British Rail

Chief Signal and Telecommunications Engineers Department

Induction Course

Training School YORK

Eastern Region

British Railways Eastern Region

C S & T E DEPT.
TRAINING SCHOOL.
YORK.

REF. Ind.1/1.

COURSE.

SUBJECT.

How is British Rail Controlled?
Where do you fit into the organisation?
To answer these questions we will consider the "Family Tree" of British Rail.

The whole organisation is controlled by the British Railways Board.

They are responsible for the finance and organisation of the Whole Railway system and for all the other associated companies.

The Chairman of the Board. Peter Parker

Deputy Chairman. —

Vice Chairman (Non Rail) R B Reid

Non Executive Board Members

Chief Secretary G R Bell

Vice Chairman (Rail)

Direct responsibility for Engineering and Research.*
Chief Architect.
Chief Civil Engineer.
Chief Mechanical and Electrical Eng.
Chief Signal & Telecommunications Eng.*
Chief Projects Officer.
Director of Research.
Director for, Environment, Design, Supply.
M.D. for Transmark.

Executive Board Members.
Chief Exectutive Railways.
Special Projects.
International Policy.
Regional General Managers.*
Finance and Planning.
All Financial and Planning Sections including Computing services.
Marketing. G Myers
Chief Managers for Freight, Parcels, Passenger and European Rail Traffic.
Freightliners and Britrail Travel.
Operations and Productivity.
Chief Managers for Operating, Parcels, Police, BRE, Metro. B.R.E.L.
Personnel. J G Wright
Chief I.R.O. Chief M.O. Chief Management and Staff Training. Controller Pensions.
Director of Personnel Development

The Board Chairman has a responsibility for Public affairs, British Transport Staff College and BR industry export group. (BRIEX) The Deputy Chairman covers, B.R. Hotels, Hovercraft, Shipping, Legal, Pension investments and International Services Division. Chief Secretary is responsible for Secretariat.

British Rail services are operated by five Regions:-

Eastern*, Southern, Midland, Western, Scottish.

Each having a Regional General Manager.

This Region is the Eastern Region.
The following is the "Family Tree" for this Region.

General Manager F Pattenden

Deputy General Manager G J D Drew

Marketing. Production*. Services. Divisional Managers.

Marketing
Chief Manager, Freight. Chief Manager, Passenger. Regional Parcels Manager.
G E T Wolfe I W Worburton E H Hopwood

Services E H Hayhurst D A Dickinson
Chief Finance Officer. Management Services. Chief Personnel Officer.
Chief Planning Officer. Public Relations Officer. Stores Controller.
M N Sherwood W A Porter F B Ward

Divisional Managers
Based at 7 Divisions. Doncaster, Kings Cross, Leeds, Liverpool Street, Newcastle, Norwich, Sheffield. These Managers have responsibility for Railway operations in their areas.

Production*
Chief Operating Manager. Chief Mechanical and Electrical Engineer.
R M Williams A J Gosden

Chief Signal & Telecommunications Engineer*. Chief Civil Engineer.
M Leach P B Dowd

Divisional S. & T. Engineers*. Based at	Divisional Civil Engineers. Based at
Doncaster*+	Doncaster
Sheffield *+	Sheffield
Leeds *+	Leeds
Newcastle*+ F P Wiltshire	Newcastle
Liverpool Street	Liverpool Street
Norwich	Norwich
Kings Cross	Kings Cross
	York

*+ These Divisions of the Chief Signal and Telecommunications Engineer are served by the Training School at York.
The other three Divisions attend the Training School at Ilford.

The Purpose of the Chief Signal and Telecommunications Engineers Department, of which you are now part is:-

To provide the Railways with a Safe and Efficient Signalling System.

To provide the Railways with an Efficient internal communications System.

We will next consider the organisation of the Department to enable it to fulfil both of these functions.

Works R Pearce
General H Murray
Telecom D G Hamblin

Eastern region provides rail services over Eastern England extending from the Thames to the Tweed and including 18 counties in addition to the north eastern part of the Greater London Council area.

The Region covers an area of 20,460 square miles, or over one third of the total area of England and Wales. The population of the region numbers over 15, millions and returns 157 Members of Parliament.

The latest facts and figures are.

Number of Staff Total.	41,929
Salaried.	9,756
Train crews.	10 154
Signalmen.	2 291
Engineering.	13 417
Route miles of track.	5 812
Passenger stations.	598
Parcels stations.	126
Signal boxes manual.	614
Signal boxes Power.	134
Level crossings.	935
Bridges.	9,605
Tunnels.	194
Locomotives.	1,004
Coaches.	1,479
Power cars 125.	68
Coaches.125.	284
D.M.U.	848
E.M.U.	1682

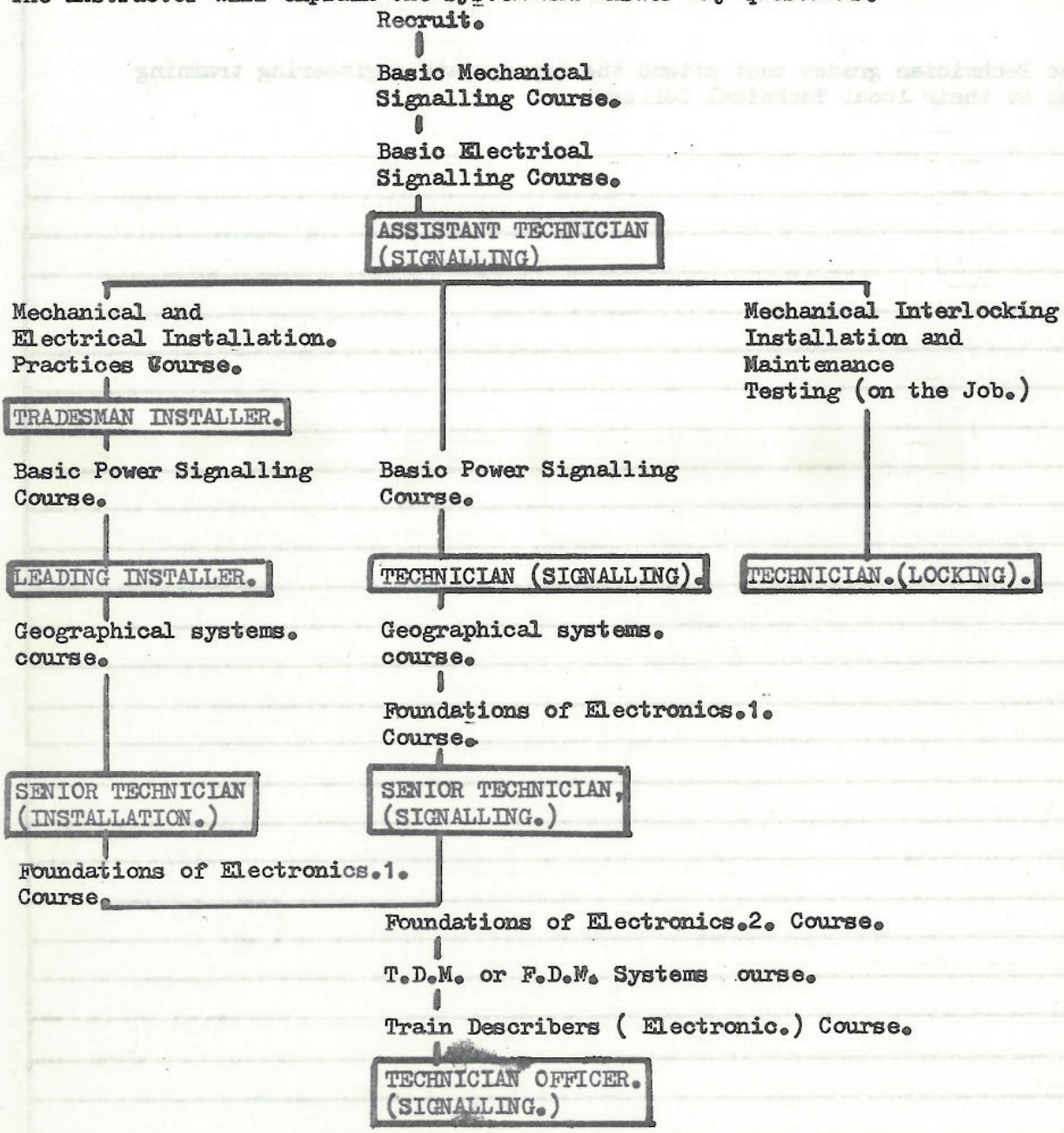
C S & T E DEPT.
TRAINING SCHOOL.
YORK.

REF. Ind.5/1.

COURSE. Induction an

SUBJECT. Promotion and Training.

Your Promotion in the department under the Pay and Grading agreement is related to the level that you have attained in Training and is subject to a vacancy existing.
Generally, subject to any suitability clause applying, the Senior (in time) qualified applicant for a post will be appointed.
The following chart shows the promotional steps and the related training courses.
The Instructor will explain the system and answer any questions.



Your promotion need not stop at the Wages Grade you can when you reach a required level and if you have the knowledge and qualifications, apply for vacancies in the Salaried staff grades.

Your steps could be to Supervisor or possibly into one of the Technical grades. You may of course wish to change Departments, or apply for a Clerical post.

Your conditions of service book will give this information, and your Divisional office will be able to supply information on obtaining the required details.

In addition to the " on the job training " the Training school run Evening classes in Railway signalling. You are eligible to attend these classes. Travel facilities are available and leave may be granted at the discretion of Divisional Engineers to enable staff to leave work early to attend.

