A Handbook for

AUXILIARY FIREMEN

United States

OFFICE OF CIVILIAN DEFENSE

Washington, D. C.

Handbook for

AUXILIARY FIREMEN

Prepared by the Training Section U. S. Office of Civilian Defense

Approved by the Advisory Committee on Fire Defense

United States

OFFICE OF CIVILIAN DEFENSE

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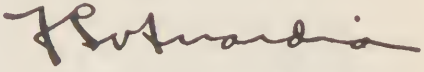
ORGANIZATION OF AUXILIARY FIREMEN

Fire fighting is one of the most important factors in the program for civilian defense. In the event of attack a 2-pound incendiary may do more damage than a 2,000-pound explosive. An open and forthright attack, however, is not the only means by which serious damage may be inflicted. Widespread sabotage by arson constitutes an increasing element of danger.

Regular fire departments do not have sufficient men or equipment to combat either an incendiary attack or an organized campaign of arson. As the United States Director of Civilian Defense, I urge that auxiliary fire-fighting forces be organized at once. I urge also that the auxiliary forces be trained in fundamental fire-fighting practices. We must provide increased protection against fire now.



F. H. LAGUARDIA
U. S. Director Civilian Defense.

INTRODUCTION

By an auxiliary fireman is meant one who has been enrolled by the regular fire department and whose function is to assist the department in the event of an emergency related to the national defense in the manner prescribed by the fire department officer in command.

For the most part the training of the auxiliary fireman must be done locally. To be most effective, the training should be given by experienced firemen who have themselves been thoroughly schooled in fire fighting. Many city departments and many States have acceptable fire training programs. These should be utilized to the utmost both for the training of regular firemen and of the auxiliaries.

The material in this handbook covers, in an introductory fashion only, the job of the auxiliary fireman. It is not intended to supplant existing fire training programs nor is it intended to serve as a substitute for such a program, although it will prove useful where no program is provided. It is designed to help the auxiliary fix clearly in his mind some of the fundamental principles to be followed in fire fighting. It is designed also to give the regular fireman, who may be serving as instructor, a base around which he can organize his instructional materials.

SPECIAL PROBLEMS

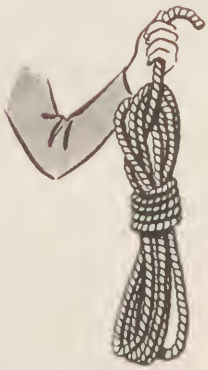
The auxiliary fireman needs much information concerning problems peculiar to his own community. He can obtain this information only by a study of local conditions. He needs to know:

1. The organization, activities, and responsibilities of the fire department, and its relationship to other municipal agencies; the departmental rules and regulations pertaining to all firemen.
2. How the fire-alarm signaling service works. This includes a knowledge of the action taken by the individual firefighter, and by the fire department when a signal is received.
3. The geography of the district. This includes:
   - A. Location of alarm boxes.
   - B. Location of unusual hazards such as chemicals, oils, gases, and refrigerants.
   - C. A study of the layout and conditions of the streets.
   - D. Location of usable hydrants.
   - E. The water system. The auxiliary fireman should become thoroughly acquainted with the various emergency sources of water supply in his sector such as tanks, wells, and swimming pools.

COILING ROPE
ON GROUND

HOLD COIL IN HAND
TO START TIE

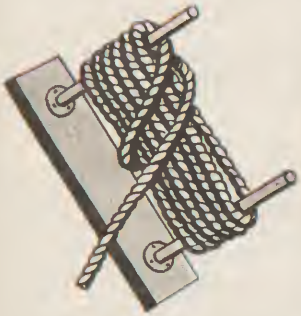
WRAP END OF ROPE
AROUND CENTER
OF COIL



PASS LOOSE END OF ROPE
THROUGH LOOP OF COIL

USES OF ROPE

Rope is indispensable in fire fighting. Demonstration and explanation of the uses of rope by the instructors are necessary together with much actual practice by the student. The following knots have widespread usage in fire fighting. You may have need of others. Learn the knots your department believes most essential and practice them until you can tie or untie them in the dark. The knot you tie should be recognizable by another fireman in the dark.



COILING ROPE ON COILING RACK

PREPARING ROPE FOR BACK CARRY

METHOD OF CARRYING ROPE ON BACK

TO DROP ROPE TO GROUND HOLD LOOSE END, DROP COIL

Half hitch—the basis of many knots.

Beckett bend—for tying two ropes together.

Clove hitch—used in hoisting tools.

Chimney hitch—for anchoring a rope to a solid object.

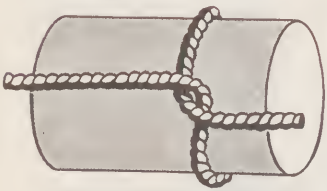
Rolling hitch—used to tie hose on top of building.

Bowline—used for ladder work or wherever loop on end of line is necessary.

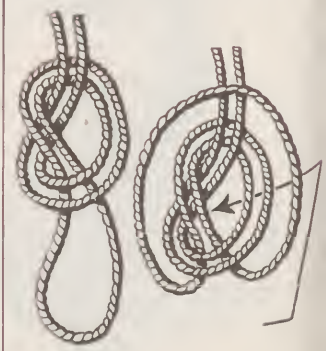
Bowline on a bight—for rescue work.

Sheepshank—for taking up slack in line.

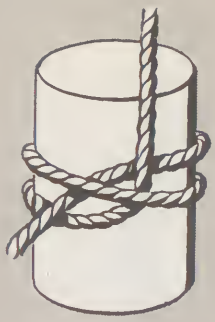
Each of the knots illustrated has more than one use. Practice these and other knots which may be suggested until you become proficient. Learn how to use a rope and how to coil it properly.



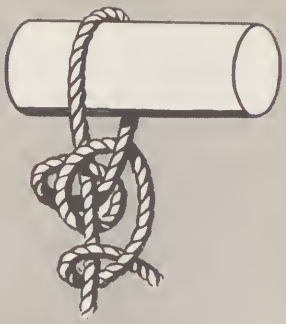
HALF HITCH



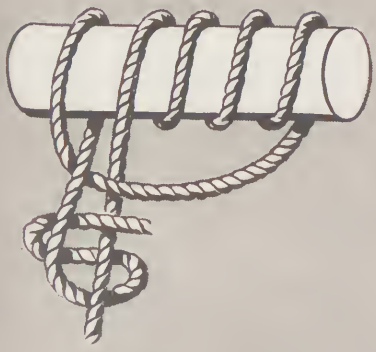
BOWLINE ON A BIGHT



CLOVE HITCH

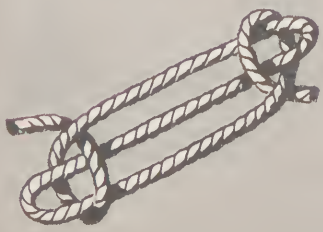


CHIMNEY HITCH



ROLLING HITCH

BOWLINE



SHEEPSHANK

BECKET-BEND

CLOVE HITCH
& TWO HALF HITCHES

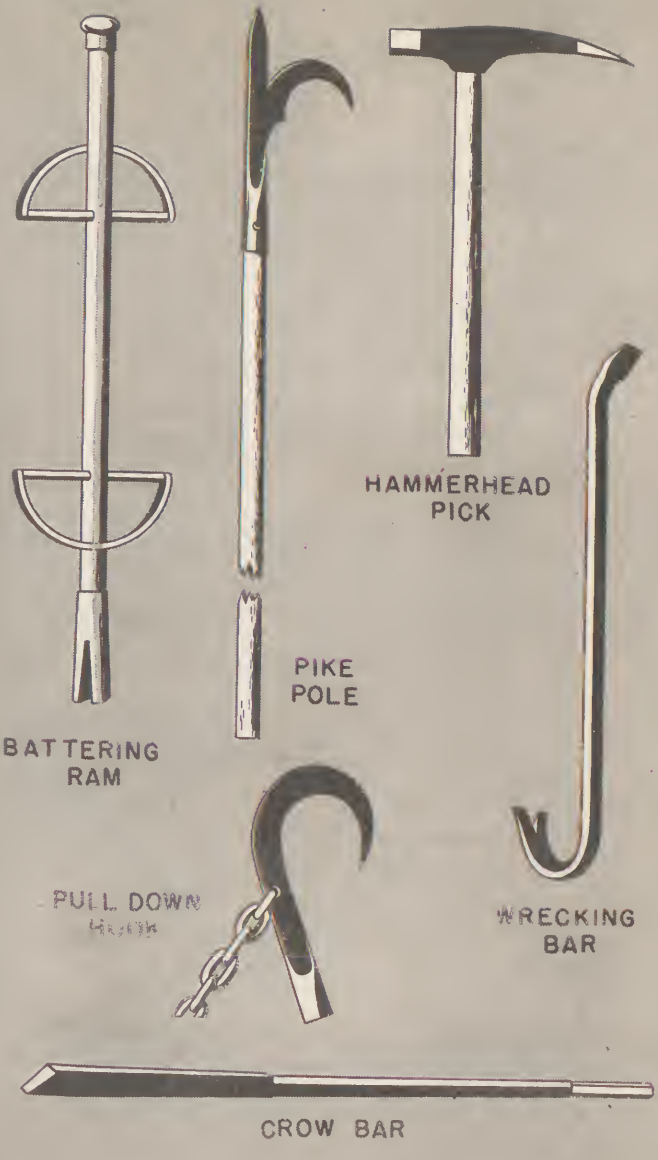
DOUBLE LOOP

TOOLS AND APPLIANCES

Following are illustrated some of the standard tools and appliances used by the fire services. Learn how to use them properly.

FLATHEAD AXE

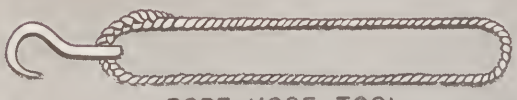
PICKHEAD AXE


BATTERING RAM
PIKE POLE
HAMMERHEAD PICK
WRECKING BAR
PULL DOWN HOOK
CROW BAR

KELLY TOOL

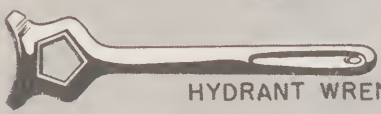
CLAW TOOL

HOSE AND LADDER STRAP



ROPE HOSE TOOL

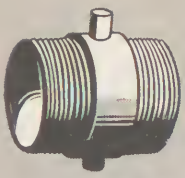
SPANNER WRENCH



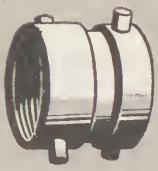
HYDRANT WRENCH

PIN LUG

ROCKER LUG



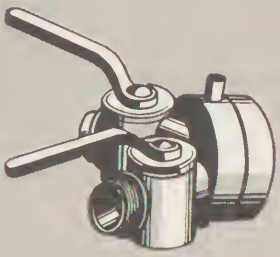
DOUBLE MALE CONNECTION



DOUBLE FEMALE CONNECTION

REDUCING COUPLING

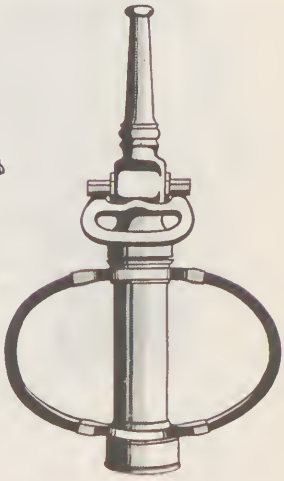
WYE



CELLAR NOZZLE

SIAMESE

HOSE CLAMP

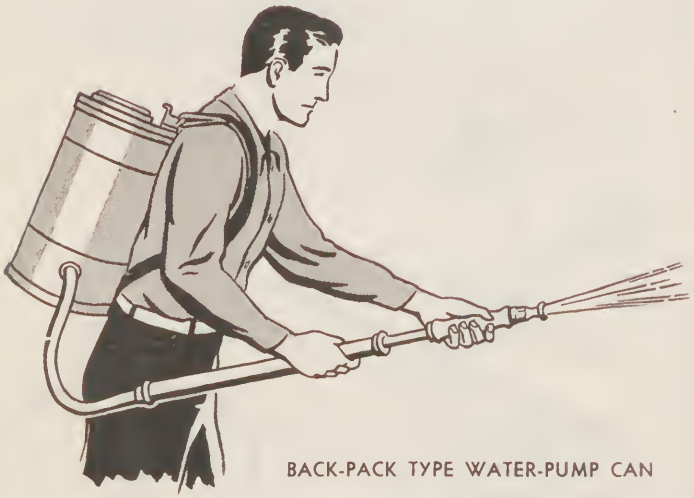


SHUT-OFF AND NOZZLE

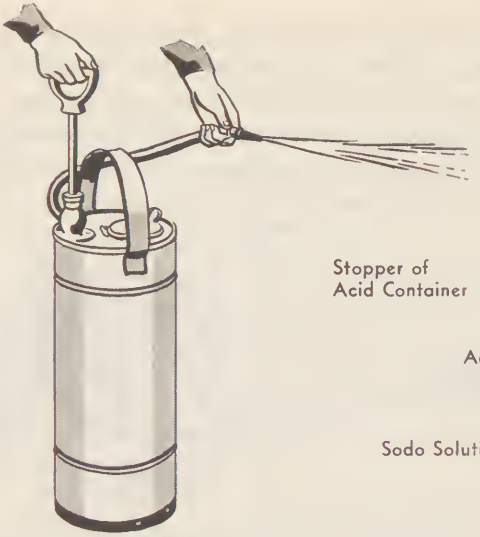
EXTINGUISHERS FOR SMALL FIRES

It has been said that a pint of water at the proper time is worth more than a reservoir full when a fire is out of control. To extinguish a fire, it is necessary to eliminate one of the three essential factors making the fire possible—fuel, oxygen, or heat. Most small extinguishers absorb the heat, as water will do, or smother the fire by cutting off the supply of oxygen, or employ a combination of these effects.

Extinguishers are most effective in the hands of persons who have had training and experience in their use. Extinguishers must be kept in operating condition by careful maintenance. All types require recharging after use and most types require recharging annually, if not used.



BACK-PACK TYPE WATER-PUMP CAN



ANOTHER TYPE OF PUMP CAN

A WATER SOLUTION EXTINGUISHER
Soda-Acid Type

Water Pump Cans

Portable water pump cans, usually carrying 4 gallons of water, can be used effectively for small fires. They are equipped with a hand pump capable of discharging a stream of water from the nozzle to a distance of 10 to 30 feet.

Water Solution Types (Soda-acid, Plain Water, Antifreeze solution, Loaded Stream.)

These extinguishers look much alike and are similar in operation. The commonest size is $2\frac{1}{2}$ gallons capacity. The soda-acid type has a chemical solution employing bicarbonate of soda and sulphuric acid. The acid is in a bottle in the

top of the extinguisher and the soda is dissolved in the water. When the extinguisher is turned bottom end up, the chemicals are thrown together and carbon dioxide is generated. The gas expels the water under pressure forming a stream which is effective for distances of from 30 to 40 feet.

