to act is then placed, if possible, on the site of an " Incident " in such a way as to show how his or her injuries may have been caused. Dust and debris should be scattered around and aqueous solutions of suitable colouring material poured on the ground to represent pools of blood.

It is very important that party personnel should be given the opportunity of seeing actual wounds and injuries, apart from those caused during air raids, and every effort should be made, especially during lulls in enemy action, to arrange with local Hospital Authorities to permit these personnel to attend regularly at the Out-patients Departments where they can obtain a first hand knowledge of patients and benefit by seeing how they are treated. This applies equally in the case of personnel of the other Civil Defence Casualty Services, i.e. First Aid Post and Ambulance Services.

Some examples might be:—

(1) *To represent a case suffering from a compound fracture of the right thigh bone.*

The person to represent the casualty might be discovered lying on his back with his right foot turned out, a " faked " external wound having been " built up " at the site of the fracture, which is in the upper part of the thigh bone. Pieces of real bone or a plaster cast of the thigh bone broken across are embedded in the wound and protrude from it. Fragments of torn muscle and extensive damage to the skin with signs of severe bleeding are reproduced in the wound and the clothing in the neighbourhood of the wound is cut and torn. The face of the " casualty " is " made up " to represent a condition of severe shock.

The following information may be given by card or orally by the instructor:—

Patient answers when spoken to.
Face pale.
Skin cold and clammy.
Damp sweat on forehead.
Pulse weak and rapid.
Breathing shallow and weak.
Shortening of right leg.

(2) *To represent a case suffering from a compound depressed fracture of the skull.*

In this case good co-operation by the " casualty " is very important. He might be discovered lying on his back or side and should pretend to be unconscious. His face is " made up " to appear slightly flushed and his breathing is a little " snoring."

A " faked " fracture of the skull on the right side about three fingers' breadth above the ear has been " built up " and the legs and arms on the left side of the body (i.e. the side opposite to the fracture) are allowed to go limp to simulate flaccidity.

The injuries simulated having been discovered by the pupil, he should proceed to examine the whole body rapidly but thoroughly in order to eliminate the possibility of the presence of other serious injuries, taking care not to touch the wound, or to press on injured bones. He should then proceed to give the appropriate treatment, and to state what would be his decision as to immediate disposal, whether home, to First Aid Post, or to Hospital.

The above are examples of what is meant, and others can readily be thought of and set out.

The instructor should not volunteer a full statement at the beginning of the examination, but should state appropriate details in reply to definite questions put by the pupil. The pupil during his examination of the case will thus elicit the data he requires for his first aid diagnosis.

Inter Team or Inter Depot Tests and Competitions should be arranged

Both in practice and in tests or competitions it will be helpful for the instructor to use detailed marking sheets, which set out each step in the process and allot marks.

Simple examples of such itemised marking sheets are given herewith.

EXAMPLE I.

(*a*) *Information*—given by means of a card, or orally by the instructor or judge:

"This man has been carried out of a burning building. His hands are burnt; there are no obvious signs of bleeding or fracture. He is unconscious."

(*b*) *Note for Instructor.*

Man to be lying on his back.

(*c*) *Marking sheet.*

Is he breathing? (" No ").	 2
Any signs of injury to the chest (" No ")	 2
At once place casualty upon his face	 2
with arms extended above the head	 2
and head turned to one side	 2
so as to keep his nose and mouth away from the ground	 1
Do not waste time by loosening clothing	 2
To turn on to the face, stoop at his side, place his arms close to his body	 2
cross his far leg over his near leg, and, protecting his face with one hand	 2
with the other grasp his clothing at the hip on the opposite side of the body and pull him smartly over	 2
see that there is no obstruction in the mouth	 2
Induce expiration. Kneel across the casualty facing his head	 1
Place your hands on the small of his back, their lower edges just clearing the top of his pelvis	 1
the wrists nearly touching, the thumbs as near each other as possible without strain	 1

and the fingers passing over the ribs on either side and pointing towards the ground, but not spread out	 1
Bending your body from the knees swing slowly forward so that the weight of your body is conveyed to your hands directly downwards. No exertion needed; the necessary pressure is given by the weight of your body	 2
Swing your body slowly backwards to its first position thus removing the weight from your hands which are kept in position	 2
Alternate these movements by rhythmic swaying forwards and backwards of your body	 2
12 times a minute	 2
The rhythm is: pressure 2 seconds and relaxation 3 seconds	 2
When natural breathing begins regulate the movements of artificial respiration to correspond with it	 2
Wrap casualty in blankets and rapidly look for other injuries	 2
Apply strips of lint to burns on hands	 1
covered with pad of cotton wool and secured by bandage	 2
If stretcher at once available, load casualty on to stretcher, obtaining assistance from other members of your party	 2
For loading with two, three or four bearers—correct procedure	 4
Decision as to initial disposal (to first aid post by wheeled transport)	 2
	50

EXAMPLE II.

(*a*) *Information* (by card or orally):—

"The casualty is found lying unconscious in the street. He appears to have been struck by falling masonry and to have been driven violently against a handcart."

(*b*) *Note for Instructor.*

The casualty is lying on his right side with his right hip resting against an overturned handcart. He is unconscious, but comes round during the course of the test. Occipital haemorrhage; fractured pelvis; simple fracture right scapula.

(*c*) *Marking sheet.*

Speak to the patient. He does not answer	 1
Is he breathing? ("Yes")	 2
Carefully remove barrow from casualty, and out of the way	 1
Note possible injury to pelvis	 2
Note haemorrhage back of head	 2
Is blood scarlet? ("Yes")	 1
Spurting? ("Yes")	 1
Character of Wound ("Incised")	 1
Decide treat as arterial haemorrhage	 2
Apply indirect pressure on occipital artery pressure point	 2
Is haemorrhage controlled? ("Yes") Examine the wound	 1
Foreign bodies? ("No")	 1
Local signs of fracture? ("No")	 2
Apply clean dressing	 1
Haemorrhage still controlled? ("Yes")	
Further examination. Colour face ("pale")	 1
Skin ("cold and clammy")	 1
breathing ("shallow")	 1
Any blood from nose, ears or mouth? ("No")	 3
Undo tight clothing neck, chest and waist	 1
Keep head low and turn on one side	 2
Treat shock. Gently wrap in blankets	 2
Examine for other injuries. Clavicles (normal)	 2

scapulae, left (normal), right irregularity	2
and swelling	1
Any obvious signs of haemorrhage? (" No ")	1
Left scapula normal. Shoulder joints both normal	2
Forearms and hands normal	2
Ribs normal	2
Any signs of injury to the chest?	1
Treat simple fracture of right scapula	2
Apply broad bandage in armpit injured side, cross ends over uninjured side and tie under arm	2
St. John sling	3
(The Judge: " Patient is now recovering consciousness ")	
Enquire pain anywhere else. (Patient indicates right hip)	2
Can he move lower limbs? (" Only with difficulty and pain ")	2
Any obvious deformity of limbs?	1
Suspect fractured pelvis	2
Confirm no injury to spine	2
Confirm no injury to lower limbs	2
Lay in position of greatest ease	2
Broad bandage round hips	2
tight enough to give support	2
bandage both knees and both ankles together	2
Blankets or coats over and under patient	2
Ascertain if haemorrhage still controlled ("Yes ")	2
If stretcher available, obtain services of other members of party for loading	2
Prepare and test stretcher (stretcher to be prepared with blankets)	4
Place in position for loading	1
Load stretcher supporting injured parts	5
Lift stretcher; adjust slings; advance	5
(Ambulance vehicle now available)	
Approach ambulance and load into ambulance	4
Decision as to immediate disposal (direct to Hospital)	5
	100

EXAMPLE III.

(*a*) *Information* (by card or orally):—

"Two of you have been detached by the leader of your party to attend to the following group of six casualties:—

No. 1 casualty is obviously dead, since you can see that the whole of the right side of his head has been crushed in.

No. 2 casualty is standing leaning against a wall, holding his head. Bright blood is running from his head over his fingers, hands and arms.

No. 3 casualty is lying on the ground apparently unconscious, with no obvious signs of injury.

No. 4 is lying quite still with blood spurting from a wound in the middle of his right thigh.

No. 5 is lying on his back shouting and throwing his arms about. There is some deformity of the right leg.

No. 6 is semi-reclining, holding the right side of his chest and is coughing up blood, apparently with pain at every breath."

(*b*) *Note for Instructor.*

No. 1 is dead.

No. 2 has a slight scalp wound at the top of his head.

No. 3 is suffering from internal haemorrhage from a penetrating wound of the abdomen, with small points of entry and exit.

No. 4 has an incised wound of right thigh with bleeding from right femoral artery.

No. 5 is hysterical and has compound fractures of his right tibia and fibula.

No. 6 has complicated fractures of the sixth and seventh ribs on the right side.

(*c*) *Marking Sheet.*

Priority.

No. 1 bearer goes at once to casualty No. 4	3
and immediately makes indirect digital pressure on the pressure point	3
finds incised wound, with no fracture or gross laceration	2
raises limb and supports it raised	2
No. 2 bearer proceeds to casualty No. 5 and warns him to keep still	
Then goes to help No. 1 bearer with No. 4 patient, adjusting St. John tourniquet accurately on the pressure point	2
After wrapping No. 4 casualty in blanket and supporting limb in elevated position, on anything available (box, large stone, etc.) No. 1 bearer proceeds to casualty No. 6, No. 2 bearer to casualty No. 2.	2
Casualty No. 6. Bearer inclines him to right side, supporting him in that position and warns him to lie still	2
The other bearer to casualty No. 2. Decides no dangerous arterial haemorrhage and no underlying fracture	2
Applies dressing, pad and bandage	1
No. 1 bearer to casualty No. 3. No obvious signs of injury. No signs external haemorrhage	2
Casualty pale, skin cold and clammy, breathing, sighing	2
Decide internal haemorrhage. Wrap patient warmly	2
Both bearers to No. 5. Leg steadied until splints applied	2
Clean dressing to wound	1
Two splints	2
Firmly apply	1
Five bandages correct positions	3
Bandages passed correctly	3
One bearer to No. 4 patient. Notes haemorrhage still controlled	2
Elevation maintained	1
Other bearer to No. 6 patient. Right arm in large arm sling	2
Cover casualty No. 1	
Decision as to initial disposal:—	
No 2 home as walking case with instructions to attend own doctor or first aid post	
No. 3 and No. 4, direct to hospital	4
No. 6 and No. 5, direct to hospital	4
Priority of removal in this order:—	
(1) No. 3 and No. 4	
(2) No. 6 and No. 5	4
Load on to stretchers as available, obtaining assistance from rest of your party	2
Loading on to stretchers:—	
Casualty No. 3	4
Casualty No. 4	4
Casualty No. 6	4
Casualty No. 5	4
When ambulance vehicle available	
Loading into ambulance vehicle	8
	80

CHAPTER IV

8. MARKING OF CASUALTIES AND DISPOSAL OF THE DEAD

Parties are not expected to label all casualties or take particulars of names and addresses. An exception exists where for some special reason, such as the application of a tourniquet or the administration of morphine by a doctor, it is important to draw special attention to the case. A plain luggage label is issued for the purpose, but, failing this, a piece of paper attached to a button or pinned to the clothing will serve to distinguish the case.

The symbols used for marking and their interpretation are as follows:—

Symbol on label or forehead.	*Interpretation.*
X	Requires priority of removal from the incident and of examination when reaching hospital. This is used mainly, but not exclusively, for wounds of the chest and abdomen, and for internal haemorrhage.
T	A *tourniquet* has been applied. The time of application of the tourniquet and subsequent releases should also be indicated on the label.
H	Severe haemorrhage has occurred.
M	Morphine has been given. The time of administration and dose should be written on the label.
C	Contaminated by PERSISTENT GAS.
XX	Poisoned by Phosgene Gas or other non-persistent gases.
P	Phosphorus burns.

These markings on the label are additional to markings of the appropriate capital letters on the casualty's forehead, in cases where this is possible.

Diagnosis of Death.

In the absence of a doctor the party should itself take the responsibility of diagnosing death in clear cases, but where there exists any doubt as to whether life is extinct the advice of a doctor should be obtained on the spot.

If no doctor is immediately available, to avoid delay the casualty should be sent direct to a Hospital and *not* to a First Aid Post.

Collection of bodies.

When dead bodies are recovered they should be deposited in the nearest convenient building and some suitable covering placed over them, pending removal; they should not be left on the highway or in an open space. The public and all persons not directly concerned should be kept away whilst bodies are being recovered.

Labelling of bodies.

A label bearing the following information should be firmly tied to a part of the body or clothing of the deceased; special printed or typed labels should be provided for this purpose by Local or Scheme-Making Authorities, and each should be signed by the party leader.

(1) The address of the premises where the body was recovered.
(2) The position in the building (if this can be defined).
(3) The time and date when recovered.
(4) Apparent cause of death (e.g. bomb splinters, falling masonry, fire, etc.).
(5) Any other special information which might assist in identifying the body (e.g. name of casualty if known).
(6) If the body is contaminated with lewisite or mustard gas, or is suspected of being contaminated, the label should be clearly marked with a " C."
(7) For those suspected to have died from the effects of poisoning by phosgene or other non-persistent gases, the label should be clearly marked "XX."

Removal of bodies.

Recovered bodies should be removed to the mortuary as soon as possible, after labelling, by the appropriate Service, normally the Local Authority's special mortuary vehicles.

9. METHODS OF TRANSPORTATION

Stretchers

Most of the stretchers issued for the Civil Defence Services are of the rigid pattern, but many types of folding stretcher exist throughout the country and will be used as required. The dimensions of the Civil Defence rigid stretcher are as follows:—

Length—	
Bed	6 ft. 0 in.
Poles	7 ft. 9 in.
Width, total	1 ft. 11 in.
Height	6 in.
Distance between centres of runners	4 ft. 10 in.

