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Regulations of the
Danger Buildings
Royal Laboratory
1905

REGULATIONS

OF THE

Danger Buildings,

ROYAL LABORATORY.

(SECOND EDITION.)



1905.

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Nothing in these Regulations is to be regarded as exempting any employé committing an offence from prosecution under the Explosives' Act, should such a step be considered desirable, in addition to the penalty prescribed herein.—See R.L. 32018 and 32928 (1811).

Regulations

OF THE

DANGER BUILDINGS, ROYAL LABORATORY.

I.—The Regulations which follow have been drawn up with a view to the orderly performance of work in the Danger Buildings of the Royal Laboratory, and the prevention of accident therein. They are divided into General Rules, which affect all employed on explosive work in any capacity, and Special Rules, for certain specified individuals and operations. They supplement, but in no way supersede, the Rules and Regulations of the Ordnance Factories.

The Special Rules are intended to draw attention to certain special features in connection with certain duties and operations. *They must never be regarded as separate and complete in themselves, nor as warranting action which is contrary to the spirit of these Regulations when read as a whole.*

II.—Every person on joining the Royal Laboratory Danger Buildings, or who works habitually in the Danger Areas, whether on explosive work or not, will be provided with a copy of these Regulations, which will be marked, in ink, with his name prior to issue to him. He will acknowledge receipt by his signature in a book kept for the purpose. He must keep his copy in good order and show it, after notice, when required. Foremen will cause those under them to produce their books once a quarter, and will report those who lose their copies or allow them to be damaged or defaced.

III.—Every person employed in the Royal Laboratory Danger Buildings is to make himself thoroughly acquainted with all Rules which concern his employment. Ignorance of them will never be accepted as an excuse for their contravention or non-observance.

IV.—Every person is to report to his Foreman or Overlooker, or to superior authority, any infringement of these Rules which comes to his notice. Should he fail to do so he will lay himself open to punishment exactly as though he had committed the infringement which it was his duty to report.

V.—Any infringement of any of these Rules will render the offender liable to suspension or dismissal, and in those cases in which suspension is detailed as the *usual* punishment for an offence, dismissal might be inflicted if it were considered desirable. Suspension will, unless there be good reason to the contrary, take place at once by order of the Foreman, who will immediately report the case.

VI.—The word "workman" in these Rules includes every man and boy below the rank of Foreman, Assistant-Foreman, or Principal Overlooker, employed in the Royal Laboratory Danger Buildings.

VII.—The expression "Danger Building" means any building, in which explosives of any kind in any stage of manufacture, are dealt with in any way, or are stored. *All* buildings, however, in the Danger Building Areas which are "clean," will be treated as "Danger Buildings," whether explosives be stored or dealt with in them or not.

The expression "Danger Establishment" means an aggregate of "Danger Buildings" usually under one Foreman and employed for explosive work of one particular class.

The expression "Danger Building Area or Enclosure" means all the land lying round the buildings of Danger Establishments and surrounded by a fence or other barrier.

The expression "clean," as applied to Buildings, Platforms, Clothing, etc., in Danger Building Areas, means that such buildings, etc., after having been pronounced by authority to be suitable, are reserved *exclusively* for use in work on, and in connection with, explosives, the work being conducted in strict accordance with these Regulations.

The expression "dirty" may be taken generally as the converse of "clean," as defined above.

The term "Danger Building Officer" includes the Superintendent and Assistant-Superintendents of the Royal Laboratory.

VIII.—Unless they be manifestly inapplicable, all Rules for Danger Buildings, Danger Building Establishments, and Danger Building Areas, apply to Barges and Boats employed by the Royal Laboratory for the conveyance of explosives.

IX.—The General Rules (with the exceptions mentioned below), Instruction No. III above, and this (No. IX.) Instruction, will be read once a month by the Foreman to all workmen, and others concerned, under them, and the Special Rules for specified persons will be similarly read once a month to those concerned.

The exceptions referred to above are:—Table in Rule 2 (a); remainder of Rule 2 (b), after the word "fires" in the 7th line; last two paragraphs of Rule 8, and footnotes, pages 11, 12, 15, and 22; Rules 11, 14, 18 (a) and (b), and 21; last two paragraphs of Rule 27; Rules 34, 35, 38, 39, 41, and 42; remainder of Rule 43, after the word "discharge" in the 8th line; Rules 44 and 46.

It must be distinctly understood that the Rules excepted above are rendered none the less binding on all concerned, and that the reading out of any of the Rules in no way excuses employes from a strict adherence to Instruction III. above.

H. W. BARLOW,

MAJOR, R.A.,

SUPERINTENDENT,

ROYAL LABORATORY.

Royal Arsenal,

20th February, 1905.

General Rules.

Smoking. 1. No one is to smoke in any part of the Royal Laboratory Danger Building Enclosures.

Matches, or means of procuring Lights. 2. No matches or other means of striking or procuring a light are ever under any pretext to be taken into the Danger Building Enclosures, other than by duly authorized persons and in the manner detailed below :—

(a)—*Electric Gas Lighters.* These are only permitted at the places and in charge of the persons named in the following table. They will only be used by the persons and for the purposes stated therein :—

N.B.—IF NOT PERMANENTLY ATTACHED TO SOME FIXED ARTICLE, ELECTRIC GAS LIGHTERS ARE TO BE RETURNED IMMEDIATELY AFTER THEIR USE BY THE PERSONS AUTHORIZED TO THE INDIVIDUAL IN WHOSE CHARGE THEY ARE KEPT.

Place.	No. allowed	Person in Charge.	Persons who may use, and purpose.
Cannon Cartridge Factory.	5	Four in charge of Foreman.	Men detailed by Foreman to light gas lamps for buildings and platforms.
		One in charge of dining room attendant, and attached to wall of dining room.	Dining room attendant, to light gas jet above cooking stove, and, from the gas jet, the gas for the stove and lights for the room. The bargeman, in a similar way, to light his barge lamps.
Lyddite Establishment.	5	Two in charge of Foreman.	Man detailed to light lamps for platforms, and reserve.
		One attached to wall of No. 38 Stove House, and in charge of Stoker, and 1 similarly attached to the walls in Nos. 2 and 8 Stove Houses.	Stokers of Lyddite Establishment to light gas jets in Nos. 2, 8, and 38 Stove Houses, and, from the jets, to obtain light for their lanterns, and so light their fires, etc.
Cartridge Factory, No. 3.	2	One in charge of Foreman. One in Mechanics' Shop, attached to wall, and in charge of the leading hand.	Men detailed to light lamps for platforms. Leading hand, to light gas furnace.

The following amendments are to be made in the table in General Rule 1, D.B. Regulations :—

Page 6, at Cannon Cartridge Factory, delete the present authorized distribution and substitute :—

Cannon Cartridge Factory.	4	In charge of Foreman.	Men detailed by Foreman to light gas lamps for buildings and platforms. The Bargeman will light his barge lamps from a gas jet in the C.C.B. Shifting House, also the person in charge of the B.W.D. Gas Repairing Shop.

After Picric Powder Exploder Establishment, page 6, insert :—

Foremen's cook-house, & attached to wall of same.	1	The Cook of Foremen's Mess.	The Cook to light the gas for the stove.

gas lamps
jet in Stove
to obtain
and

After Lyddite Establishment in table in General Rule 2 (a) insert :—

Person in charge.	No. allowed	Place	Persons who may use, and purpose.
Principal Stoker.	1	Lyddite Establishment.	Men detailed to light gas lamps for buildings and platforms.

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General Rules.

Smoking. 1. No one is to smoke in any part of the Royal Laboratory Danger Building Enclosures.

Matches, or means of procuring Lights. 2. No matches or other means of striking or procuring a light are ever under any pretext to be taken into the Danger Building Enclosures, other than by duly authorized persons and in the manner detailed below :—

(a)—*Electric Gas Lighters*. These are only permitted at the places and in charge of the persons named in the following table. They will only be used by the persons and for the purposes stated therein :—

N.B.—IF NOT PERMANENTLY ATTACHED TO SOME FIXED ARTICLE, ELECTRIC GAS LIGHTERS ARE TO BE RETURNED IMMEDIATELY AFTER THEIR USE BY THE PERSONS AUTHORIZED TO THE INDIVIDUAL IN WHOSE CHARGE THEY ARE KEPT.

Place.	No. allowed	Person in Charge.	Persons who may use, and purpose.
Cannon Cartridge Factory.	5	Four in charge of Foreman. One in charge of dining room attendant, and attached to wall of dining room.	Men detailed by Foreman to light gas lamps for buildings and platforms. Dining room attendant, to light gas jet above cooking stove, and, from the gas jet, the gas for the stove and lights for the room. The

After Lyddite Establishment in table in General Rule 2 (a) insert:—

Place.	No. allowed	Person in charge.	Persons who may use and purpose.
Picric Powder Exploder Establishment.	1	In box in Shifting House. Key in charge of Principal Overlooker.	Men detailed to light gas lamps for buildings and platforms.

The following amendments are to be made in the table in General Rule 1, D.B. Regulations :—

Page 6, at Cannon Cartridge Factory, delete the present authorized distribution and substitute :—

Cannon Cartridge Factory.	4	In charge of Foreman.	Men detailed by Foreman to light gas lamps for buildings and platforms. The Bargeman will light his barge lamps from a gas jet in the C.C.B. Shifting House, also the person in charge of the B.W.D. Gas Repairing Shop.
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After Picric Powder Exploder Establishment, page 6, insert :—

Foremen's cook-house, & attached to wall of same.	1	The Cook of Foremen's Mess.	The Cook to light the gas for the stove.
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New Lyddite Establishment.	4	3 in charge of Foreman 1 attached to wall of No. 14 Stove House, in charge of Stoker.	Men detailed to light gas lamps and reserve. Stoker to light gas jet in Stove House, and from the jet to obtain light for his lantern, and so light the fire.
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Page 6—Lyddite Establishment. Add the word "Old" in first column and an asterisk (*) after the word "Foreman" in 3rd column, to refer to a footnote worded "When this Establishment is being used."

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Picric
Powder
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Establish-
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Place.	No. allowed	Person in charge.	Persons who may use, and purpose.
Cap and Detonator Factory.	2	1 in charge of Foreman	Man detailed to light gas for plat- forms & gas furnaces for solder- ing, etc. For lighting gas fires.
		1 attached to wall of No. 4 Building	
Forge Branch	1	In charge of Foreman	Ditto

Page 7, at Cap and Detonator Factory, delete the present authorized distribution and substitute:—

Cap and Detonator Factory.	3	1 in charge of Foreman.	Man detailed to light gas for plat- forms and gas furnaces for solder- ing, etc. For lighting gas fires. D.B. Chemist, for lighting gas burners in Chemical Laboratory.	
		1 attached to wall of No. 4 Building.		
		1 in charge of D.B. Chemist.		
Boiler Houses	Y 18	1	Attached to wall, and in charge of leading Stoker. Stoker on duty, to light a gas jet, and so to light his fires.	
	Y 20	1		Ditto.
	Y 21	1		Ditto.
Gateman's Cabin, at Main entrance to Danger Buildings.	4	1 attached to wall and in charge of Gateman.	To light gas jet. See (b), 3.	
		1 in locked box for use by Police, who keep the key.		
Gatemens' Cabins at Middle (Q.F.C.F. 3) and East Gates, and at C.C.C.F.	1 at each cabin	2 in locked boxes, keys in charge of Gateman	for lighting gas in hydrants, and the special lamps referred to in General Rule 44.	
		Attached to wall, and in charge of Gateman.	To light gas jet. See (b).	

A spare stock of electric gas lighters will be kept at the Assistant-Manager's Office, where a Foreman can immediately obtain a new lighter in exchange for one that is worn out.

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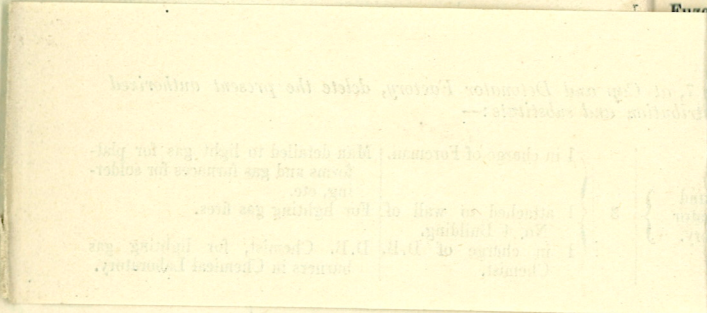
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Place.

Picric
Powder
Exploder
Establish-
ment.



