Rural housing manual.

MINISTRY OF HEALTH

Housing (Financial Provisions) Act
1938

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LONDON: HIS MAJESTY'S STATIONERY OFFICE
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LONDON
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RURAL HOUSING

Siting

Lay out on the site.

1. The siting of houses in rural districts is a matter of the first importance. Buildings good in themselves may be so placed as to spoil the countryside or ruin the appearance of a village of distinctive character. The desirability on social and practical grounds of placing the new houses in or close to existing villages has been pointed out in the second report on "Rural Housing" of the Central Housing Advisory Committee and the advantage of this course from the aesthetic point of view need hardly be stressed. There is, however, a tendency with some local authorities to select sites for new houses in prominent positions at some distance from a village, or on the main approach road, rather than to evolve a plan for the development of the village on well-considered lines. Such a plan would take into consideration any existing features of special interest and might make provision for open spaces for recreation, a site for a community centre or for a new school, and perhaps for the redevelopment of cleared areas as well as for the unobtrusive siting of the new cottages. The lie of the land should determine to a great extent the placing of the roads and buildings. These should be so arranged in relation to the contours that the construction of the roads and the foundations of the buildings will be economical. On sloping or sharply undulating land it is important to arrange the groups so that they will sit well on the site. Buildings set diagonally with the plane of slope seldom look well. This defect is not easily remedied by terracing the ground. Generally buildings are most satisfactory when arranged with their longer face parallel to the contour lines and the shallower depth at right angles to them.

A building with a higher and a lower side or end will generally look better and firmer on its site if the higher part of the building stands on the lower part of the site.

Roads.

2. In planning the lay-out cross-roads should be sparingly introduced, as, owing to the loss of frontage at junctions, a cross-road is often found to add very little to the effective building frontage. Acute angled junctions also are wasteful in frontage.

Variety in grouping and economy in road-work may be achieved by planning the houses round a green or in a short cul-de-sac.

Much of the effect of the lay-out design depends on the careful and orderly planning of road bends and junctions, and on the placing and treatment of the houses adjacent to them. Where the end elevations are exposed at corners the houses should be properly designed to provide for the two faces being seen together. Unless specially adapted to the position houses placed diagonally across a corner do not usually look well. Even when suitably designed, they are seldom pleasing unless set well back behind the building lines of the streets. At important corners specially designed groups may be used to turn the angle; otherwise the corners may be made satisfactory by bringing the ends of the two rows of houses fairly near to each other and filling the diagonal space with a wall, out-building or a screen of hedge or shrubs.

Frontage is sometimes wasted in a quite unnecessary effort to make all the gardens exactly the same size, even where they come against a road junction or corner. Such an arrangement is unsuitable to open development; by it the backs of the houses are unduly exposed, and a ragged appearance is given to the street junctions.

Community Centres.

3. School sites, playing-fields and allotments are generally most economically arranged behind house sites with access at convenient points to the road while a Village Hall or Community Centre would naturally be sited with some degree of prominence. Advice in the planning and construction of Village Halls is given in "Village Halls" published by the National Council of Social Service.*

Grouping of the Buildings.

4. Much may be done by the careful arrangement of the buildings to introduce pleasing relationship and orderly grouping, the true variety; and the very opposite, be it noted, of mere change of frontage for the sake of change. To break away from the straight line by scattering the units in a random irregularity or by a mechanical setting back of blocks is but to destroy the chief virtue which the straight row has, namely, its orderliness, without producing any new relation to take its place.

An orderly grouping does not necessarily mean one that is symmetrical on plan. On undulating sites it is important to remember that symmetry demands balance in levels as well as on plan; and where this cannot be secured some other grouping will usually be desirable.

Natural Features of the Site.

Irregularities in the site, existing trees, hedges, banks or other features will suggest many opportunities for varied grouping, which may be as important for economy in foundations as for variety in appearance. Difference in aspect of the various sites will demand a change of plan to secure the proper share of sunlight for the living rooms, shade for the larder, or shelter for the doors of the house.

These are sound reasons for introducing variation in the arrangement or in the type and treatment of the buildings. If advantage is taken of them there will generally be sufficient change to relieve any tendency to monotony; and the variation will arise in a pleasing and natural manner very different from the crude expedients frequently adopted, such as altering the position or treatment of alternate groups of houses, slating one, tiling another, facing one with brick or plastering another, without reason, merely for the sake of change.

Use of Blocks of Houses.

5. The planning of some of the houses in long blocks rather than in the semi-detached blocks so much favoured by many housing authorities is of great value in grouping. The practical advantages of building in pairs are admitted, and, while something can be done by means of outbuildings, curtain walls or, more economically, by judicious planting and grouping to give a degree of continuity with semi-detached blocks and to relieve the monotony of excessive repetition, the small sacrifice of convenience required to permit of building in longer blocks might well be made for the sake of the appearance of the village as a whole. When built in blocks of more than two houses secondary access to the inner houses by means of a passage or passages through the block is probably the most convenient and economical arrangement when allowance is made for the extra space afforded for bedrooms. In a block of four houses an arrangement, with L-shaped gardens to the inner houses is sometimes adopted.

The Buildings

Traditional Styles.

6. The beauty of the English countryside depends very largely on the general appropriateness of the older buildings to the locality and to the sites which they occupy.

In former days, when transport of heavy or bulky articles was difficult and costly, each district depended mainly on local materials for its domestic buildings. Generations of practice in their use built up traditional methods of planning and construction adapted to the materials at hand.

* Obtainable from the National Council of Social Service, 26, Bedford Square, London, W.C.1.

From these methods there were evolved the many local styles of cottage building which are still to be found in this country in great beauty and variety. This use of local materials naturally tended to produce a uniformity in style and in colouring for all the buildings and enclosing walls and fences in the locality and wherever such traditional styles and colourings survive it is of the first importance to avoid the introduction of incongruous forms or inharmonious colours.

7. Where new houses are required a study should be made of the old buildings in the district, not with a view to the revival of old forms or of past methods of construction, but to regain the sense of fitness and restraint that seems to have been the common possession of the builders of the old villages and farm houses, and to note the forms and colours with which the new buildings must harmonize. Photographs on pages 37-43, show old cottages of a simple type with distinctive local character. That it is possible, even within the limits of strict economy, to avoid the unsuitable buildings which so frequently disfigure the English countryside, is shown by illustrations on pages 43-51.

The majority of old cottages are noticeably free from elaboration whether of plan or treatment. Their pleasing effects depend mainly on their simplicity, on the appropriateness of the materials used, on the good proportion of the necessary parts, and on variety in some few of the details. A study of almost any attractive village street will show how an extensive simple background may be adequately relieved and adorned by an occasional prominent point showing a little more elaboration or decoration. A gable, porch, door canopy, bay window or chimney stack will here and there stand out as a note of emphasis.

Pamphlets of the Council for the Preservation of Rural England.

8. The Council for the Preservation of Rural England through their various branches have given a great deal of attention to the design of buildings and the selection of appropriate materials for particular districts, and have published useful regional pamphlets on these matters covering the greater part of England. These pamphlets should be carefully studied by every Architect or Surveyor who is concerned with the erection of buildings in rural districts.

Choice of Materials.

9. The appearance of a village will be least interfered with if the roofs of the new buildings are not far removed in form or colour from the existing roofs. One must respect the skyline which in many places is as important as the elevation. Where blue or purple slates would be inharmonious, grey slates of various kinds are available; where red tiles would be too prominent, buff or brown clay or cement tiles can be procured; where flat tiles would be too expensive, good economical roofs may be obtained by the use of interlocking or pan tiles. Should there be places where these roofing materials, which have been proved practically permanent by long experience, are not available at reasonable cost, and it is found necessary to use composition tiles or sheets, these can be selected of a texture and colour that will mitigate the generally foreign appearance of such roofings in a rural district. Hips and ridges should harmonize with the colour of slates or tiles, not contrast with it.

10. Though the choice of materials for walls is perhaps narrower, it is possible to colour-wash the surface, and this frequently has not only a weatherproofing value, but also serves to hide an incongruous material; a coat of white or suitably tinted lime-wash will frequently be enough to bring into reasonable harmony with its surroundings a building which would otherwise stand out in aggressive isolation. Texture is as important in walls as in roofs. The hard smooth bricks common in some districts should be avoided and pointing of brickwork should

be in a good lime mortar or a lime cement mortar with the joints struck off flush rather than in smooth cement mortar.

Design of Elevations.

11. The broad considerations of harmony in colouring and of suitability to site and surroundings can generally be appreciated if a little thought and care be given to the matter. Other questions affecting design become more technical and difficult, but a few simple rules of general application may be stated.

What the architect calls scale is but a special function of good proportion. The scale of a cottage building may be destroyed by the excessive size or wrong shape of the units of its construction. Large unbroken sheets of glass frequently have this effect; and in concrete houses especially, the size and character of the building blocks may be very destructive of scale.

Special emphasis may be laid on the general point that there can be no virtue in any kind of disorder or irregularity for its own sake. It is true that there are many beautiful relations which are not symmetrical, and consequently good designs for buildings which are not regular. But their virtue arises not from the absence of regularity, but from the presence of definite relations and proportions between the parts, which are frequently much more subtle and difficult to attain than those of regular design. Without such reasons, based on good relation and proportion, irregularity, which is merely want of order, is always a negative and destructive quality.

The adoption of the long rectangular type of plan with low eaves rather than the short square type with eaves high in proportion to the length of the block, a careful planning of chimneys with simple chimney heads, an orderly spacing of windows on all fronts—especially in the upper story—with adequate wall space for their proper setting, the avoidance of unnecessary features borrowed from the suburban villa and of any conscious striving after the picturesque, in other words straightforward and sensible building will go far to produce a pleasing and unaffected type of dwelling appropriate to its purpose.

Side walls and back walls should be faced with the same material as the fronts of the cottages Where the upper and lower parts of a building are faced with different materials the relation between the two is often ill-considered. The line of the first floor level may frequently be an unsatisfactory one at which to place the division, and a more pleasing proportion between the two parts will sometimes result if the line of the ground floor window heads or sills, be chosen instead. Rules for such relations cannot be laid down; only an appreciation of good proportion can be a safe guide in such matters; consequently, the rule of safety is to avoid introducing changes of treatment where mere difference is the only aim. A treatment to be avoided in short blocks is one with an upper storey of plaster or rough-cast and a lower storey of brick.

The general uniformity which may be demanded by economy can be relieved at a cost which is almost negligible, if, instead of spoiling the simplicity of all houses, an occasional touch of emphasis and variety is secured by a well-designed and carefully placed feature to mark the centre of a group, the termination of a street vista, or the turning of a corner.

Accommodation and Planning

12. The following table gives areas for bedrooms and living rooms which may be regarded as affording a desirable standard of accommodation. These should be taken as approximate areas for the general guidance of local authorities and their architects and a good plan need not be spoiled or abandoned in order to secure exact compliance with the suggested areas.

Persons (adult or child)	Bedrooms. 1	2	3	4	Living Room.	Parlour.
4	150	120	—	—	140–160	—
5	150	100	70–80	—	180	—
6	150	120	100	—	200	—
7	150	120	100	70–80	220	—
					or 180	100
8	150	120	120	100	180	100
9	150	130	120	100	180	100

Where more than four bedrooms are required the additional accommodation should be obtained by planning a large house in association with a small one, e.g. one suitable for a childless couple, in such a way that at some future date the combined dwelling might be altered to two normal family houses.

The necessary accommodation for a cottage dwelling may be set out and considered in the following order of essential importance: living room, bedrooms, scullery, larder, water-closet or earth-closet, bath, fuel store, and in large houses, parlour.

Living Room.

13. In this room all the occupants habitually assemble, and in it the family life has to be carried on. Sufficient space for the purpose, plenty of light and sunshine, and convenience of arrangement to meet the many needs are essential. It should be given preference in the matter of aspect with the object of securing as much sunshine as the conditions of the site allow, and affording as cheerful an outlook as possible from the windows. It should be planned so that the spaces about the windows and fire, where the occupants will naturally wish to sit and work or rest, will be as free as possible from disturbing cross traffic from door to door. For separating in a convenient manner the different kinds of work and use, for securing adequate sunshine when the aspect is other than South and for securing a cheerful outlook when the site rises steeply to the South, a living room running through the house, having windows at both ends, has very great advantages. In such a room all parts are better lighted on dull days, and windows on the sheltered side can be left open in nearly all weathers.

This plan of living room involves a house of long frontage and shallow depth, a type specially suitable for sloping ground where the contour lines are parallel with the road. It also lends itself to the production of a better proportioned building where houses are erected in pairs. The narrower roof span, with resulting reduction in height of gable or party walls and chimneys, frequently compensates in cost for the increased length of outside wall required to contain a given area in oblong shape as compared with a shape more nearly square.