Owing to the difficulty experienced in getting full length stretchers into certain hospital lifts and small commercial vehicles, some of the latest metal stretchers are 7 ft. 4 in. in length, 2½ inches having been taken off the handles at either end. The position of the runners, the U-shaped legs, on which the stretcher rests, remains the same.

1. *Training in the use of Stretchers.*

The placing of casualties on stretchers, and their removal and loading into ambulances should be in accordance with methods which have been found by experience to be the most comfortable to the patients. Hence it is essential that parties should receive training in the form of drill for correct stretcher carriage and practice in loading and handling stretchers.

2. *Stretcher Practice.*

(*a*) *"Stand to Stretcher."*

The four men of approximately the same height will be numbered 1, 2, 3 and 4. No. 1 is the leader and stands at the front right handle. All orders will be given by No. 1.

No. 2 places himself at the left of the stretcher opposite No. 1, No. 3 is at the rear handle behind No. 1, and No. 4 behind No. 2.

(*b*) *"Lift Stretcher."*

All stoop, grasp the handles of the poles with the inner hand, rise together, holding the stretcher at the full extent of the arm.

(*c*) *"Collect Wounded."*

The bearer squad will advance and place the stretcher on the ground in line with the patient, either at the head or foot as may be convenient.

No. 1 proceeds to the right side of the patient and attends to him assisted by No. 3, who has proceeded to his left side. Nos. 2 and 4 prepare the blankets on the stretcher.

When the patient is ready for removal and the stretcher has been prepared, Nos. 2 and 4 will take up their position on either side of No. 3, No. 2 being at the feet and No. 4 at the shoulders of the patient.

All bearers then kneel on the left knee and pass their hands beneath the patient, No. 2 supporting the legs, Nos. 3 and 1 (by linking hands) the thighs and hips and No. 4 the upper part of the trunk. The patient is then carefully lifted on to the knees of Nos. 2, 3 and 4 bearers, after which No. 1 brings the stretcher, places it on the ground in front of them, arranges the blankets and

then assists in lowering the patient on to it. Any convenient article may be used to serve as a pillow if necessary. The bearers then rise and resume their original positions ready to lift the stretcher.

3. *Moving patients from one stretcher to another.*

When transference of a patient from one form of stretcher, i.e. Army pattern to Civil Defence pattern or vice versa is necessary, the following movements will be carried out.

After the Army pattern stretcher carrying the patient has been laid on the ground, No. 3 bearer will proceed to its left side and take up his position between No. 2 and 4 bearers. All bearers then turn towards the stretcher, kneel on the left knee and pass their hands beneath the blankets in which the patient is wrapped, No. 2 supporting the legs, Nos. 3 and 1 (by linking hands) the thighs and hips and No. 4 the upper part of the trunk. Care must be taken not to disarrange the blankets.

The patient is then lifted on to the knees of Nos. 2, 3 and 4 bearers. No. 1 disengages, removes the stretcher and brings the Civil Defence Stretcher,

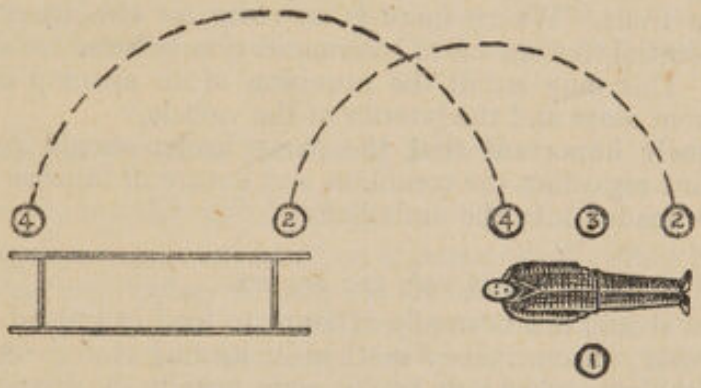


FIG. 1—LOADING STRETCHERS.

places it on the ground in front of Nos. 2, 3 and 4 bearers and assists in lowering the patient on to it.

The bearers then rise and resume their original position ready to lift the stretcher.

4. *Advancing.*

The bearers step off together with the inner foot, knees slightly bent, using short, shuffling steps. The party is therefore out of step, which is more comfortable for the patient. If only two men can be spared to carry the stretcher the front man should step off with the left foot and the rear man with the right, thus being out of step. As a rule it does not matter whether a casualty is carried head first or feet first, but when going uphill it is more comfortable for him to be carried head first unless there is some reason to the contrary (see page 36).

5. *Shoulder carry.*

The party should halt, turn inwards, grasp the stretcher with both hands, and lift it gently on to the shoulders, turning to the right or left according to the direction they are going. When a stretcher is being carried on the shoulders both hands are required to support and steady it, and some padding on the shoulders is desirable.

6. *Loading a Stretcher with only two bearers.*

The stretcher is again placed in line with the patient, preferably at his head. After dressing the wounds the two bearers stand astride the patient, facing the stretcher. The patient's arms are folded across his chest if he is

unconscious, but if not he may be able to help by either pressing up from the ground or by helping to lift himself by taking the leading bearer round the neck with one or both hands as he bends down. The bearers should both bend together, lift the patient by the shoulders and thighs and shuffle forwards, straddling the stretcher as they advance.

7. *Loading an ambulance.*

The method of loading will depend on the type of fitment in the vehicle. The stretcher should always be lowered to the ground in line with the vehicle, the patient's head to the front. After No. 1 has made certain that the tracks and steadying straps are clear and in proper position the four bearers turn inwards, lift the stretcher together and slide it into the tracks, assisted, when circumstances permit, by the ambulance attendant. The most awkward berth to load—generally the upper berth—should be loaded first unless there are reasons to the contrary. The ambulance attendant should see that the steadying straps are properly adjusted and that the patient is as comfortable as possible and well wrapped up before the ambulance moves off. Wherever it is possible the attendant should travel inside the ambulance with her patients and not sit in front. Where there is no room for the attendant inside the vehicle it is essential that means of communication between her and the patients should exist. This may entail the provision of an opening in the partition between the front seats and the interior of the vehicle.

It is extremely important that the party leader should give information to the attendant regarding the condition and nature of injuries of the patients when they are loaded into the ambulance.

8. *Loading an Ambulance with only two bearers.*

Two persons should not normally attempt to load or unload an Ambulance. There is, however, an emergency method of loading stretchers into the lower berth of an Ambulance when only two persons, usually the driver and attendant, are available. This is described below.

1. The stretcher should be placed at the rear of the Ambulance in line with the lower berth selected for loading and with the head of the patient towards the Ambulance.
2. The patient should be secured to the stretcher by means of two triangular bandages forming armslings (as shown in Fig. 8 on page 35) to prevent him from sliding when the stretcher is tilted during loading.
3. The bearers (A) and (B) then take position at opposite sides and while lifting the head end of the stretcher draw the handles forward until they rest on the floor of the Ambulance.
   The handles are again lifted and the foot of the stretcher drawn forwards until the ends of the handles rest against the tracks of the lower berth.
   The patient is comfortably held in position on the stretcher by the arm slings referred to above.
4. One of the bearers (A) now moves to the foot of the stretcher keeping his hands on the side nearer to him to prevent it from slipping, the other (B) remains at the head of the stretcher holding it in position.
5. The bearer (A) at the foot of the stretcher now lifts that end and pushes it forward so that the handles slide along the tracks of the berth, guided by the bearer (B) at the head of the stretcher.
6. This having been done, the bearer (B) joins his colleague (A) at the foot. Both now raise the foot of the stretcher above the level of the berth so that the weight of the stretcher is supported on the tips of the handles at the head end and the runners of the stretcher will slide easily on to the tracks. When the runners of the stretcher are engaged in the tracks the stretcher must be brought level and pushed home slowly into position.

9. *Unloading the Ambulance.*

1. Arm slings should be adjusted as shown in method for loading.
2. The stretcher should be drawn out until the runners of the stretcher at the head end are almost at the end of the tracks.
3. The foot should now be tilted upwards until the weight is supported by the handle ends at the head of the stretcher and then drawn slowly outwards until the runners of the stretcher have just cleared the ends of the tracks.
   The stretcher will then be lowered at the foot end until the rear handles rest on the ground while those at the head end remain against the ends of the tracks of the berth.
   The bearer (A) on the side of the stretcher nearest the Ambulance should go to the head of the stretcher and hold it securely, bearer (B) will take up a position opposite to him.
4. The bearer (A) now assists the bearer (B) in lifting the head of the stretcher from the tracks and at the same time should move slowly backward, pivoting the foot end of the stretcher on the handle farthest away from him. When the head of the stretcher is clear of the rear of the ambulance, (A) and (B) should gently lower the head of the stretcher to the ground.

General Instructions regarding the Use of Stretchers

1. *Preparation of a stretcher with blankets.*

Before an injured person is placed on a stretcher, it should be covered with a blanket folded lengthwise, or with his overcoat, so that he does not lie in direct contact with the canvas or metal bed-portion. This adds to his comfort and keeps him warm, thus reducing shock. It is more important to place blankets under him than over him. With two layers of blanket underneath and one on top a man is better off than with one layer underneath and two on top.

When three blankets are available they should be folded and used as shown in the following diagrams:

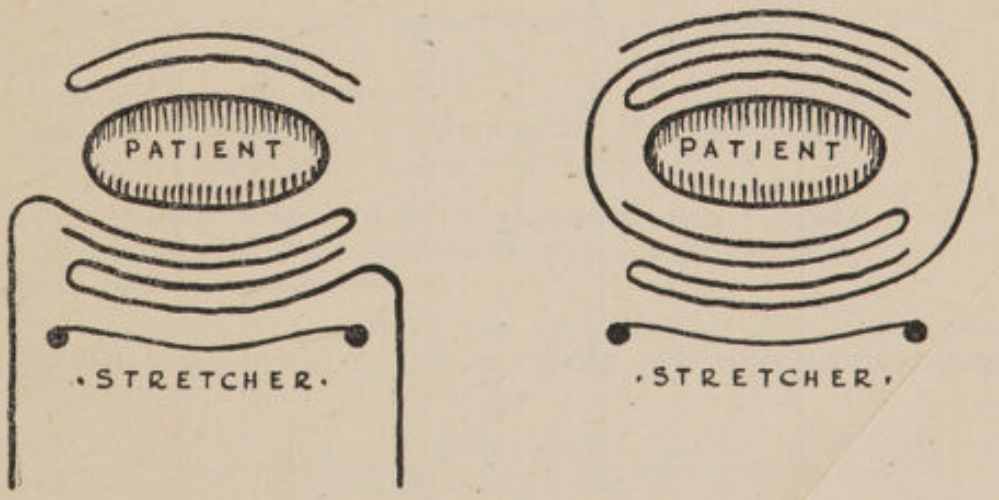


FIG. 2—PREPARATION OF A STRETCHER USING THREE BLANKETS.

If only two blankets are available instead of three, the upper folded blanket shown must be dispensed with.

Another method has been devised, using two blankets only.

A full description of this with diagrams is given below.

2. *A method of blanketing Civil Defence or other stretchers, using two blankets only.*

(*a*) *Preparing the stretcher.*

(i) Place blanket A lengthwise across the stretcher with one *side* close to the head end of the stretcher, and one *end* of the blanket having a slightly longer overlap of the stretcher than the other end. (Fig. 3.)

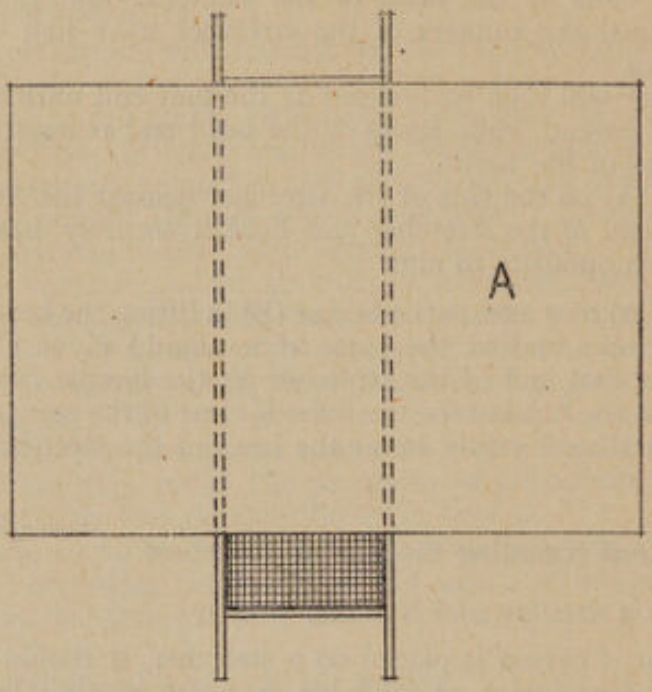


FIG. 3.

(ii) Fold blanket B in three lengthwise and place over A, the upper edge of this folded blanket being about 15in. below the upper edge of Blanket A (Fig. 4) (See note 1).

(iii) Open the folds of blanket B for about 2 feet at the foot end (Fig. 4).

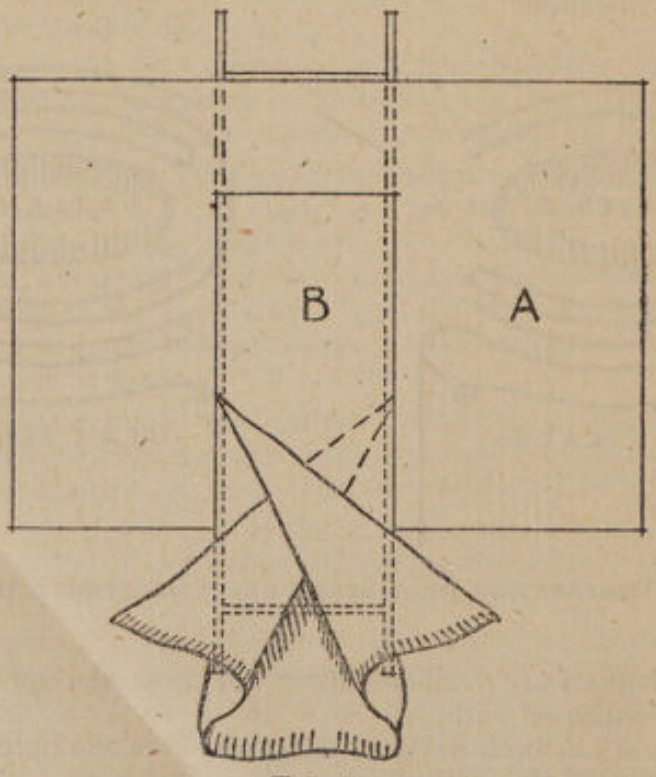


FIG. 4.