Trainee Technician grades must attend the appropriate engineering training courses at their local Technical College

British Railways Eastern Region

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YORK.

REF. Ind.6/1.

COURSE. Induction.

SUBJECT. The " RULE BOOK. " Signalling engineering instruction book and

You will have been issued with a Rule Book, (BR 87109.) take care of this book you will have cause to refer to it many many times during your railway career.

The rule book serves two main functions, 1. it is a set of rules governing your employment, 2. it is a set of rules concerning the operation of railways.

You can learn a lot from your rule book. By careful study you will find that not only does it list a mass off do's and dont's but, it also contains a wealth of information on Railway Signalling. Study your rule book it will help you to learn your job.

Always carry your Rule book with you, you will be surprised at the number of times you need to refer to it.

The rule book is divided into sections identified by letters. Section A deals with your terms of employment and with discipline.
The Instructor will go through this section and explain any items that you do not understand.
It is a requirement that each man employed in an Engineering department shall have the rules read and explained as required at least twice a year, and shall sign a form stating that this has been done.
Such a form is shown below and the rules to be read listed. It is not the purpose of this course or the duty of the Instructor to read these rules or for you to sign any statement, that is your Supervisors responsibility, the Instructor will however cover the main rules and give any explanation required.

BRITISH RAILWAYS.....Region BR 13111

SIGNAL & TELECOMMUNICATIONS ENGINEER'S DEPARTMENT.....Station

READING AND EXPLANATION OF RULES AND REGULATIONS

Section B, clause 3, of British Railways Board Rule Book dated 1st October, 1972, reads as follows:—

"Each Engineering Department man-in-charge (as designated by the Department concerned) must, before any man of his Department is permitted to take up duties on or about the permanent way, read and explain to him all the Rules and other instructions so far as they relate to his duties or otherwise affect him. These Rules and instructions must also be read to each man under his control at least twice a year. A signed declaration to that effect must be obtained from each man and these declarations must be sent to the Departmental Supervisor".

In accordance with the above, the following Rules must be read and explained:—

a) **To Conciliation Staff and Workshop Staff issued with Rule Book dated 1st October, 1972:—**

Section A	—	whole of
Section B	—	clauses 1.1, 1.2, 2.1, 2.4, 3, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10 and 5.11.
Section D	—	clauses 1 (first paragraph) and 5.
Section E	—	notes 1 & 2, clauses 1, 2, 3, 5 and 6.
Section F	—	clause 1
Section N	—	clauses 3.1(i), 5.6 and 5.22.3.
Section O	—	clauses 2, 5, 7, 9, 10, 13 and 14.
Section P	—	whole of.
Section Q	—	clauses 1, 2 and 4.
Section R	—	clauses 1, 2 and 3.
Section S	—	clauses 1, 2 and 3.
Section T	—	Part I clauses 1 & 2, Part II clauses 5 & 6, Part III clauses 9, 10, 11 and Part IV clauses 16 and 20.

The Rules applicable to S.&T.E. Department staff have been enumerated above but to obtain a full understanding of the arrangements, all staff concerned should study the whole Rule.

b) **To workshops and Conciliation Staff issued with Extracts from Rule Book, dated 1st October, 1972.**

Section A	—	whole of
Section B	—	clauses 2.4, 5.1, 5.2, 5.3.1, 5.3.2, 5.3.3, 5.3.4, 5.3.5, 5.3.6, 5.3.9, 5.4, 5.5, 5.8, 5.9, 5.10 and 5.11.
Section O	—	clause 14.

RULES AND REGULATIONS OF BRITISH RAILWAYS

This is to certify that on the undermentioned dates we have had the Rules and Regulations as noted above, read and explained to us by the person mentioned overleaf and that we understand them.

Dates above referred to	Signature of persons to whom the rules have been read and explained		
	Name	Station	Grade

7
8.

In addition to your rule book you will have been given two other documents. The Signal Engineering instruction book and Departmental Instructions Part D. The Signal Engineering Instruction book (BR 13445) is issued only to staff in The Chief Signal and Telecommunications Engineers Department. It is really the "Specifications " for the work to be carried out in respect of the equipment which you will be Installing or Maintaining.
This Book together with the Maintenance Specifications for individual equipment is your guide to the work required.
The Instructor will explain the use of this book and the use of Maintenance Specifications.

Departmental instructions.
In addition to the above the Chief Signal and Telecommunications Engineer. issues special instructions to staff in his department.
They are identified by letters explaining their function.

DA.	Department Administration.
DP.	Procedure.
DF.	Finance.
CP.	Signal and Telecommunications practices.
SP.	Signalling principles.
SI.	Signalling Installation.
SM.	Signalling Maintenance.
TI.	Telecom. Installation.
TI.	Telecom. Maintenance.

They are issued only to the Grades of staff concerned by a code letter.

A. Engineers and Management staff.
B. Supervisors.
C. Established wages grade staff. (Assist. Tech, to Tech. Officer.)
D. Personal issue to all staff.

You will receive all instructions for D. issue, and on appointment to a post items for C. issue.

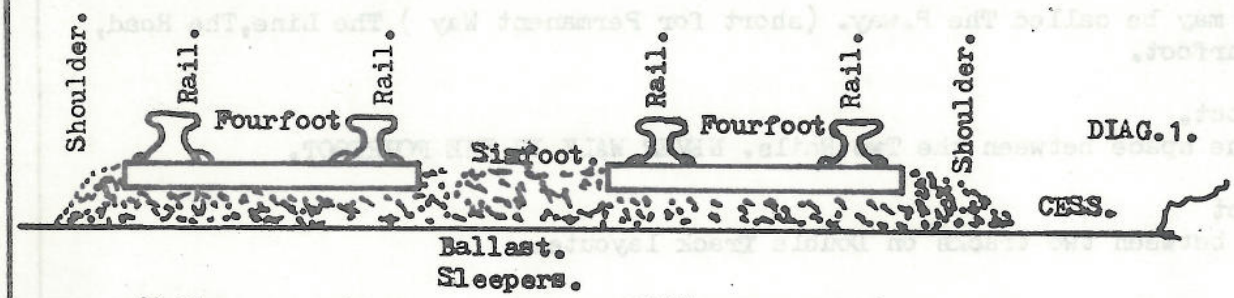
British Railways Eastern Region

C S & T E DEPT.
TRAINING SCHOOL.
YORK.

REF. Ind.8/1.

COURSE. Induction.

SUBJECT. Railway Terms.



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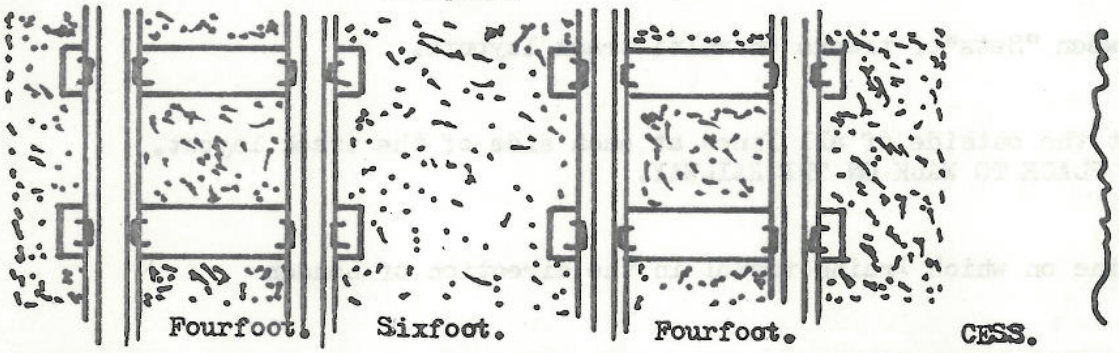

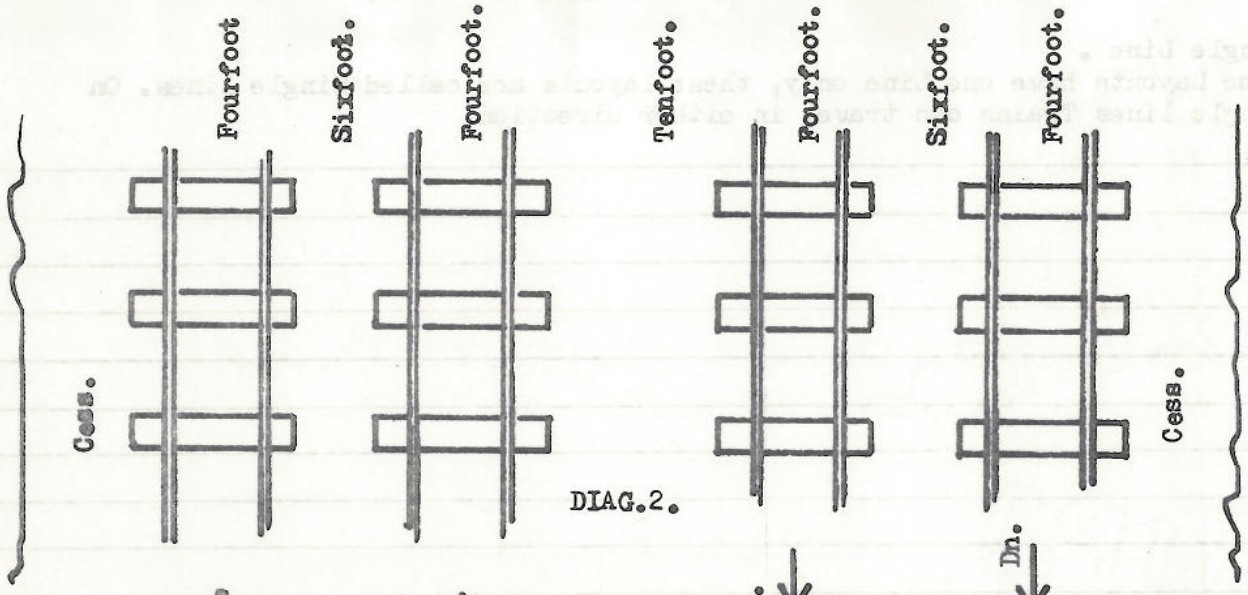

DIAG.2.