In the other types the pressure to expel the solution is generally obtained from a carbon dioxide cartridge. In addition to turning these bottom up, they must be bumped on the ground. Bumping punctures the cartridge seal releasing the gas.

The soda-acid and plain water types must be protected from freezing but the solutions in the antifreeze (calcium chloride) and the loaded stream types are designed for use in locations where ordinary water solutions would freeze.

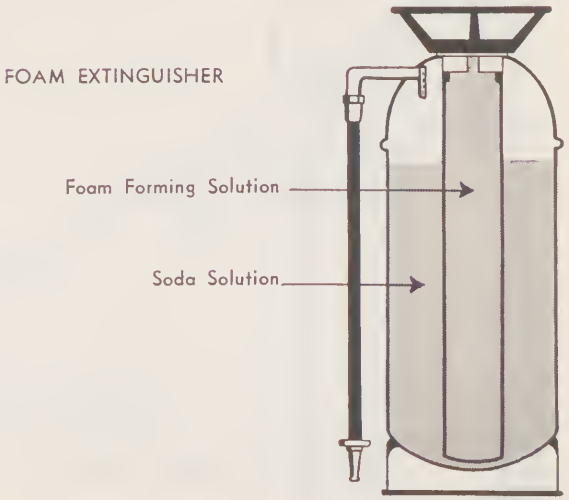
Water is the principal extinguishing agent in each of these types. They are particularly suitable for small fires in ordinary combustibles (paper and wood for example) where the cooling effect of water is of primary importance. They are not effective on flammable liquids in open vessels, for example, and should not be used on electrical fires such as

panel boards, switchboards, and motors. The loaded stream type employs an alkali-metal salt solution which is somewhat more effective than plain water on fires in ordinary combustibles and is also useful in fighting fires in flammable liquids.

The Foam Extinguisher

Foam type extinguishers contain two solutions which are kept separated until the extinguisher is inverted. The chemicals used are bicarbonate of soda, aluminum sulphate, and a stabilizing agent. When the extinguisher is inverted, the chemicals produce not only the foam but sufficient pressure to expel the foam.

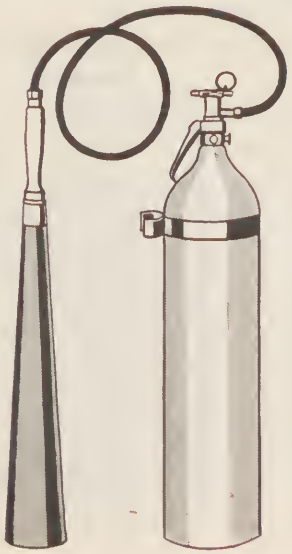
The principal extinguishing agent consists of minute bubbles of carbon dioxide gas entrapped in walls of insoluble aluminum hydrate. A blanket of bubbles is formed which excludes the oxygen



and at the same time cools the surface of the burning material. The foam will coat both horizontal and vertical surfaces with a heat insulating layer which clings wherever applied. Foam floats on the surface of water and also on the surface of practically all oils.

The commonest size foam extinguisher has a $2\frac{1}{2}$-gallon capacity. It is primarily a water-solution unit and requires protection from freezing. It is effective in fires in both ordinary combustibles, where cooling is needed, and on fires in small quantities of flammable liquids and greases (in vats and open vessels) where the foam may be retained as a blanket to smother the fire.

Do not shoot the foam directly into the fire. Apply it at the edge of the burning area, gradually covering and smothering the fire.



CARBON DIOXIDE

Vaporizing Liquid Extinguishers (Carbon Tetrachloride)

Since water is a conductor of electricity, its use in fires involving electrical equipment may make conditions worse.

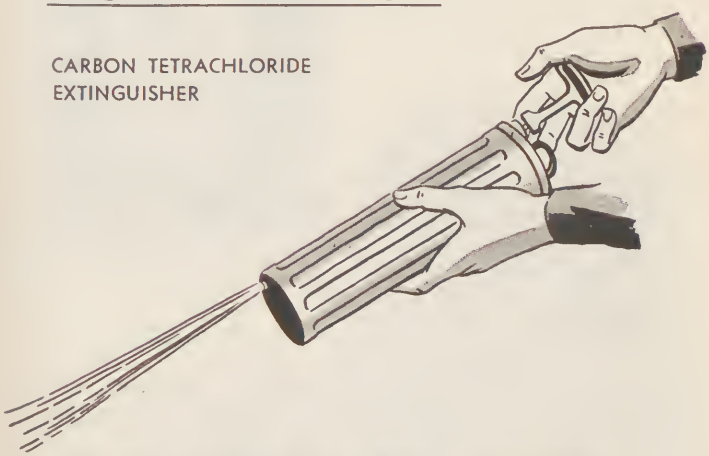
The vaporizing liquid extinguisher expels a stream which is a nonconductor of electricity. It is a nonflammable liquid, principally carbon tetrachloride. Common sizes are 1- to $1\frac{1}{2}$-quart capacity operating by a pump. They will throw a fine stream of liquid 20 to 30 feet.

The liquid vaporizes, forming a blanket of smothering gas, which will effectively smother electrical and other fires.

Apply the liquid around the fire allowing the liquid to vaporize and to act as a blanket.

CAUTION.—Do not use vaporizing liquid extinguishers in a confined space.

CARBON TETRACHLORIDE EXTINGUISHER



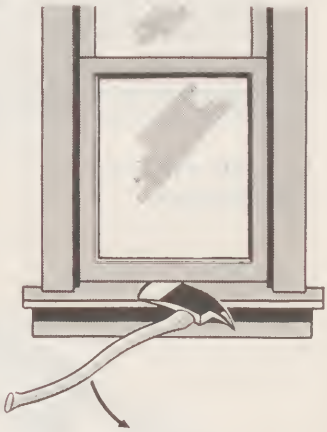
Carbon Dioxide and Dry Compound Extinguishers

These extinguishers give off a cloud of smothering gas (plus a suspended inert dust in the case of

the dry compound type) discharged through a special shaped nozzle, and are designed for use at close range.

These extinguishers are effective on small flammable liquid fires, on surface fires in ordinary combustibles, and they are especially effective on small fires in electrical equipment where a nonconducting extinguishing agent is of importance.

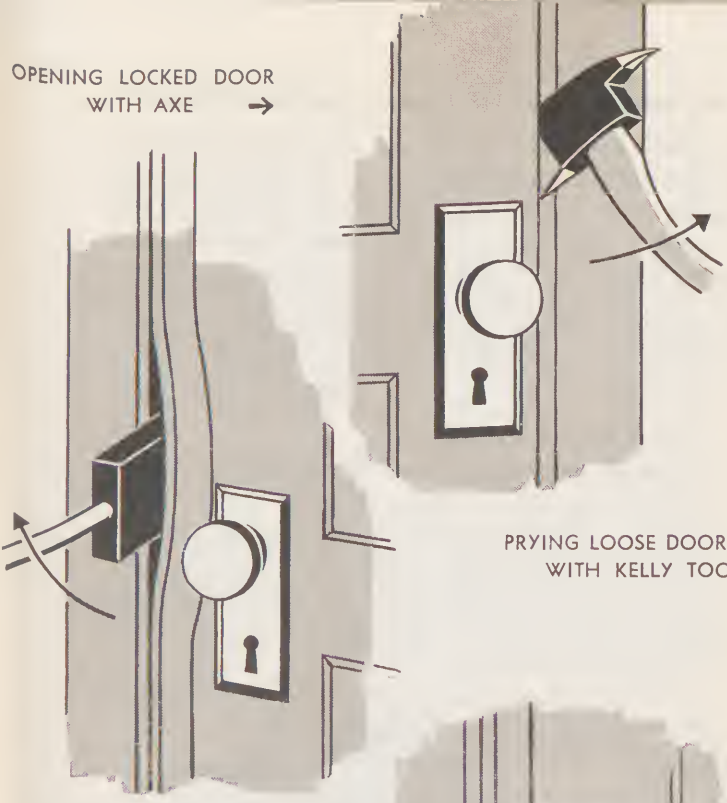
FORCIBLE ENTRY



OPENING WINDOW WITH AXE. INSERT BLADE AND PRESS HANDLE DOWN.

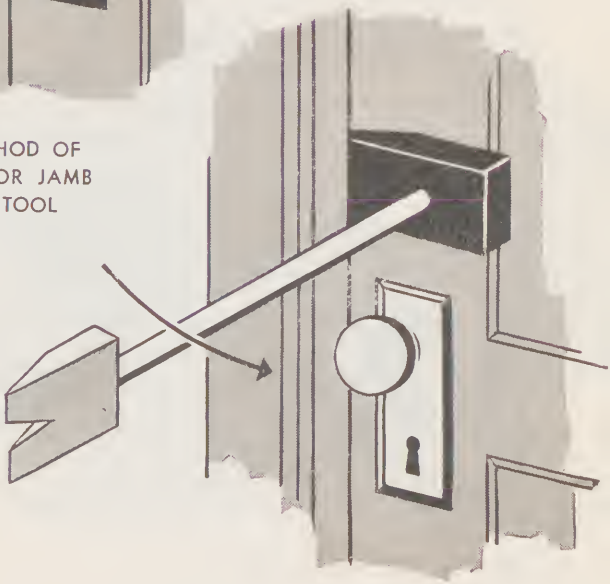
Force is often necessary to get at the base of a fire which may have started in a locked building or in an inaccessible attic or other space. The auxiliary fireman must exercise care that in his zeal to protect property from destruction by fire, he does not destroy more property than the fire.

OPENING LOCKED DOOR WITH AXE →



PRYING LOOSE DOOR JAMB WITH KELLY TOOL

ANOTHER METHOD OF LOOSENING DOOR JAMB WITH KELLY TOOL

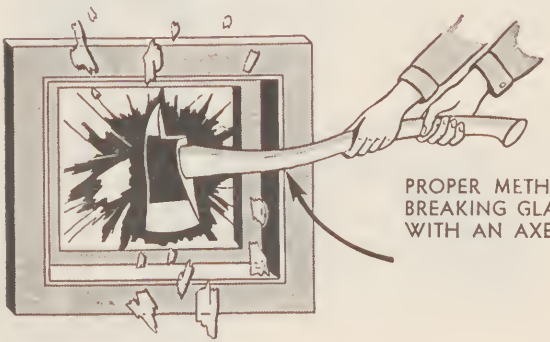


Opening Locked Doors and Windows

Before forcing an entrance, be sure that doors and windows are not unlocked. If the door has a glass panel, break the glass, and on most doors it is then only necessary to turn the handle on the inside. Determine which way the hinges are fastened so as to know which way to force the door open. If there is no glass panel, a Kelly tool, claw tool, or the edge of an axe may be used to force open the door with little or no damage, depending upon the construction of the door.

In opening windows insert the end of a jimmy or the blade of an axe under the lower edge of the window. This will either loosen or break the lock. If the window swings on pivots at the sides, insert the tool at the top and force the window outward. Another procedure would be to break the pane of glass in order to unfasten the lock or catch.

Prying with a wedge is the principal operation in opening both doors and windows. If the wedge be wide and thin, the entry may be forced with little damage to the building.



PROPER METHOD OF BREAKING GLASS WITH AN AXE

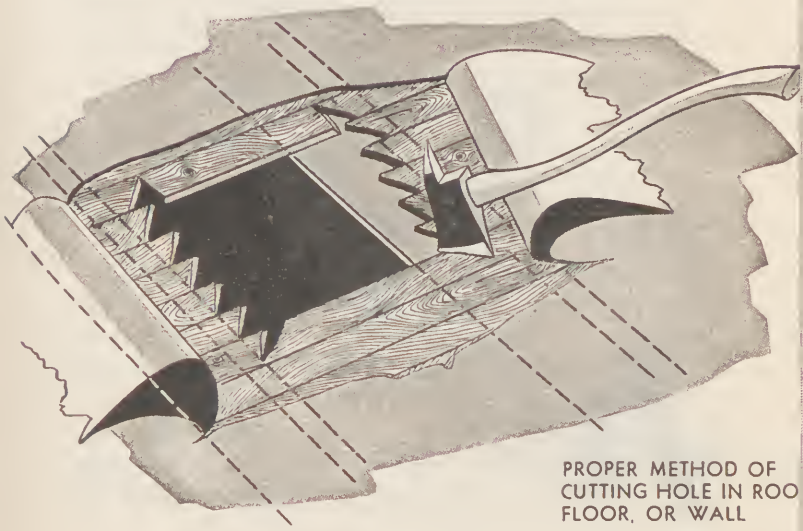
Breaking Glass

Glass should be broken only to accomplish a definite purpose. If possible stand at one side of and above the glass to be broken so that broken pieces will not follow the handle of the tool used.

By standing to one side any outrush of smoke and gases will also be avoided Remove all jagged pieces of glass Minimize damage by breaking least expensive panes.

Cutting Holes Through Roofs, Floors, and Walls

In opening roof keep wind at back in order to avoid gases and fire coming through the opening. Cutting will be easier if made close to the joists as the boards will not spring. Always keep open the means of escape.

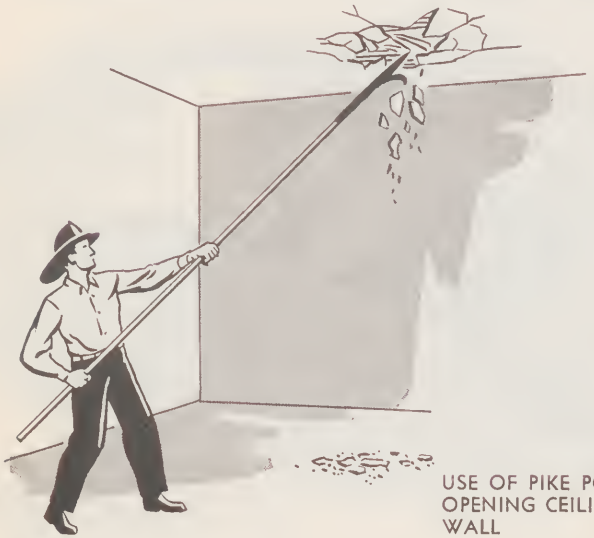


PROPER METHOD OF CUTTING HOLE IN ROO FLOOR, OR WALL

Holes cut in flooring should also be made close to a supporting timber. Before cutting holes, feel along the partitions, walls, or ceilings in order to locate the fire. Be sure that water lines are at hand at time hole is cut.

Be careful of men below when opening a slate or tile covered roof. After a slight opening has been made, the slate or tile may be dropped inside the building.

Use the pick-headed axe for making holes in roofs and floors. The pick or the base of the head will be valuable for prying and digging. Cut close to yourself with short, hard strokes. This will reduce the possibility of striking those around you. Cut wood at an angle of the grain, rather than with the grain. An axe is a useful but very dangerous tool. Be careful.



