

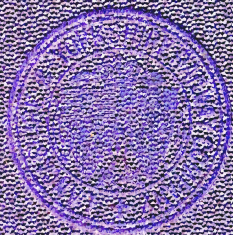
The
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LANCASHIRE & YORKSHIRE RAILWAY

Operational Documents & Pamphlets.

September 1906.

Fire Brigade Manual.

(48 Pages).



FIRE BRIGADE
MANUAL

SEPTEMBER, 1906.

LANCASHIRE AND YORKSHIRE RAILWAY.

Directions and Instructions

FOR

USING AND KEEPING IN ORDER

FIRE ENGINES, HOSE, ETC.,

AND

General Regulations

FOR

FIRE BRIGADES.



JOHN HEYWOOD LTD.,
DEANSGATE AND RIDGEFIELD, MANCHESTER;
20, 22, 24, & 26, LAMB'S CONDUIT STREET, LONDON.

LANCASHIRE AND YORKSHIRE RAILWAY.

DIRECTIONS AND INSTRUCTIONS

FOR

USING AND KEEPING IN ORDER FIRE ENGINES,
HOSE, Etc.,

AND

GENERAL REGULATIONS FOR FIRE BRIGADES.

The Brigades are collectively known as the LANCASHIRE AND YORKSHIRE RAILWAY COMPANY'S FIRE BRIGADE, under the charge of the Chief Officer, Fire Department, Chief Mechanical Engineer's Office, Horwich.

At large Stations and Works a Brigade consists of one Superintendent, one Assistant Superintendent, two Engineers, and Firemen.

At small Stations one Superintendent, one Engineer, and Firemen.

The number of Firemen is determined by the risk.

The Superintendent is responsible for the efficiency of the appliances, hydrants, drill of Brigade, and general discipline. He keeps a book in which records are made of events affecting the Fire Brigade, such as dates of fires, drills, appliances received or sent away, changes of staff, residence, etc.

The Assistant Superintendent aids the Superintendent in all his duties, and in his absence takes charge of the Brigade and appliances.

In action, Engineers and Firemen attach their stand-pipes securely to hydrants, run hose out without any kinks, and use the branches where ordered by their Officers.

Members of Brigades are selected from the staff that reside nearest the place to which they are attached, so that they may be readily called.

Brigades are equally divided where circumstances permit between day and night staff, or late turn men according to the way in which the work is carried on at the Works or Station.

Watchmen are to be active men, and well drilled in the use of the appliances.

Each Officer and man connected with a Brigade is to attend at drill at least once each month, and a record of time taken to get a hydrant into use with

stand-pipe, hose, and branch is to be kept. The Brigade is also to have a combined drill, and it is imperative that the Superintendents of Brigades personally see these drills executed in a thorough manner. Unless this is done the Superintendent will not be allowed to retain his command.

In each case the drills are to be performed with appliances in cupboard or hose cart to start with and not laid beside a hydrant.

Copies of these records, with any Surprise Drills that take place, are to be returned on the Monthly Fire and Appliance Report forwarded to Fire Department, HORWICH.

The Chief Officer visits the Stations and Works at irregular intervals to examine Fire Appliances, give Surprise Drills, and report upon general efficiency.

Fire Brigade retaining fees are:—

Superintendent	20/-	per annum.
Assistant Superintendent...	15/-	„ „
Engineer	12/-	„ „
Firemen	10/-	„ „

Special pay is granted to members of Fire Brigade engaged in fire extinction.

GENERAL INSTRUCTIONS.

Each Fireman should recollect he is a unit of a Brigade, and he must act on his own initiative in the absence of an Officer or Senior Fireman with promptitude.

To enable every individual member of a Fire Brigade to do this efficiently and without excitement, it is essential that he be competent to handle each appliance of the Brigade, and be thoroughly acquainted with the names and positions of every piece of gear, hydrant, landing valve, stop valve, etc.

It should never be necessary for a Fireman to have to wait the arrival of a comrade before starting to get his appliances into use to deal with a fire.

All ranks are to answer Fire Alarms promptly, whether to fire or drill. Whilst working at a fire or drill, appliances are not to be thrown or dropped to the ground, but *laid down*, thus preventing damage to them.

All orders are given by the Officer in charge.

On no account must conversation be held with or instruction be taken from outsiders. They are to be referred to the Superintendent or his Assistant.

As at a fire, so at drill, work is to be done silently, quickly, and intelligently, and discipline must be maintained.

In no case should one man enter a room heavily charged with smoke, but two men must enter together.

The best method of entering a smoke-charged building is to place a wet cloth over the mouth and nose, and crawl along the floor. If working with a branch, keep down as low as possible, and near the stream of water. If a hand lamp will not burn, it is not safe to remain in the compartment or room affected.

All hands are to assist the Superintendent to maintain the appliances in good clean order, and prevent misuse. After fire or drill the appliances are to be replaced in their proper places, but if the hose is wet, it must be thoroughly dried before being put away.

All Firemen are expected to assist in the observance of Fire *Prevention* Regulations.