Railway Terms.
Most Industries have their own"language", that is , they have their own names for many things. The Railway is no exception, we have many things that are peculiar to Railway working.

The Track
This is the two Rails on which the Train runs. The two Rails are fixed by Chairs or Clips to Sleeper which may be of Wood or Concrete,they hold the rails to the correct Gauge for the train wheels. The sleepers are embedded in Ballast of Ash or Stone.
The Track may be called The P.way. (short for Permanent Way) The Line,The Road, or The Fourfoot.

The Fourfoot.
This is The space between the Two Rails. NEVER WALK IN THE FOURFOOT.

The Sixfoot
The space between two tracks on Double Track layouts.

Tenfoot.
The space between "Sets"of tracks on multi track layouts.

Cess.
The pathway at the outside of all lines at each side of the track layout.
THE ONLY SAFE PLACE TO WALK ON THE RAILWAY.

The UP LINE.
Usually the line on which Trains travel in the direction of London

The DOWN LINE
Usually the line on which Trains travel away from London.

Single Line .
Some Layouts have one Line only, these layouts are called Single lines. On Single lines Trains can travel in either direction.

British Railways Eastern Region

C S & T E DEPT.
TRAINING SCHOOL.
YORK.

REF. Ind.9/1.

COURSE. Induction.

SUBJECT. Correct Dress for Work.

There is no restriction as to the Fashion of your working Dress there are however one or two factors to consider for the Safety and effectiveness of your clothing.
Bright clothing has an advantage on the railway in that it enables you to be seen, however this aspect is taken care of . When on the Railway you MUST WEAR YOUR HIGH VISIBILITY VEST, or other High visibility clothing as instructed.

One colour to be avoided on the Railway is RED. Red is a Danger Signal to a Driver, and a Red Shirt or Jumper at a Distance may be taken for a Red Flag by a Driver.

Loose clothing can be a Hazard. Much of the work will involve machinery or moving parts, loose fitting clothes can soon get caught and trap or injure you.
Your Division will tell you your entitlement for protective clothing. Usually Overalls(High Visibility Boiler Suit)or Jacket and Trousers(Bib and Brace), Mackintosh, and Leggings.(Choice of Overcoat at appropriate interval.)

Footwear, Boots are best, the Ballast on the Railway can be very rough and uneven. Boots give your Ankles better support, they will also take the wear and tear of Railways better. Safety footwear is better still. The Steel toe caps etc will protect your feet much better. Many a Man has had his Toes saved by his Safety Boots. Your Division can give you details of how to purchase them.

The Health and Safety at Work Act.(1974) made the use of protective clothing for certain work a Legal requirement.

Goggles. You must wear Goggles of the correct type when using Drilling or Grinding Machines, You must also wear Goggles when doing maintenance work on Secondary Cells. These are just some examples, there are many other times that goggles are essential.

Bump Caps, Ear Muffs, Gloves, these and other items may be required by Law.

Prior to starting work on any task for the first time CHECK with your Supervisor or Man in Charge if any protective clothing is required.

Dress sensibly with an Eye to Safety more than Fashion.

Dressing to Kill - could result in YOU being killed.

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REF. Ind.10/1.

COURSE. Induction.

SUBJECT. Summary of Track Safety.

You have been issued with a set of Raiway publications covering all aspects of Safety associated with safety on the track and at work.
These are listed below.

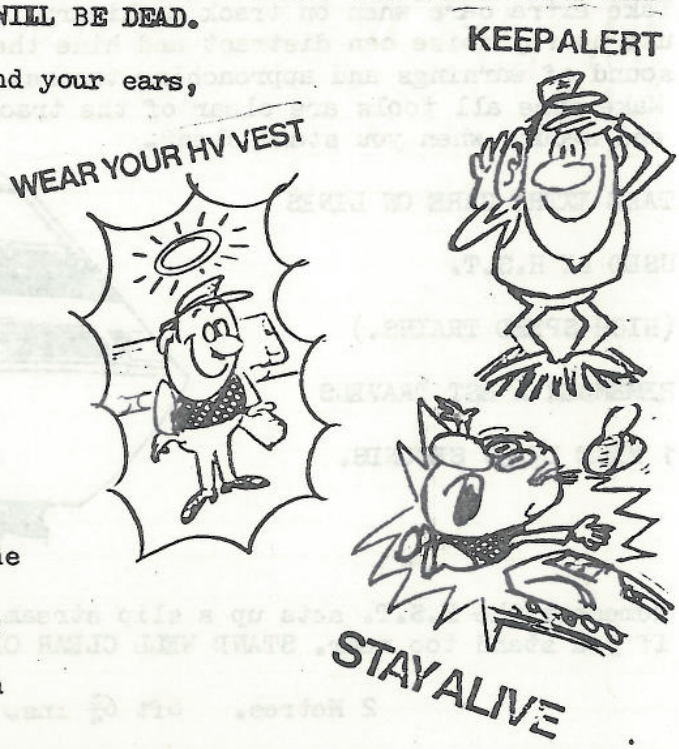
12323.	Your personal safety on the track.
7013/9.	Sense and safety on the track.
7013/10.	Sense and safety in traffic.
29995/12.	Safety code for track walking.
29995/23.	Safety code for lookout men, trackmen and others working on the line. Including extension card for H.S.T.s.
29995.	Track drill card.
12811.	Lookout mans form of examination and competency certificate.
29988.	Extracts from working instructions for A.C. electrified lines.
2306/80.	Dangerous goods hazard identification card.

The following is a summary only of the main points in these leaflets. It is your responsibility to read them completely.

The most important rule to remember about walking on the track is DON'T.
All walking is not necessarily confined to walking on the track. You will have to walk to and from your depot, and possibly between your depot and other premises or station signal boxes etc.
ALWAYS SELECT A ROUTE CLEAR OF THE RAILWAY TRACK WHEN POSSIBLE.
There are authorised walking routes to and from all depots. These should be defined on depot notice boards. YOU MUST KNOW THEM AND USE THEM.

You must not enter or remain on railway property (without authority) when not on duty.
In the course of your duties you will need to walk and work on or near the line. Walking on or adjacent to the line is common sense. Follow the basic rules and you will be safe. FORGET THEM AND YOU WILL BE DEAD.

Be alert at all times, use your eyes and your ears,



Always wear your high visibility vest or other approved high visibility clothing when on or about the line.

Never walk in the fourfoot if it is at all possible not to do so. Always walk in the Cess if you must walk near the track.
There may be times when you must walk in the fourfoot. If you must walk in the Fourfoot Walk facing the traffic.
Keep alert. Keep looking and listening.
On single lines sidings and on main lines in emergencies trains run in both directions so keep a lookout behind you. To avoid slipping walk on the ballast especially in winter and wet weather.

Stepover rails not on them take care not to trip.
Step over rails not on them take care to avoid tripping and slipping.
Never walk in the sixfoot. If you get caught in the sixfoot between two trains lie down.

Stand clear of all lines when a train is approaching, never step from one line to another, you could be stepping into danger.

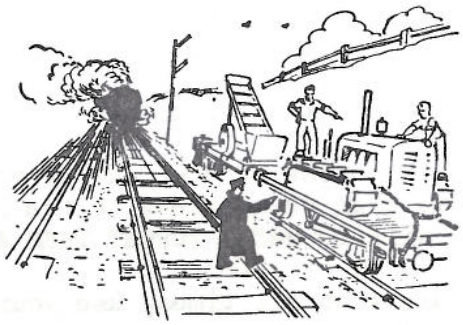
Raise your arm to acknowledge warnings from drivers and lookout men.

Tunnels present extra hazards. Never enter a tunnel alone, and always carry a handlamp.
At night and in bad weather or at times of poor visibility take extra care, carry a handlamp at night.

Walk clear of all signal wires point rods etc.

When you are called upon to work on the track. The man in charge is responsible to appoint a Lookout man and they decide the safe place of refuge to go to when a train or trains approach. THE MAN IN CHARGE. is the senior man, or if no senior man exist and no one has been appointed in charge the person with the longest service is in charge. Rule book section P.

No person shall act as a Lookout man until he has passed a test and been issued with a certificate of competency.



Step to the place of refuge immediately you are warned by the lookout man, do not cross other lines if possible and do not move in front of moving vehicles.

Take extra care when on track machinary is in use nearby noise can distract and hide the sound of warnings and approaching trains.
Make sure all tools are clear of the track and secure when you stand clear.