USE OF PIKE POLE IN OPENING CEILING OR WALL

Opening Ceilings and Walls

Use a pike pole to open a plastered ceiling. Stand away as far as possible from the space to be opened. Pull down and away in order to keep falling material at a distance.

When a portion of the plaster is pulled from metal lath there is a possibility that whole sections of the plaster may drop. Be aware of such danger.

VENTILATION

By ventilation is meant the process of getting rid of hot, combustible gases to permit the firemen to get at the fire.

When a fire has been burning for some time in a tightly closed building, much of the oxygen is used up. Due to the lack of oxygen, the fire may smoulder. A smouldering fire produces highly flammable carbon monoxide and other combustible gases. Any inrush of fresh air from the bottom may result in an explosion and a spreading of the fire.

The explosion can usually be avoided if proper ventilation is practiced by making an opening at the top of the trapped gases. The outrush of the gases prevents fresh air from entering at this point and causing an explosion inside the building.

If the building is filled with smoke and hot gases, start the ventilation operation at the highest point. Work downward floor by floor, opening first the lee then the windward side of the building.

In this way the building can be cleared so that rescue operations can be carried out and so that a close-range attack may be made on the seat of the fire.

Properly carried out, ventilation has the following advantages:

1. Permits search for occupants.
2. Reduces smoke loss.
3. Permits rapid advancement.
4. Reduces the hazards of fire fighting and increases the effectiveness thereof.

Precautions in Ventilating

Improper or untimely ventilation may increase the fire or create unnecessary damage. Extensive ventilation may not be necessary. When the fire is confined to one room, sufficient ventilation may be secured by opening the top window. If a building is fully charged with smoke, open it at the top. It may not be necessary to cut a hole in the roof. There may be a skylight or some other opening which can be used for ventilation purposes. *Do not stand in front of or above the opening to be made.* The fireman should stand with his back to the wind. When going onto a roof, take a rope along as a means of escape if cut off.

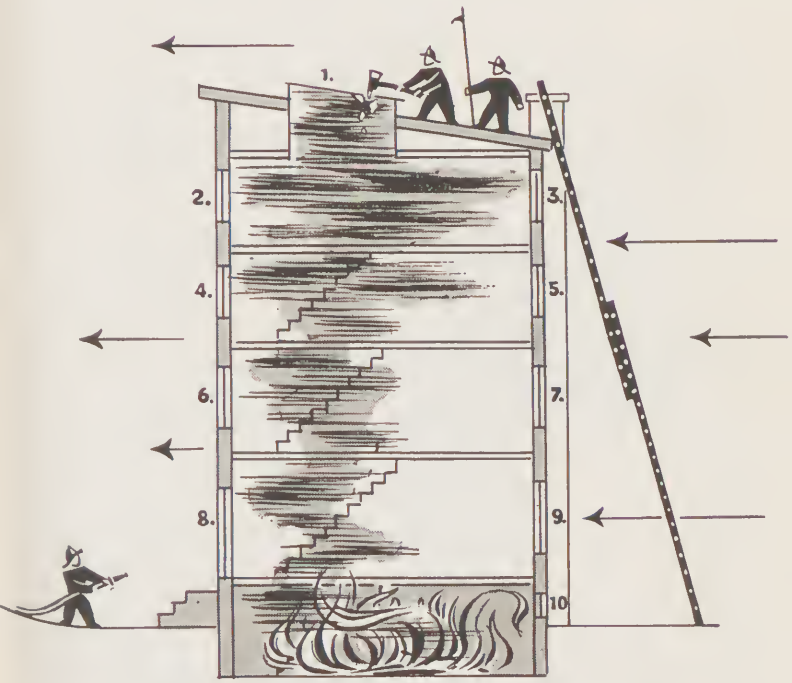
One man should not attempt, by himself, to do the ventilating. If two or more men work together and one man is injured, he can be brought to safety.

Opening Roofs

Observe exposure hazards which may be created by cutting hole in roof. If hazards exist, have

charged lines in position to cover exposure before opening roof. One large hole, say 4 to 6 feet square, gives better ventilation and is less expensive to repair than several small holes.

After the hole is cut in the roof, it may be necessary to remove the ceiling below by means of a plaster hook or pike pole.



STAND WITH BACK TO WIND WHEN OPENING ROOF

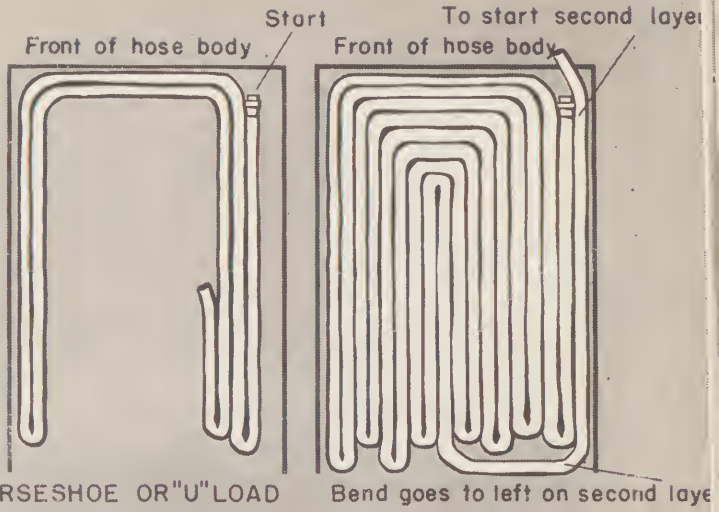
FIRE HOSE

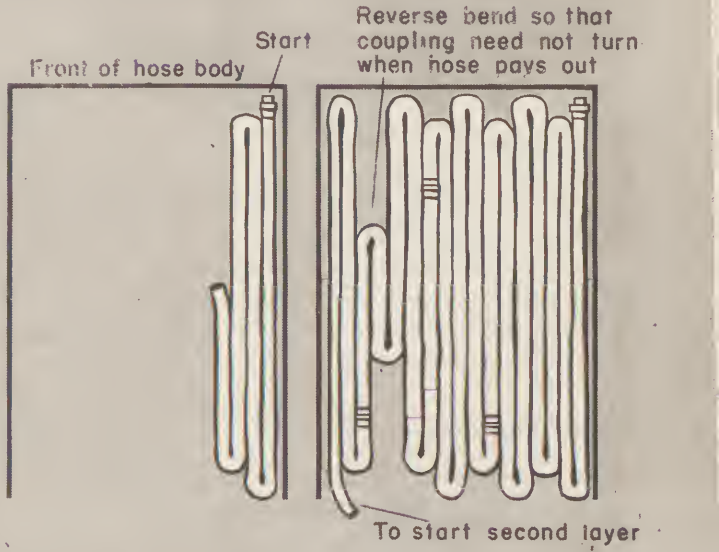
Fire hose is the elastic connecting link between the water supply and the fire. Nothing is more essential than to have the hose in perfect condition, at all times. If, through neglect and lack of care, the hose fails when it is most needed, an unnecessary loss in property and life may result.

Care of Hose

Exercise caution in order to avoid mechanical injuries to hose such as rips, cracked inner lining, and crushed couplings. The following suggestions apply to cotton rubber-lined hose.

1. Do not permit any vehicles to run over fire hose unless hose bridge is used, or driver has approval of officer in charge.
2. Do not lay hose over or around rough, sharp corners.
3. Shut off nozzle slowly to prevent water hammer and open slowly to prevent sudden back pressures.
4. Avoid striking couplings on pavement or other objects.
5. Protect hose from excessive heat or fire.
6. After hose is used, it should be swept clean and washed. Flush the hose if salt water has been used.
7. Scrub with soap or mild alkaline solution if gasoline or hot oils or chemicals have come in contact with hose.





ACCORDION LOAD

8. Run water through hose occasionally in order to prolong life.
9. Keep outside of hose dry—inside moist.
10. Do not dry hose in sun or on roadway.
11. Test couplings for jammed threads.
12. Keep threads free from dirt and sand.
13. Hose should be reloaded with different bends every thirty days if not used.

HOSE LOADS

There are several methods of loading hose, each of which has certain advantages. Local conditions determine the method to use.

The hose bed should be loaded to get the most hose in the space provided and to have a minimum of sharp bends. A basic principle is to so arrange the hose that it will pay out smoothly, speedily, and without kinking. Two common methods are described below.

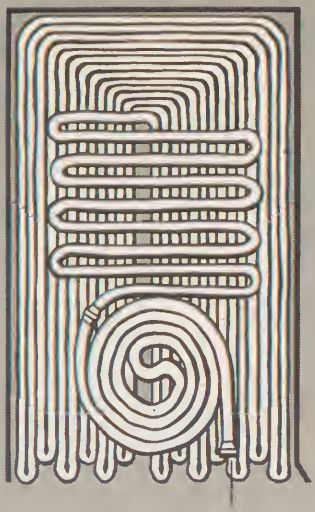
Horse Shoe or "U" Load

The load is started in the right corner of the bed. The hose is laid around the inside of the bed and alternate rear bends should be made shorter in order to make the bends less sharp. To permit the return of the hose from the center to the outside without protruding behind the bed, make the rear bends on one-half of the bed 3 inches shorter than those of the other half.

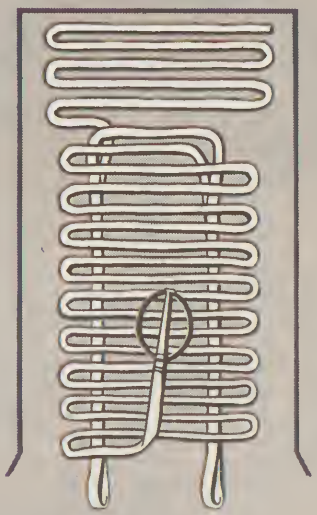
The Accordion Load

The accordion load is quite simple but it has the disadvantage, since all the bends are sharp, of

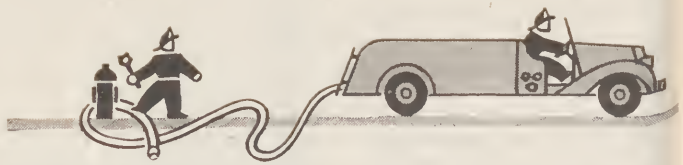
DOUGHNUT LOAD



Finish of doughnut roll



SKID LOAD



CONNECTING HOSE TO HYDRANT

STRAIGHT LAY

REVERSE LAY

READY TO USE

cramping the rubber lining of the hose. Reverse bends may be made at the coupling so that the coupling need not turn around in order to pay out.

Load Finish

The speed and efficiency of a hose layout may be increased by the type of load finish. It is best to finish loading the hose in such a manner that a sufficient amount can be dumped quickly to do any operation that may be expected.

For laying from the hydrant to the fire, the doughnut roll assures sufficient hose to the fireman catching the hydrant. The fireman grabs the loose end of the roll, steps off the truck, and the entire roll slides off with him.

The skid load is of advantage when laying from fire to hydrant. To unload, the fireman grasps the loop end of the skid, steps off, and pulls the skid with him. This makes available to the nozzle man a hundred feet or more of hose.

Hose Layout

Time is at a premium in making hose layouts and advancements. The auxiliary fireman must know the way the apparatus is loaded or serious delay may result. Two hose layouts are possible. The first is the straight lay, or hydrant to the fire, in which the hose generally is loaded with the female end on the finish. The second is the reverse lay or fire to the hydrant in which the male end of the hose is on the finish of the load. *If double male and double female connections are available, no time need be lost regardless of the type of lay.*

At all times, lay hose as straight as possible. Straighten out kinks to eliminate bursting of hose and reduced pressure at the nozzle. Avoid pulling off large supplies of extra hose. Keep hose as close to curbing or edge of road as possible. Make sure couplings are tight and hose washers are in position. If the line must be moved after the water is turned on, lift the hose at the couplings in order to reduce strain and to prevent the coupling lugs from catching on any obstruction.

In making up couplings, tighten by hand only. Use the spanner only to unmake sticking couplings when necessary.

Taking the Hydrant

Many types of hydrants are in use. Their construction varies considerably. It will be necessary for the auxiliary fireman to study the type or types in the area which he will serve. Learn the principles involved in the construction and operation of the hydrant and practice the operations in connecting hose to the hydrant. Turn on and turn off hydrant slowly.

Keep the hydrant wrench tied to the end of the hose which is to be attached to the hydrant. Where it is customary to lay from the hydrant to the fire with the pumper a gate valve may be attached to the opposite side of the hydrant for a second line. The hose should be snubbed to the hydrant in a manner which permits the fireman to work rapidly and safely.

Do not straddle hose. By using the method illustrated the fireman is less liable to injury if the hose is jerked.

Handling Nozzle

Do not let go of a nozzle when the line is under high pressure. Better control may be obtained by pressing the nozzle against some solid obstacle.

Open and close nozzle shut-offs slowly.

Hose Advancement

Whatever the system of advancing hose, teamwork is a major consideration. The following illustrations are suggested as proper methods of advancing hose lines.

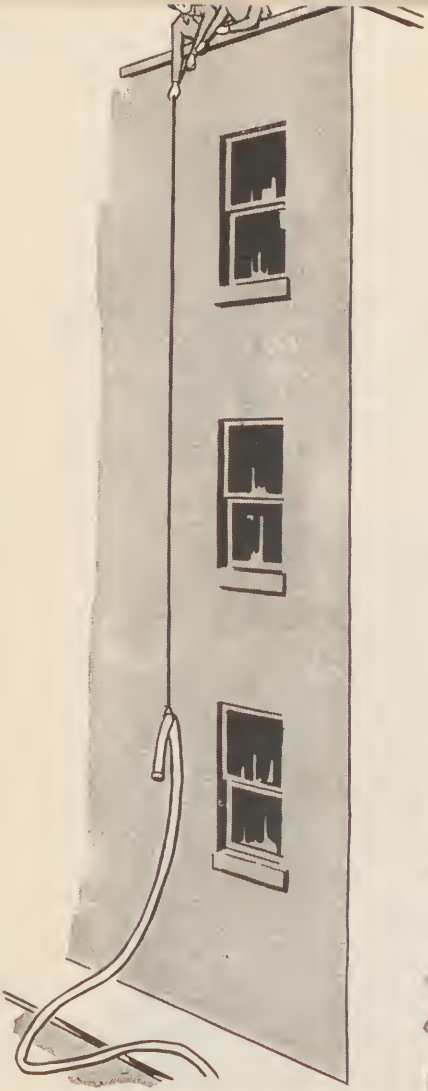
OPERATING CHARGED LINE OFF LADDER. OBSERVE HOSE STRAP, LEG LOCK

NOZZLE END
←

THE SHOULDER LOAD

ADVANCING HOSE UP STAIRWAY

1. Carry hose instead of dragging.
2. Use hose clamp to keep line dry until fire is reached, if pumper is long distance from fire.



