

YOUR HOME AS AN AIR RAID SHELTER

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LONDON

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CONTENTS

	PAGE
Introduction	3
The Shelter	6
The Refuge Room	6
Protection of Windows and Doors of Refuge Rooms	7
Protection of Glass in Windows	16
Fire Precautions	22
Taking Cover	22

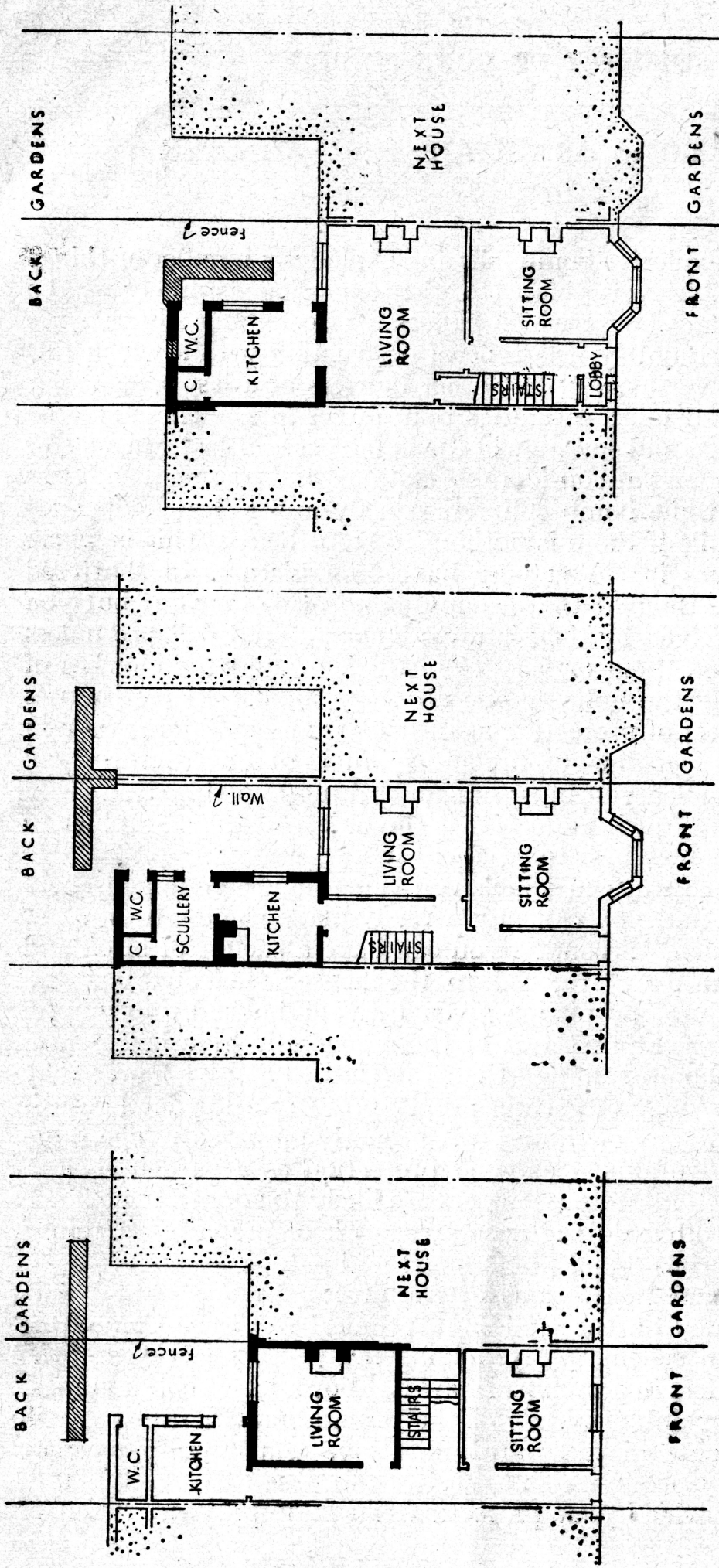
MINISTRY OF HOME SECURITY

YOUR HOME AS AN AIR RAID SHELTER**Introduction.**

When a high explosive bomb falls and explodes a number of things happen. Anything very close to the explosion is likely to be destroyed, and any house which suffers a direct hit is almost sure to collapse. Fortunately, the zone of destruction within which this danger exists is very small; but other dangers of a less spectacular kind can cause far more casualties than direct hits. These are the dangers from blast and splinters of the bomb case. Blast can shatter unprotected windows at considerable distance and fragments of glass can be deadly, while bomb splinters can fly and kill at a distance of over half a mile if there is nothing to stop them. This is where your house comes in. You may have seen pictures of shattered houses and have thought that a house is no place for you; but you must not be deceived by the pictures; houses do not collapse unless the bomb falls on them or very close to them, and the chances of your house being the unlucky one are very small. In fact houses afford a great deal of protection against blast and splinters—as well as against aerial machine-gun fire and splinters of anti-aircraft shell, the dangers of which you must not underrate—and they can easily be made to afford much more. It is the object of this pamphlet to tell householders how best to go about it.

There are three ways in which you can provide your household with shelter. First, you can buy a ready-made shelter to bury or erect in the garden. Secondly, you can have a shelter of brick and concrete built into or attached to the house. Thirdly, you can improve the natural protection given by your house by forming a "refuge room." The first two of these generally give better protection against bomb splinters than the third, but cost more; they may be the only way of getting proper protection if your house is very lightly built, say of timber. A properly-prepared refuge room can, however, give almost as good protection as a garden shelter, and is the method most householders are likely to adopt. The home handyman can often do the necessary work of preparing a refuge room with materials found in his house and garden.

The professional Institutions of Architects, Engineers and Surveyors represented on the Building Technical Advisory Committee have arranged a scheme for providing inexpensive advice for the use of householders in a number of areas. For a fee of half a guinea, a consultant appointed by one of the professional Institutions will inspect your house in these areas and give you a written report stating the best place in which to shelter and describing ways within your means by which your protection can be improved. A list of

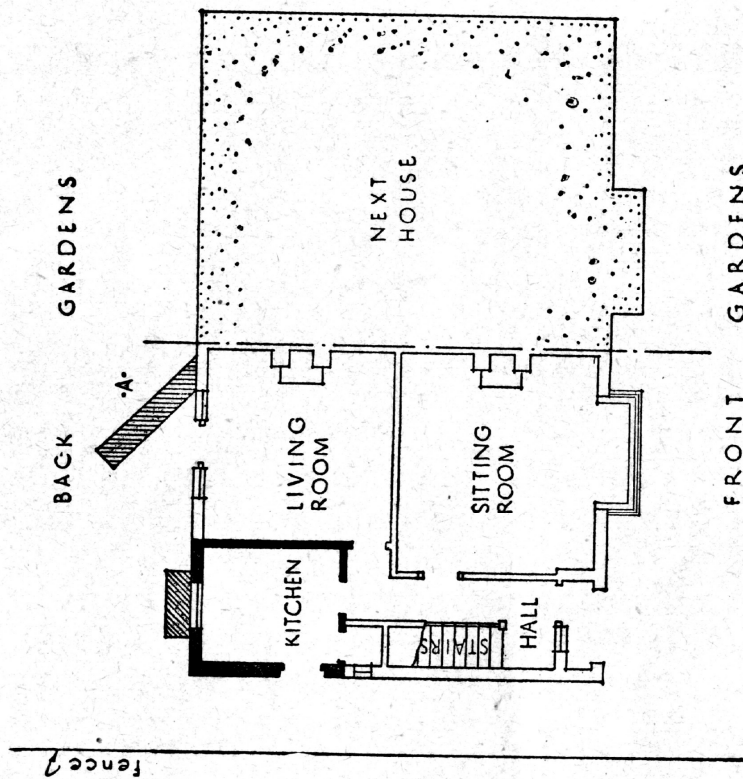


In this case the Living Room affords quite good protection as all the walls are well screened and the only place where splinters could enter is the window. The chances of this are small but a screen wall built across the opening would protect the window.

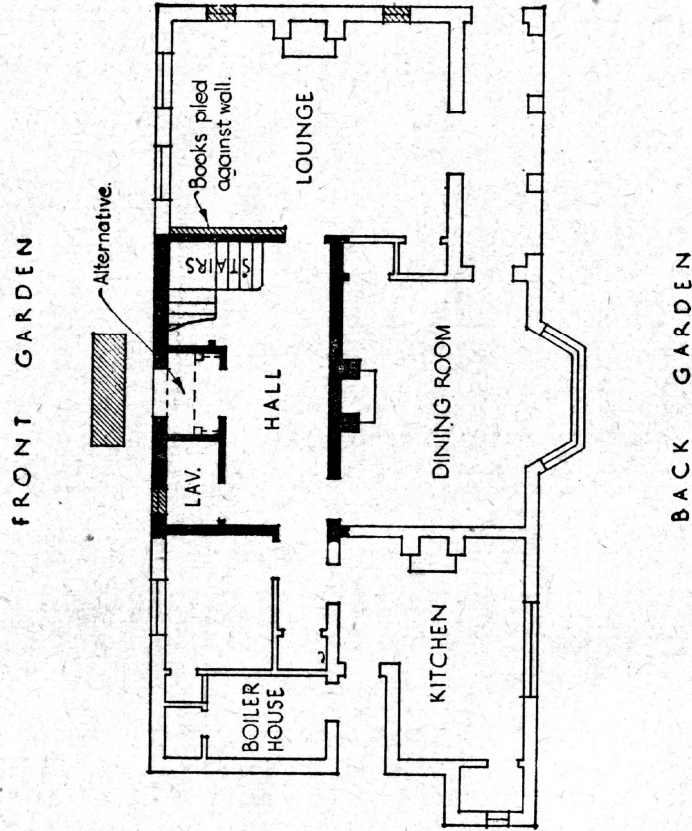
Kitchen and Scullery provide good refuge rooms as they are, but would be improved by the erection of screen walls across the back yard.

