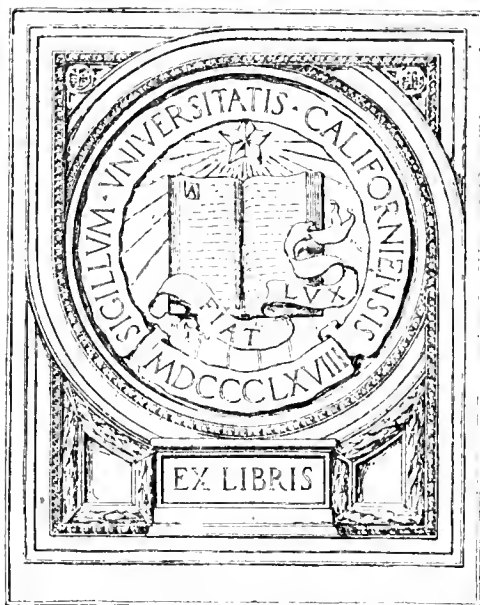


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ROYAL COMMISSION ON HOUSING IN SCOTLAND.

SPECIAL REPORT

With Relative Specifications and Plans, prepared by
Mr JOHN WILSON, F.R.I.B.A., Architectural
Inspector of the Local Government Board
for Scotland

ON

THE DESIGN, CONSTRUCTION, AND MATERIALS OF VARIOUS TYPES OF SMALL DWELLING-HOUSES IN SCOTLAND

Presented to Parliament by Command of His Majesty



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NOTE.

THIS Special Report forms part of the Appendices to the Evidence of the Royal Commission on Housing in Scotland. The Evidence placed before the Commission and the remainder of the Appendices will not be published till later, but meantime it is thought desirable to issue this Report separately, as the Commission consider that it will be of assistance to Local Authorities and others preparing post-war housing schemes.

APPENDIX No. CXCII.

REPORT HANDED IN BY MR J. WILSON.

QUESTION No. 43,721.

LOCAL GOVERNMENT BOARD,
EDINBURGH, 9th September 1915.

SIR,—With reference to your letter of the 23rd February 1914, intimating that the Royal Commission on Housing (Scotland) had appointed me a Special Investigator to inquire and report “on different types of houses that are being built in selected parts of Scotland, as regards their accommodation, materials of construction, methods of construction, cost of construction, including architect’s fees, cost of land, cost of making roads, etc. ; to report on the particular type that may be suitable to meet the needs of local circumstances, and to suggest in what respects the cost of erection of houses may be cheapened, and to what extent, if any, the statutory requirements and the provisions of local bye-laws or regulations might be relaxed or modified,” I have now the honour to report as follows :—

GENERAL DESIGN AND TYPE OF HOUSES.

1. The plans appended to this report have been prepared as the result of personal visitation of many towns and districts of Scotland.

Of course it is impossible, in the compass of this report, to provide a plan to suit every district and every class of family, but plans of different types and sizes of cottages and double-flatted houses are shown to meet the general requirements in the various rural and urban districts of Scotland. An endeavour has been made whenever possible to design a house contained within four walls. Only by this means can the greatest economy be effected, as out-buildings always increase the cost.

2. The design of the houses is contingent on the absence of the conditions which lead to cramped and narrow-fronted houses in urban districts.

3. Designs A, B, C, and E are suitable for cottage houses over the greater part of Scotland where a gravitation water-supply and drainage system are available.

4. Design D is suitable where a gravitation water-supply is not available and peat is used for fuel. The coal place is omitted, as fuel will be stacked either outside or in a wooden shed behind the house. A rain-water tank is provided and connected to the sink in the scullery for washing purposes, and an earth-closet is also provided.

An ash-pit or large ash-bin in the back garden should be provided for the house of “D” design, and also for all houses where there is not a daily collection of household refuse.

5. All the cottage houses can be built in rows of four and six by placing the doors and the windows shown in the end walls on either the front or back walls.

6. The building of cottages in couples is the ideal arrangement, as, by this means access to the back garden can be obtained at the side of the house. However, for purposes of grouping this arrangement is not so satisfactory.

7. A common pathway along the back of the houses is not a desirable arrangement, as it is seldom possible to keep it free from nuisance of one kind or other.

8. Designs F, G, and H are also suitable for double-flatted houses over the greater part of Scotland where a gravitation water-supply and drainage system are available.

9. The flatted houses are designed in blocks of four houses each. This plan cannot be adapted to suit blocks of a greater number of houses. It is difficult to design a satisfactory and economical plan of a block of more than four houses. If the number of houses is increased, then back stairs to the garden will require to be provided, and these, as well as front stairs, will in most cases require to be common to two tenants. An endeavour has been made in every case to make a house self-contained. Whenever

Mr J. Wilson—continued.

any part of a house—a stair or washhouse—is common, then it is found that these tend to a lowered standard of cleanliness among the tenants as well as to friction between them.

10. Design G is similar to Design F, with the exception that an outside stair is provided in the former. In many parts of Scotland the outside stair is preferred to the inside stair.

11. Design H is of a house containing a living-room, bedroom, and scullery. The plan is not so satisfactory as those of the other houses. The bedroom is entered from the living-room, but this may not be considered a great objection in a small family house.

12. Design J is a suggestion for the plan of a house for farm-servants. It is intended that married farm-servants should live in the two central houses, and the single men, who usually live in a bothy, should live in the end houses. By this arrangement the housewives in the central houses can do the usual household work for the single men. Possibly, in the majority of cases, two houses in place of four will meet all requirements.

There may be some difficulty about this arrangement, as the wives of farm-servants are usually expected to do a certain amount of farm work.

Such arrangement would, however, tend to a higher standard of living and comfort among the single men than at present obtains where the bothy is a separate building.

The bothy system is fairly common in Scotland, except in the southern counties, where the single men are housed in the farmhouses.

13. Design K shows the plan of a house suitable for smallholders and crofters. Where there is no gravitation water-supply, an earth-closet will require to be provided apart from the house. A tank for rain-water may also require to be provided and connected to the sink for washing purposes. The provision of buildings for cattle, etc., has intentionally been omitted as not coming within the scope of this report.

14. Designs L and M are suggestions for the plans of one-apartment houses. These are not desirable houses for families, but they are suitable for such cases as, e.g. an aged couple, a single woman, or a woman and young child, who do not need and are not able to pay for larger accommodation.

This type of house may be called a hostel, and, as stated above, is only suitable for certain cases.

In each house there is a large living-room, with a small scullery, coal-place, larder, and water-closet. Where there is no gravitation water-supply, an earth-closet will require to be provided outside the house.

In the back garden a common washing-house is provided, and a roofed shelter for ash-bins.

15. It would be advisable to have as a tenant of one of the houses a woman who could act as caretaker for the hostel, and give assistance to any infirm or sick tenant when required.

16. In designing all the types of houses an endeavour has been made to provide the necessary accommodation to enable people to keep their houses wholesome and tidy. At the same time, advantage has been taken of every foot of space, even to the omission of the usual passage from the front entrance to the scullery. The elevations have been kept simple, although these could be improved by a little extra expenditure.

THE PLANNING OF HOUSES.

17. Considerable economy and convenience of arrangement can be effected in planning a house by giving careful consideration to every detail. By concentrating sanitary and water fittings, a saving can be effected in capital expenditure and maintenance. By arranging the position of beds and furniture on the plans, convenience of arrangement can be attained.

18. The door to a bedroom should be so placed and hung that the bed is covered and protected from draught when the door is opened. The doors in a living-room or kitchen, which may adjoin another room, should have these so placed that the passage-way is confined to one end of the

Mr J. Wilson—continued.

room. Staircases should be so planned that the unnecessary height of ceilings often found in small houses can be avoided.

19. Those who have made a study of the planning of small houses for artisans know how difficult it is to eliminate the wastage in the areas and so reduce the cubic contents of the building. It should always be remembered that as a room or house approaches a square on plan so does the cost decrease. The house that is narrow-fronted and deep on plan may have the same length of walling to enclose it as that enclosing a house which is practically square on plan, but the former has about 25 per cent. less floor area than the latter.

20. The various apartments that are necessary in a house are dealt with as follows :—

LIVING-ROOM.

21. This room is the one in which the family will principally live, and it should be given the chief consideration in planning. A south or south-east aspect should be obtained in order that the room may have the morning sun. Where this is not practicable, a west aspect is the next best in order that as much sunshine as possible may be obtained. Where a northern aspect cannot be avoided, the living-room should be a through room with a window to the south. The minimum size of room given in Appendix No. CXCIII. is 168 superficial feet of floor space, and it should be regarded as the smallest in which family life can be carried on without overcrowding and discomfort. The convenience of a living-room depends principally upon the arrangement of the fireplace, window, and doors.

22. The fireplace should be placed on a wall at right angles to the window, so that the housewife may not stand in her own light when cooking. The doors to and from the living-room should be so placed that the passages from one room to the other should not interfere with the sitting space round the fire. Pass doors on either side of a fireplace are most inconvenient.

23. The room should be rather longer than its width, and the size which gives 168 square feet (14 feet by 12 feet) will be found of a satisfactory shape.

24. A cooking range should be provided in this room. Some of the latest combinations of cooking range and low fire with boiler for hot-water supply attached have been found satisfactory.

SCULLERY.

25. In small houses for artisans it has not been usual in the past to have a scullery. The living-room or kitchen was provided with a sink, and all the dirty household work was done in this room, with the result that it was found difficult to keep the room clean, tidy, and wholesome.

26. It is essential that every house should have a scullery ; in the scullery all dirty household work can be done, and the living-room kept clean and tidy for family life.

27. The scullery should be planned so that the doors can be kept at one end in order to give working space round the sink. The scullery should open from the living-room, as it is essential that a mother should be able to keep her children under observation while she works there. The aspect is not of so much importance as that of the living-room, but, where possible, it should be placed to face north-east or east.

28. The washing boiler can be placed in the scullery against the internal gable wall, which contains the flues from all the fires in the house. To avoid the escape of steam into the scullery, an arrangement can be provided to take it into the flue. A glazed earthenware sink should be placed in the scullery with a draining-board on one side.

29. Where gas is moderate in price, tenants sometimes prefer a gas washing-boiler to an ordinary washing-boiler. The former is more cleanly to use, but where coal is easily obtained, the latter is preferred by the majority of tenants.

30. In England it is usual to provide a small cooking range in the scullery, but in Scotland it is the practice to have a fire continually in the living-room, and cooking is always done on this fire. The Scottish housewife will not keep two fires burning, so it is useless to provide a fireplace in the scullery. It is of advantage, however, to provide a space for a gas cooking-stove in the scullery, as some housewives desire this arrangement for use in summer

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months. The scullery should not be made so large as to encourage its use as a living-room.

31. It will be found convenient if a small part of the court or yard outside the back door is paved with cement, brick, flagstones, or tar macadam.

BATHS, WATER- AND EARTH-CLOSETS.

32. There is an increasing demand for baths by the tenants of small houses, and where the standard of living demands it, these may be provided.

33. In England it is customary to place the bath in the scullery with a hinged table-top to cover it. By this arrangement no privacy is secured, as the scullery is constantly in demand, and people are thereby deterred from using the bath. Further, the table-top on the bath is so handy for placing dishes on, that rather than be troubled removing these, the people refrain from using the bath.

34. The bathroom may be a separate apartment, and entered from the scullery. The water-closet may also be placed in this apartment. A hinged metal ring fixed on the wall at the end of the bath for a portable basin will be found a convenience.

35. Where there is no gravitation supply of water, only an earth-closet can be provided. This can be placed in a small outhouse detached from the house. There are various types of automatic dry-closets on the market, which, with proper ventilation, have proved fairly satisfactory. The pail-closet is, of course, very often used.

LARDER.

36. A larder is required in every house for storing food-stuffs, and the space allowed may vary from 12 to 15 superficial feet. The larder should always have a window to the outside for proper ventilation with, if possible, a north or north-east aspect. A wooden frame covered with fly gauze should be fitted into the window opening outside the window frame. A stone or slate shelf is of great service in the larder.

37. The larder should be entered from the scullery. It is sometimes placed under the stair and entered from the living-room, but this should be avoided if possible, as frequently it is difficult to ventilate in this position.

COAL OR FUEL STORE, ETC.

38. This store should be entered from the scullery, and be placed as near the back door as possible. In country districts where coal is scarce, and peat or wood is frequently used, it will be found more convenient to keep the fuel in a wooden shed in the back garden, and under the same roof as the earth-closet.

39. It is also desirable to provide space for garden tools, bicycles, and perambulator in a shed in the back garden. In small fishing villages a shed is required for the storage of nets, though in larger villages and towns it is usual to have a large central store for common use by a number of fishermen.

ASH-PIT.

40. In rural districts where there is no regular collection of household refuse, it will be advisable to provide a small ash-pit in the back garden. It can be formed of concrete, and should be roofed in some simple manner and capable of being easily emptied. In places where the intervals of collection are short, a large covered iron ash-bin will be more suitable than an ash-pit.

STAIRCASE AND LOBBY.

41. The staircase should open off a small lobby placed at the front door. It should not be necessary to enter the living-room for access to the staircase.

42. The steps of the stair should not be steeper than 7-inch risers and 9-inch treads, and, if possible, wheelers should be avoided. The stair should have a width of, at least, 3 feet. The top of the staircase should be well-lighted and ventilated by means of window or roof light. A handrail should be fixed to one side of the staircase wall.

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BEDROOMS.

43. In cottages, the size of the bedrooms is governed by the size and number of the apartments on the ground floor. In flatted houses there is no such restriction, as all the rooms are placed on one floor.

44. Though a standard of cubic space is necessary, the habitability of the room depends as much on floor space and efficient ventilation. The statutory powers contained in the Burgh Police (Scotland) Act, 1903, demand 400 cubic feet for each adult, and 200 cubic feet for each child under ten years of age. It is suggested, however, that the higher standard of 500 cubic feet for each adult, and probably 375 cubic feet for each child under ten years, should be obtained. Where there are only one or two bedrooms in a house, the floor area should not be less than 125 square feet, and, where possible, this should be larger. Where there is a third bedroom, it may be smaller, but should in no case have less than 500 cubic feet.

45. In planning bedrooms it will be found that a room of an oblong shape is much more serviceable than one of a square shape. In the former a more convenient space for dressing purposes will be found. The room should be so planned that the bed can be placed out of the draught from the window. There is no objection to the door being placed near the fire, but it should always be hung to cover the bed when opened. Where possible, a hanging wall-press for clothes should be provided in each bedroom, but where this is not possible a hanging cupboard can be formed in a recess or corner by means of a curtain.

PARLOUR.

46. Where there is a demand for a parlour, it may be advisable to provide one, but only in a house of two or more bedrooms. A parlour, however, is only put to occasional use in the majority of cases, and where there is need for economy it can well be dispensed with. As a parlour is of less importance than a living-room, the size and aspect need not be given the same consideration. It is of importance, however, to plan this room with the door, window, and fireplace in proper relation to each other, so that the space around the fireplace is free for sitting use.

PRESS ACCOMMODATION.

47. Presses should be provided wherever practicable, in order that rooms may be kept as tidy as possible.

STRUCTURE OF THE HOUSE.

48. In Appendix No. CXCIV. information is given in regard to the building materials used in various districts of Scotland. In the Specifications and Schedules of Quantities of the houses (Nos. CXCVI. and CXCVII. of the Appendices), of which plans are appended to the report, items are given which include the majority of the building materials used throughout the country.

49. The following description of the various parts of the structure of the houses is practically a description of the plans appended, and what it is suggested should be adopted in the various districts.

WALLS.

50. In the greater part of Scotland, cavity brick, plastered on the hard, or solid stone walls, strapped, lathed, and plastered, must be used. In some districts, where brickworks are remote, the cost of a 21-inch stone wall is found to be as cheap as that of a 9-inch brick wall.

51. In a few districts, principally in the north-west of Scotland, in Orkney and Shetland, and in some of the Western Islands, solid concrete walls can, where sand and gravel are available, be built cheaper than those of stone or brick.

52. In Scotland generally, except in specially sheltered places, a 9-inch brick wall, unless strapped, lathed, and plastered, will not be found weatherproof.

53. *Stone Walls.*—The walls should be built 18 to 21 inches thick in preference to 24 inches thick, as by adopt-

Mr J. Wilson—continued.

ing this thickness there is less chance of packing with shivers, and a more solidly-built wall is obtained. This wall should be built of random rubble, trowel-pointed on the outside, and on the inside strapped, lathed, and plastered, or grounded and covered with wood lining or some composite boarding.

54. In some districts it is customary to whitewash the external face of the walls, and in other districts to finish them in rough-cast.

55. *Brick Walls.*—Where 12-inch cavity walls are used, these should be formed of two 4½-inch brick, with a 3-inch cavity, and galvanised iron ties binding the walls together. In the building of the hollow walls care must be taken that no lime is left lying on the metal ties, and that the channel at the foot of the cavity is thoroughly cleaned out at the completion of the work. The cavity must not on any account be ventilated, as the admission of air is liable to produce condensation on the face of the plaster on the inside wall.

56. The walls should be rough-cast or skimmed with cement on the outside face, and plastered on the inside face of the cavity built wall. If a 9-inch solid brick wall is built, it should be strapped, lathed, and plastered on the inside and rough-cast on the outside, except in the case of small outbuildings where, if plaster or cement are used, these can be placed directly on the inside face of the wall. In out-buildings it is usual either to point the external face of the brickwork or skim it with cement. A 9-inch solid wall, strapped, lathed, and plastered on the inside, is dearer than a cavity brick wall plastered on the hard inside.

57. Instead of carrying the last coat of the rough-cast on the walls down to the ground level, the part of the walls between the ground floor window-sills and ground is sometimes finished smooth in cement and tarred or built in pressed brick.

58. In the past blaise bricks have not been found very satisfactory where rough-cast. The rough-cast does not seem to adhere properly to these walls. A clay brick is, as a rule, more satisfactory.

59. *Concrete Walls.*—The best type of concrete wall is built of two thicknesses of concrete blocks with a cavity between of 3 inches, and bound together with galvanised iron ties. A convenient size of block is 32 inches by 9 inches by 4½ inches thick. The outside face of the outer block can be finished rough and covered with rough-cast, or cast with an artificial rock finish. The plaster is applied directly to the inside face of the wall.

60. A cavity wall of concrete is never so satisfactory as one of brick, as the former absorbs water much more readily than the latter.

61. If the walls are built solid they will require to be at least 10 to 12 inches thick, formed either of blocks in courses or *in situ* by means of boarding. The use of blocks is a much more satisfactory method than forming a concrete wall in one continuous slab by means of boarding. The economy of the latter type of construction depends largely upon suitable materials being easily obtainable and upon skilled labour being available. In buildings of this kind, however, there is a risk of settlement and fracture due to careless and hurried construction. The inside of the walls should be strapped, lathed, and plastered.

62. In the north-west of Scotland, in Orkney and Shetland, and in the Western Islands, which are all remote from brickworks, concrete walls will be cheaper to build than those of brick or stone when there are suitable materials at hand. In Shetland there are many houses built of solid concrete walls. When the walls of a house are harled, the lintels, sills, and steps may be of cast concrete.

63. Chimney flues should be pargetted, but if not done properly soot will come through the lime joints and blacken the plaster walls. Fireclay vent linings may be used, but are slightly more expensive. They give, however, a better result.

FOUNDATIONS.

64. The foundations of the houses may be of stone, brick, or concrete. The solum underneath the floor should be covered with a layer of asphalt or cement concrete laid on the ground after the black soil has been removed, for the prevention of damp and vermin getting into the houses. Gravel and ashes are also used for the same

Mr J. Wilson—continued.

purpose, but are not so effective. In some cases, after the ground has been prepared, it is only sprayed with tar.

65. A damp-proof course of slates and cement, stone slabs, or patent asphalt felt should be laid over all the foundation walls about 4 inches above the finished level of the ground. The outside face of the external foundation walls is sometimes tarred.

66. In some districts where the subsoil is of gravel and sand it has been found unnecessary to cover the solum, or even to provide a damp-proof course, though it is unwise to omit the latter.

FINISH OF THE INTERNAL SURFACE OF THE WALLS.

67. Where the plaster is put directly on the walls, two coats will be found sufficient. Where walls are strapped, and in the case of ceilings, three coats will be necessary. Two coats of plaster on brick walls are quite sufficient. There are now certain forms of patent quick-setting and drying plaster manufactured and sent out in bags ready for use. The cost of this plaster is slightly dearer than that of ordinary plaster, but the durability and finish of the former is much superior to that of the latter.

68. Fibrous plaster sheets are sometimes used in place of lime plaster. The joints are filled with plaster of Paris, and then the whole surface is given a coat of Keene's cement or hard plaster.

69. In certain northern districts it is often impossible to obtain good plaster work, and walls are finished in asbestos or other composition sheeting. The only objection to this class of material is in regard to the joints. Probably the best method of overcoming the difficulty is to fix a small half-round wooden bead over the joint.

70. Wood lining has been used in many cases, and where the houses have been well kept it has proved quite satisfactory. There is, however, always a danger from vermin lodging in the joints which open up through shrinkage of the material.

71. In various coast towns in Aberdeenshire and further north, where sea sand is used for internal plaster work, it has been found that plaster cannot be placed on the hard wall because of the "bloom" or efflorescence which appears on the face of the plaster wall. This is the result of the salt in the sand. If strapped and lathed wooden partitions are used, this trouble can be partially overcome.

72. The angle at the ceiling can be rounded or a small cove and fillet formed. A picture moulding should be fixed to the wall about 1 foot from the ceiling. This avoids nails for pictures being driven into the plaster.

ROOFS.

73. The cheapest method of constructing the roofs is to carry purlins on the internal gables and partitions, supported at the corners by piend rafters or struts. On these are carried light rafters, boarding, and felt.

In some cases felt is omitted, and in others waterproof building paper is substituted.

ROOF COVERINGS.

74. The roof coverings to be adopted depends on the district.

(1) *Slates.*—Where easily procured, slates will be found to be the most satisfactory of roof coverings. Where houses have had to be built economically, Welsh slates seem to have been used all over Scotland. There are, however, good slate quarries in certain districts of Scotland which supply slates of a better texture and colour than those from Wales. Small-sized and thick slates are to be preferred to large-sized and thin slates, and should be laid with an average cover of from 2 to 2½ inches. In the north of Scotland, Caithness slates are used, but their weight entails a stronger roof than for ordinary slates. The Caithness slates are found to be more brittle and more susceptible to the changes of weather than ordinary slates.

75. (2) *Tiles, Pantiles.*—It appears that pantiles are at present only made in one district of Scotland. These at one time were made in various parts, and are to be seen on many old houses throughout the country. Where bedrooms are immediately under the roof it may be found

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necessary to lay boarding and felt in addition to fillets under the tiles, as these are somewhat porous, though it is claimed that felt laid on the rafters without boarding is sufficient in normal cases. Another method is to use lath and plaster immediately under the tiling fillets in place of boarding and felt. Pantiles, made in England, may be used, as these are much cheaper than flat tiles.

76. *Flat Tiles.*—As these are made almost entirely in England, they are, because of their expense, seldom used for working-class houses in Scotland.

77. (3) *Asbestos Slates.*—Asbestos slates are made in two colours, red and blue. As these are light in weight, the roof timbers can be made lighter than for slates. Though the colour and the texture of these slates are not so satisfactory as those of ordinary slates or tiles, they have proved very satisfactory in exposed situations.

78. (4) *Concrete Roofs.*—Flat roofs of breeze concrete covered with limmer asphalt are favoured in some parts of the country. It is maintained that these cost much the same as a roof framed in wood and covered with slates. The advantage they have over slated or tiled roofs is that they are less costly in upkeep. They are, however, rather unsightly.

79. (5) In Shetland and the Western Islands the roofs of many small houses are covered with tarred felt. This covering is not satisfactory, and in some cases asbestos slates have been substituted later.

80. (6) Galvanised corrugated iron sheeting is sometimes used for roofs, but is rather unsightly. It is costly to maintain if in the vicinity of a town because of the effect of smoke on it.

81. *Plumber Work of Roof.*—Cast-iron half-round 4½-inch eaves gutters, with 3-inch down pipes carried direct to drain, are generally used. Zinc is used for ridges, and lead flashings at chimney stalks are only used where necessary, as a cement fillet or water table formed at the foot of the stalk will be found sufficient in many cases. The roof-lights should be of iron.

FLOORS.

82. *Concrete Floors.*—The floors of the scullery, larder, coal-place, and, if placed off the scullery, the bathroom and water-closet, should be laid with concrete. These floors should be laid on a bed of broken stones, blanded and covered with a half-inch coat of asphalt. The asphalt keeps any ground damp from rising through the concrete. In certain circumstances the asphalt may be dispensed with. An impervious tiled floor is sometimes preferred for the scullery, but the cost is considerably more than for concrete.

83. *Wood Floors.*—In all apartments on the ground floor, with the exception of those for which concrete floors have been recommended, ¾-inch boarded floors are generally used. Where a good-sized scullery is provided, the floor of the living-room can safely be made of wood. Linoleum and waxcloth are often laid on the flooring, and though these may be partly the cause of dry-rot, it is usually the result of inadequate ventilation under the floor and of the soaking in of water at the joints under the floor coverings when floors are washed. The linoleum or waxcloth should never be washed, but only mopped over with a damp cloth.

84. A common practice is to lay flooring beards in pitch directly on breeze concrete, which gives a hold for the nails. There is greater danger of dry-rot affecting this form of floor when it is covered with linoleum or waxcloth, as the flooring is completely isolated from the air.

85. Every precaution should be taken to guard against the occurrence of dry-rot. It is essential that adequate cross ventilation should be provided under all wood floors, also that all shavings and waste wood should be removed from under the floors. Ventilation gratings on one side of a house are not sufficient, and it may be necessary to use drain pipes under concrete floors to obtain cross ventilation. The joists should not be built solidly into the walls, and wall plates should always be placed above the damp-proof course.

86. The floors of bedrooms on the first floor do not require, as a rule, to be deafened, but if such is found necessary, lime riddlings should not be used. A better method is to lay an inodorous felt on the joists, then nail a fillet 1 inch thick and the width of the joists on the top before the flooring is laid.

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WINDOWS.

87. *Sash Windows*.—The sash window is the usual form adopted all over the country. These should be made to open at the top and the bottom, and should be placed not more than 12 inches from the ceiling, in order that the upper as well as the under portion of the room may be ventilated. The windows on all upper floors should be fitted with an apparatus to allow of them being opened inwards to facilitate cleaning. A hinged draught board fixed to the sill will allow of the bottom sash being opened for ventilation at the meeting rails.

88. *Casement Windows*.—Casement windows are simpler in construction than sash windows, but these, if of wood, have not, as a rule, proved satisfactory in exposed situations. Metal casements on account of their cost cannot be used.

DOORS.

89. Entrance doors are usually framed and lined $1\frac{1}{2}$ inches thick. Interior doors may also be framed and lined, or lined with back bars fitted with rim locks and latches. Where economy is not of so much moment, panelled doors may be used, but those of inferior quality are not so satisfactory as the doors mentioned above.

90. All door furnishings should be of galvanised or lacquered metal to avoid the labour of polishing. Door handles, if used in place of latches, may be of cocos wood.

DOMESTIC HOT-WATER SUPPLY.

91. Wherever there is a gravitation supply of water available, it is advisable, even in small houses, to instal a domestic hot-water system. In the plans appended to the report, the kitchen range, washing boiler, bath and sink have been arranged for the minimum length of piping. The use of galvanised iron, lead, or copper piping depends on the hardness or softness of the water.

92. A range with a large oven at one side and a low fire at the other has proved satisfactory for the living-room. The low fire gives those sitting around it the advantages of a room fire. The high-pressure boiler is placed behind the fire, which can be closed over when heat is desired for hot water or cooking. The circulating tank can be placed on the kitchen wall, preferably in the upper part of the wall-press in the chimney gable. The tank can be made 9 inches wide and 30 inches square. This size of tank can easily hold twenty-five gallons, and leave sufficient space at the top for the ball-cock on the cold-water supply pipe. Pipes can be led from the tank to the bath and sink in the scullery. If desired, a connection can be made to the washing boiler. By this arrangement an economical system of domestic hot-water supply can be installed.

93. Hand-fed side boilers in ranges should not, as a rule, be used, as these are of small capacity and often prove unsatisfactory. Hot-water pipes are generally exposed, and should always be placed so as to be easily accessible.

WATER-SUPPLY.

94. If available, public water-supplies should be made use of. In country districts not within a special water district, the cost of forming a deep well is prohibitive, unless there are a considerable number of houses.

95. Shallow wells are often the only source of supply for crofter and farmhouses. These are liable to pollution from surface impurities when near houses or cesspits. These wells should be lined with brick or salt-glazed fireclay pipes, 1 foot 6 inches or 2 feet in diameter, to a sufficient depth, and the top protected by a wall of concrete 9 inches thick and about 2 feet 6 inches above the ground level. The inner lining should be brought to the top of the wall surrounding the well.

96. When necessary, clay puddling free from stones and not less than 6 inches thick can be put between the well lining and the soil to keep the surface water from percolating through the lining. The well should be covered with $1\frac{1}{2}$ -inch tongued and grooved redwood lining bolted to the walls. The suction and overflow pipes should be

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fixed in the walls, and the former should have a strainer on the end. The pump should always discharge outside the well. Pumps are sometimes bought in quantities from the makers by Local Authorities and sold at cost price to those requiring them.

97. A concrete or galvanised iron tank is often provided to catch the rain-water from the roof. If this tank is placed at the back of the house and kept at a sufficient height a pipe can be led to the sink in the scullery, as shown on some of the plans appended to this report. It is advisable to place a tray covered with a layer of sand on the top of the tank. By this means the rain water is filtered before it enters the tank. This water should, however, be only used for washing purposes.

DRAINAGE.

98. Whenever possible a site for a house should be chosen where a gravitation water-supply and a sewer are available. Though the site with these facilities will be dearer to few than one without them, it will be found more economical, as a rule, to choose the former, as the cost of obtaining water and disposing of the sewage is always considerable on the latter site. The ground, where possible, should have a fall from the house to the garden.

99. Where no sewer is available there are various methods of disposing of the slop water:—

(1) The slop water can be run in a pipe to a pit filled with loose stones, and sometimes called a runnel. This water will then percolate through the soil.

(2) If the garden is large, the slop water may be discharged over a certain area of the garden and allowed to irrigate over the soil. This method will not be successful if the ground is of peat or hard clay. Clay can, however, be made porous by the addition of ashes.

(3) If there are a number of houses the soil and waste pipes should be led to a septic tank and the effluent run into a stream or ditch.

100. Great care should be taken in selecting a site for cesspools, etc., in relation to the wells in order to avoid surface contamination. The drainage should be taken to a point below the water-yielding stratum.

101. The cesspool system without an outlet where the slop water is led into a watertight chamber does not in practice work very satisfactorily. The tank may in a few days become full and require to be emptied. It is better to adopt one of the systems mentioned above.

102. The gully trap placed outside the back door is an objectionable method of disposing of slop water. The water, as a rule, is thrown over the ground surrounding the trap, which, if not cemented over, becomes saturated, and an offensive odour is given off. The trap itself also tends to become foul.

SANITARY FITTINGS.

103. *Water-Closets*.—Those on the wash-down principle should always be used. The combination type with the flush cistern at the level of the seat is frequently used where sufficient headroom for the cistern is not obtainable. It is a curious fact that the standard type of water-closet basin is still made too high for the use of adults.