ADVANCING HOSE BY HANDLING

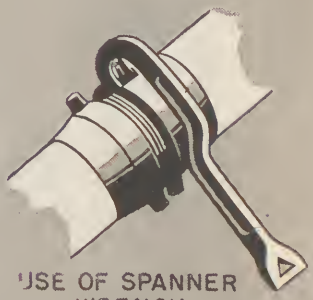
1. Use dry line.
2. Firemen 10 feet apart with 20–25 feet of hose between each man.

ADVANCING HOSE UP LADDER

3. When sufficient hose has reached desired floor, anchor line with hose strap to ladder.

DOUBLE MALE CONNECTION

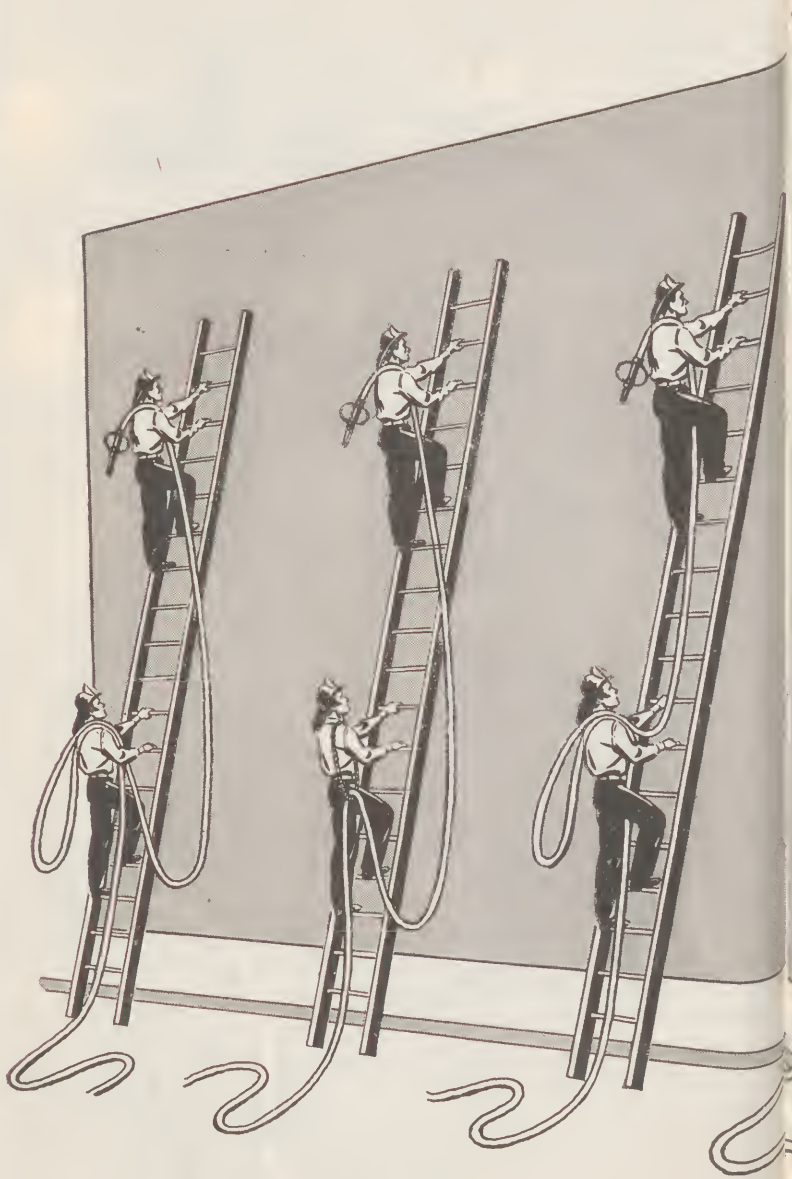
DOUBLE FEMALE CONNECTION



USE OF SPANNER WRENCH

COUPLING HOSE

TIE FOR HOSE LINE ON LADDER



4 WAYS TO CARRY A LINE OVER A LADDER

USING A PIKE POLE IN ADVANCING A LINE

LADDER WORK

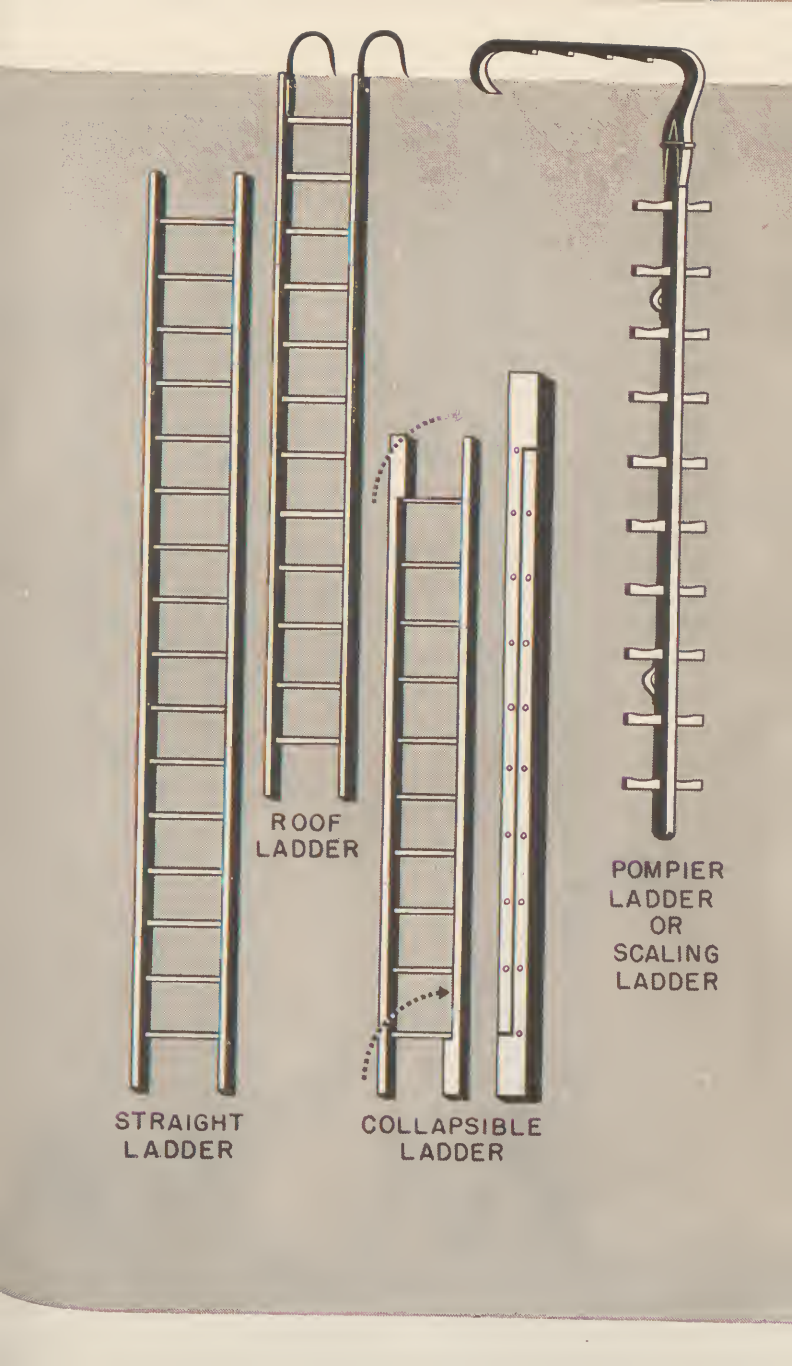
Every fireman must know how to carry, raise, and climb ladders. Training and practice are necessary to do ladder work rapidly and safely.

Terms Applying to Ladders

1. Beam—the principal structural member of a ladder in which the rungs are supported.
2. Fly ladder or fly—upper section of extension ladder.
3. Halyard or fly rope—the rope used in hoisting the fly ladder.
4. Heel, foot, or butt—bottom of ladder.
5. Tip—the top of the ladder.
6. Main or bed ladder—lowest section of extension ladder.
7. Round or rung—cross members between beams.
8. Tormentors—poles used to raise, guide, and steady long extension ladders.

Types

Straight ladder.
Extension ladder.
Roof ladder (Hook).
Collapsible attic ladder.
Pompier ladder (Scaling).
Aerial ladder.

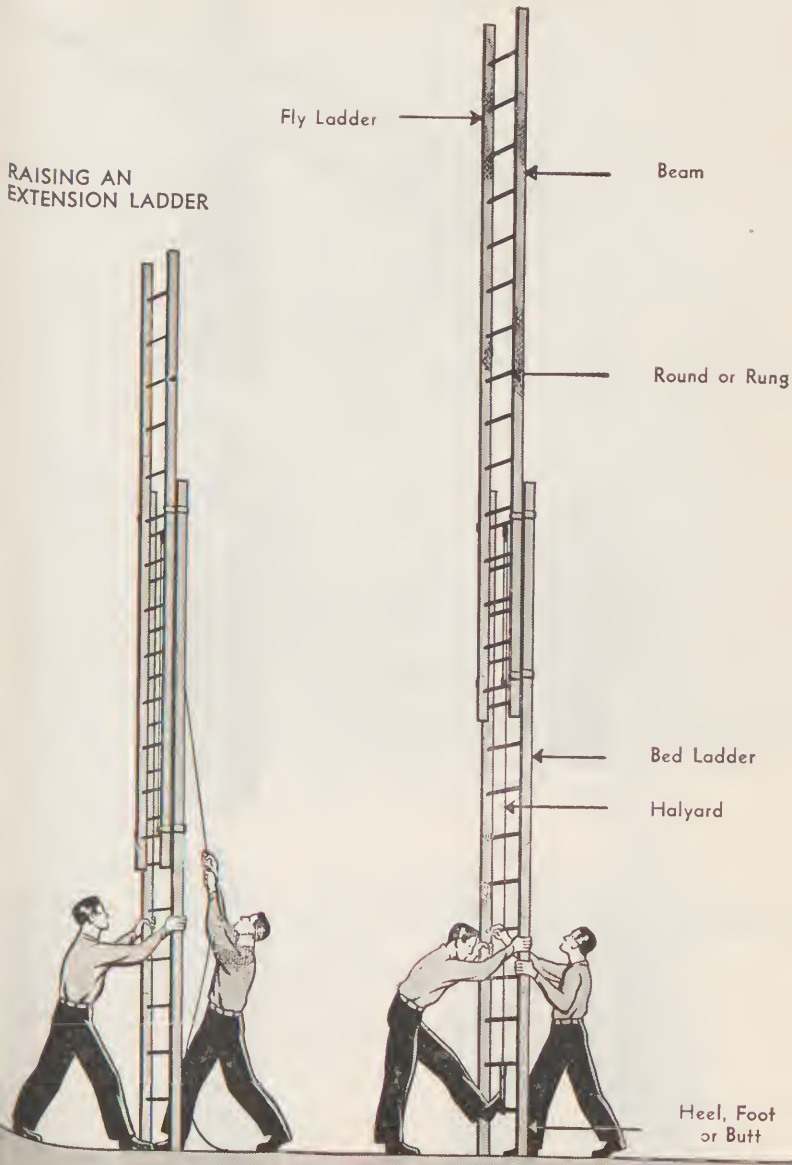

ROOF
LADDER
POMPIER
LADDER
OR
SCALING
LADDER
STRAIGHT
LADDER
COLLAPSIBLE
LADDER

Safety

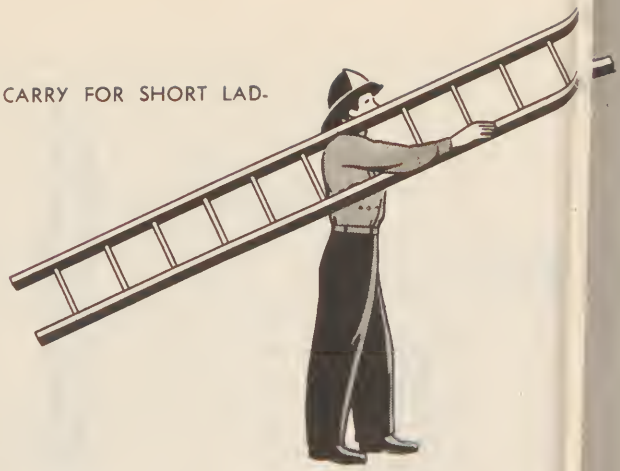
Remember that placing the foot of a ladder too far from a building endangers its stability. Not only is the base of the ladder liable to slide outward but the load which the ladder can carry is considerably less. On the other hand, placing the ladder in a too vertical position is dangerous. It is hard to climb and there is the possibility that it may tip outward. The distance the butt of a ladder should be placed from a building is governed by its length. A recommended practice for ladders is to place the butt away from the building at a distance of approximately $\frac{1}{5}$ of the length. Only the length of the ladder that is actually used is to be considered.

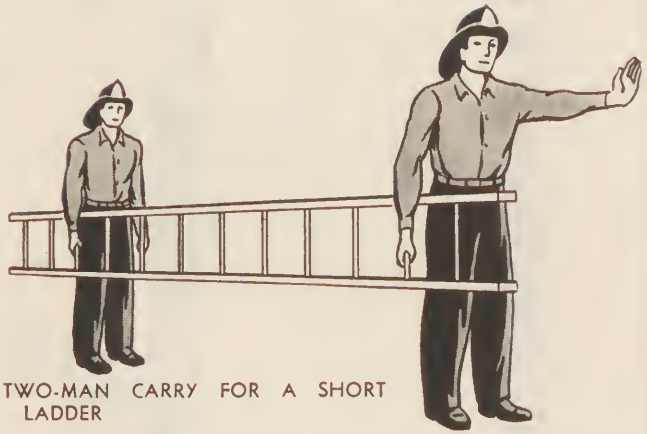
Take no chances with defective or damaged ladders. Make sure that locks and ropes on extension ladders are in working order and ropes in good condition. Extend ladders to proper working point, and anchor to building, if desirable.