The Kitchen would provide the best refuge room since the Living Room is vulnerable to splinters entering the windows from front and back. It would be a good thing to block the Kitchen window or, even better, to make a screen wall to cover the back door, Kitchen window and W.C. door.

ILLUSTRATION I.—PLANS OF TYPICAL HOUSES SHOWING THE BEST ROOMS IN WHICH TO SHELTER (REFUGE ROOMS) AND HOW TO IMPROVE THEIR NATURAL PROTECTION.



The Kitchen affords good protection, the door is screened by the next house and the window is small and can be readily protected. The two thin inside walls are well protected except from a chance splinter coming through the Living Room window. This window can be also screened as shown at 'A' then almost complete protection would be obtained.



In this case the Hall provides a good refuge room. The front door has to be blocked either by a screen wall outside or by screen wall in the lobby. The lavatory window is high and may be blocked but if left open would not constitute a danger to people sitting down. It is desirable to block the two lounge windows facing the Hall door if they are low.

ILLUSTRATION I (CONTD.)

the Institutions concerned and the addresses from which further information can be obtained will be found at the end of this pamphlet.

The Shelter.

The simplest kind of garden shelter is an open trench which will give you complete protection against bomb splinters and very good protection against blast. Covering it over with earth will improve the protection against blast and also keep out falling splinters of anti-aircraft shells. A trench shelter needs materials such as timber and corrugated iron to hold up the earth covering and also, in most soils, to prevent the sides of the trench falling in. Suitable materials are not easy to get at present, though you may find them in your garden or outhouses.

Several kinds of sectional shelters are also marketed that are designed to be put together in a garden trench and to hold up the earth at the sides and overhead. Most of them are made of concrete. Alternatively you can have built on the ground surface, or partly sunk below it, a brickwork or concrete shelter, usually called a "surface-shelter." This can give as much protection as one below the ground, and will be necessary where the ground is too water-logged to allow deep digging.

Many persons, however, would prefer not to leave their houses, especially at night or in cold, wet weather, and would like a refuge room in the house. In some cases a surface shelter can be built against a house with a door opening from it.

The Refuge Room.

A refuge room below ground-level is best because it gives natural protection against bomb splinters. Very good protection can, however, be obtained above ground where the refuge room is well enclosed by brick or stone walls.

Illustration 1 shows plans of typical houses which illustrate how refuge rooms should be chosen and improved.

The room chosen should be one that is as well protected as possible by surrounding walls of brick, stone or concrete, including those of the house next door and garden walls, the object being to provide as much protection as possible against flying bomb splinters. Remember that 13½ inches of brickwork will protect against splinters, and that even 9 inches of it will stop a great many. The whole of this protection need not be found in the wall of the shelter room; you can add on the thickness of all walls within a distance of about 30 feet from the refuge room. Make certain that the walls enclosing the refuge are of solid brickwork or stonework and not of timber framing covered with stucco or weather-boarding, as these provide no protection.

A small or narrow room is to be preferred, because, in the event of part of the house collapsing from a very near explosion, the roof or ceiling over it will be more capable of resisting the fall of debris,

such as loose slates or tiles, than a roof of wide span. Of course, if you can get material and labour for propping up the ceiling over the refuge room, it is not so important to choose a small and narrow room.

As a general rule it is desirable to avoid rooms with large windows; bay windows in particular will require large amounts of material to block them in order to keep out blast and splinters.

In the typical suburban house, the kitchen or scullery will often, though not always, be found to be the most suitable, particularly if the door faces either the next house or a garden wall. A ground floor room should generally be chosen in preference to one on an upper floor as it provides greater overhead protection against falling shell splinters or machine-gun fire. Also bomb splinters may strike upwards through window openings and floors.

If you live in the upper storey of a house which has been converted into flats it will be necessary to come to some arrangement with the other occupants, so that common protection can be secured for all. People in the ground floor or basement might give up space in an entrance hall or the like, and the others might provide material and labour for blocking up a window where necessary. Perhaps a common staircase could be adapted for use as a refuge by all.

A coal cellar under the pavement or under a yard at the back of a house will make a very good shelter just as it is, but you should see, if possible, that there is an emergency exit. This can be provided by enlarging the coal chute as shown in Illustration 2. If you live in a terrace it may be possible to arrange with your neighbour to make a crawl hole between your cellars.

Protection of Windows and Doors of Refuge Rooms.

Windows and doors of refuge rooms which are not shielded by another house or solid wall within a short distance must be protected against bombs. This protection can be obtained by blocking the openings or by erecting a brick or earth wall outside. The latter is known as a "barricade." In either case the protection should be raised to a height of at least 6 ft. above the floor of the room, so that you can walk about without danger from splinters. Where a window is blocked up to a height of 6 ft. above floor level this will usually leave a small area of window at the top which can be used to admit light and air at normal times. If you find it too expensive to provide protection up to 6 feet high, protection up to 3 feet 6 inches will do if you are prepared to sit on the floor during raids. An inside screen (as described on page 20) should be fitted to the refuge room window. This will prevent light from showing in a black-out, and if the glass is broken will stop flying pieces of glass and also keep out gas.

If you can get the help of somebody in the building trade, the best plan is, of course, to build up the window opening with brickwork. Old bricks will serve just as well as new ones; the builder will probably have some. There is no shortage of bricks.

A simple way of blocking the window is shown in Illustration 3, type A. Whilst this does not give absolute protection it will stop most splinters. It is done by nailing up stout boards on either side of the window opening and filling the space between them with

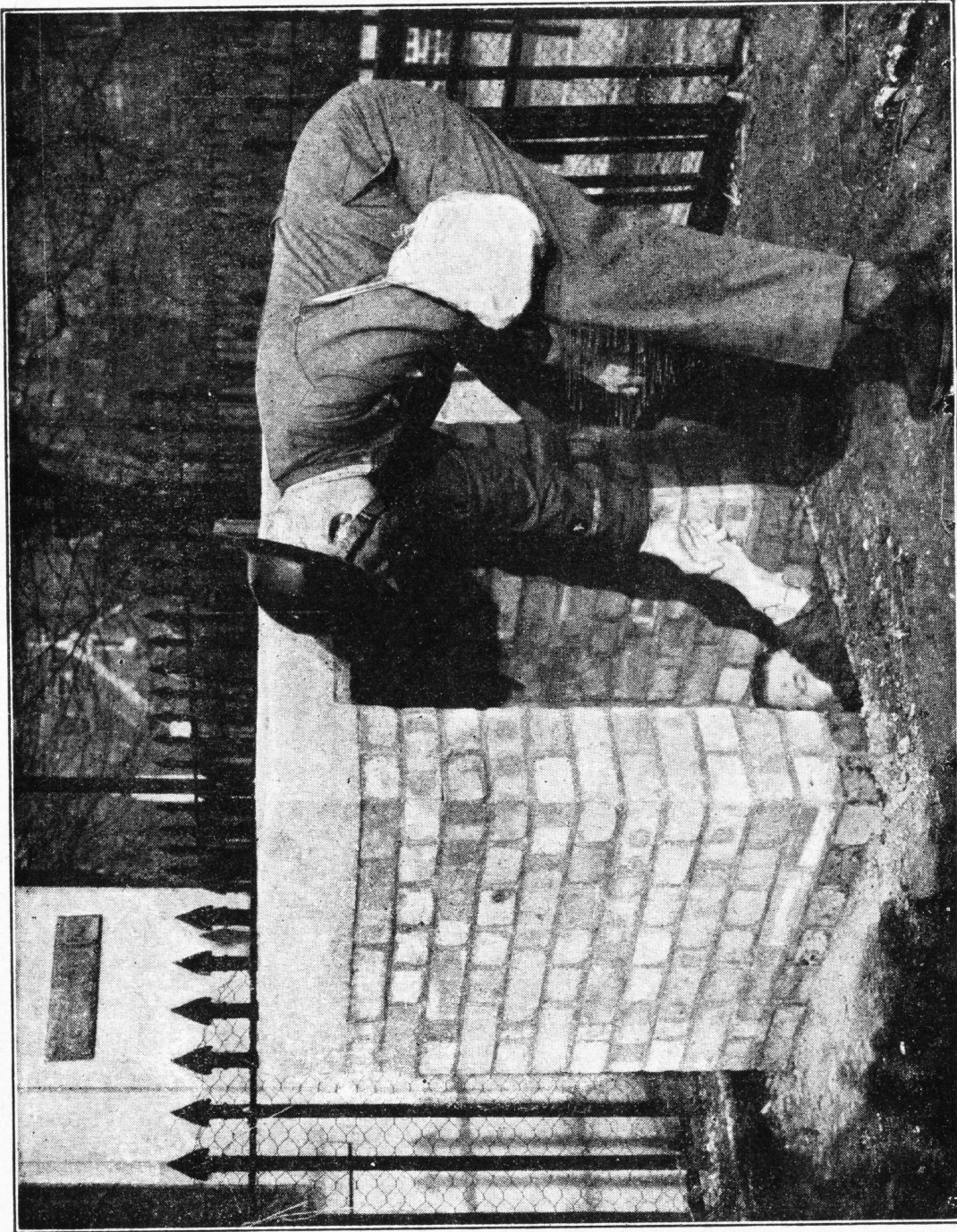
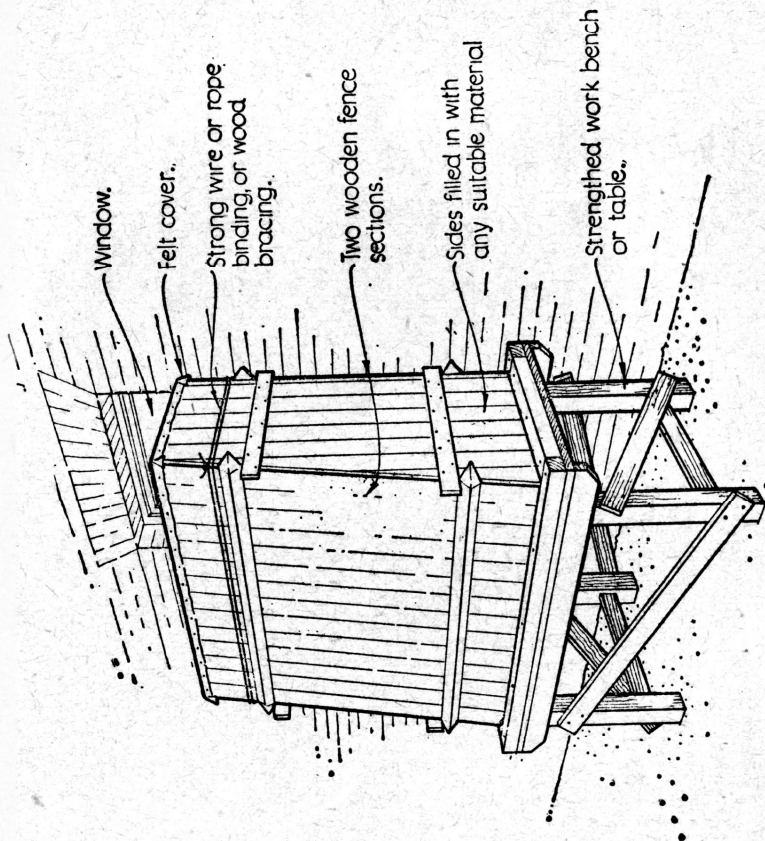