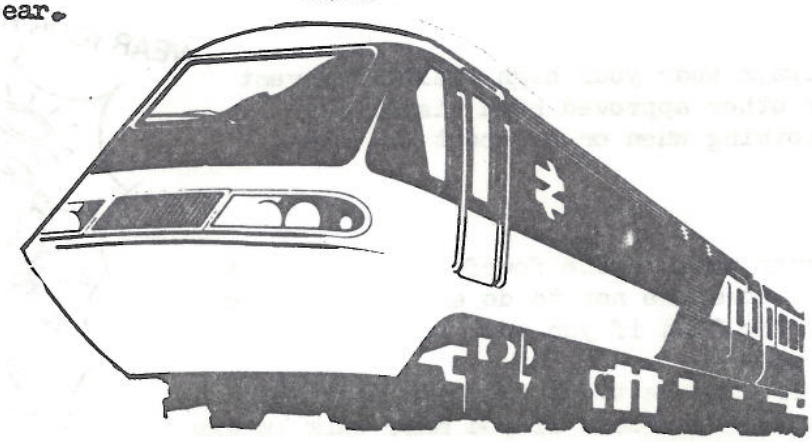
TAKE EXTRA CARE ON LINES

USED BY H.S.T.

(HIGH SPEED TRAINS.)

REMEMBER A HST TRAVELS

1 MILE IN 30 SECONDS.



Remember the H.S.T. sets up a slip stream, this will pull you under the train if you stand too near. STAND WELL CLEAR OF THE H.S.T. AT LEAST.

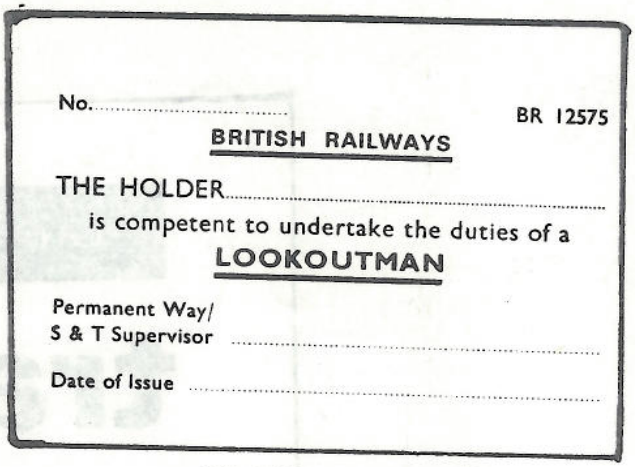
2 Metres. 6ft $6\frac{3}{4}$ ins.

Ind.10/2.

When the H.S.T. is approaching secure all tools, beware of being caught when there is restricted clearence.

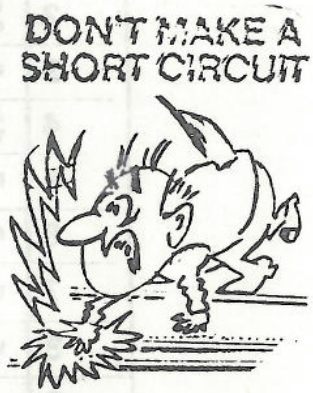
Men appointed as Lookout men.
No person shall act as a Lookout man until he has passed the Lookout mans test and holds the certificate of competency.

When acting as lookout remember you have an extra responsibility,not only for your own life but also for those under your protection.
Make sure that you are in a position to do your job properly and warn men in ample time of the approach of trains.
Make sure of all the men knowing where to move when warned of trains coming.
Make sure they can hear your warnings.
Make sure you have all your equipment and that you are wearing your arm band.


No.....
BR 12575
BRITISH RAILWAYS
THE HOLDER.....
is competent to undertake the duties of a
LOOKOUTMAN
Permanent Way/
S & T Supervisor .....
Date of Issue .....

When working on Electrified lines Special Precautions are needed.
The dangers can be above or below.
Know and obey the working instructions for Electrified lines. Dont let anything that you are carrying go near the overhead wires and dont carry a long article on your own if there is any danger of this.Unless special arrangements have been made, no part of your body or any tool you are using should come within nine feet of live equipment.
This is to protect you in case of a sudden or unexpected slip.Of course, you must not attempt to measure nine feet; use your judgement.

When working on or near live rails use the proper equipment and protective clothing, rubber gauntlets, insulating mats,etc. and make sure they are in good condition .
In third and fourth rail areas treat all rails as live. Step over them when crossing the track and hold your clothes clear, especially if they are damp or the weather is wet. Remember that water conducts Electricity very readily indeed, so use dry sand if there is a fire near live equipment.



While working on the track you may be near a derailment involving wagons carrying dangerous cargoes. Look at the Hazard warning signs.

If a wagon bearing a hazard label is seen to have been involved in any incident and there is leakage or suspect leakage you should.
1. Stay away from the area.
2. Keep others away.
3. Inform a responsible railway official.
If in doubt call the nearest Signal Box and ask for advice to be called.
4. In the event of personal contamination seek medical attention as quickly as possible giving full details of the product if known.

Carry this always

track drill

- **Know the rules**
- **Before every job -**

check for safety ⇨

BR [illegible] (Revised August 1988)

1	TRAINS— CAN THEY BE SEEN?	Tunnels? Failing Light? Fog? Rain? Snow?
2	WARNINGS— CAN THEY BE HEA	Bridges? Via[illegible]? Cuttings? Noisy equip[illegible] Winds?
3	COMPLETE POSS[illegible]	Should I a[illegible]
4	A GANG IS AT W[illegible] WHOM SHOULD I	[illegible]naim[illegible]
5	PROTECTION?	[illegible]e (or more than one)? [illegible]s?
6	OTHERS NEAR[illegible]	
7	LOOKOUT M[illegible]	[illegible]all his [illegible]where to stand?
8	WHERE TO [illegible]	[illegible]o by?
9	ACKNOWLE[illegible]	
10	FINAL CHECK!	Are there any other rules or instructions I should apply?

YOU HAVE LIVES IN YOUR HANDS!

C S & T E DEPT.
TRAINING SCHOOL.
YORK.

REF. Ind.11/1.

COURSE. Induction.

SUBJECT. Dangers from Signalling equipment.

Signalling equipment has many hazards.
It is often heavy, there are moving parts, there can be sharp edges awkward parts to handle, Electricity may be involved, the dangers are many, but with sense and care accidents can be avoided.
We can only mention some of the Dangers you must always be on the lookout for the many not mentioned here.
One of the common accidents is caused through using a finger to line up two holes for a turned pin.

LIKE THIS.

CAN (AND OFTEN DOES).
END UP WITH THIS.

OR THIS.

The motto is
clear.
GET YOUR FINGER OUT

AND KEEP IT OUT

Use a Bar or drift to line up holes.

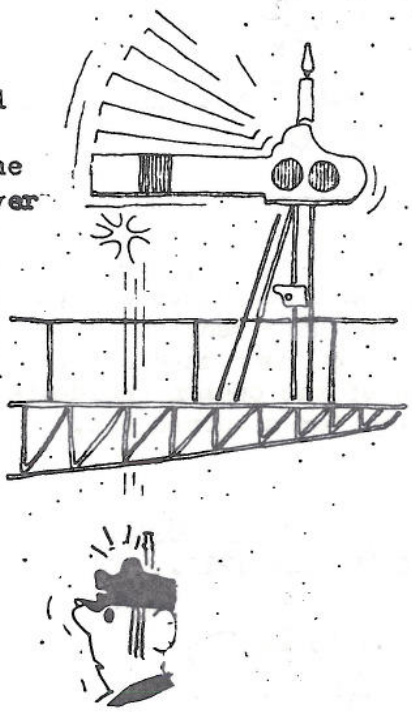
Getting trapped is a common cause of losing another finger or even a hand.
Never put your fingers or hands
in an open pair of points,
not even just to lift somthing out,
the points may move trapping you and maybe
causing the loss of fingers or hand.

When working on points always use a
wedge in the open switch to prevent
it from moving.

Feet can get caught also
Dont stand on Switch blades(Points) if you
slip your foot will be trapped.

Take care with moving levers and arms.
DOWN under the signal box, or
UP a signal a bump on the head
HURTS.
Take care when working under the Signal box keep clear of the lever tail and back weight.

Up the Signal watch out for the Signal arm, especially going ON Lever plates and weights must also be avoided.



Bump cap and protective head gear is available , ask about it./

Follow the rules and the instructions given in the,

INSTRUCTIONS TO STAFF ENGAGED ON MAINTENANCE OF SIGNALLING APPARATUS. BR.13445.

C S & T E DEPT.
TRAINING SCHOOL.
YORK.

REF. 12/1.

COURSE. Induction.

SUBJECT. Electrical Installations.

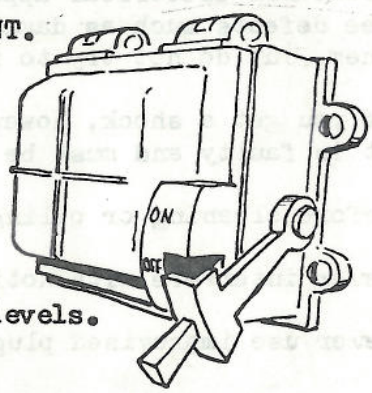
The Electricity supply from the Central Electricity Generating Board,(CEGB). is at one of the following levels in general.

240/250volts 440 volts 650 volts.

ALL OF THEM ARE POTENTIAL KILLERS IF YOU COME INTO CONTACT WITH THEM.

THE MOTTO IS OBVIOUS. —— - - - - - DONT TOUCH LIVE CONNECTIONS.

IF YOU MUST WORK ON LIVE SUPPLIES USE PROTECTIVE EQUIPMENT.
RUBBER GLOVES.
RUBBER MAT
INSULATED TOOLS AND EQUIPMENT.
(Only recognised approved equipment must be used.)
IF POSSIBLE SWITCH OFF ALL SUPPLIES BEFORE WORKING.