RAISING A LADDER

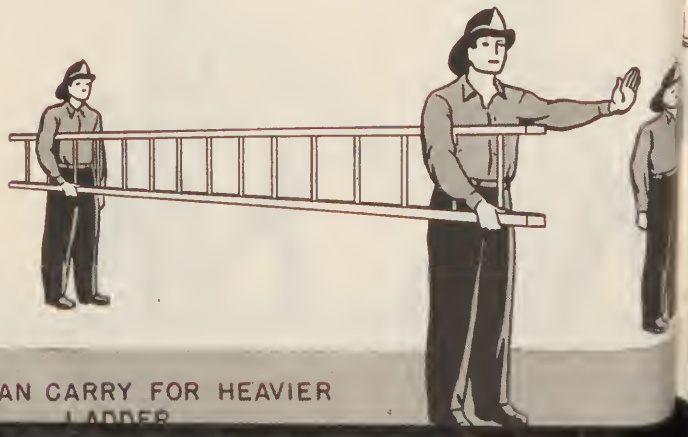

RAISING AN
EXTENSION LADDER
Fly Ladder
Beam
Round or Rung
Bed Ladder
Halyard
Heel, Foot
or Butt
PIVOTING LADDER

ONE-MAN CARRY FOR SHORT LADDER





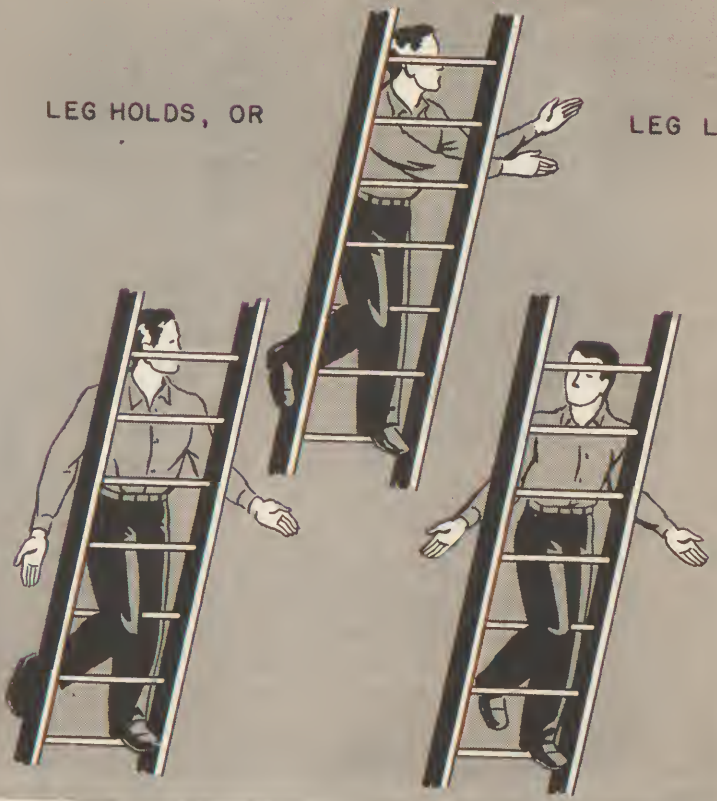
TWO-MAN CARRY FOR A SHORT LADDER

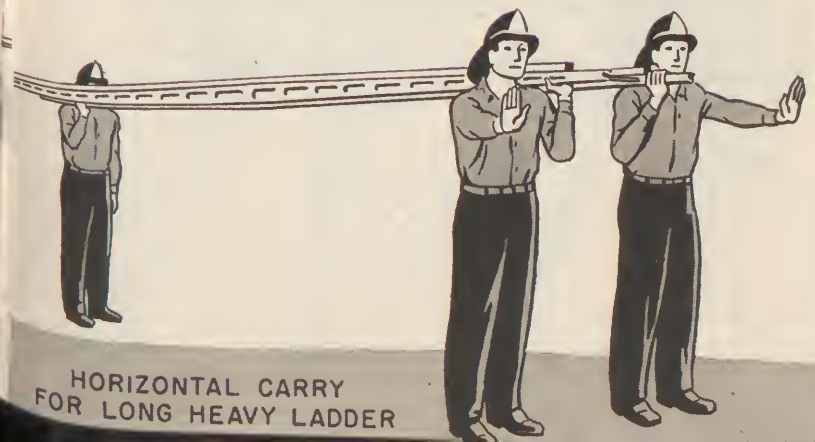


TWO MAN CARRY FOR HEAVIER LADDER

LEG HOLDS, OR

LEG LOCK





HORIZONTAL CARRY FOR LONG HEAVY LADDER

Ladder Raises

Team work in raising ladders lessens the possibilities of strains and injuries and makes for greater speed and efficiency. Considerable practice is necessary to obtain the "feel" of the ladder and to know how to control its weight properly.

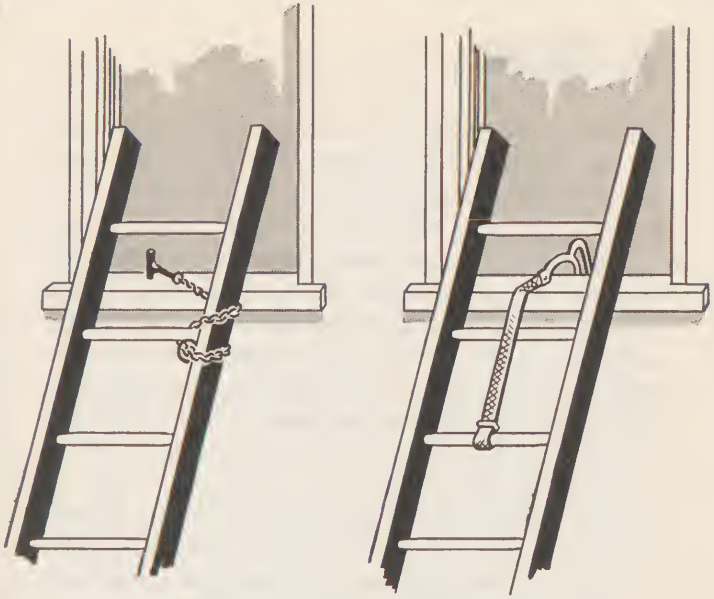
Ladder Carries

There are a number of different ways to carry ladders. Whatever method is used, practice until you consider yourself able to carry and place a ladder rapidly and with as little effort as possible, and without endangering those about you.

Ladder Climbing

Rhythm is an important factor in smooth climbing. Climb on the balls of the feet, near the center of the ladder. When carrying an object with one hand slide the free hand along the back of the beam. Stay at arm's length from the ladder. Do not look down.

In working from ladder use leg lock. Pass the foot, *opposite the side you are to work,* over the second rung above the one on which you are standing. Pass foot back through and lock around beam or rung. Place lower foot across rung and against beam of ladder. The rung should be against the heel at the instep.



METHOD OF DOGGING A LADDER

PLACING A ROOF LADDER

FIRE STREAMS

A major problem is to produce a fire stream that will carry from the closest practicable point of approach to the seat of the fire and at the same time be of such a character as to do the most good.

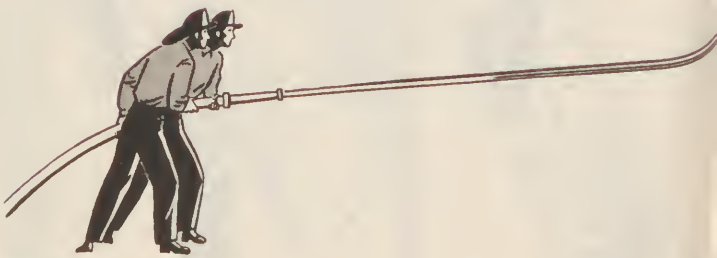
Different types of fires require different fire streams. It is important for firemen to know the kind of water stream which will be effective on each type of fire in order that a minimum of water damage may result. Following are the types of streams which may be required:

Solid Stream—Either large or small, to carry to the base of the fire.

Spray Stream—To divide water particles as finely as possible in order to obtain heat absorption. Very effective in fighting confined fires and flammable liquid fires.

A solid fire stream is one which is delivered from a nozzle in such a manner that it travels through

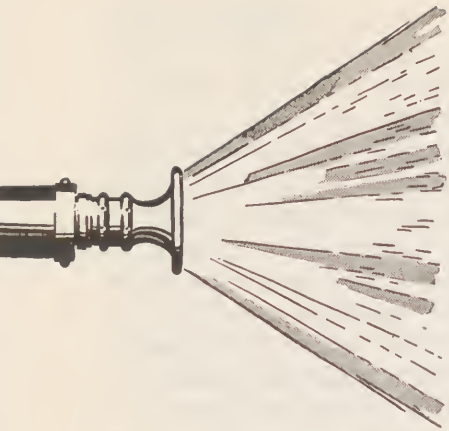
THE SOLID FIRE STREAM



space as a solid mass. To be most effective, the stream should break at the point which will cover the greatest possible burning area with a sufficient amount of water to put out the fire.

To get that solid stream to the desired point means that the friction loss in the hose line and limitations of gravity and air friction must be overcome. Wind has a tendency to break up streams. *High pressure does not necessarily mean great distance*. Excessive velocity at the nozzle tends to break the stream or, more important, makes the nozzle more difficult to hold.

The *requirements* for a good fire stream, the *characteristics* and *factors* influencing a fire stream, and the methods of obtaining the proper amount of water at a particular spot—all of these are subjects requiring much study. The pump operator, especially, must know how to produce a stream having sufficient capacity and velocity to meet demands. In handling hose streams, practice is necessary.



VAPOR STREAM

PUMP OPERATION

The chief function of the fire pump is to boost water pressures. Three types of pumps are in common use, the centrifugal, the piston, and the rotary. Since there is some variation in the method of operation of the many makes of pumps, *it will be necessary for the pump operator to undergo specific and detailed training upon the particular pump under his supervision.*

Every auxiliary fireman should be acquainted in some degree with the pumper his company is using. He should know what the pumper can do and what it cannot do under reasonable operating conditions.

SALVAGE AND OVERHAUL PRACTICES

Protecting property against water damage is known as salvage work. Cleaning up after a fire in order to make the building as habitable as possible or to guard against rekindling of the fire is known as overhauling. Efficient overhauling and salvage work will materially lower the total fire loss.

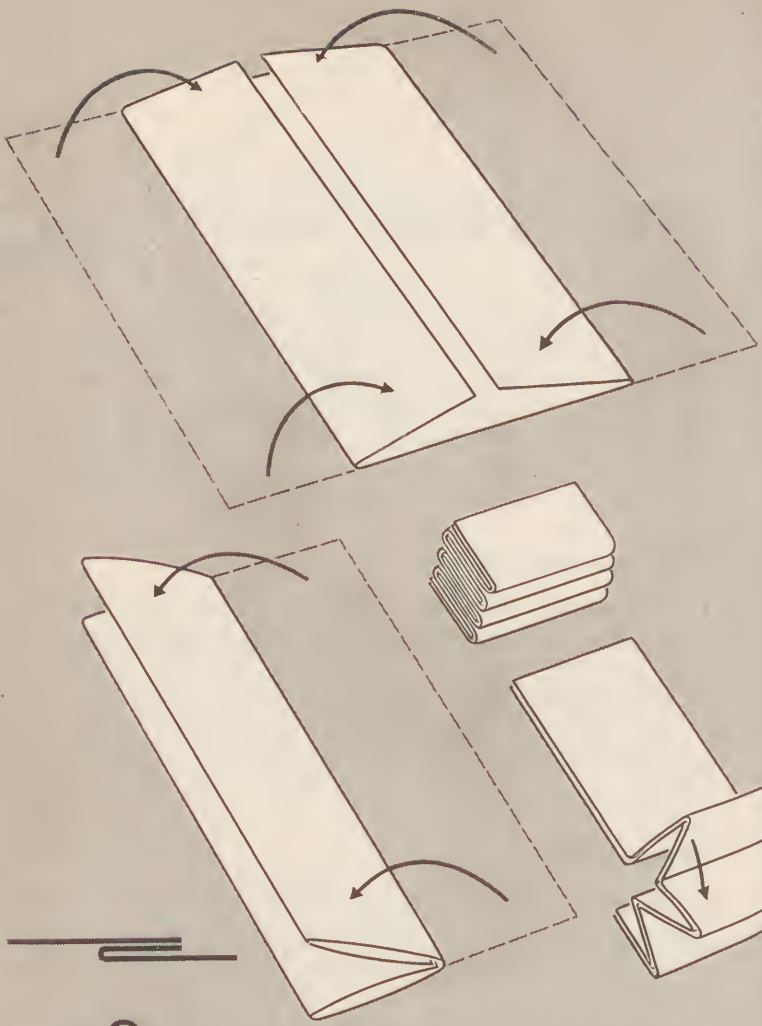
The Salvage Cover

The salvage cover must be waterproof and of a size that is convenient for handling. 12 by 18 feet or 14 by 18 feet covers are commonly used. The cover should be folded in such a fashion that it can be unfolded quickly. Keep one side as clean as possible, and place that side next to the materials being covered.

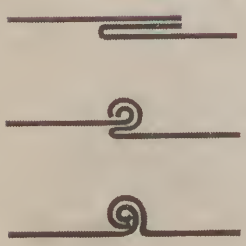
Procedure

Salvage operations offer an excellent opportunity for ingenuity. Any action which prevents or reduces water damage and saves property is worth taking.

The officer or fireman in charge of salvaging must determine where to expect the water to come through. Quick covering at that point is essential.



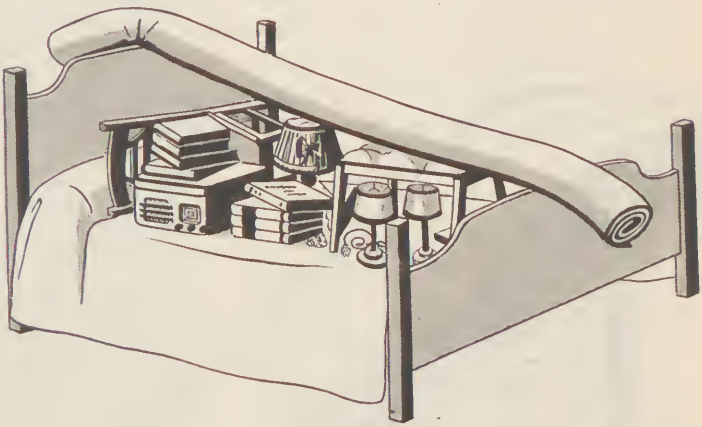
FOLDING OF SALVAGE COVER



Two covers lapped watertight

If it appears that a relatively small amount of water will control the fire, it may be possible to hold the water in the covers by building them up at the ends. If that is impossible, the water should be routed outside by way of elevator shafts, stairways, windows, or other openings. Cut shows how a bedroom may be arranged for covering. The rug is used as a ridgepole over which the cover is placed.

Obviously, one of the best ways of preventing water damage is to get the water out of the building as quickly as possible. Salvage covers may be laid on stairs in such a manner as to carry the water with a minimum of loss. If a building is being heavily deluged, it may be advantageous to bore or cut holes in the floors to relieve the weight of the water.



BEDROOM PREPARED FOR COVERING

Overhaul

Extinguishing the fires does not complete the fireman's job. Debris and water left in the building will cause further damage. Partially burned articles should be placed in a convenient place for examination by the owner. Plaster, lath, etc., should be carried out of the building. Water on floors should be mopped up. Sawdust sprinkled on a wood floor will help absorb excess moisture.

Cover holes in roofs with tar paper or other material. Close broken windows or holes in floors with boards. See that doors and windows are fastened securely.

Salvage and overhaul practices are infinite in number. The point is, the firemen's duties include whatever action is necessary not only to put out fire, but to reduce property damage as much as possible.