(*b*) *Wrapping a Patient.*

(i) Bring the foot of blanket B up over the feet with a small fold between the feet.

(ii) Tuck the two open folds of blanket B closely over and round the feet and ankles (Fig. 5).

(iii) Turn in upper corners of ends of blanket A (Fig. 5), wrap shorter end of blanket A over patient and then the longer end and tuck well in at side (Fig. 6).

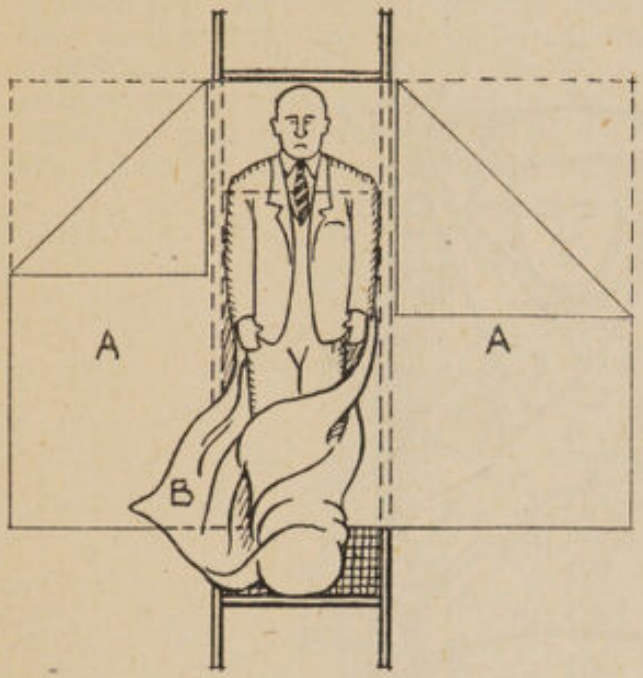


FIG. 5.

FIG. 6.

METHOD OF BLANKETING STRETCHERS USING TWO BLANKETS.

(*c*) *Preparing blankets for stowing in readiness on ambulance or as a pack.*

(i) Proceed as under 3 and 4 for preparing a stretcher.

(ii) Fold in the two ends of blanket A, taking the folds to the side of the stretcher twice then fold over again on to the stretcher.

(iii) Fold the foot end of blanket B on to the stretcher and then fold over and over with blanket A to form a flat pack in the centre of which a hot-water bottle can be placed when required.

Note 1. A minor refinement for short patients only. Blanket B may be drawn up 6in. over the head and folded over, giving seven layers, instead of four under the head, as a pillow.

Note 2. This fold to go between the feet comes up almost automatically when the foot of blanket is tucked over the feet and makes both for neatness and comfort.

Note 3. It is found, even with broad patients, that the rolled edges can be eased out from under the shoulders without difficulty or discomfort.

Note 4. The foot and head ends of the folded blankets are, respectively, thin and thick, and can be distinguished instantly. For an example an ambulance attendant can lay a stretcher in readiness in the dark.

Note 5. The method is adaptable; for example a long thigh splint can be allowed to protrude with a trifling adjustment of the blanket folded round the feet.

The following advantages are claimed for this method:—

1. The maximum degree of warmth, support and absence of draught are obtained from two blankets, even with a broad 6ft. 2in. patient.
2. The removal of a patient from a stretcher by a simple blanket lift, using blanket B is safe and convenient.
3. The blankets are thick and close round the patient so as to render fastening on the stretcher by ropes or triangular bandages, for lowering, comfortable and safe.

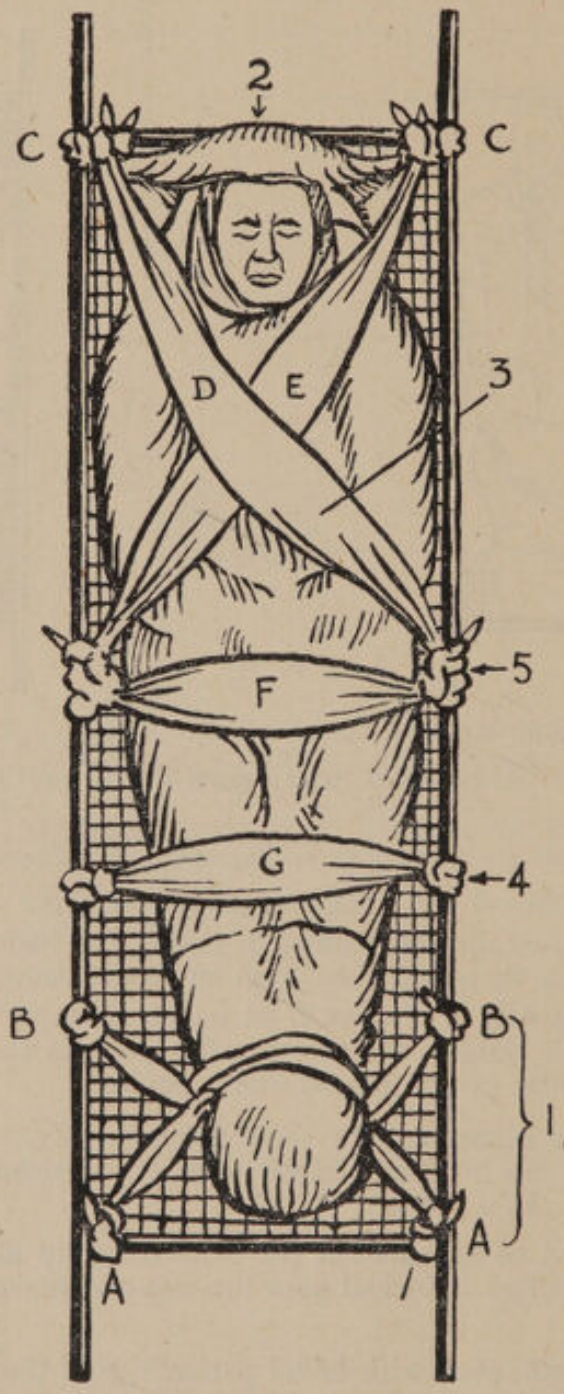


FIG. 7—COMPLETED METHOD NUMBERED ACCORDING TO ORDER OF MOVES.

A Method of Securing a Blanketed Patient to a Civil Defence Stretcher with triangular Bandages for lowering from a height

This method is intended to cover any of the following needs:—

1. Lowering feet first with a rope on the head of the stretcher and a guide rope pulling the feet end out from the wall.

2. Lowering by sliding down a ladder (manhandled, or more usually with a check rope and a man below steadying but taking no weight) at any angle from 30 to 75 degrees, to the horizon.
3. Lowering horizontally from an improvised "derrick" or crane (with the possibility of the stretcher hitting protrusions on the building and being temporarily tipped on one side or one end).

Seven triangular bandages only are needed, the greater part of the weight when either head or foot is raised, is taken by the ankle-bandages: the knee bandage prevents flexion at the knee and gives some support. The crossed chest bandages give considerable lateral support if necessary and take a little weight when the head is downwards. They can be fairly firmly applied and restrict breathing less than would be anticipated. The head bandage immobilises the head very comfortably for a concussed or very shocked patient and should not normally take much weight. It is most important that the

FIG. 8—DETAIL OF ARM SLINGS.

METHOD OF SECURING A BLANKETED PATIENT TO A STRETCHER FOR LOWERING FROM A HEIGHT

many conceivable alternative methods be kept in mind, for dealing with particular injuries: e.g. with leg injuries, a bandage goes across the pelvis, two bandage slings go under the arms from the top bar of the stretcher (Fig. 8) and the legs are steadied on to the stretcher conveniently, with the weight bearing ankle-bandages omitted, or modified.

The knots are simple but extremely important. The reef as such is useless and dangerous. A round turn on the stretcher bar should be secured by 2 half hitches of the free end round the standing part, two round turns and two half hitches is better still, even if it brings the knot fairly near the end of the bandage, as it also takes nearly all strain off the knot itself. It is immaterial whether the two half hitches are tied the same way—making a clove-hitch—or in opposite directions. Properly applied, the bandages will keep the patient touching the stretcher, with only 1in.–2in. of movement, while the stretcher is turned completely over, sideways, or endways, or obliquely.

If wounds or other causes preclude the use of the crossed bandages on the chest, the method of securing the patient by means of triangular bandages below the armpits as shown in Figure 8 should be used.

1. *Drill for Securing Patient to a Civil Defence Stretcher. Two Men Only.*

No. 1 will take three triangular bandages and proceed to foot of stretcher.

No. 2 will take four triangular bandages and proceed to head of stretcher.

No. 1 will proceed with stirrup around feet as follows:—

The centre of a narrowfold bandage (A) passed over both insteps, each end to be tied to the corresponding lower outside angle of the stretcher.

The centre of a narrowfold bandage (B) under arches of both feet taking one turn around bandage (A) on each side of the feet and securing to the sides of the stretcher at a corresponding upward angle of bandage (A).

Meanwhile No. 2 will open out one triangular bandage (C) and pin apex to clothing at nape of neck, then bring the base of the bandage over the head and make a hem which will lie across the forehead. The two ends of the bandage will be twisted until the head is encased by a type of "cap." The two ends will then be fixed to the side bars of the stretcher in line with the patient's shoulders. No. 2 will then take a broadfold bandage (D) and tie one end to the outer end of the top cross-bar of the stretcher, and lay the bandage across the chest. He will repeat this with broadfold bandage (E) from the opposite end of the cross-bar. By this time No. 1 will have finished the fastening of feet and will proceed to the middle of stretcher on the patient's right. No. 2 will proceed to the middle of stretcher on the patient's left. They will then tie the ends of the crossed bandages (D) and (E) to the bar of the stretcher on their respective sides, in line with the patient's pelvis.

They will then take broadfold bandage (F) across the patient just below the pelvis and tie to the bar on their respective sides. Broadfold bandage (G) will then be tied in the same way as bandage (F) across the knees.

N.B. A turn should be taken around the bar of the stretcher in all cases before tying the knot, which consists of two half-hitches. Wherever possible bandages should be passed through the mesh of the stretcher before tying in order to prevent any chance of slipping.

With reference to bandages (F) and (G) one side should be tied first in order that a maximum amount of firmness can be obtained when tying off on the opposite side.

An alternative and more rapid method of securing a patient to a stretcher by means of the forty foot line, as issued to Rescue parties is shown in Fig. 9.

2. *Carrying Stretchers.*

A stretcher should always be carried as nearly level as possible. On slopes, the injured extremity should be kept at a higher level, e.g. a casualty with head injuries should be carried head first upstairs; one with a fracture or wound of the lower limbs head first downstairs.

If a stretcher has to be carried over a wall or fence, the front handle of the stretcher should be rested on the wall or fence and the stretcher held level by the bearers in rear, while those in front cross the wall. All bearers then lift together, moving the stretcher forward until the rear handles can be rested on the wall and the stretcher kept level by the bearers in front. The rear bearers then cross the wall and the carriage of the stretcher is resumed.

If a wide ditch has to be crossed, the stretcher will be lowered as near the edge as possible. The two bearers at the front end descend into the ditch. All four bearers, lifting together, move the stretcher forward until the rear handles can be rested on the near edge of the ditch. The rear bearers now enter the ditch. Again all working together, the stretcher is lifted until the front handles are resting on the far side. By similar movements the stretcher is lifted out of the ditch on the far side, and the march is resumed.

Position of the Casualty on the Stretcher

The position of the casualty on the stretcher depends on the situation of

the wound, but will usually be on the back. The following types of wound or injury require special position:—

(*a*) In head injuries care must be taken that the injured part does not press against the stretcher. Casualties with severe injuries to the mouth and lower part of the face may need to be carried face downwards with the

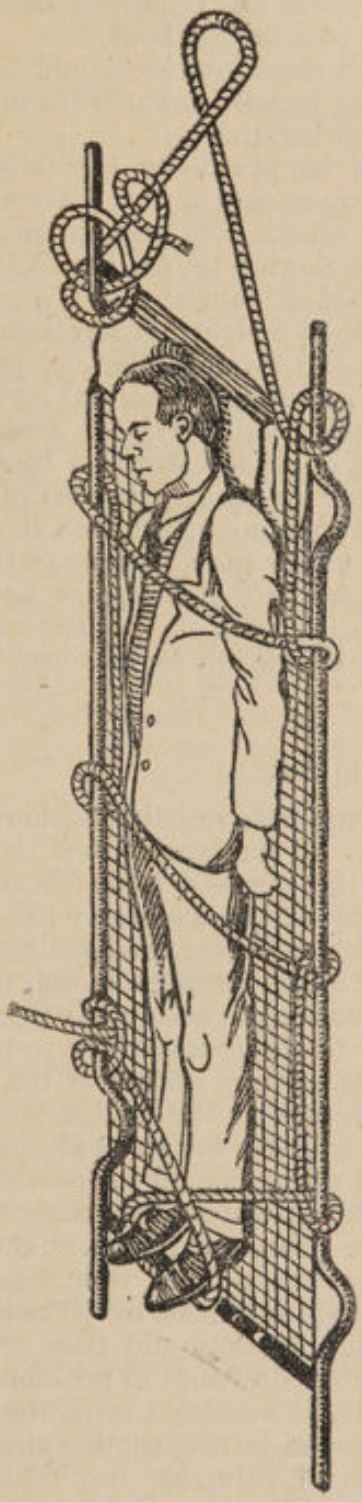


FIG. 9—ALTERNATIVE METHOD OF SECURING A BLANKETED PATIENT TO A STRETCHER FOR LOWERING FROM A HEIGHT.

head hanging over the end of the stretcher in order to prevent the tongue falling back and causing choking. In this case the head must be supported in a sling formed by triangular bandages tied between the handles of the stretcher, and the casualty loaded feet first into the Ambulance to avoid striking the face against the stretcher fitment during the process, if loaded head first.