Signalling supplies are generally at one of two voltage levels.
650 volts for supply lines on signalling layouts.
110 volts for general signalling equipment.
650 volts is high voltage and will KILL.
110 volts is not quite so dangerous, but under certain conditions can be dangerous depending on the person and the conditions.

Assume all apparartus to be live unless it is certain that it is isolated.

As a new starter in the Department you should not touch any electrical equipment except under the direction and guidance of an experienced Technician.

Most Signalling installations use Secondary Cells or Batteries for standby in the event of Power failure. The voltages of these batteries vary from as low as 1.5 volts to as high as 120 volts.
The cells may be one of two type Lead Acid or Alkaline.

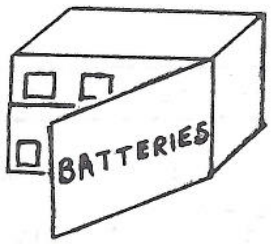
Both liquids are volatile and toxic. Do not drink them, splash them and avoid being in a closed atmosphere with them .

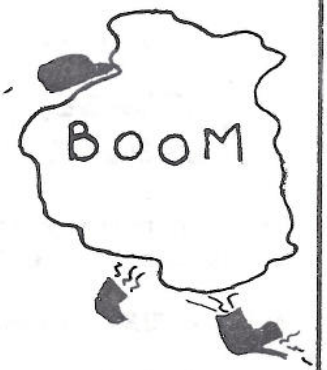
All secondary cells give off Hydrogen gas which is highly infamable and Explosive.

THE RULE IS OBVIOUS.....NO SMOKING NEAR SECONDARY CELLS.

TAKE CARE NOT TO CAUSE SPARKS.

KEEP A GOOD FLOW OF FRESH AIR.





DO NOT SMOKE OR BRING NAKED LIGHTS NEAR SECONDARY CELLS.

Treat all electrical apparatus with respect and dont interfere with it. If you see defects such as damaged switch covers frayed or defective cables, report them, but do not try to repair them unless you are authorised and qualified.

If you get a shock, however slight when touching electrical equipment, report it, it is faulty and must be attended to.

Before cleaning or oiling electrical machinery always switch off.

Never interfere with notice boards on switch gear,

Never use improvised plugs or connectors.

Never work on electrical equipment with wet hands.

British Railways Eastern Region

C S & T E DEPT.
TRAINING SCHOOL.
YORK.

REF. Ind.13/1.

COURSE. Induction.

SUBJECT. Work above ground on Ladders Signals and Poles.

Department instruction DA8. covers the use of ladders and other portable supports. You are also issued with a Ladder Drill Card. Both these documents should be read and understood. The information given here is a reinforcement to these documents.

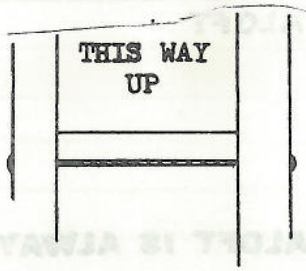
Before climbing a Signal post telegrph pole or any other structure, make sure that it is safe to do so and that the structure is sound. Metal structures should be examined for signs of rusting or corrosion, hammering if required to establish the condition. Wooden structures such as signal posts or telegraph poles can be effected by decay make a careful examination before climbing. Check the stay wires and fixings on all structures prior to climbing.

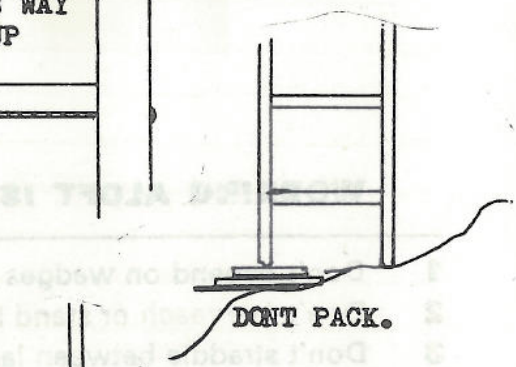
When you are working on overhead structures, remember there may be others working below, take care not to drop tools etc. that could cause injury to those below.

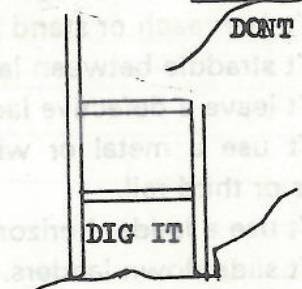
On structures when handrails are provided, keep within the handrails using them for your protection and safety. Do not use handrails for raising and lowering equipment.

Use safety belts and protective harnesses when working on poles or structures.

Choose the right ladder for the job.
The ladder should be such that it will reach 1 m(3ft 6 ins)above the rung from which you will stand to work.
Set the ladder the correct way up, wire under rungs on wood ladders.
Pitch the ladder 1 out for each 4 up.
Dig a footing dont pack the ladder foot.
Secure the ladder top and/or foot prior to starting work. have the ladder held until this is done.

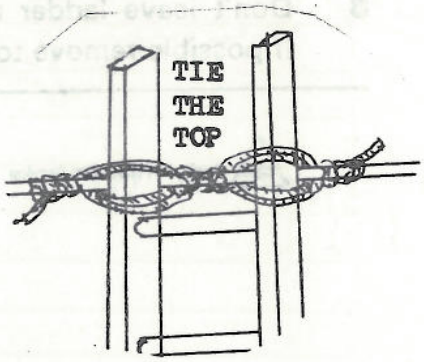






Dont use metal or wire reinforced ladders near electified lines or near open power lines.

When carrying a ladder of 10ft(3m)or more on electrified sections two persons are required one at each end.
At all times when walking and carrying a ladder on your own keep the head of the ladder (the end you can see)down, and when walking at the lineside, pointing in.



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LADDER DRILL

1 Choose right ladder for job. Reject damaged ladders and report defects.
2 Carry ladder with front end above head height, *except near OHL when ladders longer than 10 ft (3 m) should be carried by two persons, one at each end.*
3 Get help to set up and lower long ladders.
4 Erect on firm level base; set feet of ladder firmly; pitch one out to four up. Ensure ladder is footed by a workmate until it has been secured at head or foot.
5 Head of ladder to be 3 ft 6 in. (or 1 m) above point of landing or the working rung.
6 Secure all doors likely to foul ladder.
7 Keep clear of uninsulated electric wires unless isolated.
8 Face the ladder and grip with both hands when going up or down.
9 Carry tools in shoulder-bag or sling. Use a line to hoist heavy items.

BE SAFE ALOFT BR 29995/7

WORKING ALOFT IS ALWAYS DANGEROUS

1 Don't depend on wedges or small packing on uneven ground.
2 Don't overreach or stand ladder on anything to gain extra height.
3 Don't straddle between ladder and other objects.
4 Don't leave a defective ladder where someone else may use it.
5 Don't use a metal or wire-reinforced ladder near uninsulated electric wires or third rail.
6 Don't use a ladder horizontally or as a support for a scaffold board.
7 Don't slide down ladders.
8 Don't leave ladder after work without securing a plank to the rungs. If possible remove to a safe dry place until required again.

Accident Prevention Service

British Railways Eastern Region

C S & T E DEPT.
TRAINING SCHOOL.
YORK.

REF. Ind.14/1.

COURSE. Induction.

SUBJECT. Lifting.

You will be issued with a Lifting drill card and an explanatory leaflet, read them both fully. The purpose of this section is to reinforce the information on the card.

Back ache and Back Sprain cause the most loss of time in British industry. Not only though is time lost at work it is also lost at leasure. Remember that generally once you start with Back troubles you have them for the rest of your life.
The motto is simple, dont risk back injury.
Lifting is one major cause of back injury, lift properly and you will avoid trouble. There is one safe way of lifting, the KINETIC METHOD.
In kinetic lifting energy expended is applied so as to assist the lifter to move off in a correct direction and manner.

Many of us instinctively lift things incorrectly.,ie. with back bent and straight legs. This puts excessive strains on the spinal and stomach muscles and can cause back strain and ruptures.
Many of us instindtively lift things incorrectly,with bent back and straight legs. This puts excessive strains on the spinal and stomach muscles and may cause back sprains and ruptures.
This is the wrong way .
Watch the Weight lifter lifting .
He uses his LEGS TO LIFT NOT HIS BACK.

The best way to lift is with the back straight and the chin in,letting the legs do the work. Doctors discovered it champions use it. The large bones and muscles of the legs are much strongerthan the bone and tissue of the spine. look at the pictureand follow the Lifting drill.KINETIC lifting uses your energy to the best effect.
Grip properlywith the whole of the fingers not just the tips.
Hold the load diagonally at opposed corners.
Hold it close and tight.
Position the feet about 12 inches apart one in front of the other the foremost in the direction you are going to move off.
Lift by straightening your legsand moving off in one steady action.
NEVER TACKLE A LOAD THAT YOU KNOW OR THINK IS TOO HEAVY.

lifting drill

SIX RULES FOR SAFE EASY LIFTING

1 SIZE UP THE JOB

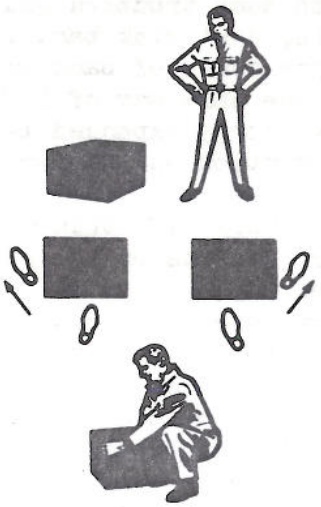
Obstructions, greasy floors?
Sharp edges, nails?
If too heavy, get help.