When a Fireman intends to go away from home he must inform his Superintendent.

When a Fireman leaves a Brigade he is to return to his Superintendent all articles of clothing and equipment which have been supplied for Fire Brigade duty.

At places where separate Fire Brigades are maintained for Goods, Passenger, and other Departments, they must answer Fire Alarms in any Department and assist in the work of fire extinction, the Superintendent of the Brigade where the fire is in progress taking charge.

If assistance arrives from Horwich Works, Newton Heath Carriage and Wagon Works, or Wyre Dock, the Senior Officer in charge of either of these Brigades will take full control.

In towns where there are Public Fire Alarms, the members of the Company's Fire Brigade must make themselves acquainted with those nearest the Company's property and the method of working them. The necessary information would be freely given at the Fire Station.

IN THOSE PLACES WHERE THE NATIONAL TELEPHONE COMPANY'S INSTRUMENTS ARE INSTALLED, THE TELEPHONE NUMBER OF THE CORPORATION FIRE BRIGADE MUST BE POSTED IN A CONSPICUOUS POSITION TO SAVE DELAY WHEN CALLING FOR THEIR SERVICES.

At many Stations where there is a Fire Brigade the surrounding districts are inadequately or entirely unprovided with fire protective arrangements. Where

the Company are asked to render assistance in such places, in all cases it is desirable, *if possible*, to obtain the order of the Owner or his representative before getting the appliances into use; unless standing arrangements are in force.

NOTE:—ALL RANKS OF BRIGADE MUST ASCERTAIN THE SITUATION OF PUBLIC HYDRANTS ADJOINING THE COMPANY'S PROPERTY, AND IN CASE OF FIRE IT MUST NOT BE FORGOTTEN THAT THESE HYDRANTS ARE AVAILABLE FOR USE.

Superintendents of Passenger Station and other Brigades are to see that Signalmen are acquainted with positions of hydrants and fire appliances. (See instructions in Appendix to Working Time Table.)

FIRES.

To be successful in fire fighting it must be distinctly understood that it is of no use trying to work at a distance. The water must actually hit the burning material to obtain any useful result. The branch should be kept moving and every advantage gained, promptly followed up by the Branchman.

If the heat is great, Firemen should make use of cover to protect themselves whilst working the branch. Wet horse-cloths, a wall, a door or shutter, have been used to advantage for this purpose.

Captain Sir E. M. Shaw said:—"The end and aim of real Firemen is to get close to their work, and their efficiency may always be measured by their success or failure in accomplishing this." It is true that in individual cases this is no certain test, as circumstances may be against their getting close; but the power of getting close and the habitual exercise of this power are infallible symptoms of efficiency; and for this purpose the Firemen must be thoroughly drilled in the use of their appliances, both when working singly and in combination.

No two fires are alike; therefore it is impossible to lay down an invariable rule for dealing with an outbreak.

The following is a general outline of what should be done:—When called to a fire in a building, the first action should be to ascertain the extent of the outbreak, if possible by entering the building by ordinary means, or by ladder or permanently fixed fire escape. Having learned the extent of the fire (either by observation or information given on the spot), appliances should be got into use that will deal with the outbreak. If it appears to be more than the appliances and staff present can cope with, the Corporation or Local Authority's Fire Brigade must be called, and a wire must be despatched giving brief details to Fire Department, HORWICH, *stating*

clearly whether help is required or not. (Steam Fire Engines and staffs of men are always ready to proceed to a fire where it is thought their assistance will be valuable.) See page 44.

During the time messages are being sent to the Corporation Brigade and to Horwich all efforts must be maintained to hold the fire in check with the appliances at hand until the arrival of help, as it is better for a Fire Brigade to arrive and find a fire out than a big one in progress.

Having found it expedient to send for the Public Fire Brigade, all possible information should be given to the Officer in charge on their arrival as to water supply, position of hydrants, landing valves, internal arrangements of buildings, and, if necessary, work to their instructions.

AT ALL FIRES WHERE MANCHESTER, SALFORD, LIVERPOOL, OR BOLTON CORPORATION FIRE BRIGADES RESPOND TO THE ALARM, THE OFFICERS IN CHARGE OF THESE BRIGADES TAKE FULL CONTROL, NOT ONLY OF THEIR OWN STAFF, BUT OF THE COMPANY'S FIRE BRIGADE AS WELL; AND OFFICERS AND MEN MUST CARRY OUT ANY ORDERS OR INSTRUCTIONS THEY MAY GIVE OR INSTRUCT THEIR DEPUTIES TO CONVEY, AS THOUGH GIVEN BY THEIR OWN OFFICIALS.

It is not always easy to locate and define the extent of a fire, owing to smoke filling the compartment, room, or building affected. In an event of this kind appliances must be held ready for use whilst endeavouring to find the seat of fire. The judicious opening of doors and windows may clear the place of smoke sufficient to work; at the same time the temperature of the smoke should be observed. If it is cold, the fire is probably of small dimensions, but if heated, the fire is greater, and the element of risk of a larger fire is present, as access of air to the fire is liable to convert a volume of highly heated smoke into a sheet of flame. Directly the location of the fire is determined, the appliances that will meet the case should be brought into use.