104. *Baths*.—There are various porcelain-enamelled cast-iron baths of a very moderate price on the market. These should always be used in preference to enamel-painted baths, as the extra cost will give greater economy later, and will not only prove more satisfactory but will involve practically no expenditure in upkeep.

105. Baths are often used for washing clothes, and only porcelain enamel will resist the action of certain chemicals used in washing.

106. All fittings should be of a standard type, so that they can be easily renewed when necessary.

PAINTER WORK.

107. The walls should be treated with a water paint and the ceilings distempered. The wood-work finishings may be stained and varnished. Oil-painting is more satisfactory, but of course it means extra cost. The outside wood and iron work should be treated with oil-paint.

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ENCLOSURE OF SITE AND FORMATION OF ROADS AND PATHS.

108. The area of ground proposed for each block of two cottages varies from one-sixth to one-eighth of an acre, and for each block of four-flatted houses about one-fifth of an acre.

109. These areas are exclusive of roads and footpaths, and are the plots of ground enclosed by the boundary fences round the blocks. In the cost of the houses, sparred wooden fencing about 3 feet 6 inches high and a wood gate have been included. A path of stone bottoming, finished with ashes, from the entrance gate to the main door and round the house, has also been included.

110. The roadways are taken 40 feet wide between the front garden fences. The carriage-way is 16 feet wide, with a 6-foot footpath and a 6-foot grass verge on either side of the carriage-way. The carriage-way is of 9-inch stone bottoming, and finished on the top with a 4-inch layer of whinstone, well blinded and rolled. The channel is of two rows of setts, and the kerb is formed of railway sleepers. The footpaths are of 4-inch stone bottoming, consolidated and blinded, and finished with a 3-inch layer of clean engine ashes, watered and rolled.

111. If the carriage-way was finished with a 3½-inch layer of tar macadam in place of a 4-inch layer of whinstone, blinded and rolled, the initial cost would be a little more, but in the cost of upkeep a considerable economy would be effected. The road, in addition, would be practically dustless, as would not be the case with the water-bound road. The cost of the paths and roadway is included in the price of the houses.

112. To obtain a certain amount of privacy in the garden, the fencing can be assisted by planting hedges of privet or common elder.

SELECTION AND LAY-OUT OF SITES.

113. In selecting sites for houses, the following points should be kept in mind:—

(1) They should, as far as possible, be level, to avoid underbuilding.

(2) They should not be too far from the place where the prospective tenants are employed.

(3) They should have drainage, water, and lighting facilities.

(4) They should not be too near underground workings or of a low-lying nature.

114. In regard to lay-out, the further points should be kept in view:—

(1) The necessity for town-planning the whole area before any houses are erected.

(2) The number of houses to the acre.

(3) The position and width of roads.

(4) The aspect of the houses in relation to wind and sun.

COST OF BUILDING.

115. In order to ascertain the cost of building the cottages, flatted houses, and special houses as shown on the plans appended to this report, the cottage house "C" and the double-flatted house "F" were carefully measured and detailed schedules prepared. The schedules were sent to various burghs and districts in Scotland, and were priced by reliable persons at the normal rates prevailing at July 1914.

116. In this manner the cost of the cottage houses "C," and the double-flatted houses "F," in forty-seven different burghs and districts, was obtained.

The cube rates of these houses are a fair average for both types, as the houses larger or smaller than those for which prices were obtained by schedules do not vary sufficiently in size to make any appreciable difference in the cube rate. The cost of the other houses was thus obtained by applying the cube rate of either the cottage or the double-flatted houses. The result of these investigations is given in Appendix No. CXCIV.

117. Though all the types of houses are not perhaps strictly applicable to every burgh and district, it was thought advisable to give the cost of all the cottages, flatted houses, and hostels for every locality dealt with.

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In country districts where no gravitation water-supply is available, the cost is given for cottage "D" and hostel "M," which are planned to meet this deficiency.

118. In every case the cost of one house is given, except in "J," where the cost is given for the block of four farm-servants' houses.

119. The rate in pence per cubic foot is stated in each case in the column preceding that in which the total cost of the house is given.

120. In the large majority of places brick has been found cheaper than stone for the erection of the houses, but where stone is cheaper this has been stated.

121. Cavity walls built of concrete blocks have not been found to be cheaper in cost than those of brick. This may, however, be due to a lack of knowledge of the making of concrete blocks.

122. In the cost of each house the drainage, water-supply, fencing, footpaths, roadway, and sewer have been included. The only items not included are the cost of land, architect's and surveyor's fees.

123. In every case the cost of a double-flatted house is cheaper than that of a cottage house of the same accommodation and practically the same superficial floor area. On an average, the difference between the two rates is a little less than a penny per cubic foot.

The cube rate of the cottage is based on the price of semi-detached cottages. If a block of four cottages was built, the cube rate of the two intermediate cottages would possibly be, on an average, about one-fifth of a penny less in cost.

124. If the cost of the floor area of double-flatted and cottage houses be compared, it will be found that the cost of the former varies from 6½d. to 10d. per superficial foot less than that for the latter.

125. Three examples are given below of the estimated cost of houses built (a) close to a large city, (b) near a populous town, and (c) in a country district:—

District.	Cottage C. Cost per Superficial Foot of Floor Area.	Double-flatted House F. Cost per Superficial Foot of Floor Area.
	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>
Glasgow	6 5½	5 11½
Dunfermline District .	7 2½	6 8¼
Kirkcubright County	10 3	9 5¼

126. Anyone with a knowledge of tradesmen's estimates is aware that there is often a wide divergence between the prices obtained for the same building. Consistent pricing is extremely difficult to obtain in any part of the country, except where a ring among contractors has been formed. The rates on which the prices for the various houses were based are, as far as ascertainable, the average normal rates in the district. On examining the priced schedules, it was evident that the pricing on the whole had been done very carefully all over the country.

127. If forty or more houses were erected at one time, there may be a reduction in cost of about 2 per cent. It is doubtful, however, if any but large contractors will be able to make this reduction, as it is a question of using available building plant, and the application of good business methods to the work in the course of erection.

128. In arriving at the cost of houses for farm-servants, crofters, and smallholders, no allowance has been made for the fact that cartage of materials and excavations are often done by the tenant, that quarries are sometimes free on estates, and sandpits readily available at normal rates. These facilities will considerably reduce the costs stated in Appendix No. CXCIV.

129. The information given in Appendix No. CXCIV. will partly help to explain the reasons for the wide divergence of prices in various parts of the country. The rate of wages, the cost of cement and bricks, the distance stone, sand, lime and slates have to be conveyed, are but some of the factors to be considered in the question of cost.

130. Take, for example, the cost of building in Peterhead and Fraserburgh. These two towns are only about 16 miles apart, yet the cost of building in the latter is

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considerably greater than in the former. Though wages are practically the same in both places, cement and bricks are dearer in the latter. Stone is scarce, and has to be brought a distance of 12 miles at Fraserburgh in place of 4 miles at Peterhead. Plumber work for some reason is much more expensive in Fraserburgh than in Peterhead. These are some of the factors which go to make building dearer in Fraserburgh than in Peterhead.

131. The cost of building in Jedburgh and Hawick, two towns about 12 miles apart, also varies considerably. Though wages are the same, and the price of bricks and cement is equal, yet the Jedburgh prices are much higher than those of Hawick. In Jedburgh the personal factor seems to account for the higher rate, as it is understood that Hawick tradesmen if allowed to compete for work in Jedburgh can estimate cheaper than the Jedburgh tradesmen. The main difference is in the cost of stone and brickwork, both of which, as a rule, cost more to build in Jedburgh than in Hawick. The output of work varies considerably in different districts. This has a considerable effect on the cost of building.

132. The following tables show the percentage of the total cost of the erection of cottages and double-flatted houses respectively that is applicable to each of the trades represented in the building of such houses. In arriving at the total cost, an average has been taken of the costs of the erection of such houses, (a) close to a large city, (b) near a populous town, and (c) in a country district:—

Table I.		Table II.	
Cottages.	Percentage of Whole Work.	Double-flatted Houses.	Percentage of Whole Work.
Mason and brickworks, including excavations, roads, sewer, and grates . . .	40.2	Mason and brickworks, including excavations, roads, sewer, and grates . . .	39.5
Carpenter, joiner, and glazier . . .	28.5	Carpenter, joiner, and glazier . . .	29.0
Slater and harler . . .	7.4	Slater and harler . . .	6.9
Plumber . . .	15.2	Plumber . . .	15.2
Plasterer . . .	5.4	Plasterer . . .	5.8
Painter . . .	3.3	Painter . . .	3.6
	100.0		100.0

ARCHITECT'S AND SURVEYOR'S FEES.

133. Architect's fees are charged at the rate of 5 per cent. on the cost of the house. This fee includes for the work necessary in the preparation of the plans and specifications, also for the supervision of the building during erection, etc. If the plans and specification are only prepared, the usual charge is 2½ per cent. In housing schemes this fee will only be charged on "type" houses; but if a number of houses of one type of plan are built, then the fee is a matter of arrangement between the architect and the client.

134. Surveyor's fees are charged at the rate of 1¼ per cent. for the measuring of the plans. The printing of the schedules of quantities being an additional charge. If a number of houses of one type of plan are built, then the fee is a matter of arrangement, as in the case of the architect.

INCREASED COST OF BUILDING.

135. During the last ten years there has been a steady increase in the cost of building. It is difficult, if not impossible, to obtain exact information as to the percentage of increase in each district from 1904 to July 1914. So many local factors govern prices in each district.

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Tradesmen may have been busy or otherwise, materials may or may not have been easily obtained at the time of estimating, and labour troubles may have existed or been anticipated. All these factors and many others affect prices.

136. It is estimated that during the last decade before July 1914, the increased cost of building in Scotland has been a little over 20 per cent. Of this percentage of increase, it is certain that the main increase is due to the rise in the cost of both raw and manufactured materials. The rise in the price of certain manufactured materials was quite legitimate, as irresponsible competition had been the means of cutting the prices too low for a reasonable profit to the manufacturer. It is open to doubt, however, if the prices obtained for other materials produced by manufacturers, who have formed rings among themselves, are fair. The restricted output of work has also contributed to this increase of cost.

137. Since July 1914 the increased cost of building has risen steadily. The principal increases are (1) in joiner work, due to rise in the price of wood; (2) in plumber work, due to rise in the price of metals; (3) in painter work, due to rise in the price of white lead; (4) in cement work, due to rise in the price of cement; and (5) in labour, due to the rise in wages.

138. In normal cases, mason, plaster, and slater works have not increased much in price, except where bricks are used entirely for walls and partitions. If cement is used largely on a building, this will increase the cost considerably. Of course, in districts where stone, brick, lime, cement, or slates, etc., have to be conveyed from a distance, the present restricted transit facilities all over the country have caused a considerable increase in cost.

139. It appears from information obtained that the increase in the cost of building since July 1914 is, on an average, from 25 per cent. to 30 per cent. In some districts it is nearer 40 per cent., and in districts in the north and north-west the increase is at least 50 per cent. These increases in cost will rise still further. Prices may be reduced after the war, but it is doubtful if they will be reduced to the rate prevailing at July 1914 for a considerable period, if ever.

THE PRICE OF BUILDING SITES.

140. In Appendix No. CXCV, the feuing rates in various burghs and districts are given. These figures may be taken as representing the value of land as *undeveloped*, though some of the high figures may be subject to certain deductions on this account. In the burghs the feu-duties, excluding those in the larger cities, vary from about £10 to £30. The average for twenty-four burghs works out at nearly £20 an acre per annum. In the county districts the feu-duties vary from about £8 to £27, 10s. The average for twenty-three districts works out at practically £13 an acre per annum.

141. In all royal burghs land on burgage tenure is common. This is practically equivalent to freehold. Owners of this land have now power to grant it in feu, and in many cases this has been done.

142. In certain southern districts of Scotland the ground is freehold, but the price is not excessive.

143. In other parts, especially on the north-east coast of Scotland, the ground is leasehold. Building leases are given for ninety-nine years and under. In the old burgh of Wick all building sites were leasehold until 1883. Since that date the feuing system has been substituted by the proprietor, and the ground is let at £8 an acre per annum. In Wick many of the old houses for ten years before the termination of the lease expired were allowed to fall into disrepair. Fortunately, this system of land tenure is not common in Scotland; but, wherever it is found, the effect on property is what obtains in Wick.

144. The high feu-duties that obtain in certain burghs are often due to natural and artificial difficulties of extensions, e.g. the sea or hilly ground in the first case, and railways or land monopoly in the second case.

145. Where a single proprietor or land company have a monopoly of the land, the ground rents are often high. These have often been doubled in recent years, and are a fair index of the growth of the community.

146. In the large burghs, tenement building is respon-

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sible for the high feuing rates, and in small burghs, where there are many villa residences, the building of these is often the cause of the rise in the feuing rates. These causes keep the feuing rate high for workmen's houses. Of course, it can be argued that high feuing rates are responsible for the building of tenements in the one case and of villa residences in the other. In the past, superiors have often held their land until they could get the highest possible price.

147. The feuing system, however, is superior to the leasehold system that is common in England. Owners cannot be expected under the latter tenure to maintain their property in habitable order for the last few years of the lease.

148. The influence of the cost of land on the cost of the house is not so great as is commonly supposed, except, of course, in the case of exorbitant feuing rates. There are various factors that influence the cost of the house or the rent at which it can be let. These factors are as follows: The great increase in the cost of materials in recent years, the rates, the rate of interest, the nature of the site, the remoteness from works and railways, and the cost of the land.

149. The cost of land is only one, and by no means the principal, factor. If the rate of interest is raised 1 per cent. on a £200 house, the rent will be increased £2; but the difference between cheap and dear land will only amount to half or three-quarters of this sum. If land can be obtained at £10 an acre for cottages, and at £15 to £20 an acre for double-flatted houses, these rates will not impede building. Where land can be bought from £200 to £250 an acre, it will be found that the loan charges for, say, eighty years, are equal to a very moderate feuing rate. At the end of the loan period the land belongs to the purchaser without further payment, which would not be the case if it had been feued at the same rate.

150. The chief problem in housing has been, and will be, the high and increasing cost of building and the increasing difficulties with labour.

RELAXATION AND AMENDMENT OF BUILDING BYELAWS.

151. In burghs and districts where the building regulations of the Burgh Police (Scotland) Act do not apply, one is struck with the "jerry" nature of many of the dwelling-houses erected. On the other hand, building regulations may be relaxed in one or two respects, in order that the cost of construction may be cheapened.

152. The following relaxations may with advantage be made on existing building regulations:—

Height of Ceilings.

(1) Section 172 of the Burgh Police (Scotland) Act, 1892, provides that in new houses the height of ceilings on the ground floor shall be at least 9 feet 6 inches, and on the other floors, except attics, at least 9 feet.

(2) This section of the Act was ostensibly framed to meet the case of tenement buildings of three, four, and more storeys in height, and should not apply to cottage or double-flatted houses.

(3) In the plans of the houses appended to the report, the height of the ground floor ceilings is shown 8 feet 6 inches, and that of the bedrooms is shown 8 feet. If the bedrooms are attic rooms, *i.e.* rooms constructed partly or wholly above the level of the eaves of the roof, then the height should be at least 8 feet from the floor to the ceiling through not less than one-half of the area of the room, and should at no part thereof be less than 5 feet in height. It is suggested that these heights are ample if the rooms of the houses described in the report are properly ventilated.

Thickness of External Walls.

153. In cottages and flatted houses of not more than two storeys in height, the present regulations may be relaxed to allow:—

(1) Of hollow-brick walls of two 4½-inch bricks with a 3-inch space between, and tied together with galvanised iron ties. The outside of such walls to be built of a facing brick or rough-cast with cement, and the inside of such walls plastered on the hard—not less than ½ inch thick.

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(2) Of 9-inch solid brick rough-cast on the outside, and strapped, lathed, and plastered on the inside.

Party Walls.

154. (1) In cottages and flatted houses of not more than two stories in height, all internal party walls should be solid, and of a thickness of not less than 9 inches.

(2) It is provided in Schedule 4 of the Burgh Police (Scotland) Act, 1892, that all party walls must be carried through the roof, and finished with a skew. This is not necessary if the roofing material is bedded securely on the walls to form an effective fireproof barrier.

Amendment of Building Byelaws.

155. The statutory provisions should be amended so that Local Authorities in every part of the country shall have power to enforce:—

(1) The submission of suitable building plans for the approval of the Local Authority prior to the commencement of the work.

(2) That all walls, external or internal, floors, roofs, and all concrete, timber, stone, brick, and iron work, forming part of the structure of a building, shall be of sufficient quality, strength, and stability, and to the satisfaction of the Local Authority.

(3) That no new house shall be occupied until a certificate of fitness for occupancy has been given by the Local Authorities' officers.

(4) Where a suitable water-supply is available, the introduction of water into dwelling-houses.

(5) The provision of a separate water-closet or earth-closet for every dwelling-house.

(6) The provision of a scullery, in addition to a kitchen or living-room.

(7) The provision of washing accommodation either in the scullery or elsewhere for every dwelling-house of the cottage or double-flatted house types.

(8) The provision of a small larder press or cupboard properly ventilated to the outside.

(9) The provision of a coal-house for every dwelling-house.

(10) The provision of a damp-proof course in every wall, dwarf wall, and partition wall of a building of such suitable material as shall be approved by the Local Authority, and that the solum under the building, if found necessary, shall be covered with a layer of asphalt, cement, or other suitable material, to their satisfaction.

(11) That bed recesses shall be prohibited.

(12) That the placing of plaster on the solid external wall of any habitable apartment shall be prohibited.

156. Matters cannot be put right until all Local Authorities are bound to make building byelaws to be confirmed by the Local Government Board. Of course, in special cases the Local Authorities should be given powers to relax these conditions subject to the approval of the Local Government Board.

THE FINANCE OF HOUSING SCHEMES.

157. In fixing the rents to be charged for houses, no profit to owners has been allowed in the following charges, as it has been assumed that only Local Authorities can build smaller working-class houses without profit to themselves:—

(1) *Interest.*—The rate of interest varies from time to time, and is defined by a Treasury Minute. The rate of interest for loans granted under the Housing Acts to Local Authorities by the Public Works Loan Board at the present time is 4½ per cent. for any period. In all probability, this rate will not be reduced for a long period and, in consequence, the rent charges have been based on the present rate of interest.

(2) *Sinking Fund.*—The amount which must be set aside for this fund varies with the period for which the loan is obtained.

158. For housing loans, sixty years for buildings and eighty years for land are regarded as the normal periods.

159. The following table shows of how little advantage it is to a Local Authority, or to any person who desires to borrow for housing purposes, to extend the period of repayment beyond forty or fifty years. The table shows the repayment of a loan of £100 at 4½ per cent. in equal

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annual payments of principal and interest combined for a number of years:—

	£	s.	d.
10 years	12	12	9
20 „	7	13	9
30 „	6	2	9
40 „	5	8	8
50 „	5	1	2
60 „	4	16	11
70 „	4	14	4
80 „	4	12	9
90 „	4	11	9
100 „	4	11	1

160. Loans are usually obtained on the annuity system; and the annual payments to be made in respect of loans for sixty and eighty years under the Housing Acts to Local Authorities are as follows:—

Equal Annual Payments of Principal and Interest at 4½ per cent. for each £100 on the Annuity System.

	£	s.	d.
Loans for 60 years	4	16	11
„ 80 „	4	12	9

161. The respective annual amounts for sinking fund contained in the above sums are:—

- (1) For a sixty years' loan, 6s. 11d. for each £100; and
- (2) For an eighty years' loan, 2s. 9d. for each £100.

162. (3) *Rates.*—Owners' rates (poor rates and burgh or county rates) must be included in the rent charges. These vary so much in different parts of the country that it is only possible to take an average rate in the following tables of rental. Occupiers' rates have not been included in the rental.

163. (4) *Taxes.*—Property or income-tax is levied on the annual rental of property. It is a tax on ownership, and Local Authorities must pay this imperial tax on the rental of property, less owners' rates, and one-sixth of the rental in respect of repairs, etc.

The tax is, however, recoverable to the amount of the taxes on the interest charges for the loan on the property. If these charges equal or exceed the amount of the net assessable rental, the whole tax will be recoverable. The Inland Revenue Authorities, of course, draw a distinction between interest and sinking fund charges, as the latter is a repayment of capital.

The recovery of the tax is effected by Local Authorities from the Inland Revenue Authorities by the production of a certificate from the Public Works Loan Board certifying the amount paid in interest charges for the loan.

To avoid recovery proceedings, a simple arrangement would be to levy the tax on the difference between the net assessable rentals and the interest charges of the loan where the former is the greater.

The property tax on Local Authorities' housing schemes will be very small, as these show practically no profit when interest charges have been met.

164. (5) *Fire Insurance.*—This must be allowed for at the usual rate of 1s. 6d. per £100. It is maintained by some that as a building cannot be entirely destroyed by fire, only 75 per cent. of the total cost should be insured. In the following tables of rental the full cost of the house has been taken.

165. (6) *Repairs and Maintenance.*—If the officials of a Local Authority manage the property, 7½ per cent. of the annual rental seems sufficient. Private owners usually allow 10 per cent. for this work, but opinions vary considerably as to the charge. Care should be taken to earmark any surplus which is not required in the early years of the loan period for the increased cost of repairs in the later years. It will be found generally that the main items in the annual cost of repairs are for slater, plumber, and painter works. In regard to the first two items, it is usually found that the cost of maintenance is high on work that has not in the first instance been executed substantially.

166. (7) *Management and Collection of Rents.*—If the officials of a Local Authority manage the property, 2½ per cent. of the annual rental seems sufficient.

No allowance has been made for empty houses in view of the present demand and of the distinct shortage which will exist for some years.

167. (8) *Feu-duty.*—As the feuing system of land

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tenure is common all over Scotland, £10 an acre for cottages and £15 for flatted houses have been allowed in the tables of rental.

168. The result of these charges in terms of rental is shown in the following tables:—

Example No. 1: Cost of a semi-detached cottage at July 1914:—

Cost of a cottage	£205
Cost of roads, paths, sewer, and fencing, say	15
Total cost, without land	<u>£220</u>

There are fourteen cottages to the acre, including roads, at an annual feu-duty of £10 an acre.

The period for repayment of loan on the cost of the house is sixty years; interest, 4½ per cent.

Charges Represented in the Rental. £ s. d.

Annual repayment of loan (interest and principal) at 4½ per cent. on the annuity system in respect of the cost of the cottage (£220) for sixty years	10	13	2
Owners' rates (poor rate and burgh or county rate) at, say, 2s. in the £ on £14, 3s. 6d. rent Taxes—1s. 3d. per £ on 14s. 8d., being the difference between the interest charges (£9, 18s.) and the net assessable rental (£10, 12s. 8d.)	0	0	11
Insurance—1s. 6d. per cent. on £200	0	3	0
Repairs and maintenance—7½ per cent. of rental	1	1	3
Management and collection of rents—2½ per cent. of rental	0	7	0
Feu-duty—£10 an acre, fourteen houses per acre	0	14	3
Rent per annum	<u>£14</u>	<u>3</u>	<u>3</u>

The rent will be 5s. 5½d. per week, or £14, 3s. 6d. per annum, *exclusive* of occupiers' rates.

169. The cost of roads and sewers in Local Authorities' housing schemes is often not charged directly against the schemes. The charges are met out of the local rates for these services when the roads are taken over by the Local Authorities.

170. If the above-mentioned house was built at the present time, the increased cost would be at least 25 per cent. extra, or £275 in place of £220. The extra loan charge would amount to £2, 13s. 4d. The property tax would be doubled, and all the other items of expenditure would be increased in proportion to the rise in rental. The rental necessary to meet these extra charges would require to be about £17, 11s., in place of £14, 3s. 6d. The weekly rental would require to be about 6s. 9d., in place of 5s. 5½d.

171. *Example No. 2:* Cost of a flatted house in a block of four at July 1914:—

Cost of one flatted house	£180	0	0
Cost of roads, paths, sewer, and fencing	10	0	0
Total cost, without land	<u>£190</u>	<u>0</u>	<u>0</u>

There are five blocks of four flatted houses, or twenty flatted houses to the acre, including roads, at an annual feu-duty of £15 an acre.

Loan period and rate of interest as in Example No. 1.

Charges Represented in the Rental. £ s. d.

Annual repayment of loan (interest and principal) at 4½ per cent. on the annuity system in respect of the cost of the flatted house (£190) for sixty years	9	4	1
Owners' rates (poor rate and burgh or county rate) at, say, 2s. in the £ on £12, 9s. rent	1	0	8
Taxes—1s. 3d. in the £ on 15s. 10d., being the difference between the interest charges (£8, 11s.) and the net assessable rental (£9, 6s. 10d.)	0	1	0
Insurance—1s. 6d. per cent. on £180	0	3	0
Repairs and maintenance—7½ per cent. of rental	0	18	9
Management and collection of rents—2½ per cent. of rental	0	6	3
Feu-duty—£15 an acre; 20 houses per acre	0	15	0
Rent per annum	<u>£12</u>	<u>8</u>	<u>9</u>

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The rent will be 4s. 9½d. per week on £12, 9s. per annum, exclusive of occupiers' rates.

172. If the above mentioned house was built at the present time, the increased cost would be at least 25 per cent. extra, or £237, 10s. in place of £190. The extra loan charge would amount to £2, 6s.

In order to meet all the extra charges, the rental would require to be about £15, 7s. 6d., in place of £12, 9s. The weekly rental will require to be about 5s. 11d., in place of 4s. 9½d.

GENERAL.

173. It is false economy to save unduly in the initial outlay on the construction and materials of a building, as the result is certain to be increased expense in maintenance. A house should remain in a good habitable condition during the period of the loan. If it does not, the rent will require to be reduced considerably, unless there is a shortage of housing accommodation in the district.

174. Much has been written about the desirability of wooden houses for country districts, but the advantages of brick over wooden houses are obvious:—

(1) The cost of the maintenance of brick houses is less and the life is longer than for wooden houses.

(2) Money can not only be borrowed more easily for brick than wooden houses, but the loan period usually allowed for the former is sixty years as against twenty years for the latter. The loan charges at 4½ per cent. on the annuity system for the former amount to £4, 6s. 11d. for each £100, and for the latter the charges amount to £7, 13s. 9d. for each £100.

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(3) Fire insurance for brick houses is 1s. 6d. per cent., but for wooden houses 2s. 6d. per cent. is charged.

(4) The brick house is more comfortable to live in than the wooden house, and it will sell or let more easily than one of wood.

175. *Standardisation.*—To obtain structural economy, the cost of the houses should be reduced as much as possible by paying careful attention to arrangement of planning, details of construction, and type of fittings, in order that these may be standardised for the whole scheme. In this way, the sizes of doors and windows can be made uniform, the water-closet basins, baths, sinks, ranges, grates, etc., can be kept of one type, with the result that these can be ordered in large quantities at a reduced price. This does not necessarily mean that designs should be standardised, and it is not desirable that these should be. The use of local materials, the treatment of windows and roofs to meet local tradition will give a sufficient diversity of design.

176. In conclusion, I have to thank the many architects, surveyors, and officials of Local Authorities who have given me assistance in the preparation of this report.

I am, Sir,

Your obedient Servant,

JOHN WILSON, F.R.I.B.A.,
*Architectural Inspector to the Local
Government Board for Scotland.*

The Secretary,
The Royal Commission on Housing (Scotland).

APPENDIX No. CXCIV.

PAPER HANDED IN BY MR J. WILSON.

QUESTION No. 43,721.

INFORMATION IN REGARD TO BUILDING MATERIALS USED IN VARIOUS DISTRICTS OF SCOTLAND.