2 STAND FIRMLY

Close to load, feet about 12 in. apart. One foot ahead of the other in direction of move.

3 BEND THE KNEES

Keep your back straight.
Chin well in.



4 GET A FIRM GRIP

Use whole of fingers, not just the tips. Keep load close to body. Grip diagonally.

5 LIFT WITH YOUR LEGS

Lift by straightening legs. Use impetus of lift to move off in required direction.

6 PUTTING THINGS DOWN

Back straight. Legs bent. Avoid trapped fingers—put load down askew—slide into place.

Carry this card until safe, easy lifting drill comes naturally to you

Accident Prevention Service

BR. 29995/6

British Railways Eastern Region

C S & T E DEPT.
TRAINING SCHOOL.
YORK.

REF. Ind.15/1.

COURSE. Induction.

SUBJECT. Power tools.

The operation of most power tools is controlled by the requirements of the Health and Safety at work act.
Under the requirements of this act most machinery and power operated tools require the operator to be trained and hold a certificate of competence for the tool or machinery concerned.
Prior to operating any power tool ensure that you are authorised to do so.
Certain tools are subject to restrictions on the age of the user, the operator must be over 18 years of age.

Tools must always be used in accordance with the manufacturers specifications.

Use the right tool for the job, be sure that the toool is designed for the job in hand and is the right size for the work. Overloading power too ls can be dangerous.

With electrically operated tools check that the voltage is correct and that an earth connection is used when required. If the equipment is motor driven check that the correct fuel is used in the engine.

Check that the equipment is in good condition before work starts, look for frayed cable, loose connections, leaking fluid pipes etc.

Take extra care with equipment operated by compressed air. Air operated equipment has its own extra hazards. Dont allow air to escape and blow about freely it can cause dust etc to be picked up and blown in the face of the operator or other people thus causing injury.

Take care with electrical equipment to ensure that water does not get into the interior of the equipment, damp can also damage electrical components.

Ensure that you are wearing the correct clothing, make sure that none of your clothing can get caught in the machine.

Check that you are wearing the protective clothing required for the operation that you are performing.
?. DO YOU NEED GOGGLES VISOR OR EYE SHIELD.

IN MOST CASES THE ANSWER IS YES.

?. DO YOU NEED EAR MUFFS.

?. DO YOU NEED GLOVES.

?. DO YOU NEED A DUST MASK.

?. DO YOU EYE PROTECTION FROM LIGHT (WELDING ETC.)

?. DO YOU NEED TO PROVIDE PROTECTION FOR OTHER PEOPLE.

REMEMBER IN MOST CASES YOU HAVE A LEGAL RESPONSIBILITY TO PROVIDE PROTECTION FOR YOURSELF AND OTHERS.

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British Railways Eastern Region

C S & TE DEPT.
TRAINING SCHOOL.
YORK.

REF. Ind.16/1.

COURSE. Induction.

SUBJECT. Reporting of accidents.

All accidents must be reported.
Depots are equiped with First aid boxes, they contain the requirements for basic first aid treatment following an accident. The first aid box also contains a record book which should be completed after each case. The entry should give details of the accident, how treated and by whom. Details should also be listed of all items used.
This record is for Depot use. For all but the most trivial minor accidents an accident report form must also be completed.
The Injured persons form is shown overpage and must be completed as soon as possible after the accident. The completion of this form is a Legal requirement under the Health and Safety at Work ACT.
A further form must also be completed by the injured persons Supervisor.

Ind.1632.

MUST BE COMPLETED IN INK

B.R. 6766

BRITISH RAILWAYS

.....Region .....Department

.....Station .....19.....

ACCIDENT TO RAILWAY EMPLOYEE

REPORT BY INJURED PERSON

(1) Date of accident.....19.....

(2) Time of accident..... Hrs.

(3) Place of accident (To be particularised.)

.....

.....

(4) Full Name and Address:—

.....

.....

.....

(5) Age..... Years.....

(6) Occupation .....

(7) Nature and degree of Injury.....

.....

(State whether right or left leg, eye, etc.)

(8) Name and Address of Insurance Doctor:-

.....

.....

.....

(9) (a) Are you being attended for the injury by your Insurance Doctor:—

.....

.....

.....

(b) State where and by whom any other medical attention given:—

.....

.....

.....

(10) (a) Give names of any persons who saw the accident happen:—

.....

.....

.....

(b) To whom did you first mention or report the accident?

.....

(c) When did you do so?

Time..... Hrs.

Date .....19.....

DESCRIPTION OF ACCIDENT

.....

Signature.....

(Continued overleaf)

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C S & T E DEPT.
TRAINING SCHOOL.
YORK.

REF. Ind.17/1.

COURSE. Induction.

SUBJECT. Introduction to simple First aid.

The instruction given in this section covers basic first aid principles only. It is not intended as a training course in First aid . To obtain full instruction you should join the first aid section. Details of which will be given during the lecture.

Wounds. There are four different types of wounds: Incised or clean cuts. Lacerated or torn. Contused or bruised. Punctured or stabbed.

The urgent need is to stop the bleeding prevent infection and reassure the casualty .

1. Place casualty at absolute rest, with legs raised.
2. Elevate the injured part unless an underlying fracture is suspected.
3. Loosen all tight clothing.
4. Reasure them and explain the need to relax completely.
5. Expose the wound removing as little clothing as possible.
6. Do not waste time washing your hands or cleaning the wound area in cases of severe bleeding.
7. Control bleeding by grasping sides of wound firmly together.
8. Apply sufficient sterile dressing packed into the depth of the wound, until it projects above the wound, then cover with padding and bandage firmly.
9. If bleeding continues, do not disturb the original dressing or bandage, but, add additional pads and again bandage firmly.
10. If foreign bodies are present in the wound , remove them if possible prior to dressing. If the foreign bodies cannot be moved by gentle wiping they should be left. If foreign bodies or projecting bones are in the wound avoid putting pressure on them by using diagonal bandaging round them .
11. All bandages should be applied just firm enough to stop bleeding.
12. Immobolise the injured part by a suitable method/eg. a sling in the case of the upper limb, or by tying an injured lower limb to the uninjured one.
13. Keep casualty comfortably warm with blankets.
14. Remove to hospital as quickly as possible.

Fractures. Signs and symptoms
Comparison with the uninjured side will often help in diagnosis.

1. Pain over the injured part.
2. Tenderness on gentle pressure.
3. Swelling and later bruising.
4. Loss of control.
5. Deformity of the limb.
6. Irregularity of the bone may be felt.

Treatment.

1. Severe wounds and bleeding must be dealt with before fractures.
2. Treat the fracture where the casualty lies, if possible.
3. Steady and support the injured part at once, and maintain the control until the fractiure is completely secured.
4. Immobilise the fracture by securing theinjured part to a sound part of the body or by the use of splints.

ELECTRIC SHOCK—RESCUE AND TREATMENT

MEN ARE RARELY KILLED OUTRIGHT BY ELECTRIC SHOCK
THEY CAN BE SAVED IF YOU FOLLOW THESE INSTRUCTIONS
ACT QUICKLY BUT DO NOT PANIC

(A) ELECTRIC SHOCK FROM OVERHEAD TRACTION EQUIPMENT

1. If the Casualty is within **two feet** of the **overhead live equipment** it is **essential** for your own safety that the electric current is **switched off** before you touch the injured person.

To get the electricity switched off carry out the following procedure as quickly as you can:—

(a) Note carefully the location of the accident, the number on the nearest overhead line structure and the live wire concerned, i.e. **Up** or **Down** line, etc.

(b) Go to the nearest telephone and call the Electrical Control Operator or arrange for this to be done.

(c) The person contacting the Electrical Control Operator must:—
  (i) State that this is an **emergency** call,
  (ii) State his name, grade and department or Private Firm,
  (iii) State where speaking from,
  (iv) State line(s) concerned and location and give the number of the nearest overhead line equipment structure,
  (v) State why it is necessary to have the electricity switched off,
  (vi) Stay at the telephone until assured by the Electrical Control Operator that the electricity has been switched off and the equipment made safe.

2. If the Casualty is completely **below** the **overhead live equipment** and **no part of him is nearer than two feet from the overhead live equipment** it is perfectly safe to touch the person since there is no harmful electric charge retained in his body.

Make quite sure, for your own safety, that no part of your body, your clothing, or anything you are holding gets within two feet of the Overhead Live Equipment.

(B) ELECTRIC SHOCK FROM CONDUCTOR RAILS

If the Casualty is touching a conductor rail the **electricity should, if possible, be switched off before** you touch him.

To get the electricity switched off carry out the following procedure as quickly as you can:—

(i) Note carefully the location of the accident and the line concerned, i.e. **Up** or **Down** line, etc.,

(ii) Go to the nearest telephone, call the Electrical Control Operator and tell him that a person is in contact with a conductor rail, give the information in (i) and ask him to switch off the electricity,

(iii) As soon as the Electrical Control Operator says the electricity has been switched off, return to the Casualty.

If it is not possible to have the electricity switched off **immediately** take the following precautions **before** you touch him:—

(a) Cover your hands with something which will not conduct electricity. A **dry** mackintosh or an article of **dry** clothing, rubber gloves or a tobacco pouch will do.

Note: It must be remembered wet rubber articles are useless if moisture on the surface makes contact with wet clothing or skin.

(b) Stand on **dry** non-conducting material, if you can, such as a mackintosh, wood, a thick carpet, thick newspaper, linoleum, glass or rubber.