(*b*) For injuries to the lower limbs, the casualty should be laid on his back, inclining toward the injured side. This position is less liable than others to cause motion of the injured limb during transport. A casualty who is in splints should, however, be placed on his back and not inclined to the injured side.

(*c*) For injuries to the upper limbs, if the patient is unable to walk he should be placed on his back or on the uninjured side, as there is thus less liability of displacement of a broken bone.

(*d*) A casualty suffering from chest injuries should be placed with his chest well raised, his body being inclined towards the injured side. This tends to relieve any difficulty in breathing.

(*e*) Abdominal cases should be placed on the back, the abdominal wall relaxed by flexing the knees over a box, haversack or rolled coat and the head and shoulders raised. No attempt must be made to replace protruding organs. (See Section 18, Chapter XIII.)

(*f*) In a fracture of the spinal column at any level the casualty should be carried lying on his back on a rigid flat stretcher with a blanket folded lengthwise beneath him and a small pillow or pad under the neck and lumbar region, so as to maintain the normal curves of the spine and to prevent movement of the head. It is of great importance that the casualty should be lifted on to the stretcher by several bearers so that his back may be supported evenly at a number of points.

If any sagging of the spinal column is permitted to occur in the process of lifting, severe and irreparable injury may be done to the soft spinal cord.

Where there is a suspected fracture of the spine and a doctor is available at the incident, summon the doctor, warn the patient not to move and, without moving him, keep him as warm as possible by means of blankets and hot-water bottles. (See page 57.)

Action by Bearers if exposed to Gas

On gas being encountered, the bearers halt and lower the stretcher to the ground as rapidly as possible. All the bearers, and the casualty if he is able, put on their respirators. If the casualty is unable to put on his respirator for himself it will be put on by whichever bearer has first adjusted his own. Care should be taken to ensure that before the head harness is drawn over the casualty's head the lower part of the facepiece is well under his chin.

Head bandages should be removed to ensure gas-tightness of the respirator, if it can be done with safety. Gas-tightness of the respirator can be obtained by ensuring contact between the fitting surface of the facepiece and the skin which lies over the bony structure of the forehead, cheeks and chin. Any dressings applied between the fitting surface and the skin will permit the entrance of gas. Hence no dressing should be placed over these parts if it can be avoided. Should it be absolutely necessary to place a dressing on a wound over these parts, the minimum thickness should be used. It may be necessary to remove some of the padding from ready-made pad dressings. It will be found that by adjusting the tension of the head-harness, by loosening the elastic bands, applying the dressing, and then gradually tightening the harness, the mask itself will retain dressings in position.

When an unconscious casualty is wearing a respirator it should be inspected frequently to see that the person is getting enough air.

Full details of the methods of adjusting respirators, for all three types (Civilian, Civilian Duty and Service) on a casualty are to be found in A.R.P. Handbook No. 1 (2nd Edition).

Handseat and other methods

Methods of carrying casualties by handseats and other methods, when stretchers cannot be used, and methods of improvising stretchers, are described below. Personnel should be trained in these methods.

CHAPTER V

10. METHODS OF CARRYING INJURED PERSONS WHERE STRETCHERS ARE NOT AVAILABLE OR CANNOT BE USED

Injured persons can be carried in several ways if no stretcher is available or if it is impossible to use a stretcher.

If only one bearer is available

1. *"Pick-a-back."* Carry him in the ordinary pick-a-back position. This is the best way if he is conscious and able to hold on.

2. *"The Fireman's Lift."* A good way of carrying a helpless or unconscious patient and one which allows the bearers a free hand (see Figs. 10–12). It is easier for the bearer than pick-a-back, but not so comfortable for the patient. First roll him on to his face, keeping his arms to his sides. Stand at his head, put your hands under his shoulders and raise him to a kneeling position or get someone to help. Now put your hands under his armpits, and raise him up a little. Stoop, place your head under his right arm, put your own right arm between or round his legs, bring his weight well on to your shoulders, grasp his right wrist with your right hand and rise. Work the weight well up on to the back of the neck.

If two or more helpers are available

1. *Hand Seat: the Two-handed Seat (for a patient who cannot assist the bearers).*

Two bearers face one another on either side of the patient and stoop. Each bearer passes his arm nearest the patient's head under his back just below the shoulders and, if possible, grips his clothing. They raise the patient's back and slip their other arms under the middle of his thighs, clasping their hands with a hook grip. (See Figs. 13–14.)

The bearers rise together and step off with short paces.

2. *The Four-handed Seat.*

Two bearers face each other and each grasp their own left wrist with their right hand. Their hands are then put together, the free left hand grasping the right wrist of the man opposite. The patient puts one arm or both arms round the necks of the two bearers.

3. *The Fore and Aft Method.*

The patient is placed on his back. One bearer raises the shoulders and passes his hands under the arms from behind, clasping them in front of the chest. The other bearer takes one leg under each arm and they carry him feet first. If a leg is broken, both legs should be tied together or put in splints and carried together under one arm.

Lifting, carrying and loading patients by means of webbing bands

A set of 4 webbing bands with metal handles is issued to each party and is used:—

1. for lifting a patient from the ground on to a stretcher.
2. for lifting and carrying a patient from a place into which it is impossible to take a stretcher.

The following are the advantages of this method:—

(i) Comfort for the patient.
(ii) No great effort for the bearers.
(iii) Speed if necessary.

FIG. 10.

FIG. 11.

FIG. 12.

THE FIREMAN'S LIFT.

FIGS. 13 & 14—THE TWO-HANDED SEAT.

(iv) Slow movement if advisable.
(v) Heavy patients can be lifted with ease.
(vi) A patient can be turned over.

The webbing bands are of two different lengths, two being of 2 feet and two of 3 feet, the two longer ones being intended for the chest and hips and the two shorter ones for the head or neck and feet. Each band has two handles, a long and a short, the former being 1 foot and the latter 4 inches long. The longer handle is used for pushing under the patient's body, after which the webbing band is pulled through so that there will be a handle at either side (Fig. 16).

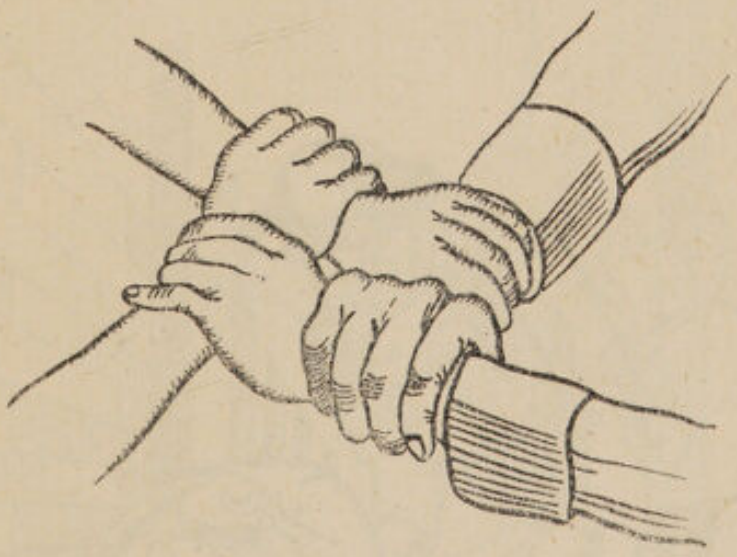


FIG. 15—THE FOUR-HANDED SEAT.

Using the Webbing Bands.

When pushing the bands under a patient, the long handle is grasped by the right hand at the end where the handles join the canvas.

The left hand is used to raise the patient slightly; the handle is then smartly and firmly pushed under.

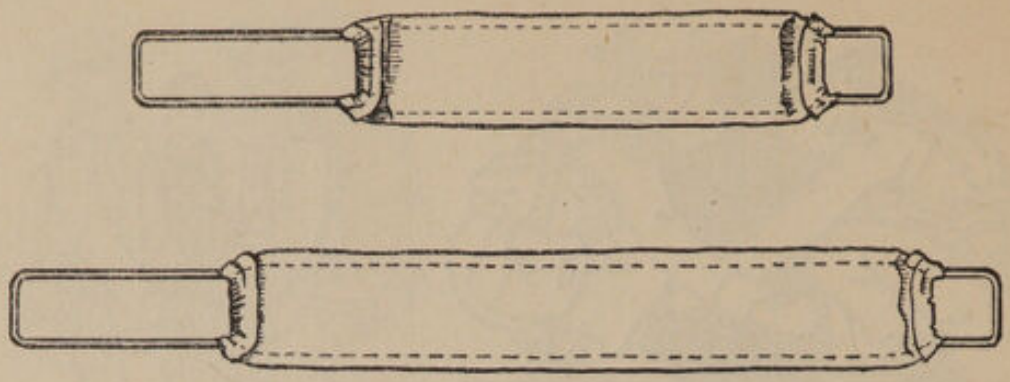


FIG. 16—WEBBING BANDS.

FIG. 17

FIG. 18

The bearer who is going to pull the band through also uses his left hand to raise the patient slightly.

NOTE.—It is only necessary to raise the patient a quarter of an inch from the ground.

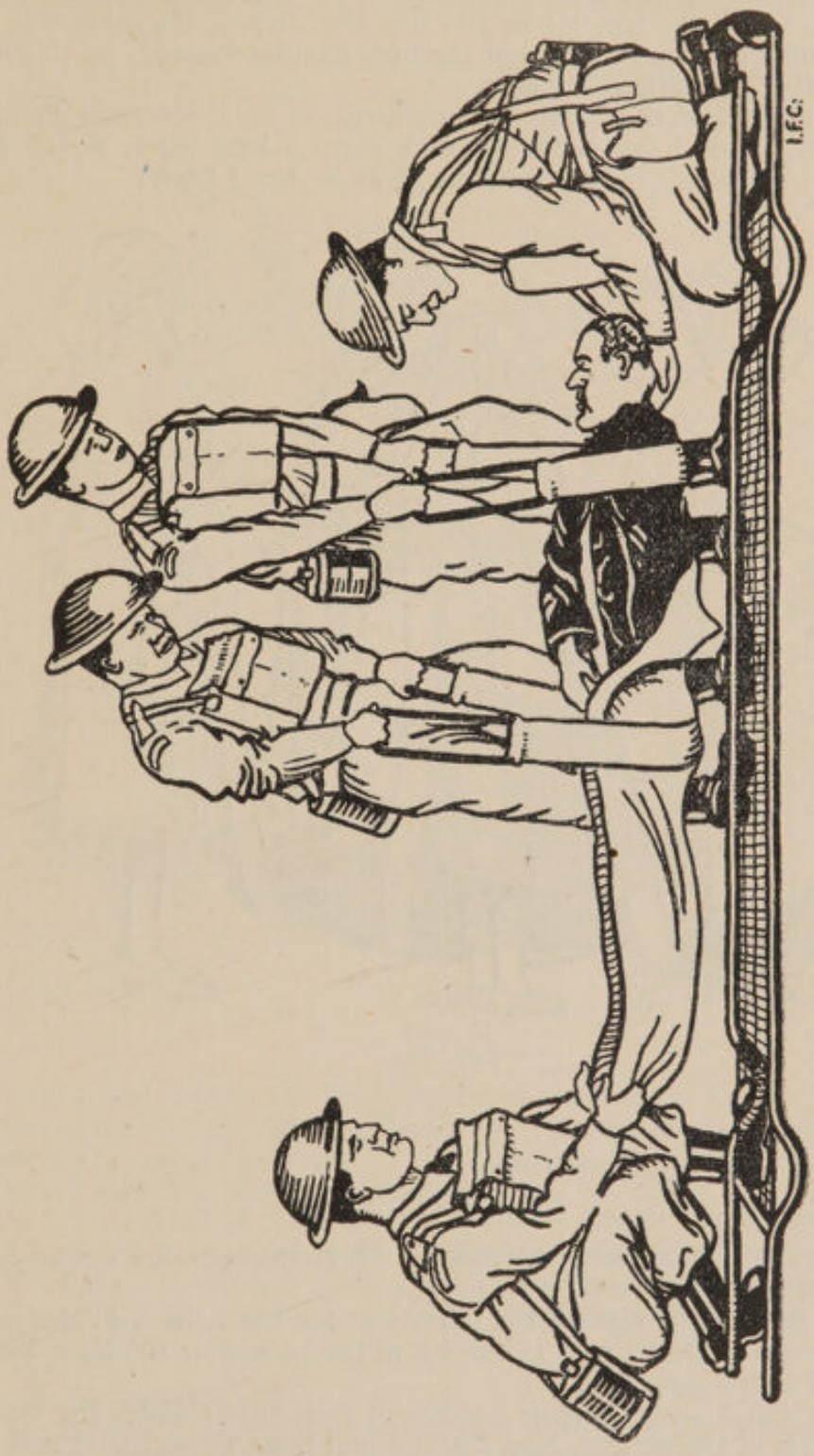


FIG. 19

When a patient is lying close to a wall or other obstruction it is not possible to pull the long handle through, so the small handle is bent over the long handle and then pushed through.

The small handle is pulled through and the long handle withdrawn, at the same time.

When the five methods described below have been learned the bearers will be able to adopt a method to suit any particular situation.

Care should be taken to adjust the slings so that no undue pressure is put upon any injured part.