	District or Burgh.	Wages per Hour of Tradesmen.	Sand.	Cement per Ton.	Bricks per 1000.	Stone.	Roof Coverings.	Lime for Internal Work.	Materials for Walls.	Nature of Soil.	Drainage and Water.	Gas or Electricity.	Cost of Cartage in District.	Land: Fee-duty per Acre.
1	Aberdeen County	8d. to 9½d.	Available	47s. 6d.	50s. (at Aberdeen)	Granite plentiful	Welsh slates	From Keith or Dufftown	Granite generally	Varies from soil to clay	Drainage in villages, Water available, Both available	Both in four villages	Is. per hour	£16 to £30
2	Aberdeen	9d.	"	46s.	50s.	"	"	"	"	Sand or gravel	Both available	Both	11d. per hour	About £40
3	Peterhead	6½d. to 8½d.	Sea sand only	46s. 6d. at ship	50s.	Quarry 4 miles distant	"	"	Stone generally	Sand and clay	Both in parts of burgh	Gas	1s. per hour	£20 to £25
4	Fraserburgh	7d. to 8d.	"	50s. at ship	55s.	Quarry 12 miles distant	"	"	"	Clay	Both available	"	"	£30
5	Turriff	6½d. to 7½d.	Available	52s.	65s.	Quarry 2 miles distant	"	"	"	"	"	"	"	"
6	Argyll County	8d. to 9d.	Available in districts	42s. to 47s. 6d.	45s. (at Oban)	Local granite and whinstone	Welsh Highland and Welsh slates	From Keith or Grange	"	Sand generally	"	"	"	£8 to £12
7	Argyll County	9d. to 10½d.	"	43s.	29s. to 35s.	Quarries at Mauchline and Monkriddden	Welsh Highland and Welsh slates	From Lismore and Ireland	"	Clay, gravel and peat	Drainage in districts, Water plentiful	Both in towns only	9s. per day	£8 to £12
8	Ayr	9½d. to 10½d.	Available	41s. 6d.	35s.	Quarry at Mauchline	Welsh Highland, Welsh and Cumberland slates	From Girvan and Beith	Stone and brick	Clay and sand	Both available in towns and villages	Both in towns and villages	8s. per day	£8 to £24
9	Prestwick	9½d. to 10½d.	"	42s.	35s.	Quarry at Ballochmyle	"	From Beith	"	"	"	"	10d. per hour	£12 to £19
10	Troon	9d. to 11d.	From Irvine	47s.	30s. to 40s.	Quarry at Mauchline	Welsh and Lancashire slates	"	"	"	"	Gas	1s. per hour	£28
11	Buckie	7d. to 8d.	Available	46s. 6d.	48s.	Quarry 20 miles distant	Welsh slates	From Keith	Stone generally	"	"	"	"	£12 to £30
12	Berwick County	9d. to 9½d.	River and sea sand	45s. at Duns	36s. (at Duns)	Quarry near Duns, Local whinstone	"	From Campsie and Midlothian	"	Dry soil and gravel	Both in towns and villages	Gas in towns	10d. per hour	£12 to £20
13	Caitness County	5d. to 6d.	Available only in certain districts	56s.	60s. (at Thurso)	Quarries on various estates	Local and Welsh slates	From Keith	Stone generally; concrete occasionally	Clay	Drainage and water to large houses, Wells prevalent	Neither	8d. per hour	£4 to £8

14	<i>Caitness.</i>	Wick	6d. to 7d.	48s.	45s. to 52s.	Local stone (Old Red Sandstone) Quarries at Ren-ton	Local and Welsh slates	From Keith	Stone generally	Clay	Both available	Gas	9d. per hour	£8 to £10
15	<i>Dumbarton.</i>	Western district	10d. to 10½d.	45s.	28s.	Quarry at Ren-ton	Luss slates	From Campsie	Stone and brick	Clay and gravel	Drainage and water in districts	Both in populous districts	1s. per hour	£10 to £24
16		Kirkintilloch	9½d. to 10d.	46s.	36s.	Quarry at Auchinlea	Welsh and West-Highland slates	"	"	Clay and sand	Drainage partial. Water available	Gas	"	£15 to £40
17		Clydebank	10d. to 10½d.	44s.	24s. 6d. to 28s. 6d.	Quarries at Auchinlea and Ballochmyle	"	From Campsie and Ireland	"	Clay and sand	Both available	Both	"	£20 to £37, 10s.
18	<i>Dumfries.</i>	County	7½d. to 10d.	44s. to 48s.	25s. to 50s.	Various quarries in the county	Welsh and Lancashire slates	Annan and Carlisle	"	Clay and gravel	Both in towns and districts	Gas	"	£10 to £15
19		Dumfries	8d. to 8½d.	46s.	35s.	Quarry at Locharbriggs	"	"	"	Clay	Both available	"	"	No feuing. 2s. 6d. to 3s. per square yard for freehold
20	<i>Fife.</i>	Dunfermline district	8d. to 9½d.	34s. to 44s.	30s.	Quarries at Cul-laloe and Burnt-island	Welsh and West-Highland slates	From Charles-town	"	"	Drainage and water in special districts	Both in certain districts	10½d. per hour	£8 to £12
21		Cupar district	7½d. to 8½d.	45s.	35s. to 37s.	Quarries near Cupar, Dairsie, etc. Whinstone in districts	Welsh and West-Highland slates, Dunshalt tiles	From Pittlesie	"	Sand and gravel	Drainage rare. Water available	Gas in larger villages	1s. per hour	£12
22		Leven and Buchhaven County	8d. to 9d.	41s.	26s. 6d.	Quarry at Burntisland	Welsh slates, Dunshalt tiles	From Charles-town and Cults	"	Sand	Both available	Gas	"	£20 to £25
23	<i>Forfar.</i>	County	7d. to 9d.	45s.	37s. 6d. (at works)	Quarries near all towns	Welsh and West-Highland slates	"	Stone generally	Clay and sand	Drainage and water in special districts	Gas in towns	1s. 2d. per hour	£4 to £10
24		Forfar	7½d. to 8½d.	45s.	43s. 3d.	Quarries at Toll-booth and Burghmuirhead	"	"	"	"	Both available	Gas	1s. per hour	£10 to £20
25		Dundee	9d. to 10d.	38s. to 40s.	35s.	Camperdown and Leoch	"	From Charles-town and Cults	Stone and brick	"	Both available	Both	1s. 1d. per hour	£16 to £24 in suburbs
26	<i>Haddington.</i>	County	8d. to 8½d.	46s. (at Haddington)	22s. 6d.	Quarries near all principal towns	Welsh slates	From Dunbar	"	"	Both available in special districts	Gas in most villages	1s. per hour	£10 to £18
27	<i>Inverness</i>	County	8d. to 10d.	55s. to 60s.	55s. to 65s.	Quarries in various districts	Welsh and West-Highland slates	From Elgin and Glasgow	Stone generally	Clay, gravel, peat and rock	Both available in special districts	Neither	8d. to 10d. per hour	£2 to £10
28		Inverness	8d. to 9d.	46s.	52s. 6d.	Quarries at Covesea and Tarradale	"	From Keith	"	Gravel	Both available	Both	11d. to 1s. per hour	£12 to £20

	District or Burgh.	Wages per Hour of Tradesmen.	Sand.	Cement per Ton.	Bricks per 1000.	Stone.	Roof Coverings.	Lime for Internal Work.	Materials for Walls.	Nature of Soil.	Drainage and Water.	Gas or Electricity.	Cost of Cartage in District.	Land: Rent-duty per Acre.
29	<i>Kirkcubright</i> , County	7d. to 8d.	Available	45s. to 50s.	38s. to 42s.	Whinstone and granite available	Welsh, North English and slates	From Annan and Carlisle	Stone generally	Mostly light soil	Both available in villages and towns	Both in a few towns and villages	1s. per hour	£12 to £20
30	<i>Lanark</i> .	9d. to 10d.	"	42s.	23s. to 30s.	Quarry at Ear-nock	Welsh, West Highland and Aberfoyle slates	From Campsie	Stone and brick	Clay, sand and gravel	Both available	Both in most districts	"	£10 to £30
31	Glasgow	10d. to 10½d.	"	42s. 6d.	29s. to 35s.	Quarries at Ear-nock and Auchinleath	Welsh and West Highland slates	"	"	Clay	"	Both	"	£16 to £90 (in suburbs)
32	Hamilton	9d. to 10d.	"	33s. 6d. to 41s. 3d.	22s. to 30s.	Quarry at Ear-nock	Welsh, West Highland and Aberfoyle slates	"	"	Clay and loam	"	"	"	£24 to £36
33	Motherwell	9½d. to 10d.	"	34s. to 52s.	21s. to 30s.	Quarries at Bothwell Park and Auchinlea	Welsh and West Highland slates	"	"	Clay	"	"	"	£20 to £32
34	Lanark	8½d. to 9½d.	"	41s. to 49s.	30s.	Quarry at Bothwell Park, and local stone	Welsh slates	From West Linlithgow and Derbyshire	"	Clay and gravel	"	Gas	9s. per day	£12 to £20
35	<i>Linlithgow</i> , County	9d. to 10d.	"	44s.	27s. 6d.	Quarry 8 miles from Bathgate	Welsh and West Highland slates	From Campsie and Charles-town	"	Clay and sand	Both available in special districts	Both in towns	1s. per hour	£6 to £22
36	Bathgate	9½d. to 10d.	"	33s. to 42s.	27s. 6d.	Quarry 8 miles distant	"	"	"	"	Both available	Both	1s. 1d. per hour	£12 to £22
37	<i>Midlothian</i> , Gala district	8d. to 9d.	"	43s. 4d.	25s. to 30s.	Whinstone plentiful	Welsh and West Highland slates	From Middleton, Midlothian	Stone generally	Clay	Both available in special districts	Both in large villages and towns	1s. per hour	£16 to £20
38	Calder district	8d. to 9d.	"	43s.	25s. to 30s.	"	"	From Campsie and Middleton	Stone and brick	Clay, sand in places	"	"	"	£8 to £16
39	Edinburgh	9d. to 10d.	"	40s.	25s.	Quarries in So. Counties and No. of England. Local stone	"	From Burdighouse and Mid-dleton	"	"	Both available	Both	1s. 2d. per hour	£40 to £50 (in suburbs)
40	<i>Orkney</i> , Mainland district	6d. to 7½d.	Shell sand	48s.	80s.	Local stone	Welsh, Caithness, and Norwegian slates	From Sunderland principally	Stone and concrete	Clay, peat and sand	Both in Kirkwall and Stromness elsewhere	Gas in Kirkwall and Stromness	1s. per hour	£8
41	<i>Peebles</i> .	8½d. to 9d.	Available	45s.	30s.	Quarries in Dumfriesshire and Ayrshire. Local whinstone	Welsh and No. English slates	From Straiton, Midlothian	Stone and brick	Clay and gravel	Both available	Both available	"	£16 to £18

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	Pertth.	Pertth.	8½d. to 9d.	Available	41s. 9d.	34s.	Local stone	Welsh and local slates	From Charles-town and Cults	Stone and brick	Clay, sand and gravel	Both available	Both	11½d. per hour	£24 to £30
42	Ross.	Western district	9d. to 1s.	Available only in districts	50s. to 55s.	Brick not used	Local sandstone and gneiss	Welsh and West Highland slates	From Keith and Dufftown	Stone generally	"	Both available in towns. Wells elsewhere	Neither	1s. per hour	£4 to £6
44		Dingwall and district	7½d. to 8½d.	Available	55s.	50s. to 54s. (Brora or Elgin)	"	"	"	"	Clay and gravel	"	Both	"	£10 to £16
45		Tain and district	7½d. to 8½d.	"	50s. to 52s.	50s. (Brora or Elgin)	"	"	"	"	"	"	Gas in towns	"	£8 to £16
46		Stornoway	7d. to 8d.	"	50s. to 53s.	65s.	Local sandstone, gneiss and whinstone	"	From Ireland	"	Clay and loam	Both obtainable	Gas	7s. per day	£10, 15s. to £12
47	Roxburgh.	Hawick	8d. to 9d.	"	50s.	40s.	Quarries in Northumberland and Dumfriesshire	Welsh and No. English slates	From Northumberland and Buxton	"	Clay, sand and gravel	"	Both	1s. 2d. per hour	£20 to £25
48		Jedburgh	8d. to 9d.	"	50s.	40s.	Quarries in Northumberland. Some local stone	"	"	"	Gravel and sand	"	"	8s. 3d. per day	£90 an acre freehold
49	Selkirk.	Selkirk	8½d. to 9d.	"	48s. 3d.	33s.	Quarries in Northumberland.	Welsh slates	"	"	Loam	Both available	Gas	1s. per hour	£12 to £20
50	Shetland.	Lerwick	6d. to 8d.	Shell sand	52s. to 54s.	65s.	Local whinstone Quarry at Bressay and local stone	"	From Keith	Stone and concrete	Peaty soil and rock	"	Gas	10d. per hour	£15 to £25
51	Stirling.	Stirling	8½ to 9½d.	Available	32s. to 44s.	28s.	Quarry at Auchinheath	West Highland and Welsh slates	From Charles-town	Stone and brick	Clay, sand and gravel	"	Both	1s. per hour	£10
52	Sutherland.	County	7d. to 8d.	"	55s.	40s. to 45s.	Quarries at Broora, etc. Local stone in west	Welsh slates	From Keith and Glasgow	Stone generally	Clay, peat and gravel	Both available in villages	Neither	10s. per day	£5 to £12

Note.—The wages and prices of materials were those prevailing in each district at July 1914.

APPENDIX No. CXC.V.

PAPER HANDED IN BY MR J. WILSON.

QUESTION No. 43,721.

COST OF DIFFERENT TYPES OF HOUSES IN VARIOUS DISTRICTS AND BURGH OF SCOTLAND.

District or Burgh.	Cottages.						Flatted Houses.						Houses for Farm-Servants.		Houses for Small-holders and Crofters.		Hostel.					
	A.		B.		C.		D.		E.		F.		G.		H.		J.		K.		L.	M.
	d.	£ s.	d.	£ s.	d.	£ s.	d.	£ s.	d.	£ s.	d.	£ s.	d.	£ s.	d.	£ s.	d.	£ s.	d.	£ s.	d.	£ s.
1 Aberdeen.	7-15	416 0	7-15	331 10	7-15	302 0	..	..	7-15	239 0	5-94	258 10	5-94	251 0	5-94	200 0	..	..	5-94	124 0	..	..
2 Peterhead (stone)	5-92	344 0	59-2	274 0	5-92	250 0	..	..	5-92	198 0	5-02	218 10	5-02	212 0	5-02	169 0	..	..	5-02	105 0	..	..
3 Fraserburgh (stone)	7-40	431 0	7-40	343 0	7-40	312 10	..	..	7-40	247 10	6-42	279 10	6-42	271 0	6-42	216 10	..	..	6-42	134 10	..	..
4 Turriff (stone)	6-43	374 0	6-43	298 0	6-43	271 10	..	..	6-43	215 0	5-67	247 0	5-67	239 10	5-67	191 0	..	..	5-67	118 10	..	..
5 Argyll.	7-82	455 0	7-82	362 10	7-82	330 10	7-47	261 0	7-82	261 0	6-58	286 0	6-58	278 0	6-58	222 0	7-82	1398 0	7-82	431 10	6-58	137 10
6 Ayr.	5-63	327 10	5-63	261 0	5-63	238 0	5-28	184 10	5-63	188 0	4-72	205 0	4-72	199 0	4-72	159 0	5-63	1006 10	5-63	310 0	4-72	99 0
7 Ayr.	5-67	330 0	5-67	263 0	5-67	239 10	..	..	5-67	194 0	4-79	208 10	4-79	202 0	4-79	161 0	..	..	4-79	100 0	..	..
8 Prestwick	5-81	338 0	5-81	269 0	5-81	246 0	..	..	5-81	190 0	4-91	214 0	4-91	207 0	4-91	165 0	..	..	4-91	103 0	..	..
9 Troon	5-33	322 0	5-33	256 0	5-33	233 10	..	..	5-33	185 0	4-69	204 0	4-69	198 0	4-69	158 0	..	..	4-69	98 0	..	..
10 Banff.	7-26	422 10	7-26	336 10	7-26	307 0	..	..	7-26	243 0	6-21	270 0	6-21	262 0	6-21	209 0	..	..	6-21	130 0	..	..
11 Berwick.	6-80	396 0	6-80	315 0	6-80	287 0	6-45	225 10	6-80	227 10	5-75	250 0	5-75	243 0	5-75	194 0	6-80	1216 0	6-80	374 10	5-75	120 10
12 Caithness.	7-70	448 0	7-70	357 10	7-70	325 0	7-35	257 0	7-70	257 0	6-72	292 10	6-72	284 0	6-72	226 10	..	..	6-72	140 10	6-72	142 0
13 Wick (stone)	7-52	437 10	7-52	348 10	7-52	318 0	..	..	7-52	251 10	6-62	288 0	6-62	279 10	6-62	223 0	..	..	6-62	138 10	..	..
14 Dumbarton.	5-91	344 0	5-91	273 10	5-91	250 0	..	..	5-91	198 0	4-90	213 0	4-90	206 0	4-90	165 0	..	..	4-90	103 0	..	..
15 Western District	5-15	300 0	5-15	239 0	5-15	217 10	..	..	5-15	172 0	4-34	189 0	4-34	183 0	4-34	146 0	..	..	4-34	91 0	..	..
16 Kirkintilloch	5-32	309 10	5-32	246 10	5-32	225 0	..	..	5-32	178 0	4-37	190 0	4-37	184 10	4-37	147 0	..	..	4-37	91 10	..	..
17 Clydebank	6-30	366 10	6-30	292 0	6-30	266 0	5-95	208 0	6-30	211 0	5-55	241 10	5-55	234 10	5-55	187 0	6-30	1134 0	6-30	347 0	5-55	116 0
18 County	6-16	358 10	6-16	285 10	6-16	260 0	..	..	6-16	206 0	5-17	225 0	5-17	218 0	5-17	174 0	..	..	5-17	108 0	..	..
19 Dumfries.	5-40	314 0	5-40	250 0	5-40	228 10	5-05	176 10	5-40	180 10	4-59	200 0	4-59	194 0	4-59	154 10	..	..	4-59	96 0	..	..
20 Dunfermline District	6-93	403 0	6-93	321 0	6-93	293 0	6-58	230 0	6-93	232 0	5-63	245 0	5-63	238 0	5-63	190 0	6-93	1239 0	6-93	381 10	5-63	118 0
21 Cupar District	5-29	308 0	5-29	245 0	5-29	223 10	..	..	5-29	177 0	4-49	195 0	4-49	189 0	4-49	151 0	..	..	4-49	94 0	..	..
22 Leven and Buckhaven	6-70	390 0	6-70	306 0	6-70	283 0	6-35	222 0	6-70	224 0	5-79	252 0	5-79	245 0	5-79	195 0	6-70	1198 0	6-70	369 0	5-79	121 0
23 County	6-46	376 0	6-46	299 10	6-46	273 0	..	..	6-46	216 0	5-31	231 0	5-31	224 0	5-31	179 0	..	..	5-31	111 0	..	..
24 Forfar	5-35	311 0	5-35	248 0	5-35	226 0	..	..	5-35	179 0	4-56	198 10	4-56	192 10	4-56	153 10	..	..	4-56	95 0	..	..
25 Dundee	6-49	378 10	6-49	301 0	6-49	274 0	6-14	215 0	6-49	217 0	5-37	234 0	5-37	227 0	5-37	181 0	6-49	1160 0	6-49	357 0	5-37	112 0
26 Haddington.	7-04	444 10	7-04	354 0	7-04	323 0	7-29	255 0	7-04	255 10	6-50	283 0	6-50	274 10	6-50	219 0	7-04	1366 0	7-04	421 0	6-50	136 0
27 Inverness.	7-25	422 0	7-25	336 0	7-25	306 0	..	..	7-25	242 10	6-20	270 0	6-20	262 0	6-20	209 0	..	..	6-20	130 0	..	..
28 Inverness	7-70	448 0	7-70	357 0	7-70	325 0	7-35	257 0	7-70	257 10	6-49	282 10	6-49	274 10	6-49	218 10	7-70	1376 10	7-70	424 0	6-49	136 0
29 Kirkcubright. County	7-70	448 0	7-70	357 0	7-70	325 0	7-35	257 0	7-70	257 10	6-49	282 10	6-49	274 10	6-49	218 10	7-70	1376 10	7-70	424 0	6-49	136 0

29	Lanark.	Middle Ward	5.23	304	0	5.23	242	0	5.23	221	0	4.33	188	10	4.33	182	10	4.33	146	0	5.23	288	0	4.33	90	10	..
30	Glasgow	.. . . .	4.85	282	0	4.85	225	0	4.85	205	0	4.10	178	10	4.10	173	0	4.10	138	0	..	..	..	4.10	86	0	..
31	Hamilton	.. . . .	5.23	304	0	5.23	242	0	5.23	221	0	4.33	188	10	4.33	182	10	4.33	146	0	..	..	..	4.33	90	10	..
32	Motherwell	.. . . .	5.29	308	0	5.29	245	0	5.29	224	0	4.70	204	10	4.70	198	10	4.70	158	0	..	..	..	4.70	98	0	..
33	Lanark . . . . .	.. . . .	5.66	329	0	5.66	262	0	5.66	239	0	4.60	200	10	4.60	194	10	4.60	155	0	..	..	..	4.60	96	0	..
34	Linlithgow.	.. . . .	5.17	301	0	5.17	239	0	5.17	218	0	4.46	194	10	4.46	188	10	4.46	150	0	..	..	..	4.46	93	0	4.11
35	County . . . . .	.. . . .	5.23	304	0	5.23	242	0	5.23	221	0	4.45	194	0	4.45	188	0	4.45	150	0	..	..	..	4.45	93	0	..
36	Bathgate . . . . .	.. . . .	6.64	386	10	6.64	308	0	6.64	280	10	5.49	239	0	5.49	232	0	5.49	185	0	6.64	1187	0	5.49	115	0	5.14
37	County . . . . .	.. . . .	5.32	309	10	5.32	246	10	5.32	225	0	4.47	194	10	4.47	189	0	4.47	150	10	..	..	..	4.47	93	10	..
38	Peebles . . . . .	.. . . .	6.27	365	0	6.27	290	10	6.27	265	0	5.34	232	10	5.34	225	10	5.34	180	0	..	..	..	5.34	112	0	..
39	Perth . . . . .	.. . . .	5.73	332	10	5.73	265	10	5.73	242	0	4.86	211	10	4.86	204	10	4.86	164	0	..	..	..	4.86	102	0	..
40	Ross . . . . .	.. . . .	7.78	453	0	7.78	360	10	7.78	328	10	6.65	289	10	6.65	281	0	6.65	224	0	..	..	..	6.65	139	0	6.30
41	Western District (stone)	.. . . .	8.10	471	10	8.10	375	10	8.10	342	0	7.40	322	0	7.40	312	10	7.40	249	10	..	..	..	7.40	155	0	7.05
42	Dingwall and Dist. (stone)	.. . . .	7.18	418	0	7.18	333	0	7.18	303	0	6.43	280	0	6.43	271	10	6.43	216	10	..	..	..	6.43	134	10	6.08
43	Stornoway . . . . .	.. . . .	7.43	432	10	7.43	344	10	7.43	314	0	6.37	278	0	6.37	269	0	6.37	214	10	..	..	..	6.37	133	10	..
44	Hawick . . . . .	.. . . .	5.64	328	0	5.64	261	10	5.64	238	0	4.88	212	0	4.88	205	0	4.88	164	0	..	..	..	4.88	102	0	..
45	Jedburgh . . . . .	.. . . .	6.45	375	10	6.45	299	0	6.45	272	10	5.59	243	10	5.59	236	0	5.59	188	10	..	..	..	5.59	117	0	..
46	Selkirk . . . . .	.. . . .	6.26	364	0	6.26	290	0	6.26	264	10	5.20	226	0	5.20	219	0	5.20	175	0	..	..	..	5.20	109	0	..
47	Stirling . . . . .	.. . . .	5.97	347	10	5.97	277	0	5.97	252	10	5.03	219	0	5.03	212	0	5.03	170	0	..	..	..	5.03	105	0	..

NOTES.

(1)—A. Block of two cottages.
 B. " " " "
 C. " " " "
 D. " " " "
 E. " " " "
 F. Block of four double-flatted houses.
 G. Block of four double-flatted houses.
 H. " " " "
 I. Block of four double houses for farm servants.
 J. House for smallholders and crofters.
 K. Hostel. Row of six cottages.
 L. " " " "
 M. " " " "

(2) In every case the cost of one house is given, except "J," where the cost is given for the block of four houses.
 (3) The rate in pence per cubic foot is stated in each case in the column before that in which the total cost of the house is given.
 (4) Except where otherwise stated, all the houses are taken to be built of brickwork.
 (5) The costs stated are based on the normal rates prevailing in each district at July 1914.

APPENDIX No. CXCVI.

Mr J. Wilson—continued.

PAPER HANDED IN BY MR J. WILSON.

QUESTION No. 43,721.

ONE BLOCK OF FOUR-FLATTED HOUSES.
(Type F.)SPECIFICATION AND BILL OF QUANTITIES OF THE SEVERAL
WORKS REQUIRED TO BE EXECUTED IN THE ERECTION
OF SAME.EXCAVATOR, BRICK AND CONCRETOR WORKS
SPECIFICATION.1. *Sand*.—All sand to be fine, clean, sharp pit or river sand.2. *Lime Mortar*.—The lime mortar to be composed by measure of 1 ton of best fresh-burned unslaked lime shells to 3 tons of sand, mixed with fresh water.3. *Cement*.—The cement to be best London Portland cement, and to comply in every respect with the terms of the British Standard Specification for Portland cement as revised to June 1907.4. *Cement Mortar*.—Cement mortar to be composed of 1 of cement to 4 of sand, or as may be otherwise described in Bill of Quantities.5. *Bricks*.—The bricks to be all of the best sound, clean, well-shaped, hard-burned bricks from an approved local brickwork.

All walls over 4½ inches thick to be built four courses of stretchers to one course of headers.

BILL OF QUANTITIES.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
				<i>Excavations, Foundations, Brickwork, etc.</i>
1	181	0	0	Supl. stripping soil over area of buildings 9 inches deep.
2	18	0	0	Cube excavation in trenches for foundations (under 3 feet deep). <i>Note</i> .—So much of the material from the foregoing excavations as may be required for the purpose to be filled in and well rammed next foundations on each side of walls, and the remainder to be removed and deposited round building or on site (at a distance not exceeding 50 yards from building), laid in layers, well rammed and consolidated, and sloped off as directed, and the prices to include for this. All water that may accumulate in area or trenches, drain tracks, etc., during the progress of the work, from rain or other causes, is to be removed at the contractor's expense.
3	39	0	0	Supl. Portland cement concrete 9 inches thick in foundations to main walls, composed of 1 part cement, 4 parts of clean, hard stones or bricks broken to pass a 2-inch ring, and 2 parts clean, sharp gravelly sand by measure. The materials to be mixed in an approved manner, deposited in tracks, properly levelled, and all well pounded and rammed.
4	28	2	3	Supl. do. do. 6 inches thick to inside walls, do. do.
5	7	2	3	Supl. brick walls 31½ inches thick (3½ bricks).
6	82	6	9	Supl. do. do. 18 inches thick (2 bricks).
7	28	4	6	Supl. do. do. 13½ inches thick (1½ bricks).
8	359	6	9	Supl. do. do. 4½ inches thick.
9	7	20	3	Cube brickwork in angle chimney breasts (measured nett).
10		7	0	Linl. brick piers 27 inches by 4½ inches in roof to support purlins, including plumbing four corners.
11	271	2	3	Supl. brick hollow main walls 1 foot thick, consisting of 4½-inch brick to outside, 3-inch air cavity, and 4½-inch brick to inside, having twisted galvanised wrought-iron ties of approved pattern for bond weighing 1 cwt. per 300, placed 4 feet apart horizontally, 2 feet 6 inches apart vertically, and laid with slight slope outwards.
12				Allow for movable boards or hay bands to keep the air space free from droppings during the building, also for leaving openings at bottom of brick linings at intervals for the removal of any droppings, and for afterwards bricking up these openings complete. <i>N.B.</i> —The ties in hollow walls to be left entirely clear of mortar.
13	23	0	0	Supl. brick walls under sleepers and fender walls under hearths 4½ inches thick (built on top of asphalt over area).
14		11	6	Linl. brick corbelling, two courses high and 6½-inch projection at centre chimney stack (including projection of brickwork).
15				6 brick corbels, each of the requisite size, under ends of timber ridge and pient rafters of roof. <i>Note</i> .—All brick walls are stated at the thickness of bricks themselves, exclusive of the mortar joints.
16		511	6	Linl. plumbing external corners to brick walls.
17		64	0	Linl. plumbing scuntions to openings in 12-inch hollow walls.
18		242	0	Linl. plumbing scuntions to openings in do., including keeping back the 4½-inch inner lining to form reveal as shown.
19		7	0	Linl. plumbing scuntions to ends of brick walls 4½ inches broad.
20	33	1	6	Linl. extra for wallheads of 12-inch hollow brick walls, being built solid with one course of 12 inches by 6 inches brick.
21	33	1	6	Linl. do. do. for brickwork of do. at window sills, being do. do.
22				Extra for 32 brick-saving arches 9 inches deep over lintels of openings in 4½-inch brick walls, including forming springers and core complete.
23		81	6	Linl. cutting and waste of 4½-inch brick walls to rake of roof.
24	302	0	0	Supl. raking-out joints of brickwork in bathrooms, sculleries, coals and larders, filling in with cement mortar (1 to 4), and drawing in with the edge of the trowel.
25	36	0	0	Supl. damp-course to walls ¾-inch thick, composed of best British pitch, Stockholm tar, and washed and kiln-dried gravel, mixed in approved proportions.

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.	No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.			Yds.	Ft.	Ins.	
26	113	0	0	Supl. ½-inch coating of asphalt composed as described for damp-course below all timber floors, including levelling and hard beating down surface of ground to receive same.				slightly sloped top and on circular front edge, and slightly rounded on arrises as required, complete.	
27	25	0	0	Supl. ½-inch coating of do. below concrete floors, do. do.	44			<i>N.B.</i> —Boilers with mountings will be provided by plumber.	
28				Allow for forming clear space round ends of all joists, etc., in brick walls and carefully keeping them free from mortar.				Providing and building into walls 4 approved perforated stones for steam pipes at do., each about 11 inches by 11 inches, and 5 inches thick, polished on exposed face and properly connected to vents.	
29				14 galvanised cast-iron gratings, each 9 inches by 6 inches for ventilation below sleepers, fixed with cement, including forming openings in 12-inch hollow brick walls, and closing up the air space at same with brickwork or otherwise as directed.	45			6 arches under hearths in upper floor of 4½-inch brick built in cement.	
30				Forming 2 openings through 18-inch brick footings for ventilation.	46			Allow for making up with hard, dry approved material at 2 hearths on ground floor, within the brick fender walls, each about 4 feet 6 inches by 2 feet, and 1 foot 6 inches deep.	
31				Do. 47 do. through 4½-inch do., and sleeper dwarfs for do.	47			Do. do. at 4 do., each about 2 feet 6 inches by 1 foot, and 1 foot 6 inches deep.	
				<i>Note.</i> —The price of all brickwork to include for raking out joints and preparing to receive plaster, rough-casting, or pointing.	48			10 glazed fireclay shoes for ends of 9-inch by 2-inch joists, built into walls at vents.	
32	17	3		Supl. hammer-dressed flat stones not less than 3 inches thick, to carry brickwork over recesses in living rooms, ground-floor houses, and in lobbies, first-floor houses, built with cement.	49			8 do. do. for ends of 7 inches by 2 inches do. do.	
33	15	6		Linl. hammer-dressed edges to do.	50	79	9	<i>Cement Concrete Lintels and Chimney Copes.</i> Linl. cement concrete outer lintels to doors and windows, 4½ inches by 10 inches, cast in moulds, reinforced with the requisite steel bars or rods turned up at ends as directed, and let rough on face, and sc flit for harling (in lengths under 5 feet).	
34	400	0		Linl. forming smoke flues in brick walls and chimney stacks, 9 inches by 9 inches, smoothly pargetted with lime mixed with cow dung.				Linl. do. do., 4½ inches by 10 inches, do. do. (in lengths of 7 feet).	
35				16 fireclay-beaded chimney cans, each about 12 inches high, countersunk into concrete cope, and set in and pointed with cement.	51	56	0	Linl. do. do. inner lintels to windows in larders, sculleries and bath-rooms, 4½ inches by 10 inches, do. do., but smoothly finished on inside face where exposed (in lengths under 5 feet).	
36				Forming 8 openings in brick walls for fireplaces, each with oncome, plumbing of scuntions and lintel or brick arch (no deduction made from brickwork).	52	15	0	Linl. do. do. do. 4½ inches by 10 inches do. do. do. (in lengths of 7 feet).	
37				8 cast concrete jambs to living-room fireplaces, each about 18 inches broad, 6 inches thick, and 4 feet 6 inches high, reinforced and composed as specified for window lintels, smooth finished and rounded on angles where exposed.	53	28	0	2 cement concrete copes to chimney stacks, each about 6 feet 3 inches by 2 feet 1 inch, and 6 inches thick, cast in moulds, slightly weathered on top, neatly finished on exposed edges, with arris on horizontal and vertical angles, holed for 4 smoke flues, countersunk for 4 chimney cans, and set with cement.	
38				4 do. do. lintels to fireplaces at do., each 4 feet 6 inches long and 15 inches by 14 inches do. do.	54			1 do. do., about 6 feet 3 inches by 3 feet 3 inches, and 6 inches thick, do. do., holed for 8 smoke flues, countersunk for 8 chimney cans, and do.	
39				4 pieces hammer-dressed pavement, each 20 inches by 6 inches, and 3 inches thick, built with cement, forming corbels to carry projection of jambs at first-floor fireplaces.	55			<i>Note.</i> —The foregoing lintels (including jambs and lintels to fireplaces in living-rooms) and copes to chimney stacks to be composed of 1 part cement to 3 parts of stone or bricks free from dust and broken to pass a ⅜-inch mesh, all well mixed in an approved manner.	
40				Forming safe oncome, etc., to 4 fireplaces in living-rooms.				The concrete lintels have not been deducted from the quantities of brickwork.	
41				Providing the requisite materials for and building in 4 kitchen ranges.					
42				Do. do. 8 room grates.					
43				Building in 4 boilers in sculleries with firebricks made to the proper mould, circled on front, built and pointed in fireclay, having properly formed flues, and with Portland cement concrete copes, each about 2 feet 8 inches by 2 feet 8 inches at extremes, not less than average 3 inches thick, smoothly finished on					

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
				<i>Sundries.</i>
56	25	0	0	Supl. bedding to granolithic floors in sculleries and coal places, 6 inches deep, of clean broken stones or bricks, well blinded, beaten down, and levelled as directed.
57	8	6	9	Cube-making up below do., with hard, dry approved material thoroughly packed and rammed.
58				Leaving or forming 24 openings through 12-inch hollow brick walls for plumber's waste, etc., pipes, and afterwards neatly building up round same.
59	9	0	0	Linl. cutting and refilling trenches for water-supply pipe, not exceeding 3 feet deep.
60				Providing and fitting up 1 outside malleable iron ladder for access to roofs, about 12 feet long in all, with sides 1½ inch by ¾ inch, rungs at 12-inch centres, ¾-inch diameter, riveted to sides, the lower ends of sides circled and batted to walls, and the upper ends of same continued up about 2 feet 6 inches and circled off to form guard, and having four stiffeners, each about 6 inches long, riveted to sides, and let into and batted to wall, and afterwards painted with 3 coats best oil-paint, complete.
				<i>Drains.</i>
61	30	0	0	Linl. cutting and refilling trenches for drains, not exceeding 3 feet deep.
62	20	0	0	Linl. do. do. over 3 feet, and not exceeding 5 feet deep. <i>Note.</i> —The surplus material from drain trenches to be disposed of as described in Note after Item No. 2.
63	50	0	0	Linl. best quality glazed fireclay drain-pipes, 4 inches diameter, jointed with cement.
64				Extra for 7 bends on do.
65				Do. for 4 branches on do.
66				Do. for 2 Buchan's glazed fireclay patent inspection bends on 4-inch do. in manholes, each with cast-iron coated cover bedded in red lead.
67				Do. for 1 glazed fireclay S.P.A. trap on 4-inch drain with top piece, having single inlet and flat stone seat.
68				Do. for 1 do. do. with do., having two-way inlet and do.
69				2 polished, perforated, and checked hard stones over traps at do., each 18 inches by 18 inches, and 4 inches thick, fitted with 6 inches by 6 inches galvanised iron grating or plate, and having pipe eye to trap and brick in cement-built seat, complete.
70				Extra for 1 Buchan's glazed fireclay patent disconnecting trap on 4-inch drain, having flat stone seat.
71				Forming 1 connection of new to main drain, including taking out length of main drain, and providing and inserting new branch pipe of same diameter as existing drain to receive 4-inch drain, and properly cementing and making good, including extra excavation required at same.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
72				2 manholes on drains, each of the requisite size and under 3 feet deep, having cement concrete bottom 4 inches thick made up within the walls and smooth-floated towards access opening, 4½-inch brick walls built in cement and pointed on inside, and pavement cover 3 inches thick (price to include excavation additional to drain trench for same), complete.
73				1 do. do. on tail drain over 3 feet, and not exceeding 5 feet deep do. do.
74				6 cemented connections of plumber's pipes to drains.
75				Allow for testing drains with smoke or otherwise as directed to the satisfaction of the architect and local Sanitary Authority.
				<i>Jobbings, Scaffolding, and Sundries.</i>
76				Allow for performing all mason and brick-work jobbings, attending on, cutting for, making good after, and rendering the usual assistance to all the other trades, cutting all holes, sinkings, etc., necessary, except those which have been specially measured.
77				Removing all rubbish of every description and of every trade that may accumulate from time to time during the progress of the works and at completion of same, and carting it away from the site to a deposit found by the contractor, and leaving the whole buildings and grounds in a clean and perfect state.
78				Providing water for this department of the contract, including supplying and fixing pipe of the required length, and nosecock with screwed nozzle and coupling for hose, leaving same for the use of the plasterer and other contractors requiring it, and afterwards removing same and restoring ground surface.
79				Allow for all the implements, tools, cranes, tackling, scaffolding, gangways, ladders, tressels, mixing platform, and measures for concrete and mortar, etc., moulds, rods, and every appliance necessary for carrying on and completing the works.
80				Providing, erecting where directed, and afterwards removing the requisite tool-house and workmen's conveniences, including cleaning same as and when directed.
81				Allow for maintaining the work under this department of the contract for twelve months after the entire completion of contract. Amount for excavator, brick, and concretor works carried to Abstract.

