ENGLISH·COUNTRY·HOUSES

ENGLISH COUNTRY HOUSES.

FORTY-FIVE

VIEWS AND PLANS

OF RECENTLY ERECTED

MANSIONS, PRIVATE RESIDENCES, PARSONAGE-HOUSES, FARM-HOUSES, LODGES, AND COTTAGES:

WITH

A PRACTICAL TREATISE ON HOUSE-BUILDING.

BY

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PREFACE.

THE examples of Domestic Architecture in this work are selected by the Author for publication as useful specimens of the various classes of English Country Houses, which have been designed with care to meet various requirements, have been executed at a moderate cost, and are suited to the English Landscape.

These examples, accompanied with some practical remarks on House Building, are submitted to those who may propose to build, chiefly to assist them in determining the style and character of the proposed edifice, in deciding upon the materials to be employed, and the mode of executing the work, and as suggestive of various matters that deserve consideration.

In the remarks upon materials and building, the endeavour has been to furnish practical information, avoiding technical phraseology as far as possible. Those parts of the construction of a house which are the most important to the owners and future occupiers, are adverted to in more detail, such as the proper method of building walls, constructing floors, covering roofs, ventilation, and drainage, which do not admit of subsequent rectification without considerable inconvenience and expense, and proportionately less space is allotted to the fittings and finishings of a building, which do not affect the construction and stability of the work.

OXFORD,
January, 1870.

LIST OF PLATES.

Nos.		*Built for*
1. and 2.	View and Plans of CHADLINGTON HOUSE, Oxfordshire.	The late JAMES HAUGHTON LANGSTON, Esq.
3. and 4.	View and Plans of WOOTTON HOUSE, Oxfordshire.	JOHN ROWLAND, Esq.
5. and 6.	View and Plans of BIGNELL HOUSE, Oxfordshire.	The MISSES TYRWHITT DRAKE.
7. and 8.	View and Plans of HOUSE on Norham Manor, Oxford.	THOMAS F. DALLIN, Esq., M.A.
9. and 10.	View and Plans of HOUSE on Walton Manor, Oxford.	EDWIN BUTLER, Esq.
11. and 12.	View and Plans of HOUSE on Norham Manor, Oxford.	THOMAS G. COUSINS, Esq.
13. and 14.	View and Plans of HOUSE at Oxford.	GEORGE WARD, Esq.
15, 15[a], and 16.	Views and Plans of The VICARAGE HOUSE, Linton, Herefordshire.	The Rev. EDWARD PALIN, Vicar.
17. and 18.	View and Plans of The VICARAGE HOUSE, Swanbourne, Buckinghamshire.	The Rev. M. D. MALDEN, Vicar.
19. and 20.	View and Plans of The RECTORY HOUSE, Upper Heyford, Oxfordshire.	The Rev. C. B. MOUNT, Rector.
21. and 22.	View and Plans of FARM HOUSE at Upton, Oxfordshire.	MISS YOUDE.

A

PRACTICAL TREATISE

ON

HOUSE-BUILDING.

THE first step to take in building a House is to select the Site; and in doing this the chief points for consideration are—

The Nature of the Soil,

The Drainage of the Ground,

The possibility of obtaining a sufficient Supply of pure Water,

And the facilities presented by the site for allowing the building to be properly placed as regards aspect and protection from cold winds and rain.

Besides the above, and where the locality is not already determined, the healthiness of the neighbourhood, the proximity of good roads, and easy access to places of worship, &c., are matters not to be lost sight of.

Nature of soil.

The nature of the soil should be well considered; for as one soil is more healthy than another, it is desirable to make choice of that which is, in this respect, the best. One soil admits of the natural drainage of surface water through it much more readily, and is consequently drier, than another; it is therefore less likely to encourage ague, asthma, rheumatism, and that class of disorders, and is more agreeable to move about upon after rain or in damp weather; another is more prolific for gardening purposes. And with special regard to the building itself, it is all-important to select a site upon which a secure foundation can be obtained without the great expense of an artificial basis, such as is necessary for a house upon unfavourable ground.

The ground most suitable for building upon is that having a subsoil of gravel, sand, rock, or chalk. The best is that overlying a bed of gravel; such an one is generally healthy; it becomes dry very soon after rain, which drains away naturally; no fogs hang over it; and it is generally (unless the gravel be too near the surface) favourable for vegetation; pure spring-water is usually to be found near the surface; the subsoil affords a firm foundation for the walls, and the advantage of having gravel, which enters so largely into the composition of mortar and concrete, on the site, is not to be overlooked.

Rocks and rocky ground exist in many districts, and they are often covered with a soil produced from the decomposition of the rock itself, and partaking therefore of its character. Much ground of this sort is healthy, and suitable for building purposes; it is easily drained, and springs of water are generally to be met with.

Clay subsoils are perhaps in this country more frequent than any other, sometimes having strata of gravel and rock in them. They vary from rich marls to yellow and tenacious clays: the former are not unfavourable for building upon; the latter are at all times to be avoided, for the rain cannot get away, except by evaporation. Hence a clay soil is for a great portion of the year in a damp state; but when the weather is dry, the surface becomes, on the other hand, hard and unfruitful.

Drainage of site.

Although, if possible, a site should be chosen sufficiently elevated to have a natural drainage, it is in most cases necessary, in order to keep the ground around a house dry, to make provision for carrying away from it the surface-water in wet weather; and when the soil is retentive, so as to hold moisture, it is the more necessary to make full provision for thorough drainage of it before the building is commenced; and this applies especially where the situation is low, in which case it is desirable to extend the drainage operations over a larger area.

Water supply.

The supply of pure spring-water is of the greatest importance: the value of it, perhaps, is duly appreciated only where it cannot be procured. No dwelling, large or small, should be erected where pure water cannot, in some way, be plentifully obtained. In districts where water can only be procured with difficulty, it becomes of consequence to arrange for storing in underground tanks all the rain-water which falls on the roofs.

Aspect, &c.

The situation, with regard to aspect and protection from cold winds and driving rains, should always be considered. And here I may describe what may be fairly called a desirable situation for a house. The ground moderately elevated, with subsoil of gravel, sloping towards the south, sheltered by rising ground on the north and east, but open towards the south, and with pleasant landscape. Under such conditions the air will be pure and healthy.

Of course, all low and confined and marshy situations, and also those too much exposed to the north and north-east, should be avoided. Such aspects are subject to bleak winds in winter, and to great heat in summer.

The site being selected, the materials to be employed for walls and roofs must, before the drawings can be prepared, be determined on, as the nature of them in some measure influences the character of the building.

Materials for walls.

Although the materials for the walls of buildings in this country are generally but of two kinds, stones and bricks, the selection of the best in each particular case is often a matter requiring judgment and consideration; the more especially as the qualities and cost of both vary much in different districts.

In ordinary house-building, a main consideration is the expense; and where a sound and good material of one kind can be procured in the locality at a less cost than another from a distance, it is wise to make use of it.

Stone.