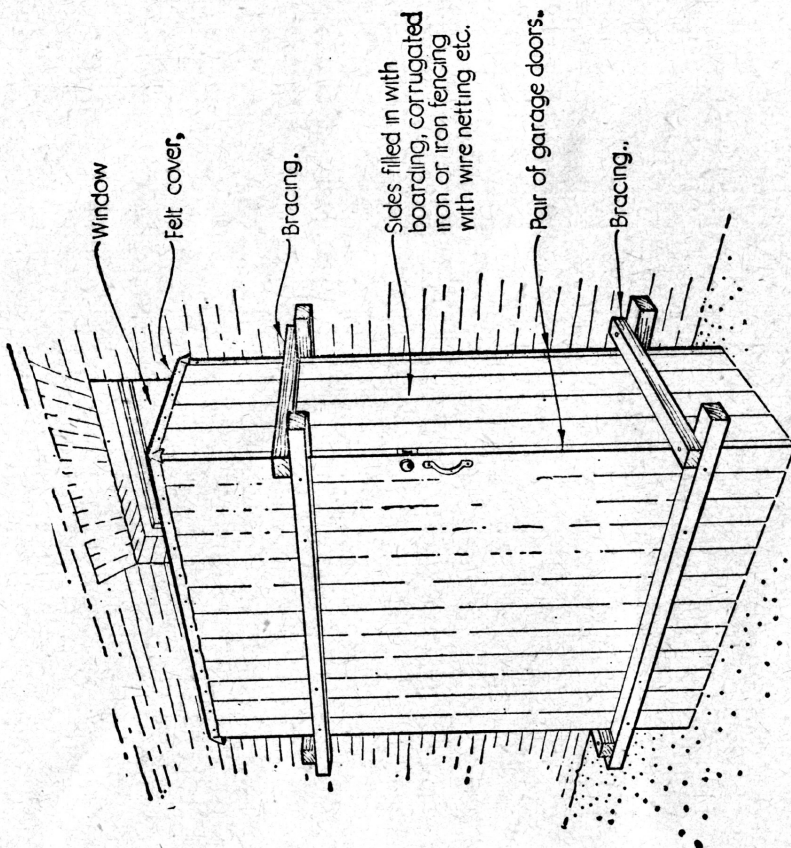
ILLUSTRATION 2.—AN ENLARGED COAL CHUTE PROTECTED FROM DEBRIS CAN BE ARRANGED AS AN EMERGENCY EXIT FROM CELLARS.

shingle, earth or sand. It will usually be best to remove the window, or at any rate the glass, before doing this. Thick stacks of books form good protection against flying bomb splinters, and Illustration 4 shows two ways of stacking them.

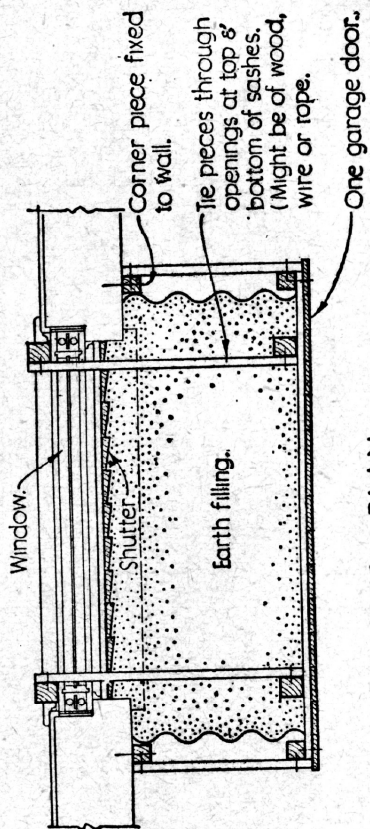
Some ways of making window barricades are shown in Illustrations 3 and 6, and of door barricades, usually called "traverses," in Illustration 5. Methods of barricading the windows of basement or semi-basement rooms are shown in Illustrations 7, 8 and 9.



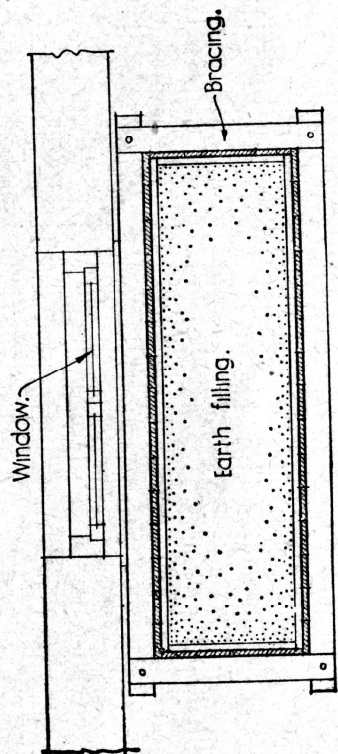
SKETCH.



SKETCH.

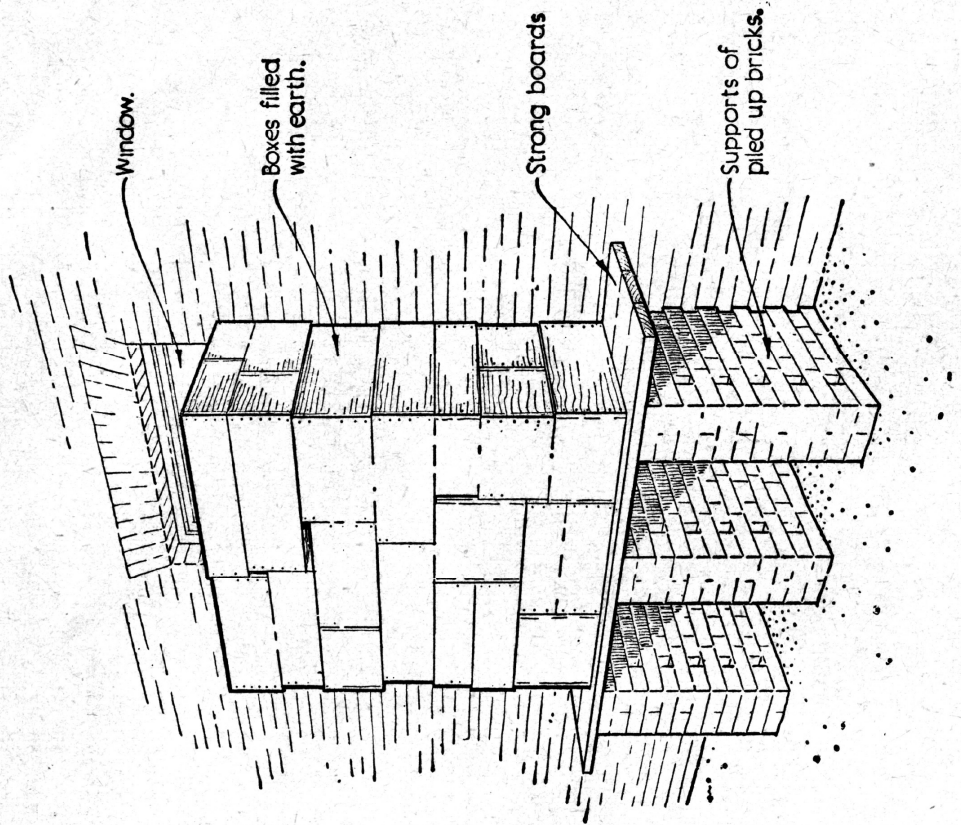


ALTERNATIVE PLAN.

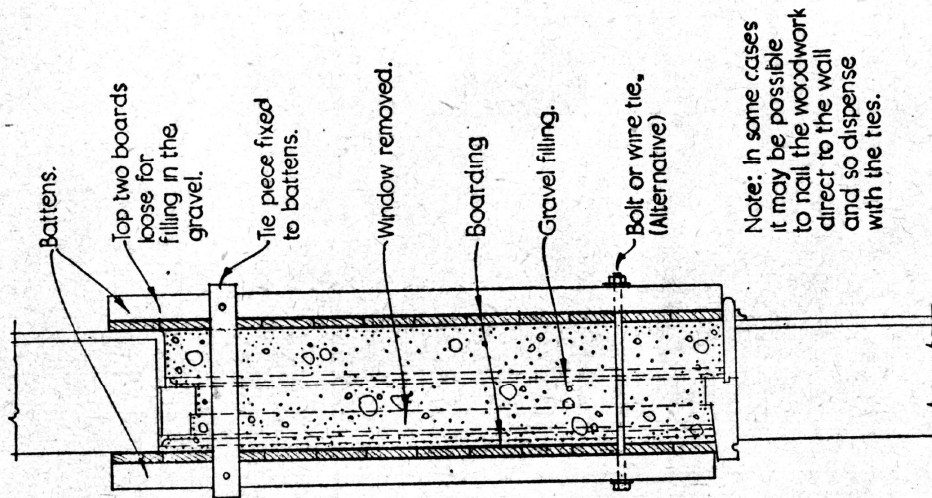


PLAN.