In many instances fires difficult to locate, through the presence of large quantities of smoke, have been found of insignificant size, the burning material having been of a class that threw off large volumes of smoke. It is therefore most important that attention be given to the heat of the smoke.

When the outbreak is making headway, and there are floors over that on fire, there should be no hesitation in flooding the floor immediately above, if circumstances permit.

In the case of small outbreaks, buckets, hand-pumps, and extinguishers should be used before getting the larger appliances into use, to prevent as far as possible heavy water damage.

The best Fireman is he who extinguishes the largest fire with the least water damage.

Should a fire happen in that portion of a Station used for residential purposes, every effort is to be made at once to assist inmates to get out of the buildings. At the same time the extinction of the fire must be dealt with. More persons are saved from fire by its quick extinction than by any other method.

Discretion is necessary in deciding upon the best number of branches to use at a serious fire; two good streams of water are more effective than four bad ones. It is therefore necessary for each Brigade to know how many hydrants can be used effectively by day and by night at their respective Stations. Say, for instance, two fair streams of water are available by day, it might be found that three can be obtained at night owing to less call on the water mains. In many cases the quantity and pressure of water is only sufficient to supply one good branch, and at some places not even one can be obtained without the aid of a Fire Engine. This is an important matter, and must not be overlooked.

FIRES IN BUILDINGS.

When a fire occurs in a building adjoining and communicating with another by means of doors, shafting boxes, shoots, defective walls, etc., it is of the utmost importance that all doors be at once shut tight and other openings closed (and no goods left in the immediate vicinity), with the exception of those openings through which it is found convenient for the Firemen to work their jets or branches on to the fire. During the progress of the fire reliable men must be told off to watch the doors or shutters, protecting the openings, so that warnings can be given of signs of failure to confine the fire to the building affected, and allow of steps being taken to check its advance.

It is most important, therefore, that at all times storage should be kept clear of communication doors in party walls, as it enables the doors to be kept under observation, and permits of free movement by the Firemen.

Should the Firemen be driven back, every effort is to be made to close the doors through which they have been working.

Where there is a building in close proximity to a large fire, the Officer in charge must detail men to close all windows and doors, and post Firemen at

the dangerous points with fire appliances ready for immediate use, should the threatened building take fire.

It is also necessary in case of a fire in the immediate vicinity to post reliable men in a Goods Yard to look out for burning wood, paper, sparks, etc., falling on goods either in wagons or on dunnage, and to extinguish any fire in its earliest stages.

DURING THE TIME THE FIRE IS BURNING—IF IT IS IN THE UPPER FLOORS OF A WAREHOUSE OR OTHER SIMILAR BUILDING—ALL AVAILABLE TAR SHEETS SHOULD BE BROUGHT INTO USE, TO COVER THE MERCHANDISE STORED ON THE FLOORS UNDER THE FIRE; MEN SHOULD BE STARTED TO SWEEP THE WATER OUT OF THE DELIVERY DOORS OR DOWN THE STAIRCASE; AND WHEN THE FIRE IS OUT, AND WATER CLEARED OFF, THE FLOORS SHOULD BE WELL COVERED WITH SAWDUST TO SOAK UP MOISTURE, AND ALL DOORS AND WINDOWS OPENED FOR A WHILE TO HELP DRY THE BUILDING AND CLEAR OFF SMOKE FUMES. IF THIS IS DONE PROMPTLY AND EFFECTIVELY, THE COMPANY WILL BE SAVED HEAVY LOSSES.

Where escapes of gas are suspected during a fire the gas must be turned off at the main cocks, or, if necessary, at the meter, to prevent flaring gas assisting in making a heavier loss. Where small lead pipes (either gas or water) are melted or broken, they should be knocked up to prevent further loss when the gas or water is afterwards turned on.

Care must be taken not to do needless damage; but when necessary, impeding obstacles can be broken down or removed, doors broken open, windows cut away, or partitions shifted, to get at a fire, and holes cut through floors to allow water to drain away.

Where cotton has been the material on fire, directly the outbreak is checked the work of removing the bales from the building must be commenced, and the fire then completely extinguished. This is best accomplished by treating each bale separately, picking out the fire and putting the smouldering matter into buckets of water and then thoroughly damping the surrounding portion of the bale with water from fire buckets.

**FIRE-DAMAGED COTTON AT ALL TIMES
NEEDS CAREFUL WATCHING. THE BALES
SHOULD NOT BE BROKEN OPEN.**

When a fire happens in close proximity to a petroleum tank, either stationary or portable, one branch or more if necessary should be detailed to work on the tank, to keep the temperature down and prevent risk of explosion.

When dealing with oil or spirit fires, sand or ballast should be used to help to extinguish the outbreak.

ELECTRIC FIRES IN BUILDINGS.

In dealing with fires of this nature, great care must be exercised.

The use of water *whilst the current is on* will probably increase the risk of the fire extending, and, under some conditions, be dangerous to life. It is therefore necessary to use discretion.