In the arrangement of the room comfort and convenience suggest that the fire should be placed on one of the walls at right angles to the window wall; that no door should intervene between the only window and the fire; and that doors opening immediately across the fire should be avoided.

The common method of hanging doors to screen the room from view is not always convenient in small cottage rooms. It should not be adopted in cases where the swinging door or the free space required to walk round it would interfere with the use or destroy the comfort of an important part of the room such as that near the window. In addition to the usual dresser some shelving should be provided in the living room.

Bedrooms.

14. For most families three bedrooms are needed to secure separate sleeping places for parents, boys and girls; and even when the third room is not continuously required for this purpose, the importance of some relief space in cases of birth, sickness, death, or of visitors, is sufficient generally to justify the little extra cost of providing in new cottages for a small third bedroom.

One of the bedrooms should be adequate in size to provide for the parents and one or two young children, about 150 sq. ft. area. The distribution of the remaining space between the other two bedrooms may depend to a considerable extent on economy and convenience of planning; the smallest should, however, be large enough for one adult or two children, and should not be less than 70 sq. ft. area.

Sunshine is important to sweeten the rooms during the day and in case of sickness. Rooms with only north aspect should be avoided where practicable.

The main considerations in the planning of bedrooms are that spaces in size and shape convenient for the beds and for the necessary furniture should be provided. Windows should be so placed that they can conveniently be opened, and the fireplaces planned so that they can be used without inconvenience. Sash windows or casements should be hung so that parts can be opened in rainy weather in order to secure constant ventilation. At least one of the bedrooms should have a coal fireplace for use in case of sickness, and if only one is provided it is probably best to place it in the second bedroom. The great value of flues for ventilation should be remembered. In rooms in which no fire is to be fixed, a flue affords a more reliable means of constant ventilation than the single vent grating in the outer wall. An extra flue may frequently be secured for this purpose even when the position of the chimney stack would not allow a fireplace to be connected to it.

Scullery.

15. The main considerations affecting the planning of sculleries are: space for the sink and drainage boards under or immediately adjacent to the window; space for the copper so placed that anyone standing at the sink will not be in danger from the fire; space for mangle if in general local use, and for the necessary utensils. The arrangement of scullery shelves should be carefully considered with a view to accessibility and to suit the needs of the housewife.

Cooking Facilities.

16. In the detailed planning much will depend on whether cooking takes place in the living room or in the scullery. The practice varies from district to district and before plans are prepared consideration must be given to local custom. Where gas or electricity is used the almost universal practice now is to cook in the scullery, in the summer months at least. This arrangement is greatly to be preferred.

If a coal-fired copper is used, access to a flue will be a determining factor in the arrangement of the plan. Where the absence of a laid-on water supply or the necessity for economy excludes a circulating hot-water supply, the copper should be so placed that it can readily supply the bath. It is a great convenience to have the copper near the sink, but in some districts the copper in the bathroom or in a detached washhouse is preferred.

Bathroom.

17. Preferably the bathroom should be planned downstairs. It is more convenient as bathroom when accessible direct from the stairs, but may serve more readily as washhouse if placed adjacent to the scullery; economy in plumbing and drainage may also suggest this position.

Larder.

18. A good larder is essential. It should be on the north or east side. Good light and ample ventilation to an outside area which

is free from risk of contamination are important. The size depends on other provision of storage space in the dwelling and on the location of the dwelling in relation to shops or market. The Womens Advisory Housing Council recommend that cottage larders should be three feet wide by four feet deep. There should be a ventilating brick as well as a small window with gauze screen. At least one shelf should be of slate or concrete and a small space should be left between the back of any shelf and the wall for ventilation and cleanliness.

A dark cupboard, even if ventilated to the open air, is very unsatisfactory for the purpose.

Outbuildings.

19. A good sized fuel store is essential, and a small shed should be provided for cycles, garden tools and garden produce.

Closets.

20. Where there is a sufficient water supply and where suitable disposal for sewage can readily be provided, a water closet should be adopted. It should never be so placed that access is directly from a living room or scullery. Access under cover is, however, desirable. It may be most conveniently placed with access from an open lobby or ventilated passage, or it may be placed in the bathroom. Access from the bedrooms should be so arranged as to avoid the need for carrying slops through the living room.

Where an earth closet is provided it should always be properly ventilated and entered from the outside of the dwelling; though access under cover may be provided with advantage. It may be included under the main roof but it should not open directly off the back porch. Where a small shed or barn is provided near the dwelling, the earth closet may be planned in conjunction with this building. Instruction in the proper maintenance of earth closets should be given to tenants.

Parlour.

21. Where there is a large family the advantage of a second sitting room need not be emphasised. This room is, however, placed last in order of importance because, valuable as it may be, the parlour is not so necessary for healthy and decent family life as the other rooms and accessories mentioned. As a rule, therefore, it should only be included in the family dwelling when it can be given in addition to the other accommodation and not instead of it. Where a parlour is provided, the living room does not serve quite so many functions and can, therefore, be reduced a little in size; it remains, however, the room in which the family mainly live, and if less than 160 square feet in area will be inconveniently cramped for the purpose.

Many of the purposes for which a parlour is valuable can be served by quite a small room. Little more, in fact, than a recess opening from the living room will do much to provide the needed retirement for reading, writing, dressmaking, and other occupations with which the general movement in the living room is liable to interfere. While, therefore, a fair-sized parlour is desirable, the benefit of quite a small room is not one to be despised.

Plans and Elevations

22. The desirability of entrusting the execution of their housing schemes to persons of experience, capable of planning not only well-built houses but of designing harmonious and appropriate buildings, has from time to time, been impressed upon local authorities. The importance of this is again stressed. It should be emphasised, as already recommended in Circular No. 1697 that, whenever possible, the advice of persons experienced in architectural design and particularly in rural housing should be secured.

For general guidance a number of type designs have been included. A warning should, however, be uttered against the indiscriminate use of standard or type designs;

even a large variety of plans would not prevent buildings from being placed on sites where they would be incongruous. Unless the limits to the use of standard designs are fully recognised and the plans are used with intelligence, development in the planning and design of rural cottages may be seriously retarded.

Reconditioning

23. Careful study has been made in recent years of the problem of reconditioning old buildings and competent advice should be taken before structural repairs are put in hand. The services of the panels of architects set up by the Council for the Preservation of Rural England, in conjunction with the Royal Institute of British Architects are available.

Where assistance is to be given under the Housing (Rural Workers) Acts the Local Authority must be satisfied that the surrounding conditions as well as the state of the building when reconditioned will allow it to be in all respects a satisfactory dwelling.

"Fit for human habitation" implies generally that a dwelling should be free from serious dampness, satisfactorily lighted and ventilated, properly drained and provided with adequate sanitary conveniences and with a sink and suitable arrangements for disposing of slop water, and be in good general repair. It should also have a satisfactory water supply, adequate washing accommodation, facilities for preparing and cooking food, and a well-ventilated store for food.

While a lower standard than is required in new buildings may be accepted as fit for habitation in the case of existing buildings to be reconditioned, for dwellings on which a substantial sum is to be spent, with financial assistance from public funds, there is a minimum standard of health, decency and convenience which should be exacted before additions and conversions can be considered worth while.

In many cases existing houses are so small, and additions would be so unsatisfactory, that a better alternative is to convert two inadequate dwellings into one and build new cottages to make up the deficiency in numbers thus created.

General Recommendations.

24. Subject to authorised relaxations of local byelaws, a too rigid adherence to generally desirable standards of size and height should not be required in this class of work.* The disadvantage of a low ceiling or low windows will be greatly reduced by good ventilation at the ceiling level. Less than one-tenth the floor space in window area may provide adequate light if well distributed. In place of expensive alterations to existing windows where additional light is needed, a skylight or dormer may sometimes be added at less cost and with less danger to the structure.

Alterations in the heights of floors or buildings usually involve considerable expense without affording any increase of accommodation. The raising of the roof level may destroy the general proportion of the building, on which its charm may largely depend. Where there is ample space around the building, a ceiling height below that adopted for new buildings could wisely be approved in connection with the reconditioning of existing buildings.

In new dwellings, for example, separate access to each bedroom is rightly regarded as essential. In many existing rural cottages, however, the need for additional sleeping space is so great that an extra room, even if only accessible through one of the present bedrooms, would be well worth adding.

* It must be borne in mind that building byelaws will in future normally apply not only to new buildings but also to alterations or extensions of building and to buildings so far as affected by alterations or extensions, and also to buildings or parts of buildings in cases where there is a material change in the purposes for which they are used.

Where the existing entrance door cannot be repaired one of similar design should be used. The change from a simple flush framed or ledged and boarded door to a stock door with moulded panels and glazing would spoil the appearance of many cottage fronts.

25. Where for reasons of economy or on account of the difficulty of obtaining suitable labour or materials the use of the most appropriate material has to be abandoned, as in the case of thatch or stone slates for roofs, or ashlar for walls, materials which will not clash in colour or character with those formerly used in the locality must be used. For roof coverings a material which can appropriately be used with the existing pitch should be selected.

Where thatch has decayed chiefly at the foot of the slopes, repairs can often be effected by inserting along the eaves a few courses of tiles or slates.

Where rendering or roughcasting a damp wall would destroy a beautiful brick or stone facing, the alternative of forming a dry interior lining may be considered.

Underpinning, or the erection of a buttress, may restore adequate stability to bulging walls or fine old chimney stacks with less danger and cost than rebuilding.

26. Where the enlargement of existing windows would be fatal to the scale, the insertion of new ones may be less injurious; where the raising of the roof would destroy the good proportion, the needed air space might be attained by raising the ceiling to the level of a collar beam, light and ventilation being secured at a more effective height through the gable walls or by means of a dormer. When replacing old or inserting new windows the original type should be followed as closely as possible. Few features are more characteristic of the style of the cottage than the glazing of the windows. The greatest care should be taken to maintain the original proportions of the square or pane. To replace the casement type by sash windows, or well-proportioned panes by single large sheets of glass may completely destroy the character of the cottage.

27. The securing of a dry weather-proof dwelling should be the first consideration. The three main sources from which damp may be expected are through the roof, through the walls, and up from the ground. Defective windows or doors may provide a further source, though of minor importance.

Roofs.

28. In remedying leaky roofs there will arise considerations both of structure and appearance. The old materials may often be re-used if there is laid on the rafters a covering of bituminous sheeting or similar material. This will catch any occasional drips from driving rain or snow. For pantiles or for coverings of slightly porous material, this treatment is safer than bedding or torching with mortar. The latter, unless it is completely effective in excluding all wet, is apt to become sodden and set up rot in the laths or battens which, in turn, will infect the rafters.

The importance of securing adequate ventilation in roof spaces as a protection against dry rot should not be overlooked, and when introducing new timbers for repairing old roofs it may well be wise to dip them in creosote, or other protective liquid, to minimise the risk of infection, either from or to the new timber.

Chimneys.

29. Chimneys may be a source of damp either on account of defective flashing where they pass through the roof, or by means of wet soaking through the exposed part of the stack and down into the rooms below. In the case of large old flues, sufficient rain may fall into the chimney top to cause trouble. A covering of the chimney outlet by means of a suitable chimney pot or by stone or slate slabs leaving adequate openings for the escape of smoke; the waterproofing of the stack by means of pointing or rendering, or the insertion of a damp

course just above the flashing; and the provision of adequate flashing appropriate to the roof coverings should effectually prevent or remove such damp as is likely to be due to chimneys.

Walls.

30. Nearly all solid walls are more or less pervious to moisture and in long periods of bad weather the damp may strike through to the inner surface before the drying out becomes effective. Sometimes quite a little extra protection will restore the right balance between damp penetration and surface drying. A slight increase in the width of the overhanging eaves, a drip to throw off the water at the base of a gable or under the window sills may be enough. Weather-boarding in oak, elm, cedar, or red deal, the latter creosoted or painted; tile, slate, and shingle hanging, and various plaster finishes, afford wide choice in character and colouring where gables or parts of walls must be covered externally to secure the necessary dry interior. Sometimes in measures to secure a dry interior, it may prove more advantageous, or less disfiguring, to build a thin lining wall of breeze, plaster, or terra cotta slabs inside, leaving a small air cavity sufficiently ventilated between the wall and the lining.

Damp walls may result from condensation, not from the passage of moisture through the wall. In some cases a coat of reasonably porous and good non-conducting material laid on the internal surface would be the appropriate treatment, while in severe cases fibre-board fixed to battens plugged to the walls would be required.

The clearing of the walls from overhanging bushes, trees or other obstructions, which interfere with the external drying-out process by reducing the air circulation or by warding off the sunshine, will in some cases prove effective in securing a dry wall.

It is important to make allowance for the power of wind to increase permeability especially where the volume of water running down the face of the wall is great. It is a common experience that walls under gables may be damp in buildings where no damp is found on those parts of the same walls protected by the eaves. Soft and porous mortar may be the cause of damp where the bricks or stone would otherwise be satisfactory. In such case careful pointing should prove an effective cure.