If a patient is in a prone position and it is required to put him in a supine position, or vice-versa, on the stretcher, proceed as in method " B ", leaving the four handles to one side close to the body. The bearers then lift the patient off the ground with the handles on one side low, and on the other side high. The low handles are then raised and the high handles lowered, by this movement the patient is gently rolled over.

The four bearers of the Party are numbered as for " Stretcher Practice " (see page 28). Nos. 1 and 3 bearers each carry a long band, Nos. 2 and 4 a short one. The words of command are given by No. 1 bearer.

FIG. 20

METHOD "A."

1. *"Speed Lift"—using two bands only.*

(*a*) On the command " Collect wounded,"

(i) The bearers place their stretcher on the ground parallel to and on the left of the patient.

(ii) No. 1 goes to the *right* of the patient at the hips, No. 3 to the *right* at the shoulders; No. 2 goes to the *left* of the patient at the hips, No. 4 to the *left* at the shoulders.

(iii) Nos. 1 and 3 push the long handles of their bands under the hips and shoulders of the patient, Nos. 2 and 4 pull them through and pass them back over the patient to Nos. 1 and 3. Nos. 2 and 4 then take up positions at the feet and head of the patient.

(*b*) On the command " Lift,"

Nos. 1 and 3 raise the patient from the ground by means of the bands while Nos. 2 and 4 support the feet and head respectively. The patient is then lowered gently on to the stretcher (see Fig. 19).

METHOD "B."

2. *"Slow Lift"—using four bands.*

(*a*) On the command "Collect Wounded,"

(i) The bearers place their stretcher on the ground in line with the head or feet of the patient.

(ii) No. 1 goes to the *right* of the patient at the shoulders, No. 2 to the *right* at the hips; No. 4 goes to the *left* at the shoulders, No. 3 to the *left* at the hips.

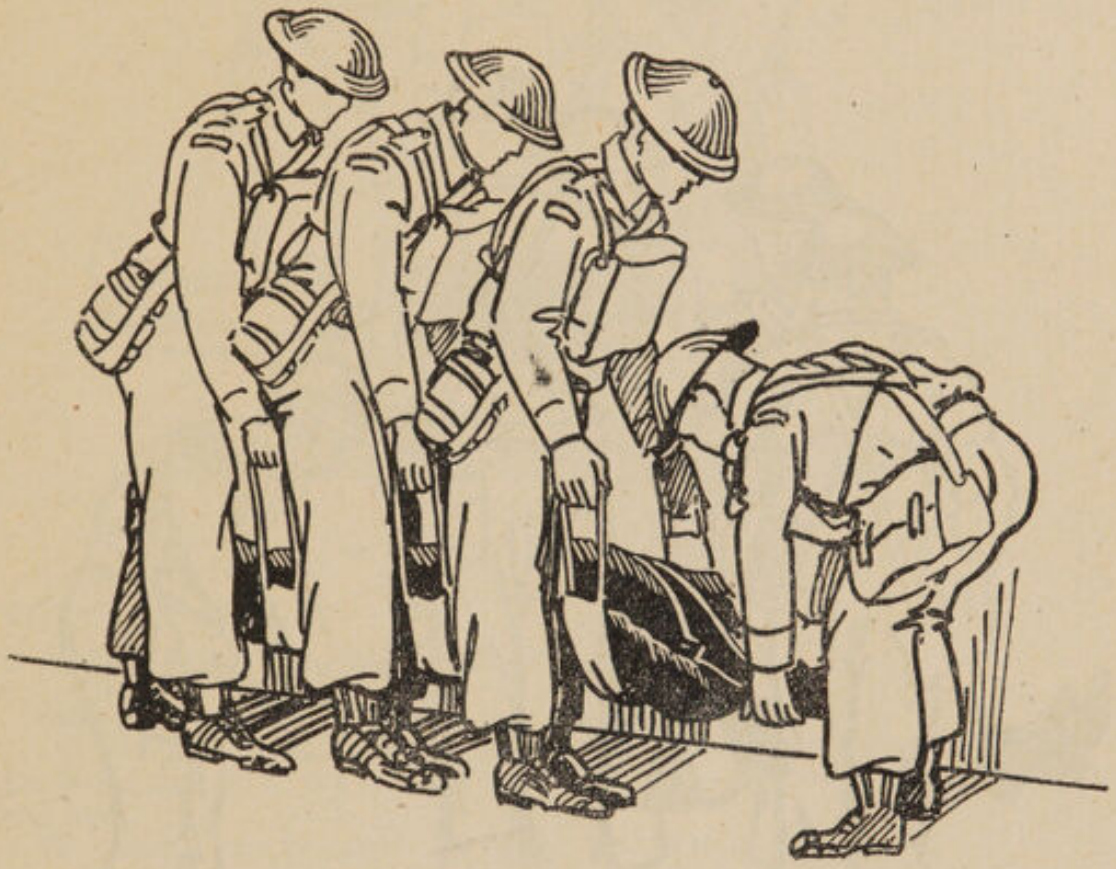


FIG. 21

(iii) Nos. 1 and 3 push the long handles of their bands under the shoulders and hips of the patient, Nos. 2 and 4 pull them through and both handles are placed on the ground.
Nos. 2 and 3 now move to the *right* and *left* of the feet, Nos. 1 and 4 to right and left of the head.

(iv) No. 2 pushes the long handle of his band under the feet of the patient, No. 3 pulls it through. No. 4 pushes the long handle of his band under the head, No. 1 pulls it through. Bearers then take up position as shown in Fig. 20.

(*b*) On the command " Lift,"
The patient is raised from the ground by Nos. 1 and 4 lifting the head and shoulders, Nos. 2 and 3 the hips and feet.
The bearers then move by side paces towards the stretcher and the patient is gently lowered on to it.

METHOD "C."

3. *"Wall Lift"—using three or four bands.*

(*a*) On the command " Collect wounded,"

(i) No. 1 goes to the shoulder and pushes the short handle of his band under the patient, No. 4 pulls it through (see note on page 43 under " Using the webbing bands ").

(ii) No. 3 goes to the hips and pushes the short handle of his band under the patient, No. 2 pulls it through.

(iii) No. 4 pushes the short handle of his band under the head of the patient. No. 1 pulls it through (the use of this is optional, and the head may be supported as shown in Fig. 21).

(iv) No. 2 pushes the short handle of his band under the feet, No. 3 pulls it through.

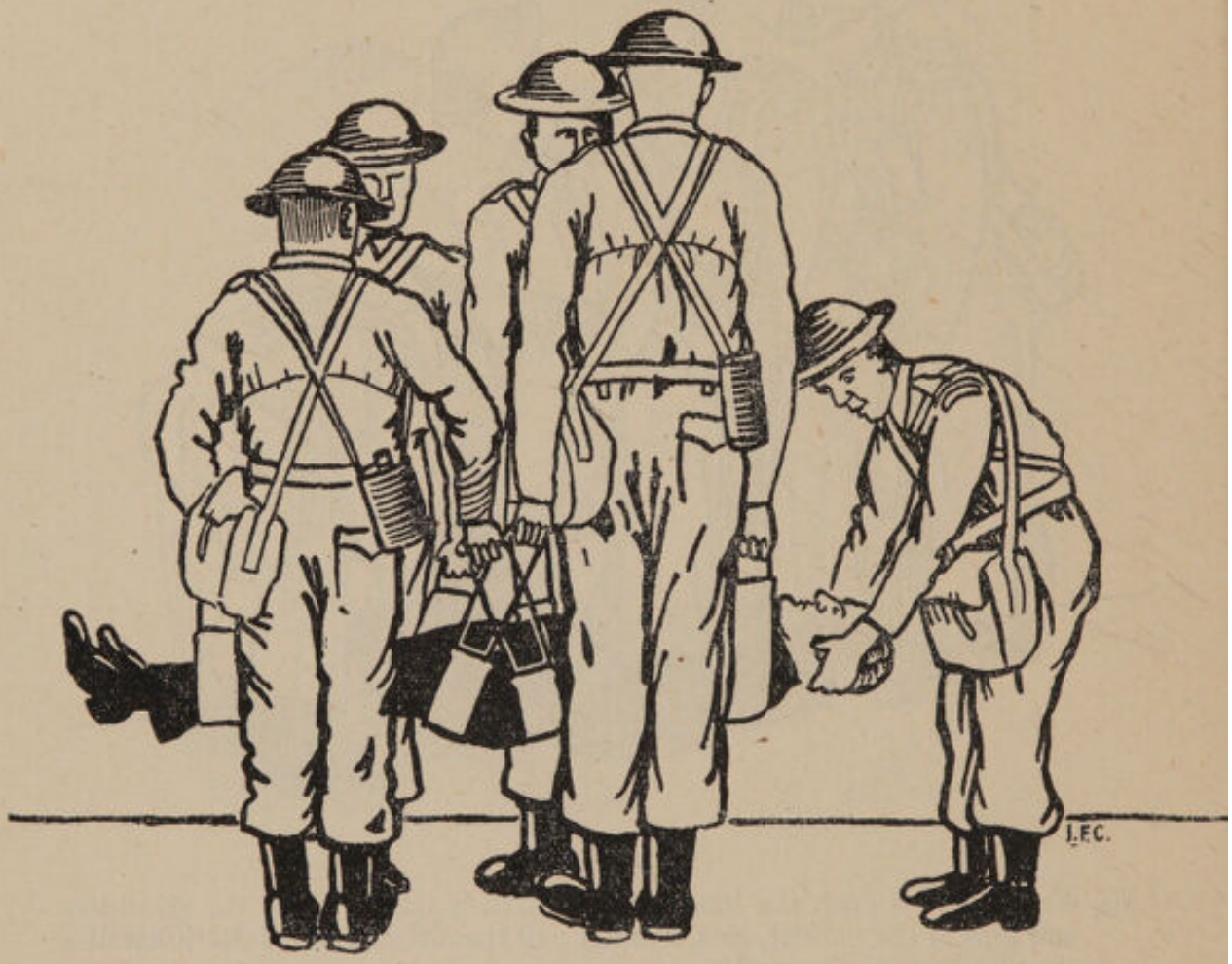


FIG. 22

(*b*) On the command " Lift,"

The patient is raised as shown in Fig. 21 and placed on the stretcher by the party, taking forward paces, at the command of No. 1.

METHOD " D "

4. " *Heavy Patient Lift* "—*using four bands.*

For this method five bearers are necessary.

The drill is the same as that for the " Slow Lift " except that the band used in this to support the head is now passed under the upper part of the thighs and the handles of this band and the one under the hips are crossed when lifting the patient as shown, in Fig. 22.

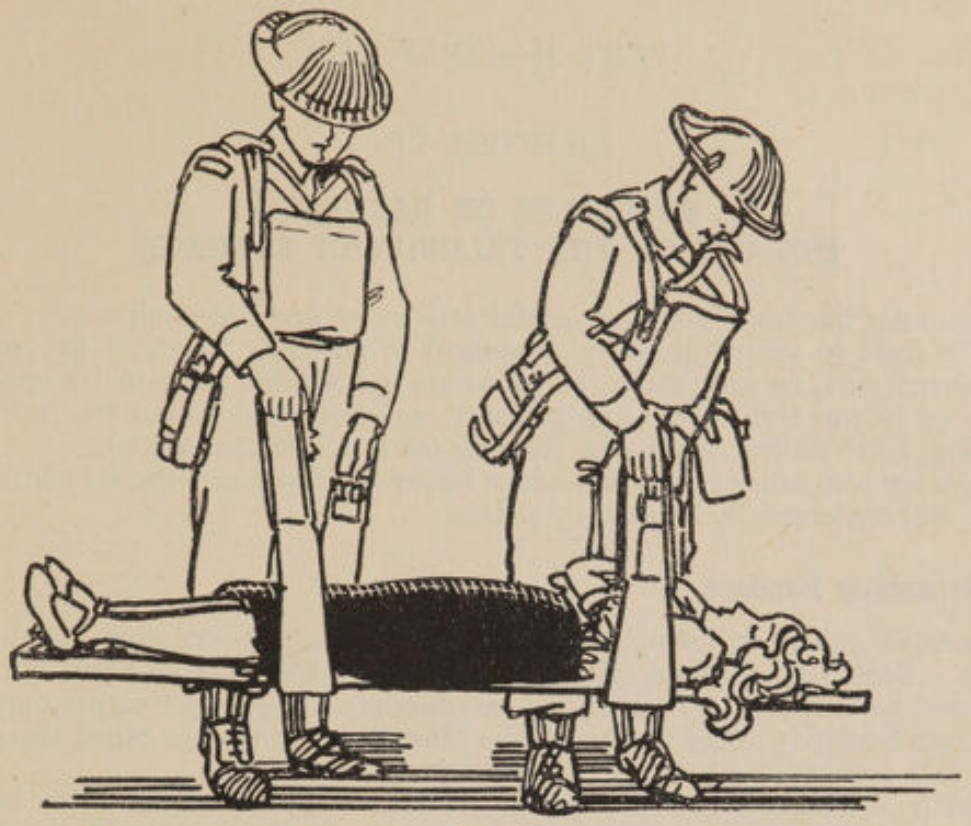


FIG. 23

METHOD " E."

5. *" Moving a patient without a stretcher."*

Place a board on the ground.

Lift the patient on to it as in method " A " and remove the bands. Raise the board slightly at one end and pass the two bands under it at the shoulders and hips.

The patient may be carried by two or four bearers (see Fig. 23).

PART II—FIRST AID

CHAPTER VI

11. PRINCIPLES OF BANDAGING; THE USE OF THE TRIANGULAR BANDAGE

Triangular bandages are most useful articles of first aid equipment. They may be used to keep splints (or dressings) in position; to afford support to an injured part, as arm slings, or to secure a fractured limb to its opposite fellow or to the trunk; to make pressure, as when used in the treatment of bleeding, or to reduce or prevent swelling (as in a sprained ankle).

There are also other types of bandage (roller bandages and special bandages) which will not normally be used by parties.