ILLUSTRATION 3.—THREE WAYS OF MAKING BARRICADES OUTSIDE WINDOWS USING MATERIALS FOUND IN THE HOUSE OR GARDEN AND (TYPE A) A WAY OF BLOCKING A WINDOW OPENING.

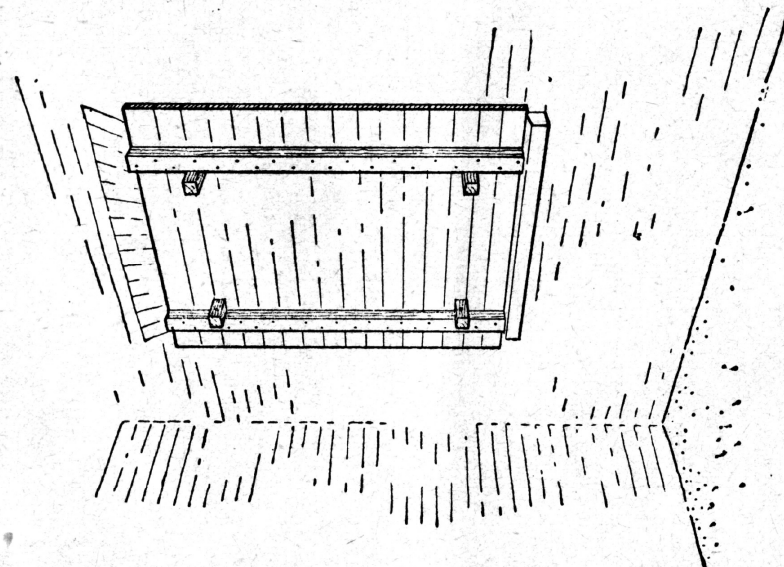


SKETCH •



SECTION •

ILLUSTRATION 3 (CONTD.)



SKETCH • (Type A)

Loose gravel or shingle, 2 feet thick, or 30 inches of earth or sand, will give complete protection against splinters, and is equivalent to a solid brick wall 13½ inches thick. These materials should be held between boarding, corrugated iron or some form of revetment, as in Illustration 3. Timber may be difficult to get and can be economised by using wire netting or split chestnut fencing between timber uprights spaced not more than 1 foot 6 inches apart. In

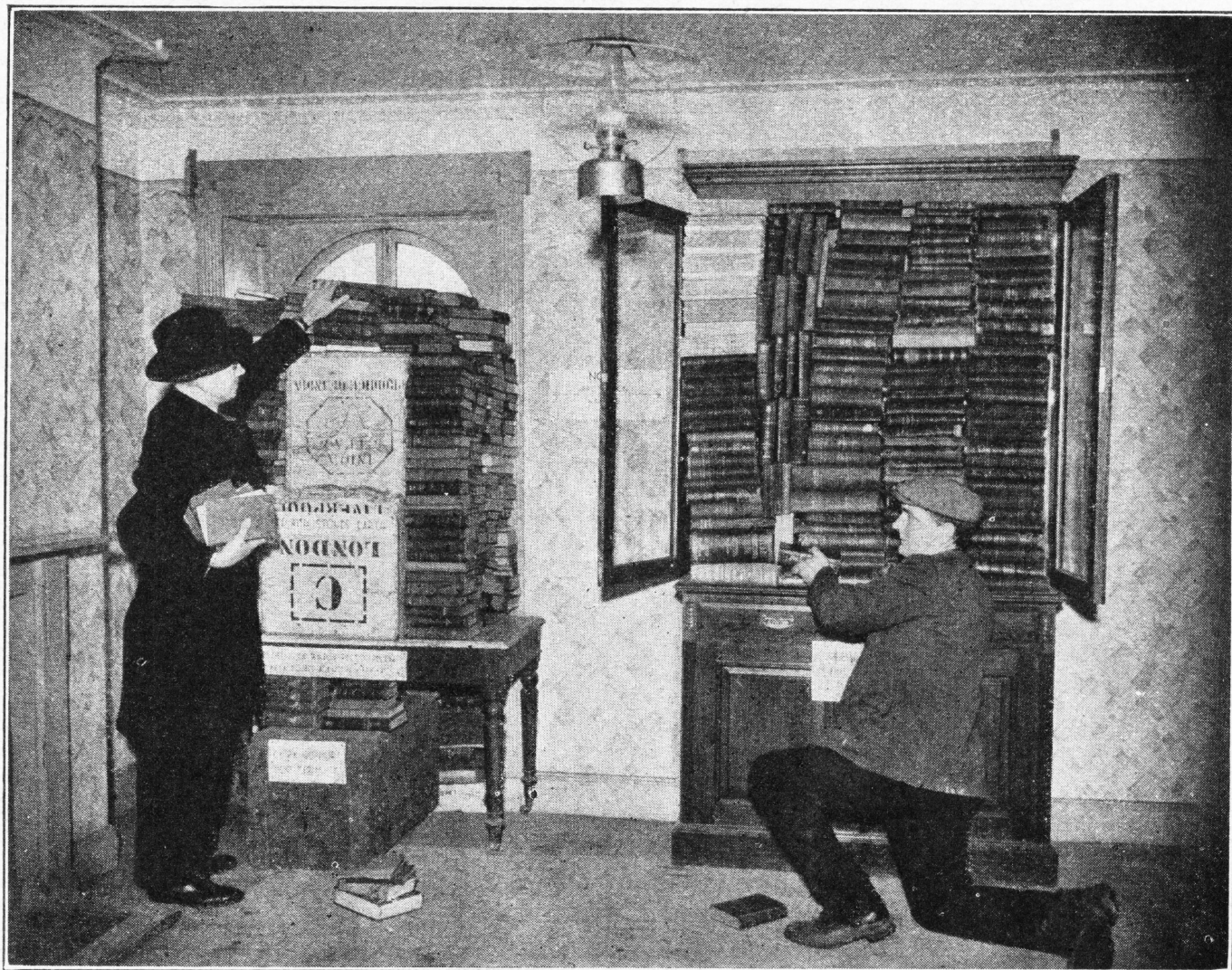
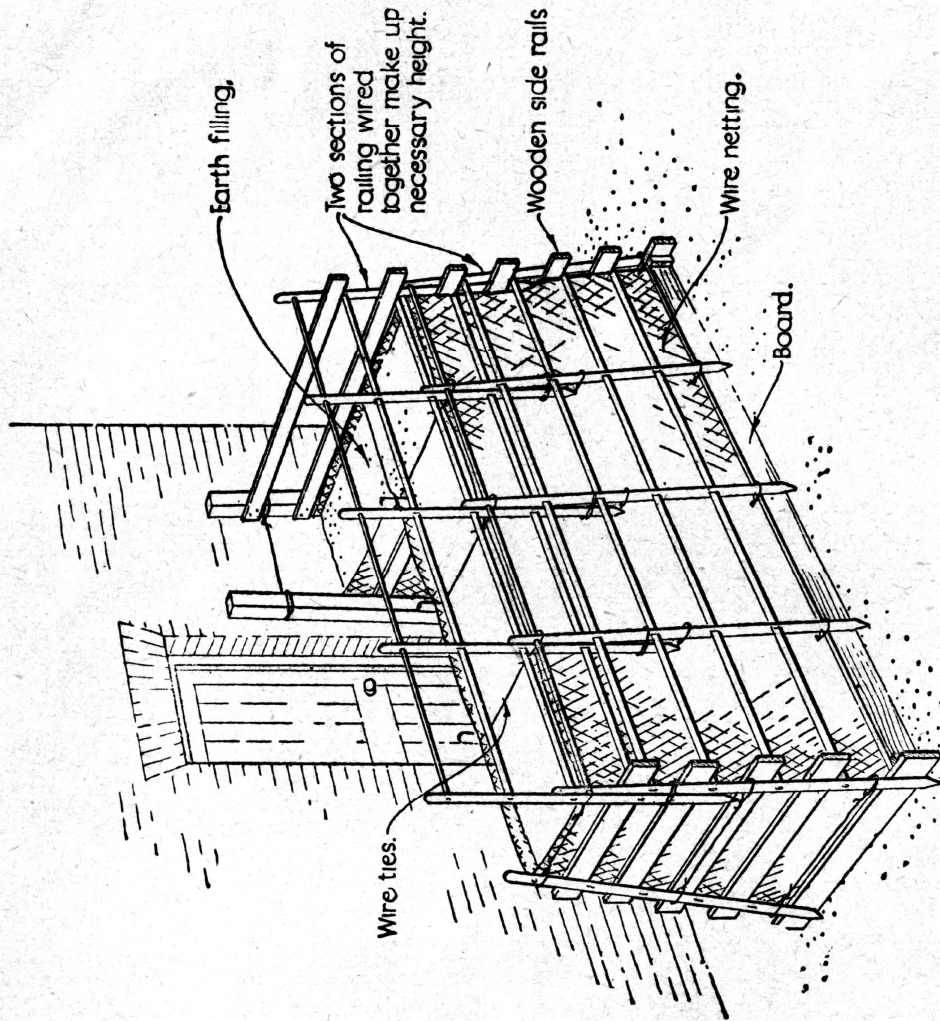
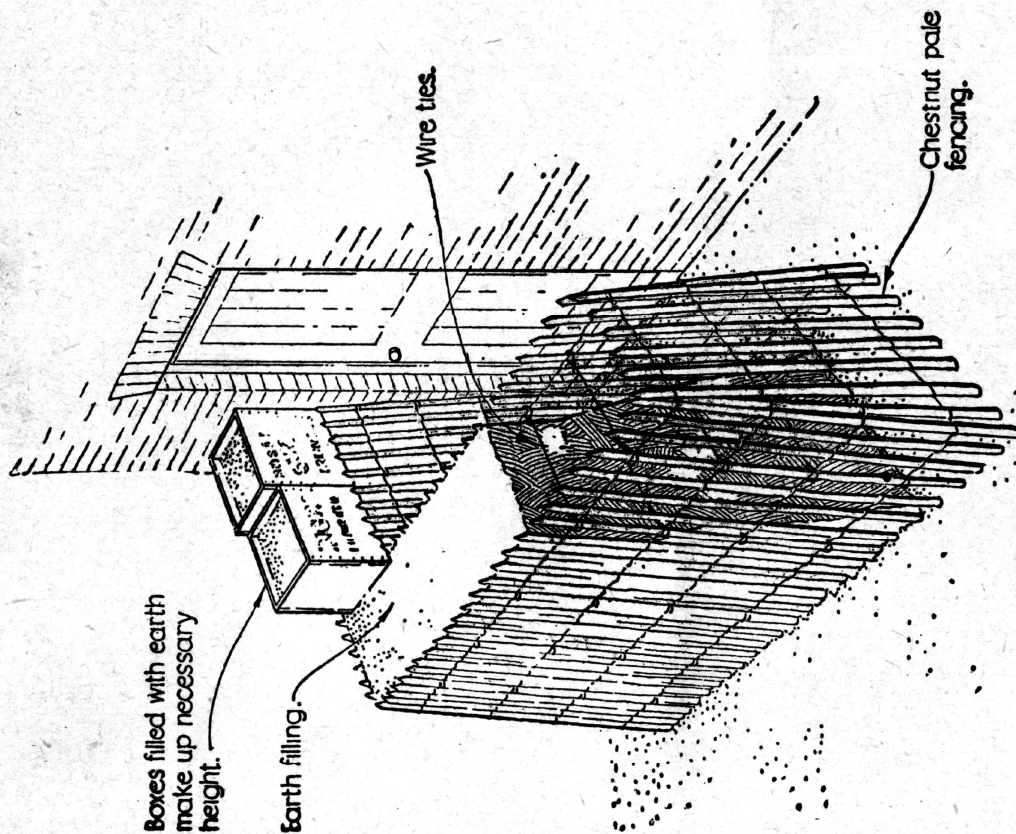