Pointing.

31. When pointing old brick or stone walls a rich cement mortar should not be used. It is undesirable that mortar for this purpose should to any great degree be less porous than the old materials on which it is used; consequently a good lime mortar may be preferable. Lias lime mortar may be used provided the wall can be kept sufficiently damp until the setting is completed. The following has been found a useful mixture. Non-hydraulic lime putty and clean sand in the proportion of 1 to 3 by volume, gauged immediately before use with 1 part Portland cement to 6-10 parts water.

Dampness is frequently attributed to defective walls when it is, in fact, due to stoppages or leakages in the rainwater gutters or pipes.

When it is necessary to provide rainwater gutters and new or additional fall pipes to existing buildings types should be selected which are appropriate in character.

Damp ground.

32. The cases of damp from below may be divided into two classes (*a*) those in which the ground, even when protected from rain falling upon it, is liable to be moist or waterlogged and (*b*) those where the ground remains dry so long as the surface is protected from rain.

In class (*a*) no cure will be complete short of providing a covering of concrete, asphalt, or other impervious material over the internal area of the dwelling, and inserting a dampcourse in the walls.

The difficulty and cost of inserting a damp-proof course will depend on the structure of the wall, and the relative levels of the floors inside and the ground outside.

Where the insertion of a dampcourse is impracticable or would be too costly a cement rendered plinth inside together with surface treatment over the ground may be sufficient.

The rendering in such case should be carried down well below the floor or ground level and above the highest point to which the damp has risen.

In all cases the outside surface of the ground should be lowered to at least six inches below the dampcourse, more where possible, for the constant splashing of the rain from the ground upon the wall above the dampcourse is a frequent cause of trouble. Where such lowering of the ground is not practicable a vertical damp-proof course or cement plinth may prove satisfactory, but in some cases will be effective only if a dampcourse is inserted above the plinth as well as under the floor.

If the ground cannot be lowered, sometimes a trench can be cut to the required level, and kept open to dry the wall, or filled with a new wall, leaving a cavity. Any such cavity or trench must, however, be drained below its base to prevent the accumulation of water, and ventilated.

In class (*b*), where the ground, if protected, remains dry, damp arising in the outer walls may be cured by the construction of an impervious paving of concrete or asphalt round the building sloped away from the walls and provided with a properly drained gutter at the outer edge. In such cases covering the inside surface with concrete may be dispensed with, provided plenty of through ventilation under wood joist floors is secured.

To keep down dampness from the ground a layer of roughly made concrete, such as might serve for a foundation trench, is little good; it must be consolidated and roughly flushed up to an unbroken surface with a spade finish. Even when so treated cement concrete is often not sufficiently impervious to damp when on a heavy clay sub-soil. On such a site a layer of hard coarse clinker or other impervious ballast should be laid under the concrete. This will often prevent the chilling effect resulting from slight damp in a solid floor when finished in cement, tiles, or other similar surfacing.

Floors.

33. For joist floors with the space under properly ventilated a few simple precautions should be taken. The joist ends and any plates must be protected by a dampcourse and air space from contact with moisture in wall, ground, or cavity, and circulation of air round any embedded ends be secured. The ends may be dipped in creosote with advantage. A dampcourse should be laid on all sleeper walls, under the joists; wood plates should be avoided as far as possible, and especially should not be built in outside walls; damp striking through from outside below the dampcourse or from the filling under adjacent solid floors should be provided against; all shavings or loose scraps of timber should be cleared out before the boards are laid.

Damp-proof Courses.

34. The damp-proof course must be such as to remain permanently impervious. Slates, or impervious blue bricks laid in cement are satisfactory. Bitumen sheet damp-proof courses are made which have stood the test of time. There are, however, a number of damp-proof courses offered composed of paper-like materials impregnated or coated with tar, the permanent value of which is very doubtful. The small saving to be effected by their use does not justify the risk involved. The British Standards Institution has issued a specification for bituminous materials for damp-proof courses which should be consulted.

In hollow brick walls the cavity should be carried a few courses below the dampcourse, as a protection against trouble from mortar droppings in the cavity.

Over window and door openings in cavity walls a dampcourse is required so fixed as to ensure drainage outward and to prevent access of damp to the lintels or inside face of the wall.

The cavity in such walls should be stopped against the jambs of all openings with slate or other impervious material which will not conduct damp to the inner part of the wall or allow it to reach the wood frames.

*Dry Rot.**

35. The conditions predisposing to dry rot are:—(1) Damp; the disease can hardly attack thoroughly dry timber, though certain forms of fungus when once started can provide their own moisture from the air and so continue extending their ravages. (2) Air supply sufficient to support the life of the fungus; if air is entirely excluded the fungus cannot develop. On the other hand, ample air circulation will usually promote conditions dry enough to prevent the disease. Situations where there may be damp, and where there is stagnant air, are the most dangerous. (3) Mild heat sufficient to keep up a warm damp atmosphere without drying up the moisture completely will render such situations more dangerous.

Unseasoned timber is specially liable to attack because it is seldom quite dry when put in place; for this reason it is important that new floor boards should not be covered with linoleum, or other impervious covering, until thoroughly dried out; even then linoleum may cause trouble on solid floors, or on joist floors, if there is not ample ventilation underneath. This is a point needing special attention in connection with repair, addition, or conversion work.

When the presence of rot or decay is suspected in any part of the structure all new timbers should be treated with a reliable preservative, preferably by thorough impregnation.

Air grates on one wall are not sufficient to secure an adequate circulation of air under all parts of wood floors. Where only one outer wall is available for grates a through draught should be secured by means of ducts or pipes from the back of the space under the floors, communicating with open air on the opposite side of the building.

When fixing the position and level of air grates and dampcourse the risk of obstruction by creepers or other plants, and raised flower-beds should not be overlooked.

Doors and Windows.

36. Doors give trouble chiefly in exposed situations. When planning houses for such sites, the outer doors should, as far as possible, be placed on the more sheltered sides. Usually the wet drives in under the door only, and a properly-arranged weatherbar in the sill, covered by a sloping drip-board or moulding on the door, should suffice. The difficulty is reduced if the step or sill falls away in line with, or little in advance of, the door, leaving small space for water to lodge. There are extremely exposed positions, however, in which the outer door must be protected from the wet and the wind by a porch, or by special grooves to the doors or jambs.

37. Windows are a source of weakness in two respects; the frames may not be set so as to make a weathertight joint with the wall, and the sashes may not close on the frames with a joint which will exclude driving rain. Defects in the joint between frame and wall can be remedied usually by providing a drip over the window head formed by tile creasing, oak weathered board or cement fillet, a similar extension or a lead apron to the sill, or by pointing the joints with mastic covered with a wood architrave, beading or rebated fillet.

To remedy defects between the frames and the sashes may call for grooving, weather fillets, wood or metal tongues, according to circumstances, the aim being to prevent the accumulation of water where the wind may drive it into the joints, to baffle the force of the wind, and to give plenty of opportunity for water to escape without being carried forward to the inside.

* A special report dealing whith the subject of dry rot has been issued by The Forest Products Research Laboratory of The Department of Scientific and Industrial Research, Princes Risborough, Aylesbury, Bucks.

Stairs.

38. If the existing stairs are too steep or lead directly into one of the bedrooms they should be re-designed and adequately lighted.

Stoves.

Efficient cooking arrangements should be provided in all cases.

Food Stores.

A cool larder properly lighted and ventilated, with a cold stone, slate or concrete slab is essential for healthy living and should be provided in every house.

Water Supply.

39. Much is being done by the Government and Local Authorities to improve the water supply in rural areas and many villages are being provided with a piped supply. Where a piped supply is available the cost of taking it to a cottage can be included in an application for a grant under the Housing (Rural Workers) Acts. There are, however, still many cottages which are too isolated for a piped supply to be possible and where the existing water supply is often inconveniently situated some way from the cottage. In such conditions every effort should be made to improve the water supply by deepening old wells or providing new ones. All drinking water wells should be made safe from the danger of surface pollution, and, where possible, provided with a pump or syphonage arrangement. The tops of wells should be covered with concrete sloped up on all sides to an iron door. The sides for a suitable depth should, if necessary, be bricked in and surrounded with 12 inches of impervious clay puddle. Tanks connected to the roof gutters should be provided for storing rain-water for washing and cleaning.

Closets.

40. A separate water-closet or earth-closet should be provided for each cottage. The closet must be properly lit and ventilated. An earth closet should be entered from out-of-doors and a water-closet should never have to be entered directly from a living-room or scullery. Where there is an earth-closet and no public scavenging there must be sufficient ground in which to bury the contents.

Converted Buildings.

41. When converting for use as dwellings buildings which have been used for other purposes it must not be assumed without careful consideration that roofs, walls or floors which have resisted damp or cold weather, sufficiently for the previous use, will be adequate protection for human habitation. For many uses the occasional dropping of wet from the roof or passage of damp through wall or floor would be harmless, or at worst a slight disadvantage, and such defects are consequently liable to be overlooked when considering a building for conversion.

42. The presence of contamination of walls or floors arising from the former use of buildings, from rats or other vermin or from other cause, must also be considered and proper steps taken thoroughly to remove any impregnated soil or parts, or to eradicate any taint which would be unhealthy or objectionable. The surface of the ground within the building should, as a precaution generally be covered with a layer of concrete or asphalt or hardcore.

Plan.	Area.	Living accommodation.		Bedrooms and areas.				Aspect.	No. in family.
		Living Room.	Parlour.	1	2	3	4		
Ia	773	181		150	112	70		S	5
Ib	773	190		150	112	70		N	5
Ic	800	187		158	110	70		N	5
Id	800	196		158	110	70		S	5
Ie	850	218		156	100	97		S	6
If	850	208		156	100	97		N	6
Ig	861	188		150	141	103		N	6
Ih	861	188		150	141	103		S	6
IIa	767	180		150	100	70		S	5
IIb	767	180		150	100	70		N	5
IIc	767	180		150	100	70		N	5
IId	767	180		150	100	70		S	5
IIe	800	180		165	110	70		S	5
IIf	877	195		165	143	100		S	6
IIIa	790	184		169	104	73		N	5
IIIb	790	184		169	104	73		S	5
IIIc	770	186		150	110	77		S	5
IIId	770	186		150	110	77		N	5
IVa	762	185		153	100	72		S	5
IVb	762	185		153	100	72		S	5
Va	736*	160		160	137	—		S	4
Vb	736*	160		160	137	—		N	4
Vc	658	160		160	119	—		N	4
Vd	658	160		160	119	—		S	4
VIa	1,006	184	100	147	100	100	82	S	7
VIb	1,006	184	100	147	100	100	82	N	7
VIc	1,083	198	100	147	136	113	100	S	8
VIIa	1,055	204	107	150	120	99	75	N	7
VIIb	1,055	198	107	150	120	99	75	S	7
VIIc	1,119	204	107	150	145	118	99	N	9
VIId	1,137	204	117	150	126	110	99	S	8
VIIIa	1,075	200	100	157	117	93	75	S	7
IXa	1,020	208	100	142	116	93	70	S	7
Xa	780	180		140	110	70		S	5
Xb	780	180		140	110	70		N	5
XIa	788	190		148	104	73		S	5
XIb	788	178		148	104	73		N	5
XIIa	827*	174		156	101	87		S	5
XIIIa	868*	178		150	112	70		S	5
XIIIb	868*	178		150	112	70		N	5
XIVa	800	190		147	121	74		S	5
XIVb	740*	162		162	101	—		S	4