In many instances a slight outbreak on an installation can be dealt with by switching off the light or motors on the section of wire affected.

Where the lights or motor have failed owing to the fault causing the fire, it must be specially seen to that the section switch is closed; any small fire remaining can then be extinguished.

Should the defect have caused other materials to ignite, and start a more serious fire, it must be dealt with in the ordinary manner, care being taken as far as possible to keep water away from the electrical installation; and at the same time every effort must be made to switch the current off.

In exceptional cases water must not be used until the current is shut. This, however, does not apply to an ordinary electric fire such as might happen in a warehouse lighted by electricity, or where jiggers are worked by electric power.

Dry sand is the best extinguisher of electric fires where it is not expedient to shut off the current, such as when shutting off would bring a section of the Line or a large works to a standstill. Unfortunately, it cannot very often be used in the ordinary electric fires in buildings, owing to the wires being fixed to ceilings, etc.

Defects in electric light and motor wire installations should be immediately reported by anyone to prevent risk of fire.

Special instructions are issued to the staff on the Liverpool and Southport Railway respecting Electric Train Fires, which are as follows:—

(a) Stop train.

(b) Shut off current, if necessary using short circuiting bars carried in each motor compartment. This latter must, however, only be done in emergency, as it means practically stopping the whole section for the time being.

(c) Try to extinguish with sand.

(d) If this fails, or if only the woodwork is on fire, use the extinc-teur.

(e) Insert the insulating paddles between shoes and rail.

This takes considerable time, though if done it will be sure to stop the short circuit on whichever cables or wires it has taken place.

Station Staff must, upon the arrival at a Station of a train on fire, co-operate with the train men to cut off the current by means of the paddles. This must not prevent a plentiful use being made of sand, which is provided in boxes at each Station. If this is not effective, use extinc-teurs and other fire apparatus.

If the fire has occurred through a short circuit between third rails and any portion of a car, it will be advisable to use the wood paddles at once, together with a liberal supply of sand. Should the

steps taken prove ineffective, try to detach vehicle, and run forward to the nearest point or Station where fire appliances are located. Under such circumstances, passengers should be left for the next train to pick up. If possible, send a telephone message to the two nearest Stations.

Do not be deceived by the quantity of smoke which may arise from burning insulation; see, therefore, that whatever appliances you use do effective work where actual fire is in progress. Attention is drawn to the fact that water may cause considerable damage to the electrification equipment, and other fittings of the vehicle.

To Platelayers, Station Staff, and all concerned.

In the event of an arc fire caused by metal falling on power rail forming a connection with another rail, endeavour to cut the arc by throwing sand upon same, and try to remove the obstruction by means of a wood paddle or other non-conductor.

If any woodwork is burning, such as sleepers, bring fire buckets or extincuteur into operation.

The location of public fire hydrants in close proximity to the line, together with those belonging

to the Railway Company, must be ascertained. There are a large number of the former between Formby and Southport. In the event of fire, information must be telephoned to the Power Station, and wired also immediately to the Fire Department at Horwich.

FIRES IN WAGONS.

This class of fire is to be isolated at the earliest possible moment. If the wagon is on a train in transit, every effort must be made to get it forward to the first water supply or Fire Station, and there isolated. In all cases discretion must be used. Often it is possible to check the fire or extinguish it altogether by buckets of water from a locomotive tender or smothering with ballast. After extinction, the wagon (if loaded) must be detained at the nearest Station and watched before being allowed to go forward to make certain that a further outbreak is not likely to occur.

Where goods are thrown off on the line side and left smouldering, the Superintendent of Fire Brigade or Station Master at nearest Station will use his best efforts to extinguish the fire and have the goods removed to his Station at the earliest moment.

A wagon of cotton having arrived at a Station on fire, the following is the best procedure:—If only a portion of the load is alight, the burning bales should be removed and the fire appliances brought into use to check the fire. If the load is well alight the outbreak should be checked with fire appliances or water column before any bales are removed from the wagon. The wagon should be placed in a convenient position for using fire hydrant and removal of bales without causing unnecessary damage by their getting in mud and dirt, etc. Each bale should then be taken separately and the fire extinguished by plucking out the material and soaking it in fire buckets. The fire loss is kept down by keeping bales whole. No bands should be removed, as loose cotton on fire is worse to deal with than solid bales.

If it is a load of bags of cotton or waste, the bags should, as far as possible, be kept intact and separate. The loose cotton must not be scattered, as it is bad to recover and causes heavier loss. After the blaze is checked the burning cotton must be plucked out and extinguished by use of the fire buckets. In each case the hose must be kept attached to the hydrant ready to check the fire should it show signs of getting away.

The following points are to be borne in mind when dealing with cotton:—It must never be assumed that

the fire is out and left too soon. Water damage to sound bales and bags is to be averted as far as is possible with safety, and the burnt cotton should not be placed where it is liable to pick up mud and dirt. The bands must not be taken off.

The same directions apply with wagons of esparto, jute, hay, straw, and other fibres.