Place.	No. allowed	Person in charge.	Persons who may use, and purpose.
Cap and Detonator Factory.	2	1 in charge of Foreman	Man detailed to light gas for plat- forms & gas furnaces for solder- ing, etc.
		1 attached to wall of No. 4 Building	For lighting gas fires.
Branch	1	In charge of Foreman.	Ditto.
		One in charge of Fore- man.	Man detailed to light gas for plat- forms, gas furnaces, etc.
		One in charge of lead- ing hand at Proof Shed & attached to wall.	For lighting gas furnaces, etc.
Mechanics' Shop.	1	In charge of Foreman.	Man detailed to light gas furnace.
Black Firing Station, Fac. No. 3.	2	In charge of Foreman.	Men detailed to light gas for platforms, and gas furnaces for soldering.
White Can- Cartge. ctory.	3	In charge of Foreman. (Two spare).	Man detailed to light gas for platforms.
Boiler Houses	Y 18	1	Attached to wall, and in charge of leading Stoker.
	Y 20	1	Ditto.
	Y 21	1	Ditto.
Gateman's Cabin, at Main entrance to Danger Build- ings.	4	1 attached to wall and in charge of Gateman.	To light gas jet. See (b), 3.
		1 in locked box for use by Police, who keep the key.	for lighting gas in hydrants, and the special lamps referred to in General Rule 44.
		2 in locked boxes, keys in charge of Gateman	
Gatemens' Cabins at Middle (Q.F.C.F. 3) and East Gates, and at C.C.C.F.	1 at each cabin	Attached to wall, and in charge of Gateman.	To light gas jet. See (b).

A spare stock of electric gas lighters will be kept at the Assistant-Manager's Office, where a Foreman can immediately obtain a new lighter in exchange for one that is worn out.

(b)—*Lanterns.* Stokers of Boiler and Stove Houses, and the Leading-hand of the Metal Melting Furnaces attached to the Composition Establishment, are permitted to be in possession of lanterns for illuminating purposes inside their boiler and stove houses, and outside them for inspection of the motors and fans *only*, and for conveying a light to light their fires.

When necessary, in frosty weather, oil lanterns will be placed by a man told off for the purpose from the Hydraulic Department, in the positions mentioned below, to prevent the water in certain pipes from freezing, viz. :—One in valve box of coal hoists at Y 18, and one in each of the capstan boxes near C.C.F. A light for lighting these will be obtained at the nearest authorized place mentioned below.

Stokers will obtain a light for their lanterns from the gas jet lighted by electric gas lighters, as detailed in (a) above, and the Leading-hand of the metal melting furnaces will always get one from the Stoker of Y 21 boiler house. Should the electric lighters fail for any reason, the stokers can obtain a light as follows, viz. :—Y 18 and Y 21 from the watchman's cabin at the main entrance to the Danger Area, where a gas light will always be kept burning, and Y 20 from the Police at the Marsh Gate.

The constables on duty and the search patrol (see Rules 27 and 44) will be allowed to carry lighted lanterns in the Danger Building Areas.

Workmen and others riding bicycles may obtain lights for their lamps at the Gatemen's cabins or at the Dining Hall when leaving Danger Building Areas. All bicycle lamps must be put out on entering.

(c)—*Portable electric lights.* These are kept for emergency purposes in many Danger Buildings (see General Rule 37). The Gateman at the main entrance will keep a portable light for use in case of need.

N.B.—This rule refers specially to *movable* lights or means of obtaining a light. *Fixed* gas jets, etc., in proper places need no special mention.

3. No articles of any description whatever are, under any pretext, to be brought into Danger Building Establishments by being received direct into the "clean" Buildings or on to the "clean" platforms from the ground in their immediate vicinity, except by the special permission of the Foreman. The only authorized places of entry for articles are the Shifting-Houses and Receiving Stores. No articles are ever to be introduced into Danger Building Areas, except by the authorized gateways, without the special permission of the Assistant Manager Danger Buildings.

Entry of Stores into Danger Buildings and Areas.

Addition to Para. 3, General Rule 3:—

"They are specially warned to take care that the linings of those pockets which they may retain for use have no holes in them, as they will be held responsible for any forbidden articles which may be found between the linings and fabric of their clothing, whether such articles are discovered during the search outside the Shifting Houses or later when the clothing, after having been taken off, is searched by the men in charge of Shifting Houses (see General Rule 6 and Rule 6 of the Special Rules for Persons in Charge of Shifting Houses.)"

articles found on a bicycle would be regarded as in the "private possession" of its owner or user.

General Rule 3. Third para.:—

With the exceptions mentioned below, no person is to take pocket knives or scissors into Danger Buildings. Those employed in Danger Areas, and all workmen, will leave them on the dirty side of Shifting Houses; visitors will leave them (with any other prohibited articles) at the entrance gates. Workmen carrying out repairs in Danger Buildings will be allowed to take in knives and scissors when necessary for the execution of their work, but the sanction of the Foreman of the Establishment in which the work is to be carried out must first be obtained.

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viz. :-

in each of the capstan
lighting these will be obtained at the nearest
place mentioned below.

Stokers will obtain

Prohibited
Articles and
Penalties for
bringing
them into
Danger
Building
Enclosures.

Any workman when inside Danger Building Enclosures found in private possession of matches or means of procuring a light, or any obviously dangerous article, for instance as an explosive of any sort, will be discharged; and any workman who in similar circumstances is found in possession of tobacco, in any form (including pipe, pipes, cigar or cigarette holders, cigarette papers, or any articles used for the purpose of smoking, or any pipe or pipe of tobacco in any form, or any chemical, will on the first offence be suspended for not less than one week and for the second offence be discharged. Any person, however, who knowingly introduces any forbidden article will be discharged.

A prominent notice of prohibited articles is at all times to be posted at the barrier of every Shifting-House and at the entrances to Danger Building Enclosures.

Workmen should carefully turn every one of their pockets inside out before being searched (General Rule 6) and leave them so turned inside out, as far as possible. Such action should render it almost impossible for a prohibited article to be overlooked, and will moreover be evidence that every endeavour has been made to obey regulation. Workmen are further recommended to have as few pockets as possible in the clothes in which they come to work, sewing up those they do not absolutely need.

Workmen and others riding bicycles are to be most careful not to bring matches or other forbidden articles into the Danger Areas in the tool bags or other receptacles attached to their machines. Forbidden articles found on a bicycle would be regarded as in the "private possession" of its owner or user.

4. Should a workman, or other person, inadvertently bring any of the articles described in General Rule 3 into the Danger Building Enclosures, and deliver it up himself, and at once, to the Overlooker in charge, he will suffer no penalty under General Rule 3, provided he is not in the regular habit of making this most undesirable mistake. The Overlooker to whom the article is delivered will at once report the case to the Foreman, and a note will be made of the occurrence.

5. No person under the influence of liquor is to be allowed to enter the Danger Building Enclosures. Intoxicants.

Any workman who is suspected of being under the influence of liquor, when coming to work, or whilst inside the Danger Building Areas, will be at once sent to the Hospital for his state to be decided on by the S.M.O., and if pronounced to be under the influence of liquor will be removed and discharged.

Any workman known to habitually indulge to excess in intoxicants will be discharged.

No beer, wine, or spirituous liquors are to be brought into the Danger Building Enclosures without the written permission of the Superintendent.

Entry of
Danger
Buildings,
and search
of private
clothes, etc.

6. All workmen are to proceed at once from the entrance gates to the Overlooker in charge of the shop in which they work (or other person told off for the purpose), who will thoroughly search their private clothing, head gear, and any private bag or parcel carried by them. They will then enter the "dirty" portion of the Shifting-Houses, where they are to take off the clothes in which they enter the Factory, with the exception of under-vests, shirts, neck-ties, drawers, and socks. Shirts are to be of wool, neck-ties of wool or silk. Belts worn for health, but not in substitution for braces, are permitted provided they are quite free from metal buttons or fittings.

Metal
articles
forbidden.

7. No articles of iron, steel, or metal are allowed on private underclothing of workmen, nor are any such articles, except spectacles (which must be "curl-side," or the sides securely tied together across the back of the head, not "pince nez") and surgical appliances which are unlikely to become detached, to be carried across the Shifting-House barriers. All buttons on the private underclothing of workmen are to be of bone. (The so-called "cloth" buttons usually contain a ring of metal).

Searching.

8. Workmen, after taking off their clothes (as in General Rule 6), are to be thoroughly searched by persons, deputed for this work, and, until they have been searched, are not to pass across the barrier into the "clean" portion of the Shifting House. THE WORKMAN IS RESPONSIBLE EQUALLY WITH THE PERSON DEPUTED TO SEARCH, FOR THE OBSERVANCE OF THIS RULE, AND WITH THE OVERLOOKER THAT THE SEARCHING DETAILED IN GENERAL RULE 6 HAS BEEN CARRIED OUT.

precisely as if they were daily employed for explosives. If not so treated they may become sources of serious danger.

Boiler Houses, Mechanics' Shops, and any other "dirty" buildings in Danger Building Areas, must be carefully inspected from time to time to see that they do not become a danger owing to the work in them not being carried out with due regard to cleanliness. (See also General Rule 28). These buildings will be visited by the Police patrol during the silent hours.

28. Cotton waste, sponge cloths, serge and silk cuttings, oil, turpentine, and inflammable articles used for painting, varnishing, or other purposes, sawdust, and articles of a kindred character, will be kept in iron chests outside Danger Buildings and other buildings in the Danger Building Areas; and will be only taken into such buildings in such quantities as are needed for immediate use. At the close of work serviceable articles of the above classes are to be replaced in the iron chests, and unserviceable ones collected and sent to be burnt, under B.W.D., at the Burning Ground, except in the case of the Cordite Cannon Cartridge Factory, where the burning will be done at Y 20 Boiler House, and the Lyddite Establishment, where all waste of the kind indicated is liable to be impregnated with picric acid, and is to be treated as waste explosive. *The utmost care is to be taken that waste explosives are never mixed with the above-mentioned waste articles.* Waste explosives will be disposed of as laid down in the various "Directions for Overlookers." If they are to be burnt the burning will be done by employes of the Primer Branch.

Cotton
waste,
sponge
cloths,
turpentine,
oil, etc.,
treatment
of.

29. Until the Special Rules in connection with alterations, repairs, adjustments, new work, etc., in Danger Buildings (see Page 34) have been complied with no work of the above character, *however trivial*, is ever to be carried out by *anyone* on buildings, fittings, machinery, tools, or plant of any kind; nor, on the completion of such work, is ordinary work to be resumed.

THE ATTENTION OF WORKMEN IS VERY SPECIALLY CALLED TO THE ABOVE RULE, AS IT APPLIES ALSO TO CASES OF TEMPORARY DERANGEMENT OR STOPPING OF MACHINERY, WHICH IT MAY SEEM A VERY SIMPLE MATTER TO PUT RIGHT.

Repairs and
adjustments
of any kind
in Danger
Buildings.
How to be
carried out.

The exceptional cases, in which a workman may adjust or otherwise deal with machinery, tools or plant, are detailed in the "Directions for Overlookers" for the operations in which the necessity for such action is likely to occur.

Packages of Explosives and their treatment.

30. Receptacles and packages of all kinds for Explosives, whether full or empty, are on no account to be roughly handled, or allowed to drop. They are to be lifted clear from place to place; they are never to be pushed, slid, dragged, or sharply put down. Covers are always to be most carefully put on and taken off. (See also Special Rules for the loading and unloading of explosives, Page 41).

Barrels of Explosives.

31. Closed barrels containing explosives are always to be rolled on their bilges, each one separately, and are to be carefully put down when lifted from one level to another.

Open barrels containing explosives are never to be placed one in the other. When being moved they may be rolled on their chimes or lifted as may be found most convenient.

The above apply to movements of barrels on "clean" platforms and in "clean" shops. Barrels containing explosives will always be *carried* across "dirty" places.

Trucks containing Explosives.

32. Trucks, containing explosives in any stage of manufacture or their ingredients, or finished explosive articles, when being moved from one building to another, are always to be kept closed or covered over. They are never to be left without someone being with them in charge, except during a thunderstorm. Trucks are always to be pushed from behind, and kept thoroughly under control; they are never to be moved faster than at a quick walk.

Fire Buckets, Pumps, etc.

33. All fire buckets and hand fire pumps are to be kept filled with clean water and ready for use, and care must be taken that those in exposed situations are not allowed to become frozen. They are not to be removed from the positions assigned to them, nor used for any but fire purposes. Workmen must always consider the position of these buckets, as a single bucketful of water, used at the right moment, may quite possibly put out an ignition capable, if not dealt with at once, of producing a serious fire or explosion. (See also Special Rules as to fires, on page 42).