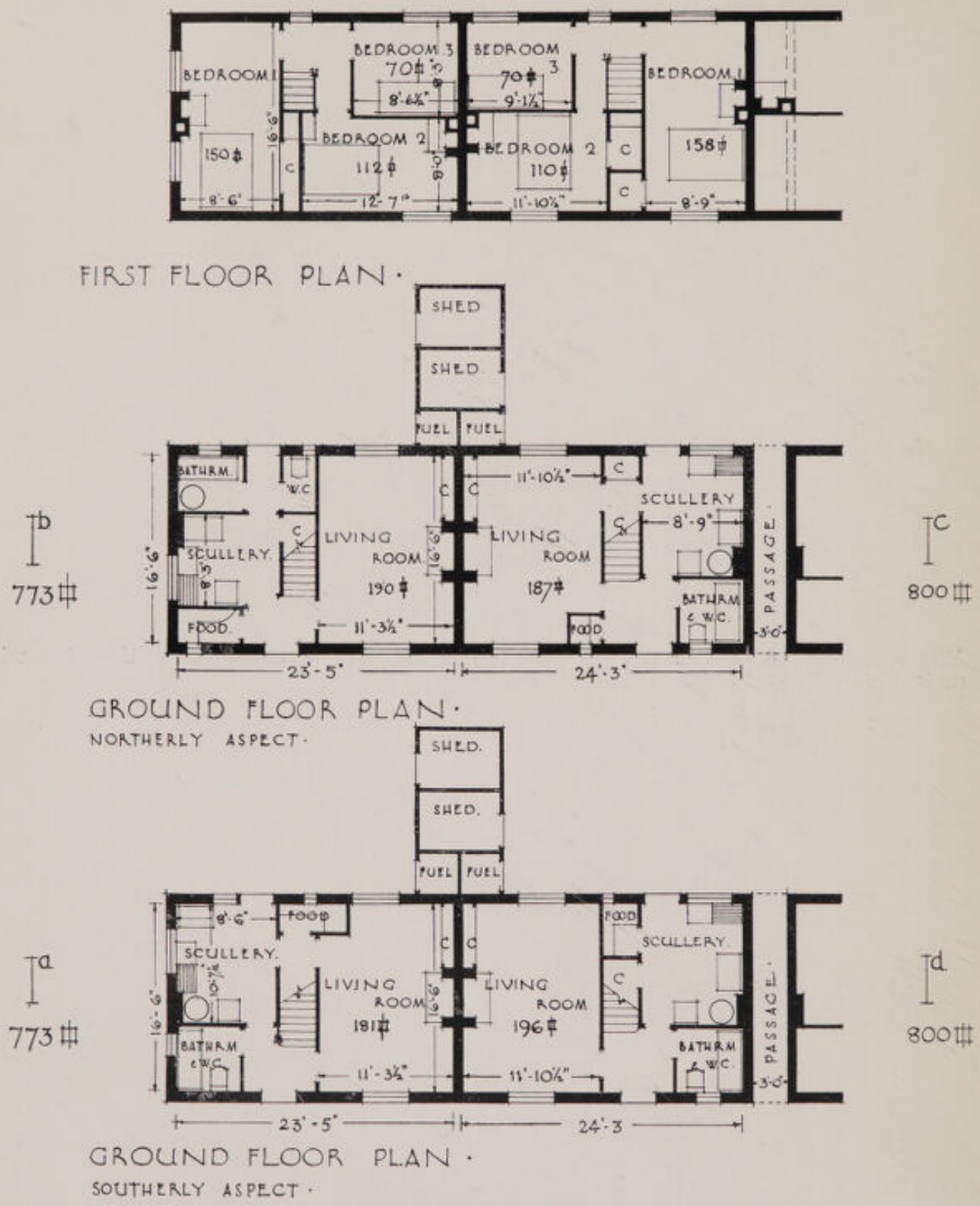
Notes.—All Areas exclude outbuildings except those marked *.

PLANS

In the plans illustrated, the following points have been kept in view:

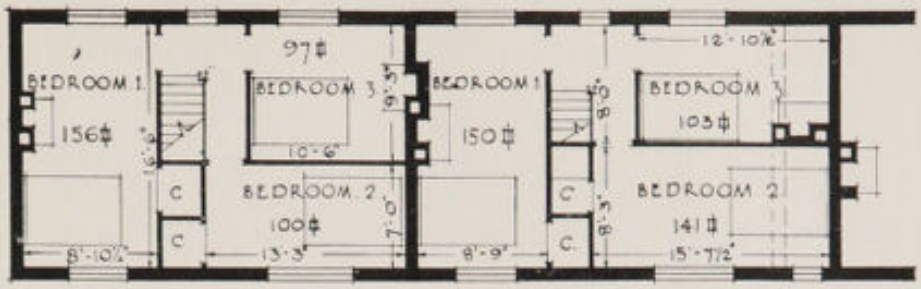
1. Access to the bathroom and water closet without passing through the living room.
2. The provision of a coal or wood fired boiler to supply hot water direct to the bath.
3. Direct light and ventilation to the staircase.
4. Outside access to the fuel store.

The elevations 1–6 are for a pair of houses to plan I and are varied to suit different districts and materials.

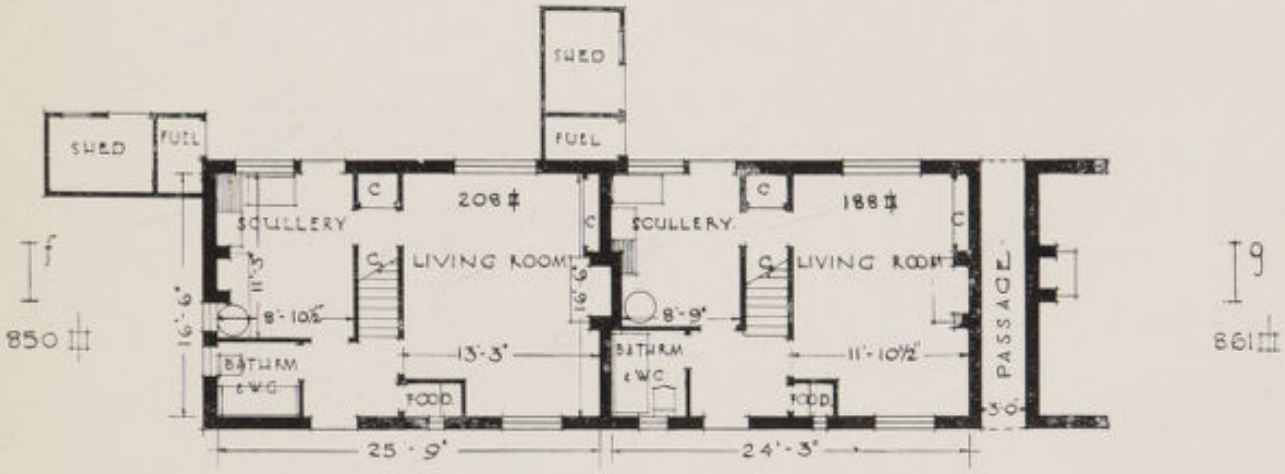


PLAN NO. I.—a, b, c, d.

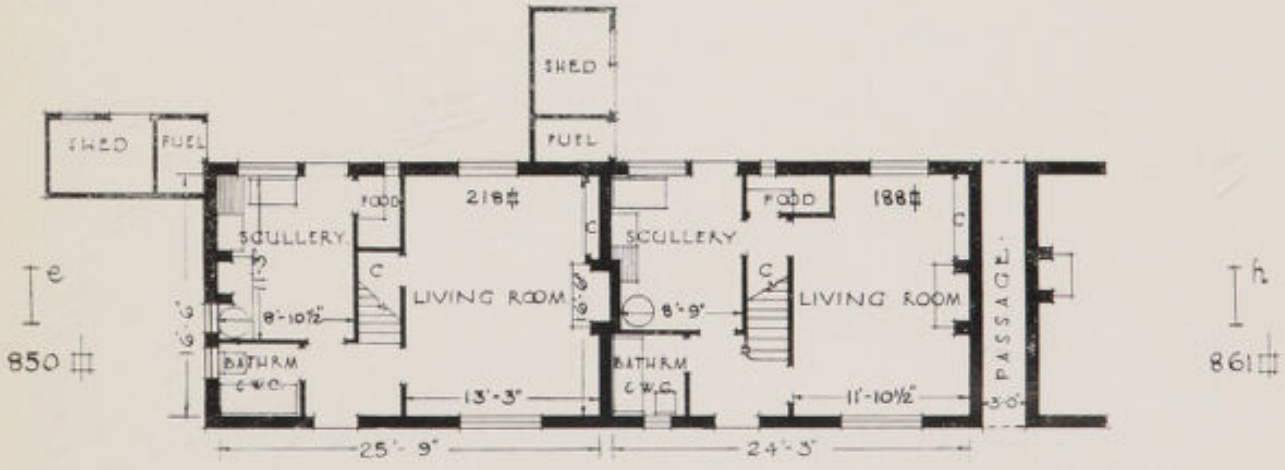
A through living room type permitting siting for any aspect. Types "c" and "d" are suitable as intermediate houses. Types "a" and "c," indicate direct access between living room and scullery.



FIRST FLOOR PLAN.



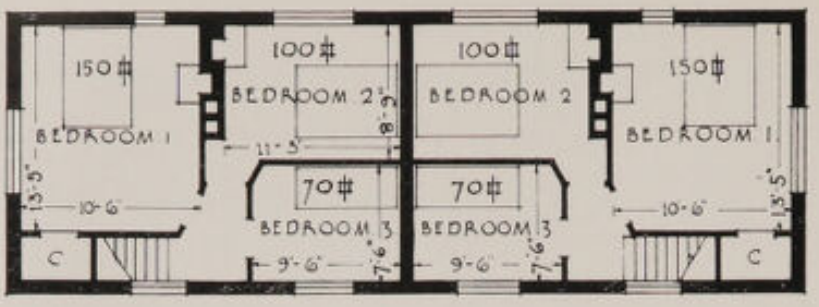
GROUND FLOOR PLAN.
NORTHERLY ASPECT.



GROUND FLOOR PLAN.
SOUTHERLY ASPECT.

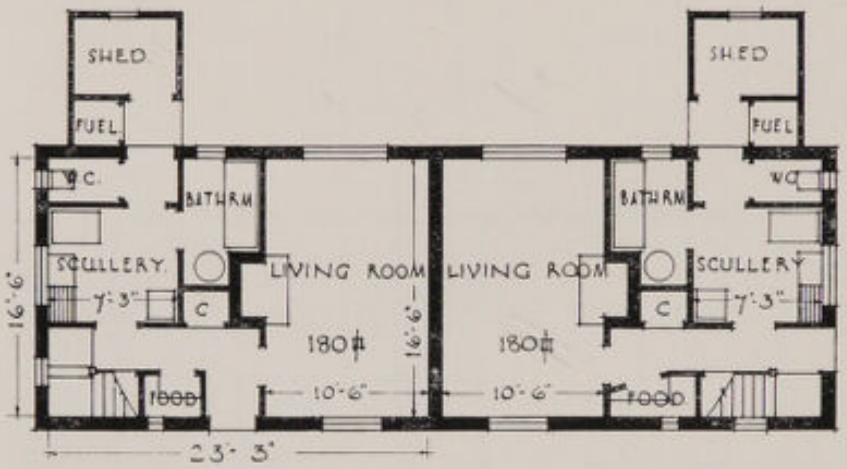
PLAN No. I.—e, f, g, h.

Similar to plans Ia, and b, but of larger area, providing accommodation for 6 persons.



FIRST FLOOR PLAN.

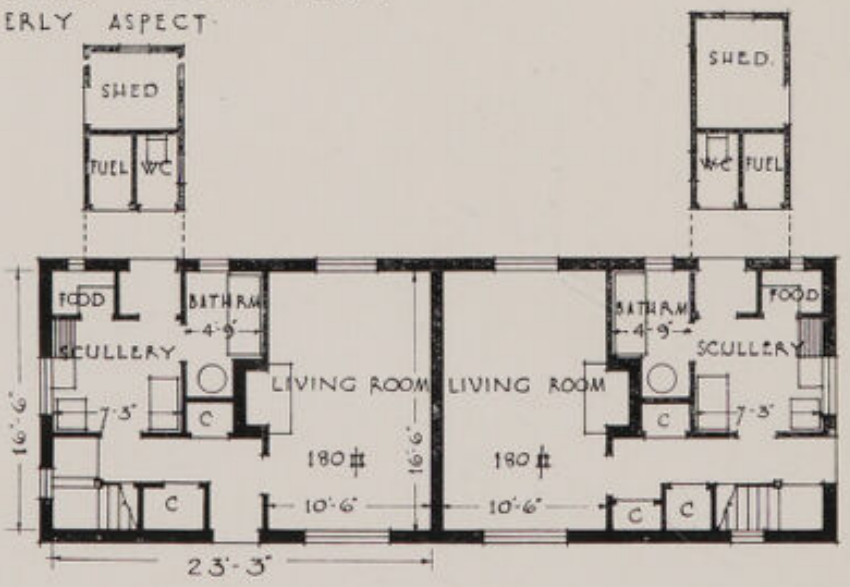
b
767#



c
767#

GROUND FLOOR PLAN.
NORTHERLY ASPECT.

d
767#

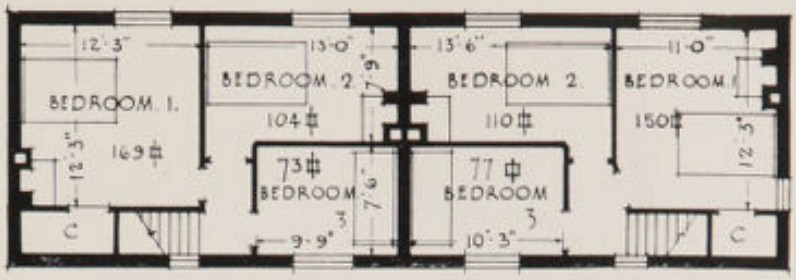


d
767#

GROUND FLOOR PLAN.
SOUTHERLY ASPECT.