In dealing with wagon of yarn, the same precautions are to be taken as with cotton, respecting the extinction of fire and means taken to prevent loss by water, removal, and dirt. This is best accomplished by leaving the cops in the skips and preventing rough handling.

When the vehicle contains lime, the lime near the burning part should be thrown out and fire extinguished by smothering or judicious use of a small quantity of water.

If coke, the wagon should be placed under water column or flooded by using the hose without branch attached.

Reckless use of water and careless removal of goods causes extra damage.

CARBOYS OR BOTTLES OF ACID.

SHOULD THESE ARTICLES FROM ANY CAUSE BREAK, GREAT CARE MUST BE EXERCISED AGAINST INHALING THE FUMES. IF THE SPILT ACID IS IN A ROOM, NO ONE SHOULD ENTER. THE FLOOR SHOULD BE FLOODED WITH WATER BY PLAYING THROUGH AN OPEN DOOR OR WINDOW. ACID FUMES MAY BE APPARENTLY HARMLESS AT THE TIME, BUT THE AFTER-EFFECTS ARE OFTEN SERIOUS, AND IN SOME CASES FATAL.

The Company's Regulations for Prevention of Fire are to be strictly observed, and Superintendents of Fire Brigades must recollect that their's is a preventive as well as a protective duty.

SEALED HYDRANTS.

Where hydrants are supplied by water without passing through a meter they are usually sealed by the Water Authorities, and this seal has to be broken to bring them into use. In such cases, after the fire is extinguished, notice must be sent to the local Water Office. At those Stations where seals are fixed to hydrants or landing valves, the same are to be tested every six months. To do this due notice

must be given to the Water Authority of the District, so that their representative may be present to re-seal the valves after use. FIRE DEPARTMENT TO BE ADVISED WHENEVER SUCH VALVES HAVE BEEN RE-SEALED.

BYE-PASS VALVES.

Another arrangement adopted at some of the Stations on the System is a Sealed Bye-pass Valve. This method also is only adopted where the water to the hydrant does not pass through a meter. In case of fire this valve must be opened to get the pressure on the hydrants.

The same rules apply to the sealing of bye-pass valves as to hydrants.

In all cases of failure of water supply to fire hydrants the District Hydraulic Fitter must be at once informed by wire.

HAND PUMP IN BUCKET.

There are two types, small (London) and large (Manchester) pattern. Their special use is to enable small quantities of water to be used effectively and economically in the extinction of small fires.

The buckets are to be kept clean to prevent the small pump valves becoming choked. The leathers on plungers must be frequently lubricated with oil to keep them soft.

To test the pump:—The delivery outlet must be covered with the thumb and the piston worked for a few strokes and then released at bottom of the down stroke. If piston is a proper fit and water-tight, it will rise upward by reason of the compressed air in the delivery chamber. If this does not happen the pump is not in good order.

FIRE BUCKETS.

Special care is to be taken to have fire buckets kept filled with clean water, situated in recognised positions and examined daily. It is imperative that they be used only for the purpose for which they are provided.

In frosty weather, exposed buckets are to be removed to protected positions and replaced when the frost breaks.

MANUAL FIRE ENGINES.

The essential point in the maintenance of Manual Engines is to keep the leathers on the pump rams

soft and well oiled. This is best done by keeping the leathers in the cylinders covered with rape oil.

To test the appliance on the suction side:—The palm of the hand must be placed over the suction inlet and the levers worked up and down for a few strokes to exhaust air from the pump. If all is in good order the hand will feel as if it were being sucked into the orifice.

To try the delivery side:—The palm must be placed over the outlet and the levers worked for a few strokes, when the pressure will be felt blowing the hand away from the opening if the valves are working correctly.

When testing the pump with water, the cylinder should be examined to see if any water passes the leathers. If it does so, the leathers require renewing.

The bearings of the rocking shaft are to be kept well oiled.

SUCTION PIPES.

The suction couplings must be kept perfectly clear, and the washers in the couplings soft and in good order. If this is neglected, tight joints cannot be made, and the utility of the machine as a pump is greatly reduced, or the pump rendered useless.

A set of spanners are supplied to tighten the suction couplings.

The suction is to be well drained after use. Care should be taken to keep all india-rubber appliances free from oil, as it destroys the material.

Arrangements have been made for working Manuals direct from fire hydrants, so as to get the benefit of the pressure in the mains. This is done by using ordinary stand-pipe and hose which is coupled up to the suction inlet of the engine by means of a special "He" connection.

GETTING ENGINE TO WORK.

In case of four-wheeled machines the fore carriage must be squared and locked with the locking pin to be found on the pedestal. The pole and sway bars or shafts must be placed on the ground to allow room for pumpers to work. The levers should then be turned over and secured, and the suction and delivery hose attached to their respective couplings on the machine, and nozzles fixed. When all is ready the levers are unlocked, and work commenced.

The number of pumpers to be employed can be gauged by the length of the levers on each machine. They are to be placed as near together as convenient without impeding the movements of each individual.

After working dirty or salt water, the engine must be worked for five minutes with clear water on return to Station.

STEAM FIRE ENGINES.