The purposes for which stone is required in a building may be conveniently classified as follows:—

For the foundations, and for the walls of the superstructure;

For the dressings, viz., quoins, plinths, string-courses, cornices, jambs, heads and sills to windows and doors, and work of an ornamental character;

For the steps, landings, paving, &c.

Walling stone.

Stones for walling are usually quarried within a few feet of the surface; they should be of a dry and durable nature, of a kind that may be readily wrought, and have large flat beds. The dryness is of great importance: some are affected by changes of temperature, and the inner face of walls built with them becomes damp in wet weather, to the destruction of paper and paint, and to the discomfort of the dwelling. An inner lining of brickwork to stone walls is now a recognised necessity as a safeguard against damp, for few stone buildings are sufficiently dry without this or some other precaution.

Stone for dressings.

For the quoins, plinths, string-courses, cornices, jambs, heads and sills to doors and windows, and for work of an ornamental character, it is customary to use what is called, from the comparative facility with which it is worked, "freestone." This description of stone, including both oolites and sandstones, is quarried in many parts of this country; large quantities of the oolite are obtained from the neighbourhood of Bath, whence it is conveyed by rail and canal to all parts of the south of England. This stone, when carefully selected for its purpose, is of average durability; and it is so reasonable in cost, and is so readily worked, that even in cottage-building it is often substituted for the local stone for quoins, jambs, heads of window and door-openings, and the like: there are several varieties of this stone in the Bath district. Some quarries in other localities yield freestone superior to the Bath in durability, and where such is within reach at a moderate cost, its superiority should be taken into consideration in making choice.

Caen stone, imported into England from Normandy, is largely employed in

building, more particularly for interior and ornamental works, monuments, &c.: it is uniform, fine in the grain, and easily wrought; but its durability is not to be depended upon in this climate in exposed situations.

Two kinds of a magnesian limestone, quarried at Bolsover, in Derbyshire, the one buff, the other dull red in colour, and both hard and good weather-stones, are extensively used for works of a monumental character.

All stone used in a building should be free from vents, sand-holes, and cracks; and it should, with few exceptions, be placed in the building on its natural bed.

Stone for steps, paving, &c.

The stone used for steps, landings, and for paving, is what is called "hard-stone." It is a quality of stone, as the name implies, which will bear continual wear and pressure, and be unaffected by weather.

The chief quarries from which this kind of stone is obtained are in Portland, Yorkshire, and the Forest of Dean; but in many districts much useful stone of this sort is met with.

Whatever may be the kind of stone, and for whatever purpose it is to be used, the selection should be made with judgment, as there is a considerable variation in the quality of stone from the same quarry: the stone which is durable in one situation is far from being so in another, and it is important with some, and especially with the calcareous kind, to have it dug and exposed to the air for some time before it is used.

Bricks and brick-making.

Bricks have been used as building-material from the earliest times, and they are still used for most engineering and railway works, and for buildings of a domestic character. Great improvements have been made in their manufacture since the repeal of the duty once levied on them, and bricks of all sizes and shapes can now be obtained in most districts.

The quality of bricks is dependent on the nature of the clay, and the manner in which it is prepared and burnt. Some clays, when dug, require to be exposed to the weather during the winter season; others contain limestone, and must be ground in order to crush it, or, after burning, the bricks are liable to be split, or "blown," by the action of the lime in them.

Bricks are moulded either by hand or machines, and are then freely exposed in rows to the sun and air for six or eight days, when they are burnt in clamps or kilns constructed for the purpose. The latter method is considered the best; it takes less fuel, a shorter time for burning, and the bricks are burnt more uniformly. In clamps they are apt to vitrify and run together near the fire-holes, and in other parts to be only partially burnt, so that much waste arises. Great care is required to burn the bricks neither too little nor too much; in the one case they are not sufficiently hard, in the other they become mis-shapen, or fall to pieces.

Many risks must be incurred in brick-making, and unless a large quantity is

required for a building (at least 100,000), and the clay is of a good quality, it is better to obtain them from an established kiln rather than make them on the ground. In all cases, before a large quantity of bricks is made, it is as well to test the capabilities of the clay and the probability of success by sending a small quantity of it to a brick-kiln, to be made into bricks and burnt as a specimen.

Some clays, such as the Staffordshire, are adapted for the manufacture of tiles of different colours for paving, and of blocks for stable and barn floors, and articles of a similar kind. From the Stourbridge clay are made bricks and lumps which will resist the action of fire, and are therefore used in the setting of grates and ranges, and the building of ovens and furnaces. At Bridgwater, in Somersetshire, are extensive manufactories of plain and ornamental building-bricks, and of paving and roofing tiles of several descriptions.

The quality of bricks.

A good building-brick should be evenly burnt, hard, square at the angles, sound, close in texture, and give out a clear, ringing sound on being struck with the trowel.

Roofing materials.

The materials usually employed in roofing buildings (excluding lead, zinc, and straw, which are only used in exceptional cases) are slates and tiles.

Slates.

Most of the slates in use at this time are from Wales; the ordinary colour of them is blue or bluish, but some are grey, green, and purple. Others are from Westmoreland, Cumberland, and Cornwall, chiefly green in colour, and very durable. Several sizes of Welsh slates are made; those called Countesses (20 in. by 10 in.) are most preferred, as being of a convenient average size, and easily procurable when repairs are needed. The Westmoreland slates are of various sizes; the smallest are selected by the slater for use next the ridge of the roof, and the largest near the eaves; the others being graduated in courses between them.

Quality of slate.

A good slate is non-porous, uniform in thickness (although not necessarily thick), clear in colour, and rings sharply when tapped with a mallet or the hand. A slate of a dull sound, or a dull colour, or easily absorbing moisture, should be avoided.

At Stonesfield, in Oxfordshire, are obtained what are called "stone" slates: the stone is quarried many feet below the surface, and is reached by means of shafts; it is exposed for some time to the action of frost, which causes it to break into thin slabs of about a quarter or three-eighths of an inch in thickness, and of various sizes. These slates are greyish in colour, and make a durable roof: they have been much used for the roofs of the ecclesiastical and collegiate buildings of Oxford, and of

churches and houses in Oxfordshire and Gloucestershire. At Naunton, Temple Guiting, and other parts of Gloucestershire, a similar stone slate is obtainable, which, although more variable in quality, is more uniform in thickness, and is much employed locally.

The Forest of Dean also furnishes a heavy stone slate; but it seldom finds its way into use out of that district.

Some other localities have special roofing materials, but they are not of sufficient value to need particular description. The slates from Wales and Westmoreland are generally considered to be the best in all important respects.

Tiles.

Roofing-tiles are manufactured from clay, in a similar manner to bricks; some by machinery, others by hand, and are of various sizes and shapes. They are daily coming more into use: their durability depends much upon the nature of the clay, and the care taken in making them. The flat, or plain tile, in general use, is from ten to twelve inches in length, from five to seven inches in width, and about three-eighths of an inch in thickness, and can be procured in most districts where bricks are made. Red (pale or dark) is the prevailing colour; those made of the Staffordshire clay are perhaps the best, and are to be obtained now in most places either of a red, dark blue, or a mixed colour, called brindled, generally at a cost only slightly in excess of local tiles. Tiles for the ridges, hips, and valleys, can be usually obtained where roofing-tiles are made, and therefore no lead is required but for gutters. The Bridgwater tiles, already mentioned, although perhaps not so widely known as the Staffordshire, are used extensively throughout the district, and they are largely employed away for farm-buildings, &c.