(c) If none of these is possible, pull or push the body clear with a dry rope or a wooden pole. Do **not** use anything made of metal.

(C) ELECTRIC SHOCK FROM CIRCUITS OTHER THAN "A" OR "B" ABOVE

If the Casualty is touching a live conductor, switch off the electricity **before** you touch him if the switch is near.

If you know the voltage is not above 750 volts and you cannot readily switch off the electricity, take the following precautions **before** you touch the Casualty:—

(a) Cover your hands with something which will not conduct electricity. Rubber gloves, a **dry** mackintosh, an article of **dry** clothing or a tobacco pouch will do.
Note: It must be remembered wet rubber articles are useless if moisture on the surface makes contact with wet clothing or skin.

(b) Stand on **dry** non-conducting material, if you can, such as a mackintosh, wood, thick newspaper, linoleum, glass or rubber.

(c) If none of these is possible, pull or push the body clear with a dry rope or a wooden pole. Do **not** use anything made of metal.

In the case of circuits **above** 750 volts, or if you do not know the voltage, **do not touch the Casualty until the electricity has been cut off.** The **only** exception to this rule is that a person experienced in High Voltage Work may use rubber gauntlets and rubber mat, or an isolating pole **suitable for the voltage concerned.**

(D) ACTION AFTER CASUALTY IS CLEAR OF OVERHEAD LIVE EQUIPMENT, CONDUCTOR RAIL OR OTHER CONDUCTOR

The Casualty may appear to be dead and will probably be burnt.

Remove the Casualty to a safe place, if possible on ground level.

Apply Artificial Respiration at once and send someone for a **Doctor** and an **Ambulance.**

If you are on your own, concentrate on the Artificial Respiration and shout for help. Send for the Doctor and Ambulance when somebody turns up.

Apply immediately any method of Artificial Respiration that you know.

Do not stop the Artificial Respiration until the Casualty breathes normally again, unless a **Doctor** tells you that further efforts are useless.

The Casualty must **not** be left alone at any time, as breathing may stop again.

If breathing does stop, apply Artificial Respiration again **straight away.**

Handle the Casualty carefully for there may be some broken bones.

Cover any burns with sterilised dry dressing. **Do not** try to remove any clothing which is stuck to a burn. If no sterilised dressings are available, use any **clean** dry material available.

Do not give the Casualty **anything** by the mouth except under a Doctor's advice.

Send any Casualty from electric shock to hospital on a stretcher. He **must not** be allowed to walk, except under a Doctor's advice.

ARTIFICIAL RESPIRATION

If the brain is deprived of **oxygen,** after four minutes irreparable damage can happen to it. The aim of Artificial Respiration is to supply oxygen to the blood so that it can be circulated to all parts of the body, in order to forestall such damage. The urgent need is such that the lungs should be inflated at once. **DELAY OF ONE OR TWO SECONDS MAY PROVE FATAL.**

The method of greatest value is the **Mouth-to-Mouth (or to Nose) inflation.** The only equipment that is required are the operator's hands, mouth and lungs.

Mouth-to-Mouth Method

1. **Lay the Casualty on his/her back.**

2. Tilt the head back as far as possible to open the air passages.

3. Pinch the Casualty's nose and open his her mouth.

4. Open your mouth wide and take a deep breath.

5. Completely cover the Casualty's mouth with your mouth and blow, making his/her chest rise.

6. Move your face to allow Casualty to breathe out. Watch for his/her chest to fall.

Blow into the Casualty like this at the rate of natural breathing until he/she starts breathing. Keep his/her head back as far as possible all the time.

Mouth-to-Nose Method

If the mouth cannot be opened, or a good seal between Casualty's and operator's mouths is not possible, inflation should be made through the nose.

Seal the mouth with your fingers, blow through the nose and proceed as for Mouth-to-Mouth Method.

In all cases **THE FIRST FOUR INFLATIONS SHOULD BE GIVEN AS QUICKLY AS POSSIBLE. THEN PROCEED AT THE RATE OF NATURAL BREATHING.**

In the case of a small child, cover its nose and mouth with your mouth and blow at the rate of 20 times per minute.

Obstruction of Air Passages

If you cannot inflate the chest consider the following points:—

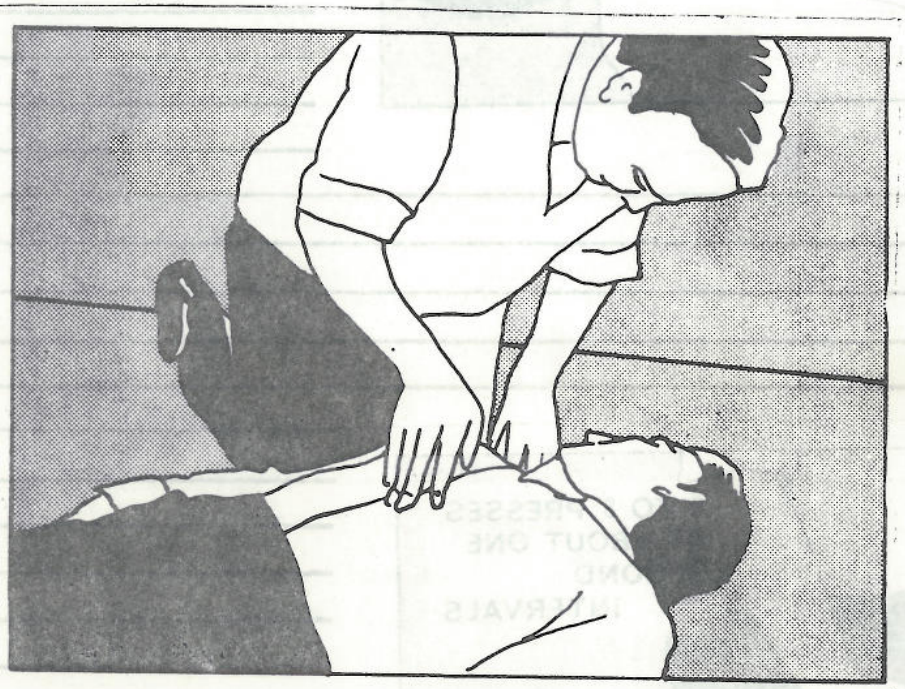
Cause	Remedy
(a) Air passages not open	Tilt head further back and keep it supported there – carry on inflations.
(b) Obstruction in the throat	Turn the Casualty on his/her side. Slap him/her hard between the shoulder blades. If not successful put your finger into his/her throat and dislodge the obstruction.

External Heart Compression

The value of Artificial Respiration is greatly reduced if oxygen cannot be carried rapidly by the circulation of the blood to the brain. Should the heart fail, it is essential that External Heart Compression (immediate method of maintaining circulation) be combined with Artficial Respiration. It is possible that this will cause the heart to function again. In some cases External Heart Compression combined with Artificial Respiration will have to be continued until the Casualty reaches hospital. External Heart Compression is not without its dangers and should only be used when the heart fails. To establish this, it is necessary to be able to test the pulse at the neck. This can be felt at both sides of the windpipe. In addition to this the position of the lower half of the breastbone must be known.

Method

If the Casualty is not breathing, mouth-to-mouth (or mouth-to-nose) Artificial Respiration must be performed. If after 10-12 breaths into the Casualty's lungs there is no apparent change in his condition such as a return to a more normal colour of the skin and lips, feel for the pulse in the neck. If no pulse is felt, examine the eyes and if the pupils (black centres) are greatly enlarged, apply External Heart Compression. Whilst continuing mouth-to-mouth (or mouth-to-nose) respiration the Casualty must be placed on a firm surface. Find the lower half of the breastbone, then place the ball of one hand on it with the second hand covering the first (Figs. 7, 8 and 9).



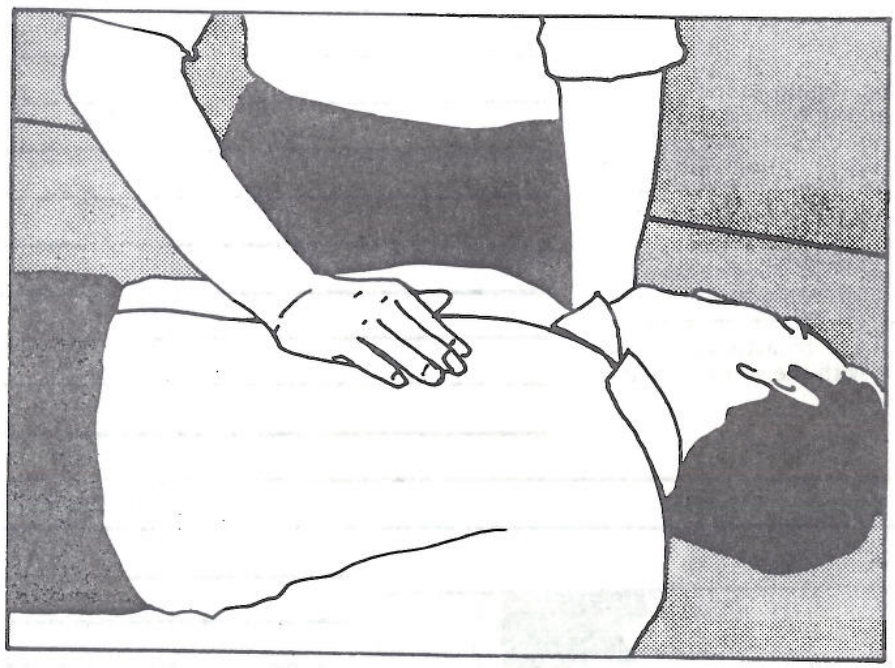


Fig. 8.