These appliances must be maintained in perfect condition, both as to efficiency and cleanliness. In the event of any defect being discovered whilst working at a fire or drill, it must be remedied at the earliest possible moment.

The boiler fire is to be laid as follows:—A thin layer of coal is placed on the fire bars, then shavings, then wood in pieces of about 9 in. by $\frac{3}{8}$ in. square—enough to ensure a good fire—then covered with coal.

When pressure gauge registers 20 lb. the steam blast may be used to facilitate the draught in furnace.

The cylinders and steam chest must be gently warmed, and the drain cocks opened, before starting the engine.

When 100 lb. pressure is recorded the engine can be started.

When starting, one blast on whistle must be sounded, and when stopping, sound two blasts.

Whilst working, the steam pressure must be maintained as steadily as possible. If making too much steam, the fire-box door should be opened and the fire pierced in the centre. If losing steam, the fire-box door should be closed, the steam jet turned on, the fire lifted, and, if necessary, the pump checked for a short time.

The fire should be kept spread evenly over the bars, and not allowed to cake.

Water should be maintained half-way up the gauge glass. The supply is taken from the pump or tank feed when running and from injectors when standing.

If allowed to make too much water, priming will take place, or if allowed to run short, serious damage will result to the boiler.

If the boiler primes, the fire should be checked, pet cocks on cylinders and steam chests opened, feed started, and gauge glasses watched. If no water shows in the glass, the fire must be drawn. If no damage shows itself, as boiler refills the fire can be replaced and work commenced.

In all cases of priming it is most important that prompt attention be given to ascertain quantity of water left in boiler.

In the event of failure of all feeds, the fire must be withdrawn at once.

Should a tube burst whilst at work, the engine should be kept running, pump-head feed and injectors started, then fire drawn. If not running, the engine should be at once started to work tank feed, and injectors put on and fire drawn. This will help to limit damage.

Whilst working, the water bags should be secured to hind wheels to protect them from heat of fire-box.

Lubricators are to be kept charged, and worsted renewed when required.

On no account is water to be thrown into fire-box to cool same before relaying fire.

Motions are to be turned at least once each day.

Engine is to be run with steam once each month and a record kept of time taken to obtain 100 lb. of steam, at the same time all joints and gland packings are to be examined.

After pumping dirty or salt water, the pumps are to be thoroughly washed by working with clean water

for a short time, and finally all water is to be blown out of the pump.

The boilers of engines are to be examined as follows:—At the end of one year fire bars and funnels removed, fire bars and tubes examined as far as possible; at the end of the second term of twelve months the ring joint is to be broken and boiler dropped to enable Boiler Inspector to make a thorough examination.

At the same time pumps, if necessary, will be examined, leathers and valves renewed, and other needed repairs executed.

STATIONARY AND FLOATING FIRE PUMPS.

These pumps are to be examined every eighteen months, valves and leathers renewed if necessary, and other repairs executed.

In no case is a land stationary or floating fire engine to be disabled for repair without acquainting Fire Department by wire.

HOSE.

Care must be taken to maintain good soft washers in the "She" couplings of the Standard end and Screw pattern; and in the "He" coupling of Watkinson's type.

It injures hose to drag it over the ground, and Superintendents are specially cautioned not to allow this to be done, except in cases of emergency.

After wet drill the hose must be washed, thoroughly drained, and well dried, before being put away.

Care should be taken to see that it is dry inside as well as outside. In several instances hose put away apparently dry has been found wet and mildewed a few days afterwards from want of thorough drying.

After dry drill, hose should be brushed before being replaced in cupboard.

All hose must be made up neatly, and care must be taken to keep the centre coupling tight, so that it may be run out without kinks.

Each length should be used in rotary order to prevent undue wear of any one piece.

Hose is usually kept rolled upon the "She" coupling in case of the Standard, and upon the "He" coupling in the Watkinson's and Screw types.

HELMETS, BELTS, POUCHES, AXES, AND LIFE LINES.

These must be kept clean and in good repair, ready for immediate use. Cutting edges are to be maintained on the axes. Life lines should be periodically tested to ensure reliability.

GENERAL REPAIRS.

When a defect is discovered in a fire appliance, the article is to be sent forthwith for repair, addressed Fire Department, HORWICH, and in every case a repair note, properly filled up, must be sent at the same time.

CLEANLINESS.

All appliances, cupboards, and Fire Stations are to be kept scrupulously clean.

VEHICLES.

All vehicles should be examined after a turn-out to see that all nuts are tight on axles, springs, and axle-boxes. Axle bearings must be kept well lubricated to ensure easy running.

SPECIAL NOTICE.

FIRE APPLIANCES ARE PROVIDED FOR EXTINCTION OF FIRE, AND MUST NOT BE USED FOR ANY OTHER PURPOSE.

GENERAL REGULATIONS TO BE OBSERVED IN COMPANY'S WAREHOUSES, OFFICES, AND STATIONS FOR PREVENTION OF FIRE.

Safety lamps to be used for lighting gas in all Goods Yards, Warehouses, Sheds, and Passenger Platforms.