Quality of tile.

A good tile should be regular in shape and thickness and uniformly hard, and give out a clear, sharp sound on being struck.

Preliminary plans for a building.

The materials for the walls and roofs being settled, the next step is to prepare the preliminary plans; and in doing so, both for houses large and small, the chief matters for determination are,—

The accommodation to be provided;

The dimensions of the principal rooms;

The arrangement and general disposition of the several parts of the dwelling, according to the site, giving to the chief rooms the best aspect and prospect, in order to make them healthful, cheerful and pleasant;

The position of the entrance-hall, and approach thereto;

And the situation of the kitchen and its appurtenances.

The best rooms of a house should, if possible, face the south, south-east, and south-west, and they should have ready access from the hall and corridors. In all

but very small houses the dining-room should have a servants' entrance apart from the general one.

The servants' offices and apartments should be distinct from the other portion of the house, and there should always be a separate staircase for servants to the upper floors without having to pass through the hall, or principal corridor. Water-closets should be placed against external walls, in order to insure light and ventilation, and in situations only where privacy, but nevertheless, convenience of access, can be obtained.

Speaking generally, it may be said, that an idea of simplicity should pervade the general arrangement and disposition of the rooms; corridors and passages should not be irregular in plan, but as straight as may be, and, without exception, have ample light and ventilation. Numberless inconveniences arise from tortuous, dark, or unventilated passages, and complicated arrangements of any sort.

A dwelling-house (and the same may be said of any building), to be satisfactory, must be well and conveniently arranged; the design, both of the exterior and interior, be properly considered and worked out, with due regard to the purpose for which the building is intended, to the materials of which it is to be composed, and to the situation in which it is to be placed.

In working out the plan, much careful study is requisite to produce a satisfactory building. Incomplete drawings, whether from carelessness, or want of practical knowledge, lead to endless trouble and expense, necessitating frequent alterations to meet the deficiencies, and involving loss and misapplication of space. Nothing is more unsatisfactory, even to those with ample means, and much more to those whose means are limited, than to be called upon to pay more than they have been advised a house would cost; and this is more frequently the consequence of immatured and imperfectly prepared plans than of anything else.

The wish to be employed to erect buildings, costly in design and rich in detail, is, of course, pardonable in an architect; for from works of this kind he is more likely to derive satisfaction and credit than from works in which, for pecuniary reasons, he is compelled to dispense with all but what is actually necessary. Yet equal skill and attention, and much more practical knowledge, are required to design and carry out an inexpensive but satisfactory building, than one the expense of which is not an object. It is where great economy in house-building has to be practised, that a minute practical knowledge of building operations and materials and of planning is imperatively called for, to render an architect alive to what is really necessary, and to shew him where saving can be effected without loss of convenience, or without weakening the construction. Of course, under no conceivable circumstances, should the use of inferior materials of any kind be permitted, or the employment of inexperienced labour. In all cases, walls and partitions should be of sufficient thickness, and, above all, an unyielding natural or artificial foundation must be secured.

Modes of arranging with builders.

There are several methods of arranging with a builder for the execution of any intended works. The old system of employing a trustworthy builder, and having the work done by him measured and valued by a surveyor, although the most satisfactory, is fast disappearing before the present competition in the building trade, and its place is taken by what is known as the contract system; that is, builders are applied to for estimates at which they are willing to execute the works. This method has now become so general, that, although it is fraught with evils, it must be accepted as the one which persons about to build will generally adopt, and it is desirable to consider the best way of proceeding in it.

Although works are often thrown open by advertisement to public competition, such a course is not to be recommended, and should only be adopted for special reasons.

It is advisable, when the drawings and specifications are thoroughly complete, that a competent surveyor be employed to take out the quantities of the several works which the builder is required to perform; and then copies of these should be supplied to a few respectable builders (or to one only, if preferred), that they may each estimate the amount at which they are willing to perform the works. The lowest estimate is then generally accepted, if the architect considers it a fair one.

In many cases the quantities are not supplied, but each builder is required to ascertain them for himself; but builders often have not the special knowledge necessary for this, and more often have not the time. Mistakes arise from both causes; and these a builder is sure to find out as the works proceed, and there is thus engendered a feeling of dissatisfaction, a loss of interest in the work, and perhaps, what is worse, an attempt to compensate for his omissions by using inferior materials and workmanship.

Mode of building on some estates.

In erecting buildings on a nobleman's or gentleman's estate, the materials are sometimes bought by the proprietor, or his agent, and local tradesmen are employed by day-work, under the direction of a competent foreman; but this method is not advisable, except where there are on the estate facilities for the conversion of timber, burning of lime, &c.

Clerk of works.

In all important buildings a clerk of works, practically acquainted with all the branches of building, should be employed under the architect by the proprietor, and be in constant attendance at the works, to take care that everything is performed according to the specification: without this, as an architect's supervision of any work can only be periodical, there is no sufficient guarantee that the works, some of which are necessarily hidden almost as soon as they are done, will be properly performed.

Architect's duties.

The duty of an architect is, to prepare the designs, draw up the specification containing a proper and minute description of all the materials to be used, the various works to be performed, and the manner in which they are to be executed, and supply the necessary working-drawings and explanatory details required from time to time; also to enter into the necessary arrangements with the builder, and give a general superintendence to the works during their progress, and act throughout the undertaking on behalf of his client.

Foundations.

The building operations are commenced by excavating the ground for the foundations: the widths and depths of the trenches to receive the footings (the projecting portion of the foundations) are governed by the nature of the soil, and the weight and character of the superstructure. When the subsoil is gravel or chalk, or is rocky, it is only necessary, in ordinary cases, for the top of the footings to be a few inches below the intended level of the ground, or, in the case of basements, a few inches below the floor, and from six to nine inches wider on each side than the walls; therefore a wall eighteen inches in thickness should have the bottom course of stones or bricks, two feet six inches or three feet in width, gradually reduced, course by course, until the thickness of the wall itself is reached. When the subsoil is clay, greater care is requisite; for ground of this nature is generally subject to expansion and contraction in wet and dry seasons, and it becomes necessary to excavate below the depth where it is likely to suffer from atmospherical changes, often as much as five or six feet; the consequence of insufficient foundations in such a soil is the separation and cracking of the walls in dry seasons from the base upwards, at times, so much as to render necessary the reconstruction of the building, and, in any case, to entail great expense and inconvenience in repairs.

Concrete.