34. The ambulance hampers and stretchers are to be kept in good order, and are not to be shifted from their assigned positions without permission. (See Special Rules as to accidents on Page 46).

35. In slippery weather the platforms are to be covered with clean sawdust free from grit. In hot or dry and windy weather the platforms are to be wetted as ordered by the Foreman. The platforms are to be kept thoroughly clean by the workmen appointed for the purpose. No paper or any other rubbish is to be thrown about the Danger Buildings Enclosures. Platforms.

36. When buildings, platforms, etc., are shut off for repairs, barriers painted red will be used to divide the "clean" from the "dirty" side. Such barriers are never to be crossed, even with a change of shoes, without special permission from the Foreman or Assistant-Foreman. (See General Rule 18). Barriers and Danger Notices.

In certain establishments special barriers are placed across the platforms, or notices erected at the entrances to Danger Buildings, to prevent passage or entrance while certain operations are in progress. These barriers or notices are never to be passed when in the danger position.

37. Except in the case of grave emergency, no one except the Overlooker, Foreman, or persons specially detailed, is to touch in any way the gas or electric light arrangements. Should anything go wrong with them an immediate report is to be made to the Foreman. Gas and Electric Lighting-Portable Electric lights.

Occasionally the electric lights suddenly fail. At any such time, the person authorized will at once obtain and make use of the "portable light" provided specially in most buildings to meet such an emergency, and report to the Foreman. The remainder of the workmen in the shop will remain quietly in their places.

In certain specially dusty or dangerous buildings only portable lights with extra casing will be used.

38. Except in the approved Dining Rooms, meals are not to be taken in any of the Buildings inside the Danger Building Areas without special permission. This applies to *all* ranks. Meals not to be taken in Danger Buildings

39. Doors and windows of Danger Buildings and their porches are to be closed when the difference between the wet and dry bulb thermometers does not Temperature Closing of doors, etc.

exceed the amount laid down for the building—usually, but not always 5° Fahrenheit.

Thunder-
storms.
Procedure in
connection
with.

40. On the approach of a thunderstorm and the ringing of the warning bell or blowing of the steam whistle, the machinery is to be stopped, all doors and windows are to be closed, and all workmen are to retire to the "clean" portion of the Shifting-Houses until they receive orders to return to work. Should, however, the Foreman consider it unsafe or impracticable to suspend any particular process that may be in hand, such men only as are necessary for its continuance are to remain at their work. Such exceptional cases will usually be found laid down in the "Directions for Overlookers" for the operations in which they are likely to occur.

Lightning conductors will be examined and tested once a year.*

Danger
Buildings to
be kept
locked when
not in use.

41. When not in use, all Danger Buildings, Magazines, and other buildings are to be kept locked up.

Cessation of
work.
Disposal of
work, put-
ting out
lights, etc.

42. On the cessation of work, the Overlookers will not leave until the work in operation has been disposed of as directed in the "Directions for Overlookers" and in General Rule 28, † all windows and doors of their respective Danger Buildings have been fastened, bolted, and locked. The Overlookers are responsible that no workmen remain in the Danger Buildings, that all is left correct, and that the keys are deposited in the appointed places. (The Overlookers are to sign the certificate to the above effect, in the book provided for the purpose, daily before leaving the Danger Buildings Enclosures).

Lights will be put out by persons deputed for the purpose, who will report to the Foreman.

Cessation of
work. Pre-
cautions to
be taken in
clearing
Buildings.

43. On cessation of work, workmen are to proceed to the Shifting-Houses under the control of their Overlookers, when the removal of Danger Building clothes, and the putting on of private clothes is to be carried out as provided for on going to work, but in the reverse order. Any workman remaining in a building at close

* See correspondence B. W. D. 15229 R. L. 31601.

† The existing "Directions for Overlookers," which may be used pending the completion of new ones, do not lay this down.

of work without authority will render himself liable to immediate discharge. To prevent any workman being left in the Danger Buildings Enclosures after they have been closed, the men in charge of Shifting-Houses will see that no private clothes are left in them. Should any be found they are to make an immediate report to the Foreman, who will take steps at once to find the workman to whom they belong.

44. From the 21st March to the 21st September in each year, certain gas lamps on platforms will be lighted at the close of work, and left lighted until commencement of work the next morning, to facilitate efficient patrol by the Police who will patrol inside the Danger Building Areas but not on the "clean" platforms, except in case of necessity. These special lamps are distinguished by single and double white bands. The double white bands indicate the proximity of fire extinguishing appliances, and the position of the nearest hydrant is indicated by a zinc tablet. Lighting of
gas on plat-
forms to
facilitate
Police patrol

From the 21st September to the 21st March of the following year, all lamps (except the special ones) will be extinguished at the close of work. The special lamps will be left lighted until the commencement of work the next morning. On Saturday afternoon, Sundays, and holidays, men will be detailed to light the special lamps at sunset, and extinguish them at sunrise.

45. Certain Danger operations (*e.g.*, destruction of waste explosive) are not carried out in Danger Buildings. Such operations are never to be undertaken without detailed "Directions for Overlookers" being got out for them. (See General Rule 19.) Danger op-
erations not
performed in
Buildings.

46. Special Rules for (1) Foremen, (2) Assistant-Foremen, (3) Overlookers, (4) Danger Building Visitors, (5) Gatemen, (6) Men in charge of Shifting-Houses, (7) carrying out of alteration, repairs, and new work in Danger Buildings, (8) Experimental and specially dangerous work, (9) Packing and Loading of Explosives, (10) Extinguishing Fire, and (11) Accidents, will be found hereafter.

The duties of the Assist.-Superintendent and Danger Building Officers and of the Assistant, and Shop, Managers of the Danger Buildings, are published separately.

Special Rules.

SPECIAL RULES FOR FOREMEN.

Responsibility. To be thoroughly acquainted with all Regulations.

The Foreman of Danger Buildings is in a position of great responsibility.

All Foremen (and Assistant-Foremen) will, before confirmation of appointment, furnish satisfactory written answers to certain questions which will be put to them on the subject of explosives and Danger Building Management.*

1. He is to make himself thoroughly conversant with the whole of the "Regulations of the Danger Buildings, Royal Laboratory," and to see that they are strictly carried out. He will draw attention to any Rules or precautions which appear ineffective, unworkable, or obsolete. He will keep a diary, in which he will daily enter all matters having any bearing on the question of the safety precautions in his establishment.

Certificates as to reading out of Rules.

2. He is responsible, and will sign a certificate monthly, on the form supplied, that the "General and Special Rules" have been read out to all concerned once a month, and that the "Special Precautions" have been read out as directed in General Rule 23.

To be constantly on look out for Danger, and Improved Precautions.

3. He is to be constantly on the watch for unexpected sources of danger, and is never to allow himself to rest content with the existing arrangements to prevent accident if he can see his way to better ones. He is to use every effort to *reduce* his limits for men and explosives where possible and can do so without authority.

* See R.L. (D. R. P.) 16356.

4. He must be inflexibly severe against infractions of Rules and Precautions. One warning is all that should ever be given, and that only in unimportant cases, and after that the offender should be suspended, and a report at once made. **NEGLECT OF REGULATION IN DANGER BUILDINGS MAY MEAN LOSS OF LIFE**, and a discipline, which may even appear to border on severity, is therefore essential.

5. He is invariably to be present ten minutes before the commencement of each "call," and to attend during the period the men are being searched (General Rules 6 and 8). He is occasionally to make "surprise" searches, as laid down in General Rules 8 para. 13, and 11 para. 2, and not less than once a month he is to thoroughly examine a portion of the Danger Building clothing in use to see that no unauthorized alterations nor additions have been made to it. He will similarly look for alterations and additions when searching men dressed in Danger Building clothing (see General Rule 9, para. 7). He will record the results of his searches and examination in his diary.

He will not leave his Establishment at closing time until thoroughly satisfied that all is correct. (See General Rules 42, 43, and 44).

6. He will give instructions as to the intervals at which shops, platforms, etc., are washed out, and see that all receptacles provided for sweepings, cuttings, etc., of explosives are kept in a safe state. He will be constantly on the watch that the cleanliness of all Danger Buildings is maintained, and that "dirty" buildings in their vicinity do not become sources of danger (General Rule 27, and Special Rules for Repairs, No. 5).

7. He will keep a constant watch that only the articles enumerated in the "Use Lists" are allowed in Shops, and that implements, etc., are correctly marked with the number of the Shop to which they belong, as far as is practicable.

8. He is responsible for the condition of his Buildings and platforms, and must occasionally look round their exteriors, leaving the platforms for the purpose. He should specially note the condition of the light- and conductors (irrespective of the B.W.D. examination

Firmness in enforcing Regulations

Presence during Searching, and occasional personal Search.

Orders as to Washing and Cleanliness of Buildings.

Attention to "Use Lists" and marking of Tools.

Attention to condition of Buildings, etc., for electric light, etc.

mentioned in General Rule 40), and of the electric light or power connections. He will make himself thoroughly acquainted with the positions of all the electric switches, whether for light or power, and gas valves in his Establishment, and will tell off men to deal with all important ones in case of emergency.

Watch over
Subordinates

9. He will keep a sharp eye on all those under him, and be especially watchful that those in subordinate charge are worthy of trust, and scrupulously exact in their performance of duty. An untrustworthy man in Danger Buildings is *far worse* than useless, as he constitutes a positive peril.

He will also concern himself with the temperaments and health of his subordinates. It is obvious that quarrelsome, excitable men are specially out of place in Danger Buildings, and the performance of work on explosives by men with shaky hands or defective eyesight, etc., is eminently undesirable.

When defective health is obviously the result of indulgence to excess in intoxicants, a subordinate should at once be recommended for dismissal.

Attendance
and Duties in
connection
with Experi-
mental work

10. In the event of specially dangerous or experimental work having to be undertaken, he will not proceed until the conditions laid down in the Special Rules for that class of work (see Page 37) have been met, and until his arrangements for it have been passed as suitable by a Danger Building Officer, who will sign to that effect in the Foreman's diary. He is *invariably* to be present when experimental work of any kind is carried out in his branch, and will not hesitate to draw attention to any feature in the action proposed, which he may consider undesirable, even if a superior official be present. Experimental work should only exceptionally be undertaken in a Shop where explosives are handled (see General Rule 22).

Receptacles
for miscell-
aneous
articles to be
watched,
and their use
discouraged.

11. He will take special notice that miscellaneous receptacles in Shops to hold paper, labels, writing materials, chalk, etc., are kept strictly for the purposes intended, and that odds and ends are not accumulated therein. The use of these receptacles should be discouraged.

Workmen, other than mechanics or stokers, habitually employed in a Danger Building Area, but on the "dirty" side, and who wear magazine clothing with distinguishing marks, will be similarly searched before proceeding to work, and are similarly responsible that they do not start work without being searched.

Workmen who enter an Establishment after the general searching has ceased will be searched by the person in charge of the Shifting-House exactly as detailed above, and will be similarly responsible that they are searched before they commence work.

No loose articles, other than handkerchiefs, and the articles specified in General Rule 7, may be taken across the barrier by workmen, and no private bag or private parcel, etc., by anyone. Workmen wearing surgical appliances under their underclothing must acquaint their Foreman that they do so.

Parcels, bags, etc., left on the "dirty" side of the Shifting-House will be searched, and workmen or others leaving such articles must accept this liability. This also applies to bags, baskets, etc., left in the Dining Room at the Cannon Cartridge Factory.

(The Overlookers, and others deputed to search, are to sign the searching certificate in the book provided for the purpose, daily before leaving the Danger Building Enclosures.)

Writers, Book-keepers, Worktakers, workmen not employed in work on or in connection with explosives, and workmen of other Departments, will not remove their clothes except when searched by the Foreman, or by the order of an Officer; but they will turn all their pockets inside out in the presence of the men in charge of Shifting-Houses, or Gatemen (or other person deputed to search) and be felt over by them. They will further have their hats or caps examined by them.

In the case of Y 20 the Stokers who have to enter this boiler house when the Cordite Cannon Cartridge Factory is closed, and no Gateman is therefore present, will be searched by the Police at the Marsh Gate.* Mechanics working habitually in Mechanics' Shops in Danger Areas will be searched by their own Leading-hands before commencing work.

Every mechanic, or stoker, habitually employed in the Danger Area will always carry with him a "search

*See Correspondence R.L. 17349 and 18463 (1600).

book" suitably made out, and he will be responsible that he does not proceed to work until the fact that he has been searched has been attested by the initials of a responsible person.

In order to render the search of Worktakers, etc., and that of the private clothes of workmen referred to in General Rule 6 above, as rapid as possible, all persons subject to such a search must have all their pockets ready turned inside out when they come to the person who is to search them.