ILLUSTRATION 4.—A STOUT BOOK-CASE, STUFFED TIGHTLY WITH OLD BOOKS, PROTECTS ONE WINDOW. OR A TABLE CAN BE USED WITH BOOKS 2 FT. 6 IN. THICK PILED ON IT. IF THE BOOKS ARE LOOSE, ROPE THEM DOWN FIRMLY.

some cases one or two old doors may be removed and used to contain the earth or gravel walls as shown in Illustration 6.

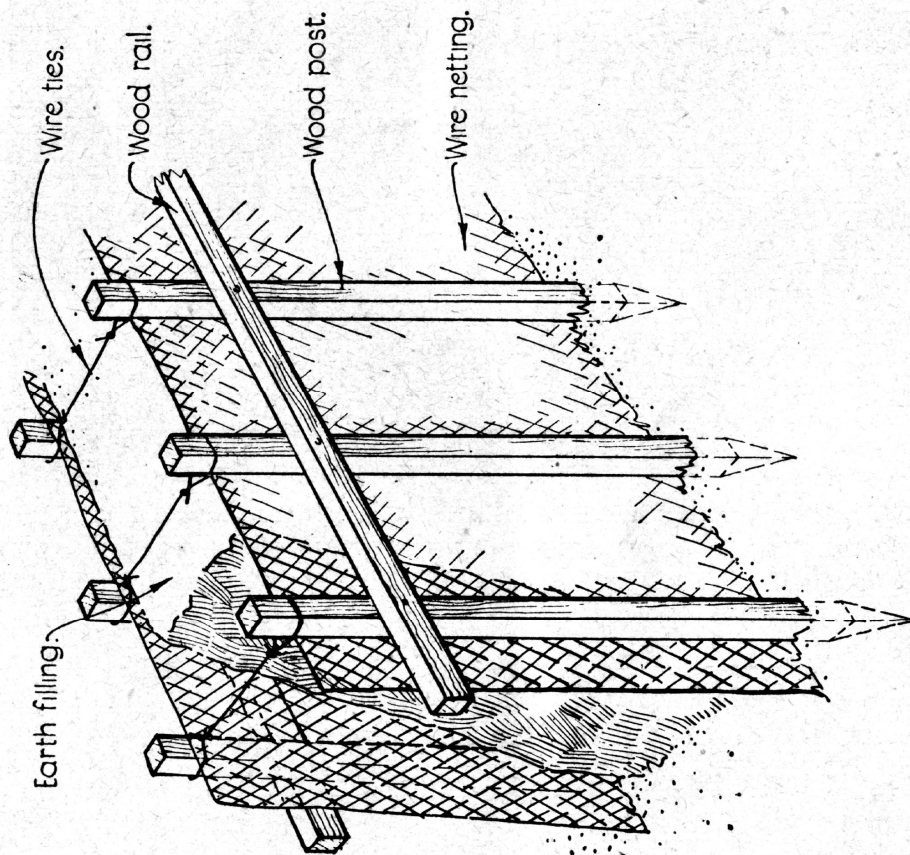
Timber or other outside framing should be firmly tied together through the earth wall to prevent bulging. For this, cross pieces of wood may be nailed on, or lengths of wire used. The earth or gravel need not be rammed tightly. There is, of course, no objection to providing earth or gravel walls thicker than is specified above; the aim should be to make the window barricade give at least as much protection as the walls of the house. Crazy paving slabs make an excellent material for building walls or filling barricades.



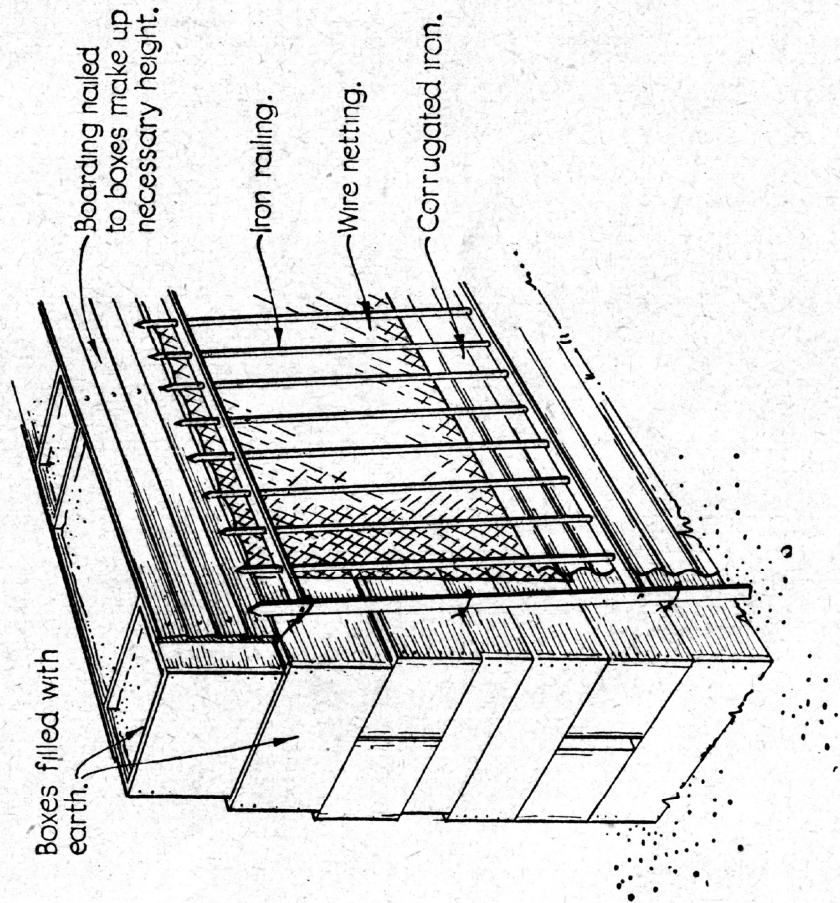
CHESTNUT PALE FENCE REVETTING •

IRON RAILING AND WIRE REVETTING •

ILLUSTRATION 5.—METHODS OF MAKING BARRICADES AND TRAVERSES TO DOORS, FILLED WITH EARTH. ALTERNATIVELY THEY CAN BE BUILT OF BRICKWORK.



WOOD POST AND WIRE REVETTING •



THE USE OF WOODEN BOXES •

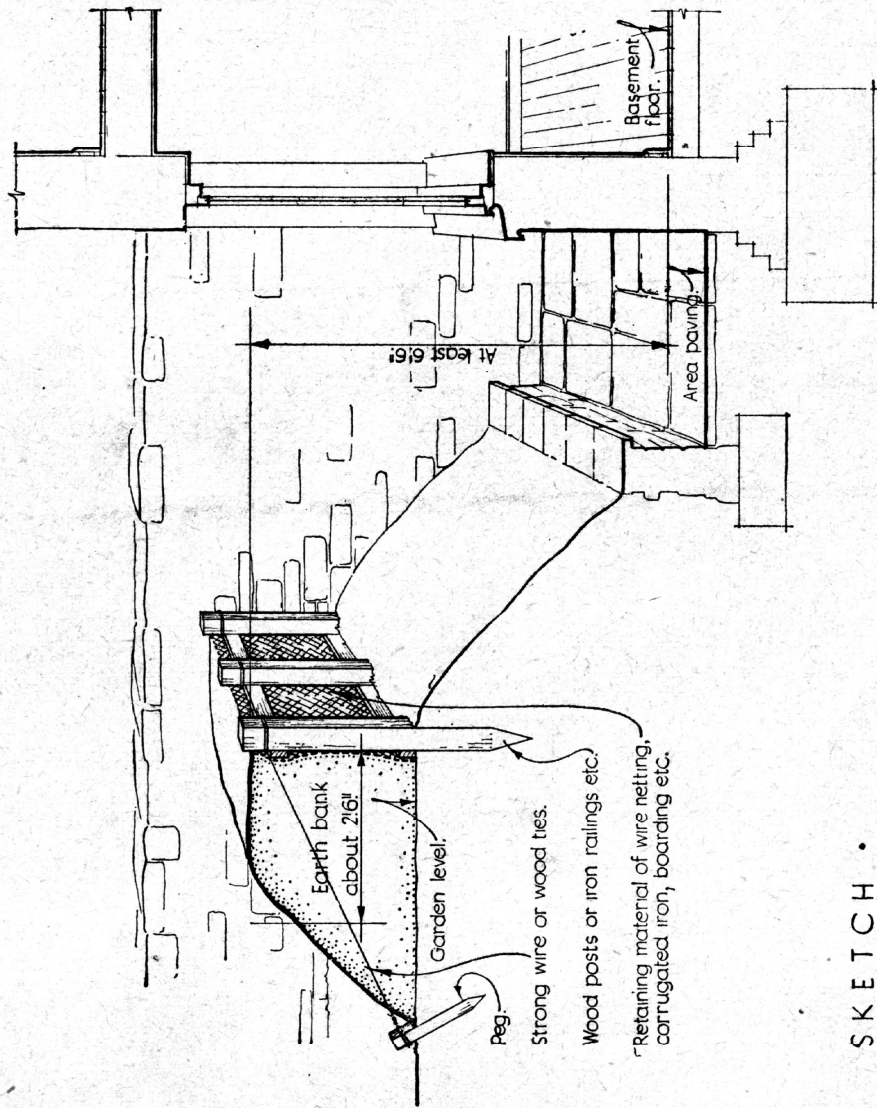
ILLUSTRATION 5 (CONTD.)