£

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.		
82	Contractors are requested to fill in rates to the following items:—	
83	Foundations to walls 6½ inches thick, formed of two courses of brick on bed built with cement mortar (1 to 4)	per suppl. yard.
84	Do. do. 4½ inches thick, formed of one course of brick on edge, built with do. (do.)	do. do.
85	Extra for brick walls being built with cement mortar (1 to 4)	per cube yard.
86	Extra for outer 4½-inch thickness of brick hollow walls being built with do. (do.) and trowel pointing joints on one exposed face as work proceeds	per suppl. yard.
87	Painting exposed face of brick walls two coats patent liquid cement	do. do.
88	Rubble walls 2 feet thick, built with lime mortar	do. do.
89	Do. do. 1 foot 8 inches thick, do.	do. do.
90	Do. do. 1 foot 6 inches thick, do.	do. do.
91	Do. do. 1 foot 3 inches thick, do.	do. do.
92	Do. do. 1 foot thick, do.	do. do.
93	Hammer-dressed corners to external angles, window and door openings, etc.	per linl. foot.
94	Cement concrete walls 1 foot thick, composed as described for foundations (Item No. 3), but aggregate broken to pass a ¾-inch ring	per suppl. yard.
95	Strong timber temporary boarding and supports for do., including fitting up and removing, and all cutting and waste	do. do.
96	Outer hollow walls 1 foot thick, consisting of concrete blocks 4½ inches thick to outside and inside and 3-inch air cavity, and having twisted galvanised wrought-iron ties of similar pattern and distributed as described for hollow brick walls (Item No. 11). The concrete blocks to be each 16 inches by 19 inches by 4½ inches, composed as above described for concrete in walls, manufactured on site by an approved machine, built with cement mortar (1 to 4), and the price to include all cutting, fitting, and waste at door and window openings, wallheads, roof, etc., and where else necessary and directed	do. do.
97	Damp course to walls formed of two courses of strong slates, broken bonded, and bedded in cement mortar (1 to 3)	do. do.
98	Layer of clean engine ashes not less than 3 inches deep spread over area below floors, including levelling and hard beating surface of ground below same	do. do.
99	Layer of cement concrete 3 inches thick, composed as described for foundations, but aggregate broken to pass a ¾-inch ring, spread over area below floors, including levelling and hard beating surface of ground below same	do. do.
100	Forming main roads with stone hand-laid pitching 9 inches deep, well blinded, and finished on top with 4-inch layer of whinstone broken to pass an 1½-inch ring, well blinded, watered, and rolled, and finished with a camber, including the necessary excavation for same	do. do.
101	Forming paths with stone bottoming 4 inches deep, broken to pass a 2-inch ring, consolidated and blinded, and finished with a layer	do. do.

No.		
102	3 inches deep of clean engine ashes, watered and rolled, and laid to the requisite declivities, including the necessary excavation for same	per suppl. yard.
	Cement plaster on top of brickwork of chimney stacks average about 1½-inch thick, smoothly polished, weathered off on top, and neatly finished round chimney cans	do. do.

CARPENTER, JOINER, GLAZIER, and IRONMONGER WORKS SPECIFICATION.

1. *Timber.*—The timber for all carpenter work to be of good quality whitewood; for outer doors, windows, and other outside work, good quality redwood; and for inside doors and finishings generally, first quality whitewood, free from large or loose knots.

All timber for finishing to be carefully selected and kept clean for painter, and to stand the full specified size when finished.

2. *Price of Woodwork.*—The price of all woodwork to include all necessary grooving, tonguing, jointing, framing, morticing, and tenoning, and all work, labour, and fixings complete and requisite.

Bill of Quantities.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
				<i>Roof.</i>
				<i>Note.</i> —All joinings of roof timbers to be neatly half-checked, and each joint to have three steel-cut nails of sufficient length to form proper rivet.
103		233	6	Linl. purlins 6½ inches by 2½ inches, half-checked at joinings.
104				Providing 14 steel bolts, each 2½ inches long and ½-inch diameter at joinings of purlins, with head, screwed end, nut, and washer (including holing timber for same).
105				8 steel-kneed plates connecting purlins at pends, each 18 inches long in all, and 4 inches by ¾-inch.
106				32 steel bolts securing do., each 3 inches long and ½-inch diameter, as before (including holing steel and woodwork for same).
107	206	0	0	Supl. rafters to roof 4½ inches by 1½-inch at 18-inch centres.
108		19	6	Linl. bridles to rafters 5 inches by 2 inches (with rafters at 18-inch centres trimmed on to same).
109		170	6	Linl. wallplate 4½ inches by 1½ inch firmly fixed to wallhead.
110		23	0	Linl. ridge board 6½ inches by 1¼ inch.
111		88	0	Linl. piend rafters 7 inches by 1½ inch (including cutting and fitting ends of 4½-inch by 1½-inch rafters at 18-inch centres to both sides of same), and for cutting small V-groove in top edge for water.
112		37	0	Linl. uprights 6 inches by 2 inches under ends of purlins at corners.
113		23	0	Linl. rounded roll 2½ inches by 2 inches on ridge, fixed with double-shouldered iron spikes.
114		1073	6	Linl. ties to roof 4 inches by 2 inches (placed at 18-inch centres).

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.	No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.			Yds.	Ft.	Ins.	
115		53	0	Linl. runners 4 inches by 2 inches, securely fixed to brickwork (with ties at 18-inch centres trimmed on to same).	144	214	0	0	Supl. $\frac{7}{8}$ -inch whitewood flooring in 6-inch widths, grooved and tongued in joints, wall nailed, and thoroughly cleaned off at completion.
116		6	0	Linl. angle do. 4 inches by 2 inches do. (do. do.).	145		22	0	Linl. labour and waste cutting and fitting flooring to angle.
117		8	0	Linl. beams 4 inches by 4 inches (formed of two 4 inches by 2 inches spiked together) to carry ties over lobbies.	146				Whitewood borders of flooring mitred round 12 hearths, with bearers.
118		109	3	Linl. wallplates $4\frac{1}{2}$ inches by $\frac{3}{4}$ inch under ties.	147		31	0	Linl. jointing ends and edges of flooring to concrete floors.
119	203	0	0	Supl. $\frac{5}{8}$ -inch batten sarking to roof, plain-jointed and firmly nailed.	148	25	0	0	Supl. $\frac{5}{8}$ -inch sarking, nailed to the joists under concrete floors of sculleries and coal places on first floor.
120		176	0	Linl. labour and waste cutting and fitting do. at pends.	149		6	6	Linl. checked and bottled plates to edge of flooring at top of stairs $4\frac{1}{2}$ inches by $1\frac{1}{4}$ inch.
121		212	0	Linl. tilting fillets to eaves, etc.	150		13	0	Linl. do. hardwood do. to edge of flooring at entrance doors $4\frac{1}{2}$ inches by $1\frac{1}{4}$ inch.
122		57	6	Linl. plates 4 inches by $\frac{5}{8}$ inch behind lead flashings on harled walls, chamfered on top, with fixings.	151		6	6	Linl. plates to breasts of top steps at stairs 8 inches by $\frac{3}{4}$ inch.
123		13	0	Linl. dressed plates 4 inches by $\frac{1}{2}$ inch enclosing beams over lobbies.	152		13	0	Linl. hardwood do. to breasts of steps at entrance doors $5\frac{1}{2}$ inches by $\frac{3}{4}$ inch.
124		6	6	Linl. double-beaded do. 5 inches by $\frac{1}{2}$ inch at do.					<i>Lath, etc.</i>
				<i>Joisting, Flooring, etc.</i>	153	8	4	6	Supl. standard partitions $3\frac{1}{4}$ inches by $1\frac{1}{4}$ inch at 14-inch centres, with sills, top runners, and dwangs.
125				Centres to 6 arches under hearths.					
126		20	0	Linl. bevelled fillets for springing to do.	154	13	0	0	Supl. best Baltic split lath on standard partitions, not less than $\frac{3}{16}$ inch thick, and not more than $1\frac{1}{2}$ inch broad, placed $\frac{3}{8}$ inch apart, breaking bond every 2 feet, and double nailed with strong lath nails at the joinings.
127		72	0	Linl. safe lintels over windows and doors 4 inches by 4 inches, formed with two 4 inches by 2 inches spiked, studded with nails as required to give key for plaster.	155	267	4	6	Supl. do. do. on ceilings $\frac{1}{4}$ inch thick, do. do.
128		30	0	Linl. do. over do. 6 inches by 4 inches, formed with two 6 inches by 2 inches spiked, do.	156				12 blocks with fixings on walls for gas brackets.
129		787	6	Linl. sleeper joists 4 inches by 2 inches (placed at 18-inch centres).					<i>Doors and their Finishings.</i>
130		394	6	Linl. wallplates $4\frac{1}{2}$ inches by $\frac{3}{4}$ inch under sleepers.	157		73	6	Linl. dressed frames 6 inches by 2 inches to 4 exterior doors, rounded on two angles, checked for door, and grooved for plaster and rough-casting, with dook fixings.
131		245	0	Linl. joisting to upper floor 9 inches by 2 inches (placed at 18-inch centres).	158		289	0	Linl. do. do. 7 inches by 2 inches to 16 interior doors, rounded on four angles, checked for door and twice grooved for plaster, with do.
132		555	6	Linl. do. do. 7 inches by 2 inches (do.).	159		72	6	Linl. do. do. $6\frac{1}{4}$ inches by 2 inches to 4 interior doors, do. do.
133		216	6	Linl. do. do. $6\frac{1}{2}$ inches by $2\frac{1}{2}$ inches (do.).	160		214	0	Linl. do. do. $5\frac{1}{2}$ inches by 2 inches to 12 interior doors, do. do.
134		8	0	Linl. do. do. $6\frac{1}{2}$ inches by $2\frac{1}{2}$ inches (do.), studded on face with nails to give key for plaster.	161				272 mitres to rounded angles of do.
135		12	6	Linl. bridles at hearths 9 inches by 3 inches (with joists at 18-inch centres trimmed on to same).	162		82	0	Supl. 4 framed and lined entrance doors $1\frac{3}{4}$ inch thick, stiles and top rail $1\frac{3}{4}$ inch thick, bottom and mid-rails and diagonals 1 inch thick, and lined one side with $\frac{3}{4}$ -inch grooved and tongued lining dressed and V-jointed both sides.
136		19	6	Linl. do. do. 7 inches by 3 inches (do. do.).	163				Extra for 4 entrance doors being prepared for one pane glass about 2 feet 3 inches by 1 foot in centre of upper portion, including for extra framing and beaded slips and mouldings at same.
137		13	6	Linl. angular do. do. 7 inches by 3 inches (do. do.).	164		556	0	Supl. 32 interior doors formed of $\frac{7}{8}$ -inch grooved and tongued lining in 4-inch widths, dressed and V-jointed both sides.
138				Fitting 10 ends of 9-inch by 2-inch joists into fireclay pockets in walls at vents.	165		252	0	Linl. chamfered back-bars to do. 6 inches by $1\frac{1}{8}$ inch.
139				Do. 8 ends of 7-inch by 2-inch do. into do. do.	166				4 pairs 7-inch best make steel double-joint edge hinges to doors, with screws.
140		140	0	Linl. wallplates $4\frac{1}{2}$ inches by $\frac{3}{4}$ inch under joisting on brick partitions. <i>Note.</i> —No wallplates taken on outer walls under joisting of upper floor.					
141		70	0	Linl. dwangs to joisting, formed of cross-pieces $2\frac{1}{2}$ inches by $1\frac{1}{4}$ inch, neatly fitted and firmly nailed.					
142	102	0	0	Supl. $\frac{1}{2}$ -inch split Baltic billet-wood deafening boards to upper floor with fillets 1 inch by 1 inch nailed to joists.					
143		20	0	Linl. labour and waste cutting do. to angle.					

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.	No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.			Yds.	Ft.	Ins.	
167				32 pairs 12-inch malleable-iron, strong T-hinges to doors, with do.	192				8 returned open moulded ends to do.
168				Providing and fitting 18 6-inch rim locks with brass plain furniture both sides to doors (prime cost, value 2s. each).	193				Providing and fitting 16 japanned malleable-iron hat and coat hooks, with screws.
169				Do. do. 14 rim latches with do. to do. (prime cost, value 1s. 3d. each).	194	66	6		Supl. 1½-inch redwood deal forming cisterns, dovetailed at the corners and slip-feathered in the joints.
170				Do. do. 4 rim latches with snib and do. to do. (prime cost, value 1s. 6d. each).	195	2	0	0	Supl. 1½-inch do. grooved and tongued flooring forming bottom to cisterns.
				<i>Windows and their Finishings.</i>	196	41	0	0	Linl. bearers under do. 6 inches by 2 inches.
171	184	0		Supl. 8 cased 2-inch sash windows, with moulded and checked framing and ¾-inch astragals dividing each sash into 6 panes, cases of 1½-inch deal, with weathered and throated sills 4 inches thick, parting beads, batten rods, etc., double hung with best quality strong hemp-sash line, best quality brass-faced axle pulleys and pulley boxes, and cast-iron or lead weights, as required for sheet glass.	197	3	0	0	Supl. lathing as before described, with strong bearers closing in cisterns over boilers in sculleries.
172	104	6		Supl. 6 do. do., but each sash divided into 4 panes.	198	3	0	0	Supl. lathing on underside of bearers below cisterns.
173	287	6		Supl. 8 do. do., but made in compartments (16 compartments in all) and each sash of compartment divided into 4 panes.	199	11	0	0	Linl. 1½-inch corner beads to angle, with fixings.
				<i>Note.</i> —The batten rods of all windows to be fixed with brass screws in brass sockets.	200				4 doors for access to cisterns from sculleries each 1 foot 6 inches by 1 foot 6 inches, formed of ½-inch grooved and tongued lining with two backbars, frame, pair 2-inch backfold hinges, button and knob. and 1½-inch by ½-inch facing to one side, rounded on two angles, with four mitres.
174	44	0		Linl. extra for plain inside plate 6 inches broad to cases at mullions.	201				4 dressed plates, each of the requisite size, beaded on edges, and securely fixed to wall to receive brackets for iron flushing cisterns at water-closets.
175	44	0		Linl. do. for double-moulded outside plate 6 inches broad to do. do.	202				Birch coping round three sides of 4 sinks of the necessary length, rounded on edges and corners, with bearers, and secured with brass screws.
176	99	0		Linl. sills to windows 3½ inches by ¾ inch beaded on edge, tongued into sills of cases, with bearers.	203				4 birch shelves beyond sinks, each about 24 inches by 20 inches, and 1½ inch thick, rounded on edges and one corner, stop channelled on top for water run, with falls towards sinks, secured with brass screws, and having strong dressed bearers, complete.
177				44 beaded returned ends to do., rounded on corner.					Birch boxing for plumber's taps at 4 sinks, each of the required size, with rounded edges and bearers, and secured with brass screws.
178	384	0		Linl. small cavetto moulding planted on inside of cases to cover joining with plaster.	204				4 dressed shelves to fireplaces in living-rooms, each about 5 feet long, 11 inches by 1½ inch, with fixings.
179				52 mitres to do.					4 do. do. for gas meters, each of the requisite size, with do.
180				52 butt do. to do.					4 lids to wash-boilers, formed of two thicknesses of ½-inch yellow pine, grooved and tongued in joints, copper nailed, with 3-inch brass backfold hinges, cross handle, and fixed piece cut for steam pipe, complete.
181				Providing and fitting on 30 pairs brass strong ring sash lifters.	205				Linl. pipe covers 6 inches by ½ inch, with beaded checked grounds, and secured with screws.
182				Do. do. 30 brass spring strong sash fasteners.	206				Linl. two-sided pipe boxes, formed of ½-inch deal, beaded on angles, with grounds and do.
				<i>Sundries.</i>	207				Supl. 1½-inch whitewood flooring in batten widths, forming movable front in doors at coal places (taken 4 feet high).
183	530	6		Linl. rounded fillet 1 inch by 1 inch on timber floors next plaster, with fixings (including for mitres, butts, and returned ends, etc.).	210	4	4	6	Linl. chamfered fillets for do. securely fixed.
184	105	0		Linl. do. do. on timber floor next exposed brick walls in bathrooms (do.).	211	64	0	0	Linl. working rounded edge to top boards.
185	740	0		Linl. picture moulding to lobbies, living-rooms, and bedrooms, 1½ inch by ½ inch, hollowed for hooks, with grounds.	212	10	0	0	
186				92 mitres to do.					
187				4 returned moulded ends to do.					
188	178	6		Linl. 1½-inch corner beads to angles, with fixings.					
189	60	0		Supl. ¾-inch shelving in larders, with framed open bracket supports and chamfered fillets at ends as required.					
190	42	0		Linl. do. do. 11 inches by ¾ inch do. do.					
191	16	0		Linl. double-moulded hat and coat belt-ing 6 inches by ¾ inch, with fixings.					

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
213				8 best Eeru blinds to windows, each 3 feet 3 inches by 5 feet 6 inches daylight, having bottom hem, lath, roller, strong cord, heavy brass spring mounting, and the blinds strongly tacked to roller, and all fitted and fixed complete.
214				12 do. to do., each 2 feet 6 inches by 5 feet 6 inches daylight, do. do.
215				2 do. to do., each 2 feet 4 inches by 5 feet 6 inches daylight, do. do. <i>Note.</i> —The blinds to be so made that when they are pulled down to the bottom of the window, one full roll of cloth to still remain on the roller.
<i>Stairs.</i>				
216	61	0		Linl. stringers next walls 9 inches by 2 inches, with fixings.
217	32	0		Linl. joisting to plats 6½ inches by 2½ inches (placed at 18-inch centres).
218	2	6	9	Supl. ¾-inch flooring to do. (as before described).
219		6	6	Linl. cheeked and bottled plates to edge of flooring (do.).
220		6	6	Linl. plates to breasts of plats (do.).
221				26 scale steps of stairs, each 3 feet long, 1¼-inch treads, rounded on edge, and ¾-inch tongued breasts ragged into stringers with brackets and blocks, etc., complete.
222	13	0		Linl. rounded fillet on flooring of plats, as before described.
223		67	0	Linl. do. do. planted on top of stringers, do.
224	2	4	6	Supl. lathing as before described on soffits of plats.
225	1	6	9	Supl. do. with strong bearers forming back wall of presses below stairs.
226	7	0	0	Supl. do. with do. runners and fixings on raking soffits of stairs.
<i>Glass.</i>				
<p><i>Note.</i>—The glass to be all of the very best quality of the respective kinds, carefully selected, free from waves, specks, and defects of every description, accurately cut to fit the various sashes, and carefully bedded, puttied, back puttied, and bradded. All glass to be at contractor's risk until the building is ready for occupation. The whole glass to be left clean and perfect in every respect at the completion of the entire contracts, and the prices to include for this.</p>				
227	339	0		Supl. 21 ounce clear sheet glass in windows in panes as shown.
228	10	0		Supl. do. do. in lower sashes of bathroom windows, ground obscured one side (do.).
229				4 panes ¼-inch rough plate glass in upper parts of front entrance doors, each about 2 feet 3 inches by 1 foot.
<i>Jobbings, Scaffolding, and Sundries.</i>				
230				Allow for performing all carpenter and joiner-work jobbings, and attending on and rendering the usual assistance to all other trades.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
231				Do. for implements, tools, tackling, scaffolding, gangways, tressels, etc., required for carrying on and completing the work.
232				Do. for priming all outside woodwork of windows, doors, etc., with one coat best oil paint.
233				Do. for maintaining the work under this department of the contract for one year after entire completion of contract. Amount for carpenter, joiner, glazier, and ironmonger works carried to Abstract.
£				
<i>Contractors are requested to fill in rates to the following items:—</i>				
234				Tiling fillets on sarking 1¼ inch by 1½ inch., and to be placed at about 10-inch centres (net measure). <i>N.B.</i> —The tiling fillets, along with the requisite nails for fixing same, to be supplied by joiner to the slater, and the latter will cut and fix them in required positions to suit the tiles per suppl. yard
235				Wallstraps 1¼ inch by 1 inch at 14-inch centres, to be nailed to dooks firmly driven into the holes 2 feet apart (including holing walls for dooks) do. do.
236				Branding to ceilings 1¼ inch by 1 inch at 14-inch centres do. do.
237				Standard partitions 4 inches by 2 inches at 14-inch centres, with sills, top runners, and dwangs do. do.
238				Lath deafening in standard partitions, with fillets do. do.
239				1½ inch grooved and tongued white-wood flooring (in 6-inch widths), well nailed and thoroughly cleaned off do. do.
240				1½-inch do. do. (in 4½-inch widths), do. do. do. do.
241				1½-inch do. redwood flooring (in 6-inch widths), do. do. do. do.
242				1½-inch do. do. (in 4½-inch widths), do. do. do. do.
243				Bound four-panelled doors 1½ inch thick, square framed both sides per suppl. foot.
244				Do. do. 1½ inch thick, do. do. do. do.
245				Do. do. 1¼ inch thick, do. do. do. do. <i>Note.</i> —The panels of doors may be fermed out of approved plywood.
246				Moulded and beaded facings 4½ inches by ½ inch per linl. foot.
247				Mitres to do. each.
248				Extra for pairs plain base blocks to do. per pair.
249				Dressed, framed, checked, weathered, and throated sills to case-ment windows 4½ inches by 3 inches per linl. foot.
250				Dressed, framed, checked, and throated stiles and lintels of frames 4½ inches by 2 inches, grooved on two edges for rough-cast and harling, with fixings do. do.
251				Do. do. mullions 4½ inches by 2½ inches, checked and throated on two sides do. do.

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Description of Work.	per	Quantity.			Description of Work.	
			Yds.	Ft.	Ins.		
252	Sashes of windows 1½ ineh thick, with moulded and checked framing and ¾-inch astragals dividing into small panes	per suppl. foot.					
253	Labour checking and bevelling bottom rail of sashes next sills	per linl. foot.					
254	Pairs 3-inch steel double-joint edge hinges to sashes with screws	per pair					
255	Providing and fitting on sets quadrant fasteners and stays (prime cost, value 2s. per set)	per set.					
256	Moulded skirtings 6 inches by ¾ inch with grounds	per linl. foot.	272	207	6	9	Supl. slating to roof with asbestos slates 15¾ inches by 15¾ inches, laid diagonally, and each fixed with two strong galvanised iron slate nails and one copper storm clamp, as specified.
257	Do. 4½ inches by ¾ ineh, with do.	do. do.	273	56	1	6	Linl. extra for doubling course of slates at eaves, including cutting.
258	Plain skirting 4 inches by ¾ inch, with do.	do. do.	274	14	0	0	Linl. cutting and waste of slates at skews.
259	Mitres to moulded skirtings	each.	275	29	1	6	Linl. double cutting and waste of slates at close mitred piends.
260	Butt do. to do.	do.	276	328	4	6	Supl. rough-casting to outside face of walls, chimney stacks, and ingoes of windows, the straightening coat to be ½ inch thick, composed of 1 of cement to 2 of well-washed river sand, and the rough-cast to be composed of 1 of cement to 2 of sharp well-washed approved river sand and gravel not exceeding the size of peas. The harling to receive 1 coat of Irish lime wash when directed. The whole of the wall surfaces to be carefully brushed down, joints raked out and thoroughly damped before the harling is begun, and all woodwork to be carefully protected while the harling is being done, or washed perfectly clean, and the price to include all labour at arrises, etc.
261	Returned moulded ends to do.	do.					
262	¾-inch grooved, tongued, and V-jointed or beaded whitewood linings to walls, with grounds (redwood)	per suppl. yard.					
263	Do. do. with do. (whitewood)	do. do.					
264	Beaded cope to lining 1½ inch by ¾-inch	per linl. foot.					
265	Dressed sparred outside fencing, spars 2 inches by ¾-inch, placed 1½ inch apart, and top and bottom rails 4 inches by 1½ inch (painted with one coat oil paint)	per suppl. yard.					
266	Dressed posts for do. 4 feet 6 inches long, 4½ inches by 3 inches, pointed and charred and tarred at foot, and driven into ground (do.)	each.					
267	Gates in fencing, each 2 feet 9 inches by 3 feet 6 inches, constructed similar to fencing, with framing, pair 12-inch T-hinges, and approved fastener	do.	277				Cleaning out all rhones, etc., examining roofs, and replacing all broken, cracked, or loose slates at completion of the works, and leaving the slater and rough-cast work perfect in every respect, and upholding it thus for one year after completion of contracts.
268	Ceil broad or beaver board on ceilings well nailed to ceiling joists, etc.	per suppl. yard.					Providing, fixing, and afterwards removing the requisite scaffolding, etc., in connection with this contract.
269	Do. do. or do. on walls, well nailed to grounds dooked to walls <i>Note.</i> —The cost price of the ceil and beaver boarding is about 1½d. per suppl. foot, and is subject to 10 per cent. special discount.	do. do.	278				Amount for slater work carried to Abstract.
270	Small mouldings or fillets to cover joinings of ceil or beaver boarding on ceilings and walls, including mitres, butts, etc.	per linl. foot.					£

SLATER WORK SPECIFICATION.

- The roofing slates to be "Pressed Fibro Cement Asbestos" red, blue, or grey slates, procured from any approved maker; to be 15¾ inches by 15¾ inches, laid on the diagonal or honeycomb system, having an angular cover of at least 2¾ inches, each slate to be fixed with two strong galvanised iron slate nails and one copper storm clamp.
- The slating is measured net, no allowance being made in the superficial measurement for eaves, skews, etc., these being reported separately by the lineal yard.

Bill of Quantities.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
271	203	0	0	Supl. covering roof boarding below slates with best quality inodorous roofing felt, securely fixed with large galvanised wrought-iron clout nails.

No.	Contractors are requested to fill in rates to the following items:—	
279	Fixing tiling fillets (which, along with the necessary nails for same, will be supplied by the joiner) to sarking at about 10-inch centres . <i>N.B.</i> —The tiler is to cut the fillets to the lengths necessary, and at piends, etc., and the price of fixing to include for this	per suppl. yard.
280	Covering roofs with first quality French red pan tiles, each of about 9¾ inches by 13 inches, by ½ inch thick, procured from approved maker, properly laid on the tiling fillets with the requisite cover	do. do.
281	Labour and waste cutting and fitting pan tiles against sides of chimney stacks	per linl. yard.
282	Double cutting and waste of tiles at piends	do. do.
283	Best quality half-round red tiles to ridges and piends, well bedded in cement, and neatly pointed with cement coloured to match tiles	do. do.

Mr J. Wilson—continued.

Mr J. Wilson.—continued.

No.		
284	Cement flashings to tiles at chimney stacks	per linl. yard.
285	Best small-sized Aberfoyle slates, all properly dressed and machine-bored, having 2½-inch cover at the eaves, diminishing to 2 inches at ridge, all double-nailed with galvanised wrought-iron slate nails, 10 lbs. per thousand	per suppl. yard.
286	Best "Seconds" Port Dinorwic small-sized slates, do do.	do. do.

PLUMBER WORK AND GAS-PIPES SPECIFICATION.

1. *Sheet Lead*.—All sheet lead to be of good quality English milled lead free from defects.
 2. *Zinc*.—The zinc to be all of the best quality, and procured from the Vieille Montagne Zinc Mining Company.
 3. *Lead Pipes*.—All lead pipes and traps to be solid hydraulic drawn, and all joints on lead piping to be wiped solder joints.
- The price of all lead service, supply, waste, and ventilating pipes, etc., to include for the requisite bends.
- The sizes stated for all pipes, lead or iron, are in all cases to be understood as internal diameters.
4. *Castings*.—All castings to be of best quality, sound and clean, free from all air holes and flaws, and without twist, and the price to include for all patterns required.
 5. *Price of Plumber Work*.—The price of all plumber work to include all charges for solder, holdfasts, fixings, and every expense necessary to entirely complete the work.

Bill of Quantities.