In dealing with ground of this nature, therefore, it is most advisable to put in an artificial foundation of concrete (a kind of artificial rock) under the brick or stone footings, of a width equal to twice and a-half the width of the wall above the footings, and not less in depth than two feet; the proportions of the concrete should be one of blue lias lime or cement and five of clean sifted gravel or broken stones, or an admixture of gravel and stones, or even hard broken bricks; the concrete should be thoroughly mixed together, and this is an important point to be attended to, in order that the lime may be uniformly distributed, and all particles of the gravel and stones receive a coating of it; it should be, immediately after mixing, thrown into the trenches from a height of six or eight feet, and the surface levelled.

There are many cases in which practical knowledge and special care are required

Special foundation-work.

to secure a good foundation for a building; these cannot be met by general description; for instance, when the walls are of unequal heights and thicknesses, and therefore the weight of one part, such as a tower, is much greater than that of another part; the object then is so to construct the work as to sustain the extra weight of such parts, and, as in the higher parts there are necessarily more mortar-joints, and consequently a greater settling, to provide that the settling shall be as uniform as possible.

Damp course.

A provision should always be made to prevent any damp rising up the walls from the foundations. The usual method has been, to lay between the ground-line and the floor-line, over the whole thickness of the various walls, internal and external, two layers of blue slates, each being well bedded in cement; now asphalte, of about half-an-inch in thickness, is more generally used, and sometimes a composition of pitch, tar, and sand is substituted; hard perforated bricks have also lately been introduced for the purpose.

Ventilation under wood floors.

There should be a communication between the space under the boards of the ground-floor and the external air, which is insured by openings through the outer walls, and, where necessary, corresponding openings in the inner walls, those in the outer walls being fitted with iron, or stoneware perforated bricks: the openings need not necessarily pass directly through the walls, but in cases where the ground-line is nearly on a level with the floor-line, they should be carried up a little way in the centre of the wall before being turned outwards. The air admitted through openings so formed will be drier than when it is admitted close to the surface of the ground.

Tonguing and pugging floors.

To prevent the air from finding access through the joints of the flooring to the rooms above, it is usual to have the edges of the floor-boards grooved, and a tongue of wood, or hoop-iron, driven in as each board is laid. This process is known as ploughing and tonguing, and is inexpensive and effective. Another method is to lay rough boarding on fillets between the joists, about two-thirds from the top, and upon this to place a coating of mortar about two inches in thickness. This process is called "pugging," and, although more expensive than the last-mentioned, is in some respects better.

Ground under floors.

Under all wood floors the ground ought to be cleared away to a depth of eighteen inches, and where the soil is damp it is well to lay over the whole surface a bed of concrete six inches thick.

Under all brick, stone, and tile floors, the ground should be excavated and refilled, for at least nine inches in depth, with broken stones, broken

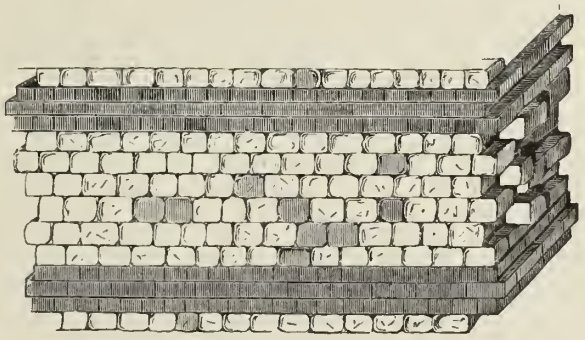
bricks, and dry rubbish, and upon this should be laid a bed of concrete six inches thick, levelled to receive the paving; all these precautions, it will be perceived, are for the purpose of rendering the house as dry as possible.

Walls.

The thickness, the materials, and the workmanship of the walls of a house should be such as safely to support the super-imposed weight, and to prevent the possibility of rain being driven through them, which, in exposed situations, and in case of thin or badly-built walls, often occurs. The bricks or stones should be well bonded together, and the spaces between them should be filled up with mortar, or be rendered solid by having liquid mortar poured in at intervals to fill up all unoccupied parts.

When the walls are of stone, the strength of the work depends very much on the manner in which it is bonded together, and stones having large flat beds are to be preferred; and at frequent intervals, stones, the whole thickness of the wall, should be inserted.

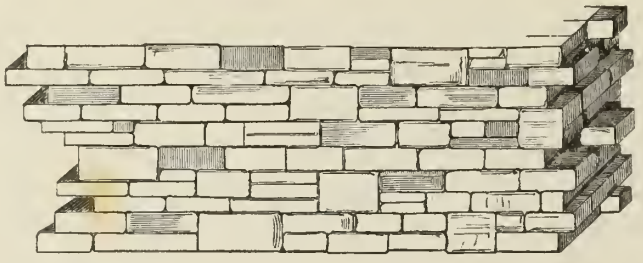
In localities where it is only possible to provide small short-bedded stones, it is advisable to form bonding-courses of brick at intervals of a few feet in height—thus :



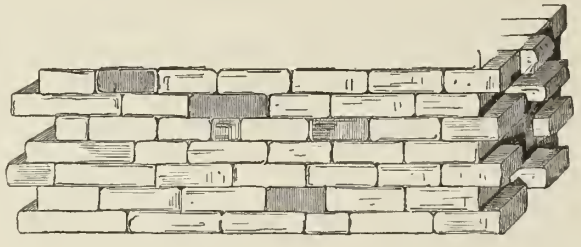
The ordinary terms used to distinguish the various kinds of stone-walling are "rubble work," "random work," "ranged work," and "ashlar work."

In "rubble work" the stones are used pretty much as they are taken from the quarry, and no labour is expended in shaping them: rubble work may be shewn as follows :—

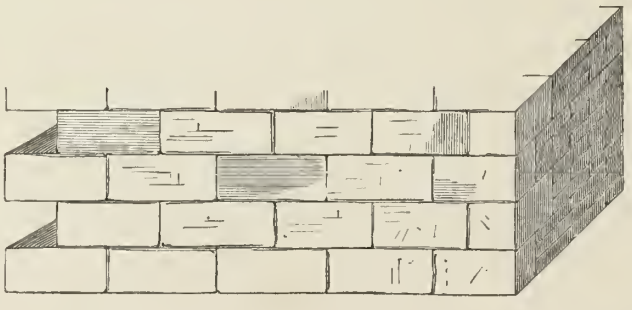
In "random work," the stones intended for the face-work are squared, both for beds and joints, as here shewn :—



In "ranged work," the stones are brought to an even thickness, and laid in courses, thus :



"Ashlar work" is formed of the descriptions of stone before described under the title of Bath, Portland, &c. The stones are sawn to a face, are very squarely bedded and jointed, worked perfectly smooth, and closely fitted to each other, as in the following illustration :—



In all cases, the amount of labour to be expended on the faces of the stones is discretionary, and is often influenced by the quality of the stone and style of building.

As with brick walls, the joints and beds should be filled up solid by flushing or grouting.

As previously stated, the ordinary building-stones are seldom dry enough for

the inside linings of the walls of a house; it is therefore usual to build the inner four and a-half inches with brick, bonded into the stonework by "headers," or bricks laid transversely at frequent intervals. This is more general than the old-fashioned system of lining the inner face of the walls with wood battens and laths.