SALVAGE COVER FORMING CHUTE ON STAIRWAY

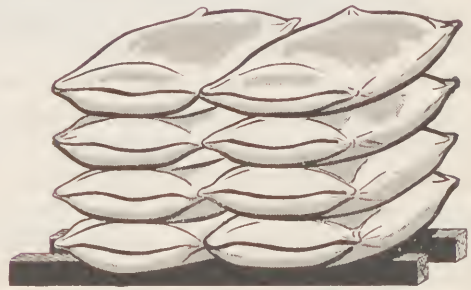
THE INCENDIARY BOMB

The most commonly used incendiary is one of a magnesium metal alloy. The common unit is a metal cylinder weighing about 2 pounds, 2 inches in diameter and 9 inches long. On some types metal fins on one end of the bomb steady its flight and cause it to strike on its nose.

The bomb burns in two stages. When the bomb lands, the impact fires an igniting mixture which is in the center of the metal cylinder. This mixture is a thermit charge and when it is set off there is the first stage of burning of the igniting mixture itself. This burns with considerable spattering and there is no known means of extinguishing the thermit.

This initial stage is quickly out. It seldom lasts more than a minute. By that time the magnesium metal of the bomb casing has been started burning. In this secondary stage, the bomb burns at a high temperature but there may be little spattering and it is possible to approach the bomb closely.

It is important to know about these two stages of burning in order to know how to deal with it.



SUGAR SACKS STORED OFF THE FLOOR

Recommended Procedure for Dealing With Incendiary Bombs.

1. The fire fighter must decide whether to deal first with the fire or the bomb itself. If the fire has gained much headway, it will be necessary to get it under control. A solid stream of water may be used effectively to fight the fire but *the stream should not be directed on the bomb*. An explosion is liable to result which may injure the firefighter and, in addition, disperse the metal causing the fire to spread. Water does not extinguish the bomb but causes it to burn more intensely and it is thus consumed in about one-third the normal time.

In treating an incendiary bomb with water, use a coarse spray where possible. The spray wets the surrounding combustibles, thereby controlling the fire, and does not hazardously accelerate the burning of the magnesium. If the nozzle is not adjustable, break the stream with the thumb or index finger to obtain a spray. Five or six gallons of water are necessary to deal with the bomb alone.

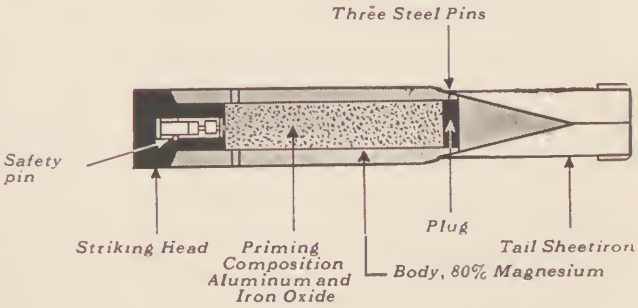
2. Water solution extinguishers may be used up to the limit of their capacity. Three or more $2\frac{1}{2}$-gallon extinguishers will ordinarily be needed to hold in check a fire in ordinary combustibles set by a 2-pound bomb. Carbon tetrachloride, carbon dioxide, and dry chemical types are ineffective on the bomb itself and are dangerous in confined spaces to the extent that they displace oxygen. Carbon dioxide and dry chemical types may be effectively used, when available, to knock down a

fire in surrounding combustibles so the bomb may be approached and shoveled out.

3. Sand or even earth may also be used to fight the incendiary bomb. When placed over the bomb less heat is given off and the glare of the burning metal is eliminated.

Sand does not extinguish the bomb. Unless removed it may quickly burn through the floor. Shovel the bomb into a bucket containing sand, cover the bomb with sand, and carry the bucket at the end of a shovel or pole out of the building.

4. A certain proportion of the 2-pound bombs (about 1 in 50) may have a small explosive charge set to go off about 2 minutes after impact. All of the larger sizes (common ones are 6, 25, and 50 pounds) may be expected to explode. The explosion is of low intensity, but this is a factor to be considered in attacking the bomb. During the first few minutes after the bomb lands, it's a good idea to keep low, behind a door, furniture or other barrier, as you prepare to attack the fire. But keep on your feet so you can duck if an explosion takes place.



INCENDIARY BOMB

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BLACKOUTS

Blackouts are ordered only on the authority of the War Department. A blackout may be ordered during any period when hostile forces are believed to be in the vicinity, whether or not enemy airplanes have been sighted.

"Blacking Out" a city means that light sources must be so hidden or dimmed that an enemy bomber will have difficulty in finding the target and lack aiming points such as main street intersections. Following are the general plans used.

Street Lights. These are fitted with low-watt bulbs and covers that diffuse the light.

Automobiles. Headlights must be covered except for a small pair of slits and hooded.

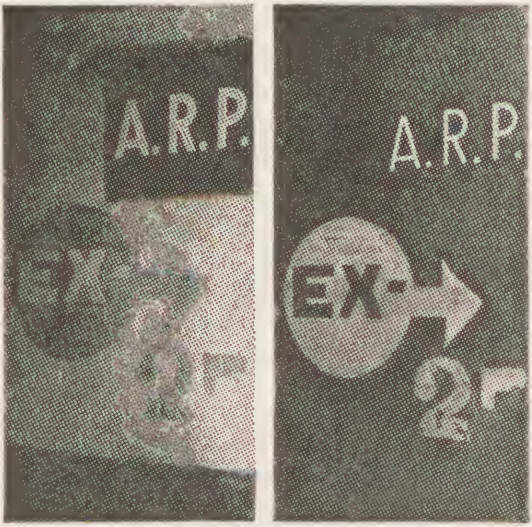
Traffic Lights. Are treated the same way as automobile headlights.

Buildings. Windows and doors must be covered with opaque materials. Paint on the glass, heavy curtains, light "baffles" or screens are some of the ways. No cracks of light must show.

Aids to Seeing. Since people have to move about during a blackout, the lack of light may be somewhat offset and safety promoted by—

1. Painting curbs, trees, poles and hydrants with white paint. There is a luminous paint, also, that gives off a faint blue light quite visible in total darkness.

2. Painting signs of luminous paint or making them of fluorescent material on which shines ultra-violet or "black" light or installing dimly lighted signs with horizontal screens to diffuse the light.



3. Painting white fenders and stripes around automobiles.

Members of the Citizens' Defense Corps who have outside duties during a blackout can be identified more easily if they wear a white cap or white-painted helmet; also a white belt fitted with crossed straps over the shoulders.

Individual Conduct During a Blackout.

Observe traffic rules. Keep to the right and remember the man or vehicle approaching *from* your right *has* the right of way.

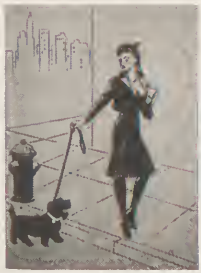
If you must smoke, go into a hallway or covered place to strike the match. No smoking in the open is an even better rule. Make all crossings at intersections. It is hard for a driver to see you.

Be sure that everyone you know is acquainted with these simple rules.

DO NOT run when air raid warnings sound after dark during blackouts.

Use your flashlight as little as possible, if at all. Never point it upward.

Curb edges and direction signs painted white will help you find your way.



Keep pets on leash if you take them out after dark.

If an air raid warning sounds, get under cover, you may be hit by shell fragments.

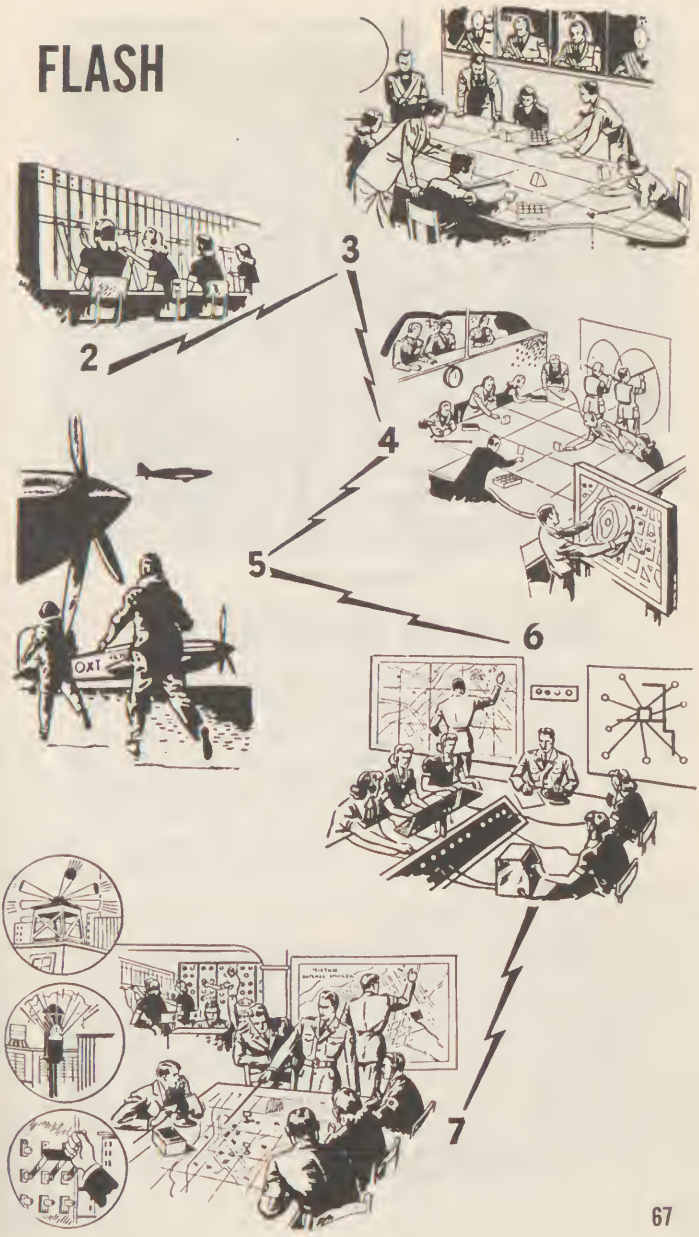
If you don't know the neighborhood the first policeman or warden will tell you where to go.

When an observer sights a group of hostile planes, he picks up his telephone (1) and says *Army Flash*. The Central Operator (2) at once connects him with the assigned Filter Center (3) to which he reports the type of planes, number, height, and direction of flight. When several reports agree, watchers transmit the data to an Information Center (4) where developments over a large area are plotted on a huge map.

Watching the map, Air Corps officers order interceptor planes into the air, (5) direct them to contact with the enemy; another officer notes the cities threatened and flashes a yellow, blue, or red alarm, according to the degree of danger, to the proper Warning District Center (6).

At this point, Civilian Defense takes over from the Air Corps, telephones the warnings to Control Centers (7) within the Warning District. And here the Commander of the local Citizens' Defense Corps orders the alert, has the public warning sounded usually short blasts on air horns, power horns or steam whistles or on the wailing sirens—and if the bombers arrive overhead, directs the operation of passive defense. Learn the air raid warning for your city.

FLASH



The Refuge Room

WHAT TO DO IN AN AIR RAID

At the yellow warning, if you are not already on duty, you will be summoned to your post and will carry out orders until relieved. However, here are the rules for those who do not have assigned duties when the air raid warning comes. Memorize them carefully so that you can in turn instruct others. Here is what to tell them:

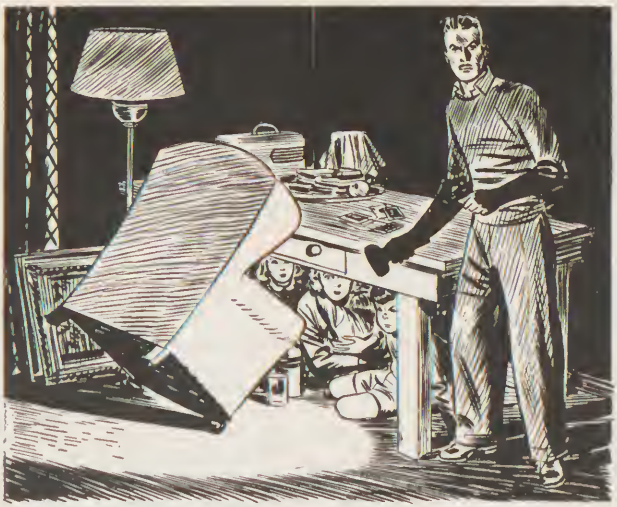
1. If away from home, seek the nearest shelter. Get off the street.

2. If you are driving, first park your car at the curb; be sure all lights are shut off.

3. If you are at home, send the others to the refuge room. This should be a comfortable place with as little window exposure as possible, equipped with drinking water, things to read, toilet facilities, a flashlight, a portable radio, a sturdy table, and food if you like.

4. Turn off all gas stove burners but leave pilot lights, water heaters and furnaces alone. Leave electricity and water on. Fill some large containers or a bathtub with water.

5. Check up on blackout arrangements. Don't let a crack of light show to the outside.



6. See that everyone's eyeglasses and dentures are in the refuge room. There should be additional warm garments for everyone, too.

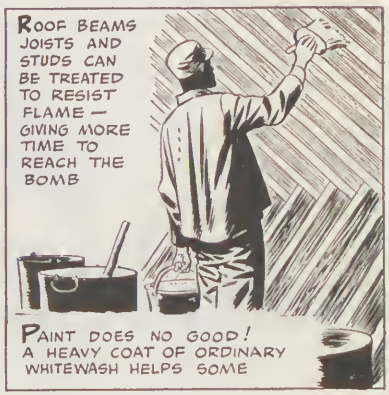
7. Keep out of line of windows. Fragments and glass splinters cause most casualties.

8. If bombs fall nearby, get under a heavy table, an overturned davenport.

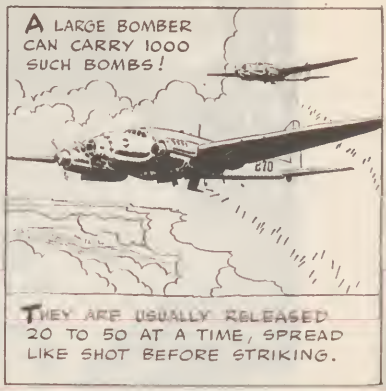
9. Don't rush out when the "all clear" signal sounds. Maintain the blackout. The Raiders may return.

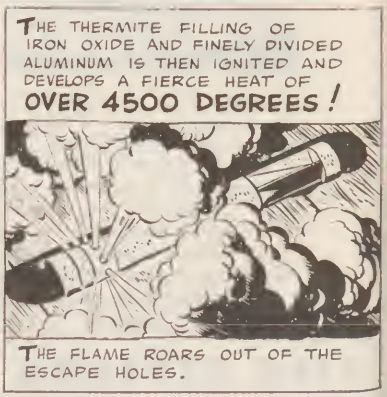
10. Otherwise, keep cool; be sensible and set an example to others.