No.	Quantity.		Description of Work.
	Ft.	Ins.	
287	23	6	Linl. No. 14 zinc covering ridges 14 inches broad, secured with strong galvanised malleable-iron straps 1½ inch by ⅜ inch at not more than 30 inches apart, fixed with strong lead-covered nails.
288	49	6	Linl. 5 lb. lead flashings to skews at chimney stalks 12 inches broad (copper tacked to timber plates).
289	17	6	Linl. 5 lb. lead berges to chimney stalks 12 inches broad (do.).
290	90	6	Linl. 5 lb. lead flashings 6 inches broad under slating at close-mitred piends, dressed into V-grooves in piend rafters.
291	171	0	Linl. cast-iron half-round gutters to eaves 4½ inches diameter inside with bead on outer edge, of approved manufacture (medium weight), carefully jointed with red lead, and screwed together with brass bolts and nuts, and secured to the sarking every 22 inches apart, with strong galvanised iron straps 2 inches broad.
292			Extra for 4 cast-iron external square-angle pieces to do.
293			Do. 3 drop pieces to do.
294			Linl. cast-iron rainwater pipe 3 inches diameter, of approved manufacture (medium heavy), jointed with red-lead putty and hemp, and secured with strong galvanised malleable-iron bands battled to brickwork with lead.
295			3 strong copper-wire rose gratings in eaves gutters.
296			One 5 lb. lead flange at foot of rainwater pipe next fireclay drain.

No.	Quantity.		Description of Work.
	Ft.	Ins.	
			<i>Inside Work.</i>
297	79	6	Supl. 5 lb. lead lining cisterns, the lead to be fused at the joints with hydrogen blowpipe in place of being soldered.
298			4 1½-inch brass ballcocks of approved pattern, with stopcock attached, and large strong tinned copper ball, securely fixed.
299			4 1-inch brass wastes and wasting washers in cisterns with piece 5 lb. lead tapered lead standing overflow pipe of the required length.
300			4 brass valves for shutting off service from cisterns with copper wires and hooks.
301			4 Wash-down closets of approved manufacture in best strong fireclay, white enamelled inside and outside, and having polished hardwood seats with seat extensions, brass hinges and india-rubber buffers, also three-gallon of galvanised cast-iron flushing cisterns of approved pattern, with bracket supports, brass chains, and porcelain handles, and 1½-inch bent lead service pipes from cistern to closet, secured with bands, the one at seat having rubber buffer and ⅝-inch composition overflow pipe taken to outside, all fitted and fixed complete.
302			4 Cast-iron "Dwellings" baths, each 4 feet 9 inches long, 1 foot 10 inches wide, and 1 foot 4½ inches deep inside, with 2½-inch roll edge, greenstone enamelled inside and on edge, and plain painted outside, set on cast-iron plain painted feet, and fitted with 1½-inch plug waste with brass washer and chain, two ¾-inch brass globe valves for hot and cold water, 1½-inch glass enamelled trap, 1½-inch brass overflow connected to waste with piece-lead pipe of the necessary length, and porcelain enamelled cast-iron single soap-dish to fix between valves, all fitted and fixed complete.
			4 best quality fireclay sinks in sculleries, each 24 inches by 18 inches, by 10 inches outside size, with roll edge to front, white enamelled in the best manner on inside, roll edge and front of outside, with openings for waste gratings, and having overflow cast on, all fitted and fixed complete.
			4 sets stronggalvanised iron approved pillar supports below sinks of the required size, with screwed flanged ends let into walls and concrete floors, run up with lead and securely fixed.
			4 2½-inch brass plugs, each with strong chain, grating, and screwed sockets for sinks.
			4 solid-drawn lead traps to sinks, each 2½ inches diameter (equal to 6 lbs. lead), with brass trap-screw.
			4 lead-tapered connections from traps, etc., to sockets in bottom of sinks.
			4 ¾-inch brass screw-down nosecocks for hot water at sinks, with screwed tails, couplings, and flanges.
			4 ½-inch do. do. on main at do.
			4 cast-iron boilers in sculleries, each to contain 15 gallons, with nozzle, furnace, grate, door, damper, brander, etc., complete (to be built in by mason).
			4 ½-inch brass screw-down nosecocks on service pipes at do. with soldered tails.

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.		Description of Work.	No.	Quantity.		Description of Work.
	Ft.	Ins.			Ft.	Ins.	
312			4 $\frac{3}{4}$ -inch do. draw-off cocks at do. with non-conducting handles and properly secured to cast-iron nozzles.				
313			4 strong zinc-kneed steam pipes at boilers, each about 2 feet 6 inches long and 3 inches diameter, flanged at ends, and securely fixed. <i>Note.</i> —The boilers to be of approved pattern and manufacture, and each to be made rustless on inside.	332	40	0	<i>Waste Soil and Ventilating Pipes.</i> Linl. 1-inch solid drawn lead waste pipes from cisterns (equal to 5 lb. lead).
				333			4 brass flanged nozzles on ends of do. discharging over baths.
				334	96	0	Linl. cast-iron waste and ventilating pipes outside of building, 3 inches diameter, secured with strong galvanised malleable iron band fixings battled with lead.
				335	24	0	Linl. do. soil and ventilating pipes 4 inches diameter, secured with do. do.
			<i>Supply and Service Pipes.</i>	336			8 cast-iron bends on 3-inch diameter pipe.
314	62	0	Linl. $\frac{3}{4}$ -inch lead supply pipe from main in roadway to cisterns, weighing 10 lbs. per yard (taken 26 feet out from front of building).	337			2 do. on 4-inch diameter do.
				338			2 do. offset bends on 3-inch do. to clear projection of eaves gutter.
315	20	0	Linl. $\frac{1}{2}$ -inch do. do. weighing 7 lbs. per yard in branches to cisterns.	339			1 do. do. on 4-inch do. to clear do.
316			1 $\frac{3}{4}$ -inch gun-metal underground stopcock on supply pipe.	340			8 do. branches on 3-inch do.
317			1 cast-iron stopcock case for do. with hinged lid and brick in cement-built eye complete.	341			4 do. do. on 4-inch do.
318			1 strong malleable-iron key of the requisite length with cross handle for turning stopcock.	342			2 do. combined branch and offset bends on 3-inch do. to clear projection of eaves gutter.
319			1 connection of $\frac{3}{4}$ -inch lead supply pipe to iron main, including warrant and water commissioner's charge.	343			Extra for 4 lower lengths of 3-inch cast-iron waste pipes having cast-iron hand access plates in same immediately at ground surface, with curved inner face to suit pipe, secured with brass bolts.
320	60	0	Linl. $\frac{3}{4}$ -inch lead service pipes to the various fittings, weighing 10 lbs. per yard.	344			Do. 1 lower length of 4-inch do. soil and ventilating pipe having do. do.
321	85	0	Linl. $\frac{1}{2}$ -inch do. do., weighing 6 lbs. per yard.	345			4 strong copper-wire spherical covers to top of 3-inch diameter pipes.
322	195	6	Linl. carefully wrapping the lead supply and service piping inside of building, with double thickness of dry hair felt, properly secured with strong copper wire, each pipe to be wrapped separately.	346			1 do. do. to top of 4-inch diameter do. <i>Note.</i> —The whole of the foregoing cast-iron waste, soil, and ventilating pipes with their fittings to be all of approved manufacture of metal not less than $\frac{3}{16}$ -inch thick, caulked in the joints with hemp, and run up and staved with molten lead and made perfectly staunch, and to be coated outside and inside with Dr Angus Smith's solution.
			<i>Hot-water Supply to Fittings.</i>	347	13	6	Linl. solid-drawn lead soil-pipe branches from water-closets, 4 inches diameter (equal to 7 lbs. lead).
323	88	0	Linl. $\frac{3}{4}$ -inch lead service pipes from cisterns to boilers, weighing 9 lbs. per yard.	348	21	6	Linl. do. do. waste pipes from sinks 2 $\frac{1}{2}$ inches diameter (equal to 6 lbs. lead).
324	91	0	Linl. 1-inch galvanised wrought-iron expansion and cleansing piping with screwed sockets and fixings, and the price to include for all fittings, such as crosses, T-pieces, bends, knees, etc., as may be required, all to be put together with red lead and made perfectly staunch.	349	19	6	Linl. do. do. from baths, 1 $\frac{1}{2}$ inch diameter (do.).
				350			4 connections of 4-inch lead soil-pipe branches from water-closets to branches on 4-inch cast-iron pipe, each with brass ferrule soldered to lead pipes and run and staved into iron pipes with lead.
325	17	0	Linl. $\frac{3}{4}$ -inch do. cleansing pipes do. do. <i>Note.</i> —No bends will be allowed to be formed on the iron hot-water piping. In all cases purpose-made bends or knee pieces must be provided, and, where practicable, bends are to be used in preference to knees.	351			4 do. of 2 $\frac{1}{2}$ -inch lead waste pipes to branches on 3-inch cast-iron pipe, with do. do.
				352			4 do. of 1 $\frac{1}{2}$ -inch lead waste pipes to branches on 3-inch do. with do. do.
				353			5 5-lb. lead flanges at foot of waste and soil and ventilating pipes next fireclay drains.
326	174	0	Linl. $\frac{3}{4}$ -inch lead hot-water piping to the various fittings, etc., weighing 10 lbs. per yard.	354	56	0	Linl. 1 $\frac{1}{2}$ -inch lead ventilating pipes off traps at sinks and baths, 1 $\frac{1}{2}$ inch diameter (equal to 5 lbs. lead).
327			12 brass-screwed connections of $\frac{3}{4}$ -inch lead piping to boilers.	355			8 beaded ends to do. with copper-wire gratings.
328			4 brass do. do. of $\frac{3}{4}$ -inch lead to iron pipes.				
329			4 $\frac{3}{4}$ -inch brass stopcocks on cleansing pipes with screwed tails, iron key, and 6-inch iron-plate cover screwed to floor.				<i>Gas Pipes.</i>
330	321	0	Linl. carefully wrapping the hot-water service, etc., pipes with hair felt as before.				<i>Note.</i> —The gas-supply pipes and gas meters are taken to be provided and fixed by the Local Authorities.
331			2 lead flashings of the required size, where iron expansion pipes pass through roofs, with upstand, and made perfectly water-tight.	356	164	0	Linl. composition gas piping $\frac{1}{2}$ inch diameter, price to include for the requisite brass common couplings.
				357	152	0	Linl. do. do. $\frac{1}{4}$ inch diameter do. do.

Mr J. Wilson—continued.

No.	Quantity.		Description of Work.
	Ft.	Ins.	
358			Connecting 4 ends of $\frac{1}{2}$ -inch composition gas piping to couplings at meters.
359			Taking delivery of, fitting, and fixing complete 24 gas brackets throughout houses.
<i>Sundries.</i>			
360			Allow for thoroughly testing the whole of the plumber work and gas pipes, providing, fixing, and removing scaffolding, tackling, etc., and maintaining the work for one year after entire completion of contracts. Amount of plumber work and gas pipes carried to Abstract. £

No.	Description of Work.	Unit
<p><i>Note.</i>—Contractors are requested to fill in rates to the following items:—</p>		
361	Strong wrought-iron galvanised tank to contain rainwater, about 3 feet by 3 feet by 3 feet, properly stayed, having aperture for rainwater pipe, $\frac{3}{4}$ -inch brass draw-off cock and cleansing door, complete	each.
362	Flanged connections on tank for $\frac{3}{4}$ -inch galvanised iron draw-off pipes	do.
363	Providing and fixing complete the requisite wiring and steel-drawn enamelled tubing from main switches to points in houses.	per point.
364	Double-pole main switches and fuses for disconnecting installation in each house, each to be enclosed in neat stained, varnished, and glazed case	each.
365	Rise and fall single-light pendants with flexible wiring, holder, carbon-filament lamp, shade, and controlled by one switch	do.
366	Single-light cord pendants with do. do. and do.	do.
<p><i>Note.</i>—The electric lighting to be all fitted up as directed by, and materials used to be in accordance with, the requirements of the Local Authority.</p>		

PLASTER WORK SPECIFICATION.

1. *Plaster.*—The lime for plaster to be of the best well-burned fresh lime shells, slaked with pure water, covered with clean, sharp river or pit sand, and mixed in the proportion of 1 part lime shells to 3 parts of sand, with 1 lb. of approved hair to every 3 cubic feet of mortar.

The finishing coat to be of 1 part lime shells run into putty, and mixed with sand and hair in approved proportions.

The lime mortar to be sourced up at least six weeks before being used.

2. *Cement.*—All cement to be British Portland cement, as specified in Bill of Quantities for excavator, brick, and concretor works.

3. *Plaster Surfaces.*—All plaster to be hard rubbed in, very carefully straightened to grounds, hand floated, polished smooth, and finished free from cracks, water marks, blisters, or any other defects.

Mr J. Wilson—continued.

Bill of Quantities.				
No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
367	289	0	0	Supl. 3 coats plaster to lathed walls and ceilings.
368	611	4	6	Supl. 2 coats do. on bricks walls.
369	7	0	0	Supl. 3 coats do. on lathed raking soffits of stairs.
370	6	4	6	Supl. 2 coats do. do. to ingoes of windows and doors (in narrow widths).
371				Bedding 22 window cases in well-haired lime, and afterwards pointing them outside with best mastie and linseed oil.
372				Mending plaster and pointing round 8 chimney-pieces in rooms.
373				Do. do. round 4 timber shelves at fireplaces in living-rooms.
374	63	0	0	Linl. double relieving corner beads.
375		215	0	Linl. forming rounded corners in plaster.
376				28 mitres to do.
377	25	4	6	Supl. Portland cement granolithic paving in sculleries, larders, and coal places, ground floors, $2\frac{1}{2}$ inches thick in all, the lower $1\frac{1}{2}$ inch being composed of 1 part cement to 4 parts of clean small broken brick, stone, or gravel, all well rammed and finished on top with a 1-inch layer of concrete composed of equal proportions of cement and crushed granite, both layers to be laid simultaneously and finished off on top with a smooth and perfectly level surface.
378	25	4	6	Supl. do. do. $2\frac{1}{2}$ inches thick laid on top of joiners' wood boarding in sculleries, larders, and coal-places on first floor, do. do.
379				Cement concrete composed, laid, and finished all as described for concrete floors, forming 4 hearths in bedrooms, ground floor, each about 2 feet 6 inches by 2 feet 2 inches at extremes.
380				Do. do. forming 4 hearths in do. first floor, each about 2 feet 6 inches by 2 feet 2 inches at extremes.
381				Do. do. forming 2 hearths in living rooms, ground floors each about 4 feet 6 inches by 2 feet 6 inches at extremes.
382				Do. do. forming 2 hearths in do. first floor, each about 4 feet 6 inches by 2 feet 6 inches at extremes.
383				4 cast concrete steps at entrance doors, each 3 feet 3 inches long, 12 inches by 6 inches, finished smooth on tread and breast.
384				4 do do. at do. each 4 feet 3 inches long, 12 inches by 6 inches, finished smooth on tread, breast, and two ends, include for the necessary underbuilding and excavation for same.
385				Mending all broken plaster and concrete from time to time during the progress of the entire work, and at completion of same, including after plumbers, gasfitters, and all other trades, and leaving the work perfect in every respect.
386				Allow for providing and erecting scaffolding, planks, battens, ladders, tressels, supports, etc. required in connection with this department of the contract.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
387				Do. for water.
388				Do. for maintaining work for one year after entire completion of contracts. Amount for plaster work carried to Abstract.

No.	Description of Work.	Quantity.
389	Contractors are requested to fill in rates to the following items :— 1 coat haired lime plaster deafening standard partitions	per suppl. yard.
390	Portland cement flush skirting 6 inches high, finished off the hand float (extra to price of 2 coats lime plaster)	per linl. foot.
391	Stucco cove run at junction of ceilings and walls to 2½ inches radius with fillet	do.
392	Mitres to do.	each.
393	Butt do. to do.	do.
394	Returned moulded ends to do.	do.

PAINTER WORK SPECIFICATION.

All materials used to be of good and approved quality. No size, stain, glue, or medium of any kind to be used.

Bill of Quantities.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
<i>Inside Work.</i>				
395	276	0	0	Supl. 1 coat distemper on ceilings.
396	621	0	0	Supl. 2 coats do. on plastered walls
397	256	0	0	Supl. 2 coats do. on exposed brick walls in sculleries, bathrooms, and larders.
398	429	4	6	Supl. sizing, staining, and 2 coats varnish on all inside woodwork.
399				3 coats oil paint on 8 cast-iron mantelshams in bedrooms, etc.
400				Do. do. on jambs and lintel at 4 living-room fireplaces.
401				3 coats oil paint on 4 cast-iron flushing cisterns, with brackets at water-closets and service pipes, etc., at same.
402				3 coats do. on outside of 4 baths and on the exposed portions of traps and piping at same.
403				3 coats do. on the exposed portions of 4 iron stands at sinks, also on exposed lead waste, etc. piping at same.
<i>Outside Work.</i>				
<i>Note.</i> —The last coat of painting on work under this heading to be mixed with quantity of varnish to give greater durability, and the prices to include for this.				
404	15	4	6	Supl. 3 coats oil paint on outside of doors.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
405	51	4	6	Supl. 3 coats do. on outside of windows (daylight size measured).
406	57	0	0	Linl. 3 coats do. on inside and outside of 4½-inch diameter cast-iron eaves gutters.
407	7	0	0	Linl. 3 coats do. on outside of east-iron rain-water pipes with their fixings.
408	55	0	0	Linl. 3 coats do. and 1 coat knotting on outside of east-iron waste, soil, and ventilating pipes with do.
409				3 coats do. on 1 iron ladder to roof 12 feet long with its fixings.
<i>Sundries.</i>				
410				Allow for preparatory work previous to painting, filling up nail and other holes with lead putty, and carefully metal knotting all knots in wood-work.
411				Do. for providing and erecting all scaffolding, ladders, trossels, etc. required in connection with this department of the contract.
412				Do. for cleaning out all apartments, washing floors, and cleaning windows, etc., at completion of entire contracts, and leaving the whole building ready for occupation. Amount for painter work carried to Abstract.

No.	Description of Work.	Quantity.
<i>Note.</i> —Contractors are requested to fill in rates to the following items :—		
413	3 coats paint on inside woodwork	per suppl. yard.
414	3 coats do. on sparred timber outside fencing (one measure to be given for each side)	do. do.

GENERAL NOTES.

1. The contractor to furnish all the materials, workmanship, carriages, implements, tackling, scaffolding, etc., required to carry on and complete the work in accordance with the Plans, Specification, and Bill of Quantities.
2. The whole work comprised in the contract to be carried on in such manner as will be directed.
3. The contractor to be responsible for all risks incurred from fire, weather, accident, or other causes in connection with the whole works, until the same is handed over complete.
4. For contractors' convenience and information, a copy of the Plan of the Building is affixed to the Bill of Quantities.
5. Samples of all materials proposed to be used in the work to be provided by the contractor when requested.
6. In order to secure economy in construction, all doors and windows have been designed to uniform sizes, and the building generally has been designed with uniform details. The four houses in the block are practically identical, as will be seen on referring to the affixed plan.
7. The work is measured according to the Edinburgh mode of measurement.

ABSTRACT.

- Amount for excavator, brick and conereter works.
Do. carpenter, joiner, glazier, and ironmongery works.
Do. slater work.
Do. plumber work and gas pipes.
Do. plaster work.
Do. painter work.

Total £

Mr J. Wilson—continued.

Note.—The ranges, grates, gas fittings, laying out of grounds, paths, and fencing have not been included in the Bill of Quantities.

ALTERNATIVE ESTIMATES.

Contractors are requested to state here what percentage they would be prepared to deduct from the foregoing total amount (which represents the cost from block of four houses, Type F) in the event of (1) 12 similar blocks, and (2) 50 similar blocks, being erected in place of a single block.

1. If 12 blocks (Type F) be erected under one contract, in place of a single block, the percentage to be deducted from the foregoing total amount is.....

2. If 50 blocks (Type F) be erected under one contract, in place of a single block, the percentage to be deducted from the foregoing total amount is.....

Measured from the Plans by
PETER LAWRENCE & Co., F.F.S.,
Surveyors.

50A FREDERICK STREET,
EDINBURGH, 21st October 1914.

APPENDIX No. CXCVII.

PAPER HANDED IN BY MR J. WILSON.

QUESTION No. 43,721.

ONE BLOCK OF TWO COTTAGE HOUSES.

(Type C.)

SPECIFICATION AND BILL OF QUANTITIES OF THE SEVERAL WORKS REQUIRED TO BE EXECUTED IN THE ERECTION OF SAME.

EXCAVATOR, BRICK AND CONCRETE WORKS SPECIFICATION.

1. *Sand*.—All sand to be fine, clean, sharp pit or river sand.

2. *Lime Mortar*.—The lime mortar to be composed by measure of 1 ton of best, fresh-burned, unslaked lime shells to 3 tons of sand, mixed with fresh water.

3. *Cement*.—The cement to be best London Portland cement, and to comply in every respect with the terms of the British Standard Specification for Portland cement as revised to June 1907.

4. *Cement Mortar*.—Cement mortar to be composed of 1 of cement to 4 of sand, or as may be otherwise described in Bill of Quantities.

5. *Bricks*.—The bricks to be all of the best, sound, clean, well-shaped, hard-burned bricks from an approved local brickwork.

All walls over 4½ inches thick to be built four courses of stretchers to one course of headers.

BILL OF QUANTITIES.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
1	114	0	0	Supl. stripping surface soil over area of building 9 inches deep.
2	15	6	9	Cubic excavation in trenches for foundations (under 3 feet deep). <i>Note</i> .—So much of the material from the foregoing excavations as

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
3	29	2	3	Supl. Portland cement concrete 9 inches thick in foundations to main walls, composed of 1 part cement, 4 parts of clean, hard stones or bricks, broken to pass a 2-inch ring, and 2 parts clean, sharp, gravelly sand by measure. The materials to be mixed in an approved manner, deposited in tracks, properly levelled, and all well pounded and rammed. may be required for the purpose to be filled in and well rammed next foundations on each side of walls, and the remainder to be removed and deposited round building or on site (at a distance not exceeding 50 yards from building), laid in layers, well rammed and consolidated, and sloped off as directed, and the prices to include for this. All water that may accumulate in area or trenches, drain tracks, etc., during the progress of the work, from rain or other cause, is to be removed at the contractor's expense.
4	18	0	0	Supl. do. do. 6 inches thick to inside walls, do. do.
5	7	4	6	Supl. brick walls 31½ inches thick (3½ bricks).
6	21	4	6	Supl. do. do. 13½ inches thick (1½ bricks).
7	163	4	6	Supl. do. do. 4½ inches thick.
8	12	18	0	Cubic brickwork in chimney breast and stalk (measured nett).
9	172	0	0	Supl. brick hollow main walls 1 foot thick, consisting of 4½-inch brick to outside, 3-inch air cavity, and 4½-inch brick to inside, having twisted, galvanised, wrought-iron ties of approved pattern for bond, weighing 1 cwt. per 300, placed 4 feet apart horizontally, 2 feet 6 inches apart vertically, and laid with slight slope outwards. Allow for movable boards or hay bands to keep the air space free from droppings during the building, also for leaving openings at bottom of brick linings at intervals for the removal of any droppings, and for afterwards bricking up these openings complete. <i>N.B.</i> —The ties in hollow walls to be left entirely clear of mortar.
10				
11	7	0	0	Supl. brick walls under sleepers and fenderwalls under hearths, 4½ inches thick (built on top of asphalt over area). <i>Note</i> .—All brick walls are stated at the thickness of the bricks themselves exclusive of the mortar joints.
12		281	0	Linl. plumbing external corners to brick walls.
13		45	0	Linl. plumbing and forming angular do.
14		19	6	Linl. plumbing scuntions to brick walls, 4½ inches broad.
15		64	0	Linl. do. do. to openings in 12-inch hollow walls.
16		24	0	Linl. do. do. in 12-inch do., including for extra brickwork across 3 inches space.
17		109	0	Linl. plumbing scuntions to openings in do., including keeping back the 4½-inch inner lining to form reveal, as shown.

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.	No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.			Yds.	Ft.	Ins.	
18		57	6	Linl. extra for wallheads of 12-inch hollow brick walls, being built solid with one course of 12 inches by 6 inches bricks, set to project 1 inch from wall face to form plinth.	39				Cutting 4 holes, each 9 inches square, through stones at do. for smoke flues.
19		71	0	Linl. do. do. for brickwork, raking top of gable heads of do. do., being built solid with one course of 12 inches by 6 inches bricks.	40		16	0	Supl. hammer-dressed flat stones not less than 3 inches thick, to carry brickwork over presses in living-rooms and at doorways to living-rooms, built with cement.
20		49	0	Linl. do. do. for brickwork of do. at window sills, being do. do.	41		14	6	Linl. hammer-dressed edges to do.
21				Extra for 12-inch brick saving arches, 9 inches deep, over lintels of openings in 4½-inch brick walls, including formingspringers and corecomplete.	42		170	0	<i>Smoke Flues, Fireplaces, etc.</i> Linl. forming smoke flues in brick walls and chimney stacks, 9 inches by 9 inches, smoothly pargetted with lime mixed with cow dung.
22	129	0	0	Supl. raking-out joints of brickwork in bathrooms, sculleries, larders, and coal-places, and filling in with cement mortar (1 to 4), and drawing in with edge of the trowel.	43				8 fireclay-beaded chimney cans, each about 12 inches high, countersunk into concrete cope, and set in and pointed with cement.
23	19	0	0	Linl. brick beamfilling wallheads up to the sarking (walls 12 inches thick and about 1 foot high at extremes).	44				Forming 4 openings in brick walls for fireplaces, each with oncome, plumbing of scuntions and lintel or brick arch (no deduction made from brickwork).
24	6	0	0	Linl. do. do. (walls 4½ inches thick and about 1 foot high at extremes).	45				4 cast concrete jambs to living-room fireplaces, each about 18 inches broad, 6 inches thick, and 4 feet 6 inches high, reinforced and composed as specified for window lintels, smooth finished and rounded on angles where exposed.
25	8	0	0	Linl. do. do. between platform joists (walls 12 inches thick and 4 inches high).	46				2 do. do. lintels to fireplaces at do., each 4 feet 6 inches long and 15 inches by 14 inches do. do.
26		71	0	Linl. cutting and waste of 12-inch brick hollow walls to rake of roof.	47				Forming safe oncome, etc., to 2 fireplaces in living-rooms.
27		3	0	Linl. do. do. of 4½ inches do. to do.	48				Providing the requisite materials for and building in 2 kitchen ranges.
28	24	0	0	Supl. damp course to walls ¾ inch thick, composed of best British pitch, Stockholm tar, and washed and kiln-dried gravel, mixed in approved proportions.	49				Do. do. 4 room grates.
29	58	0	0	Supl. ½-inch coating of asphalt composed as described for damp-course, below all timber floors, including levelling and hard beating down surface of ground to receive same.	50				Building in 2 boilers in sculleries with firebricks made to the proper mould, circled on front, built and pointed in fireclay, having properly formed flues, and with Portland cement concrete copes, about 2 feet 6 inches by 3 feet at extremes, not less than average 3 inches thick, smoothly finished on slightly sloped top and on circular front edge, and slightly rounded on arrises as required, complete.
30	26	4	6	Supl. ½-inch coating of do. below concrete floors, do. do.	51				<i>N.B.</i> —Boilers with mountings will be provided by plumber. Providing and building into walls 4 approved perforated stones for steam pipes at do., each about 11 inches by 11 inches, and 5 inches thick, polished on exposed face and properly connected to vent.
31				Allow for forming clear space round ends of all joists, etc., in brick walls and carefully keeping them free from mortar.	52				4 arches under hearths in upper floor of 4½-inch brick, built in cement.
32				6 galvanised cast-iron gratings, each 9 inches by 6 inches for ventilation below sleepers, fixed with cement, including forming openings in 12-inch hollow brick walls, and closing up the air space at same with brickwork or otherwise as directed.	53				Allow for making up with hard, dry approved material at 2 hearths on ground floor, within the brick fender walls, each about 4 feet 6 inches by 2 feet, and 1 foot 6 inches deep.
33				Forming 16 openings through 4½-inch brick walls and sleeper dwarfs for ventilation.					<i>Cement Concrete Lintels and Chimney Copes.</i>
34				2 glazed fireclay pipes, each 3 feet long and 4 inches diameter, for passage of air below cement floors.	54		34	6	Linl. cement concrete lintels to doors and windows, 4½ inches by 10 inches, cast in moulds, reinforced with the requisite steel bars or rods turned up at ends as directed, left rough on face, and soffit for harling (in lengths under 5 feet).
35				Forming 4 openings in 4½-inch walls for ends of do., building in same and making good in cement, complete. <i>Note.</i> —The price of all brickwork to include for raking out joints and preparing to receive plaster or rough-casting.					
36		40	6	Supl. hammer-dressed flat stones not less than 4 inches thick, to carry brickwork of chimney breast on first floor, built with cement.					
37		10	6	Linl. hammer-dressed edges to do.					
38		6	0	Linl. do. sunk (bevelled) do. to do.					

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.	No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.			Yds.	Ft.	Ins.	
55		28	0	Linl. do. do., 4½ inches by 10 inches, do. do. (in lengths of 7 feet).	71				Do. for 2 glazed fireclay S.P.A. traps on 4-inch drain with top piece, having single inlet and flat stone seat.
56		9	6	Linl. do. do. 12 inches by 10 inches, rebated for window frames as required, and do. do. (in lengths under 5 feet).	72				Do. for 1 do. do. with do., having three-way inlet and do.
57		14	0	Linl. do. do. 12 inches by 10 inches do., and do. do. (in lengths of 7 feet).	73				3 polished perforated, and checked hard stones over traps at do., each 18 inches by 18 inches, and 4 inches thick, fitted with 6 inches by 6 inches galvanised iron grating or plate, and having pipe eye to trap and brick in cement, built seat, complete.
58		17	6	Linl. do. do. inner lintels to windows, etc. in sculleries, bath-rooms, and larders, 4½ inches by 10 inches, as Item No. 54, but smoothly finished on inside face where exposed (in lengths under 5 feet).	74				Extra for 1 Buchan's glazed fireclay patent disconnecting trap on 4-inch drain, having flat stone seat.
59		14	0	Linl. do. do. 4½ inches by 10 inches do. do. (in lengths of 7 feet).	75				Forming 1 connection of new to main drain, including taking out length of main drain, and providing and inserting new branch pipe of same diameter as existing drain to receive 4-inch drain, and properly cementing and making good, including extra excavation required at same.
60				1 cement concrete cope to chimney stalk, about 4 feet 6 inches by 4 feet 6 inches, and 6 inches thick, cast in mould, slightly weathered on top, neatly finished on exposed edges, with arris on horizontal and vertical angles, holed for 8 smoke flues, countersunk for 8 chimney cans, and set with cement. <i>Note.</i> —The foregoing lintels (including jambs and lintels to fireplaces in living-rooms) and cope to chimney stalk to be composed of 1 part cement to 3 parts of stone or brick, free from dust, broken to pass a ⅜-inch mesh, all well mixed in an approved manner. The concrete lintels have not been deducted from the quantities of brickwork.	76				2 manholes on drains, each of the requisite size and under 3 feet deep, having cement concrete bottom 6 inches thick made up within the walls, and smooth-floated towards access opening, 4½-inch brick walls built in cement and pointed on inside, and pavement cover 3 inches thick (price to include excavation additional to drain trench for same complete).
				<i>Sundries.</i>	77				1 do. do. on tail drain over 3 feet, and not exceeding 5 feet deep do. do. (do.)
61	26	4	6	Supl. bedding to granolithic floors in sculleries, larders, and coal-places, 6 inches deep, of clean broken stones or bricks, well blinded, beaten down, and levelled as directed.	78				9 cemented connections of plumber's pipes to drains.
62	9	0	0	Cube-making up below do., with hard, dry approved material, thoroughly packed and rammed.	79				Allow for testing drains with smoke, or otherwise as directed, to the satisfaction of the architect and local Sanitary Authority.
63				Forming 12 openings through 12-inch hollow brick walls for plumber's waste, etc., pipes, and afterwards neatly building up round same.	80				<i>Jobbings, Scaffolding and Sundries.</i>
64	9	0	0	Linl. cutting and refilling trenches for water-supply pipe, not exceeding 3 feet deep.					Allow for performing all mason and brickwork jobbings, attending on, cutting for, making good after, and rendering the usual assistance to all the other trades, cutting all holes, sinkings, etc., necessary, except those which have been specially measured.
				<i>Drains.</i>	81				Removing all rubbish of every description and of every trade that may accumulate from time to time during the progress of the works and at completion of same, and carting it away from the site to a deposit found by the contractor, and leaving the whole buildings and grounds in a clean and perfect state.
65	30	0	0	Linl. cutting and refilling trenches for drains, not exceeding 3 feet deep.					Providing water for this department of the contract, including supplying and fixing pipe of the required length, and nosecock with screwed nozzle and coupling for hose, leaving same for the use of the plasterer and other contractors requiring it, and afterwards removing same and restoring ground surface.
66	26	0	0	Linl. do. do. over 3 feet, and not exceeding 5 feet deep. <i>Note.</i> —The surplus material from drain trenches to be disposed of as described in Note after Item No. 2.					
67	54	0	0	Linl. best quality glazed fireclay drain-pipes, 4 inches diameter, jointed with cement.	82				
68				Extra for 8 bends on do.					
69				Do. for 5 branches on do.					
70				Do. for 2 Buchan's glazed fireclay patent inspection bends on 4-inch do. in manholes, each with cast-iron coated cover bedded in red lead.					