Hollow walls.

The walls of a house are sometimes built with a space in the middle, to afford, as is supposed, greater security against the damp passing through from the outside, and to ensure a more equal temperature inside the building; but the strength of the work is somewhat impaired by such a mode of construction, and it is questionable, if only the same quantity of material be used, whether any greater protection is given than with the solid work carefully put together.

Hollow walls are sometimes built with purposely-made bonding bricks of extra length, which make better work than when the ordinary bricks are used for bonders; and sometimes the place of bonders is supplied by wrought-iron cramps connecting the two portions of the wall.

All the walls of a building should be carried up at one time; no part should be raised more than a few feet above the general height of the surrounding parts, and all stone sills should be bedded only at the ends, and an open space be left under them the whole width and depth of opening until the building is finished; when this precaution is neglected, the sills are liable to be fractured by the settling of the walls.

All ends of timbers should be kept at least nine inches from smoke-flues, and no wood plugs for fixing joiner's work should be driven into the walls near flues, as many accidents by fire occur from neglect of these precautions. A course of bricks should be laid on stone walls for all timbers to rest upon, except where stone templates (plates of stones) are used.

Mortar.

The mortar used in building to unite the stones or bricks is ordinarily composed of common stone lime and clean sand; but where it is to be employed in damp situations it should be made with hydraulic lime, that is, lime having the property of hardening under water. Common lime-mortar decomposes in course of time in damp situations. Upon the goodness of the mortar depends in the greatest degree the strength and durability of the walls, and great care should therefore be taken in the selection of the materials of it and its preparation. The sand should be free from all foreign matter, sharp, i. e. angular in the grit, and thoroughly mixed up with a due proportion of lime: it should be used as soon as possible after being mixed. Loamy earth and road-scrapings should not be used, wholly or partially, in the place of sand for mortar, as is the custom in some localities.

During hot dry weather, the bricks or stones should be plentifully soaked with water just before they are used, which causes the mortar to unite better with them than when they are in a dry state, and the work is therefore stronger for it.

The varieties of the constituents of building-mortar are very great, and the proportions of lime and sand have to be settled accordingly. One measure of lime to three measures of sand are the common proportions; but when the work is not properly overlooked, the lime is often stinted, and the soundness of the walls thereby impaired.

Lime.

Lime is the product of the calcination of calcareous substances, including chalk, many building-stones, marble, shells, &c. The substance containing it is subject to the action of a strong heat in kilns erected for the purpose, by which operation the carbonic acid associated with the lime is expelled. The presence of lime in a stone may be discovered by placing a small piece in a glass, covering it with water, and adding a little "aqua fortis," or other acid; this combines with the lime, if there is any, and expels the carbonic acid, causing it to rise to the surface, more or less briskly, in effervescing bubbles.

When lime is removed from the kiln it should be kept in a dry place, and secured from the action of the air until it is required for use.

Before lime is fit to be used in making mortar, it undergoes an operation called "slacking:" water is thrown on a heap, and the lime imbibes carbonic acid, which it parted with in the kiln.

Chalk-lime slacks freely, is milder in its nature, and possesses less strength than stone-lime in mortar, and it is more suited for plastering than building.

The lime which is produced from the blue lias beds is a hydraulic lime; it is difficult to slack, and, in consequence, it is usually ground in a mill before it is used. It is a valuable lime for concrete, and for work underground, and in damp situations.

Cements.

The cements principally used for building purposes are Portland, Roman, Parian, and Keene's: the two latter are only employed in interiors, where a hard smooth surface is required for walls, skirtings, and exposed angles. Plaster of Paris is used for mouldings and enrichments. Both Portland and Roman cements are valuable for use in building walls and partitions, piers, and other parts which have to bear more than usual weight, or resist unusual pressure; and also for the building of walls in damp or exposed situations, and for foundation works. In towns, cement is much used in imitation of stone, for facing inferior or thin walls, and for architraves, cornices, and dressings generally to exteriors; and Portland cement is used in districts where stone is scarce, for landings, floors, &c.

Portland cement will bear, for ordinary purposes, mixing with clean, sharp sand,

in the proportion of one of cement to three of sand; and Roman cement in the proportion of one of cement to one of sand.

Timbers of floors.

As the walls of a house are being carried up, the joists to support the several floors have to be prepared and laid upon the walls upon plates of wood built in to receive them. The outside joists should be in contact with the walls, and not, as they are sometimes, placed a little distance from them. The following schedule of the sizes of joists, arranged from calculation and experience, may be useful in determining the depth and thickness that joists should be in relation to their length or "bearing:"—

Length of bearing[a].	Size of Joists.	Length of bearing.	Size of Joists.	Length of bearing.	Size of Joists.
Feet.	*Inches.*	*Feet.*	*Inches.*	*Feet.*	*Inches.*
5 to 6	$4\frac{1}{2} \times 2\frac{1}{4}$	11 to 12	$8\frac{1}{2} \times 2\frac{1}{2}$, or $9 \times 2\frac{1}{4}$	17 to 18	10×3, or $11 \times 2\frac{1}{2}$
7 to 8	$7 \times 2\frac{1}{4}$	13 to 14	$9 \times 2\frac{1}{2}$		
9 to 10	$8 \times 2\frac{1}{4}$	15 to 16	$10 \times 2\frac{1}{2}$, or 9×3		

In all cases where the bearing of joists exceeds ten feet, they should be strengthened by cross struts spiked between them, in the shape of an $\times$, and running the full length of the room: the rows of strutting (called "herring-bone strutting") to joists of greater bearing should not be more than six or seven feet apart. The plates and sleepers bearing joists of the lowest floors should be of oak.

The construction of floors by means of a single row of joists running the shortest way of the room from wall to wall, called "single" flooring, and forming the ceiling by lathing to the underside of joists, is only applicable to bearings of eighteen feet and under. Where this bearing is exceeded, it becomes necessary to provide girders of wood or iron, of sizes proportioned to the span, by which the bearings for the joists are lessened, and the joists reduced in size accordingly. The ceiling may be then laid as before to the under side of the joists, and the girders allowed to shew beneath, or special joists for the support of the ceiling may be secured to the underside of the girders, thus enclosing them.

Floors are sometimes constructed with girders and binders (small transverse girders), which, being exposed, form a panelled ceiling to the room beneath.

Between the ceiling of all important rooms and the floor above, provision should be made for deadening sound, as the noise occasioned by persons passing overhead, or of children playing, is often objectionable. The extra expense of this provision, although slight, is frequently the cause of its omission. The ordinary method of deadening sound in these cases, called "pugging," has been already described.

[a] The "bearing" is the clear distance between the walls.

The ends of all timbers resting upon walls should be bedded without mortar, and with a space around them for air to circulate. This precaution is frequently neglected through carelessness. It may constantly be observed, that old timbers removed from buildings are decayed in those parts which have been sealed up in the walls, while they are perfectly sound in other parts. The above precaution is more especially necessary where walls are built rapidly, and timber not thoroughly seasoned is used.