In blocking windows and building barricades you should take care to avoid making the house damp or starting dry rot in the woodwork of the house. Barricades should either be built a few

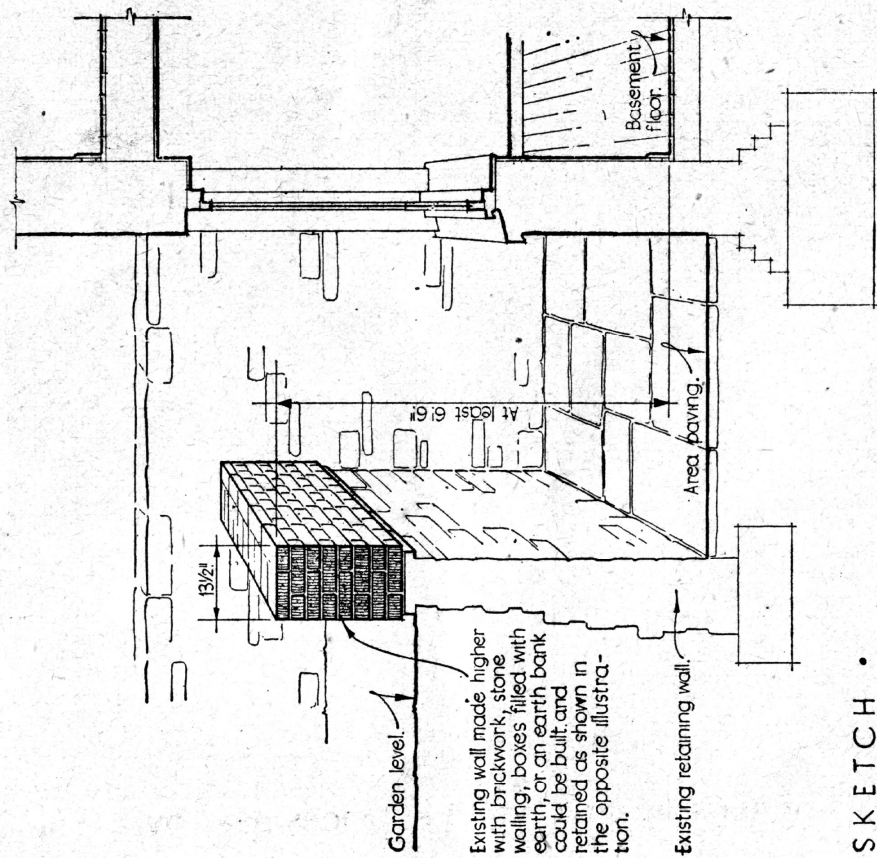


ILLUSTRATION 6.—PROTECTING A REFUGE ROOM AGAINST BOMB SPLINTERS. THE WINDOW HAS AN OLD DOOR ACROSS THE WINDOW, STOUTLY FASTENED BY WIRE TO A SECOND DOOR INSIDE THE WINDOW. THE MAN IS FILLING THE SPACE BETWEEN THE DOORS WITH GRAVEL. THE GLASS ABOVE IS COVERED ALL OVER WITH AN ANTI-SPLINTERING TREATMENT.

inches away from the walls or be insulated from them by layers of tarred building paper or waterproofed felt. It is as well to cover the tops of barricades with building paper or slates in cement mortar to keep them from becoming soaked by rain. Also be careful to keep



SKETCH •



SKETCH •

ILLUSTRATION 7.—METHODS OF BARRICADING A SEMI-BASEMENT WINDOW.

free from obstruction the wall gratings that ventilate the spaces under wooden floors. If you want to gas-proof your refuge room make arrangements to block these gratings only when air-raiding appears imminent.



ILLUSTRATION 8.—PILING UP EARTH AGAINST A WOODEN SUPPORT TO FORM A BARRICADE
IN FRONT OF A SEMI-BASEMENT WINDOW.

Protection of Glass in Windows.

Even if only a few buildings are seriously damaged by bombing, it is certain that many more will have windows broken by blast. Apart from rooms with broken windows being very uncomfortable, there is the serious danger that people in refuge rooms will be cut by flying pieces of glass when a bomb explodes near by. There are

three ways (described in detail below) of overcoming this. These are:—

- (1) Paste a suitable covering over the glass.

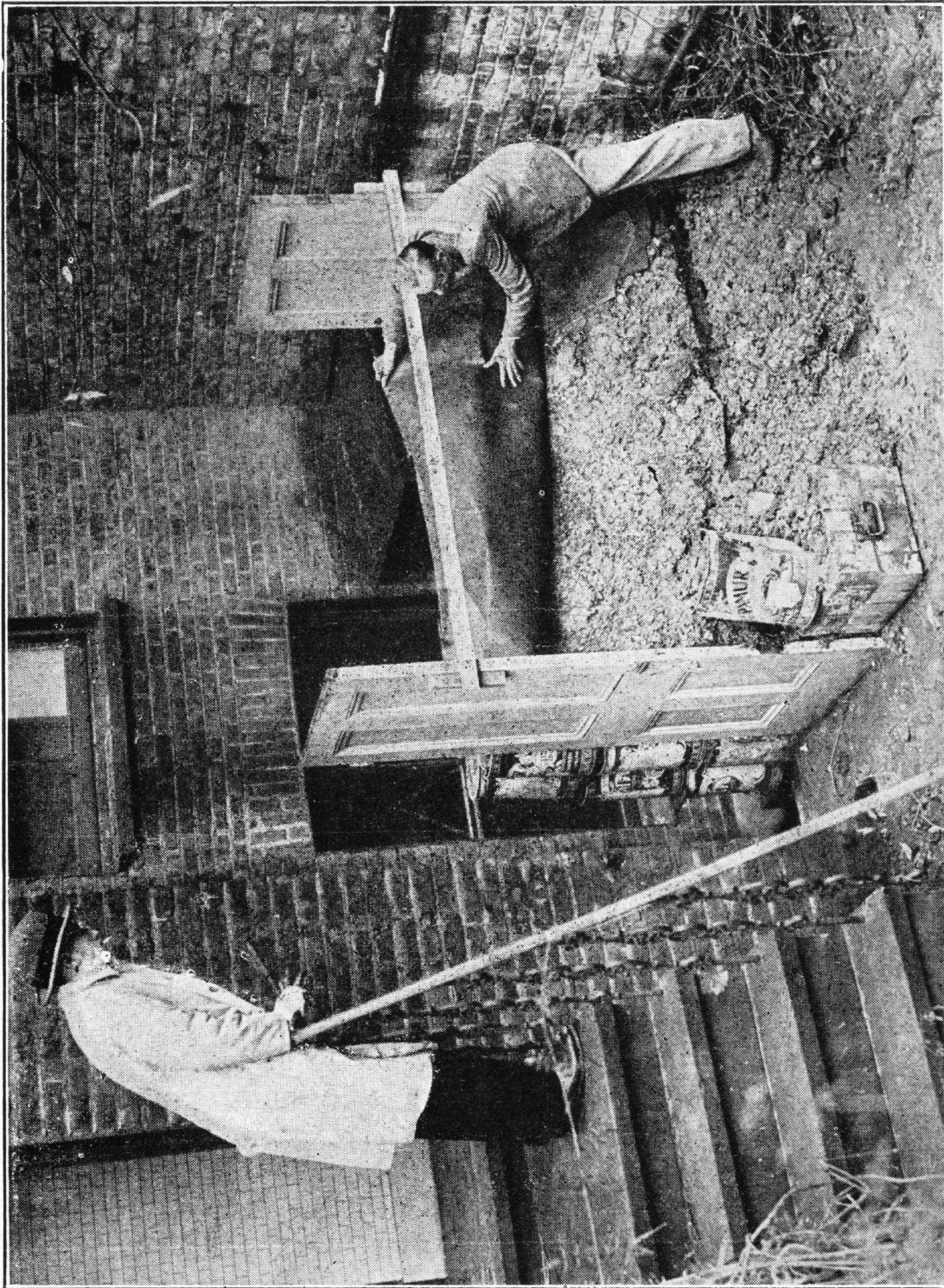


ILLUSTRATION 9.—ANOTHER IDEA FOR PROTECTING A WINDOW, USING TWO OLD DOORS AND SOME OLD PAINT CANS TO SUPPORT THE EARTH. THE OLD LINOLEUM IS TO PROTECT THE EARTH FROM SOAKING AND WASHING AWAY BY RAIN. (PLENTRY OF OLD DOORS FROM BLITZED HOMES.)