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
83				Allow for all the implements, tools, cranes, tacking, scaffolding, gangways, ladders, tressels, mixing platform and measures for concrete and mortar, etc., moulds, rods, and every appliance necessary for carrying on and completing the works.
84				Providing, erecting where directed, and afterwards removing the requisite tool-house and workmen's conveniences, including cleaning same as and when directed.
85				Allow for maintaining the work under this department of the contract for twelve months after the entire completion of contract. Amount for excavator, brick, and concretor works carried to Abstract. £

86	Contractors are requested to fill in rates to the following items:—			
87	Foundations to walls 6½ inches thick, formed of two courses of brick on bed built with cement mortar (1 to 4)			per suppl. yard.
88	Do. do. 4½ inches thick, formed of one course of brick on edge, built with do. (do.)			do. do.
89	Extra for brick walls being built with cement mortar (1 to 4)			per cube yard.
90	Extra for outer 4½ inch thickness of brick hollow walls being built with do. (do.) and trowel-pointing joints on one exposed face as work proceeds			per suppl. yard.
91	Painting exposed face of brick walls two coats patent liquid cement			do. do.
92	Rubble walls 2 feet thick, built with lime mortar			do. do.
93	Do. do. 1 foot 8 inches thick, do.			do. do.
94	Do. do. 1 foot 6 inches thick, do.			do. do.
95	Do. do. 1 foot 3 inches thick, do.			do. do.
96	Do. do. 1 foot thick, do.			do. do.
97	Hammer-dressed corners to external angles, window and door openings, etc.			per linl. foot.
98	Cement concrete walls 1 foot thick, composed as described for foundations (Item No. 3), but aggregate broken to pass a ¾-inch ring			per suppl. yard.
99	Strong timber temporary boarding and supports for do., including fitting up and removing, and all cutting and waste			do. do.
100	Outer hollow walls 1 foot thick, consisting of concrete blocks 4½ inches thick to outside and inside and 3-inch air cavity, and having twisted galvanised wrought-iron ties of similar pattern, and distributed as described for hollow brick walls (Item No. 9). The concrete blocks to be each 16 inches by 19 inches by 4½ inches, composed as above described for concrete in walls, manufactured on site by an approved machine, built with cement mortar (1 to 4), and the price to include all cutting, fitting, and waste at door and window openings, wallheads, roof, etc., and where else necessary and directed			do. do.

Mr J. Wilson—continued.

No.	Description of Work.	
101	Damp course to walls formed of two courses of strong slates, broken, bonded, and bedded in cement mortar (1 to 3)	per suppl. yard.
102	Layer of clean engine ashes not less than 3 inches deep spread over area below floors, including levelling and hard beating surface of ground below same	do. do.
103	Layer of cement concrete 3 inches thick, composed as described for foundations, but aggregate broken to pass a ¾-inch ring, spread over area below floors, including levelling and hard beating surface of ground below same	do. do.
104	Forming main roads with stone hand-laid pitching 9 inches deep, well blinded, and finished on top with 4-inch layer of whinstone, broken to pass an 1½-inch ring, well blinded, watered, and rolled, and finished with a camber, including the necessary excavation for same	do. do.
105	Forming paths with stone bottoming 4 inches deep, broken to pass a 2-inch ring, consolidated and blinded, and finished with a layer 3 inches deep of clean engine ashes, watered and rolled, and laid to the requisite declivities, including the necessary excavation for same	do. do.
106	Cement plaster on top of brickwork of chimney stacks, average about 1½ inch thick, smoothly polished, weathered off on top, and neatly finished round chimney cans	do. do.

CARPENTER, JOINER, GLAZIER, AND IRONMONGER WORKS SPECIFICATION.

1. *Timber.*—The timber for all carpenter work to be of good quality whitewood; for outer doors, windows, and other outside work, good quality redwood; and for inside doors and finishings generally, first quality whitewood, free from large or loose knots.

All timber for finishing to be carefully selected and kept clean for painter, and to stand the full specified size when finished.

2. *Price of Woodwork.*—The price of all woodwork to include all necessary grooving, tonguing, jointing, framing, morticing, and tenoning, and all work, labour, and fixings complete and requisite.

Bill of Quantities.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
				<i>Roof.</i>
				<i>Note.</i> —All joinings of roof timbers to be neatly half-checked, and each joint to have three steel-cut nails of sufficient length to form proper rivet.
107		59	0	Linl. purlins 6½ inches by 2½ inches.
108	135	0	0	Supl. rafters to roofs 4½ inches by 1½ inch at 18-inch centres.
109		323	0	Linl. ties to roof 4 inches by 2 inches (placed at 18-inch centres).

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.	No.	Quantity.			Description of Work.		
	Yds.	Ft.	Ins.			Yds.	Ft.	Ins.			
110		63	0	Linl. do. 4½ inches by 1½ inch do. tying in rafters at hip ends of roofs (in short lengths).	135	467	0	Linl. sleeper joists 4½ inches by 2 inches (placed at 18-inch centres).			
111		34	6	Linl. bridles to rafters and ties 5 inches by 2 inches (with rafters or ties at 18-inch centres trimmed on to same).	136	56	0	Linl. wallplates 4½ inches by ¾ inch on sleeper and fender walls.			
112		19	0	Linl. angle runners 4½ inches by 1½ inch, securely spiked to brick walls (do. do.).	137	298	0	Linl. joisting to upper floors 9 inches by 2 inches (placed at 18-inch centres).			
113		15	0	Linl. runners 4½ inches by 1½ inch, do. do. (with ties at 18-inch centres bevelled and trimmed on to same).	138	273	0	Linl. do. do. 7 inches by 2 inches (do.).			
114		61	0	Linl. wallplate 4½ inches by 1½ inch, firmly fixed to wallhead.	139	16	0	Linl. studding one face of 7 inches by 2 inches joists with nails as required to give key for plaster.			
115		23	0	Linl. ridge board 6½ inches by 1½ inch.	140	8	9	Linl. bridles at hearths 9 inches by 3 inches (with joists at 18-inch centres trimmed on to same).			
116		80	0	Linl. piend rafters 7 inches by 1½ inch (including cutting and fitting ends of rafters 4 inches by 2 inches at 18-inch centres to both sides of same), and for cutting small V-groove in top edge for water.	141	8	9	Linl. do. do. 7 inches by 3 inches (do. do.).			
117		53	0	Linl. valley rafters 7 inches by 3 inches (do. do.).	142	9	0	Linl. angular do. do. 9 inches by 3 inches (do. do.).			
118		6	6	Linl. uprights 6½ inches by 2½ inches under ends of purlins.	143	9	0	Linl. angular do. do. 7 inches by 3 inches (do. do.).			
119		23	0	Linl. rounded roll 2½ inches by 2 inches on ridge, fixed with double-shouldered iron spikes.	144	62	0	Linl. wallplates 4½ inches by ¾ inch, under joisting on brick partitions. <i>Note.</i> —No wallplates taken on outer walls under joisting.			
120		63	0	Linl. joisting to platform roofs 4½ inches by 1½ inch, tapered on top edge (placed at 18-inch centres).	145	53	0	Linl. dwangs to joisting, formed of cross-pieces 2½ inches by 1½ inch, neatly fitted and firmly nailed.			
121	9	0	0	Supl. ¾-inch grooved and tongued boarding to do.	146	126	4	6	Supl. ¾-inch whitewood flooring in 6-inch widths, grooved and tongued in joints, well nailed, and thoroughly cleaned off at completion.		
122		24	6	Linl. rounded rods 2 inches by 1½ inch at do. for zinc rolls.	147	35	0	0	Linl. labour and waste cutting and fitting flooring to angle. Whitewood borders of flooring mitred round 6 hearths, with bearers.		
123				Forming 4 haffits to sides of dormer windows, each about 1 foot 9 inches by 1 foot 9 inches at extremes, with ¾-inch grooved and tongued boarding, with runners and bearers complete.	148				6	Linl. jointing ends and edges of flooring to concrete floors.	
124	3	4	6	Supl. ¾-inch grooved and tongued boarding on standarding of haffits of roof over side roofs.	149				6	Linl. checked and bottled plates to edge of flooring at top of stairs 4½ inches by 1½ inch.	
125		15	6	Linl. labour and waste cutting and fitting do. to bevel at rake of roof. <i>Note.</i> —The standarding on which the foregoing boarding is fixed is included afterwards in the quantity of standard partitions.	150				6	6	Linl. do. hardwood do. to edge of flooring at entrance doors 4½ inches by 1½ inch.
126	131	0	0	Supl. ½-inch batten sarking to roof, plain-jointed and firmly nailed.	151				6	6	Linl. plates to breasts of top steps at stairs 8 inches by ¾ inch.
127		160	0	Linl. labour and waste cutting and fitting do. at piends.	152				6	6	Linl. hardwood do. to do. at entrance doors 5½ inches by ¾ inch.
128		85	0	Linl. do. do. at valleys.	153						
129		331	0	Linl. tilting fillets to eaves, etc.	154	45	4	6			
130		68	6	Linl. plates 4 inches by ½ inch behind lead flashings on harled walls, chamfered on top, with fixings.	155				7	6	Linl. labour and waste cutting and fitting do. to bevel at rake of roof.
				<i>Joisting, Flooring, etc.</i>	156				24	0	Linl. runners under standard partitions 4 inches by 2 inches, checked and fitted between the joists.
131				Centres to 4 arches under hearths.	157				38	0	Linl. joisting 4 inches by 2 inches, forming ceilings at top of stairs, etc. (placed at 18-inch centres).
132	10	0	0	Linl. bevelled fillets for springing to do.	158				17	6	Linl. runners to ends of do. 4 inches by 2 inches, securely fixed to partition standards.
133		19	6	Linl. safe lintels over windows and doors 4 inches by 4 inches, formed with two 4 inches by 2 inches spiked, studded with nails as required to give key for plaster.	159				40	0	Linl. forming coves in bedrooms with pieces 2½ inches by 1½ inch, firmly fixed (placed at 18-inch centres).
					160				8	6	Linl. labour and waste cutting and fitting do. to angle.
134		15	0	Linl. do. over do. 6 inches by 4 inches, formed with two 6 inches by 2 inches spiked do.	161	2	4	6			Supl. brandering 1½ inch by 1 inch at 14-inch centres, with runners and fixings on underside of stones carrying brickwork of chimney breast on first floor (measured nett).

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.	No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.			Yds.	Ft.	Ins.	
162	249	4	6	Supl. best Baltic split lath on standard partitions, ceilings, etc., not less than $\frac{1}{4}$ inch thick, and not more than $1\frac{1}{2}$ inch broad, placed $\frac{3}{8}$ inch apart, breaking bond every 2 feet, and double nailed with strong lath nails at the joinings.	183	48	0	Supl. 4 do. do., but each sash divided into 4 panes.	best quality strong hemp-sash line, best quality brass-faced axle pulleys and pulley boxes, and cast-iron or lead weights, as required for sheet glass.
163	15	0	0	Supl. lath with fillets for deafening in standard partitions.	184	191	0	Supl. 6 do. do., but made in compartments (12 compartments in all), and each sash of compartment divided into 4 panes.	
164				10 blocks with fixings on walls for gas brackets.					<i>Note.</i> —The batten rods of all windows to be fixed with brass screws in brass sockets.
<i>Doors and their Finishings.</i>									
165		73	6	Linl. dressed frames 6 inches by 2 inches to 4 exterior doors, rounded on two angles, checked for door, and grooved for plaster and rough-casting, with dook fixings.	185	29	0	Linl. extra for plain inside plate 6 inches broad to cases at mullions.	
166		70	0	Linl. do. do. 7 inches by 2 inches to 4 interior doors, rounded on four angles, checked for door and twice grooved for plaster, with do.	187	57	6	Linl. sills to windows $3\frac{1}{2}$ inches by $\frac{3}{4}$ inch, beaded on edge, tongued into sills of cases, with bearers.	
167		72	0	Linl. do. do. $6\frac{1}{4}$ inches by 2 inches to 4 interior doors, do. do.	188			20 beaded returned ends to do., rounded on corner.	
168		71	6	Linl. do. do. $5\frac{1}{2}$ inches by 2 inches to 4 interior doors, do. do.	189	179	6	Linl. small cavetto moulding planted on inside of cases to cover joining with plaster.	
169	113		6	Linl. do. do. $6\frac{3}{4}$ inches by 2 inches do. 6 do. in standard partitions do. do., with fixings.	190			28 mitres to do.	
170	37		6	Linl. do. do. 4 inches by 2 inches to 2 wall presses, rounded on two angles, checked for door and grooved for plaster.	191			28 butt do. to do.	
171				168 mitres to rounded angles of do.	192			Providing and fitting on 18 pairs brass strong ring sash lifters.	
172	82		0	Supl. 4 framed and lined entrance doors, $1\frac{3}{4}$ inch thick, stiles and top rail $1\frac{3}{4}$ inch thick, bottom and mid-rails and diagonals 1 inch thick, and lined one side with $\frac{3}{8}$ -inch grooved and tongued lining dressed and V-jointed both sides.	193			Do. do. 18 brass spring strong sash fasteners.	
173	355		0	Supl. 20 interior doors formed of $\frac{7}{8}$ -inch grooved and tongued lining in 4-inch widths, dressed and V-jointed both sides.	194	281	0	Linl. rounded fillet 1 inch by 1 inch on timber floors next plaster, with fixings (including for mitres, butts, and returned ends, etc.).	<i>Sundries.</i>
174	163		0	Linl. chamfered back-bars for do. 6 inches by $1\frac{1}{8}$ inch.	195	36	6	Linl. do. do. on timber floor next exposed brick walls in bathrooms (do.).	
175				4 pairs 7-inch, best make steel double-joint, edge hinges to doors, with screws.	196	113	0	Linl. picture moulding in living-rooms $1\frac{1}{4}$ inch by $\frac{3}{8}$ inch, hollowed for hooks, with grounds.	
176				22 pairs 12-inch, malleable iron, strong T-hinges to doors, with do.	197			16 mitres to do.	
177				Providing and fitting 12 6-inch rim locks with brass plain furniture both sides, to doors (prime cost, value 2s. each).	198	135	0	Linl. $1\frac{1}{8}$ -inch corner beads to angles, with fixings.	
178				Do. do. 8 rim latches with do. to do. (prime cost, value 1s. 3d. each).	199	28	0	Supl. $\frac{3}{4}$ -inch shelving in larders, with framed open bracket supports and chamfered fillets at ends as required.	
179				Do. do. 2 rim latches with snib and do. to do. (prime cost, value 1s. 6d. each).	200	14	0	Linl. do. do. 11 inches by $\frac{3}{4}$ inch do. do.	
180				Do. do. 2 press locks with brass plain sham furniture one side (prime cost, value 1s. each).	201	18	6	Supl. $\frac{3}{4}$ -inch do. over breaks in presses off stairs, with bearers.	
181				Do. do. 4 6-inch slip bolts to two-leaved doors at presses with keepers.	202	14	6	Linl. rounding edge of do.	
					203	5	0	0	Supl. $\frac{1}{2}$ -inch grooved, tongued, and V-jointed lining in narrow widths, with grounds to backs of two wall presses.
					204	36	0	Supl. $\frac{5}{8}$ -inch dressed sides and soffits to do.	
					205	26	0	Supl. $\frac{3}{4}$ -inch dressed shelving in wall presses, ragged.	
					206	8	0	0	Linl. double-moulded hat and coat belting 6 inches by $\frac{3}{4}$ inch, with fixings.
					207				4 returned moulded ends to do.
					208				Providing and fitting 8 japanned malleable-iron hat and coat hooks with screws.
182	38	0	0	Supl. 2 eased 2-inch sash windows, with moulded and checked framing and $\frac{7}{8}$ -inch astragals dividing each sash into six panes, cases of $1\frac{1}{2}$ -inch deal, with weathered and throated sills 4 inches thick, parting beads, batten rods, etc., double hung with	209	33	6	Supl. $1\frac{1}{4}$ -inch redwood deal forming cisterns, dovetailed at the corners and slip-leathered in the joints.	
					210	1	0	0	Supl. $1\frac{1}{8}$ -inch do. grooved and tongued flooring forming bottom to cisterns.

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.	No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.			Yds.	Ft.	Ins.	
211		19	0	Linl. bearers under do. 6 inches by 2 inches.	232				2 do. to do., each 2 feet 4 inches by 4 feet daylight, do. do.
212	1	4	6	Supl. lathing as before described, with strong bearers closing in cisterns over boilers in sculleries.					<i>Note.</i> —The blinds to be so made that when they are pulled down to the bottom of the window, one full roll of cloth to still remain on the roller.
213	2	0	0	Supl. lathing on underside of bearers below cisterns.					<i>Stairs.</i>
214		5	0	Linl. 1½-inch corner beads to angles, with fixings.	233	60	0		Linl. stringers next walls, 9 inches by 2 inches, with fixings.
215				2 doors for access to cisterns from sculleries, each 1 foot 6 inches by 1 foot 6 inches, formed of ¾-inch grooved and tongued lining with two back-bars, frame, pair 2-inch backfold hinges, button and knob, and 1½-inch by ½-inch facing to one side, rounded on two angles, with four mitres.	234	2	4	6	Supl. ¾-inch flooring to plats (as before described).
					235		6	6	Linl. checked and bottled plates to edge of flooring (do.).
					236		6	6	Linl. plates to breasts of plats (do.)
216				2 dressed plates, each of the requisite size, beaded on edges, and securely fixed to wall to receive brackets for iron flushing cisterns at water-closets.	237				28 scale steps of stairs, each 3 feet long, 1¼-inch treads, rounded on edge, and ¾-inch tongued breasts ragged into stringers, with brackets and blocks, etc., complete.
					238		6	6	Linl. rounded fillet on flooring of plats, as before described.
217				Birch coping round three sides of 2 sinks 4 inches by 1½ inch, of the necessary length, rounded on edges and corners, with bearers, and secured with brass screws.	239		70	0	Linl. do. do. planted on top of stringers, do.
					240	2	0	0	Supl. lathing as before described on soffits of plats.
218				2 birch shelves beyond sinks, each about 24 inches by 20 inches, and 1½ inch thick, rounded on edges and one corner, stop channelled on top for water run, with falls towards sinks, secured with brass screws, and having strong dressed bearers, complete.	241	1	4	6	Supl. do. with strong bearers, forming back wall of presses below stairs.
					242	6	4	6	Supl. do. with do. runners and fixings on raking soffits of stairs.
									<i>Glass.</i>
219				Birch boxing for plumber's taps at 2 sinks, each of the required size, with rounded edges.					<i>Note.</i> —The glass to be all of the very best quality of the respective kinds, carefully selected, free from waves, specks, and defects of every description, accurately cut to fit the various sashes, and carefully bedded, puttied, back puttied, and bradded. All glass to be at contractor's risk until the building is ready for occupation. The whole glass to be left clean and perfect in every respect at the completion of the entire contracts, and the prices to include for this.
220				2 dressed shelves to fireplaces in living-rooms, each about 5 feet long, 11 inches by 1¼ inch with fixings.					6 Supl. 21 ounce clear sheet glass in windows in panes as shown.
221				2 do. do. for gas meters, each of the requisite size, with do.					6 Supl. do. do. in lower sashes of bathroom windows, ground obscured one side do.
222				2 lids to wash boilers, formed of two thicknesses of ½-inch yellow pine, grooved and tongued in joints, copper nailed, with 3-inch brass backfold hinges, cross handle, and fixed piece cut for steam pipe, complete.	243	163	6	6	
223		8	0	Linl. pipe covers 6 inches by ½ inch, with beaded checked grounds, and secured with screws.	244		9	6	
224				Linl. three-sided pipe boxes, formed of ½-inch fronts and sides, beaded on angles, with grounds.					<i>Jobbings, Scaffolding, and Sundries.</i>
225		17	6	Linl. two-sided do. do. do.					Allow for performing all carpenter and joiner work jobbings, and attending on and rendering the usual assistance to all other trades.
226	2	4	6	Supl. 1½-inch whitewood flooring in batten widths, forming movable front in doors at coal places (taken 4 feet high.)	245				Do. for implements, tools, tackling, scaffolding, gangways, tressels, etc., required for carrying on and completing the work.
227		32	0	Linl. chamfered fillets for do., securely fixed.	246				Do. for priming all outside wood-work of windows, doors, etc., with one coat best oil-paint.
228		5	0	Linl. working rounded edge to top boards.	247				Do. for maintaining the work under this department of the contract for one year after entire completion of contract.
229				2 best Fern blinds to windows, each 3 feet 3 inches by 4 feet 6 inches daylight, having bottom hem. lath. roller, strong cord, and approved heavy brass spring mounting, and the blinds strongly tacked to roller, and all fitted and fixed complete.	248				Amount for carpenter, joiner, ironmonger, and glazier works carried to Abstract.
230				4 do. to do., each 2 feet 6 inches by 5 feet 6 inches daylight, do. do.					
231				8 do. to do., each 2 feet 6 inches by 4 feet 6 inches daylight, do. do.					

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Contractors are requested to fill in rates to the following items:—	
249	Tiling fillets on sarking 1½ inch by 1½ inch, and to be placed at about 10-inch centres (nett measure). <i>N.B.</i> —The tiling fillets, along with the requisite nails for fixing same, to be supplied by joiner to the slater, and the latter will cut and fix them in required positions to suit the tiles	per suppl. yard.
250	Wallstraps 1½ inch by 1 inch at 14-inch centres, to be nailed to dooks firmly driven into the holes 2 feet apart (including holing walls for dooks)	do. do.
251	Branding to ceilings 1½ inch by 1 inch at 14-inch centres	do. do.
252	Standard partitions 4 inches by 2 inches at 14-inch centres, with sills, top runners, and dwangs	do. do.
253	Lath deafening in standard partitions, with fillets	do. do.
254	1½-inch grooved and tongued whitewood flooring (in 6-inch widths), well nailed and thoroughly cleaned off	do. do.
255	1½-inch do. do. (in 4½-inch widths), do. do.	do. do.
256	1½-inch do. redwood flooring (in 6-inch widths), do. do.	do. do.
257	1½-inch do. do. (in 4½-inch widths), do. do.	do. do.
258	Bound four-panelled doors 1¾-inch thick, square framed both sides	per suppl. foot.
259	Do. do. 1½-inch thick, do. do.	do. do.
260	Do. do. 1¼-inch thick, do. do. <i>Note.</i> —The panels of doors may be formed out of approved plywood.	do. do.
261	Moulded and beaded facings 4½ inches by ½ inch	per linl. foot.
262	Mitres to do.	each.
263	Extra for pairs plain base blocks to do.	per pair.
264	Dressed, framed, checked, weathered, and throated sills to casement windows 4½ inches by 3 inches	per linl. foot.
265	Dressed, framed, checked, and throated stiles and lintels of frames 4½ inches by 2 inches, grooved on two edges for rough-cast and harling, with fixings	do. do.
266	Do. do. mullions 4½ inches by 2½ inches, checked and throated on two sides	do. do.
267	Sashes of windows 1½ inch thick, with moulded and checked framing and ¾-inch astragals dividing into small panes	per suppl. foot.
268	Labour checking and bevelling bottom rail of sashes next sills	per linl. foot.
269	Pairs 3-inch steel double-joint edge hinges to sashes, with screws	per pair.
270	Providing and fitting on sets quadrant fasteners and stays (prime cost, value 2s. per set)	per set.
271	Moulded skirtings 6 inches by ½ inch, with grounds	per linl. foot.
272	Do. 4½ inches by ½ inch, with do.	do. do.
273	Plain skirting 4 inches by ½ inch, with do.	do. do.
274	Mitres to moulded skirtings	each.
275	Butt do. to do.	do.
276	Returned moulded ends to do.	do.
277	½-inch grooved, tongued, and V-jointed or beaded whitewood linings to walls, with grounds (redwood)	per suppl. yard.
278	Do. do. with do. (whitewood)	do. do.
279	Beaded cope to liming 1½ inch by ½ inch	per linl. foot.

No.	280	Dressed sparred outside fencing, spars 2 inches by ½ inch, placed 1½ inch apart, and top and bottom rails 4 inches by 1½ inch (painted with one coat oil-paint)	per suppl. yard.
	281	Dressed posts for do. 4 feet 6 inches long, 4½ inches by 3 inches, pointed and charred and tarred at foot, and driven into ground do.)	each.
	282	Gates in fencing, each 2 feet 9 inches by 3 feet 6 inches, constructed similar to fencing, with framing, pair 12-inch T-hinges, and approved fastener	do.
	283	Ceil board or beaver board on ceilings well nailed to ceiling joists, etc.	per suppl. yard.
	284	Do. do. or do. on walls, well nailed to grounds dooked to wall The cost price of the ceil and beaver boarding is about 1¼d. per suppl. foot, and is subject to 10 per cent. special discount.	do. do.
	285	Small mouldings or fillets to cover joinings of ceil or beaver boarding on ceilings and walls, including mitres, butts, etc.	per linl. foot.

SLATER WORK SPECIFICATION.

1. The roofing slates to be "Pressed Fibro Cement Asbestos" red, blue, or grey slates, procured from any approved maker; to be 15¾ inches by 15¾ inches, laid on the diagonal or honeycomb system, having an angular cover of at least 2¾ inches, each slate to be fixed with two strong galvanised iron slate nails and one copper storm clamp.
2. The slating is measured net, no allowance being made in the superficial measurement for eaves, skewers, etc., these being reported separately by the lineal yard.

Bill of Quantities.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
286	135	0	0	Supl. covering roof boarding below slates with best quality inodorous roofing felt, securely fixed with large galvanised wrought-iron clout nails.
287	133	4	6	Supl. slating to roof with asbestos slates 15¾ inches by 15¾ inches, laid diagonally, and each fixed with two strong galvanised iron slate nails and one copper storm clamp as specified.
288	3	4	6	Supl. do. do. to haffits do. do.
289	35	0	0	Linl. extra for doubling course of slates at eaves, including cutting.
290	44	0	0	Linl. cutting and waste of slates at skewers.
291	12	1	6	Linl. do. do. at angled skewers.
292	27	0	0	Linl. double cutting and waste of slates at close mitred piends.
293	15	0	0	Linl. do. do. of slates at valleys.
294	26	0	0	Linl. pointing slates at open skewers with Portland cement mortar.
295	199	0	0	Supl. rough-casting to outside face of walls, chimney stalk, and ingoes of windows, the straightening coat to be ½ inch thick, composed of 1 of cement to 2 of well-washed river sand, and the rough-cast to be composed of 1 of cement to 2 of sharp well-washed approved river

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
296				sand and gravel not exceeding the size of peas. The harling to receive 1 coat of Irish lime wash when directed. The whole of the wall surfaces to be carefully brushed down, joints raked out and thoroughly damped before the harling is begun, and all woodwork to be carefully protected while the harling is being done, or washed perfectly clean, and the price to include all labour at arrises, etc.
297				Cleaning out all rhones, etc., examining roofs, and replacing all broken, cracked, or loose slates at completion of the works, and leaving the slater and rough-cast work perfect in every respect, and upholding it thus for one year after completion of contracts. Providing, fixing, and afterwards removing the requisite scaffolding, etc., in connection with this contract. Amount for slater work carried to Abstract.
				£

No.	Description of Work.	Unit
298	Contractors are requested to fill in rates to the following items :— Fixing tiling fillets (which, along with the necessary nails for same, will be supplied by the joiner) to sarking at about 10-inch centres. N.B.—The tiler is to cut the fillets to the lengths necessary, and at piends, etc., and the price of fixing to include for this	per suppl. yard.
299	Covering roofs with first quality French red pan tiles, each about 9½ inches by 13 inches, and ½ inch thick, procured from approved maker properly laid on the tiling fillets, with the requisite cover	do. do.
300	Labour and waste cutting and fitting pan tiles against sides of chimney stalks	per linl. yard.
301	Double cutting and waste of tiles at piends	do. do.
301A	Do. do. at valleys	do. do.
302	Best quality half-round red tiles to ridges and piends, well bedded in cement, and neatly pointed with cement coloured to match tiles	do. do.
303	Cement flashings to tiles at chimney stalks	do. do.
304	Best small-sized Aberfoyle slates, all properly dressed and machine-bored, having 2½-inch cover at the eaves, diminishing to 2 inches at ridge, all double-nailed with galvanised wrought-iron slate nails weighing 10 lbs. per 1000	per suppl. yard.
305	Best "Seconds" Port Dinorwic small-sized slates, do. do.	do. do.

PLUMBER WORK AND GAS-PIPES
SPECIFICATION.

1. *Sheet Lead*.—All sheet lead to be of good quality English milled lead, free from defects.
2. *Zinc*.—The zinc to be all of the best quality, and procured from the Vicille Montagne Zinc Mining Company.

Mr J. Wilson—continued.

3. *Lead Pipes*.—All lead pipes and traps to be solid hydraulic drawn, and all joints on lead piping to be wiped solder joints.

The price of all lead service, supply, waste, and ventilating pipes, etc., to include for the requisite bends.

The sizes stated for all pipes, lead or iron, are in all cases to be understood as internal diameters.

4. *Castings*.—All castings to be of best quality, sound and clean, free from all air holes and flaws, and without twist, and the price to include for all patterns required.

5. *Price of Plumber Work*.—The price of all plumber work to include all charges for solder, holdfasts, fixings, and every expense necessary to entirely complete the work.

Bill of Quantities.