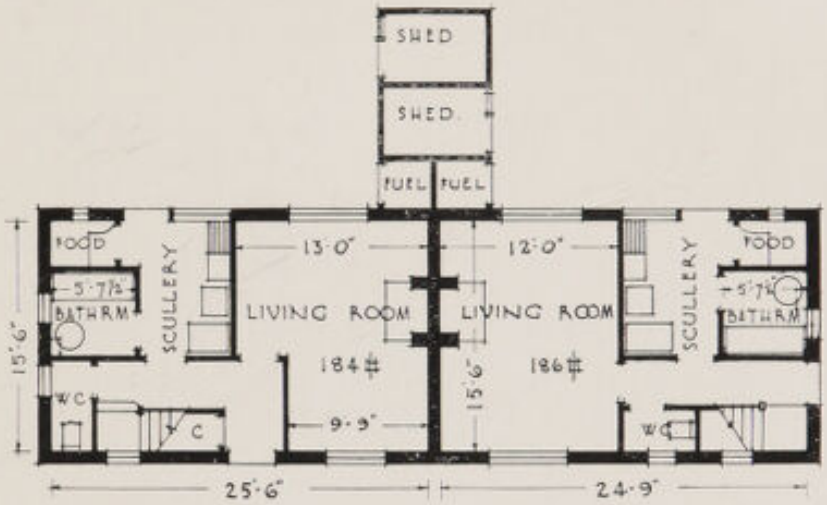
PLAN NO. II.—a, b, c, d.

A through living room type with central chimney stack. Plans "c" and "d," have the entrance doors placed in the flank walls.



FIRST FLOOR PLAN.

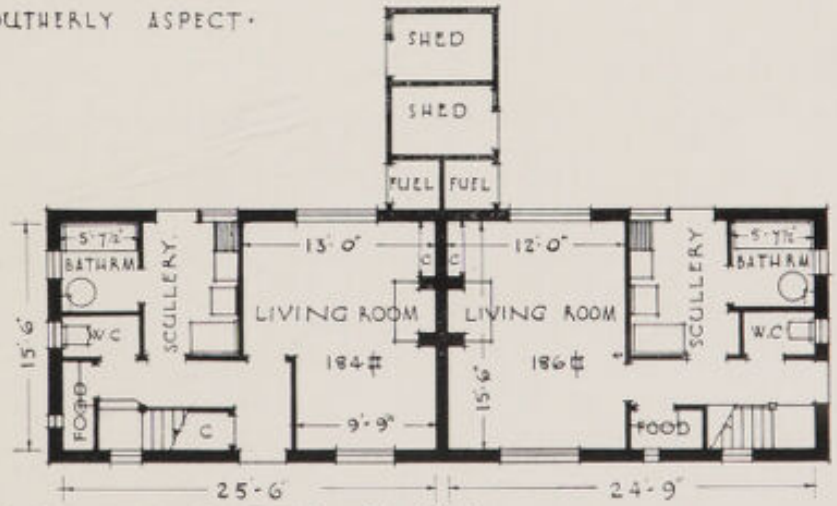
b.
790#



c
770#

GROUND FLOOR PLAN.
SOUTHERLY ASPECT.

a
790#

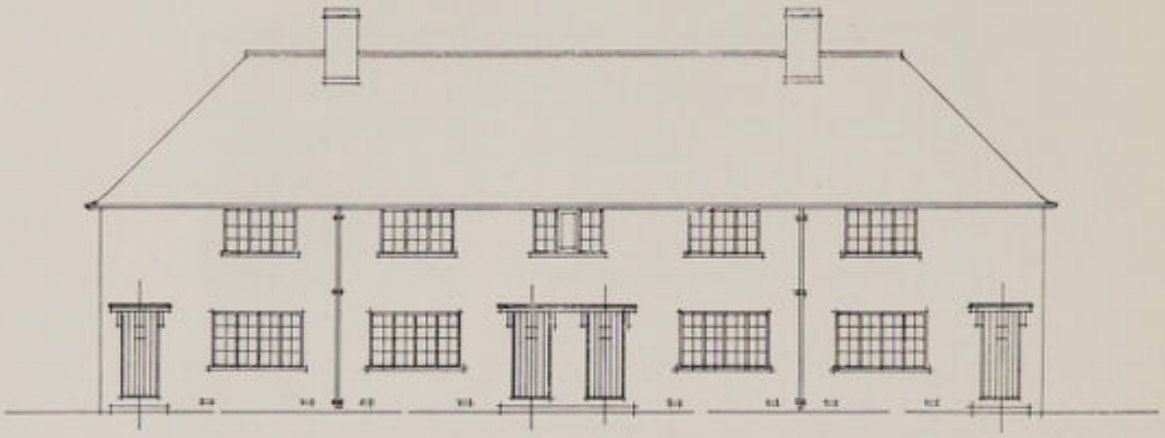


d
770#

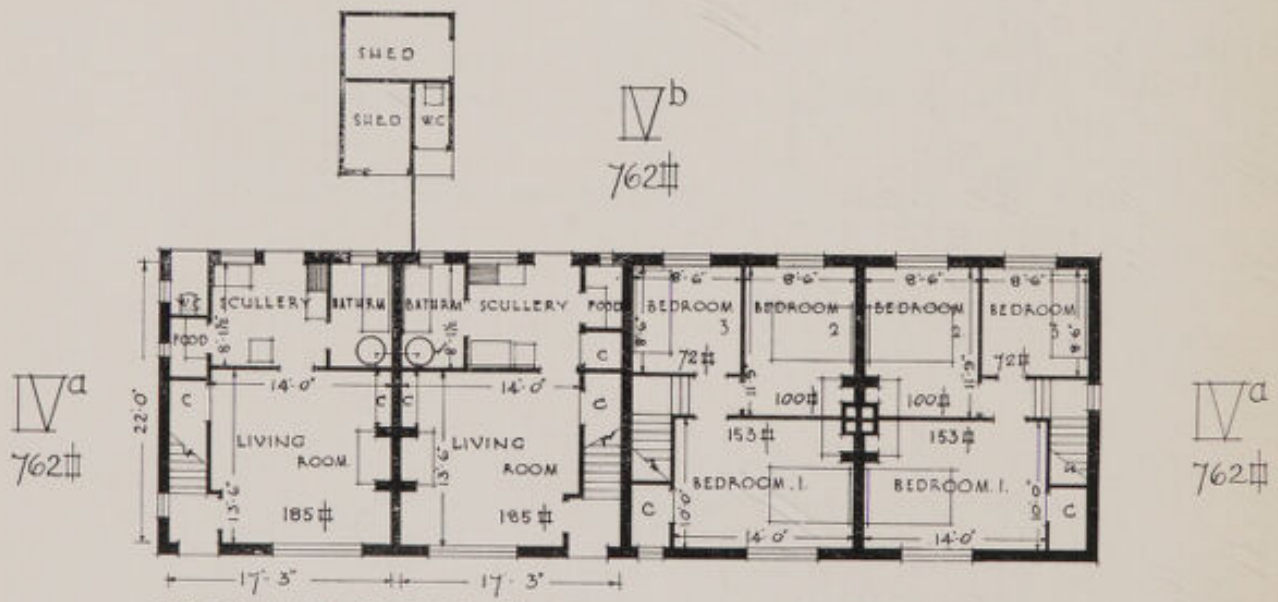
GROUND FLOOR PLAN.
NORTHERLY ASPECT.

PLAN No. III.—a, b, c, d.

A through living room type of narrower span with end stacks and front or flank entrance doors.



ELEVATION.

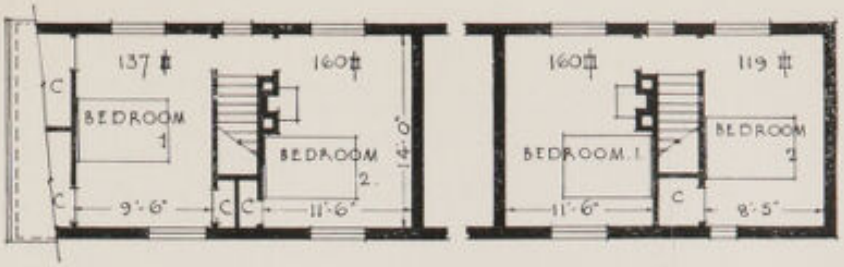


GROUND FLOOR PLAN. FIRST FLOOR PLAN.

SOUTHERLY ASPECT.

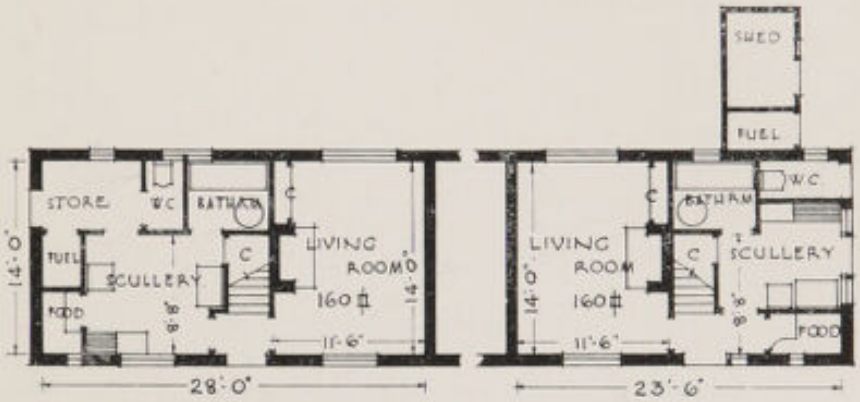
PLAN No. IV.—a, b.

A common type but only suitable for southerly aspects. Access to the bathroom and w.c. can only be obtained by passing through the living room. Type " b " is suitable as an intermediate.



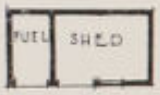
FIRST FLOOR PLAN.

b
736 ♯
INCL. STORE.

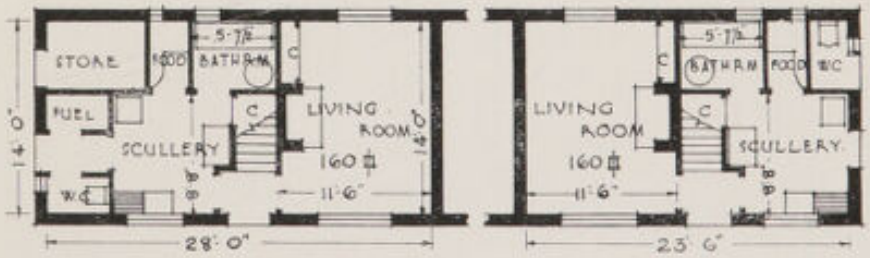


c
658 ♯

GROUND FLOOR PLAN.
NORTHERLY ASPECT.



a
736 ♯
INCL. STORE.



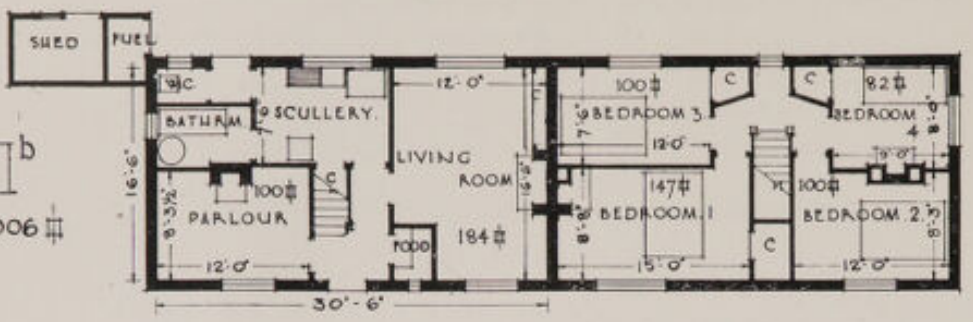
d
658 ♯

GROUND FLOOR PLAN.
SOUTHERLY ASPECT.

PLAN No. V.—a, b, c, d.

Two bedroom accommodation, with through living room. The elevations to types "a" and "b" would be similar to that shown on XIIIa.