Decay of timber.

Timber is subject to two destructive agents, dry rot and wet rot. The first affects unseasoned wood in damp situations, and when it is surrounded by stagnant air, such as ground-floor joists where no ventilation is provided, lintels when surrounded by plastering, skirtings and framework when fixed against damp walls, and unseasoned wood covered with paint. The second affects wood which is alternately wet and dry; such as posts fixed in the ground, plates, sills, and sleepers in damp places. Many processes, more or less successful, have been devised for the preservation of timber under these conditions; they are, however, more applicable to timber used in engineering works than in house-building. But it may be mentioned here, that the practice of charring the ends of timbers to be inserted in the ground is very effective in preserving them, and is of very ancient origin. The piles said to have been driven in by order of Julius Cæsar when he forded the Thames at Cowey Stakes, near Shepperton, when taken up forty years ago were found to have been charred, and were free from decay. The beams of the theatre of Herculaneum that were charred by the lava at the time of its destruction, were found perfect after the lapse of nearly eighteen centuries. Dry rot makes its appearance as mildew, and afterwards assumes the appearance of fungus, and has great tendency to spread.

The best means of preventing the rotting of timber is to provide ventilation to all parts of it, and to make use of none that is not thoroughly seasoned, or that shews any symptoms of decay; sometimes it is affected before it reaches this country, or by being stacked for a long period in a close and damp situation. The ends of all important or large timbers should rest on Portland, York, or some other hard stone templates, as they afford a dry bed for them.

Wooden partitions.

In dividing the rooms of upper floors, it is often necessary, for convenience, to have partitions in situations where there is no wall directly beneath them: in such cases the partitions cannot well be of brick, and they are then formed of wooden studs, about twelve inches apart, to be alternately lathed and plastered to match the walls. These partitions should be so framed and bolted together (in the manner called "trussing"), that as much as possible of their weight is thrown upon the side walls and upon the ends of joists next the walls, and as little as possible upon the centre of the joists, which are not generally strong enough to

receive it. Sinking and cracking of ceilings are the result of imperfectly trussed partitions above them.

Pugging partitions.

To assist in preventing the passage of sound through these partitions, fillets can be fixed in the centre of the studs, and laths nailed to them and covered with a thick coat of plaster, in addition to the lathing and plastering on each side; or the spaces between the studs can be filled with sawdust for the same purpose. Sometimes two independent rows of studding are framed, with a space of a few inches between, with the same object.

Floors.

The best wood for flooring is oak; but this, on account of its costliness, cannot always be used, and for it is substituted yellow deal from Christiana or St. Petersburg. Boards with large, loose, or dead knots, as well as those having shakes in them or sappy edges, should be carefully avoided.

The boards forming the floors should never be less than an inch in thickness, and for principal rooms not less than an inch and a quarter; they should be in narrow widths; five inches and a half is a usual width, but in no case should they be more than seven inches; for it is obvious that a narrow board will shrink less than a wide one, and therefore shew a less open joint; they should be well seasoned, and the building should be dry and in a fit state to receive them before they are laid.

Floor-boards are usually fixed by nailing them through to the joists. When it is desirable to avoid the appearance of nail-holes on the surface, they are nailed askew through the edges only, and the edges are, in addition, drilled at distances of fifteen or eighteen inches to receive wooden or iron dowels, which are also fitted into corresponding holes in the adjoining board. The method of "ploughing and tonguing" floor-boards, already alluded to, is chiefly used for the ground storey, to prevent the passage of air through the joints; but it is useful for all floors, inasmuch as it prevents the possibility of water used in cleaning the floor, dust, &c., passing through the joints into the space between the floor and the ceiling below. Over newly-laid floors (all grit being previously removed from the surface), should be placed temporary boards, or a layer of clean sawdust, to protect them from workmen's shoes, stains, &c., during the completion of the building.

Fire-proof floors.

The additional cost of rendering a building practically fire-proof is insignificant, when compared with the security obtained both for the inmates and contents of a house; and it is a matter of much regret, that at least fire-proof floors and staircases are not more often used. The floors may be constructed of joists of iron, in lieu of wood, the spaces between the joists being filled in with concrete, the ceiling below and the floor above being formed in

the usual manner. The two systems most in use are known respectively as "Fox and Barrett's" and the "Dennett" systems.

Joinery.

The joiner's work in the principal rooms of important houses is sometimes executed in oak, walnut, maple, or other ornamental woods; but the costliness of them precludes their general use. Yellow deal, carefully selected, dry, seasoned, and free from shakes, cracks, and large dead knots, is chiefly used for the staircases, doors, windows, skirtings, and fittings of modern houses, although for some parts the best white deal is often substituted. Pitch pine is also sometimes used for the principal joiner's work: it is handsomer in the grain than yellow deal, but harder to work, and therefore more expensive; not so much so, however, as to prevent its occasional use for staircases, fittings of dining-rooms, framing and panels of ceilings, &c., for which it is very suitable.

Sashes and frames.

The window-openings of cellars and out-offices are generally fitted with casements, hung to solid frames with butt hinges, and opening outwards, or with sashes hung on centres; but for all other windows, excepting those which are also to serve as doors, there is perhaps nothing so convenient as the ordinary sashes hung with lines and weights, and opening both at the top and the bottom. These, when well made of seasoned materials, exclude the weather perfectly, open and shut readily, and allow of the admission of fresh air in large or small quantities as may be desired, and the exit of vitiated air, by opening both the upper and lower sashes little or much as may be required. The pulleys, lines, and fastenings should be of the best description. Where it is desirable that a window should give access to a conservatory, verandah, or lawn, the opening begins at or near to the floor-line, and it may be fitted with the sashes above mentioned,—the upper one being placed high enough to give headway beneath it, and the lower one sliding up beyond the lintel,—or with what are known as French casements, which are hinged to solid frames, generally in two widths, and fitted into rebates in the frames, to exclude the weather. This will always be more effectually done when the casements are made to open outwards; those opening inwards should be fitted with water-bars on the sills, to prevent the rain driving in, and a special mode of rebating the frames and casements be adopted. The oak sills of all windows should be rebated at the back to the stone sills, or tongued to them, to prevent the passage of wind and water between the wood and the stone.

Glazing.

Staircase and hall windows are often, with good effect, glazed with small panes of glass, of square or diamond shape, in lead bands made for the purpose, sometimes arranged in geometrical patterns, and with tinted or painted glass.

Glazing in lead quarries was at an early period the general method, and some architects still sacrifice the advantages of clear glass and large squares even in sitting-rooms for the picturesque effect of this glazing.

The best glass for the principal windows of a house is British polished plate; and next to it, when the squares are not very large, the patent plate; either is more costly than crown or sheet glass, which are the ordinary kinds in use. The advantages of using plate-glass are, greater security, less liability to injury, better protection against heat and cold, and a more transparent medium for light. The cost of plate-glass for the chief windows of a moderate-sized private residence may be stated at from £25 to £40 beyond that of the ordinary glass.