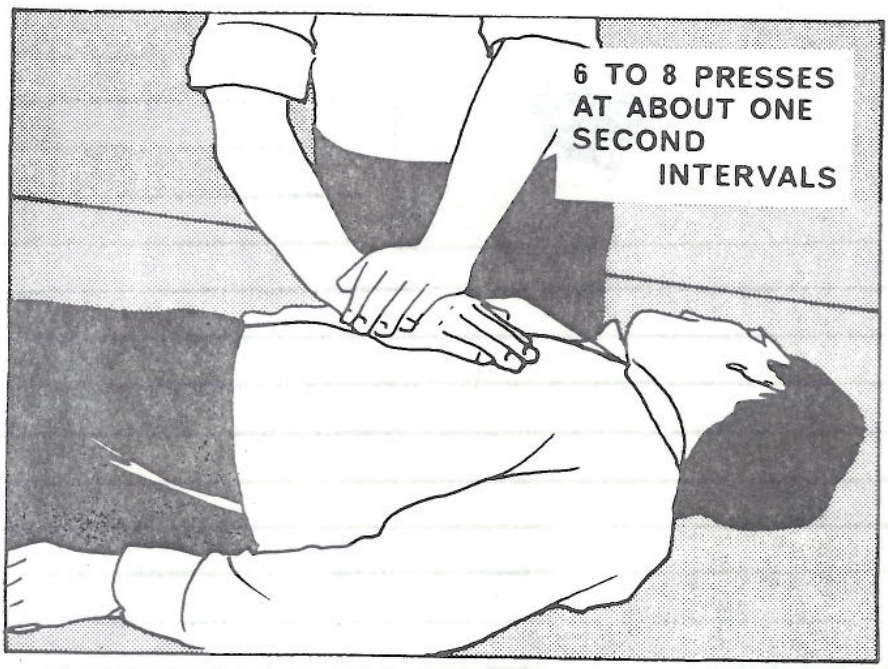


Fig. 9.

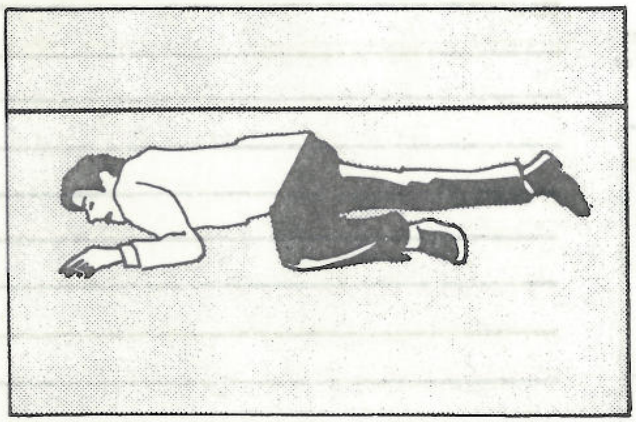
After each inflation of the lungs, apply 6-8, sharp presses at the rate of one per second. Check pulse at the neck occasionally and when it has restarted, pressure on the chest must be discontinued, but Artificial Respiration continued until normal breathing is resumed. If there are two operators available, the person at the head should inflate the lungs and be able to feel the pulse in the neck as pressure is applied to the lower half of the breastbone. If the heart resumes its normal beat, External Heart Compression must stop but Artificial Respiration should be continued if necessary.

Special points to note

If alone, the rescuer should start Artificial Respiration immediately and should not interrupt this in order to obtain help, but rather continue until either the Casualty recovers or there is no apparent hope of savings his/her life. Very often it will be found that as soon as the air passage is cleared and the lungs have been inflated, the Casualty may gasp and start to breathe spontaneously.

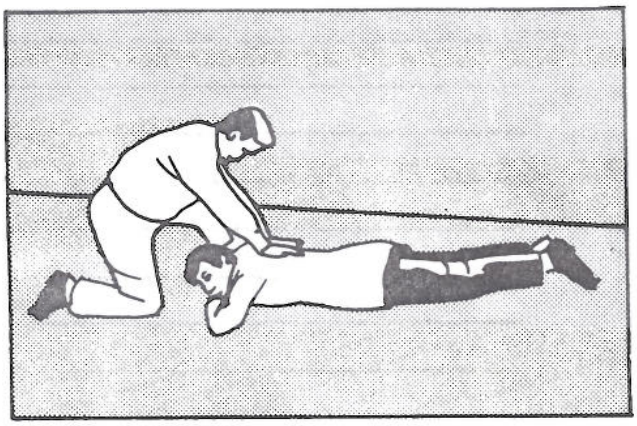
As a principle continue with your efforts until the Casualty is revived or a Doctor decides that the Casualty is dead.

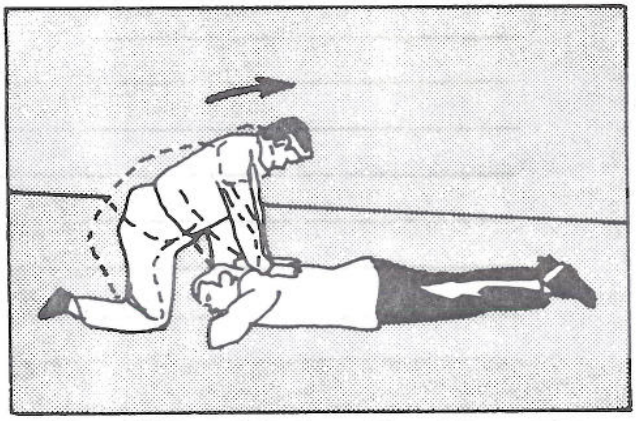
If natural breathing is restored, place the casualty in the Recovery position illustrated on Page 17.



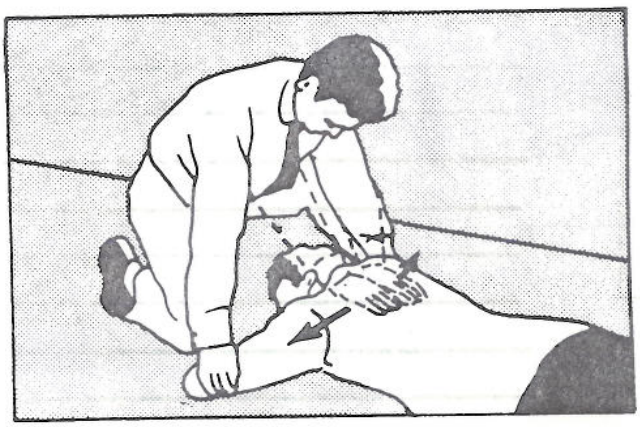
Holger Nielsen Method

1. Place casualty face downwards, the arms overhead, the elbows bent so that one hand rests on top of the other.
2. Turn his/her head to one side so that the cheek rests on the uppermost hand.
3. Kneel on one knee at casualty's head and put the foot of opposite leg near his/her elbow.



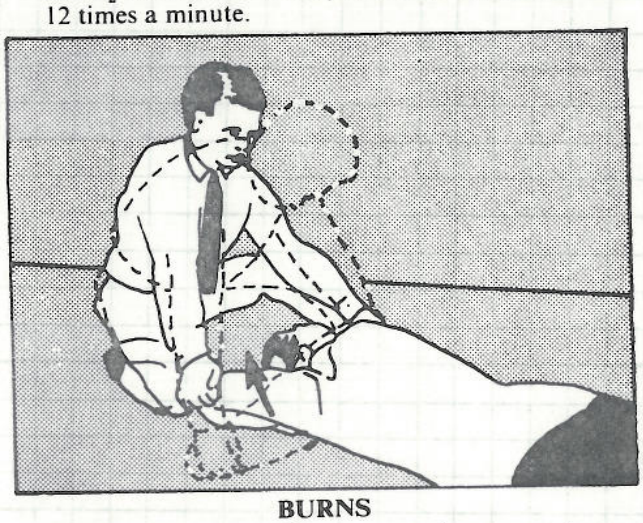


4. Place the hands on his/her back just below the shoulder blades.
5. Rock forward with elbows straight until the arms are approximately vertical, exerting steady pressure on his/her chest.



6. Grasp the casualty's arms just above the elbow and rock backwards, raising his/her arms until resistance and tension are felt at the casualty's shoulders.
7. Lower his/her elbows to the ground and return the hands to position described in 4.
8 The phases of expansion (lifting elbows) and compression (pressure on the back) should each

last 2½ seconds, the complete cycle being repeated 12 times a minute.



BURNS

Contact with electricity commonly causes burns which may be extensive and severe in character.

Treatment

1. Do not remove clothing unless wet or burning.
2. Do not prick blisters, or apply ointments.
3. Remove any constriction from injured part and this should be done before swelling starts.
4. Cover burnt area lightly with sterile or clean dressing.

SHOCK

Contact with electricity always causes some degree of shock.

Shock may develop very rapidly and very seriously; it may even become a danger to life. The Casualty will look ill, have a pale face and beads of sweat on the forehead.

After breathing has been established, it is of extreme importance to treat the Casualty for shock, without waiting for the condition to develop. Shock is usually easier to prevent than cure.

Treatment

1. Lay Casualty on his her back. (Maintain Recovery Position if still unconscious.)
2. Ensure airway is clear.
3. Re-assure him her and allay anxiety.
4. Make Casualty comfortable.
5. Cover warmly but do not overheat.
6. Do not move him her unnecessarily.
7. Get Casualty to hospital quickly.