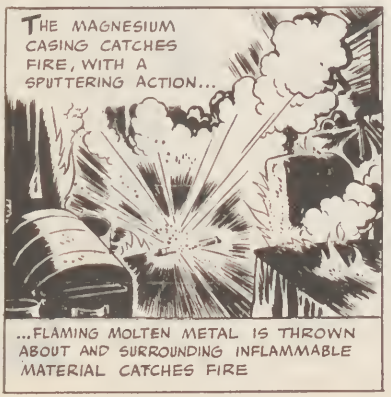
FIRE DEFENSE



HOW THE MAGNESIUM BOMB WORKS







CONTROLLING WITH WATER

TO FIGHT A BOMB WITH WATER, YOU NEED TWO MEN AND SPECIAL EQUIPMENT. REMEMBER, YOU CAN'T PUT OUT THE BOMB — YOU FEED IT WATER, TO BURN OUT!

ONE MAN PUMPS 80 STRO ES A MINUTE TO KEEP A STRONG E OUGH PRESSURE TO THROW A JET 3 FEET, AS SPRAY, 15 FEET. (E MAN FIGHTS THE FIRE.

JET ON SURROUNDINGS!

SPECIAL DOUBLE ACTION PUMP WITH 30 FEET OF HOSE AND SPECIAL NOZZLE NEEDED.

YOU USE UP A BUCKET IN 1½ MINUTES

SPRAY ON BOMB

A THIRD PERSON IS MOST USEFUL TO CHECK OTHER POINTS FOR FLAME REPLENISH WATER AND RELIEVE PUMPER.

AMPLE STORAGE OF WATER SHOULD BE PROVIDED IN ADVANCE, AS WATER MAINS MAY BE BROKEN BY HIGH EXPLOSIVES AND PRESSURE LOST! FILL THE TUB, EXTRA PAILS AND DON'T FORGET IN A PINCH —— THE CONTENTS OF HOT WATER OR HEATING BOILERS!

NEVER THROW THE CONTENTS OF A WATER PAIL ON A BOMB!

...IT WILL SCATTER WITH EXPLOSIVE VIOLENCE!

IF CONTROL OF THE BOMB SEEMS DOUBTFUL, HAVE AN ALARM TURNED IN, BUT CONTINUE FIGHTING THE BOMB UNTIL HELP ARRIVES OR SUPPLIES ARE EXHAUSTED!

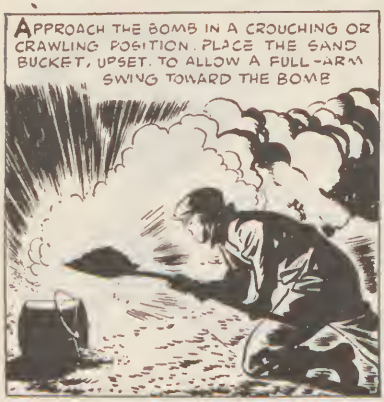
1 LEARN **NOW** HOW TO CALL

2 LEARN **NOW** LOCATION OF NEAREST ALARM...

FIRE

MILTON CANIFF

CONTROLLING WITH SAND



ABOUT FIRE EXTINGUISHERS

Many houses and public buildings have fire extinguishers. They will be as useful as ever in putting out fires caused by an incendiary bomb. For putting out the bomb itself, the extinguisher may not be suitable.

Read the label. If it says that the contents include CARBON TETRACHLORIDE, it cannot under any circumstances be used on a magnesium bomb. It is not only ineffective, it may cause dangerous gas to be generated. After the bomb is burnt out, use it on any remaining fire.

All water-type extinguishers are suitable. If the label says SODA-ACID, that's simply a means of creating pressure in the extinguisher. Turn it upside down, use it. You can get a spray effect by putting the thumb over the nozzle, use the jet on surrounding fires. However, *one extinguisher is not enough to burn out a magnesium bomb.* And you cannot refill the extinguisher.

It is best to have sand or pump-bucket equipment handy, use them on the bomb, and save the extinguishers for resulting fires.

A foam extinguisher will also help to control a bomb, but one extinguisher load will not finish the job.

See that the extinguishers you know about are ready for use.

CHEMICAL WARFARE AGENTS

REFERENCE AND TRAINING CHART

LEGEND

HOSPITAL CASE	FIRST AID STATION	LUNG PROTECTION NEEDED	COMPLETE PROTECTION NEEDED

The importance of proper first aid for gas victims cannot be overemphasized. The following are general rules which apply in all cases.

A. Act promptly and quietly; be calm.

B. Put a gas mask on the patient if gas is still present or, if he has a mask on, check to see that his is properly adjusted. If a mask is not available, wet a handkerchief or other cloth and have him breathe through it.

C. Keep the patient at absolute rest; loosen clothing to facilitate breathing.

D. Remove the patient to a gas-free place as soon as possible.

E. Summon medical aid promptly; if possible, send the victim to a hospital.

F. Do not permit the patient to smoke, as this causes coughing and, hence, exertion.

CLASS	NAMES AND SYMBOLS	FORM	ODOR	PERSISTENCE	TACTICAL CLASS	PROTECTION	FIRST AID (After removal from gassed area)	PHYSIOLOGICAL EFFECT
LUNG IRRITANTS VESICANTS	MUSTARD $S(CH_2CH_2Cl)_2$ DI-CHLOROETHYL SULFIDE	LIQUID AND VAPOR	Garlic, Horseradish, Mustard	One day to one week. Longer if dry or cold.			Undress; remove liquid mustard with protective ointment, bleach paste, or kerosene; bathe; wash eyes and nose with soda solution.	Delayed effect. Burns skin or membrane. Inflammation respiratory tract leading to pneumonia. Eye irritation, conjunctivitis.
	LEWISITE $CHClCH{-}AsCl_2$ CHLOROVINYL-DICHLOROARSINE	LIQUID AND VAPOR	Geraniums	One day to one week. Longer if dry or cold			Undress; remove liquid Lewisite with hydrogen peroxide, lye in glycerine or kerosene; bathe; wash eyes and nose with soda. Rest—Doctor.	Burning or irritation of eyes, nasal passages, respiratory tract, skin. Arsenical poison.
	CHLORPICRIN CCl_3NO_2 NITROCHLOROFORM	GAS	Flypaper, anise	Open 6 hours. Woods 12 hours.			Wash eyes, keep quiet and warm. Do not use bandages.	Causes severe coughing, crying, vomiting.
	DIPHOSGENE $ClCOOC{-}Cl_3$ TRICHLOROMETHYL CHLOROFORMATE	GAS	Fusilage, Acrid	30 minutes.			Keep quiet and warm. Give coffee as a stimulant.	Causes coughing, breathing hurts, eyes water, toxic.
	PHOSGENE $COCl_2$ CARBONYL CHLORIDE	GAS	Musty hay, Green corn	10 [illegible] minutes.			Keep quiet and warm, bed rest. Coffee as a stimulant. Loosen clothing. No alcohol or cigarettes.	Irritation of lungs, occasional vomiting, tears in eyes, dopped feeling. Occasionally symptoms delayed. Later, collapse, heart failure.
LACRIMATORS	CLORACETOPHENONE $C_6H_5CO{-}CH_2Cl$	GAS	Apple Blossoms	10 minutes.			Wash eyes with cold water or boric acid solution. Do not bandage. Face wind. For skin, sodium sulphite solution.	Makes eyes smart. Shut tightly. Tears flow. Temporary.
	BROMBENZYLCYANIDE $C_6H_5CH{-}BrCN$	GAS	Sour fruit	Several days. (Weeks in winter.)			Wash eyes with boric acid. Do not bandage.	Eyes smart, shut, tears flow. Effect lasts some time. Headache.
STERNUTATORS	ADAMSITE $(C_6H_4)_2{-}NHAsCl$ DIPHENYLAMINECHLOROARSINE	GAS	Coal Smoke	10 minutes			Keep quiet and warm. Loosen clothing. Reassure. Spray nose with neo-synephrin or sniff bleaching powder. Aspirin for headache.	Causes sneezing, sick depressed feeling, headache.
	DIPHENYLCHLORARSINE $(C_6H_5)_2{-}AsCl$	SMOKE	Shoe Polish	Summer 10 minutes.			Remove to pure air, keep quiet. Sniff chlorine from bleaching powder bottle.	Causes sick feeling and headache.

WAR GASES

General Notes.

War "Gases," or chemical agents used to produce casualties, are surprise weapons. As this is written, they have not been used against the British or others trained to protect themselves. They have been used against the Ethiopians and the Chinese.

A gas-tight room suitably located offers fair protection against any probable concentration of war gas in a city. For those whose duties take them into the streets a gas mask offers full protection against all but the "blister gases" (liquid vesicants). To enter areas where mustard or lewisite is present, full protective clothing is needed.

War gases may be dropped in bombs or simple containers and liquid vesicants may also be sprayed by airplanes.

The gas warning is a "percussion sound"—that is, bells, drums, hand rattles, rapidly struck resonant objects of any kind. If the presence of gas is suspected, report to the nearest warden. Do not shout if distant gas alarms are heard. The danger is local and the spreading of an alarm must be left to the wardens.

The notes on the following pages are simply for reference for those who have received instruction in protection against gas. Reading them will not by itself make you an expert in gas defense.

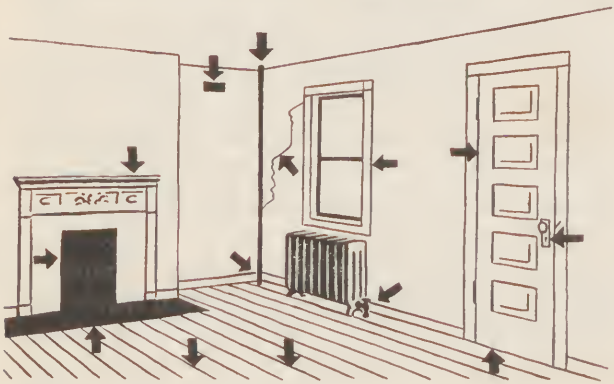
THE GAS-TIGHT ROOM

War gases hug the ground, flow into cellars and basements. Upper floors of a dwelling are away from dangerous concentrations. If all openings and cracks are closed, a room three stories from the ground will offer good protection against war gases.

To stop cracks and small openings, tape of various kinds may be used. A mush made by soaking newspapers in water or patching plaster may be used for caulking larger openings. A piece of wall board, nails and caulking material may be kept handy to cover a window broken by the blast of high explosives.

One door may be used as an entrance by fastening over it a blanket in such a way as to seal it tightly when no one is going in or out. If soaked in oil to close the air spaces, the blanket is more effective.

Store necessary supplies in such a room—food, water, chairs, a battery-operated radio, flashlight and by all means provide some sort of toilet facilities use it as the refuge room.



Allow 20 square feet of floor space for each person who is to occupy an average room with a ceiling nine feet high. This will give enough air to occupy the room 10 hours.

The illustration shows where to stop up cracks, how to hang the blanket at the entrance door.

"Blister Gases" and Decontamination.

Lewisite and mustard "gas" are liquids in the normal state. They give off a dangerous vapor that acts as a war gas and unless chemically neutralized may persist for a week, contaminating the air for a considerable distance down wind.

Full protection against these chemical agents is afforded by gas-proof clothing, covering the wearer from top to toe and tightened at wrists and ankles. The greatest care must be used in undressing after exposure to lewisite or mustard and this is done at personnel decontamination stations, where vesicant casualties are also taken for first aid.

Decontamination of streets, walls, and buildings is effected principally by means of chloride of lime (bleaching powder) freshly mixed with earth and water as a slurry or paste. It must be thoroughly worked into cracks and crevices and the resulting product flushed away. This work is done by the decontamination squads.

The liquid vesicants are very penetrating and ordinary shoes or clothing offer no protection. Do not go into the streets after a gas alarm has been sounded except on direction of the Warden.

RANK DESIGNATION	▲	▲▲	▲▲▲	△	△△	△△△	★	★★	★★★	★★★★
AIR RAID WARDEN	FIRST CLASS	SENIOR OR SECTOR WARDEN	ZONE LEADER	GROUP LEADER	CHIEF WARDEN	STATE WARDEN	NO OTHER RANKS			
AUXILIARY FIREMEN	"	SQUAD LEADER	PLATOON LEADER	COMPANY LEADER	FIRE CHIEF	STATE FIRE COORDINATOR	NO OTHER RANKS			
AUXILIARY POLICEMEN	"	"	"	"	CHIEF OF POLICE	NO OTHER RANKS				
BOMB SQUADS	"	"	NONE	"	"	NO OTHER RANKS				
RESCUE SQUADS	"	"	DEPOT LEADER	"	FIRE CHIEF	NO OTHER RANKS				
MEDICAL FIELD UNITS	"	TEAM LEADER	SQUAD LEADER	UNIT LEADER	CHIEF OF E M S.	STATE MEDICAL DIRECTOR	NO OTHER RANKS			
MEDICAL AUXILIARIES (stretcher teams)	"	" *	" *	NO OTHER RANKS						
NURSES' AIDES	NO RANK DESIGNATIONS									
EMERGENCY FOOD AND HOUSING	FIRST CLASS	UNIT LEADER	DEPOT LEADER	COMPANY LEADER	CHIEF WARDEN	NO OTHER RANKS				
DRIVERS UNITS	"	CONVOY LEADER	"	"	NO OTHER RANKS					
MESSENGERS	"	SENIOR MESSENGER	PLATOON LEADER	"	NO OTHER RANKS					
ROAD REPAIR CREWS	"	CREW LEADER	DEPOT LEADER	"						
DEMOLITION AND CLEAR.	"	"	"	"	CHIEF OF EMER. WORK S.	NO OTHER RANKS				
DECONTAMINATION SQUADS	"	SQUAD LEADER	STATION LEADER	"						
FIRE WATCHERS	"	NO OTHER RANKS								
REPAIR CREWS	"	CREW LEADER	SERVICE LEADER	NONE	CHIEF OF UTILITIES	NO OTHER RANKS				
LOCAL STAFF	"	AS REQUIRED		STAFF UNIT LEADER	CONTROLLER	COMMANDER	COORDINATOR	NO OTHER RANKS		
STATE STAFF	"	AS REQUIRED			AS DESIGNATED	AS DESIGNATED	ASST COORDINATOR	COORDINATOR	NO OTHER RANKS	
U. S. STAFF	"	AS REQUIRED				AS DESIGNATED	AS DESIGNATED	AS DESIGNATED	REGION DIRECTOR PRINCIPAL ASS'TS	U.S. DIRECTOR
EQUIVALENT ARMY TERM	PVT 1st CLASS	NON-COMM OFF.	LIEUTENANT	CAPTAIN	MAJOR	COLONEL	BRIG GEN	MAJ GEN	LIEUT. GEN.	GENERAL

*ASSIGNED BY RED CROSS TO CHIEF OF EMERGENCY MEDICAL SERVICE

CITIZENS' DEFENSE CORPS

The team of trained civilian services organized to operate the passive defense is known as the Citizens' Defense Corps. It includes regular forces of the city—police, firemen, welfare workers, sanitation men—as well as volunteers. It operates as a unit under the local Defense Coordinator.