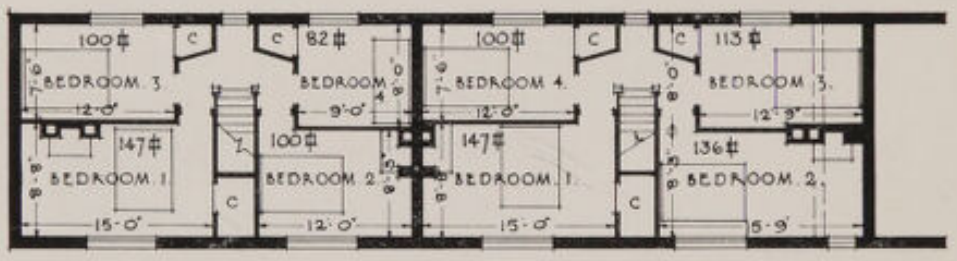
VI b
1006 ♯



VI b
1006 ♯

GROUND FLOOR PLAN · FIRST FLOOR PLAN ·
NORTHERLY ASPECT ·

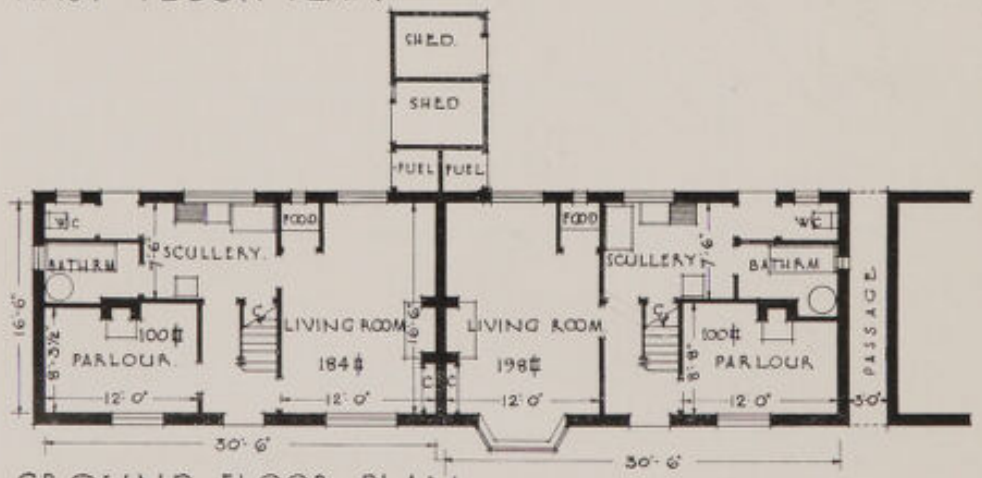
VI a
1006♯



VI c
1083 ♯

FIRST FLOOR PLAN

VI a
1006♯



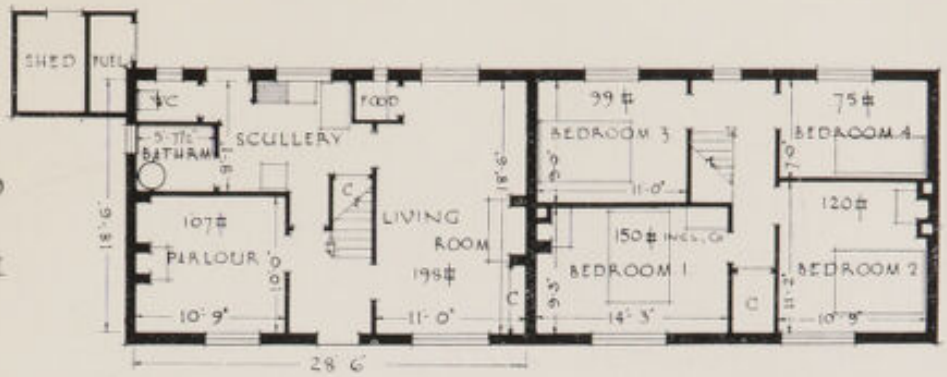
VI c
1083♯

GROUND FLOOR PLAN ·
SOUTHERLY ASPECT ·

PLAN No. VI.—a, b, c.

Houses for larger families. Type " c " is suitable for 8 persons.

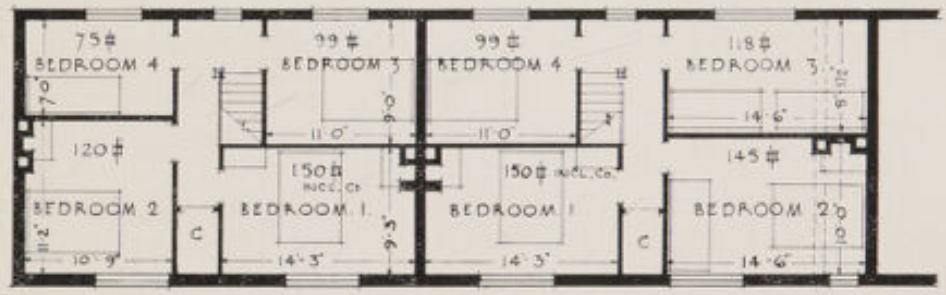
VII b
1055 ft



VII b
1055 ft

GROUND FLOOR PLAN · FIRST FLOOR PLAN ·
SOUTHERLY ASPECT

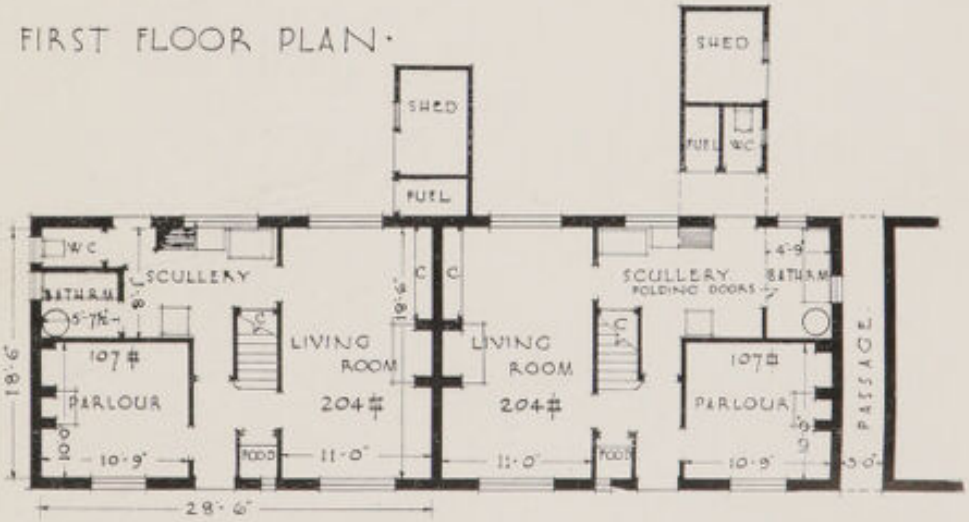
VII a
1055 ft



VII c
1119 ft

FIRST FLOOR PLAN ·

VII a
1055 ft



VII c
1119 ft

GROUND FLOOR PLAN ·
NORTHERLY ASPECT

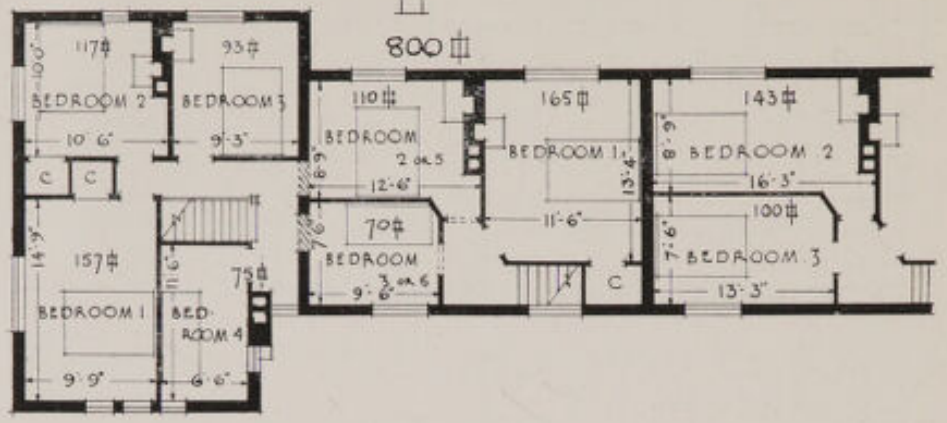
PLAN NO. VII.—a, b, c.

These plans also provide for the larger family, but with a narrower frontage. Type "c" planned over the passage-way would accommodate 9 persons.

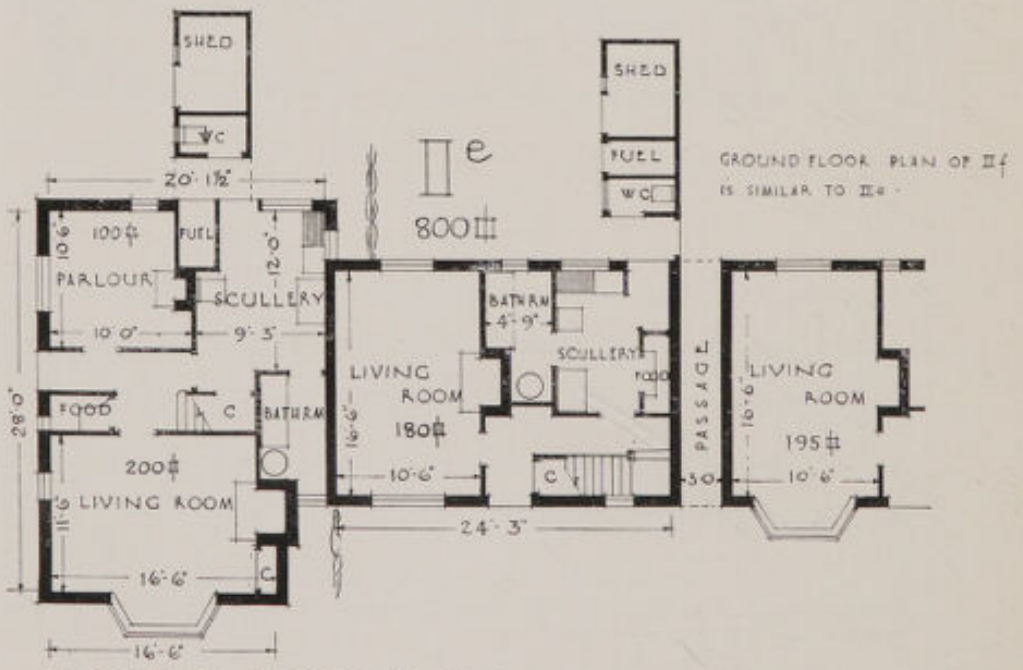
VIII a
1075 ♯

II e
800 ♯

II f
877 ♯



FIRST FLOOR PLAN.



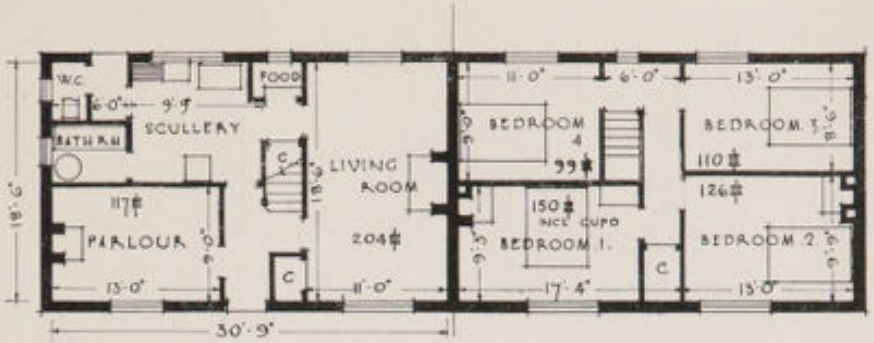
GROUND FLOOR PLAN.
SOUTHERLY ASPECT.

PLAN NO. VIII.—a
PLAN NO. II.—e, f.

A four bedroom house planned to connect with one or two bedrooms in an adjoining house to provide for very large families.

Types II, e and f, are suitable for 6 persons.

VII d
1137#

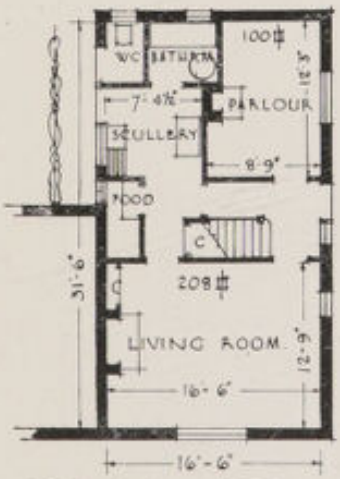


VII d
1137#

GROUND FLOOR PLAN. FIRST FLOOR PLAN.

SOUTHERLY ASPECT.

IX a
1020#



IX a
1020#

GROUND FLOOR PLAN. FIRST FLOOR PLAN.

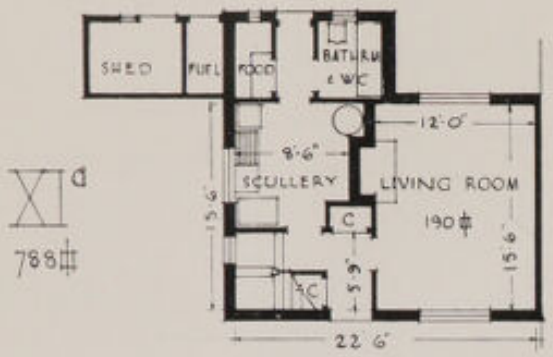
SOUTHERLY ASPECT.