All Writers, Book-keepers, and workmen employed in the Royal Laboratory Danger Buildings or Areas will be held responsible if they enter them or commence work without being searched, as laid down above.

Visitors will not be searched, but will be questioned by Gatemen and men in charge of Shifting-Houses as to their possession of forbidden articles, and their attention will be called to the notice detailing those articles. (See General Rule 3.)*

In addition to the regular search above, "surprise" searches by the order of a Danger Building Officer, Assistant Manager, or Shop Manager, by the Foreman, and by Danger Building Visitors, will be made as laid down in the Special Rules for those individuals.†

9. After being searched, the workmen who work on the "clean" side are to pass over the barrier into the "clean" portion of the Shifting-House and are to put on in it the Danger Building clothes (in which no pockets are allowed) and the shoes provided. Jackets are to be worn buttoned up and the sleeves are not to be turned back, nor are the bottoms of trousers to be turned up. The sleeves of shirts, when these are allowed to be worn without jackets over them, are not to be turned up. Workmen in certain cases may be permitted to turn up the sleeves of their own shirts and underclothing provided they turn them up *above their elbows*; and for specially dusty work, or whenever it may be considered desirable, elastic bands for closing the sleeves of jackets

* Individuals under instruction by the Ordnance College are bound by "Ordnance College Standing Orders," Section II, para. 28, to strictly observe all Safety Regulations; and further have to sign a certificate to this effect before visiting Danger Buildings.—See also R.L. 14,685 (1600).

† As to the general principles of the Rules for Searching. See O.F. B./32868, R.L. 18796 (1647).

Danger
Building
clothes.
How worn.

(or of shirts when worn without jackets) will be provided.

Workmen must draw immediate attention to frayed sleeves or other lack of good repair in their clothing.

Braces are provided for use with the Danger Building clothes, and no waist strap, nor other braces are to be used. The term "waist strap" does not include a

GENERAL RULE 9 :—

In line 1, para. 4, of General Rule 9—Delete the word "and," and after the word "Buildings" at end of line 2, add "and workmen not employed ordinarily in Danger Buildings, but who enter them to do actual work (e.g. Carpenters, Pipe-fitters, etc.)"

WORKMEN WILL BE HELD RESPONSIBLE FOR CREATING SUCH Danger Building clothes with reasonable care and regard to cleanliness.

Danger Building clothes will be washed as may be necessary, but at least once in six months.

The greatest care must be taken that clothing reserved for specially dirty *explosive* work does not, by impregnation with explosive matter, become a source of danger.

No alterations in, nor additions to, Danger Building clothing (such as the addition of pockets, etc.), are ever to be made without special sanction.

10. Each workman will have a peg allotted to him in the "dirty" portion of the Shifting-House, on which he is to hang up his private clothes, and a peg in the "clean" portion on which he is to hang up his Danger Building clothes. Private clothes are never, on any pretext, to be hung up on the "clean" side of the barrier nor Danger Building clothes on the "dirty" side.

11. The private clothes and any bag, parcel, bicycle, etc., left on the "dirty" side of the Shifting-House will be carefully examined by the man in charge of the Shifting-House during each call, as soon as possible after the workmen have changed, and should a match, pipe, or any forbidden or dangerous article be found, a report is to be immediately made to the Foreman. Search of private clothes.

book" suitably made out, and he will be responsible that he does not proceed to work until the fact that he has been attested by the initials of a

etc., and

by Gatekeepers
to their possession of robes
tion will be called to the notice detaining
(See General Rule 3.)*

In addition to the regular search above, "surprise" searches by the order of a Danger Building Officer, Assistant Manager, or Shop Manager, by the Foreman, and by Danger Building Visitors, will be made as laid down in the Special Rules for those individuals. †

9. After being searched, the workmen who work on the "clean" side are to pass over the barrier into the "clean" portion of the Shifting-House and are to put on in it the Danger Building clothes (in which no pockets are allowed) and the shoes provided. Jackets are to be worn buttoned up and the sleeves are not to be turned back, nor are the bottoms of trousers to be turned up. The sleeves of shirts, when these are allowed to be worn without jackets over them, are not to be turned up. Workmen in certain cases may be permitted to turn up the sleeves of their own shirts and underclothing provided they turn them up *above their elbows*; and for specially dusty work, or whenever it may be considered desirable, elastic bands for closing the sleeves of jackets

* Individuals under instruction by the Ordnance College are bound by "Ordnance College Standing Orders," Section II., para. 28, to strictly observe all Safety Regulations; and further have to sign a certificate to this effect before visiting Danger Buildings.—See also R.L. 14,685 (1600).

† As to the general principles of the Rules for Searching. See O.F. B./32868, R.L. 18796 (1647).

Danger
Building
clothes.
How worn.

(or of shirts when worn without jackets) will be provided.

Workmen must draw immediate attention to frayed sleeves or other lack of good repair in their clothing.

Braces are provided for use with the Danger Building clothes, and no waist strap, nor other braces are to be used. The term "waist strap" does not include a belt worn for health. (See General Rule 6.)

Writers, Book-keepers, and those Worktakers who spend all their working hours in Danger Buildings, will remove their boots on the "dirty" side, and put on magazine shoes on the "clean" side, but will not change into magazine clothing unless they wish to do so.

Workmen, other than Mechanics or Stokers, habitually employed in a Danger Building Area, but on the "dirty" side, will wear magazine clothing distinguished by red stripes down the trousers red bands round the upper part of the sleeves, and red badges on the cap. These clothes will be kept, and put on, on the "dirty" side of the Shifting-House.

Workmen will be held responsible for treating their Danger Building clothes with reasonable care and regard to cleanliness.

Danger Building clothes will be washed as may be necessary, but at least once in six months.

The greatest care must be taken that clothing reserved for specially dirty *explosive* work does not, by impregnation with explosive matter, become a source of danger.

No alterations in, nor additions to, Danger Building clothing (such as the addition of pockets, etc.), are ever to be made without special sanction.

10. Each workman will have a peg allotted to him in the "dirty" portion of the Shifting-House, on which he is to hang up his private clothes, and a peg in the "clean" portion on which he is to hang up his Danger Building clothes. Private clothes are never, on any pretext, to be hung up on the "clean" side of the barrier nor Danger Building clothes on the "dirty" side.

11. The private clothes and any bag, parcel, bicycle, etc., left on the "dirty" side of the Shifting-House will be carefully examined by the man in charge of the Shifting-House during each call, as soon as possible after the workmen have changed, and should a match, pipe, or any forbidden or dangerous article be found, a report is to be immediately made to the Foreman. **Search of private clothes.**

the "Directions for Overlookers" for the particular work in hand, and will be hung up in the building before work commences. All such tools, implements, and articles are to be marked, as far as is practicable, with the number of the Danger Building to which they belong, and from which they are not to be removed. When not in use they are to be deposited in the appointed places in the Danger Building. (See also General Rule 45.)

"Limits" of Explosives and men, and "Directions for Overlookers."

20. The quantity of explosive, and the number of men allowed to be present in a Danger Building during any particular operation and at the close of work, will be found at the head of the "Directions for Overlookers" for the operation in question,* and until these directions are hung up work is not to commence. On no account is this quantity or number to be exceeded; and further, every effort must be made to keep the explosives in operation covered up except when being actually handled. Workmen will assist their Overlookers in seeing that this Rule is strictly obeyed.

N.B.—*The temporary presence of Officers, Managers, Foremen, or Visitors properly conducted, and the occasional authorized performance of work in connection with experimental stores will not constitute an infringement of this Rule. See General Rule 22.*

Notices, how posted.

21. No Notices, other than "Directions for Overlookers," are to be hung up in workshops.* Notices, when necessary, are to be posted on a board at the entrance to, or in, but on the "dirty" side of, the Shifting House, and in the dining rooms. Specially important notices should be read out to the men as often as needed in addition to being posted.

Unofficial notices are never to be put up without the permission of the Superintendent.

Experimental work.

22. No experimental or specially dangerous work will be carried out until the conditions laid down in the Special Rules for these classes of work have been met. (See Page 37).

* Pending the publication of new "Directions for Overlookers," separate notices of men and explosive limits will continue to be used when necessary.

23. When carrying out some operations in connection with explosives, attention has to be drawn to special precautions in connection therewith, and these will be found embodied in the "Special Precautions," which will form part of the "Directions for Overlookers" * for the particular operations. Such precautions are invariably *additional*, and are never to be taken as excuses for relaxing the stringency of the "General Rules" which *always apply*. "Special Precautions" will be read out to the workmen, by the Foreman or Assistant-Foreman, before commencing work on the operation in question, and, at least, once a week afterwards during the continuation of the operation by the Overlooker.

24. Workmen employed in Danger Buildings are to carry on the work entrusted to them in as gentle and careful a manner as possible. No undue haste is ever to be made, and no greater force employed than is absolutely necessary to effect the object in view. All tools and implements are to be handled carefully, and are never to be thrown down, or be allowed to fall or drop on to the floor. Workmen carrying explosives are never to move faster than at a walk, and no workmen are to be observed.

the "Directions for Overlookers" for the particular work in hand, and will be hung up in the building before work commences. All such tools, implements, and articles are to be marked, as far as is practicable, with the number of the Danger Building to which they belong, and from which they are not to be removed. When not in use they are to be deposited in the appointed places in the Danger Building. (See also General Rule 45.)

"Limits" of Explosives and men, and "Directions for Overlookers."

20. The quantity of explosive, and the number of men allowed to be present in a Danger Building during any particular operation and at the close of work, will be found at the head of the "Directions for Overlookers" for the operation in question,* and until these directions are hung up work is not to commence. On no account is this quantity or number to be exceeded; and further, every effort must be made to keep the explosives in operation covered up except when being actually handled. Workmen will assist their Overlookers in seeing that this Rule is strictly obeyed.

N.B.—The temporary presence of Officers, Managers, Foremen, or Visitors properly conducted, and the occasional authorized performance of work in connection with

General Rule 21. Delete first three lines and substitute the following:—

The following notice boards may be hung up in Danger Buildings, and wherever possible, are to be permanently fixed.

(1).—Board for "Directions for Overlookers."

(2).—Board for "Miscellaneous notices, etc." The following may be posted on this board, viz.—(a) Overlookers' names. (b) Names of men allowed to remove and replace belts. (c) The nearest shop in which a portable electric light can be obtained. (d) Maximum thermometer record. (e) Hygrometer record. (f) Danger Building Visitors' diary. (g) Precautions against lead poisoning. (h) Batch and charge notice.

(3).—"Police Fire Bucket" notice board.

(4).—Board in Motor Houses, stating the names of men authorized to start motors.

Other notices when necessary are to be posted on a board at the

23. When carrying out some operations in connection with explosives, attention has to be drawn to special precautions in connection therewith, and these will be found embodied in the "Special Precautions," which will form part of the "Directions for Overlookers" * for the particular operations. Such precautions are invariably *additional*, and are never to be taken as excuses for relaxing the stringency of the "General Rules" which *always apply*. "Special Precautions" will be read out to the workmen, by the Foreman or Assistant-Foreman, before commencing work on the operation in question, and, at least, once a week afterwards during the continuation of the operation by the Overlooker.

24. Workmen employed in Danger Buildings are to carry on the work entrusted to them in as gentle and careful a manner as possible. No undue haste is ever to be made, and no greater force employed than is absolutely necessary to effect the object in view. All tools and implements are to be handled carefully, and are never to be thrown down, or be allowed to fall or drop on to the floor. Workmen carrying explosives are never to move faster than at a walk, and no workman is ever to pass another, on the platforms or in a building, at a run. Workmen are immediately to check, either in themselves or others, any tendency towards trifling, carelessness, or undue haste. Sky-larking or rough play is strictly forbidden, and any workman guilty of using or offering violence to another will be discharged.

25. Workmen are immediately to report to their Foreman or Overlooker anything which they may observe which may seem unusual or dangerous in the operations, machines, plant, tools, or implements, or in the appearance of the materials with which they are working, or in the acts or conduct of their fellow workmen. (This specially applies to the employment of any extra force, as discussed in General Rule 24 above).

Should any foreign substance be found in the contents of any package containing explosives, the package and its contents are to be put on one side and an immediate

* Existing "Directions for Overlookers," which may be used pending the completion of new ones, do not detail these "Special Precautions."

Gentleness and care in carrying out all operations in Danger Buildings to be observed.

Workmen to call attention to anything which strikes them as unusual in their work. Care to keep to free exit.