Matches not to be used in Warehouse or Sheds.

Gas lamps and gas fittings to be kept in thorough repair.

Lighted oil lamps must not be placed on any merchandise, or left on the floors of any Warehouses.

Oil lamps to be kept in thorough repair.

A gangway of at least 3 feet wide to be kept clear through each room in Warehouses.

Staircases, Communication Doors, and Fire Escape Doors. to be kept clear of all storage.

No loose cotton to be allowed to accumulate on the floors, but to be placed in tares or skips.

Sweepings or other rubbish to be removed from buildings, and not allowed to accumulate.

Smoking in and about Company's Premises not to be allowed, except where authorised.

Fire-guards must be fixed round fires in Parcel Offices and Booking Offices used as Parcel Offices.

Fires in Offices, Porters' Rooms, and Waiting Rooms not to be made up too large (as it is exceedingly dangerous, and also wasteful), but must be allowed to burn low some time before closing.

Fires not to be raked out on to hearthstones, but allowed to die out.

In case of fire, the Brigade is to be immediately called to the outbreak, and doors or windows are not to be opened unnecessarily.

Cotton, textile, and other goods liable to fire should be thoroughly sheeted.

IN CASE OF FIRE, INFORMATION TO BE SENT BY WIRE IMMEDIATELY TO FIRE DEPARTMENT, HORWICH.

STEAMER DRILL.

Four Men.—

Suction, Dam, and three lengths of Hose and Branch off one delivery.

No. 1, first and third length of Hose and Branch; No. 2, second length of Hose; No. 3, Unship Ladders; No. 4, Hand out Appliances; Nos. 3 and 4 together, set up Dam and fix Suction.

Six Men.—

Suction Dam and one length of Hose off each delivery, siamesed with Breeching, two into one, length of Hose and Branch.

No. 1, first length of Hose off Side Delivery and Branch; No. 2, first length of Hose near Side Delivery; No. 3, two into one Breeching and length

of Hose; Nos. 4 and 5, unship Ladders and set Dam and Suction; No. 6, fix Stand-pipe and assist Nos. 4 and 5.

Eight Men.—

Hydrant, Dam, Suction, and two lengths of Hose off each delivery.

No. 1, first length of Hose near Side Delivery; No. 2, second length of Hose and Branch near Side Delivery; No. 3, first length of Hose off Side Delivery; No. 4, second length of Hose and Branch off Side Delivery; No. 5, unship Ladders and set up Dam; No. 6, Hand out Gear (Nos. 5 and 6 fix Suction); No. 7, Stand-pipe; No. 8, one length of Hose from Stand-pipe to Dam.

HOSE CART AND CUPBOARD DRILLS.

No. 1 Drill, Two Men.—

Stand-pipe, one length of Hose and Branch.

No. 1, Stand-pipe; No. 2, Hose and Branch.

No. 2 Drill, Three Men.—

Stand-pipe, one length of Hose and Branch.

No. 1, Stand-pipe; No. 2, first of Hose and Branch; No. 3, Hand out Appliances.

No. 3 Drill, Four Men.—

Stand-pipe, two lengths of Hose and Branch.

No. 1, Stand-pipe; No. 2, first of Hose; No. 3, second of Hose and Branch; No. 4, Hand out Appliances.

No. 4 Drill, Five Men.—

Stand-pipe, three lengths of Hose and Branch.

No. 1, Stand-pipe; No. 2, first of Hose; No. 3, second of Hose; No. 4, third of Hose and Branch; No. 5, Hand out Appliances.

No. 5 Drill, Six Men.—

Stand-pipe, four lengths of Hose and Branch.

No. 1, Stand-pipe; No. 2, first of Hose; No. 3, second of Hose; No. 4, third of Hose; No. 5, fourth of Hose and Branch; No. 6, Hand out Appliances.

The drills Nos. 2 to 5 can be used for practice from cupboards by omitting the last man in each drill, necessitating each man taking his own appliances.

In Hose Cart or Cupboard Drills for two or more lengths of Hose.—The quickest method is to lay the first coupling on the floor for No. 1 to put his foot

upon. No. 2 then takes the "He" coupling of No. 3, and No. 3 takes the "He" coupling of No. 4, and so on to whatever number of lengths of Hose in use.

GETTING TWO BRANCHES TO WORK BY AID OF BREECHING.

Select men not engaged at Stand-pipe or Branch.

As in No. 2 Drill, No. 3 is disengaged.

No. 2 Drill, Three Men.—

Get one into two Breeching; length of Hose and Branch; lay out gear ready; turn off water, couple up Breeching, and turn on water.

No. 3 Drill, Four Men.—

Nos. 2 and 4 are available. No. 2, Breeching; No. 4, length of Hose and Branch.

No. 4 Drill, Five Men.—

Nos. 2, 3, and 5 are available. No. 2, Breeching; No. 3, length of Hose and Branch; No. 5, Appliances.

ADDING A LENGTH OF HOSE WHEN A BRANCH IS AT WORK.