Glass panels of doors, lobby partitions, and the like, are often glazed with rolled, fluted, or embossed glass.

Shutters. Shutters of iron, steel, or wood, made in laths, and working upon rollers fixed in a casing above the window-head or below the sill, and for which there are several patents, are more frequently preferred for large windows, more especially bows; and if the fittings of the window be purposely made to receive them, and they are so arranged as to act easily without any great noise, they are very convenient and secure, but their cost exceeds that of the ordinary shutters.

The shutters in most general use are made in small flaps, so as to fold together and be enclosed, when not in use, in casings on each side of the window. They are secured by means of iron bars, hinged to one half of the shutters, and fastened to the other by a spring catch. They are not so well adapted for wide windows, as the casings requisite to enclose the folds often unavoidably project some distance into the room, involving loss of space, and interfering with the light and drapery. This is avoided, to some extent, by the use of shutters hung with lines and weights, like sashes, the hollow frames to receive the weights being fitted inside the frames of the sashes, and these never project more than a few inches into the room. Such shutters are suitable for bow-windows, to which, on account of their size and shape, the shutters before-mentioned cannot conveniently be fitted. Shutters hung thus should be in two heights, each height being equal to half the height of the window, and slide into a casing below the window-sill, and, if necessary, extending below the floor-line. Great care should be taken to make this casing as nearly as possible air-tight, to prevent draught through it into the room from under the floor. Space should be left between the sash-frame and the shutter, for the working of the blinds; and this applies to all windows having shutters.

Doors. The doors of the principal rooms should not be less than two inches in thickness, and of main entrances two and a half or three inches. The character of the mouldings, &c., of the panels depends upon the style of the building.

Skirtings.

The same remark applies to the moulding of skirtings, and these should, in all cases, be fixed to proper "grounds" and "backings," that is, strips of deal fastened to the wall to receive them. It is an excellent plan to rebate the bottom of the skirting-board to fit into a corresponding groove in the floor-boards.

Stairs.

The best material for stairs, principally from the fact of its being fire-proof, is stone (Portland or York or other hard close-grained stone), and this material should always be employed for them in good houses: wood is, however, generally used, for the sake of economy. It is important that stairs should be strongly constructed, and made firm and unyielding. Easy ascent is secured by preserving a proper relation between the width of the tread and the height of the riser. The following is a rule sometimes adopted for calculating the relative proportions between riser and tread:—"From twenty-three subtract the width of tread in inches (exclusive of the moulded projection at edge of tread), and half the remainder will give the proper rise in inches of each step." The height of the top of the hand-rail, measured in a directly vertical line from the extreme edge of the nosing of the tread, should vary from two feet nine inches to three feet, in proportion to the size and description of staircase.

Time for fixing joinery, &c.

Joinery should not be fixed in a building until the plastering is dry. The best time of year for fixing such work is in the summer months, and on no account should it ever be fixed during the winter. The best-seasoned materials will swell if placed in a building at that time, and in the following summer will shrink and split and open at the joints.

A house of any pretensions should, in fact, never be completed in one season, but the shell should be erected and allowed to stand during the autumn and winter, the plastering being done in the following spring, and the joiner's work and finishing generally, in the succeeding summer. In the case of large mansions a considerably longer time is required.

Roofs.

The construction and pitch of the roofs, and the sizes of timbers in them, are regulated by the material to be used for covering them, the width of span, the character of the design, and any necessity there may be for appropriating the space immediately under.

The smallest angle which a roof intended to be covered with Welsh or Westmoreland slates should make with a horizontal line, in order to be weather-tight, should be twenty-two degrees and a half (equal to a rise of a quarter of the span, and technically called "quarter pitch"), and for all ordinary descriptions of tiles forty-five degrees (equal to a rise of half the span, and termed "half pitch").

The following table may serve as a general guide to the proper size of roof-timbers :—

	Span in feet.	Tie-beams.	King-post.	Principals.	Struts.	Straining-piece.
	Feet.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	
King-post Roofs	20	9 × 4	4 × 4	5 × 4	4 × 3	
	25	10 × 5	5 × 5	5½ × 4	5 × 3	
	30	11 × 6	6 × 6	6 × 4	6 × 3	
			Queen-posts.			
Queen-post Roofs	35	11 × 4	4 × 4	6 × 4	4 × 3	7 × 4
	40	12 × 5	5 × 5	7 × 4	5 × 3	7 × 5
	Bearing.	Size.			Bearing.	Size.
	Feet.	*Inches.*			*Feet.*	*Inches.*
Purlins . . .	6	6 × 4	Rafters . .		6 to 8	4 × 2½
	8	7 × 5			8 to 10	5 × 2½
	10	8 × 5				

Rafters should not be more than twelve inches apart, and purlins should not exceed ten feet width of bearing, a little less being advisable when it can be so arranged. The slates, or tiles, are laid on strips of deal, placed at regular distances upon the rafters. When the roofs are of a low pitch, and slates are used, each course (when of the usual size, viz., Countesses, twenty inches by ten inches,) should shew on the surface a width of eight inches; and if tiles are used (ten inches in length), then four inches should shew; but these widths may with safety be respectively increased to eight inches and a half and four inches and a half, when the pitch of the roof is steeper. Copper nails are the best for slating, but they are also the most expensive; and zinc ones, or a composition of zinc and tin, are chiefly used, as being the best substitutes for copper. Tiles are generally made with nibs, to hang on the battens, but some have holes, and are fastened by wood pegs to oak laths instead of battens. When the situation is very exposed, it is not desirable to trust to the nibs, but to have the tiles nailed on as well, holes being made in them for the purpose, or else to have the tiles bedded in lime-and-hair mortar, or cement, which is a good protection.

It is usual to plaster the under side of tiles with similar mortar or cement, to assist in excluding the weather; this is generally called pointing, but in some districts "scotching," or "torching."

The rooms immediately below the roof are apt to be inconveniently affected by change of temperature, and to be hot in summer and cold in winter, particularly where blue slates are used for the covering. These extremes may be provided against by boarding the roofs on the top of the rafters, and laying the battening on the boards: there is then a space left for a current of air between the slates and the boarding, which tends to keep cooler the rooms beneath the roof. A layer of hair-felt is sometimes

employed instead of, or in addition to, the boarding: where both are used, the boarding should be thoroughly dry and well seasoned, or else it is subject to decay from the felt fitting so closely to it.

The ridges of the roof may be covered with lead, dressed round a roll fitted on for the purpose, or with a stone or slate cresting, or with a cresting of the same material as the tiles. Where two roofs meet, or where a roof meets a parapet wall, and it becomes necessary to have a gutter, it should be formed of sheet lead, laid on boarding, and currented to the heads of the rain-water pipes. Similar small gutters are required for chimneys where they rise from the roof. Wherever the tiling or slating abuts against masonry, it is necessary to make good the junction, either with a narrow strip of cement, or (which is far better) with a piece of lead, from six to nine inches wide, let into the masonry or brickwork, and lapping over the slating or tiling.