Add after 2nd para. of General Rule 25.—“If explosives should fall on the floors of buildings or into any place or receptacle where they may become contaminated with grit or any foreign substance; or if stores, either explosive in themselves, or intended to be used in conjunction with or to contain explosives, should suffer a fall or blow, in the least likely to derange or damage them; such explosives and stores are to be set on one side, reported to the Foreman, and are not to be used for manufacture or issue without his special sanction.”

N.B.—The above paragraph does not of course apply to explosives and other materials which must to some extent be expected to fall on to floors, etc., during manufacture, and after so falling are treated as waste, and are swept up and dealt with as laid down in the “Directions for Overlookers.”

strict fulfilment of their labour.

Cleanliness in working and prevention of accumulation of material. Inflammable articles, etc., not to rest on steam pipes.

27. The greatest care is to be taken not to spill explosives on the tables and floors, and at all times to keep the floors and interiors of Danger Buildings perfectly free from dirt, grit and from all accumulation of unnecessary material. The floors are to be constantly swept over, and particular attention paid that dust and dirt are not allowed to accumulate on ledges, shelves, steam pipes, or in cracks, etc. All receptacles for explosives, and racks, tables, etc., are to be periodically inspected to see if cracks or holes have developed in them, and to have any such, which are found, stopped, or the receptacle, etc., condemned, if stopping or other repair necessary cannot be satisfactorily carried out. In hot or dry and windy weather, the platforms and floors of such buildings as are not ordered to be kept thoroughly dry, are to be kept damp. Danger Buildings are to be washed out when ordered by, and under the direction of, the Foreman. (A diary of this will be kept by the Foreman.)

No wood, explosive article, or inflammable substance is ever to be allowed to rest on boilers or steam pipes, and the closest watch will be kept, especially in Drying Houses, that this precaution is observed.

Great care is to be taken that “clean” buildings in an Establishment, which do not happen to be used for work on or storage of explosives, are always treated, in the matter of keeping them free from dirt and grit, etc.,

etc., which is to be dealt with, need not necessarily be cleared of explosives and men, or made “dirty,” and shut off from the rest of the Establishment by barriers, as detailed in Rule 3 below, provided the following conditions are strictly met:—

(a)—That work on fulminate of mercury, cap composition, or dry guncotton, shall not be carried on while repairs, etc., are proceeding.

(b)—That in the case of buildings in which the ordinary work done is liable to lead to deposit of explosive dust, all explosives shall be removed and the building thoroughly cleaned out before the repairs, etc., commence.

(c)—That the workman, or workmen, doing the work be shut off by a cloth screen not less than six feet high from those at work on explosives.

(d)—That no explosive is handled within ten feet of the workman, or workmen, executing the repair.

(e)—That the building is carefully swept out, etc., immediately the repair or alteration is completed.

(f).—That the Foreman obtain, prior to the work being done, the sanction of a Danger Building Officer of the procedure to be adopted, and records the fact of his having done so in his diary.

2. In the case of minor repairs, adjustments, change of parts, or the rectification of slight temporary derangement of machinery, the occasions when such may be carried out by the workman will usually be found in the “Directions for Overlookers” for the operation in hand. If the adjustment, etc., be not so laid down, the Foreman is to be informed, and he will take the necessary action, using his discretion as to whether the Building should be cleared or not. General Rule 29 is to be strictly adhered to.

Minor Repairs, etc. of Machinery when permissible without clearing Buildings.

3. In all other cases of alterations, adjustments, repairs of any sort whatsoever in Danger Buildings, the Building, etc. affected will be completely cleared, declared “dirty,” and shut off from the other “clean” parts of the Danger Establishment by the special barriers provided for the purpose. It will then, as far as may be, be approached and entered direct from the ground near it, and not along clean platforms, with a

When Buildings, etc., are to be cleared and declared “dirty,” Access to such Buildings.

report made to the Foreman. (In certain cases method of dealing with foreign matter is laid down in "Directions for Overlookers.")

The utmost care is to be taken that workmen are placed when at work in a building that they shall have free access to one at least, and if possible, ALL of exits from that building. Trucks or packages are not to be allowed to remain in or across exits.

N.B.—THE CORDIAL CO-OPERATION OF WORKMEN IS INVITED TO ENSURE THE DUE OBSERVANCE OF THIS RULE.

Workmen not to interfere with articles in Danger Buildings.

26. Workmen are strictly forbidden to interfere with anything in the Danger Buildings Enclosures, either lines or points, buildings and their fittings, machine plant, tools or implements, materials, or stores either in course of manufacture or manufactured, except in strict fulfilment of their labour.

Cleanliness in working and prevention of accumulation of material. Inflammable articles, etc., not to rest on steam pipes.

27. The greatest care is to be taken not to spill explosives on the tables and floors, and at all times to keep the floors and interiors of Danger Buildings perfectly free from dirt, grit and from all accumulation of unnecessary material. The floors are to be constantly swept over, and particular attention paid that dust and dirt are not allowed to accumulate on ledges, shelves, steam pipes, or in cracks, etc. All receptacles for explosives, and racks, tables, etc., are to be periodically inspected to see if cracks or holes have developed in them, and to have any such, which are found, stopped, or the receptacle, etc., condemned, if stopping or other repair necessary cannot be satisfactorily carried out. In hot or dry and windy weather, the platforms and floors of such buildings as are not ordered to be kept thoroughly dry, are to be kept damp. Danger Buildings are to be washed out when ordered by, and under the direction of, the Foreman. (A diary of this will be kept by the Foreman.)

No wood, explosive article, or inflammable substance is ever to be allowed to rest on boilers or steam pipes, and the closest watch will be kept, especially in Drying Houses, that this precaution is observed.

Great care is to be taken that "clean" buildings in an Establishment, which do not happen to be used for work on or storage of explosives, are always treated, in the matter of keeping them free from dirt and grit, etc.,

should fall on the floors of buildings or into any place receptacle where they may become contaminated with dirt or any foreign substance; or if stores, either in themselves or intended to be used in conjunction with or to contain explosives, should suffer a fall, blow, in the least likely to damage or damage such explosives and stores are to be set on one reported to the Foreman and are not to be used in any way without his special sanction.

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cap comd on while

h the ordi- f explosive ne building etc., com-

doing the less than six

n ten feet of repair.

(e)—That the building is carefully swept out, etc., immediately the repair or alteration is completed.

(f.)—That the Foreman obtain, prior to the work being done, the sanction of a Danger Building Officer of the procedure to be adopted, and records the fact of his having done so in his diary.

2. In the case of minor repairs, adjustments, change of parts, or the rectification of slight temporary derangement of machinery, the occasions when such may be carried out by the workman will usually be found in the "Directions for Overlookers" for the operation in hand. If the adjustment, etc., be not so laid down, the Foreman is to be informed, and he will take the necessary action, using his discretion as to whether the Building should be cleared or not. General Rule 29 is to be strictly adhered to.

3. In all other cases of alterations, adjustments, or repairs of any sort whatsoever in Danger Buildings, the Building, etc. affected will be completely cleared, declared "dirty," and shut off from the other "clean" parts of the Danger Establishment by the special barriers provided for the purpose. It will then, as far as may be, be approached and entered direct from the ground near it, and not along clean platforms, with a

Minor Repairs, etc. of Machinery when permissible without clearing Buildings.

When Buildings, etc., are to be cleared and declared "dirty." Access to such Buildings.

change of shoes at the barrier. If approach has to be made by "clean" platforms, a man will be specially detailed to see that General Rule 18 as to "clean" platforms is observed. (See also Rule 7 below).

Buildings to be passed as "clean" before use.

4. When a new building or platform is completed, or a repair, etc., has taken place in, or on it, it will be thoroughly cleaned, and will not be taken into use until passed as "clean" by a Danger Building Officer, who will make a note in the Foreman's diary to that effect.

As the *final* cleaning of a "dirty" building must be made by workmen in "clean" overshoes, these overshoes must be carefully rubbed and their soles examined before the workmen return to the "clean" platforms. A metal scraper mat will always be provided for the purpose.

Sheds for Tools, etc., for B.W.D. Where to be placed.

5. When the Building Works Department in connection with their work find it necessary to erect sheds in any Danger Building Area for the storage of their tools, etc., such sheds will only be erected at the places in the Area which have been approved for the purpose. Such sheds will be carefully watched, and occasionally searched for prohibited articles.*

Passage of articles and persons not connected with explosives across platforms.

6. When it is necessary to convey articles for building or other purposes, or when many persons have to cross over a platform, a portion of the platform will be shut off by the special barriers, and declared "dirty." This plan of making a regular "dirty" path is always to be chosen where many people have to cross over platforms rather than to allow the constant use of overshoes, even when the actual carriage of articles across the platform does not take place. The platform so declared "dirty" will only be taken into use again by the permission of a Danger Building Officer, as in Rule 4 above.

Presence of an Overlooker when Repairs are done when an Establishment is closed.

7. When a Danger Establishment is kept open beyond the ordinary working hours for repairs, or for any other non-explosive work, some one connected with the Establishment, and not below the rank of Overlooker, will always be present to see that all Danger Building Regulations are observed.

* Arrangements made in conjunction with B. W. D. See B.W.D. 13,560 and R.L. 11,819 & 12,399 (1,600), and Design R.L. 12,991 which shows the spots selected for sheds.

8. If, during ordinary working hours, there be work on repairs, etc., going on in a Danger Establishment, access to which necessitates the traversing of "clean" platforms, and the change of overshoes at the special barriers, or if the number of workmen present, not connected with the Establishment, be considerable, a man from the Establishment should always be told off to keep a look out on what is going on and to preserve the cleanliness of the "clean" platforms.

Presence of a D.B. man watching workmen doing Repairs.

9. Workmen under the Building Works Department below the rank of Assistant Foreman may and are to be occasionally searched by order of a Danger Building Officer or by a Danger Building Visitor, being taken to a Shifting House for the purpose, if desirable. Such searching will be *in addition* to the searching detailed in General Rule 8.

Search of Workmen working under the Building Works Department.

NOTE.—The procedure as to requisitions on the Building Works Department, and the amount of notice to be given to that Department for repair and new work, and as to the search of B.W.D. workmen, has been laid down on Correspondence, B.W.D. ^{D.O.} 4068 ; R.L. 12,787 (1601) and B.W.D. 13,560 K. ; R.L. 13,333 (1600) respectively.

SPECIAL RULES FOR EXPERIMENTAL OR SPECIALLY DANGEROUS WORK.*

1. Experimental work may be *broadly* defined as including (a) work of any kind on principles which are new to, or differ materially from, those which are usual in the Department, (b) trials of experimental articles (explosive or otherwise) or of explosives not approved officially for the service, (c) the employment of approved

Definitions of Experimental and Specially Dangerous Work.

* These Special Rules hold for Experimental work, examination of doubtful Stores, etc., conducted in the R.L. Danger Buildings by the Department of the Chief Inspector, Woolwich. See correspondence R.L. 14,739 (1,600) C.I.W. ^{P 1} 623.

Drying experimental explosives.

6. Whenever possible, experimental explosives, or stores made up with them, are to be dried by themselves. If it be necessary to dry them at the same time as other explosives, they must be placed in the Drying House as far as can be managed from the other explosives.*

Storage of experimental explosives.

7. While a certain amount of experimental explosive may have to remain in the Danger Areas when work closes, effort must be made to reduce the amount so stored to a minimum. If the quantity which must be stored be not great, it will be preferable to employ an empty workshop for this purpose rather than a magazine containing other explosives; and this will always be the case if the only magazine* available is not traversed.

Reduction of number of persons present during.

8. Every effort must be made to reduce to the absolute minimum the number of persons present during the performance of experimental and specially dangerous work; and those conducting it are responsible that this is done.

As there is apt to be some idea that the act of withdrawal during experimental or dangerous work by an individual whose services are not needed for such work, but who might be present during the performance of ordinary work, might be regarded as showing fear, or as possibly inspiring those who remain with lack of confidence, etc., the senior individual present when the work is about to commence will ORDER ALL SUPERFLUOUS PERSONS, OF WHATEVER RANK, TO WITHDRAW, AND WILL ALSO, UNLESS HIS OWN PRESENCE BE REQUIRED, WITHDRAW HIMSELF.

This Rule will form one of the "Special Precautions" in "Directions for Overlookers" for specially dangerous work, and will be read out before the commencement of all experimental work on, or in connection with, explosives.

*In the case of experimental explosives dealt with for the Explosives' Committee, a regular form of "Certificate of Safety" has been drawn up. The Superintendent of Chemical Research will arrange to allow the explosives to be drawn just as needed so as to prevent accumulation in R.L., and he will take over any surplus or made-up explosives at the close of work with reasonable notice. He will also arrange for the drying of such stores when required. See Correspondence O.F.B. 44890, R.L. 26116 (1812), and S.C.R. 1197 R.L. 34349 (1812.)