It is often essential that no stoppage of water should take place; but when this operation has to be performed, the stoppage must be limited to the shortest possible time. The best place, as a rule, to add a length of hose is between the last length and the branch, and the addition should always be made at that place unless ordered otherwise.

Upon the order being given "Add a length of hose," the hose is to be run out, leaving the "He" connection near the branchman and returning the "She" coupling to the same place. Give the order "Turn off," disconnect branch, put it on new length, couple the hose together, and give order "Turn on." If ordered to be placed between any other particular lengths, the couplings are laid down near the unions selected, and work done in the same way. The man at the branch can then approach nearer the fire.

REPLACING A BURST LENGTH OF HOSE.

Upon this order being given, unless the water is doing a great deal of unnecessary damage, keep the water on until all is ready, run out a fresh length of

hose beside the defective length. Give the order "Turn off," break the joints of defective length, insert sound length, and give order "Turn on."

If time will not allow the damaged length to be rolled up, put a large overhand knot near the end, or if rolled up it must be from the "He" coupling, to denote that it is defective and not to be used.

TAKE OFF THE LAST LENGTH OF HOSE.

Upon the order being given, have water shut off, branch disconnected and placed on next length at rear and water turned on again.

NOTES.

Hose must be laid out without sharp turns or twists. The first length of hose is always that next to the source of supply, the last length that to which the branch is attached.

Firemen are cautioned against mounting ladders with a line of hose over their shoulders, when carrying same to a roof. To prevent accidents, a "line or

rope" should be taken aloft, the end sent down, hose secured to same, and then hauled up and secured if necessary.

WHISTLE CALLS.

Turn on water	Long Call	0
Turn off water	Two Calls	00
Make up	Three Calls	000
All men not engaged to report themselves to Officer in charge.....	Four Calls	0000

SCALING LADDER DRILL.

At the order "Raise ladders," three men step forward, and are numbered 1, 2, and 3. No. 1 and 2 take their place back to a wall; No. 3 in front, with a ladder.

At the order "One," No. 3 passes ladder to No. 1, who grasps the ladder at the middle with both hands, fingers outside, thumbs behind. "Order Two." The ladder is tossed up and caught six inches from the bottom. "Order Three." No. 3 places next length

under and inserts head in sockets of No. 1 length. No. 3 then makes sure that the ladders are secure. Adding additional lengths. At the order "One," Nos. 1 and 2 stoop down and grasp the bottom round, the left hand of No. 1 and the right hand of No. 2 touching, backs out, fingers in, and the sides of the ladders as before, fingers to the front, thumbs behind.

At order "Two," Nos. 1 and 2 rise to upright position, raising ladders at same time by help of their shoulders.

At order "Three," lift ladders above head.

At order "Four," No. 3 inserts next ladder.

At order "Five," Nos. 1 and 2 let go and No. 3 inspects to see if joint is secure.

SPECIAL NOTICE.

Detachment of the Company's Fire Brigade, with Steam Fire Engines and Appliances, are available to attend serious fires on the Company's property, threatening the Company's property, or interfering

with the working of traffic. To secure attendance send telegram prefixed D.G.,

FIRE DEPARTMENT,

HORWICH,

giving briefly the facts of the case and expressly stating whether assistance is required.

In all cases information is to be sent by telegram, prefixed S.P., without delay, to

FIRE DEPARTMENT,

HORWICH.

When cotton wagons are involved, state whether ten, twenty, or thirty tons, and number of bales smouldering.

In serious cases, a detachment of Firemen will be sent to extinguish fire in smouldering cotton and secure the goods from further deterioration. Hence need of information being explicit.

Fires at which the Company's Fire Brigade assist, whether ON or OFF Company's premises, are to be afterwards reported to the heads of the Department concerned, and to the Chief Mechanical Engineer, HORWICH, in every instance.

The information required is shown on the following pages.

REPORT OF FIRE

Date and time when fire broke out

Place where fire occurred

Description of fire.....

Cause of fire

How extinguished.....

By whom first discovered

Alarm given by

Alarm received at.....

Commenced to throw water at

Fire extinguished at.....

Time occupied

Source from whence water was obtained

Appliances used.....

Damage to engine or appliances

Owner of property damaged

PARTICULARS OF DAMAGE BY FIRE, Etc.

PARTICULARS OF MEN EMPLOYED, Etc.

Name.	Position in Brigade.	On or Off Ordinary Duty.	Time occupied.	
			Hours.	Mins.

REPORT OF FIRE ON TRAIN.

Fire at..... Time..... Date.....

Train

Fire discovered by..... Place..... Time.....

Where stopped..... Distance.....

No. of wagon..... Labelled from.....to.....

Position of wagon

Time started to extinguish Time extinguished

Appliance used

Water obtained from

No. of sheets used

Was load covered?

Specify short sheeting.....

No. of engine Shed

Driver..... Fireman.....

Guard..... Station.....

Owner of property damaged

PARTICULARS OF DAMAGE.

PARTICULARS OF MEN EMPLOYED, Etc.

Name.	Position in Brigade.	On or Off Ordinary Duty.	Time occupied.	
			Hours.	Mins.