No.	Quantity.		Description of Work.
	Ft.	Ins.	
306	23	0	Linl. No. 14 zinc covering ridges 14 inches broad, secured with strong galvanised malleable-iron straps 1½ inch by ⅜ inch at not more than 30 inches apart, fixed with strong lead-covered nails.
307	43	6	Linl. 6 lb. lead lining valleys 14 inches broad.
308	80	6	Linl. 5 lb. lead flashings to skews of chimney stalk and hafts 12 inches broad (copper tacked to timber plates).
309	11	6	Linl. 5 lb. lead flashings 6 inches broad to vertical edge of slates at hafts (do.).
310	9	0	Linl. 5 lb. do. do. 6 inches broad to vertical edge of zinc at hafts (do.) and properly clinked to zinc.
311	102	0	Supl. No. 14 zinc covering platform roofs.
312	24	6	Linl. do. roll caps 2 inches by 1½ inch, with soldered ties.
313			7 soldered zinc closed ends to do.
314	14	0	Linl. securing zinc at sides of platform roofs, with close copper tacking and white lead.
315	10	6	Supl. No. 14 zinc covering hafts of dormers (nett measure).
316	9	0	Linl. No. 14 zinc flat covers 3 inches girth to joints on zinc at do., with ties.
317	82	0	Linl. 5 lb. lead flashing 6 inches broad under slating at close-nitred piends, dressed into V-groove in piend rafters.
318	82	6	Linl. cast-iron half-round gutters to eaves 4½ inches diameter inside, with bead on outer edge, of approved manufacture (medium weight), carefully jointed with red lead, and screwed together with brass bolts and nuts, and secured to the sarking every 22 inches apart, with strong galvanised iron straps 2 inches broad.
319	41	0	Linl. do. do. to eaves of dormers 4 inches diameter do. do.
320			Extra for 4 cast-iron external square-angle pieces to 4½ inches diameter do.
321			Do. for 4 do. to 4 inches diameter do.
322			Do. for 8 do. drop pieces to 4½ inches diameter do.
323			12 cast-iron plain stop ends to 4½ inches diameter do.
324			Cutting 8 ends of 4½ inches and 4 inches diameter do. neatly to bevel next roofs.
325	72	0	Linl. cast-iron rainwater pipes 3 inches diameter, of approved manufacture (medium heavy), jointed with red-lead putty and hemp, and secured with strong galvanised malleable-iron bands batted to brickwork with lead.
326			4 cast-iron shoes on 3 inches do.
327			8 strong copper wire rose gratings in eaves gutters.

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Mr J. Wilson—continued.

No.	Quantity.		Description of Work.	No.	Quantity.		Description of Work.
	Ft.	Ins.			Ft.	Ins.	
328			4 5-lb. lead flanges at foot of rainwater pipes next fireclay drains.	344			2 $\frac{3}{4}$ -inch do. draw-off cocks at do. with non-conducting handles and properly connected to cast-iron nozzles.
			<i>Inside Work.</i>				
329	40	0	Supl. 5 lb. lead lining cisterns, the lead to be fused at the joints with hydrogen blowpipe in place of being soldered.	345			2 strong zinc-kneed steam pipes at boilers, each about 2 feet 6 inches long and 3 inches diameter, flanged at ends, and securely fixed.
330			2 $\frac{1}{2}$ -inch brass ballcocks of approved pattern, with stopcock attached, and large strong tinned copper ball, securely fixed.				<i>Note.</i> —The boilers to be of approved pattern and manufacture, and each to be made rustless on inside.
331			2 1-inch brass wastes and wasting washers in cisterns, with piece 5-lb. tapered lead standing overflow pipe of the required length.				<i>Supply and Service Pipes.</i>
332			2 brass valves for shutting off service from cisterns, with copper wires and hooks.	346	60	0	Linl. $\frac{3}{4}$ -inch lead supply pipe from main in roadway to cisterns, weighing 10 lbs. per yard (taken 26 feet out from front of building).
333			2 Wash-down closets of approved manufacture in best strong fireclay, white enamelled inside and outside, and having polished hardwood seats with seat extensions, brass hinges, and india-rubber buffers, also three-gallon galvanised cast-iron flushing cisterns of approved pattern, with bracket supports, brass chains, and porcelain handles, and $1\frac{1}{2}$ -inch bent lead service pipes from cistern to closet, secured with bands, the one at seat having rubber buffer and $\frac{5}{8}$ -inch composition overflow pipe taken to outside, all fitted and fixed complete.	347	9	0	Linl. $\frac{1}{2}$ -inch do. do. weighing 7 lbs. per yard in branches to cisterns.
				348			1 $\frac{3}{4}$ -inch gunmetal underground stopcock on supply pipe.
				349			1 cast-iron stopcock ease for do., with hinged lid and brick in cement-built eye complete.
				350			1 strong malleable-iron key of the requisite length, with cross handle for turning stopcock.
				351			1 connection of $\frac{3}{4}$ -inch lead supply pipe to iron main, including warrant and water commissioners' charge.
334			2 Cast-iron "Dwellings" baths, each 4 feet 9 inches long, 1 foot 10 inches wide, and 1 foot $4\frac{1}{2}$ inches deep inside, with $2\frac{1}{2}$ -inch roll edge, greenstone enamelled inside and on edge, and plain painted outside, set on cast-iron plain painted feet, and fitted with $1\frac{1}{2}$ -inch plug waste with brass washer and chain, two $\frac{3}{4}$ -inch brass globe valves for hot and cold water, $1\frac{1}{2}$ -inch glass enamelled trap, $1\frac{1}{4}$ -inch brass overflow connected to waste with piece lead pipe of the necessary length, and porcelain enamelled cast-iron single soap-dish to fix between valves, all fitted and fixed complete.	352	29	0	Linl. $\frac{3}{4}$ -inch lead service pipes to the various fittings, weighing 10 lbs. per yard.
				353	28	0	Linl. $\frac{1}{2}$ -inch do. do. weighing 7 lbs. per yard.
				354	79	6	Linl. carefully wrapping the lead supply and service piping inside of building with double thickness of dry hair felt, properly secured with strong copper wire, each pipe to be wrapped separately.
							<i>Hot-water Supply to Fittings.</i>
335			2 best quality fireclay sinks in sculleries, each 24 inches by 18 inches by 10 inches, outside size, with roll edge to front, white enamelled in the best manner on inside, roll edge and front of outside, with openings for waste gratings, and the sinks having overflows east on, all fitted and fixed complete.	355	44	0	Linl. $\frac{3}{4}$ -inch lead service pipes from cisterns to boilers, weighing 9 lbs. per yard.
				356	46	6	Linl. 1-inch galvanised wrought-iron expansion and cleansing piping with screwed sockets and fixings, and the price to include for all fittings such as crosses, T-pieces, bends, knees, etc., as may be required, all to be put together with red lead and made perfectly staunch.
336			2 sets strong galvanised iron approved pillar supports below sinks of the required size, with screwed flanged ends let into walls, and concrete floors run up with lead and securely fixed.	357	11	0	Linl. $\frac{3}{4}$ -inch do. cleansing pipes do. do. <i>Note.</i> —No bends will be allowed to be formed on the iron hot-water piping. In all cases purpose-made bends or knee pieces must be provided, and, where practicable, bends are to be used in preference to knees.
337			2 $2\frac{1}{2}$ -inch brass plugs, each with strong chain, grating, and screwed socket for sinks.	358	84	0	Linl. $\frac{3}{4}$ -inch lead hot-water piping to the various fittings, etc., weighing 10 lbs. per yard.
338			2 solid-drawn lead traps to sinks, each $2\frac{1}{2}$ inches diameter (equal to 6 lbs. lead) with brass trap-screw.	359			6 brass-screwed connections of $\frac{3}{4}$ -inch lead piping to boilers.
339			2 lead-tapered connections from traps, etc., to sockets in bottom of sinks.	360			2 brass do. do. of $\frac{3}{4}$ -inch lead to iron pipes.
340			2 $\frac{3}{4}$ -inch brass screw-down nose-cocks for hot water at sinks, with screwed tails, couplings and flanges.	361			2 $\frac{3}{4}$ -inch brass stopcocks on cleansing pipes with screwed tails, iron key, and 6-inch iron-plate cover screwed to floor.
341			2 $\frac{1}{2}$ -inch do. do. on main at do.	362	156	6	Linl. carefully wrapping the hot-water service piping with hair felt, as before.
342			2 cast-iron boilers in sculleries, each to contain 15 gallons, with nozzle, furnace, grate, door, damper, brander, etc., complete (to be built in by mason).	363			1 lead flashing of the required size, where iron expansion pipe passes through roof with upstand and made perfectly water-tight.
343			2 $\frac{1}{2}$ -inch brass screw-down nose-cocks on service pipes at do., with soldered tails.				

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.		Description of Work.
	Ft.	Ins.	
<i>Waste, Soil, and Ventilating Pipes.</i>			
364	18	0	Linl. 1-inch solid-drawn lead waste pipe from cisterns (equal to 5 lbs. lead).
365			2 brass flanged nozzles on ends of do. discharging over baths.
366	6	0	Linl. cast-iron waste pipes, 3 inches diameter from baths, below ground.
367	24	0	Linl. do. soil and ventilating pipes 3½ inches diameter, secured with strong galvanised malleable-iron band fixings, battled with lead.
368			2 cast-iron bends on 3-inch diameter pipe.
369			2 do. on 3½-inch diameter do.
370			1 do. offset bend on 3½-inch do. to clear projection of eaves gutter.
371			2 do. branches on 3½-inch do.
372			Extra for 1 lower length of 3½-inch cast-iron soil and ventilating pipe having cast-iron access plate in same immediately at ground surface, with curved inner face to suit pipe, secured with brass bolts.
373			1 strong copper wire spherical cover on top of 3½-inch diameter pipe. <i>Note.</i> —The whole of the foregoing cast-iron waste, soil, and ventilating pipes with their fittings to be all of approved manufacture, of metal not less than ⅜-inch thick, caulked in the joints with hemp, and run up and staved with molten lead, and made perfectly staunch, and to be coated outside and inside with Dr Angus Smith's solution.
374	10	6	Linl. solid-drawn lead soil-pipe branches from water-closets, 3½ inches diameter (equal to 7 lbs. lead).
375	7	0	Linl. do. waste pipes from sinks, 2½ inches diameter (equal to 6 lbs. lead).
376	4	0	Linl. do. do. from baths, 1½ inch diameter (do.).
377	20	0	Linl. do. do. air pipes from traps of sinks and baths, 1½ inch diameter (equal to 5 lbs. lead).
378			4 beaded ends to do., with copper-wire gratings.
379			2 connections of 3½-inch lead soil-pipe branches from water-closets to bend on 3½-inch cast-iron pipe, each with brass ferrule, soldered to lead pipe, and run and staved into iron pipe with lead.
380			2 do. of 2½-inch lead waste pipes to branches on 3-inch cast-iron pipe with do. do.
381			5 5-lb. lead flanges at foot of waste and soil and ventilating pipes next fireclay drains.
<i>Gas Pipes.</i>			
<i>Note.</i> —The gas-supply pipes and gas meters are taken to be provided by the Local Authorities.			
382	73	0	Linl. composition gas piping ½-inch diameter, price to include for the requisite brass common couplings.
383	51	0	Linl. do. do. ½-inch diameter do. do.
384			Connecting 2 ends of composition gas piping to couplings at meters.
385			Taking delivery of, fitting, and fixing complete 12 gas brackets throughout houses.
<i>Sundries.</i>			
386			Allow for thoroughly testing the whole of the plumber work and gas pipes, providing, fixing, and removing scaffolding, tackling, etc., and maintaining the work for one year after entire completion of contracts. Amount for plumber work and gas pipes carried to Abstract. £

No.	Description of Work.	
<i>Note.</i> —Contractors are requested to fill in rates to the following items:—		
387	Strong wrought-iron galvanised tank to contain rainwater, about 3 feet by 3 feet by 3 feet, properly stayed, having aperture for rain-water pipe, ¾-inch brass draw-off cock, and cleansing door, complete	each.
388	Flanged connections on tank for ¾-inch galvanised iron draw-off pipes	do.
389	Providing and fixing complete the requisite wiring and steel-drawn enamelled tubing from main switches to points in houses	per point.
390	Double-pole main switches and fuses for disconnecting installation in each house, each to be enclosed in neat stained, varnished, and glazed cases	each.
391	Rise and fall single-light pendants with flexible wiring, holder, carbon-filament lamp, shade, and controlled by one switch	do.
392	Single-light cord pendants with do. do. and do.	do.
<i>Note.</i> —The electric lighting to be all fitted up as directed by, and materials used to be in accordance with, the requirements of the Local Authority.		

PLASTER WORK SPECIFICATION.

1. *Plaster.*—The lime for plaster to be of the best well burned fresh lime shells, slaked with pure water, covered with clean, sharp river or pit sand, and mixed in the proportion of 1 part lime shells to 3 parts of sand, with 1 lb. of approved hair to every 3 cubic feet of mortar.
The finishing coat to be of 1 part lime shells run into putty, and mixed with sand and hair in approved proportions.
The lime mortar to be soured up at least six weeks before being used.

2. *Cement.*—All cement to be of British Portland cement, as specified in Bill of Quantities for excavator, brick, and concrete works.

3. *Plaster Surfaces.*—All plaster to be hard rubbed in, very carefully straightened to grounds, hand floated, polished smooth, and finished free from cracks, water marks, blisters, or any other defects.

Bill of Quantities.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
393	253	0	0	Supl. 3 coats plaster to lathed walls and camp ceilings and ceilings.
394	260	4	6	Supl. 2 coats do. on brick walls.
395	3	4	6	Supl. do. do. to ingoes of windows and doors (in narrow widths).
396	15	0	0	Supl. 1 thick coat of well-haired lime for deafening in standard partitions.
397	8	4	6	Supl. 1 coat do. for rendering on walls behind linings at wall presses.
398				Bedding 12 window cases in well-haired lime, and afterwards pointing them outside with best mastic and linseed oil.
399				Mending plaster and pointing round 4 chimney-pieces in rooms.
400				Do. do. round 2 timber shelves at fireplaces in living-rooms.

Mr J. Wilson—continued.

Mr J. Wilson—continued.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
401	47	0	0	Linl. double relieving corner beads.
402		146	6	Linl. forming rounded corners in plaster.
403				20 mitres to do.
404	27	6	9	Supl. Portland cement granolithic paving in sculleries, coal-places, and larders, 2½ inches thick in all, the lower 1½ inch being composed of 1 part cement to 4 parts of clean small broken brick, stone, or gravel, all well rammed and finished on top with a 1-inch layer of concrete composed of equal proportions of cement and crushed granite, both layers to be laid simultaneously and finished off on top with a smooth and perfectly level surface.
405		6	6	Linl. forming breast to exposed edge of floors at back entrance doors with granolithic finishing (including providing, fitting, and removing temporary timber casing at same).
406				Cement concrete composed, laid, and finished all as described for concrete floors, forming 2 hearths in living-rooms ground floor, each about 4 feet 6 inches by 2 feet 6 inches at extremes.
407				Do. do. forming 4 hearths in bedrooms first floor, each about 2 feet 6 inches by 2 feet 9 inches at extremes.
408				4 cast concrete steps at entrance doors, each 4 feet 3 inches long, 18 inches by 6 inches, finished smooth on tread, breast, and two ends, include for the necessary under-building and excavations for same.
409				Mending all broken plaster and concrete from time to time during the progress of the entire work and at completion of same, including after plumbers, gasfitters, and all other trades, and leaving the work perfect in every respect.
410				Allow for providing and erecting scaffolding, planks, battens, ladders, tressels, supports, etc., required in connection with this department of the contract.
411				Do. for water.
412				Do. for maintaining work for one year after entire completion of contracts. Amount for plaster work carried to Abstract.

£

PAINTER WORK SPECIFICATION.

All materials used to be of good and approved quality. No size, stain, glue, or medium of any kind to be used.

Bill of Quantities.

No.	Quantity.			Description of Work.
	Yds.	Ft.	Ins.	
<i>Inside Work.</i>				
419	182	4	6	Supl. 1 coat distemper on ceilings.
420	335	0	0	Supl. 2 coats do. on plastered walls.
421	109	0	0	Supl. 2 coats do. on brick walls in sculleries, bathrooms, and larders.
422	262	4	6	Supl. sizing, staining, and 2 coats varnish on all inside woodwork.
423				3 coats oil paint on 4 east-iron mantel-shams in bedrooms.
424				Do. do. on jambs and lintel at 2 living-room fireplaces.
425				3 coats oil paint on 2 cast-iron flushing cisterns, with brackets at water-closets and service pipes, etc., at same.
426				3 coats do. on outside of 2 baths and on the exposed portions of traps and piping at same.
427				3 coats do. on the exposed portions of 2 iron stands at sinks, also on exposed lead waste, etc., pipes at same.
<i>Outside Work.</i>				
<p><i>Note.</i>—The last coat of painting on work under this heading to be mixed with quantity of varnish to give greater durability, and the price to include for this.</p>				
428	15	4	6	Supl. 3 coats oil paint on outside of doors.
429	25	0	0	Supl. 3 coats do. on outside of windows (daylight size measured).
430	27	1	6	Linl. 3 coats do. on inside and outside of 4½-inch diameter east-iron eaves gutter.
431	14	0	0	Linl. do. do. on inside and outside of 4-inch diameter do. do.
432	21	1	6	Linl. 3 coats do. on outside of east-iron rainwater pipes with their fixings.
433	7	0	0	Linl. 3 coats do. and 1 coat knotting on outside of east-iron soil and ventilating pipe with do.
<i>Sundries.</i>				
434				Allow for preparatory work previous to painting, filling up nail and other holes with lead putty, and carefully metal knotting all knots in woodwork.
435				Do. for providing and erecting all scaffolding ladders, tressels, etc., required in connection with this department of the contract.
436				Do. for cleaning out all apartments, washing floors, and cleaning windows, etc., at completion of entire contracts, and leaving the whole building ready for occupation. Amount for painter work carried to Abstract.

£

No.	Contractors are requested to fill in rates to the following items:—	
413	1 coat haired lime plaster deafening standard partitions	per supl. yard.
414	Portland cement flush skirting 6 inches high, finished off the hand float (extra to price of 2 coats lime plaster)	per linl. foot.
415	Stucco cove run at junction of ceilings and walls to 2½ inches radius with fillet	do. do.
416	Mitres to do.	each.
417	Butt do. to do.	do.
418	Returned moulded ends to do.	do.

Mr J. Wilson—continued.

No.	Contractors are requested to fill in rates to the following items :—	
437	3 coats paint on inside woodwork .	per suppl. yard.
438	3 coats do. on sparrd timber outside fencing (one measure to be given for each side)	do. do.

GENERAL NOTES.

1. The contractor to furnish all materials, workmanship, cartages, carriages, implements, tackling, scaffolding, etc., required to carry on and complete the work in accordance with the Plans, Specification, and Bill of Quantities.
2. The whole work comprised in the contract to be carried on in such manner as will be directed.
3. The contractor to be responsible for all risks incurred from fire, weather, accident, or other causes in connection with the whole works, until the same is handed over complete.
4. For contractors' convenience and information, a copy of the Plan of the Building is affixed to the Bill of Quantities.
5. Samples of all materials proposed to be used in the work to be provided by the contractor when requested.
6. In order to secure economy in construction, all doors and windows have been designed to uniform sizes, and the building generally has been designed with uniform details. The two houses in the block are identical, as will be seen on referring to the affixed plan.
7. The work is measured according to the Edinburgh mode of measurement.

Mr J. Wilson—continued.

ABSTRACT.

Amount for excavator, brick and concretor works.
Do. carpenter, joiner, ironmonger, and glazier works.
Do. slater work.
Do. plumber work and gas pipes.
Do. plaster work.
Do. painter work.
Total £

Note.—The ranges, grates, gas fittings, laying out of grounds, paths, and fencing have not been included in the Bill of Quantities.

ALTERNATIVE ESTIMATES.

Contractors are requested to state here what percentage they would be prepared to deduct from the foregoing total amount (which represents the cost of one block of two houses—Type C) in the event of (1) 12 similar blocks, and (2) 50 similar blocks, being erected in place of a single block.

1. If 12 blocks (Type C) be erected under one contract, in place of a single block, the percentage to be deducted from the foregoing total amount is.....
2. If 50 blocks (Type C) be erected under one contract, in place of a single block, the percentage to be deducted from the foregoing total amount is.....

Measured from the Plans by
 PETER LAWRENCE & Co., F.F.S.,
Surveyors.

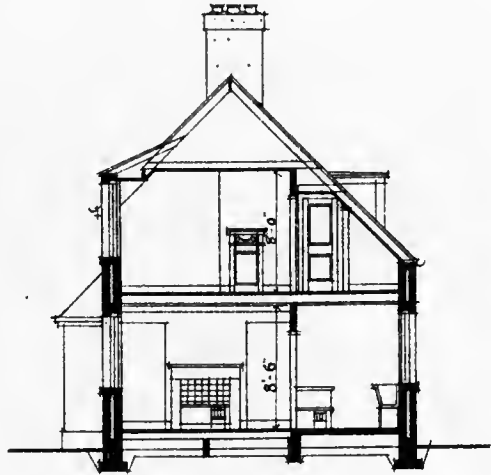
50A FREDERICK STREET,
 EDINBURGH, 21st October 1914.



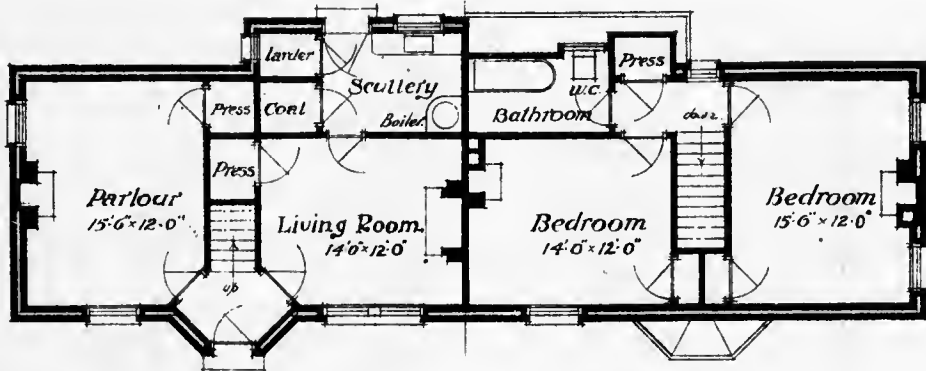
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• Side Elevation •