Staff.

The Citizens' Defense Corps is headed by a Commander assisted by a staff. His second in command is the Executive Officer. There are others who operate the control center and the communications, account for personnel and property and assign transportation. The Chiefs of the Fire and Police Departments assist him in the passive defense. There is a Chief Air Raid Warden, a Chief of Emergency Medical Services, and others who control groups of the enrolled volunteers. Learn the organization of the Citizens' Defense Corps in your community.

Enrolled Volunteer Services of The Citizens' Defense Corps.

Air Raid Wardens are in complete charge of a sector containing the homes of about 500 people. To them the warden is the embodiment of all Civilian Defense.

Auxiliary Firemen assist the regular fire-fighting forces.

Auxiliary Policemen assist the police department in enforcing blackout restrictions, in traffic control, and in guard duties.

Bomb Squads are specially trained squads of police to handle and dispose of time bombs and duds.

Rescue Squads are trained crews of about 10 men each with special equipment to rescue the injured from debris.

Medical Forces consist of first-aid parties and stretcher squads and personnel at casualty clearing stations. Members of these forces are doctors, trained nurses, and assistants.

Nurses' Aides assist nurses. They have special Red Cross Training.

Emergency Food and Housing Corps members provide welfare services to the needy and homeless.

Drivers Units consist of emergency drivers of vehicles used by the Civilian Defense services.

Messengers carry supplies, dispatches, and messages wherever needed.

Road Repair Crews restore normal flow of traffic as quickly as possible. Utility repair men work with these crews and with demolition squads.

Demolition and Clearance Crews remove rubble, fill bomb craters, and remove unsafe walls or parts of buildings.

Decontamination squad members are specially trained to treat clothing and equipment as well as streets and walls contaminated by war gas.

Fire Watchers must spot and combat incendiary bombs.

A MANUAL OF DRILL

for the

CITIZENS' DEFENSE CORPS

Adapted from the Basic Field Manual of the United States Army

Basic drill is required of a volunteer for award of the insigne. Drill for units of the Citizens' Defense Corps, moreover, is recommended as it helps to coordinate the work of individuals under a single command. The purposes of drill are:

1 To enable a leader to move his unit from one place to another in an orderly manner.

2 To aid in disciplinary training by instilling habits of precision and response to the leader's orders.

3 To provide a means, through ceremonies, of enhancing the morale; develop a spirit of cohesion; and give an interesting spectacle to the public.

4 To give leaders practical training in commanding volunteers.

Drills should be frequent, intensive, and of short duration.

General.

A normal squad of volunteers contains 12 men or 12 women, all of one service. It consists of a leader, an assistant leader, and other personnel. As far as practicable, the squad is kept intact. The usual formation of the squad is a single rank or single file. This permits variations in the number of men composing the squad.

To Form the Squad.

The command is; FALL IN. At the command FALL IN the squad forms in line as shown. Squad leader on the squad's extreme right, assistant leader on the squad's extreme left.

To secure uniformity, the tallest leader is put in charge of the first squad, the second tallest in charge of the second squad, etc. Assistant

Fig. I—A Squad in Line

leaders are similarly arranged. Other volunteers are placed according to height beginning with the tallest being placed next to the leader.

On falling in, each man except the one on the left extends his left arm laterally at shoulder height, palm of the hand down, fingers extended and

joined. Each man, except the one on the right, turns his head and eyes to the right and places himself in line so that his right shoulder touches lightly the tips of the fingers of the man on his right. As soon as proper intervals have been obtained, each man comes to attention, drops his arm smartly to his side and turns his head to

Fig. II—A Volunteer at Attention

the front, heels are together, feet forming a right angle; knees are straight without stiffness, hips level and drawn back slightly, body erect and resting equally on hips, chest lifted and arched, shoulders square and falling equally. Arms hang straight down without stiffness with the back of the hands out, fingers held naturally. Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical, eyes straight to the front. The weight of the body rests equally on the heels and the balls of the feet. In assuming the position of attention the heels are brought together smartly and audibly.

(Leaders and assistant leaders will be appointed under authority defined by the Chief of the Service of which the squad forms a part.

To Form at Close Intervals.

The commands are: At Close Interval, FALL IN. At the command FALL IN, the volunteers fall in as described above, except that close intervals are obtained by placing the left hands on the hips. In this position the heel of the palm of the hand rests on the hip, the fingers and thumb are extended and joined, and the elbow is in the plane of the body.

Fig. III—A Volunteer Falling in at Close Interval

To Aline the Squad.

If in line, the commands are: Dress Right, DRESS, Ready, Front. At the command DRESS, each man except the one on the left extends his left arm (or if at close interval, places his left hand upon his hip), and all aline themselves to the right. The instructor places himself on the right flank one pace from and in prolongation of the line and facing down the line. From this position he verifies the alinement of the men, ordering individual men to move forward or back as is necessary. Having checked the alinement, he faces to the right in marching and moves three paces forward, halts, faces to the left and commands: Ready, FRONT. At the command FRONT, arms are dropped quietly and smartly to the sides and heads turned to the front.

Rests.

Being at a halt the commands are: FALL OUT, REST, AT EASE, and PARADE REST.

At the command FALL OUT, volunteers leave the ranks but are required to remain in the immediate vicinity.

At the command REST, one foot is kept in place. Silence and immobility are not required.

At the command AT EASE the right foot is

kept in place. Silence but not immobility is required.

At the command of execution REST of Parade REST, move the left foot smartly 12 inches to the left of the right foot keeping the legs straight so that the weight of the body rests equally on both feet. At the same time, clasp the hands behind the back, palms to the rear, thumb and fingers of the right hand clasping the left thumb without constraint; preserving silence and immobility.

Being at any of the rests except FALL OUT, to resume the position of Attention, the commands are Squad (or other unit being commanded) ATTENTION. At the command ATTENTION take that position in your squad.

Eyes right (left).

The commands are: Eyes (Preliminary Command), RIGHT (Command of Execution) (LEFT) Ready FRONT! At the command RIGHT, each man turns his head and eyes to the right. At the command FRONT the head and eyes are turned to the front.

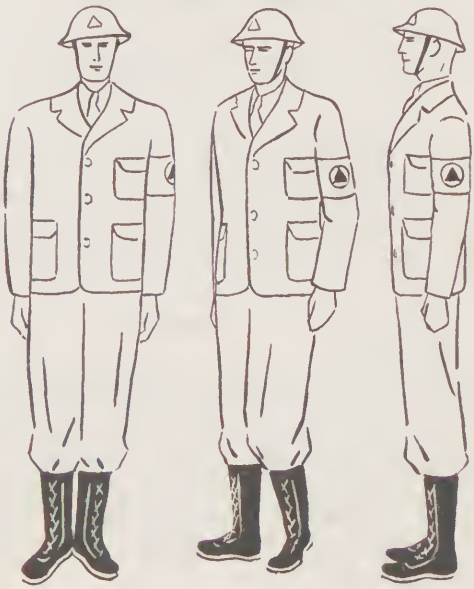
Facings.

(*All Facings are executed at the halt.*)

To the flank.—The commands are Right (Left) FACE. At the command FACE, slightly raise the left heel and the right toe: Face to the right, turning on the right heel, assisted by a slight pressure on the ball of the left foot. Next, place the left foot beside the right. Exercise Left FACE on the left heel in a corresponding manner.

To the rear.—The commands are: About FACE. At the command FACE, carry the toe of the right foot a half-foot length to the rear and slightly to the left of the left heel without changing

Fig. IV—Executing Right FACE



the position of the left foot; weight of the body mainly on the heel of the left foot; right leg straight without stiffness. (TWO) Face to the rear turning to the right on the left heel and on the ball of the right foot, place the right heel beside the left.

Steps and Marchings.

All steps and marchings executed from the halt, except right step, begin with the left foot.

Quick Time: Being at a halt, to march forward in quick time, the commands are: Forward MARCH. At the command Forward, shift the weight of the body to the right leg without perceptible movement. At the command MARCH, step off smartly with the left foot and continue the march with steps taken straight forward without stiffness or exaggeration of movements. Swing the arms easily in their natural arcs, 6 inches to the front and 3 inches to the rear of the body. To halt when marching in quick time, the commands are: Squad HALT. At the command HALT, given as either foot strikes the ground, execute the halt in two counts by advancing and planting the other foot and then bringing up the foot in rear.

To Mark Time the commands are; Mark-Time, MARCH.

Being in march at the command MARCH, given as either foot strikes the ground, advance and plant the other foot, bring up the foot in rear, placing it so that both heels are on line and continue the cadence by alternately raising and planting each foot. The feet are raised 2 inches from the ground.

Being at a halt, at the command MARCH raise and plant first the left then the right as prescribed above.

The halt is executed from mark time as from quick time.

Half Step.—The commands are: Half Step MARCH. At the command MARCH, take steps of 15 inches in quick time. To resume the full step from the half step or mark time the commands are: Forward MARCH.

Side Step.—Being at a halt the commands are: Right (Left) Step MARCH. At the command MARCH, carry the right foot 12 inches to the right, place the left foot beside the right, left knee straight. Continue the cadence of quick time. (The side step is executed in quick time from the halt and for short distances only.)

Back Step.—Being at a halt the commands are, Backward MARCH. At the command MARCH, take steps, beginning with the left foot, 15 inches straight to the rear.

To March to the Flank.—Being in march the commands are: By The Right (Left) Flank—MARCH. At the command MARCH, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) in marching and step off in the new direction.

Oblique March.—Being in march the commands are Right (Left) Oblique—MARCH. At the command MARCH, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) oblique in marching and step off in the new direction.

To resume the original direction, the commands are—Forward, MARCH. At the command MARCH each individual faces half left (right) in marching then moves straight to the front.

Change Step.—The commands are Change Step, MARCH. Being in march at quick time, at the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, plant the toe of the right foot near the heel of the left and step off with the left foot. (Execute the change on the right foot similarly, the command MARCH being given as the left foot strikes the ground.)

To the Rear.—To face to the rear in marching, being in march, the commands are: To The Rear, MARCH. At the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, turn to the right about on the balls of both feet and immediately step off with the left foot.

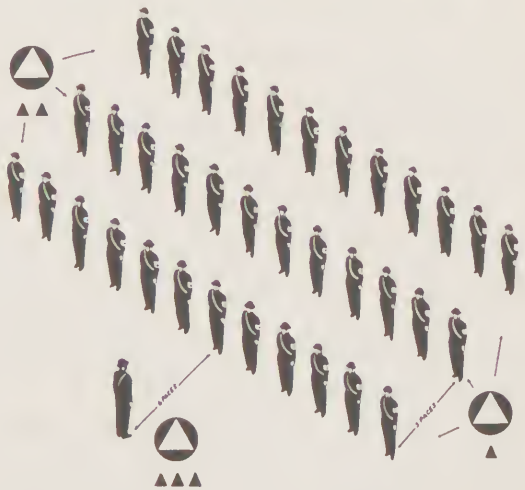
Other Marchings.—March other than at Attention. The commands are: Route Step, MARCH or At Ease, MARCH. Route Step MARCH, at the command MARCH Volunteers are not required to march at attention or to maintain silence. At Ease, MARCH is the same as Route Step, MARCH, except that Volunteers will maintain silence.

Dismissing the Squad.—The unit being at a halt the leader calls the unit to attention, if they are not at attention, from a point six paces in front of the center of the unit. He then will give the command—DISMISSED. Volunteers are then free to go and do as they please until the next regularly scheduled drill period.

Forming the Platoon.

To form the platoon, which consists of 3 squads—the command, FALL IN will be given by the senior leader facing the area on which he wishes the platoon to form. At this command the unit will form facing the leader with its center 6 paces to his front in 3 parallel lines (each of these lines constitutes a squad). (Should there be insufficient men to form 3 complete squads, skeleton squads of as near equal number as possible will be formed in 3 ranks, squad leaders placing themselves directly behind one another.)

Fig. V.—A Platoon in Column of Squads



From this formation the unit can march; forward, to the right, or to the left.

At the command: Forward MARCH, each man steps off with his left foot directly to his own front preserving his relative position and so regulates his step that the ranks remain parallel to his original front.

At the command: Right (Left) FACE Forward MARCH, the unit executes a right face on the heel of the right foot and ball of the left foot at the word FACE and at the word MARCH they step off with their left foot as in moving to the front. (Left face is performed by turning on the heel of the left foot and the ball of the right foot.) In the movements to the right or left the commander of the unit takes a position three paces in front of the left file of his command, at double time if necessary.

Being in a column to change direction the commands are— Column Right (Left) MARCH. At the command MARCH, given as the right (left) foot strikes the ground the first man of the leading element on the right (left) advances one step and then steps off in the new direction using half steps until the men to his left (right) are abreast of him. Full step is then resumed.

Close Interval—Normal Interval.— Being in column of threes at normal interval between squads to March or form at Close Interval, the commands are: Close, MARCH. At the command MARCH, the squads close to the center by

obliquing until the interval between men is 4 inches. The center squad take up the half step until the dress has been regained.

If this movement is executed from the halt, the squads close toward the center by executing Right or Left Step until 4-inch intervals are reached.

Being in column of threes at close interval between squads to March or form at Normal Interval, the commands are: Extend, MARCH. At the command MARCH, the squads open to the right and left from the center by obliquing until the normal interval is regained.

If this movement is executed from the halt, the squads Right or Left Step until normal interval is regained.

Change Direction.—Being in column of threes to change direction, the commands are: Column Right (Left) MARCH. The right flank man of the leading rank is the pivot. At the command MARCH, given as the right foot strikes the ground, the right flank man of the leading rank faces to the right in marching and takes up the half step until the other men of his rank are abreast of him, then he resumes the full step. The other men of the leading rank oblique to the right in marching without changing interval, place themselves abreast of the pivot man, and conform to his step. The ranks in rear of the leading rank execute the movement on the same ground and in the same manner as the leading rank.

Fig. VI

Forming the Citizens' Defense Corps for Parade

(Services will form and move as platoons)

Mayor, Defense Coordinator and Dignitaries.

Commander, C. D. C.

Staff.

Messengers.

Drivers.

Fire Department Chief.

Auxiliary Firemen.

Rescue Squads.

Police Department Chief.

Auxiliary Police.

Bomb Squads.

Colors.

Warden Service Chief.

Air Raid Wardens.

Fire Watchers.

Emergency Food Housing Units.

Medical Service Chief.

Medical Field Units.

Nurses' Aides Corps.

Public Works Service Chief.

Demolition and Clearance Crews.

Road Repair Squads.

Decontamination Corps.

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