PLAN No. IX.—a.

PLAN No. VII—d.

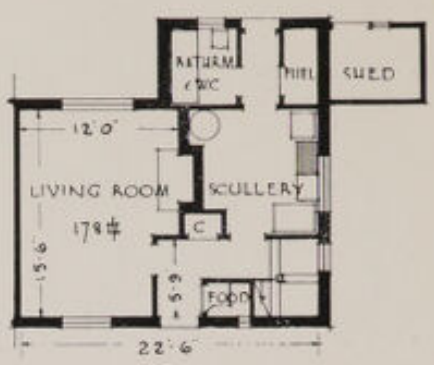
A four bedroom house planned to connect with one or two bedrooms in an adjoining house to provide for very large families.

Plan VIId on this page is similar to VIIa, b and c but provides for 8 persons.



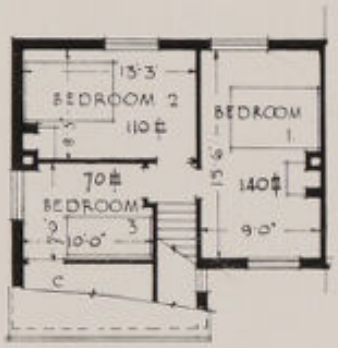
a
788#

GROUND FLOOR PLAN
SOUTHERLY ASPECT.



b
788#

NORTHERLY ASPECT

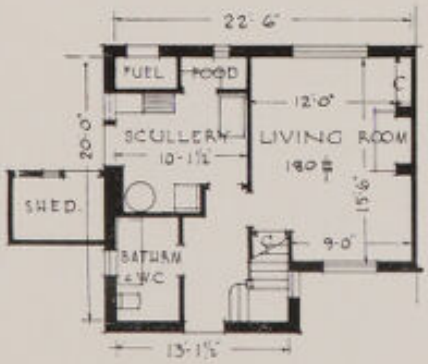


a-b
780#

FIRST FLOOR PLAN.

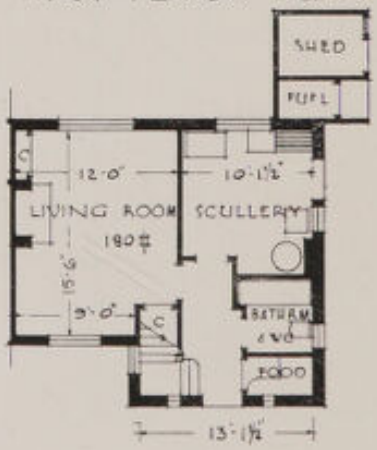
a-b
788#

FIRST FLOOR PLAN.



a
780#

GROUND FLOOR PLAN
SOUTHERLY ASPECT

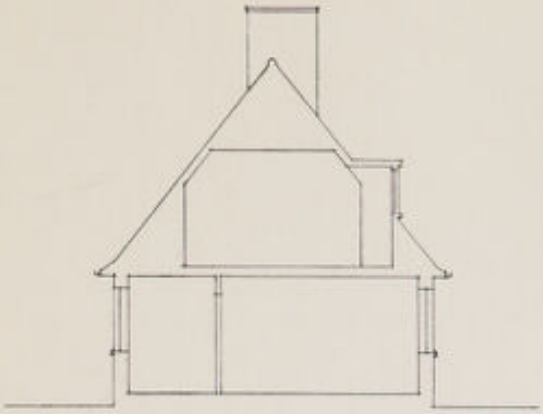


b
780#

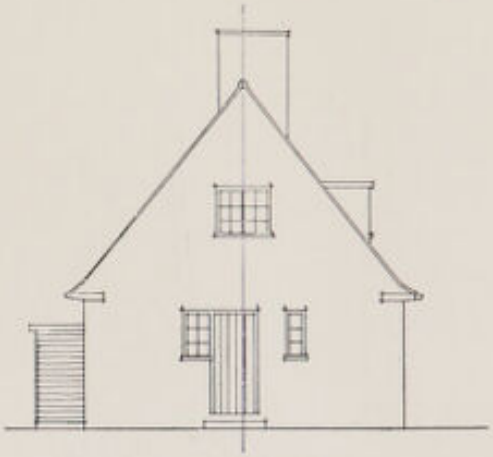
NORTHERLY ASPECT.

PLAN No. X—a, b.
PLAN No. XI—a, b.

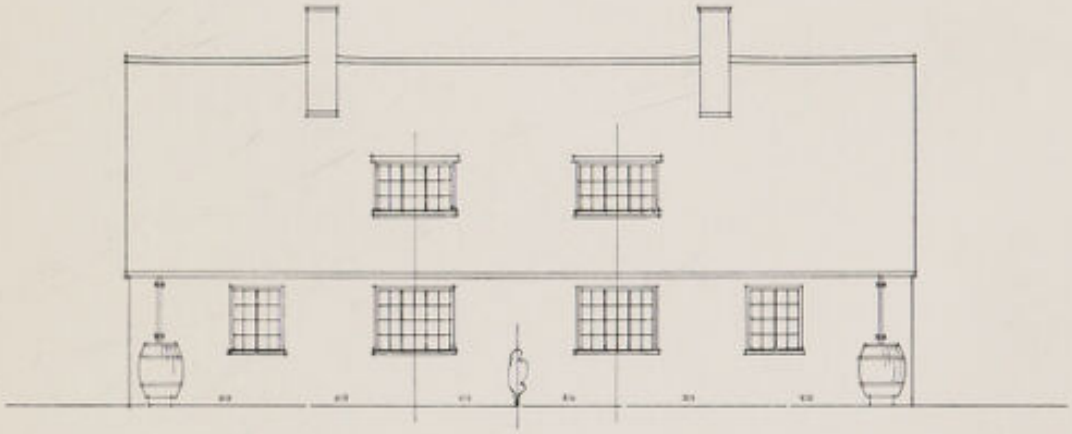
Three bedroom houses as alternatives to the usual rectangular plan.



SECTION



SIDE ELEVATION.

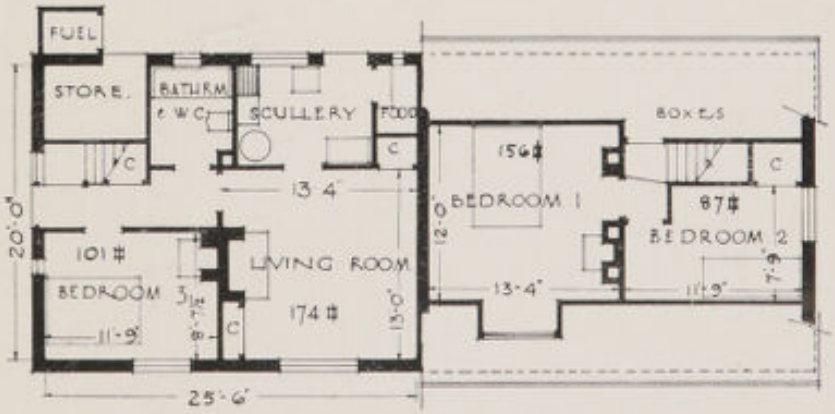


ELEVATION.

XII

827 ft

INCL. STORE



XII

827 ft

INCL. STORE

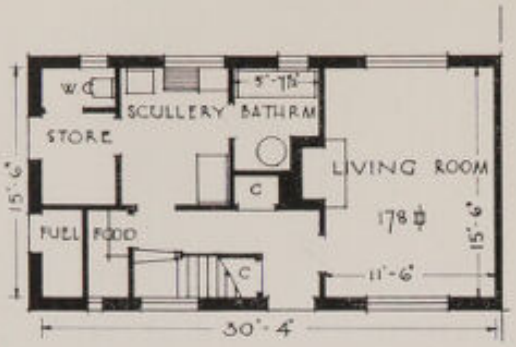
GROUND FLOOR PLAN. FIRST FLOOR PLAN.

SOUTHERLY ASPECT.

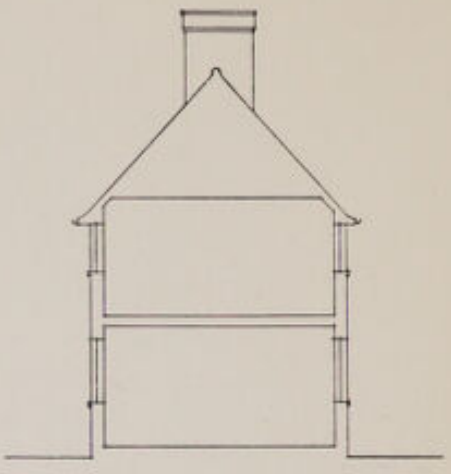
Plan No. XII.—a.

A low eaves type with one bedroom on the ground floor.

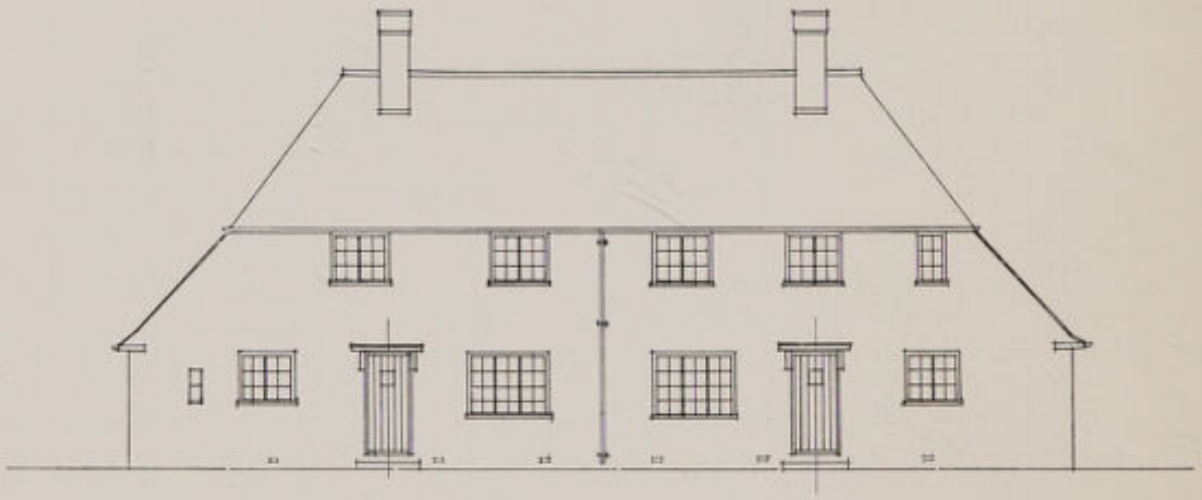
XIII b
868 ft



GROUND FLOOR PLAN.
NORTHERLY ASPECT.



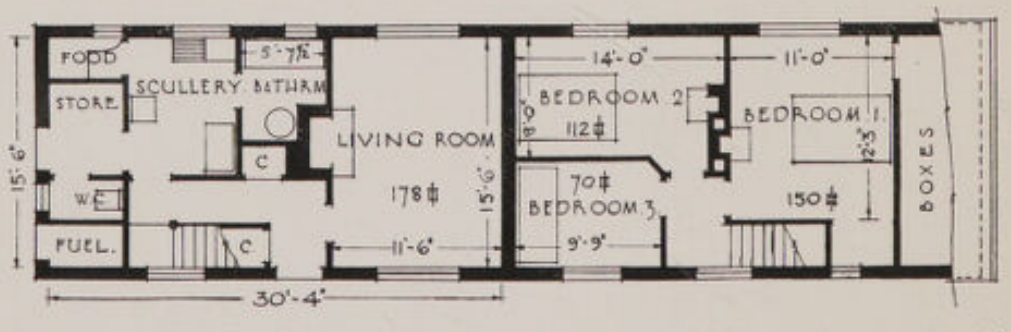
SECTION.



ELEVATION.
NORTHERLY ASPECT.

SOUTHERLY ASPECT.

XIII a
868 ft



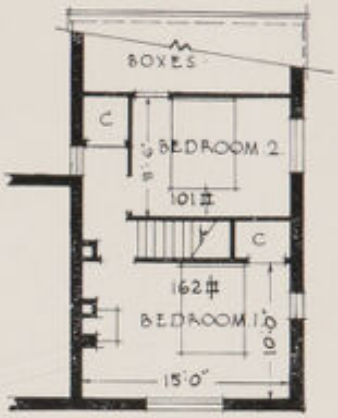
GROUND FLOOR PLAN.
SOUTHERLY ASPECT.

FIRST FLOOR PLAN.

PLAN No. XIII.—a, b.

A plan similar to IIIa, b and c, but with low eaves to the flank walls and the store included within the main walls.