The Triangular Bandage

Pieces of calico or linen, usually 40 in. square, are cut from corner to corner. Each half forms a triangular bandage. The longest edge is called the lower border, the two others the side borders. The upper corner opposite the lower border is called the point, the other two corners are called the ends.

To fold a triangular bandage for packing:—

Fold it vertically down the middle, placing the ends of its lower border together. Bring the point, and the two ends, to the middle of the lower border. This forms a square. Fold the square in half from right to left and again in half twice.

Triangular bandages can be used in the following ways:—

(1) As a "whole-cloth," i.e. unfolded, the triangle being spread out to its full extent.
(2) As a "broad-fold" bandage. Carry the point (the angle opposite the longest edge) to the middle of the longest edge opposite, and then fold the bandage again in the same direction.
(3) As a "narrow-fold" bandage. Fold a broad-fold once, long edge to long edge.

Bandages can be secured by tying (using a reef knot) or in certain cases by pinning.

Triangular bandages should be secured by reef knots. Granny knots should be avoided.

To tie a reef knot, take one end of the bandage in each hand, pass the end in the right hand over that in the left and tie a single knot, then pass the end in the left hand over that in the right and complete the knot. The ends when pulled tight will be parallel with the turns of the bandage. The rule for tying a reef knot is, "Right over left, left over right."

For securing splints the triangular bandages may be used broad or narrow fold as convenient. Either of the following methods may be used:—

(1) After adjusting the splints to the limb, place the centre of the bandage over the outer splint, then pass the ends round the limb, cross them on the inside and tie on the outside, over the splint.
(2) Double the bandage lengthways on itself. Place the loop upon the outer splint, carry the ends round the limb from without inwards, and pass both ends through the loop in opposite directions. Tighten the bandage by drawing on the two ends, and tie over splint.

As improvisations in place of triangular bandages, scarves (e.g. Boy Scouts' scarves) or pieces of cloth can be used; and ties, braces, straps, belts or lengths

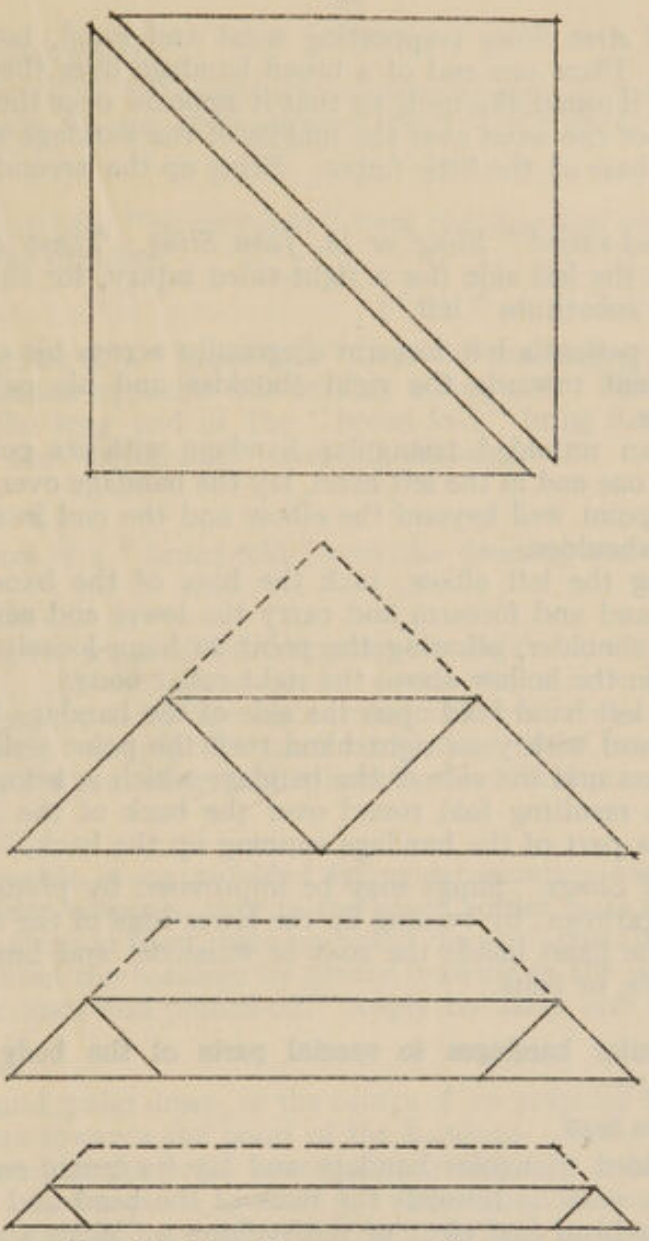
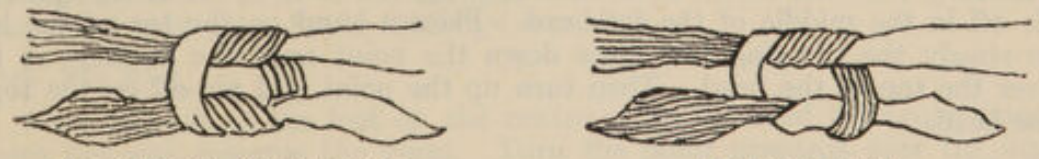


FIG. 24—THE TRIANGULAR BANDAGE.
Folding for " broad-fold " and " narrow-fold."



REEF-KNOT, TO BE USED. GRANNY-KNOT.
Contrast with granny-knot, to be avoided.

of rubber tubing can be used to secure splints or dressings or as improvised tourniquets.

Slings

(1) *The Large Arm Sling* (to support forearm and hand). Spread out a triangular bandage, put one end over the shoulder on the sound side, pass it round the neck so that it appears over the shoulder of the injured side, and let the other end hang down in front of the chest. Carry the point behind the elbow of the injured limb, and place the forearm over the middle of the bandage; then carry the second end up to the first and tie them. Bring the point forward and secure to the front of the bandage with two pins.

(2) *The Small Arm Sling* (supporting wrist and hand, but leaving elbow to hang freely). Place one end of a broad bandage over the shoulder of the sound side, pass it round the neck so that it appears over the shoulder of the injured side: place the wrist over the middle of the bandage so that the front edge covers the base of the little finger. Bring up the second end to the first and tie them.

(3) *The "Hand-raised" Sling or St. John Sling.* These directions apply for an injury on the left side (for a right-sided injury, for the word "right" in the directions substitute "left").

(i) Place the patient's left forearm diagonally across his chest so that his fingers point towards the right shoulder and his palm rests on his breastbone.

(ii) Holding an unfolded triangular bandage with its point in the right hand and one end in the left hand, lay the bandage over the left forearm with the point well beyond the elbow and the end in the left hand on the right shoulder.

(iii) Supporting the left elbow, tuck the base of the bandage well under the left hand and forearm and carry the lower end across the back to the right shoulder, allowing the point to hang loosely outwards. Tie the ends in the hollow above the right collar bone.

(iv) With the left hand hold open the side of the bandage lying on the left forearm, and with your right hand tuck the point well in between the left forearm and the side of the bandage which is being held open.

(v) Carry the resulting fold round over the back of the arm, and firmly pin it to a part of the bandage running up the back.

(4) *Improvised Slings.* Slings may be improvised by pinning the sleeve of the coat to the garment, by turning up the lower edge of the coat and pinning it, by passing the hand inside the coat or waistcoat and buttoning it, or by using scarves, ties, or belts.

To apply triangular bandages to special parts of the body (e.g. to secure dressings):—

(1) *The top of the head.*

Take an unfolded triangular bandage and lay its centre on the top of the head, so that its point is towards the back of the head and its lower border lies along the forehead just clear of the eyebrows. Make a short fold in the lower border and pass the ends round the back of the head above the ears. Cross the ends over the point of the bandage, which should here be lying vertically over the crown of the head; bring the ends to the front again and tie off in the middle of the forehead. Place a hand on the top of the head to steady the dressing and draw down the point until the bandage is taut over the top of the head. Then turn up the point and pin-off on the top of the head.

(2) *The side of the head.*

Put the centre of a "narrow-fold" bandage over the dressing, pass the ends horizontally round the head, cross and knot over the dressing.

(3) *Both eyes.*

Put the centre of a "broad-fold" bandage between the eyes, carry the ends backwards, cross and knot-off in front.

(4) *One eye.*

Put the centre of a "narrow-fold" over the affected eye. Let one end pass obliquely upwards over the opposite side of the forehead, and the other downwards over the ear of the same side. Cross the ends below the bump at the back of the head, bring them forwards and knot-off above the eyebrow on the affected side.

(5) *Chin and side of face.*

Put the centre of a " narrow-fold " under the chin, pass the ends upwards, and knot-off over the top of the head. Tuck in the ends.

(6) *The neck.*

Put the centre of a " narrow-fold " over the dressing, cross the ends, and knot-off over the dressing.

(7) *The Chest.*

Apply the centre of a " broad-fold " over the dressing, pass the ends round and knot-off on the opposite side leaving a long end. Now take a " narrow-fold," tie to the long end of the " broad-fold," bring it over the shoulder, and pin-off to the " broad-fold " over the dressing.

(8) *The Abdomen.*

Put the centre of a " broad-fold " over the dressing and tie-off on the side.

(9) *The Shoulder.*

Lay the centre of an unfolded triangular bandage on the top of the shoulder, point upwards, with the lower border across the middle of the arm. Fold in the lower border, carry the ends round the arm, cross them and knot-off on the outer side. Apply the small arm sling, draw the point of the first bandage under the arm sling, fold it back on itself and pin over the shoulder.

(10) *The Elbow.*

Place the centre of an unfolded triangular bandage over the back of the bent elbow, point upwards, turn in the lower border, pass the ends round the forearm, cross them in front, pass up round the arm, cross behind, and knot-off in front. Tighten the bandage by gently drawing in the point, which is then to be brought down and pinned-off. Apply the large arm sling.

(11) *The Hand.*

Place the hand, palm down, in the centre of an unfolded triangular bandage, with the fingers towards the point of the bandage. Bring the point over the back of the hand to the wrist, pass the ends round it, crossing them over the point. Then fold the point towards the fingers and cover it by another turn of the bandage round the wrist. Knot-off the ends in front of the wrist.

Alternatively, you can use a " narrow-fold " bandage in " figure of eight " fashion. Put the middle of the bandage over the dressing, bring the ends to the opposite side of the hand, cross and take two or three turns round the wrist and knot-off. Apply the large arm sling.

(12) *The Foot.*

Place the sole of the foot on the centre of an unfolded triangular bandage with the toes towards the point. Turn the point upwards over the instep: take one of the ends in each hand close up to the foot, bring them forward and cross them over the instep, covering the point.

Draw the point upwards to tighten the bandage and fold it towards the toes. Carry the ends back round the ankle and cross them behind, catching the lower border of the bandage. Bring the ends forward, cross them again over the instep covering the point, carry them under the foot and knot-off to the inner side.

(13) *The Hip.*

Pass a "narrow-fold " round the waist and knot-off in front Then take an unfolded triangular bandage, put its centre over the hip, point upwards, with its lower border folded in and lying across the thigh. Pass the ends round the thigh and knot-off on the outer side. Draw the point upwards under the bandage round the waist, turn it down and pin-off.

(14) *The Knee.*

Keeping the leg straight, apply a " broad-fold " bandage, cross it behind and knot-off in front below the knee-cap.

(15) *Between the legs and lower part of the abdomen.*

Pass a " narrow-fold " bandage round the waist and tie-off. Pass the end of a second " narrow-fold " bandage under the first (waist) bandage at the middle at the back. Fold it over and secure it with a safety pin. Bring the other end forward between the thighs up to the waist-bandage in front: pass it under: turn over and secure with a safety pin.

Roller Bandages

Roller bandages would not normally be used except in fixed units such as First Aid Posts or Hospitals. Members of parties should, however, have a general knowledge of the principle of roller bandaging. They consist of long strips of material, varying in length and width according to the part to which they are to be applied, e.g. for the head and upper limbs, 2 to 3 inches wide and 4 to 6 yards long: for fingers, 1 inch wide and 2 yards long: for the trunk and lower limbs, 3 inches or more wide and 6 yards long.

General rules for Roller Bandaging.

(1) First fix the bandage with two or three turns.
(2) Bandage from below upwards, and from within outwards over the front of the limb.
(3) Apply uniform pressure all through the process of bandaging.
(4) Let each turn overlap about two-thirds of the preceding one.
(5) Keep margins parallel. Let any crossings or reversings be in one line, rather towards the outer aspect of the limb.
(6) Secure either by a safety pin or by dividing the free end into two strips by a scissor-cut parallel to its edge, knotting at end of cut and tying-off ends of the two strips.
(7) To apply a roller bandage:—
Stand or sit opposite to your patient, support his limb in the position it is to be in when bandaged. Be careful that you do not put on the bandage so tightly that it causes pain or so interferes with circulation that it causes swelling of the limb below it. If when you squeeze the toes or fingers of a bandaged limb you notice that the colour returns more slowly than in the unbandaged limb, you know that your bandage is too tight.
(8) Instruction for the roller bandaging of special parts of the body are beyond the scope of the elementary first aid dealt with in this book and can be read in the larger and more advanced manuals on First Aid and on Nursing.

CHAPTER VII

12. TYPES OF INJURY

Wounds resulting from air raids may vary within wide limits and may often be of a mixed type. Multiple injuries are to be expected:—

(1) Lacerated wounds are common. They may be extremely severe and extensive, possibly with complete avulsion (tearing off) of limbs or with gross damage to the trunk and internal organs.
They may be less destructive, but associated with gross crushing of muscular and other tissue or with multiple injuries and irregular and extensive tearing and penetration.

(2) 75 per cent of fragments from high explosive bombs are extremely small but travel with very high velocity.
The wounds they produce on the skin are generally small but the damage to the tissues beneath is frequently very extensive.
The brain and other organs may be seriously injured although the skin wound may appear negligible.
At the same time the skin may be peppered with minute wounds from secondary missiles such as fragments of brick, stone, metal, wood, etc., and these wounds are difficult to distinguish from those caused by small bomb fragments.