SPECIAL RULES FOR LOADING AND UNLOADING OF EXPLOSIVES. PACKAGES FOR, &C.

1. The careful handling of all packages, vehicles, etc., containing explosives, as described in General Rules 30, 31, and 32, will be strictly attended to. Care in handling of Packages.

2. The utmost care will be taken that empty packages intended to contain explosive stores (including tin cylinders and similar small packages) are thoroughly clean both externally and internally, and that filled packages of explosives and filled and empty shell are clean externally, before they cross the barrier to the "clean" side. Examination of packages (including shell) before they cross the barrier

The packages, etc., will be passed as "clean" by a responsible individual, and such passing will form a part of the "Directions for Overlookers" dealing with the store concerned.

A report is to be made at once if packages or shell are received in an unnecessarily dirty condition, so that the Department supplying them may be informed.

3. The interior of railway trucks used for conveying explosives must always be made "clean" before use. Such trucks will be cleaned by workmen on the "dirty" side, who will, in the case of narrow gauge trucks, endeavour, as far as may be, consistently with effective cleaning, to keep outside the truck while doing this work. A final cleaning will be given to the trucks by men in "clean" shoes. These men, and all men working in "clean" trucks, will be careful to rub their shoes on the mat provided for the purpose when returning from trucks to the platforms. (See also Special Rules for Repairs, etc., No. 4). Work in trucks must be arranged so that men shall not have to constantly enter and leave them. Railway Trucks to be made "clean" before use for explosives, and precautions as to men cleaning and using them.

4. Trucks containing explosives are to be examined on receipt to ascertain:—

(a)—If they have arrived locked, in the case of covered vans. Examination of Trucks containing explosives on receipt.

(b)—That when carrying filled shell the packing and treatment have been good.

(c)—That the state of the interior of the trucks warrants their at once being regarded as "clean."

If anything unusual be observed, a report is at once to be made. *It must be impressed on all concerned that great care in dealing with trucks is essential in the interest of safety, as they pass through so many hands.*

Watering
platforms,
etc.

5. In dry and dusty weather, the floors of trucks and the platforms, floors of buildings, and ground in the vicinity of the places where loading and unloading are going on, are to be *lightly* watered, at the discretion of the Foreman, care being taken that water does not fall on the packages themselves.

Shipping in
and unshipp-
ing explo-
sives from
barges.

6. The Rules above hold generally for explosives shipped in, and unshipped from, the powder barges at the jetty at the Cannon Cartridge Factory; but each barge or boat is also furnished with a copy of "Directions for the guidance of those in charge of Barges, Powder Boats, etc." (No. 36 D.B.)

Test of
Tackles, and
examination
for grit.

7. The tackles, cranes, etc., are to be periodically examined to test the strength of the gear used, and also to prevent any accumulation of grit in the working parts, roller paths, etc.

NOTE.—The examination of packages, shell, etc., for damp, and for general suitability for storing explosives apart from questions of safety, is dealt with in the "Directions for Overlookers" for these operations.

SPECIAL RULES FOR THE EXTINGUISHING OF FIRE.

Men trained.

1. In order that there may be men ready at the earliest possible moment to deal with an outbreak of fire, the various Danger Building Establishments will have men trained in the use of the fire appliances as detailed below:—

Fuze Branch and Primer Branch...	...	6 men.
Cap and Detonator Factory	...	6 "
Quick-Firing Cartridge Factory No. 3	...	6 "
Lyddite and Exploder Establishment	...	3 "
Cordite Cannon Cartridge Factory	...	6 "
Cannon Cartridge Factory	...	6 "
Small Arm Cartridge Factory No. 3	...	3 "

These men will be exercised once every month by the Inspector of Police in charge of the Arsenal Police Fire Brigade, and will receive 1s. per drill per man.

12. He will be responsible that the appliances for Fire extinguishing fire are kept in good order, and that Arrangements are made to meet the requirements of the Special Rules for dealing with an outbreak of fire. (See page 42).

13. He will see that the stretchers and medical Medical hampers are kept in their proper places, are in good condition, and properly stocked. (See page 46).

13a. Besides being thoroughly familiar with the Special Rules for action in case of fire or accident, he must have some well-considered ideas of his action in such circumstances. Such previous consideration will render it much less likely that important matters will be forgotten at a moment of intense excitement. He must especially take care that his first message—probably from the scene of the fire or accident—despatched to warn the Police, is *accurate* and tells such essentials as may be of value to the Police or to the Hospital. For instance, in the event of there being an accident *without* a fire also, this should be stated to prevent the unnecessary turning out of the Brigade; and in the case of injuries to men, their nature should be briefly stated for the information of the medical authorities. All messages sent by him to his office for despatch by telephone must be *written* to prevent the mistakes which are almost certain to be made if the messages are conveyed verbally.

SPECIAL RULES FOR ASSISTANT-FOREMEN.

Assistant-Foremen will assist Foremen in carrying out their orders. The Special Rules for Foremen apply generally to them, and wholly so when in independent charge of any Danger Establishment, or portion thereof, whether such charge be permanent or temporary.

If anything unusual be observed, a report is at once to be made. *It must be impressed on all concerned that great care in dealing with trucks is essential in the interest of safety, as they pass through so many hands.*

Watering platforms, etc.

5. In dry and dusty weather, the floors of trucks and the platforms, floors of buildings, and ground in the vicinity of the places where loading and unloading are going on, are to be *lightly* watered, at the discretion of the Foreman, care being taken that water does not fall on the packages themselves.

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detailed below:—

- Fuze Branch and Primer Branch... .. 6 men.
- Cap and Detonator Factory 6 "
- Quick-Firing Cartridge Factory No. 3 6 "
- Lyddite and Exploder Establishment 3 "
- Cordite Cannon Cartridge Factory 6 "
- Cannon Cartridge Factory 6 "
- Small Arm Cartridge Factory No. 3 3 "

These men will be exercised once every month by the Inspector of Police in charge of the Arsenal Police Fire Brigade, and will receive 1s. per drill per man.

12. He will be responsible that the appliances for Fire extinguishing fire are kept in good order, and that Appliances. arrangements are made to meet the requirements of the Special Rules for dealing with an outbreak of fire. (See page 42).

13. He will see that the stretchers and medical Medical hampers are kept in their proper places, are in good Appliances. condition, and properly stocked. (See page 46).

14. When repairs of any sort are carried out, he is responsible that the Special Rules (Page 34) in connection with this class of work are strictly obeyed, and he will in connection with General Rule 29, as amplified by Special Rule No. 2 of the Special Rules for Repairs (Page 35), use his discretionary power of allowing certain adjustments, etc., to be made on machinery, with the utmost care; and he will never use that power if he has the smallest doubt as to the safety of his action. He will make a note of the occurrence in his diary.

15. Although in ordinary course he should make no Powers in change in the various Regulations, or in the accepted cases of method of carrying them into effect, he should not have Emergency the smallest hesitation in doing so should emergency call for immediate change. He will, of course, report his action at the earliest moment.

SPECIAL RULES FOR ASSISTANT-FOREMEN.

Assistant-Foremen will assist Foremen in carrying out their orders. The Special Rules for Foremen apply generally to them, and wholly so when in independent charge of any Danger Establishment, or portion thereof, whether such charge be permanent or temporary.

SPECIAL RULES FOR OVERLOOKERS.

Responsibility. An Overlooker, although working with the workmen, must never forget that he holds a responsible position, and that being in immediate and constant touch with the workmen, he is in the best position to at once notice and check all irregularities or conduct which though not expressly forbidden by Regulation are yet obviously objectionable. *The lives of the men he supervises are largely in his keeping, and depend upon his firm determination to allow no infraction of regulation.*

Knowledge of Regulations, especially of Directions for Overlookers. 1. He will make himself thoroughly conversant with the "General Rules," the Special Rules applying to himself, and the "Special Precautions" (General Rule 23), required in the operations carried out in his workshop, and he is generally responsible for assisting in ensuring obedience to them. He must call attention to anything in the "Directions for Overlookers," or in the Special Precautions which he considers needs alteration.

Reporting Irregularities. 2. He will at once report to his Foreman any breach of Regulation or objectionable conduct on the part of workmen or others which may come to his notice. *He has no discretionary power whatever to overlook offences.*

Searching. 3. He will be present ten minutes before the commencement of each "call," and will carefully search all the men working in his shop before they enter the Shifting-House, as laid down in General Rule 6; and he will be held responsible that his searching is efficiently carried out.

Oily cloths. 4. He will be responsible that no oily sponge cloths, etc., (General Rule 28) are left in the shop when work ceases, and that the provisions of General Rule 16 before work is commenced, and of General Rules 42 and 43 when it ceases, are observed.

Limits, gentleness and cleanliness in work. 5. He will see that the General Rules 19 and 20 as to tools and limits, General Rule 24 as to gentleness, and General Rule 27 as to cleanliness in working, are strictly obeyed.

6. He is to be specially careful that only authorized adjustments of machinery, etc., are carried out by workmen, and that no repair of any kind is carried out without the permission of the Foreman given personally. (General Rule 29, and Special Rules for Repairs, Page 35). Adjustment of machinery, etc.

7. In case of fire or accident he will keep his men in hand, and see that all is done towards quietly carrying out of the procedure laid down in the Special Rules for meeting such contingencies. (See pages 42 to 49). He must especially prevent his men from rushing aimlessly about, needlessly leaving the "clean" platforms, or crowding to the scene of the occurrence. Duties in case of fire or accident.

He must have definite ideas as to what he will do in the event of a small ignition occurring (see General Rule 33), and must see that the position of workmen in the shop is such that they are able to escape at once in the event of an accident. Workmen must not be placed with a long table or other big obstruction between them and the doors. (See General Rule 25).

8. He will sign a certificate (on the prescribed form) daily, before leaving the Danger Buildings, of the due performance of his duties. Certificate.

SPECIAL RULES FOR DANGER BUILDING VISITORS.

They will be under Danger Building Officers, to whom they will report, and from whom they will receive instructions. Report to Danger Building Officers.

1. They will make themselves thoroughly conversant with the whole of the "Regulations of the Danger Buildings, Royal Laboratory," and with the "Special Precautions" in connection with the work in progress. Knowledge of Regulations.

2. They are constantly to visit those Danger Buildings which are subject to their respective inspection, at uncertain periods, to ascertain that the work is being carried on in a satisfactory manner, and in strict accordance with the General and Special Rules laid down by the Regulations and the Special Precautions detailed in the "Directions for Overlookers." Visits to Danger Buildings & duties there.

3. They are occasionally to visit and examine all Danger Buildings, Houses, and Shops not in actual use. Visit of Shops not in use.

- Check of tools in use. 4. They are to check and examine the tools and implements in Buildings, and to see that none other than those authorised are in use.
- Searching. 5. They are also authorized to enquire as to the business of all persons they may meet on their rounds, and to search for prohibited articles anyone below the rank of Assistant-Foreman. (As to workmen of the Building Works Department, see Special Rules for Repairs, No. 9). They will daily search, at least, one man in every establishment, taking him to the Shifting-House, if necessary, for the purpose, (but, in any case, out of the Shop), and some of the private clothes, bags, parcels, etc., left in Shifting-Houses and Dining rooms in the Danger Building Areas.
- When searching men dressed in Danger Building clothing they will carefully examine to see whether any unauthorized alterations or additions have been made in the clothing (see General Rule 9, para. 7).
- Report of the necessity for alteration. 6. They will at once bring to the notice of Danger Building Officers any matter connected with Buildings, appliances, fittings, and lighting which is thought to require consideration or attention, and enter the report of the same weekly, in the book kept for the purpose in the R.L. Office.
- Fire appliances and artificial light. 7. They will pay attention to the various fire-extinguishing appliances, and to the artificial lighting and method of using same.
- Diary in Danger Buildings. 8. A diary will be kept in each Danger Building, in which they will record the date of their visit, the name of the man or men searched, and the fact of whether any report was necessary.
- They will enter in the diary in the Shifting-House the date and the hours of their entering and leaving an Establishment.
- Weekly Report. 9. They will render a weekly report to Danger Building Officers on the prescribed form.
- Not to give orders to workmen and make remarks to them. 10. They will not give any instructions to workmen except in case of urgent necessity; but, if they think it desirable, will draw the Foreman's *personal* attention to any matter they may consider needs amendment or alteration. This will in no way cancel the instructions to further report the matter to the Danger Building Officer.

SPECIAL RULES FOR GATEMEN.