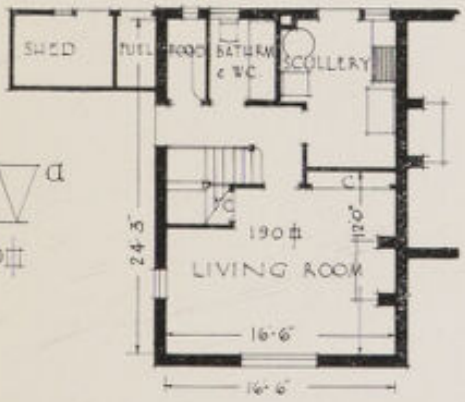
XIV a
800 ft



XIV b
740 ft
INCL. STORE.

FIRST FLOOR PLAN

XIV a
800 ft

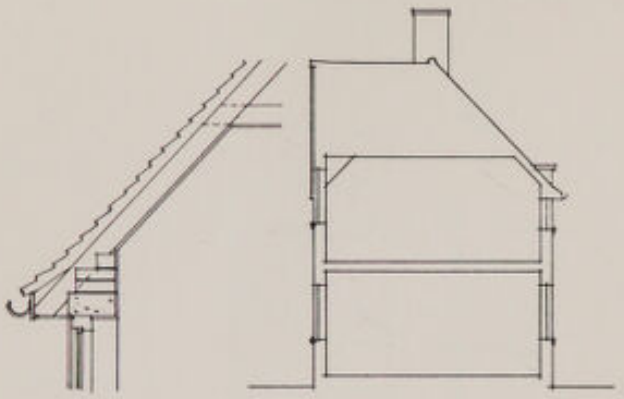


XIV b
740 ft
INCL. STORE.

GROUND FLOOR PLAN.
SOUTHERLY ASPECT.

PLAN NO. XIV.—a, b.

Narrow frontage plans suitable as end houses of groups. XIVa can connect with one of the bedrooms in an adjoining house. XIVb provides a two bedroom house with low eaves at the back.



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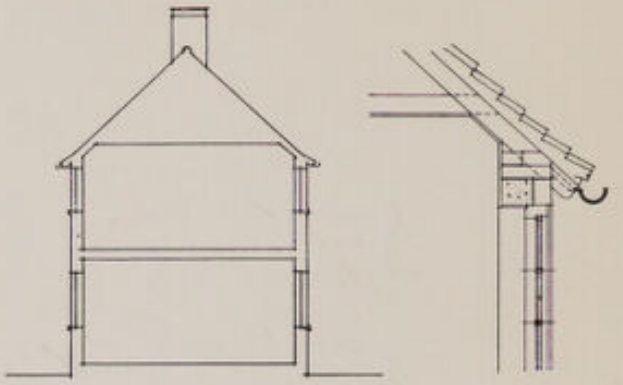

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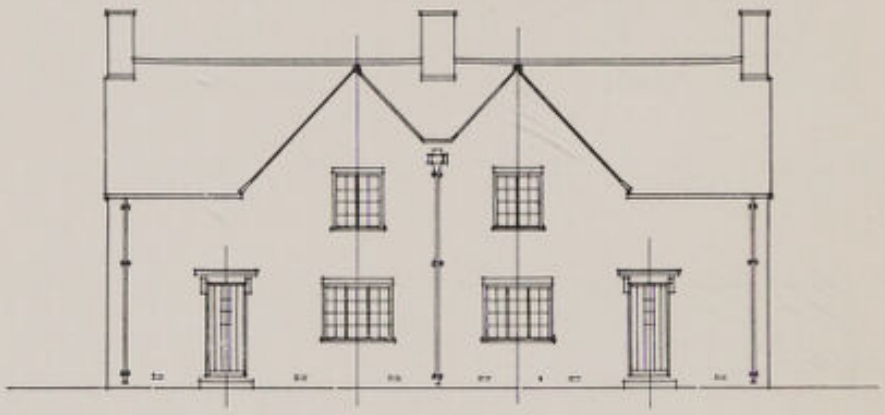
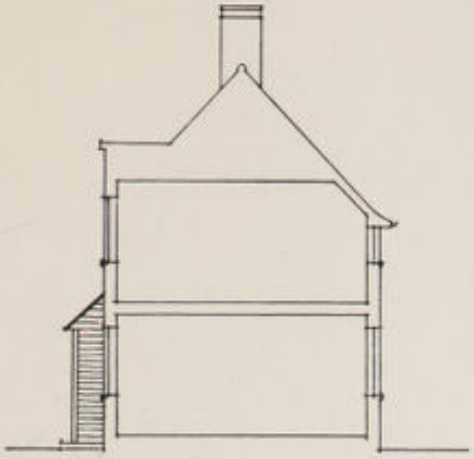


ELEVATION · 1 ·

ELEVATION · 2 ·



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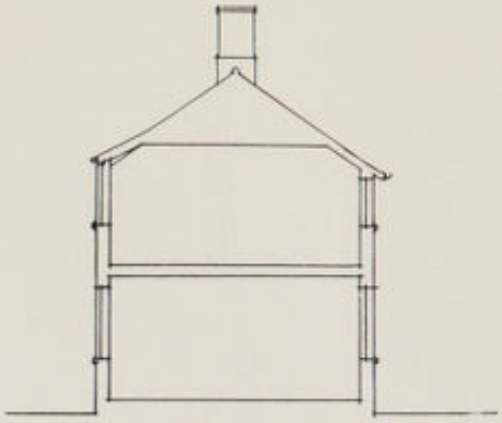

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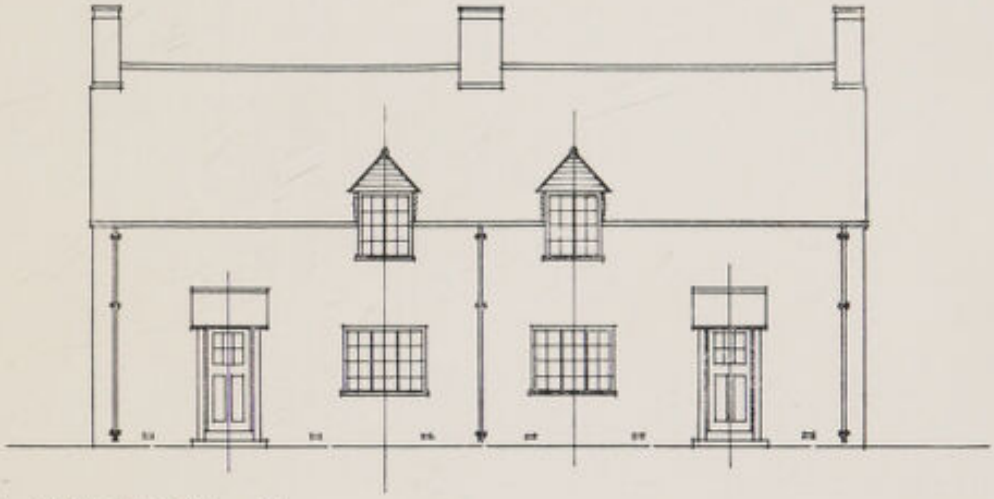

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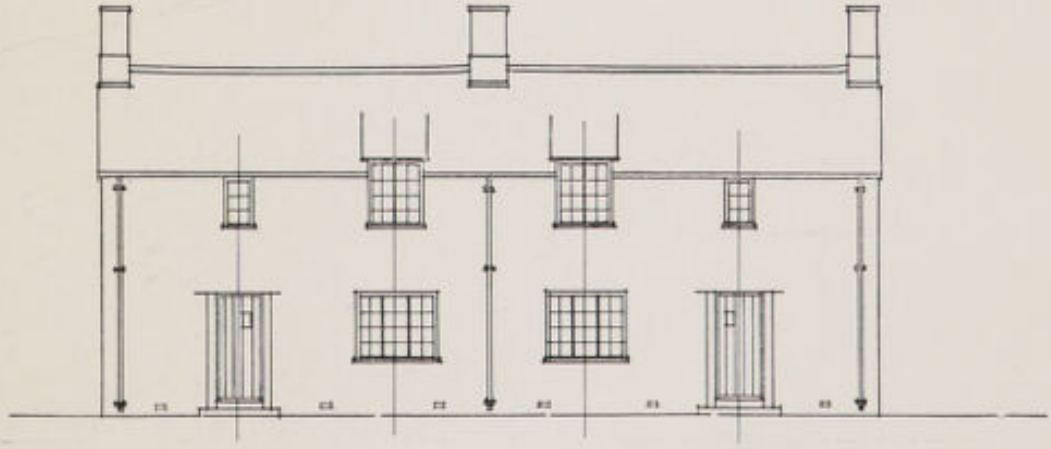

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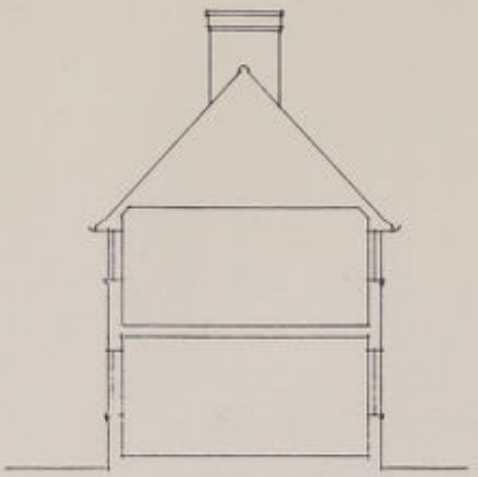

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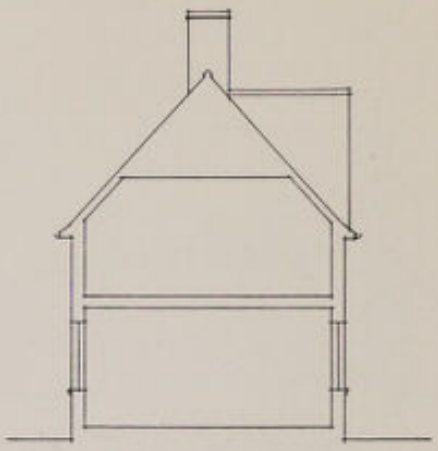

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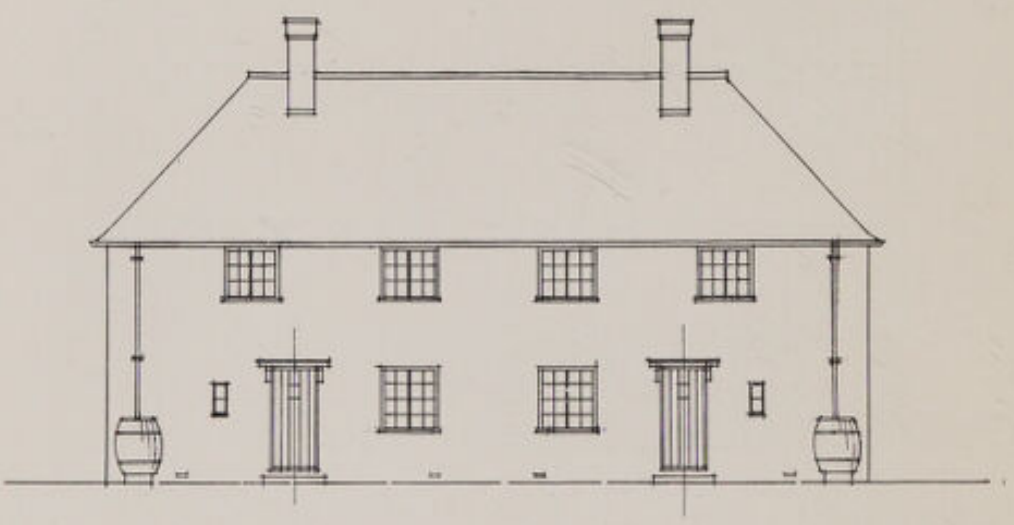

ELEVATION ·5·

ELEVATION ·6·

Thaxted, Essex.

Sonning, Berkshire.

Rolvenden, Kent.

Sandhurst, Kent.

Cattistock, Dorset.

North Perrott, Somerset.

Blankney, Lincolnshire.

Branston, Lincolnshire.

Coxwold, Yorkshire.

Crayke, Yorkshire.

Mulbarton, Norfolk.

Aldermaston, Berkshire.

Wendover, Buckinghamshire.

Bishops Hull, Somerset.

Theale, Berkshire.

Mulbarton, Norfolk.

Hatfield, Hertfordshire.

Bucklebury, Berkshire.

Blackbourton, Oxfordshire.

Milton-under-Wychwood, Oxfordshire.

Camberwell.

Stanmore, Hampshire.

South Petherton, Somerset.

Pontypridd.

Bocking Church Street, Essex.

Barnack, Lincolnshire.

Beaminster, Dorset.

Newburn, Northumberland.

Arle, Gloucestershire.

Bishop's Cleeve, Gloucestershire.

Moreton in Marsh, Gloucestershire.

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