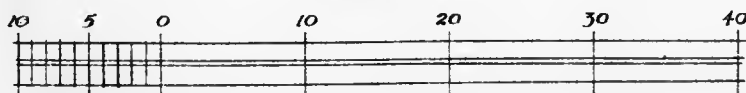
• Section •



Ground Floor Plan

First Floor Plan

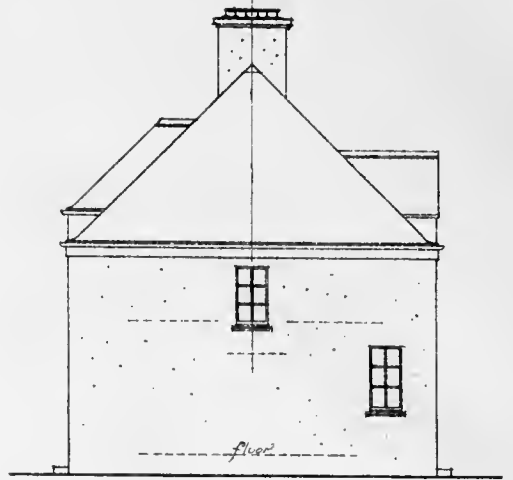
Scale of Feet



B



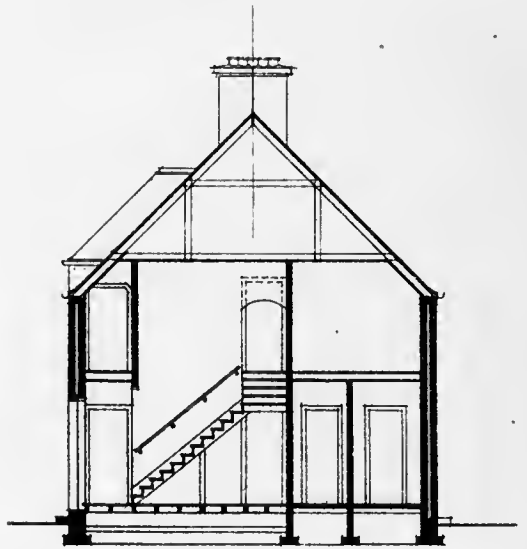
• Back • Elevation •



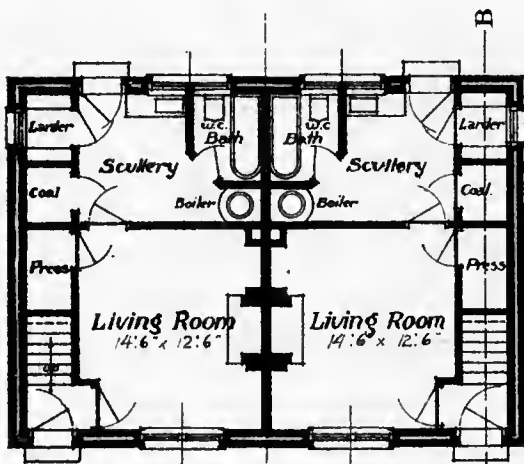
• Side • Elevation •



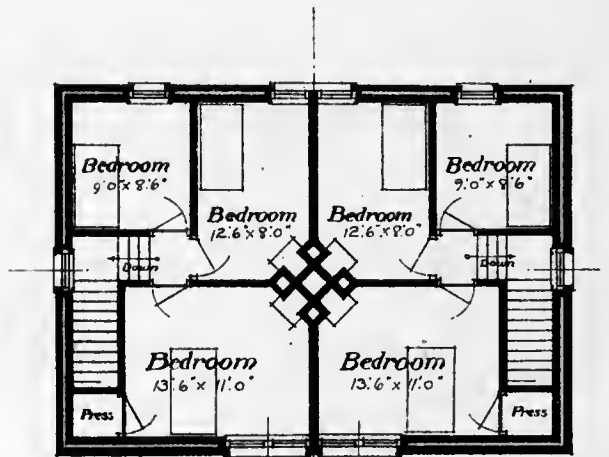
• Front • Elevation •



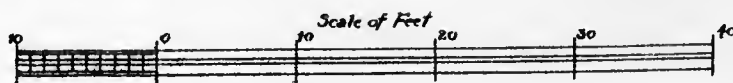
• Section • A • B •



• Ground • Floor • Plan

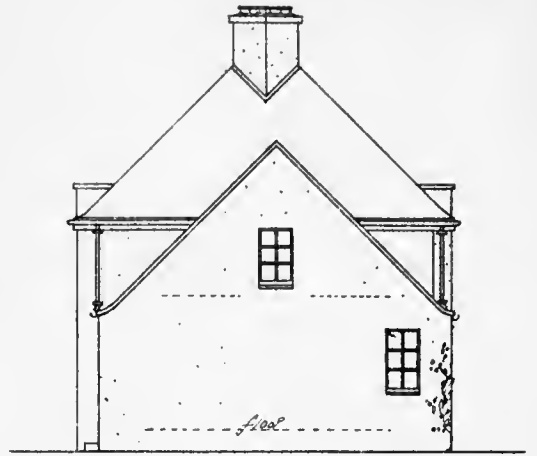


• Upper • Floor • Plan •

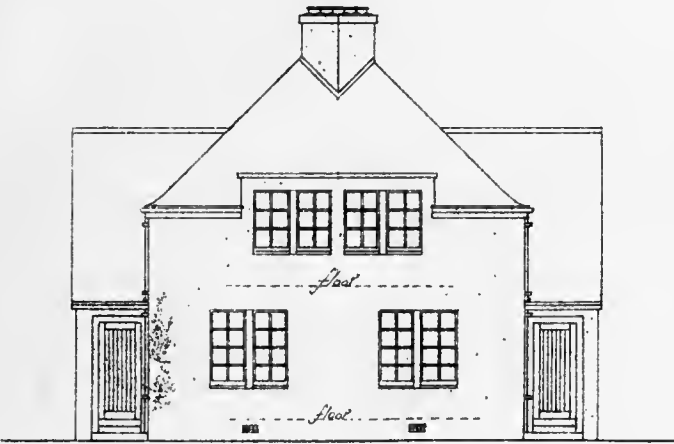




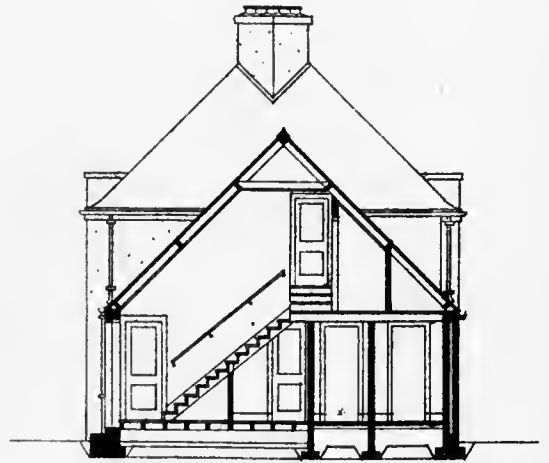
• Back • Elevation •



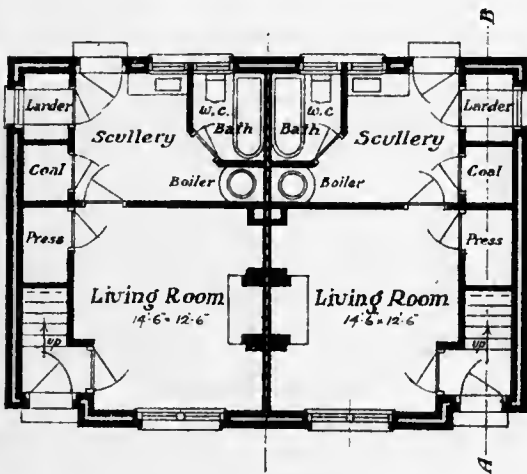
• Side • Elevation •



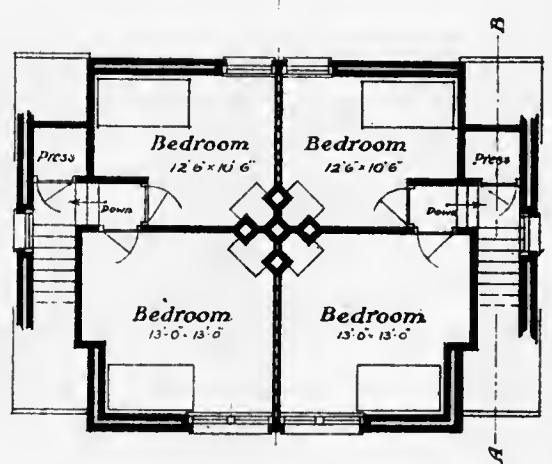
• Front • Elevation •



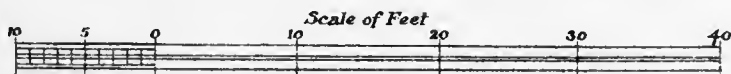
• Section A • B •



• Ground • Floor • Plan •



• Upper • Floor • Plan •



D - E



•Front Elevation•



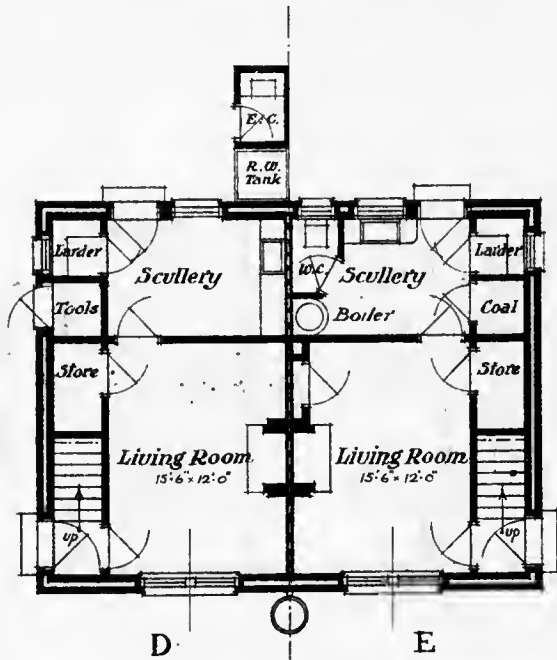
•Back Elevation•



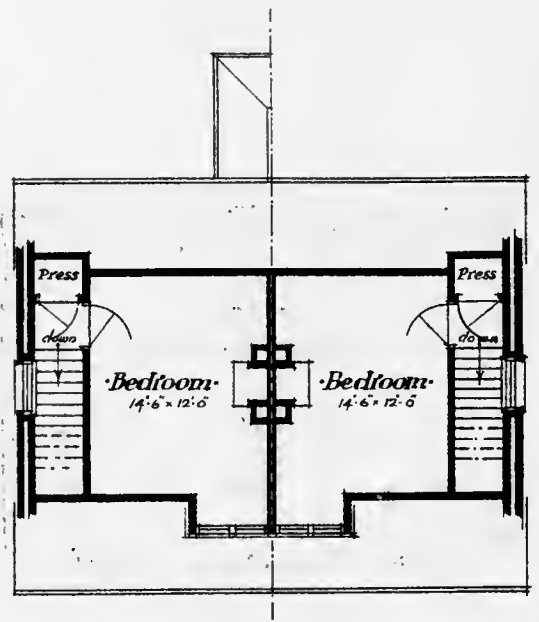
•Side Elevation•



•Section•

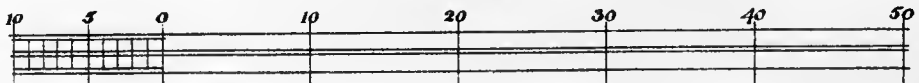


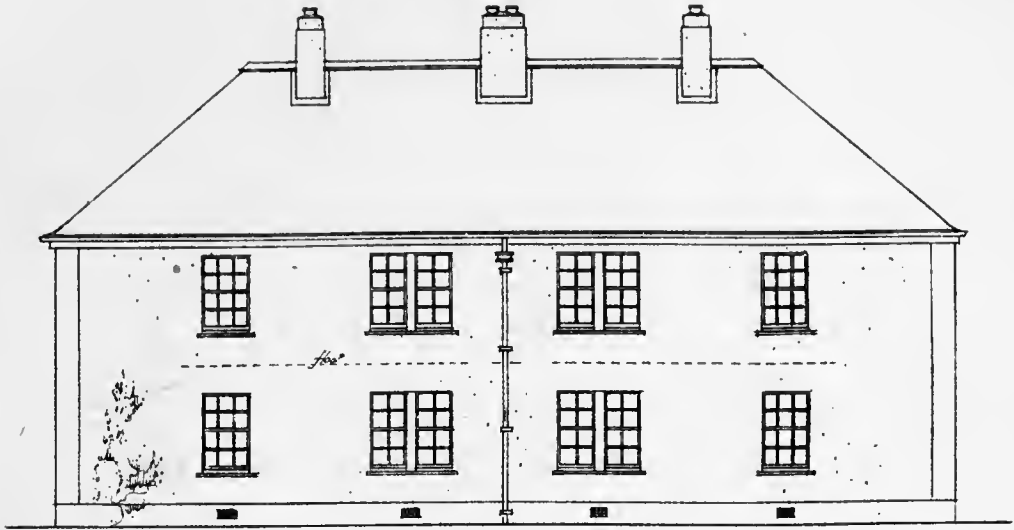
•Ground Floor Plan•



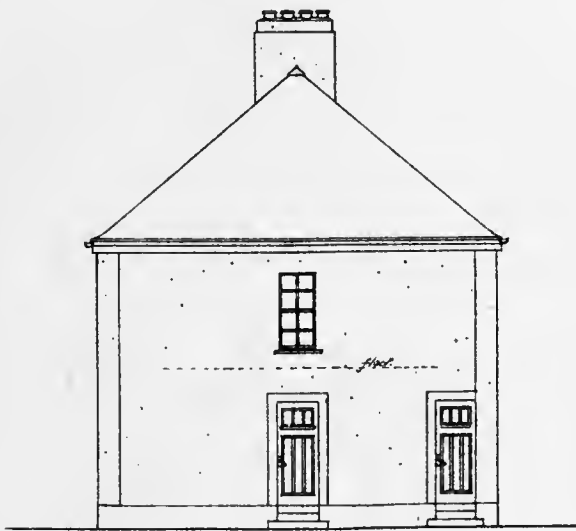
•Upper Floor Plan•

Scale of Feet

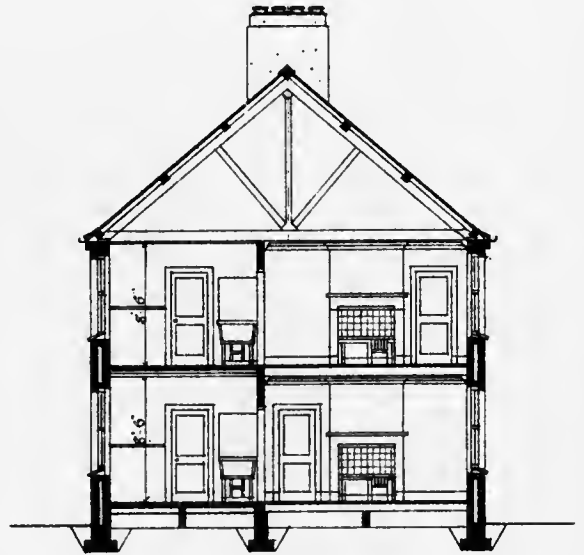




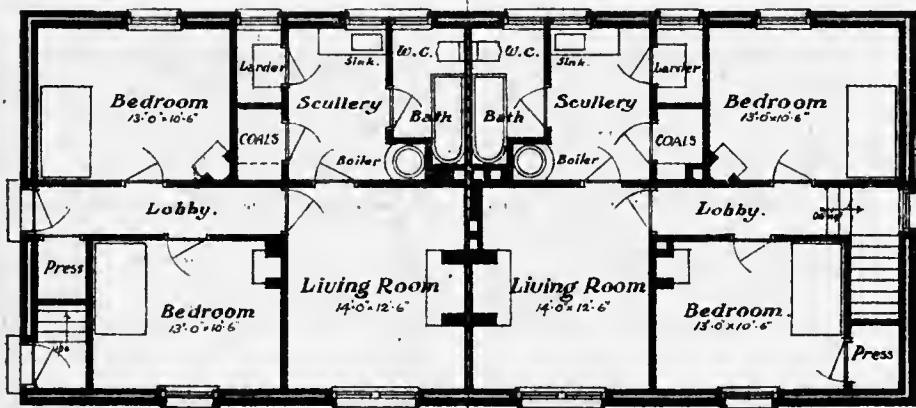
•Front •Elevation •



•Side •Elevation •

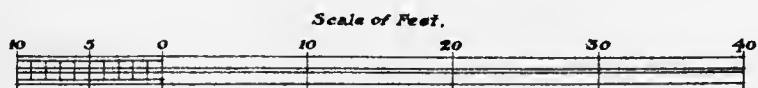


•Section •

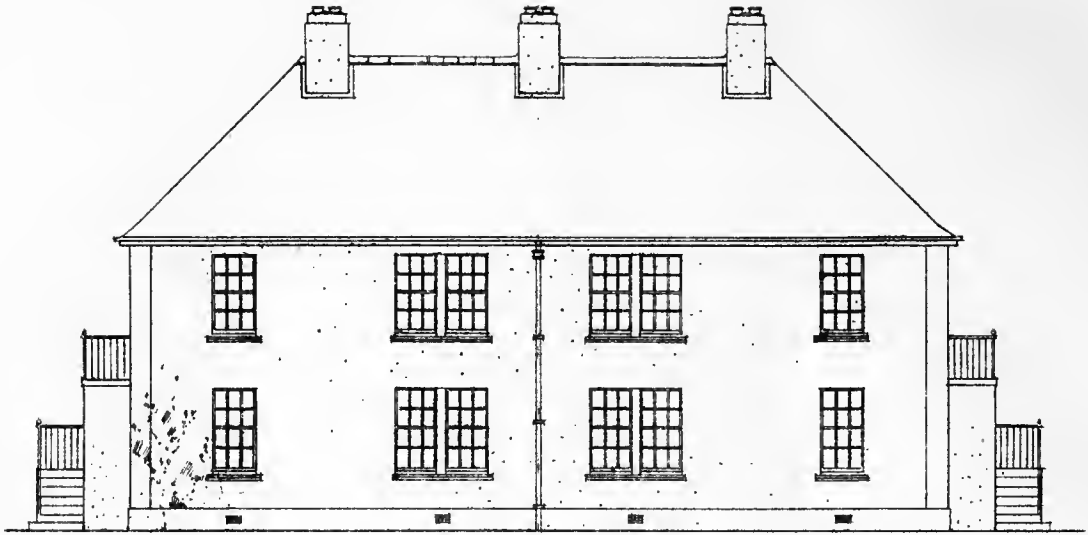


• Ground • Floor • Plan •

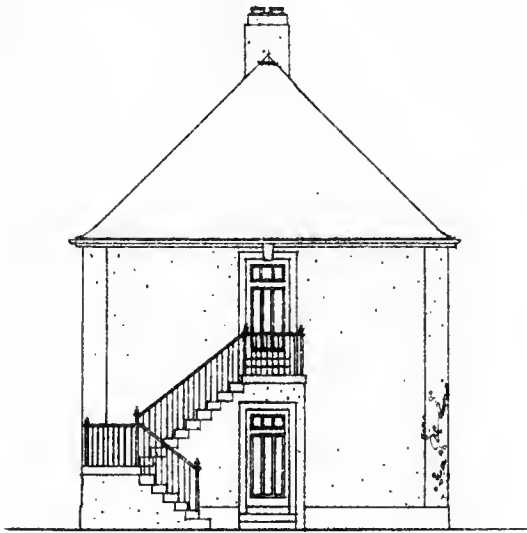
• Upper • Floor • Plan •



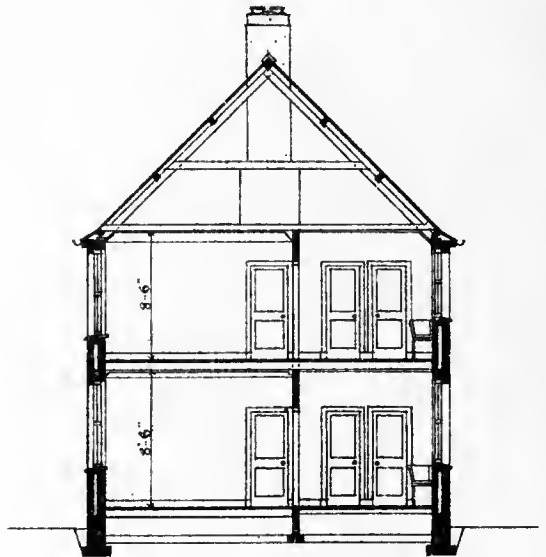
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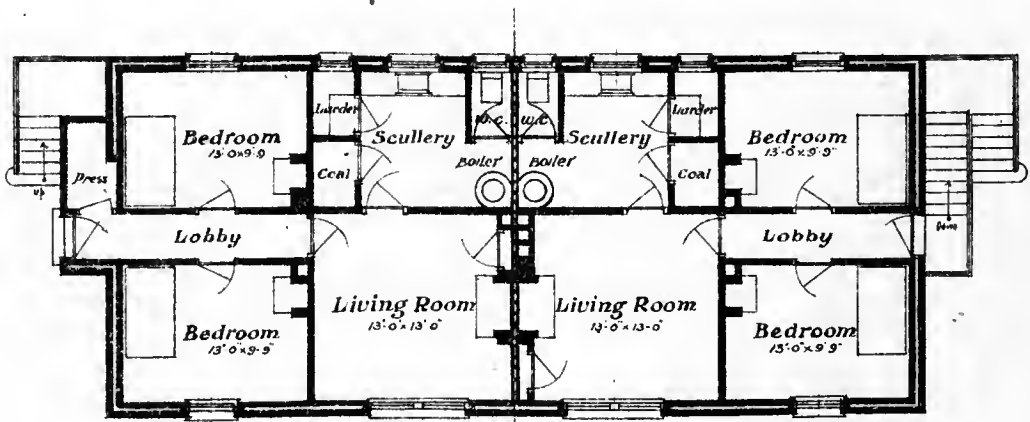
• Front • Elevation •



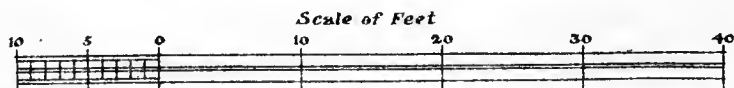
• Side • Elevation •



• Section •

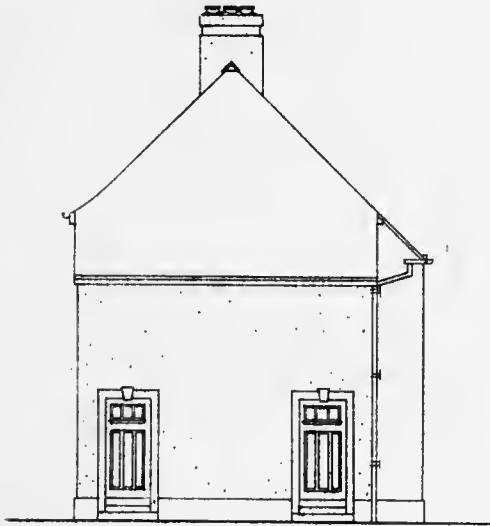


• Ground Floor Plan • Upper Floor Plan

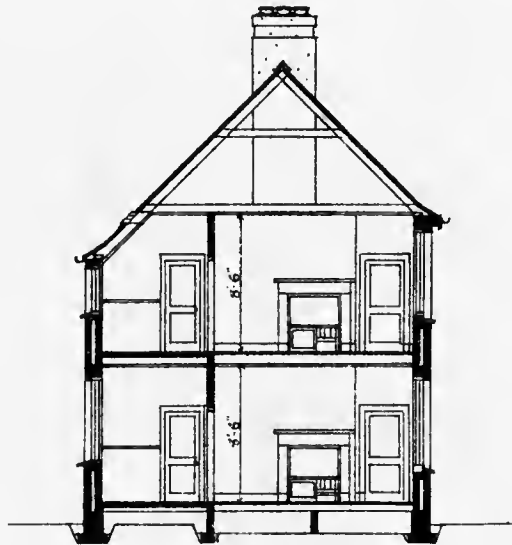




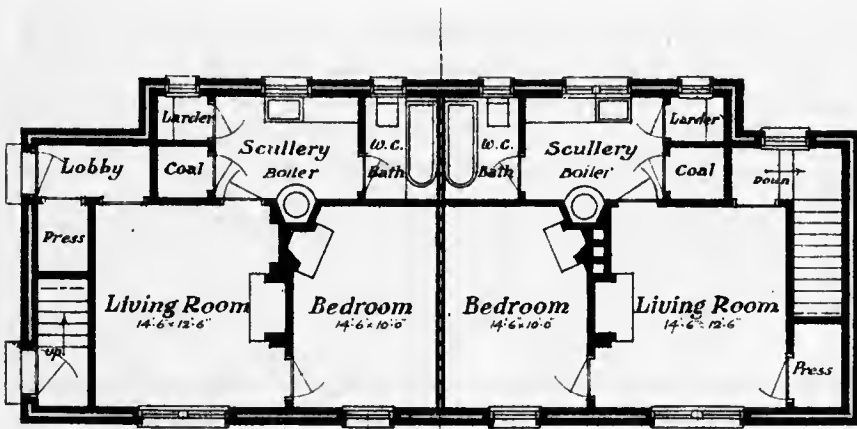
• Front Elevation •



• Side Elevation •

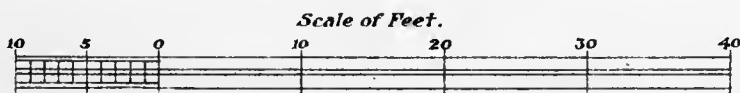


• Section •



• Ground-Floor-Plan •

• Upper-Floor-Plan •



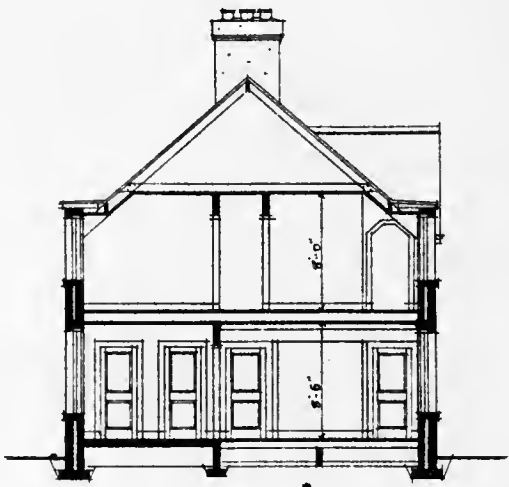
J



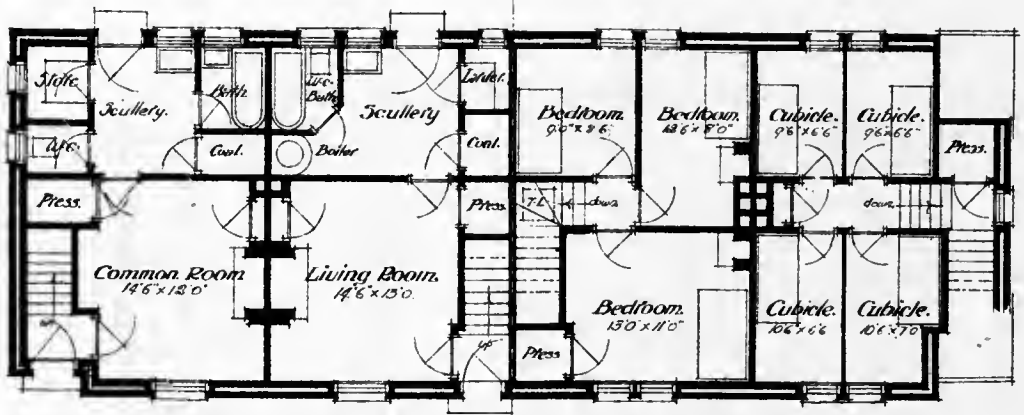
Front Elevation



Side Elevation



Section



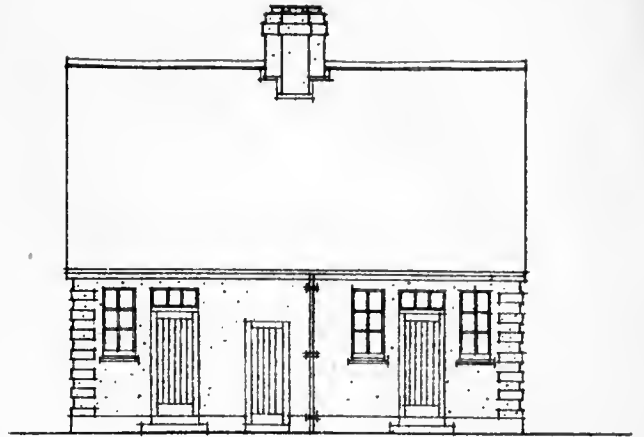
Ground Floor Plan

Upper Floor Plan





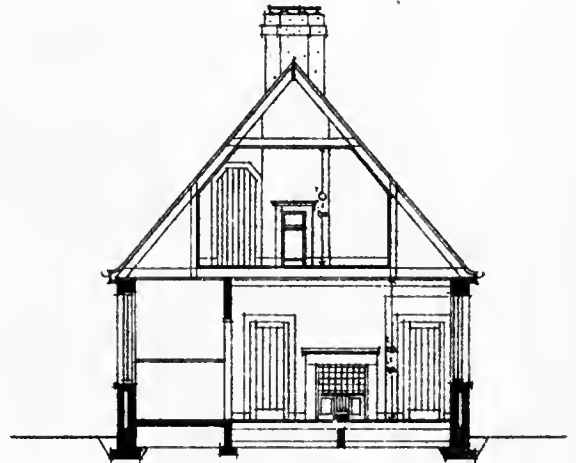
Front Elevation



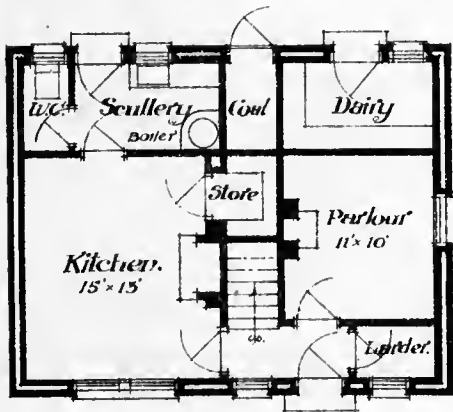
Back Elevation



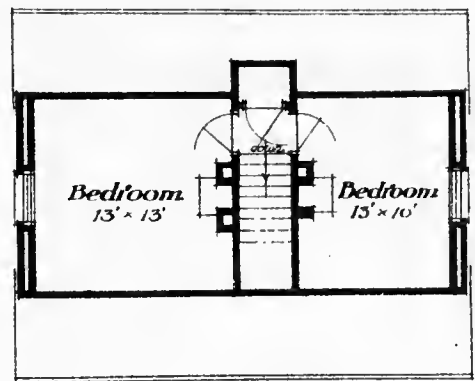
Side Elevation



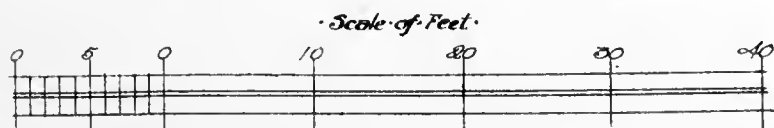
Section



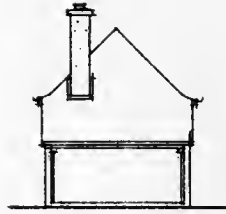
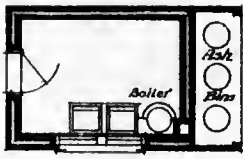
Ground Floor Plan



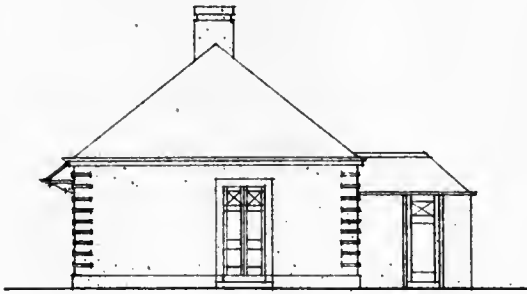
Upper Floor Plan



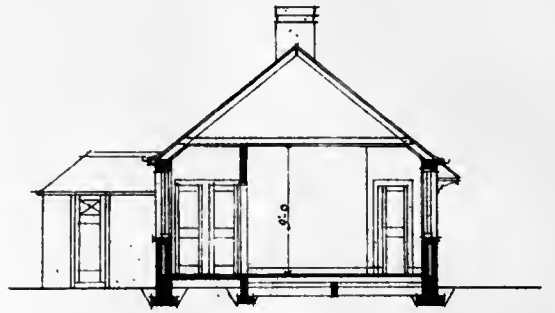
L-M



·Washing House·



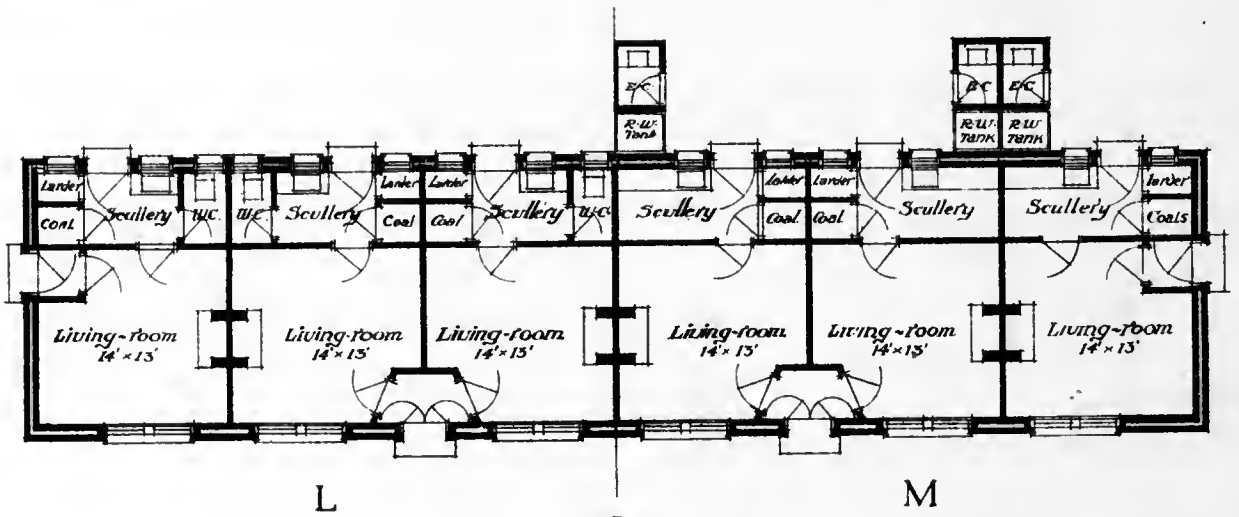
Side Elevation



Section



Front Elevation



L

M

Plan

·Scale of Feet·



Housing Acts.

The Housing, Town Planning, etc., Act, 1909, and the Housing of the Working Classes Act, 1890, as applicable to Scotland, incorporating the alterations authorised by the Scottish Application Clauses, and showing the effect of Modifications and Amendments introduced by the Acts of 1894, 1896 (Scotland), 1900, and 1903. With Index. (1910.) Price 9*d.*, post free 10½*d.*

Housing and Town Planning.

Memorandum on the operation of the Housing, Town Planning, etc., Act, 1909.
[Cd. 6676] of Session 1913. Price 2*d.*, post free 2½*d.*

LOCAL GOVERNMENT BOARD—ENGLAND AND WALES.

46th Annual Report, for 1916-17.

PART I.—Administration of the Poor Law; Miscellaneous; Special Work arising out of the War:—Prevention and Relief of Distress; Internment Camps and Assistance to Destitute Aliens; War Refugees; Use of Poor Law Institutions for Military Purposes; Casual Paupers of Military Age; Dietaries of Poor Law Institutions brought within Food Controller's Scale; Civil Liabilities of Sailors and Soldiers; National Registration; The Tribunals under the Group System of Enlistment and the Military Service Acts. PART II.—Housing and Town Planning. PART III.—Public Health and Local Administration. Local Taxation and Valuation. Miscellaneous. Appendices.

[Cd. 8697] of Session 1917. Price 3*d.*, post free 4*d.*

Housing and Town Planning.

MEMORANDUM (No. 4), dated December 31, 1914, relative to the Operation of the Housing, Town Planning, etc., Act, 1909, and the earlier Housing Acts as amended by that Act. Inspection of Houses; Notices to Landlords to make houses fit for habitation; Closing and Demolition Orders; Appeals; New Procedure under the Act of 1909; Action of Local Authorities in regard to Unhealthy Areas; Provision of New Houses by Local Authorities; Loans for the erection of Houses; Action on Complaints of Default by Local Authorities; Town Planning schemes proposed, approved, and under consideration.

[Cd. 7760] of Session 1914-16. Price 1½*d.*, post free 2*d.*

Housing by Local Authorities.

RETURN giving particulars of cost of the provision made, under the Housing of the Working Classes Acts, 1890 and 1903, by the London County Council, the Town Councils of County Borough, and Metropolitan Borough Councils.

H.C. 114 of Session 1914-16. Price 2*d.*, post free 2½*d.*

LOCAL GOVERNMENT BOARD FOR IRELAND.

Forty-Fourth Annual Report, for 1915-16.

Local Government (Ireland) Acts; Motor Car Act; Old Age Pensions Acts; Unemployed Workmen Act; War Relief; Belgian Refugees; Poor Relief; Public Health, etc., Acts; Sale of Food and Drugs Acts; Provisional Orders under the Public Health Acts, the Local Government (Ireland) Acts, and the Housing of the Working Classes (Ireland) Acts; Labourers Acts; Borrowings by Local Authorities, Treasury Restrictions on Borrowing, Loans sanctioned for Housing Schemes, Public Health Purposes, etc.; Payments from the Local Taxation (Ireland) Account in aid of Local Rates; Agricultural Grants; Audit; Examination of Parliamentary Bills; Deputations received; Departmental Arrangements.

[Cd. 8365] of Session 1916. Price 3½*d.*, post free 5*d.*

DUBLIN HOUSING INQUIRY.

DEPARTMENTAL COMMITTEE appointed by the Local Government Board for Ireland to inquire into the Housing Conditions of the Working Classes in the City of Dublin.

REPORT. With photographs of dilapidated houses, waste grounds, ruins, etc.

[Cd. 7273] of Session 1914. Price 1*s.* 1*d.*, post free 1*s.* 2½*d.*

APPENDIX TO REPORT. Minutes of Evidence, with Appendices. With Map.

[Cd. 7317] of Session 1914. Price 4*s.*, post free 4*s.* 6*d.*

LABOURERS' COTTAGES (IRELAND).

RETURN, up to March 31, 1915, in respect of Labourers' Cottages in Ireland, showing County; Rural District and its Valuation; Number of Cottages built and in course of construction; amount of Loans sanctioned and received, and methods of Repayment, giving present poundage rate levied; Amount of Exchequer Contribution, with unissued Balance, if any; Amount of Rent received and Totals per County and Province and for all Ireland.

H.C. 281 of Session 1914-16. Price 2*d.*, post free 2½*d.*

LABOURERS (IRELAND).

RETURN, up to March 31, 1915, showing the number of Cottages and Allotments provided by each District Council in Ireland; the Rents reserved in letting; number unoccupied; number of which rent is in arrear, and total amount of arrears, in each District Council area; Number of Applications for Cottages and for additional half-acres, with the number of applications sanctioned, and cost of such confirmation; and number of cases where Advances have been made to Agricultural Labourers.

H.C. 280 of Session 1914-16. Price 2½*d.*, post free 3*d.*

CONGESTED DISTRICTS BOARD FOR IRELAND.

Twenty-Fourth Report, for 1915-16.

Finance; Estates; Purchase and Resale of Estates; Untenanted Land; Estate Improvement Works; Arterial Drainage; Erection and Improvement of Dwelling-houses; Loans to Tenants for Purchase of Live Stock; Sea Fisheries; Industries; Miscellaneous Matters. Appendices:—Various Accounts and Tables, including a Return according to Counties showing the Number of New Houses built by the Board and the amount spent thereon; Number of Houses built, or substantially improved by Tenants, with the aid of Free Grants or Advances from the Board, and the Number of Houses improved by Tenants with the aid of Free Grants or Advances, and the amount of such Free Grants and Advances; Returns according to Counties of Loans to Tenant-purchasers of Holdings valued at £7 and under for erection and improvement of Dwelling-houses for the year, and during the five years ended March 31, 1916, etc.

[Cd. 8356] of Session 1916. Price 4*d.*, post free 5½*d.*

ROYAL COMMISSION ON HOUSING IN SCOTLAND.

SPECIAL REPORT

With Relative Specifications and Plans, prepared by
Mr JOHN WILSON, F.R.I.B.A., Architectural
Inspector of the Local Government Board
for Scotland

ON

THE DESIGN, CONSTRUCTION, AND MATERIALS OF VARIOUS TYPES OF SMALL DWELLING-HOUSES IN SCOTLAND

Presented to Parliament by Command of His Majesty



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