1. They will make themselves thoroughly familiar with the General Rules for Danger Buildings, and will assist in securing obedience to them. They will record and report at the earliest moment all infractions of Regulations or unusual circumstances, and they will keep records of the names and business of all persons visiting the Danger Areas during closed time. Familiarity with Rules.
2. They will allow no unauthorized persons to enter the Danger Areas. Unauthorized persons.
3. They will search all workmen who enter the Danger Area (other than those employed in Danger Buildings) in a manner similar to that laid down for the searching of Writers, Book-keepers, etc., in General Rule 8. They will question all other visitors, of whatever rank, as to their being in possession of articles forbidden by General Rule 3, drawing their attention to the notice of prohibited articles.* They will initial, if called upon to do so, the "search books" of mechanics and stokers whom they have searched. Searching and questioning of Visitors as to forbidden articles.
4. They will be on duty ten minutes before work commences, and remain ten minutes after closing time, and during the dinner hour. They will lock their gates when work ceases for the day, and deposit the keys with the Gateman at the Main entrance, except in the case of Cordite Cannon Cartridge Factory, the key of which is deposited with the Police at the Marsh Gate. Times of duty, and locking of gates.
5. They will never permit a locomotive, unless driven by oil fuel, to enter the Danger Building Areas, except with the special permission of the Superintendent, or in case of an accident the locomotives drawing the ambulances. Ordinary coal-fired Locomotives not allowed in Danger Area.
6. When detailed to attend during the supply of coal to the bunkers after closing time, they will see that no irregularities are committed. Attendance during Coal supply.

* As to individuals under instruction by the Ordnance College, see footnote on page 12.

Maintenance of order. 7. They will assist in maintaining order as the workmen enter or leave the Danger Building Areas.

Bicycle lamps. 8. They will cause all bicycle lamps to be extinguished before allowing bicycles to enter a Danger Area; and they will permit bicycle lamps to be lighted from the gas jets in their cabins when those riding bicycles are leaving a Danger Area (see General Rule 2 (b)).

Substitutes during absence. 9. Should they have to leave their posts for any purpose, the Gateman at the eastern end of Q.F. Cartridge Factory, No. 3, will arrange with the Constable* on duty at the Gate in the Arsenal wall to take his duty, and the other Gatemen will obtain substitutes from the nearest Shifting-Houses.

Certificate. 10. They will sign a certificate daily of the correct performance of their duties, in the book kept for the purpose.

SPECIAL AND ADDITIONAL TO THE ABOVE, FOR
GATEMEN AT THE MAIN ENTRANCE.

Keeping a light for Stokers. 1. He will keep the gas jet burning night and day in his cabin. An electric gas lighter to re-light it when it is necessary to put it out, is attached to the wall of his cabin. He will permit Stokers to light their lanterns from this gas jet. (See General Rule No. 2).

He will have charge of the locked boxes containing the electric gas lighters used by the Police for lighting the gas in hydrants, and by the men told off to light gas lamps during closed time, and will see that gas lighters are only used by authorized persons.

2. At night he will lock the gate, and open it on the ringing of the entrance bell.

3. He will have charge of the keys of the non-Danger Buildings for use of the Police Search Party, and of a portable electric light for use in case of emergency.

*See correspondence R.L. 14,851 (1,600) with Supt. of Police.

† R.L. 24101 and 25023 (1811).

SPECIAL RULES FOR PERSONS IN CHARGE OF
SHIFTING HOUSES.

1. They will make themselves thoroughly familiar with the General Rules for Danger Buildings, and assist in securing obedience to them. Familiarity with Rules.

2. They will be present in their Shifting-Houses during the whole period that the houses are open, and will be responsible for order being kept in them, and for their cleanliness. Presence in and responsibility for Shifting Houses.

They will be careful that the private clothing left in their charge is not tampered with.

3. They will satisfy themselves that any workman returning to the Shifting-House during working hours, does so with authority. (General Rule 12). Prevention of Workmen re-entering Shifting Houses.

4. They will not allow any unauthorized person to pass the barrier. Persons with messages or letters should not be allowed to cross the barrier, but their letters are to be sent on to the person concerned by a workman detailed for the purpose. Persons not allowed to pass barrier.

5. They will search all Writers, Worktakers, Inspection Branch Examiners, and Senior Book-keepers, as laid down in General Rule 8, and, in a similar manner, any workmen below the rank of Assistant-Foremen (other than workmen of the Establishment) who have occasion to cross the barrier. They will search any workman of the Establishment employed on explosives who enters after the general searching has ceased, *completely*, as laid down in General Rules 6 and 8 for workers on explosives, who change their clothes. They will question all other persons, of whatever rank, who pass through their Shifting-Houses as to their possession of any of the articles forbidden in Danger Areas by Rule 3, drawing their attention to the notice of prohibited articles posted up in the Shifting-House.* They will not allow sticks, umbrellas, or any private bag or parcel to be taken beyond the barrier. Searching and questioning of Visitors as to forbidden articles. Sticks, umbrellas, bags, etc., not allowed across barrier.

*As to individuals under instruction by the Ordnance College, see footnote on page 12.

Search of Private Clothing and examination of D. B. clothing.

6. They will, as soon as possible after work commences, examine the private clothing, head gear, and all parcels, bags, etc., left in their Shifting-Houses, and report to the Foreman at once if any prohibited article be found therein. They will also draw the Foreman's attention to workmen who habitually disregard the recommendations in General Rule 3 as to turning their pockets inside out.

They will take every opportunity of examining the Danger Building clothing in use, to see that no unauthorized alterations nor additions have been made to it (see General Rule 9, para. 7.)

Prevention of Workmen being left in Buildings.

7. To prevent any persons being left in the Establishment when work ceases, they will see that no private clothing has been left behind when the workmen have turned out. Should any clothing be left behind, a report is to be made to the Foreman, or other individual in charge, who will decide whether the garments left necessitate a search of the Establishment to make sure that no one has been left behind.

Special for Shifting-House for Dry Guncotton Buildings.

8. The man on night duty in the Guncotton Drying Houses, who is also in charge of the Shifting-House, has certain other duties in addition to the above. These are included in the "Directions for Overlookers" for drying guncotton.

Certificate.

9. They will sign a certificate daily of the correct performance of their duties, in the book kept for the purpose.

SPECIAL RULES FOR THE CARRYING OUT OF REPAIRS AND ALTERATIONS, ETC., OF ALL KINDS IN DANGER BUILDINGS; ALSO FOR THE ERECTION OF NEW BUILDINGS, OR ADDITIONS TO EXISTING ONES.

Minor Repairs on Buildings and Fittings when permissible without clearing Buildings.

1. In the case of minor repairs, alterations, and additions to Danger Buildings, such, for instance, as the repair of a bolt on a door, the putting up of light fittings such as shelves, and generally when the work to be done will not cause the descent of grit, nor necessitate the handling of heavy articles, or the raising of ladders, steps, trestles, nor the making of any erection to raise the workman, or work above the level of the floor, the building,

2. The following fire appliances exist, and will be maintained in the Danger Establishments:—

ESTABLISHMENT.	Buckets.	Hand Pumps.	Hydrants & Stand Pipes.	Hose.
Fuze Branch...	3	7	{ Hose Reel containing 4 lengths of 40 ft.—1. Extra hose—2 lengths of 100ft., in box on platform.
Primer Branch	1	4	{ Box containing 2 lengths of 100 ft. each.
Cap and Detonator } Factory	2	9	{ 10 lengths of hose, from 40ft. to 100 ft., in 4 boxes.
Quick-Firing Cart- ridge Factory No. 3 & Mechanics' Shop }	...	3	8	{ Hose Reel containing 200 ft.—1. Extra hose—6 lengths of 100 ft. in 3 boxes.
Lyddite Establishmt.	...	2	6	{ 1 Hand Manual, fitted with 4 40 ft. lengths and 1 20 ft. length. Extra hose 4 40 ft. lengths in box on platform, and 3 40 ft. lengths, 1 being near each melting chamber
Cordite Cannon Car- tridge Factory }	...	2	10	{ Hose Reel,—1 extra hose. 4 40 ft. lengths in box on platform.
Cannon Cartridge } Factory	2	9*	{ Hose Boxes—3 on platforms, each containing 4 40 ft. lengths of hose.
Small Arm Cartridge } Factory No. 3	...	3	8	{ 6 lengths of hose of 100 ft. each in 3 boxes.

* Includes one by "Boiling-out" House, outside boundary wall of C.C.F.

Responsibility of the Foreman.

3. While the Superintendent of Police is responsible for the drill of the men and care of the fire appliances, the Foreman of each Establishment is responsible that the men selected for training do attend the monthly drills, that they are not so scattered about in his Factory that they cannot act together promptly, and that the fire appliances are attended to. He will not hesitate to draw attention to anything which he considers in any way inadequate or undesirable in the arrangements for meeting an outbreak of fire.

Action to be taken on an outbreak of Fire.

4. On the outbreak of fire in a building in which it is known that no explosives exist or the explosives in which are known to have ALL exploded, action will be taken as follows, viz.:-

(a)—The trained men, assisted by such other workmen as may be required, will at once take action to extinguish the fire, to thoroughly wet the roofs and walls of adjacent buildings, especially those to leeward, and, if there appear any serious prospect of the fire communicating itself to these adjacent buildings, to thoroughly wet any explosives contained in them. If it be impossible for any reason to thoroughly wet the explosives, an effort should be made to remove them, provided doing so involves no serious risk, and in no case should exposed explosives be removed into the open in the close neighbourhood of a fire.

(b)—Messages will be despatched to the other Danger Building Establishments to send their trained men, who will be brought over quickly, but *quietly*, under Assistant-Foremen without removal of their magazine clothing or shoes.

(c)—The workmen and *all* employed in the Danger Areas will turn out of their buildings, and will form a single line along the platform, obstructing it as little as possible. They will take orders as to action from their Overlookers, or those in charge of them, and **WILL NOT MOVE WITHOUT ORDERS.** Of course men in *actual danger* will make their way to a place of safety without orders. This Rule is specially intended to prevent unnecessary rushing and crowding by workmen and others.

(d)—As soon as the area likely to be affected by the fire has been determined, the Foremen of the Establishments unaffected will direct their men to resume work.

(e)—A telephone message will be instantly des-

Page 45, Rule 4, Para. (e). Delete the whole para. and substitute the following :-

The special fire (or accident) electric alarm bell at the Assistant-manager's office (D.B.) will be rung immediately. The telephone attendant there, will ring the special alarm bell at the Superintendent's office, and the telephone attendant at the latter office will ring the special alarm bell at the Main Gate to warn the Police. Immediately after sending off this special alarm from the factory concerned, a telephone message is to be despatched to the Police (so that the Police Fire Brigade may be called*) through the Assistant-Manager's (D.B.) and Superintendent's offices (the attendants at the two latter offices "plugging through" but "tapping" the message by means of the receivers and reporting to the Superintendent and Assistant-Manager (D.B.) respectively). The person despatching the message will ask the Police and, subsequently, the Superintendent's and Assistant-Manager's (D.B.) offices to repeat the message to him, in order to make sure that it has been correctly received.

...the building which has taken fire is known to contain explosives, and if the fire is obviously gaining the mastery, the action to be taken cannot be precisely laid down, as so much depends upon the position of the Building, whether it is traversed or not, and upon the nature of the explosive contained in it. The following may be taken as a general guide for action.

If the explosive contained in the Building be gunpowder, dry guncotton, cap composition, fulminate of mercury, or picric acid, and it be found impossible to thoroughly wet it and *keep* it wet, all men in the vicinity must be withdrawn to a safe distance (not less than 100 yards, if possible), and placed behind or under the best cover available until the explosive has exploded. The further action will then be as already detailed in Rule 4 above, but a careful search is at once to be

* There is direct wire from the Superintendent's Office to the Police at the Main Gate.

Responsi-
bility of
Foreman.

Action
taken on
outbreak
Fire.

case should exposed explosives
open in the close neighbourhood of a fire.

(b)—Messages will be despatched to the other Danger Building Establishments to send their trained men, who will be brought over quickly, but *quietly*, under Assistant-Foremen without removal of their magazine clothing or shoes.

(c)—The workmen and *all* employed in the Danger Areas will turn out of their buildings, and will form a single line along the platform, obstructing it as little as possible. They will take orders as to action from their Overlookers, or those in charge of them, and **WILL NOT MOVE WITHOUT ORDERS**. Of course men *in actual danger* will make their way to a place of safety without orders. This Rule is specially intended to prevent unnecessary rushing and crowding by workmen and others.

(d)—As soon as the area likely to be affected by the fire has been determined, the Foremen of the Establishments unaffected will direct their men to resume work.