- (2) Cover the whole window inside with wire netting.
- (3) Fit inside the window a light-weight screen.

First Method.

You should realise that nothing you can stick on to glass will prevent it being broken, nor will even increase its chance of remain-

ing unbroken when a bomb explodes near by. But a good covering, properly stuck on, will prevent glass flying in small dangerous pieces and may even hold a badly cracked and bulged pane in place enough to keep out the weather for a time. Coverings of this kind are suitable where curtains and blinds are used for blackout.

The material chosen should be tough or one that will stretch considerably without breaking, and it must of course stick tightly to the glass. Both the material and the adhesive should keep their nature for a reasonably long time on the window. If they become brittle or peel off they will be useless.

The following notes will serve as a guide to the various materials you can use. All materials should be put on the inside of the window, which should be thoroughly cleaned beforehand.

(a) *Paper or Cardboard*.—Where the loss of light does not matter, sheets of strong wrapping paper or cardboard can be pasted over the glass. The thicker and tougher the paper, the better; if possible, it should be one containing cloth fibre. Thin brown paper applied in strips is not very effective.

It is important that the adhesive should not become brittle on drying. Adhesives such as gum, flour paste, or paperhangers' paste are suitable if a little glycerine is added or, failing glycerine, treacle.

For fixing cardboard, the adhesive should be made rather stronger than for paper, and it is as well to damp the cardboard before applying the paste. Flexible glues can also be used.

Sodium silicate ("waterglass") should not be used as an adhesive for any material as it is liable to damage the surface of the glass.

(b) *Textile Materials*.—Cotton, linen, sisal or other light-coloured cloth in the form of netting or sheeting may be applied all over the glass, using one of the adhesives mentioned in (a) above.

More daylight, though rather less effective protection, will be obtained by applying cloth materials in strips. Insulation tape and sticky cloth tape of the kind used for wrapping tennis racquet handles are examples of this. These will stick to the glass better if they are pressed on with a warm iron. The strips should preferably be not less than $1\frac{1}{2}$ inches wide, and should be put on to form spaces not more than 6 inches each way.

(c) *Transparent Wrapping Films*.—Special transparent films similar to those sold for wrapping cigarette packets, chocolate boxes, etc., but rather thicker, can be bought. These give good protection and do not cut off light as much as paper or textiles. Some films can be obtained strengthened with a light fabric netting.

Films are sold under several trade names, and sometimes have a suitable adhesive sold with them. Some are supplied in rolls

ready-coated with a tacky adhesive, and these can be put on to the glass in strips.

Most of the films now being sold belong to one or other of the following types, which can be easily distinguished by the burning tests described below.

(1) *Cellulose nitrate film*, commonly called "celluloid." This is highly inflammable and for this reason should not be used on windows. It flames fiercely when set on fire.

(2) *Cellulose film*.—This burns quietly like newspaper when set on fire. There are two types; the "coated" or moisture-proofed kind, should not be used. You can tell the "uncoated" by wetting it with the tongue when it will curl and soften slightly, whereas the "coated" will not.

Suitable adhesives are a good clear gum, or gum arabic or gelatine dissolved in hot water. These should have one part in six of glycerine or treacle added. Do not try to put the adhesive on to the film itself, but smear it on the glass and then press the dry film into place quickly. It is best to use a small hand roller. If the panes are large it will be easier to put on an all-over coating in strips, side by side, rather than in one piece. It does not matter if the film wrinkles provided most of it sticks firmly when dry. It is possible to make cellulose film stick smoothly and evenly by wetting it with water only, but this should on no account be done since the coating so applied gives little or no protection. After the cellulose film has dried it is useful to apply a coat of clear varnish or cellulose lacquer. This waterproofs the film and will help to prevent it peeling off if the windows get steamy.

(3) *Cellulose acetate film*.—This does not readily take fire, and in burning it melts and drops. Gum is not a suitable adhesive. If no special adhesive is recommended by the maker, a mixture of nine parts of treacle to one of warm water may be used and the edges stuck down with adhesive tape.

(4) *Liquid Coatings*.—Liquid preparations for painting on the glass are now being sold under various trade names as "anti-shatter" treatments. When dry they usually give a clear coating which sticks to the glass, but some are sold coloured for blackout purposes. The makers issue instructions for putting on their own materials.

Not all of these give the desired protection, and at best they usually do not last long. They tend to become brittle, and lose their anti-splintering effect, and it is not always possible to see they have done so. It is safest, therefore, to renew the coating every two or three months.

Second Method.

Wire netting of mesh not bigger than $\frac{1}{2}$ inch will stop flying glass. It should be firmly fixed on the inside of the window. It may be

nailed to the window frame, but this will make the window difficult to clean or open. A better way is to fix it to a detachable wooden frame made to fit the window opening. Wire netting of course gives no protection against weather when the glass is broken, nor does it help in blacking out.

Third Method.

A light-weight screen fixed over the window opening inside has four uses. When the window is broken it will stop flying pieces of glass, it will keep out the weather and, if properly fitted, it will keep out gas and it also acts as blackout. A screen is the best method of protecting a refuge room window. Pasting a covering on the glass as well is not necessary, but makes a better job of protection.

The screen is made of a light sheet material which is nailed to a light wooden frame. Materials such as the following are suitable:—

Plywood, Building Board, Thick Cardboard, Corrugated Fibre Board, Thin Tinned Sheets, Roofing Felts, Linoleum, Plaster Board.

Some of these materials, which are very stiff (such as Building Board), can be used for small windows without a frame. Those which are not themselves waterproof can be made reasonably rain-proof with a coat of paint. Screens of paper or cloth will not stop flying pieces of glass.

Illustration 10 shows some typical methods of framing the screens. A screen for a window 6 ft. high by 4 ft. wide can be framed with $1\frac{3}{4}$ in. \times 1 in. wood, and if this is covered with stiff material like building board no cross members will be needed, but if covered with less stiff material such as roofing felt or linoleum one or two cross members should be provided in each direction, partly to strengthen the frame and partly to provide something to nail the sheets to. See details (1), (2), (3) and (4) of Illustration 10.

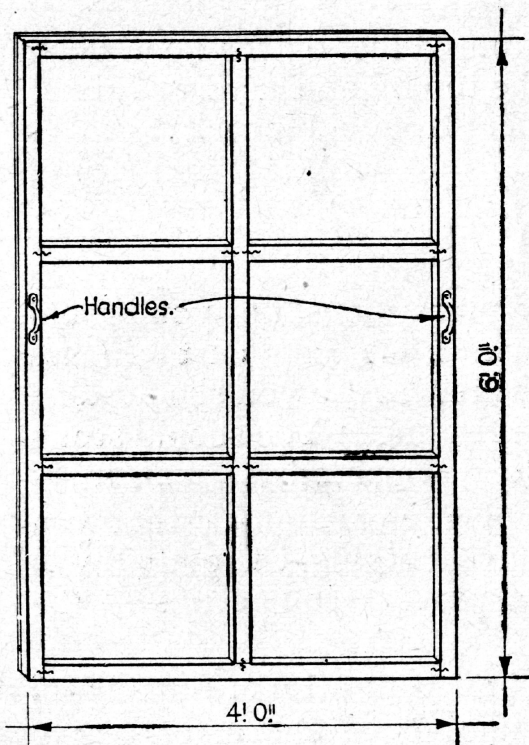
There is nothing to be gained by making the screens extra strong or heavy; the lighter they are the less they are likely to be broken when a bomb explodes. Large windows may need more than one screen.

Strong sheet materials can be nailed direct to the frame, but the thinner materials such as corrugated fibre board should be held between plywood strips or plasterer's laths as shown in details (5) and (6) of Illustration 11.

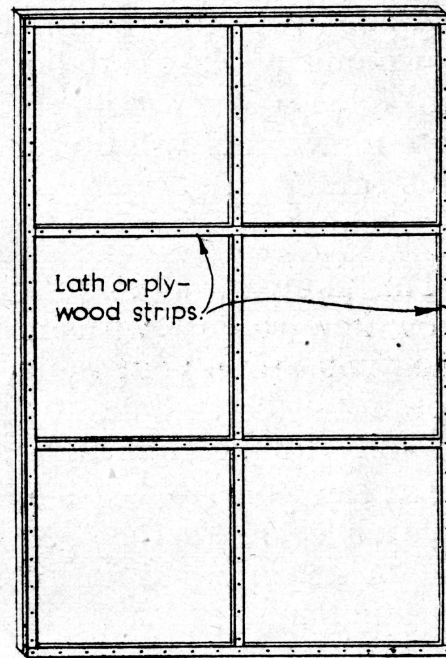
A strip of rubber, felt, baize, old carpet or other thick fabric may also be tacked on the outside edge of the screen frame to make a tight fit with the window surrounds (detail 7). This will make a tight fit to hold the screen in place, and will keep out gas.

If these screens are screwed to or otherwise firmly fixed in the window openings they will be broken by blast. They should therefore be kept in place by their tight fit or by means of the

THE SCREEN COMPLETE

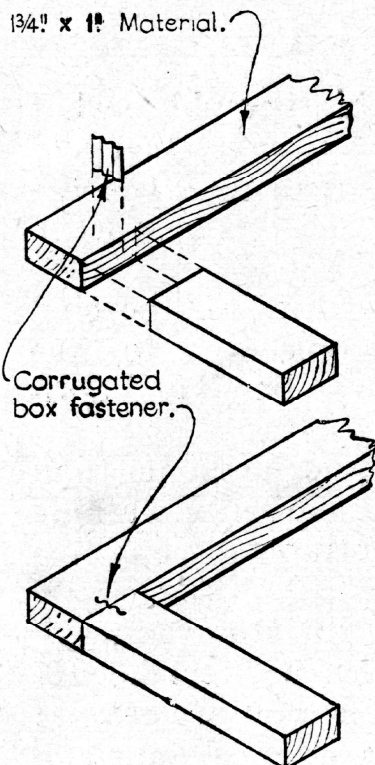


① INSIDE VIEW.