(3) Crushing may result from falling masonry, girders, beams or whole floors and is frequently associated with fractures, including those of the spine. These may be immediately fatal, or so severe that the casualty does not survive extrication.
Severe mangling of limbs, compound and depressed fractures of the skull, are common but there may be simple fractures and less dangerous injuries, such as gross contusions.

(4) Casualties trapped by heavy masses across a limb or limbs, although they may not seem to be severely injured, often die within a week. These should be pointed out to a doctor as soon as they are found without waiting until they can be extricated (Vide " Crush Injuries "—Section 16).

(5) Casualties without obvious external injury may nevertheless be seriously hurt. This is perhaps particularly noticeable in injuries to the chest and abdomen. Party personnel should be able to recognise the signs of internal haemorrhage and concussion. They should also suspect a condition of blast injury of the lungs in a person found near the site of a bomb explosion, who, while having no signs of an external injury, is obviously very seriously hurt.
The chief signs of this condition are severe shock, prostration and perhaps restlessness, difficulty in breathing and the person may complain of pain in the chest. Cyanosis (blueness of the face) is marked in most cases and is present to some extent in all. Haemoptysis (spitting up of blood) may also occur.
Such a case, as also one of internal haemorrhage which may be due to blast, should be sent at once to hospital as a priority stretcher case after wrapping in blankets and applying hot water bottles.

(6) Wounds from rifle or machine gun bullets may be met with. They may be either (*a*) " *Perforating*," i.e. passing right through the body, or (*b*) " *Penetrating*," i.e. with retention of the missile.

(*a*) Characteristic " perforating " wounds have an entrance wound, a track and an exit wound.
The entrance wound may be of small size and hence overlooked. If this is the case, the exit wound which is frequently much larger may be considered to be the only wound and even to result from some other cause. The extent of the damage caused by the passage of the bullet will thus be missed.

(*b*) In the case of " penetrating " wounds also the under-lying damage may be much more extensive than the size of the wound suggests.

(7) Injuries due to flying fragments of glass, often with fragments retained, are very common and many wounds of the back and buttocks occur in people lying in the prone position.

(8) Burns are frequent. The special danger of shock from burns involving extensive areas should be explained.

(9) Shock to some degree will be present in almost every case and will frequently be extreme.

Parties should appreciate the importance of keeping the patient warm to reduce the liability to further shock which may occur after he or she has been passed on to Hospital or First Aid Post.

CHAPTER VIII

13. HAEMORRHAGE (BLEEDING)

Severe bleeding endangers life and something has to be done quickly. Even the continued oozing of blood from a large area may lead to collapse and death if neglected.

Loss of blood is in any case one of the main causes of shock.

Parties must be familiar with the rules for the treatment of bleeding as set out in the text books.

Direct pressure over the wound by the firm application of a large dressing usually stops bleeding at once but if this is not successful other methods are available.

Arterial pressure points and methods of applying indirect pressure must therefore be known and practised.

All textbooks very properly devote much space to the application of tourniquets since under certain conditions their use may be essential; in practice, however, such conditions are seldom found and tourniquets are very rarely needed.

The main types of tourniquets are:—

(1) Rubber bandage.
(2) The St. John.
(3) The improvised.

The Samway tourniquet, which is a dangerous instrument and only justified when a limb has been blown or torn off, has now been replaced by a rubber bandage as an issue to parties.

To stop bleeding try direct pressure by the application of a pad and tight bandage. If the pad becomes soaked, do not remove it but apply a fresh pad on top and bandage again. If this fails then consider the application of a tourniquet. The one to be used should be the rubber bandage which should preferably be applied directly over the dressing; failing this the St. John or improvised type. The improvised type is better than the St. John because it is more easily applied.

In applying any form of tourniquet remember that you are adopting a dangerous procedure and that the patient may lose his limb if you do not take the necessary precautions.

Never put a tourniquet under dressings or clothing where it will not be seen; it must be applied over a thick layer of material, e.g. a narrow folded triangular bandage.

Always mark the forehead of the patient with the letter " T " to show that a tourniquet has been applied and attach a label to the patient with the letter " T " and the time of application of the tourniquet on it.

Never allow a tourniquet to be in position for more than 15 minutes, after which time it should be relaxed, and re-applied.

After relaxing a tourniquet note the time of re-application and delete the first time recorded.

When loading casualties into an ambulance vehicle see that the attendant's notice is called to tourniquet cases.

The type of bleeding which requires a tourniquet is arterial; venous and capillary bleeding never need a tourniquet and arterial only very exceptionally.

Dangers of the tourniquet:—

(1) Gangrene—unless the tourniquet is released at proper intervals all the parts deprived of their blood supply will die.
(2) Crushing of tissue—this can increase shock.
(3) Damage to nerves—the tourniquet pressing the artery against a bone may also crush nerves.

(4) The tourniquet will cause venous congestion and increase the bleeding if not properly applied.

Members of parties must be able to recognise internal haemorrhage by its signs (rapidly increasing pallor; cold clammy skin; rapid pulse quickly becoming so weak that it cannot be felt at the wrist; hurried and laboured breathing; thirst; restlessness; finally, air-hunger).

CHAPTER IX

14. SHOCK

Air raid injuries, unless very trivial, are almost always followed by a failure of vitality known as shock. This varies in degree from faintness to extreme and dangerous prostration and is responsible for the majority of deaths among air raid casualties who are not killed outright.

It may even affect those who are otherwise apparently uninjured.

Signs and symptoms of shock

Any or all of the following signs and symptoms may be present in a casualty suffering from shock. They may be evident immediately after the injury or their appearance may be delayed for some hours.

(1) Faintness.
(2) Cold clammy skin (cold sweat).
(3) Shivering.
(4) Restlessness.
(5) Shallow breathing.
(6) Rapid and feeble pulse.
(7) Vomiting.

Pallor of the face is always present but may not be obvious owing to the extremely dirty condition of this type of casualty.

Shock alone is rarely the cause of unconsciousness.

Treatment

If shock is present it must be treated urgently. If shock has not developed treatment must be directed towards its prevention. In either case the procedure is the same:—

(1) Bleeding must be checked.
(2) Pain must be relieved; for example by the gentle adjustment of the patient's position or by suitable support of the injured part before removal.
(3) The patient must be protected from chill since in cases of shock the body temperature falls rapidly. Unnecessary removal of clothing should be avoided and the casualty wrapped in blankets or coats with as many layers beneath him as on top. Hot water bottles should also be used if available but must not be allowed to come into direct contact with the patient's skin, especially if he is unconscious.
(4) Keep the patient flat unless this causes difficulty in breathing.
(5) Apply the correct first aid to any injuries which are present.
(6) The patient must always be lifted, handled and removed gently and smoothly.
(7) Give warm sweet drinks such as sweetened tea unless there is a wound or pain in the abdomen.

The treatment of shock may be summarised as:—

(1) Correct first aid for the injuries causing shock.
(2) Warmth.
(3) Fluids.
(4) Rest.

The first aid treatment of shock is simple but do not therefore regard it as unimportant. Apply it to the best of your ability in the case of every injured person. By doing so many lives will be saved.

CHAPTER X

15. FRACTURES; SPLINTS; CERTAIN SPECIAL FRACTURES

The initial first aid courses describe the signs and symptoms which may be present in cases of fracture:—

1. Pain at or near the place where the bone is broken.
2. Loss of power of movement of the affected limb.
3. Swelling round the part affected.
4. Deformity, the limb falling into an unnatural position and having an abnormal shape. It may be shortened by over-riding of the fragments of the broken bone.
5. Irregularity. If the bone is close to the surface the break in its continuity may be felt, and if the fracture is compound, the bone may be exposed and visible.

General Rules for the First Aid Treatment of Fractures

(1) The object of first aid treatment of a fracture is to prevent a serious injury from being made worse and especially to guard against the movements of the patient or careless handling by helpers converting a simple fracture into a compound, or an uncomplicated fracture into a complicated.

(2) Attend to the fracture on the spot unless the surroundings or conditions are such that danger to life is threatened, or there is danger of further injury. In any case stand by the patient until the fracture has been attended to and the injured limb secured and, except for the reasons already mentioned, do not move him until this has been done. Care in handling and movement is important for all fractures and is especially so for fractures of the spine, pelvis and ribs.

(3) If there is urgent severe bleeding endangering life, it must be controlled first of all.

(4) Wrap blankets or coats round the patient, using great care not to move him unduly. Warmth and air are indicated as part of the efforts to counter shock. Merely covering the patient is not enough to prevent him becoming chilled.

(5) With great care, and without using force, place the limb in as natural a position as possible. In the case of compound fracture with a protruding fragment, it is forbidden to attempt to pull it back into place.

(6) Apply splints, bandages or slings over the clothing to immobilise the fracture, except in cases where this is of the compound variety, when it will be necessary to remove some portion of the clothing and apply a dressing to the wound. If the factor of urgency is present, as it most frequently is, and delay may be occasioned by elaborate splinting, this treatment may be dispensed with and the fracture immobilised by carefully securing the injured

limb to the opposite one (in the case of fractures in the lower limb) or to the trunk (in the case of fractures in the upper limb).

A knowledge of the various forms of splints and their correct application is, however, essential, as their use is indicated:—

(i) In cases where the incident occurs at a considerable distance from the Hospital, as in rural areas, when it is necessary to ensure more complete immobilisation during transport in order to reduce pain and thus minimise shock.

(ii) In cases where it is known that removal of the casualty to Hospital may be delayed for some appreciable length of time.

(7) Splints (real or improvised) must be firm, and long enough to keep the joints immediately above and below the site of the fracture at rest. The bandages must be firm but not so tight as to interfere with the circulation of the blood.

(8) In applying bandages near a fracture the upper one should be tied first. When a patient is lying down, double the bandage over a splint or flat length of wood and pass it under the body or lower limb, taking advantage of the natural hollows of the body.

(9) In doubtful cases, treat as for fracture. In cases of fractured spine, pelvis or thigh, never remove except lying down and with the greatest care.

Severe lacerations or crushes of the limbs should be immobilised prior to initial removal, as if a fracture were known to be present.

Improvised Splints.

Serviceable splints may be improvised from such things as laths of a venetian blind, from rifles, walking sticks, folded coats, pieces of wood or of cardboard, from rolled up linoleum or newspaper, and from a number of other articles, providing that the resulting improvisation gives you something firm enough to support the limb and long enough to prevent movement of the joints immediately above and below the fracture.

Special Fractures

Common sense application of the general rules for the first aid treatment of fractures will enable personnel to deal adequately with most fractures. There are, however, certain fractures which call for special mention. These are fractures of the spine, pelvis, thigh, ribs and skull.

(1) *Fracture of the Spine:*

(*a*) *Causes.*—

This may be caused by direct violence (e.g. a fall across a bar or railing or a severe blow on the back as from falling debris or the impact of a missile while a person is standing or sitting in a slightly stooping position) or by indirect violence (e.g. after a fall or jump from a height, a landing is made on the feet with the legs held rigidly).

(*b*) *Signs:*—

Paralysis of both legs and loss of sensation in the lower part of the body may be an immediate result if the spinal cord is injured, and shock is always extreme; there may be retention of urine and later, loss of control over the bladder and bowels.

A fracture of the spine in the region of the neck may, of course, be immediately fatal or the patient may survive with complete paralysis of arms, body and legs and with breathing by means of movement of the diaphragm only (i.e. the normal movements of the chest wall in breathing can neither be seen nor felt). The face will be pale, the lips pale or mauve and the forehead possibly beaded with cold sweat. The skin, especially of the extremities, becomes cold and clammy. The pulse will be weak, irregular and rapid.

Breathing may be either diaphragmatic or weak, rapid and shallow, later becoming laboured or sighing. The patient may or may not be unconscious.

(*c*) *First Aid attention:—*

Warn the patient to be still; do not move him unnecessarily. Put a pad between the ankles and tie a bandage like a figure 8 around them and the feet, fastening the knot under the soles. Tie broad bandages round both knees and thighs. Carefully wrap him in blankets or coats.

(*d*) *Methods of removal.* (Special attention must be devoted to this point, since error may have grave consequences.)

The first step is to put him on a stretcher (which in this case should have its bed portion, if of canvas, made rigid and quite flat by stiffening it with a series of short transverse boards) or on to a shutter, door or plank of suitable length and width, on which a smoothly folded rug or blanket should be placed. This transference to the stretcher or improvised stretcher must be done with the greatest of care, taking particular trouble to see that the whole length of his back, his head and his legs are kept straight. His spine MUST NOT be bent. In the case of evident injury to the spine in the cervical region, his head and shoulders should be steadied by a pad in the hollow of the neck, with additional pads at the sides of the head to prevent it from rolling about. The transference should be done in one of the following ways, according to the material and to the number of helpers available.

Method (1). Pass broad bandages under the patient's head, shoulder blades, buttocks, thighs and calves. Use the natural hollows of the body, and work the bandages into position smoothly, taking care not to move the patient. Tie the free ends of the bandages on each side to a long pole, metal bar, or similar article. Four bearers, two on each side of him, should stand facing inwards and together, when the word is given, should grasp the poles with their hands wide apart, and then should carefully and evenly raise him while a fifth helper slides under him the stretcher on which he is to be laid. If there is no one to slide the stretcher under, the four bearers should move with short, smooth, side-paces until the patient is over the stretcher, when he is carefully lowered onto it. Obviously the stretcher should be placed in position in line with the patient and near his head, before the lifting operation is begun.

If only three persons are available, one should go to each side to raise the poles, their hands having grasped them wide apart and opposite to the patient's shoulders and hips, while the third steadies and supports the legs.