(e)—A telephone message will be instantly despatched to the Assistant-Manager's Office, (D.B.). The special fire (or accident) electric alarm bell at the Superintendent's Office will be rung and the message repeated to the Police, (the Attendant at the Superintendent's Office "plugging through," but "tapping" the message by means of his receiver, and reporting to the Superintendent) so that the Police Fire Brigade may be called.*

(f)—A message will be sent direct to the Police at the Main Gate by the nearest Police telephone. Police tele-
phone.

(g)—If there be the smallest doubt as to the messages despatched as at (e) and (f) having been received by the Police, a messenger on a bicycle is to be despatched *direct* to the Police at the Main Gate. He will proceed by the "Long Straight," Marsh Gate, and Plumstead Road, and will inform the Police at the Marsh Gate, so that intimation may be despatched from there also. The messenger will also, after he has informed the Police, inform the Manager, East Laboratory, calling at his house if necessary, and then report at the Royal Laboratory Office.

(See also "Special Rules in case of Accidents," No. 3. One messenger will suffice to carry messages both as to fire and accident should both unfortunately occur simultaneously).

5. If the Building which has taken fire is known to contain explosives, and if the fire is obviously gaining the mastery, the action to be taken cannot be precisely laid down, as so much depends upon the position of the Building, whether it is traversed or not, and upon the nature of the explosive contained in it. The following may be taken as a general guide for action.

If the explosive contained in the Building be gunpowder, dry guncotton, cap composition, fulminate of mercury, or picric acid, and it be found impossible to thoroughly wet it and *keep* it wet, all men in the vicinity must be withdrawn to a safe distance (not less than 100 yards, if possible), and placed behind or under the best cover available until the explosive has exploded. The further action will then be as already detailed in Rule 4 above, but a careful search is at once to be

* There is direct wire from the Superintendent's Office to the Police at the Main Gate.

made to see if burning matter has been projected on to neighbouring buildings or platforms, and steps are at once to be taken to extinguish the same.

If the explosive be wet guncotton, cordite, or chlorate of potash, attempts to subdue the flames and to wet the explosive may be continued longer, but if the fire gain complete mastery, or there be a danger of the roof falling in on to the explosive, etc., the men must be withdrawn.

6. In the case of a fire occurring but being practically immediately put out, an early report is to be made by telephone to the Police through the Royal Laboratory Office, so that the Superintendent of Police may satisfy himself that no further action is necessary.

7. When the fire has been extinguished and all risk is over, the Establishment, or Establishments affected, must be most carefully made "clean" again. This especially applies to clothes and shoes.

SPECIAL RULES IN CASE OF ACCIDENTS INVOLVING SERIOUS INJURY TO MEN.*

Arrange-
ments for
rendering
First Aid,
and for con-
veyance of
sufferers to
Hospital.

1. In order that proper assistance may be rendered at the earliest possible moment in the event of an accident involving serious injury to anyone in the Danger Areas occurring, there are trained men (distinguished by a red cross on the right sleeves of their clothing), and hospital appliances, etc., as detailed in the table below; and further in order to convey the injured to the Hospital as soon as possible, there is one large broad gauge railway ambulance, capable of holding 12 patients, kept permanently at the Proof and Experimental Sheds (close to the Main Entrance to the Danger Buildings), and one small narrow gauge ambulance, capable of carrying one stretcher slung on it, kept outside the Cap and Detonator Factory. Every Foreman, the Gateman at the Main Entrance to the Danger Building Area, and every Conductor of Explosives has a key which will open the broad gauge ambulance.

There is also a broad gauge ambulance, capable of accommodating 8 patients, kept at Berber.

* See correspondence R.L. 14,689 (1,600) with S.M.O. and Traffic Manager.

Primer Branch	...	2	1	„)	(Building.
Quick-Firing Cart- ridge Factory No. 3	}	3	2	{ 1 in Fore- man's Office 1 in No. 20A building	}	{	{ 2 in Shifting House, 2 in North Store.
Cordite Cannon Car- tridge Factory	}	3	1	{ Foreman's Office	}	{	{ 1 in Shifting-House 2 in No. 20 Build- ing.

Insert as 4th para. to Rule 5 of the Special Rules for Extinguishing Fire:—

A fire in a building containing shell filled with either Lyddite or gunpowder (which cannot for any reason be removed) will need most careful handling. In the event of any of the shell being in the process of filling and unplugged, every effort must be made to plug the shell in the building affected, and those in any neighbouring buildings, to prevent explosion by a spark. It must be remembered that simply wetting the explosives in shell does not render them incapable of exploding if the shell be subsequently exposed to great heat as the explosives are then first dried and then exploded. The only hope, therefore, is in mastering the fire, and, if the shell are plugged, the efforts to effect this may be prolonged much as described in para. 3 above; but if any of them are unplugged and cannot for any reason be plugged, the men must be withdrawn at the first sign of the fire gaining sufficient mastery to cause sparks to fly among the shell. Further, when withdrawal does take place, it must be made to a much greater distance than 100 yards as the fragments of shell will travel much further and have a much greater power of penetration than the fragments of any ordinary building. So great is this range (quite half a mile in some cases, and even more with Lyddite) that it will be much better for those whose duty it is to remain and watch the progress and effect of the fire to trust to cover rather than distance for protection. The cover should not be less in the aggregate than three feet of brick wall at a range of about 100 yards. All persons not needed to assist in combatting the fire must be cleared away to as great a distance as possible. As soon as the fire gets to the shell there will commence a series of explosions, and one of the further difficulties will be to judge when the last explosion has taken place and the site of the fire may be safely approached.

small narrow gauge ambulance, capable of carrying one stretcher slung on it, kept outside the Cap and Detonator Factory. Every Foreman, the Gateman at the Main Entrance to the Danger Building Area, and every Conductor of Explosives has a key which will open the broad gauge ambulance.

There is also a broad gauge ambulance, capable of accommodating 8 patients, kept at Berber.

* See correspondence R.L. 14, 689 (1,600) with S.M.O. and Traffic Manager.

Each of the Broad Gauge Ambulances contains four stretchers with slings, four blankets, a bundle of splints, lint, bandages, and water in a small tank.

TABLE OF TRAINED MEN AND HOSPITAL APPLIANCES.

ESTABLISHMENT.	Trained Men. (Approximate)	Ambulance Hampers.		Stretchers.	
		No.	Building where kept.	No.	Building where kept.
Cannon Cartridge Factory ... }	3	1	{ Foreman's Office }	3	{ 2 in Shifting-House, 1 in cupboard, between No. 3 and No. 14 Buildings.
Lyddite Establishmt.	3	{ 1 1	{ " "	2 1	{ In Shifting-House, In Shifting House, Picric Powder Buildings.
Cartridge Factory No. 3	3	1	{ No. 5 building (Machinery Store) }	2	{ In No. 35 Building.
Cap and Detonator Factory ... }	4	1	{ Foreman's Office }	4	{ In Shifting-House.
" " "		1	{ In Shifting House of Dry Gun-cotton Buildings }	1	{ In Shifting House of Dry Gun-cotton Buildings.
Fuze Branch ...	4	1	{ Foreman's Office. }	6	{ 4 in No. 1 Shifting-House, 2 in No. 35 Building.
Primer Branch ...	2	1	{ " "		
Quick-Firing Cartridge Factory No. 3 }	3	2	{ 1 in Foreman's Office, 1 in No. 20A building }	4	{ 2 in Shifting House, 2 in North Store.
Cordite Cannon Cartridge Factory }	3	1	{ Foreman's Office }	3	{ 1 in Shifting-House, 2 in No. 20 Building.

Responsibility of Foreman, and maintenance of First Aid requisites.

2. The Foreman is responsible that the Hospital appliances, stretchers, etc., supplied are carefully looked after, and that their localities are well known. He will not hesitate to make suggestions as to further provision, should he think it necessary, and will also call attention to any serious diminution of the men trained by, and in possession of the certificate of, the St. John's Ambulance Association, who work in his department.

He is to be thoroughly familiar with the positions of the railway ambulances, and with the action to be taken should an accident occur.

Procedure in event of Accident occurring.

3. In the event of an accident involving serious injury, the action to be taken is as follows :—

(a)—A telephone message will be instantly despatched to the Assistant-Manager's Office (D.B.) The special fire (or accident) electric alarm bell at the Superintendent's Office will be rung, and the message repeated to the Police (the attendant at the Superintendent's Office "plugging through," but "tapping" the message by means of his receiver, and reporting to the Superintendent) so that the Police may at once warn the Hospital; a similar message will be sent direct to the Police at the Main Gate by the nearest Police telephone; and to make absolutely certain, a messenger will be despatched—with an *open* brief written account of the accident, and the number injured—by bicycle by the "Long Straight," Marsh Gate, and Plumstead Road, *direct* to the Hospital, where he will show, but not deliver up, the written message. This messenger will also acquaint the Police at the Marsh Gate as he passes, and request them to telephone to the Hospital, through the Police at the Main Gate, and he will inform the Manager East Laboratory and the Superintendent's Office, *after* he has called at the Hospital, retaining the written message in his possession for delivery at the last mentioned place.

(b)—One man will be despatched for the narrow or broad gauge ambulance (or both) as may be needed. The Traffic Manager will be asked by telephone to despatch a broad or narrow gauge engine (or both), and *two* men will be sent in different directions to stop the first engine (or engines) of the kind required, and

order it to the place where the ambulance is kept. These men should be informed that, by the Regulations in existence, they are empowered to stop the first engine they see, and direct the driver to proceed to the ambulance. The narrow gauge engines used for passenger trains are exceptions to this rule, as their buffers are not suitable for the ambulance truck.

(c)—The trained men will attend to the injured, and get them ready for carriage to the ambulance. They should avoid performing anything more than is required for this, unless such action is absolutely necessary. Invaluable as first aid, scientifically applied, undoubtedly is, it is of the greatest importance that the injured should be got to Hospital as soon as possible.

(d)—If more stretchers, or hospital appliances be

Responsibility of Foreman, and maintenance of First Aid requisites.

2. The Foreman is responsible that the Hospital appliances, stretchers, etc., supplied are carefully looked after, and that their localities are well known. He will not hesitate to make suggestions as to further provision, should he think it necessary, and will also call attention to any serious diminution of the men trained by, and in possession of the certificate of, the St. John's Ambulance Association, who work in his department.

He is to be thoroughly familiar with the positions of the railway ambulances, and with the action to be taken should an accident occur.

Procedure in event of Accident occurring.

3. In the event of an accident involving serious injury, the action to be taken is as follows :—

(a)—A telephone message will be instantly despatched

Page 48, Rule 3, Para. (a). Delete to word Hospital, line 8, and substitute the following :—

The special fire (or accident) electric alarm bell at the Assistant-Manager's Office (D.B.) will be rung immediately. The telephone attendant there will ring the special alarm bell at the Superintendent's office, and the telephone attendant at the latter office will ring the special alarm bell at the Main Gate to warn the Police. Immediately after sending off this special alarm from the factory concerned, a telephone message is to be despatched to the Police (so that they may at once warn the Hospital) through the Assistant-Manager's (D.B.) and Superintendent's offices (the Attendants at the two latter offices "plugging through" but "tapping" the message by means of the receivers and reporting to the Assistant-Manager and Superintendent respectively). The person despatching the message will ask the Police and, subsequently, the Superintendent's and Assistant-Manager's (D.B.) offices to repeat the message to him, in order to make sure that it has been correctly received.

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(c)—The trained men will attend to the injured, and get them ready for carriage to the ambulance. They should avoid performing anything more than is required for this, unless such action is absolutely necessary. Invaluable as first aid, scientifically applied, undoubtedly is, it is of the greatest importance that the injured should be got to Hospital as soon as possible.

(d)—If more stretchers, or hospital appliances be needed than are present in the Establishment, further supplies must at once be telephoned for from the neighbouring Establishments, and these will be brought over without the men carrying them waiting to change their magazine clothing or shoes.

(e)—If the ambulances kept close to, and in the Danger Building Area will not suffice, the Traffic Manager is to be informed by telephone, and the ambulance at Berber obtained.

4. Men with St. John's Ambulance certificates are not to be selected for the fire brigade, as accidents and a fire are not unlikely to occur simultaneously.

Men capable of rendering First Aid not to be selected for Fire Brigade.

5. In the case of accident, ordinary steam locomotives are allowed to enter the Danger Areas to draw the ambulances.

Steam locomotives allowed in Danger Areas to convey ambulances

...to the place where the ambulance is kept. It is not to be taken to the hospital in an ambulance but by the hospital staff. In an emergency they are to be used for the purpose of conveying patients to the hospital. It is not to be used for the purpose of conveying patients to the hospital. It is not to be used for the purpose of conveying patients to the hospital.

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