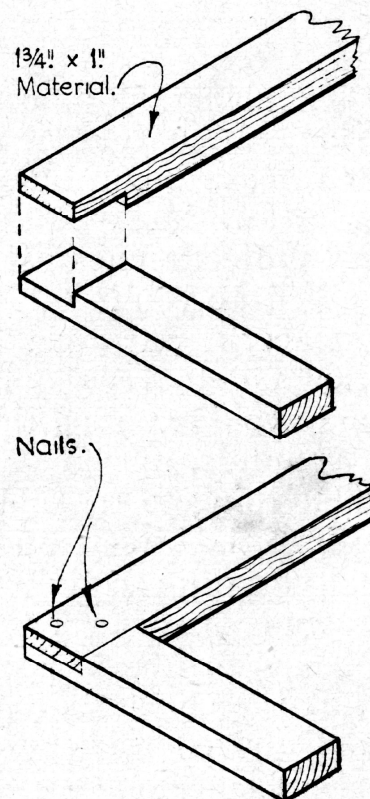


② OUTSIDE VIEW.

SKETCHES OF ALTERNATIVE JOINTS FOR FRAME



③ BUTT JOINT.



④ HALVED JOINT.

lightest possible fixings, and they will then fall out undamaged, if subjected to blast, and can be quickly replaced.

A good plan to prevent the screens from falling on the floor when blown out by blast is to hold them at the top by an elastic or rubber cord fixed to the window head. Rings cut from old inner tyre tubes from motor cars will do for this. (Details (9), (10), (11) and (12) of Illustration 11.)

Fire Precautions.

This pamphlet does not deal with fire precautions, but you should know how to deal with incendiary bombs if one falls on the house when you are in your refuge room or shelter. Also you should take precautions beforehand to prevent fire spreading. You should study carefully Public Information Leaflet No. 5 which advises you to:—

1. Clear your roof spaces and attics of any old "junk" that you have collected there. See that you have nothing there that will easily catch fire and nothing that would prevent you getting at the burning bomb.

2. Make sure that you can easily get into your attic or roof space.

3. Have ready at least four large buckets, a shovel or scoop, preferably with a long handle, and a fair quantity of sand or dry earth. Provide also what appliances you can; if possible, a stirrup handpump with the special nozzle giving either a jet of water for playing on a fire, or spray for dealing with the bomb itself. Failing this, a garden syringe would be useful, or even old blankets soaked in water.

Taking Cover.

And now about taking cover.

You have been told at the beginning of this pamphlet what happens when a bomb bursts, and from what you have been told about your own home you will know what it is that gives you the necessary protection against blast and splinters, and this knowledge will be a help to you in taking cover.

Experience in war areas has shown that casualties for the civil population fall to very small numbers when people learn to take cover and avoid exposing themselves in the open to bomb and anti-aircraft splinters, machine-gun bullets and flying glass.

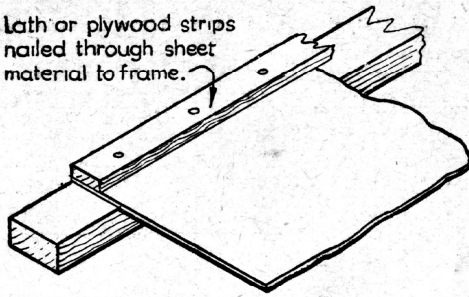
The first thing to remember is that you are safer at home than running into the streets and seeking other shelter when a warning goes, and you will certainly be much more comfortable in your own refuge room or garden shelter.

Almost no shelter is proof against a direct hit from a heavy bomb, but the chances of *your own* house getting a direct hit are very small indeed. Therefore stay at home or if you are not far away when a warning goes, get back quickly to your own home and refuge. On no account look out of the window.

If you are not near home and you are caught in the street or in the open take the best cover you can find.

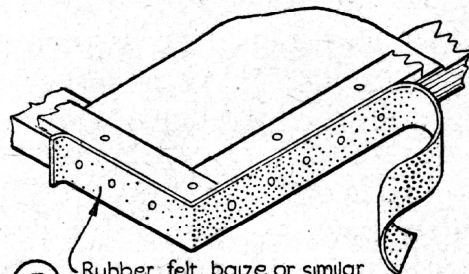
METHODS OF FIXING SHEET MATERIAL TO FRAME

Lath or plywood strips
nailed through sheet
material to frame.



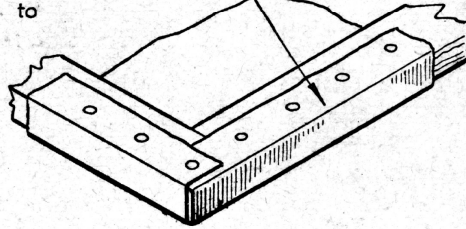
⑤ LATH OR PLYWOOD STRIPS •

EDGE FIXING & GASPROOFING



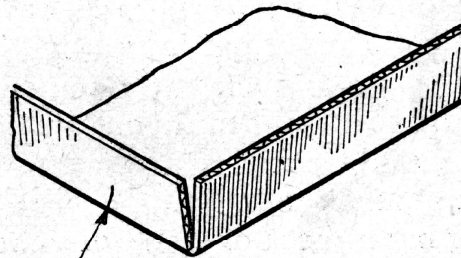
⑦ Rubber, felt, baize or similar
material tacked to edge of frame.

Sheet material turned up over edge
of frame and nailed
to



⑥ NAILING DIRECT TO FRAME •

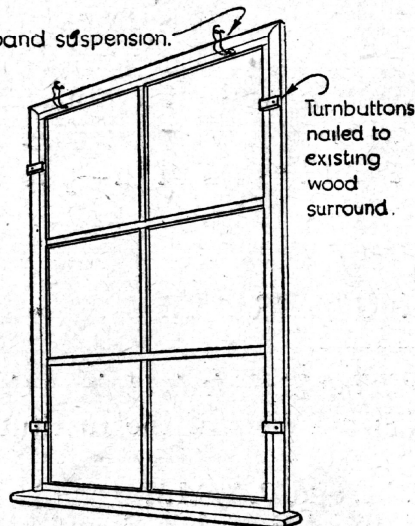
CORRUGATED BOARD SCREENS



⑧ Edge of board folded and turned.

TURNBUTTON FIXING

Elastic band suspension.

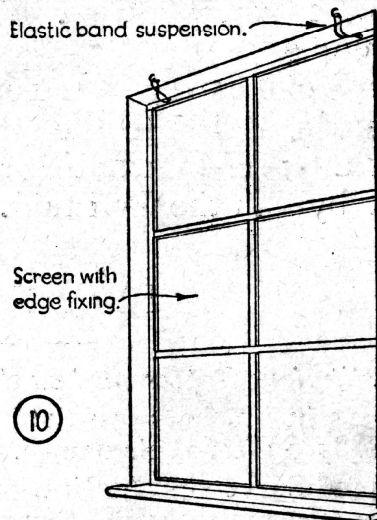


⑨

SCREEN IN POSITION •

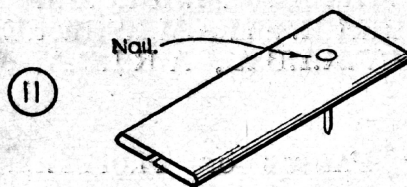
ELASTIC BAND SUSPENSION

Elastic band suspension.



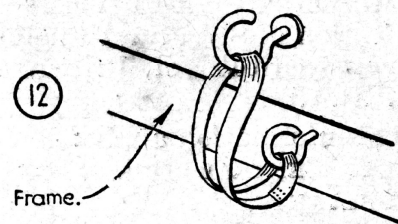
⑩

SCREEN IN POSITION •



⑪

SKETCH OF TIN TURNBUTTON •



⑫

SKETCH OF SUSPENSION HOOK •

ILLUSTRATION 11.—MAKING LIGHT-WEIGHT SCREENS.

Detail (9) shows a screen held by turnbuttons as in detail (11). Detail (10) shows a screen held by its tight fit in the window opening.

Remember that bomb splinters do not as a rule fly horizontally; practically all of them fly slightly upwards. Therefore if you are in the open with no cover lie down flat on your face. If there is a ditch get into it, or a low mound or wall get down behind it.

If you are caught in a street go into the nearest public shelter, if there is one and you know where it is. You should make a habit of memorising the situations of public shelters in the places and streets which you frequent.

Do not, however, waste time hunting for a public shelter. Go into the most solid-looking building near you, if you can. Inside corridors and passages are safer than rooms with windows. If in a room sit on the floor against a wall between windows, and avoid all places where bomb splinters or flying glass can hit you.

If you cannot get into a building get under an archway or behind a low wall, or even into an area, or lie down flat. Do not, however, lie down in front of a window because glass when broken sometimes flies or falls outwards.

If bombs are bursting near it is useful to keep the mouth open by gripping a piece of wood or rubber tightly between the teeth and to put loosely-packed plugs of cotton wool in the ears. The necessary materials should be obtained and kept in a convenient place where they may be readily found if required.

Always take cover. Never go into the open to watch anti-aircraft fire or aerial battles. They may be terribly fascinating, but it is dangerous.

Another point is this. If you live in a well-built house or have a good refuge, look into the street when the warning goes and see if there is a passer-by wanting shelter and ask him in—you may be "a passer-by" in the next raid.

HELP EACH OTHER

List of Institutions Represented on the Building Technical Advisory Committee

The letters in brackets are those which members of the Institutions are entitled to place after their names.

The Chartered Surveyors' Institution (F.S.I. and P.A.S.I.).

The Faculty of Architects and Surveyors (F.F.A.S., A.F.A.S. and L.F.A.S.).

The Incorporated Association of Architects and Surveyors (F.I.A.S. and A.I.A.S.).

The Institution of Civil Engineers (M.Inst.C.E. and Assoc.M.Inst.C.E.).

The Institution of Structural Engineers (M.I.Struct.E. and A.M.I.Struct.E.).

The Royal Institute of British Architects (F.R.I.B.A., A.R.I.B.A. and L.R.I.B.A.).

For further information apply:

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