Method (2). If nothing is available for use as poles or as bandages, a blanket or rug might be carefully and slowly worked under the patient. Lay it open on the ground in line with his head. Let two helpers kneel, one by each shoulder, and work the edge of the blanket under the shoulders, then slowly pull it beneath the hips and legs. The body must not be lifted up to get the blanket under it. The patient is then lifted by the helpers gripping the sides of the blanket rolled close to him and parallel with him. If poles are available, but no bandages, use the blanket as above, but roll the sides of the blanket on to the poles, or even cut holes in the blanket through which the poles can be passed and thus make an improvised stretcher.

Method (3). If neither poles, blankets nor bandages are available, open out the patient's coat and roll it firmly so that the roll is close up against his sides. One helper on each side grasps the rolled up coat, while others, one on each side, grasp the clothing round his thighs. A fifth, if available, supports the head and neck.

(2) *Fracture of the Pelvis.*

If after severe injury in the region of the hip or loins a case shows no signs of damage to the legs but is unable to stand or even to move his legs without

pain and difficulty, that is presumptive evidence that his pelvis is fractured, and you must treat him as such a case.

Put the patient into whatever position he finds most comfortable, raising or lowering his legs as he desires. Preferably, but by no means essentially, he should be flat on his back with his legs straight. Apply a broad bandage round his hips so that it is firm enough to give support but not so tight as to press broken bones inwards. Bandage both ankles and both knees together. Move him as described for cases of fractured spine. He should not be allowed to pass water.

(3) *Fracture of the Thigh Bone (Femur).*

This bone may be broken at any point, at its neck, in its shaft, or close to the knee.

In old people, relatively slight causes may lead to a fracture of the neck of the femur and it is often difficult to say whether or not fracture is present. If after injury an old person, when lying on his back, is unable to raise his heel from the ground, while keeping the knee straight, assume a fractured neck of the femur.

In cases of fractured femur, the general signs and symptoms of fracture are usually present. A specific sign is an abnormal turning outwards of the foot. Shortening of the affected limb will usually be present, and may be as much as three inches or as relatively little as half an inch.

First aid treatment.

Either (*a*) As in first aid text books by the application of a splint when the following method of applying bandages and splint will be used.

Steady the limb by holding the foot and ankle; gently draw the foot down into line with the opposite one and secure both together with a figure of 8 bandage round ankles and feet.

Pass seven bandages under the body and limbs in this order:—

(1) At the chest, just below the armpits.
(2) At the pelvis, in line with the hip joints.
(3) Round both ankles and feet (over the initial figure of 8 bandage).
(4) Round both thighs above the fracture.
(5) Round both thighs below the fracture.
(6) Round both legs.
(7) Round both knees (here use a broad bandage).

Now place a splint along the patient's injured side, extending from the armpit to beyond the foot, and secure it by tying the bandages as above in the same order

or (*b*) secure the injured limb to the opposite one, using the same bandages but omitting the one at the chest; place padding material in the hollows between the limbs.

Load the patient on to a stretcher, carefully supporting the whole length of the body and legs.

(4) *Fractured Ribs.*

Ribs may be broken by direct violence, in which case the broken ends of the bones may be forced inwards, or less commonly by indirect violence forcing them outwards. In the former case injury to the lungs or other internal organs may occur, rendering the fracture "complicated."

Signs and symptoms are:—a sharp cutting pain, especially on deep breathing; the breathing is short and shallow. If the lungs are injured, blood, mixed with froth, may be coughed up. If the liver or spleen are injured, internal bleeding will occur, and the patient will quickly become pale, cold and clammy, with thready pulse and weak shallow breathing. He will rapidly lose strength

and become giddy and faint, especially on standing. Later the pulse may become so weak that it cannot be found at the wrist, and the breathing is hurried, laboured and accompanied by sighing and gasping, the patient becomes unconscious and passes into a state of collapse.

First Aid Treatment.

If there are no signs of injury to an internal organ, tie two broad bandages firmly round the chest, with the centre of the first immediately above, and the centre of the second immediately below, the site of fracture. The lower bandage should overlap the other by half its width. Tie on the opposite side and slightly to the front. Support the arm of the injured side in a sling.

If an internal organ is injured *do not* apply any tight bandage to the chest. Lay the casualty down inclined, and supported with the injured side below. Loosen all clothing, keep wrapped in rugs or blankets, give ice to suck if by any chance it is available, and avoid moving the case more than is necessary.

In case of an open wound of the chest wall, with sucking of air and resulting difficult breathing, relief can be given by covering the opening with a suitable pad-dressing.

(5) *Fractures of the Skull.*

(*a*) Fractures of the base of the skull may be caused by indirect violence as by a blow on the jaw or a fall on the feet from a height. The patient is usually unconscious, and blood-stained cerebro-spinal fluid may escape from nose or ears.

(*b*) Fractures of the vault of the skull may be caused by direct impact, and portions of the broken bone may press on the brain. When with a wound of the scalp a fracture of the vault is suspected, dressings, etc., should not press directly over the wound, but a ring pad should be used.

A case of head injury should not be moved unnecessarily. If the face is pale, keep the head and shoulders low; if it is flushed, the head and shoulders are to be supported slightly raised. Tight clothing, especially about the neck and chest, should be loosened, and the case wrapped carefully in blankets or rugs. An unconscious person should, of course, not be given anything to be swallowed.

CHAPTER XI

16. CRUSH INJURIES

A large number of air-raid casualties are caused by the collapse of buildings. Of these casualties, many are found to be pinned down by beams, brickwork, or other heavy debris and may remain trapped for some time before they are released. During this period the limbs and other portions of the body may be subjected to considerable pressure.

It has been found that some of these casualties, when released, show little sign of injury and may complain of nothing more than stiffness of the muscles in the crushed part. Their general condition may appear quite good both during the time they are trapped and after release. In spite of this a very large proportion of them die in Hospital a few days later.

In such cases the functions of the kidneys are invariably deranged. Later, in the hospital, this derangement is in many cases accompanied by an alteration in the blood pressure. The quantity of urine passed is diminished and in those cases which prove fatal may be completely suppressed.

Death usually occurs between the fifth and seventh days.

A person who has been trapped by debris which has pressed upon any part of the body must therefore be regarded as a serious casualty whatever his apparent condition may be at the time of release.

Action to be taken on encountering casualties trapped beneath heavy debris

If there is a doctor at the incident, notify him *immediately* a trapped casualty is located. He may be able to give valuable treatment before the victim is released and to make special arrangements for the disposal of the casualty after release.

If no doctor is immediately available, report the presence of trapped casualties to the local Control Centre through the officer in charge of the incident. The medical officer in the Control Room will then endeavour to send a doctor to the incident, and will put into operation any local arrangements which may have been made for the disposal of this type of case, e.g. notification of and despatch to a selected hospital specially equipped for the treatment required.

Treatment at the incident.

In the absence of a doctor apply the following treatment at once:—

1. Give plenty of fluid by mouth. If you can get baking soda (bicarbonate of soda), dissolve two level teaspoonfuls in a pint of cold water and let the patient drink as much of this as possible. Follow this with drinks of hot, sweet tea or coffee. The tea or coffee alone or even plain water should be given if baking powder is not available.
2. Give the normal treatment for shock as shown in Chapter IX, Section 14.
3. If it is a limb that is crushed, an attempt should be made to place a tourniquet, preferably the rubber bandage type, loosely in position around the limb between the part that is being crushed and the body. This should be tightened just before the weight, which is pressing on the limb, is lifted to release the casualty.
4. Attach a label and mark the casualty to show that a tourniquet has been applied.
5. All these cases must be despatched to Hospital by ambulance and the ambulance attendant must be given full information concerning the nature of the injury.

CHAPTER XII

17. BURNS (OTHER THAN FROM POISON GAS) AND SCALDS: QUICKLIME AND ACID IN THE EYE

Burns and Scalds

In addition to injuries due to missiles or to falling debris, burns or scalds may need attention.

A burn is caused by dry heat (flame, hot metal, an electric current, or a strong acid or alkali).

A scald is caused by wet heat (e.g. steam, boiling water or oil).

First aid treatment of burns by parties

(1) Dry unmedicated first aid dressings should be applied without delay and with the least possible handling of the burn and the surrounding skin. Party pouches contain large and medium first aid dressings. These are made up in pads and are unmedicated. A reserve of large and medium first aid dressings exists in each party haversack. Should this reserve become exhausted and further supplies of this dressing be unobtainable at the incident then the unmedicated squares of lint (in

the haversack) should be used and applied dry. In the absence of any of the above dressings the affected part should be covered with soft clean cloths, or cotton wool, and bandaged.

Patients with severe burns must be sent to the nearest Hospital at once; those with minor burns should be sent to the nearest First Aid Post.

When burns or scalds are severe or extensive, shock will be marked. The patient must be kept warm; fluids, such as hot sweet drinks, should be given in quantity.

(2) Clothing must not be removed unless absolutely necessary. If garments must be taken off, great care should be used.

If the material sticks, it is necessary to cut around the pieces of cloth which adhere to the flesh so as to leave them in position when the garments are removed. If blisters have formed, they must not be broken or punctured, but should as far as possible be protected and kept intact.

Burns caused by corrosive acids or alkalis

(1) Thoroughly flush the part with water.

(2) If the burn is by a corrosive acid, bathe it freely with a weak alkaline lotion, such as that made from bicarbonate or carbonate of soda in water, in the proportion of 2 teaspoonfuls to each pint, or with milk in water, or with milk.

(3) If the burn is by a corrosive alkali (e.g. quicklime) brush off any that still adheres. Do not flush with water until these particles have been removed. Bathe freely with a weak acid lotion, e.g. vinegar or lemon, or lime-juice, in water, half and half. If these are not available, flush well with water.

Quicklime in the eye

Brush away any visible particles and irrigate the eyeball with one part of vinegar in four parts of warm water. If vinegar is not available, irrigate the eye freely with warm water. After thorough irrigation, close the lids, apply a soft pad, e.g. of cotton wool, or a folded handkerchief, and secure it with a bandage firm enough to keep the eyeball steady. The case should be seen by a medical officer.

Acid in the eye (e.g. sulphuric acid, " oil of vitriol ").

Irrigate the eye well with a solution of baking soda (2 teaspoonfuls to a pint of warm water). After thorough irrigation, apply pad and bandage as above. The case should be seen by a medical officer as soon as possible.

Phosphorus burns

Phosphorus continues to burn on the surface of wounded tissues and should therefore be removed as soon as possible.

(i) Water must be applied immediately to the affected part to extinguish any burning phosphorus and to keep the area moist. (Water from the water bottle may be used for this purpose.)

(ii) A clean mine dressing or clean lint or clean cloth soaked in water should be applied over the burn. Whichever dressing is used it *must* be kept wet, otherwise it may burst into flame.

(iii) With the wet dressing in place, the casualty, if a sitting case or able to walk, should be conveyed or directed *at once* to the nearest First Aid Post or Hospital for further treatment.

(iv) Stretcher cases must be sent direct to a Hospital with the least possible delay. To ensure immediate attention at the Hospital, these casualties must be marked with a P as indicated in Chapter IV, page 27.

(v) On no account should oils, greasy dressings, Tannic Acid, Triple Dye or Brilliant Green be used in the treatment of phosphorus burns until after every trace of phosphorus has disappeared from the tissues.

Oils and grease are solvents of phosphorus and their use, while phosphorus is present, may cause poisoning from absorption.

CHAPTER XIII

18. WOUNDS OF THE ABDOMINAL WALL

Wounds of the Front Wall of the Abdomen

Wounds here may or may not be accompanied by protrusion of bowel or other organs through the wound. Immediate treatment is as follows:—

(1) When bowels or other organs protrude, whether the wound is vertical or transverse: keep the case lying on his back; draw his knees well up, and support his head and shoulders well raised.

Apply clean lint or a clean soft towel, and over this place some clean cotton wool or soft clean flannel. Secure this firmly but not too tightly with a broad bandage (triangular bandage—" Broad-fold").

(2) When there is no protrusion of the organs:—

(*a*) If the wound is vertical—keep him flat on his back with legs straight; *or*

(*b*) If the wound is horizontal, keep him on his back, with knees drawn up and his head and shoulders well raised.

Apply a dressing and broad bandage firmly and evenly.

In all cases—give nothing by the mouth. Keep the case warm. Do not move him unless absolutely necessary until he is to be placed in the ambulance vehicle. Shock will be extreme and further shock must be guarded against. Appropriate careful management, and rapid, smooth transport to Hospital are essential if the case is not to be prejudiced from the outset.

In treating shock, if they are available, put hot-water bottles wrapped in a coat or blanket, in the armpits and lying across both thighs, taking care that they do not scald or burn him. Never put a hot-water bottle in direct contact with the skin. Be careful that blankets or rugs do not press on the abdomen. Let all movement be as smooth and gentle as possible.

CHAPTER XIV

19. TREATMENT OF SUFFOCATION (ASPHYXIA)

Breathing may be stopped by pressure on the chest, blocking of the mouth or windpipe by false teeth, food, mud, dust, etc., drowning or electric shock. Suffocation will also occur if the air breathed is poisoned by domestic coal gas, smoke, motor-car exhaust fumes and many other gases.

If a casualty has stopped breathing, look for the cause and try to remove it; for instance, clear the mouth of obstructions or remove the patient from a gas-filled room. If breathing does not start again immediately, commence artificial respiration at once as follows:—

1. Lay patient face downward with the head turned on one side (see Fig. 25).
2. Kneel beside the patient's thighs, facing his head and sitting on your heels. Place the palms of your hands on the small of the patient's back so that they fit into the soft area on either side of the backbone between the ribs above and the hip bones (Position A).
3. Keeping your arms straight, swing your body forward until your shoulders are directly above your hands (Position B).
4. Slowly sit back again on your heels without moving your hands.

5. Repeat the double (forward and backward) movement 12–15 times a minute.
6. When natural breathing reappears, regulate movements to correspond with it.

POSITION A

POSITION B

FIG. 25—ARTIFICIAL RESPIRATION.

NOTE. Artificial respiration must not be used in cases where failing respiration is due to poisoning by Phosgene, nitrous fumes or other war gases, or is the result of exposure to blast.

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