It is usual to cover the external junctions of the slope of slated roofs, called "hips," with rolls and lead, as for the ridges; and also the internal junctions of the same, called "valleys," with lead, about eighteen inches wide, passing partly under each slope. For tiled roofs, hip and valley tiles are made expressly for these purposes.

The joints of all stonework and brickwork of chimneys and parapet walls, for twelve or eighteen inches above the roof or gutters, should be pointed with cement, as well as the edges of tiles and slates overhanging gables, and all lead-flashings, where they run into joints of walling.

Eaves, gutters, and rain-water pipes.

To receive the water falling on the roofs, cast-iron guttering, made of various shapes and sizes, is fixed along the eaves, with outlets at intervals connected with cast-iron circular or rectangular pipes, which convey the water to the drains below. Over the outlets in the guttering, a covering of wirework, or a perforated iron plate, should be placed, to prevent leaves, dirt, &c., from entering the pipes. The feet of the rain-water pipes should be very closely connected with drains, so that no escape of water may take place near the building: the junctions can be made with iron shoes, or with ordinary stoneware bends.

Gutters behind parapets.

Where lead gutters occur behind parapets, outlet pipes of large size should be fixed to convey the water from them, through the walls to the spout-heads: if the spout-heads then become stopped, the water runs over on the outside of the walls; whereas, if the down pipe be directly connected with the gutter, without a spout-head or a separate outlet, and the pipe becomes choked, the water accumulates behind the parapet until it rises above the edges of the lead, whence it passes into the building, damaging walls and ceiling.

Lead for gutters.

Lead for gutters should weigh at least seven pounds to the superficial foot; for valleys, hips, and ridges, six pounds to the foot; and for flashings, five pounds.

Plastering.

The plasterer begins his work as soon as the roof is covered in. Ceilings and wooden partitions are first lathed, then covered with a coat of coarse mortar, having a little cow-hair mixed with it, followed by a second coat of similar material, but mixed a little finer, and "floated" evenly over the whole surface, and finished or "set" with a thin coat of "fine stuff" (slaked lime mixed with washed sand), finished smooth with a steel trowel.

Brick walls are plastered with three coats, in a similar manner, called respectively, "rendering," "floating," and "setting."

When it is desired to have plastering finished with a rough surface, the last or setting coat is done with a wood trowel, instead of a steel one. This is called rough stucco. All exposed angles should be formed of Parian or Keene's cement; and cornices, enrichments, and ornamental work generally, of plaster of Paris.

Painting.

It has been an old custom to cover internal woodwork with paint, finished with plain colours, or grained in imitation of such woods as oak, maple, satin-wood, walnut, &c.; but of late, much of it is simply varnished, leaving the grain of the wood visible.

It is better, when it can be done without inconvenience, to leave such joiner's work as it is intended to paint for a year, or even more, after it is fixed, before the painting is done, to ensure its becoming dry; although, in these days of rapid building, it is seldom practicable to defer it for so long a time.

The process of ordinary painting on deal is as follows:—All knots are first covered with a preparation of shellac and naphtha, to prevent the turpentine working through the paint; or sometimes gold or silver leaf is used; or the knots are cut out below the surface of the work, and the space filled with a piece of wood or putty; this last plan is generally adopted for good work. If this preliminary "knotting" be not done well, the knots will shew through several coats of paint.

The first coat of paint, or "priming," generally done in the builder's shop, is composed of linseed oil, red and white lead, and litharge, or some material to ensure its drying quickly. All cracks and irregularities are then filled up with putty, and the whole surface of the work rubbed with pumice-stone or glass-paper, and brought to a perfectly smooth face. The third and fourth coats are composed of oil, white lead, and turpentine, mixed with pigments of the required colours. When it is desired to avoid the gloss or glazed surface of ordinary painted work, it is further coated with a preparation of white lead and turpentine, which gives a flat, dead appearance, and is called "flatting." Each coat of paint should be thoroughly dry and hard before another is laid on.

Plastered surfaces, when perfectly dry, are painted in the same way, but the paint is mixed of a thicker consistency for the first coat. Ironwork is generally painted with three coats only; it should be first filed and brought to an even surface; the first coat is generally done with boiled oil and red lead.

The best times for external painting are in the spring or autumn, when the temperature is neither very high nor very low.

Ironmongery. The ironmongery used in a good house should be of the best quality: there is no worse economy than the use of inferior locks, latches, blind-racks, sash-fastenings, &c. The locks, especially, should be of good quality, as the greatest annoyance results from their imperfect or irregular action. Blind-racks are better dispensed with entirely by the use of springs in the rollers, by means of which the blind is rolled up, or by blind-fittings without springs; there are several kinds, which are simple in construction and inexpensive.

Bells. Bells should be very carefully hung, and only by experienced workmen. When the ordinary system is adopted, copper wire, not less in thickness than that known as 14 Birmingham wire-gauge, should be used, and when it is necessarily carried along walls it should be enclosed in zinc tubing, concealed in the plastering. The wires should, as far as possible, be carried in accessible places, in case of repairs being needed.

The galvanic bell system, recently introduced, dispenses with all cranks and wires, and is likely to supersede the old system.

Fire-places. An important feature in the internal fittings of a room is the fire-place. Great improvements have lately been introduced in the character and materials of grates, mantel-pieces, and fenders. The old stereotyped marble or imitation marble, mantel-piece and cast-iron grate, with its large black-leaded surface, filling up the entire width, now frequently gives way to mantel-pieces purposely designed and made for the building; and the fire-places are lined with tiles or fire-bricks, and fitted either with "dog grates," standing independently upon the hearth, or with bars built in, or with narrow iron frames, enclosing the front and bottom bars of the grate, the space between it and the mantel-piece being filled up with tiles, and the backs formed with Stourbridge fire-lumps or fire-bricks.

Instead of an ordinary iron or steel fender, a moulded curb is now frequently fixed round the hearth, of the same material as the mantel-piece, or of metal; and the space within the fender, which has generally been of stone, painted black, is paved with plain or ornamental glazed tiles, harmonizing with those about the grate. It is recommended that the backs of all grates should be of fire-bricks or fire-lumps; more uniform combustion of the fuel and greater heat, even with less coal, are obtained by their use, than from iron backs.

Plumber's work. It devolves upon the plumber, in addition to laying the leadwork, to complete the roofs, as already mentioned, to fix the necessary pumps, cisterns, piping and taps, for the supply of water to the closets, landings,

pantry, scullery, &c. All the pipes should be kept, as much as possible, together, be protected from frost, and be placed in accessible situations, where, when repairs or alterations are needed, they can be attended to without interference with the principal parts of the house, and where, if any bursting should take place, it will be least likely to cause damage and inconvenience.

Iron piping, on account of its cheapness, is now much used instead of lead; and when it is carefully fixed, and the joints made water-tight, it answers its purpose very well.

It is only possible, in this short treatise, to speak generally of the various contrivances of water-closet apparatus now made; all profess to have, and doubtless some have, special advantages over others; many practical plumbers, however, aver, that there is no apparatus more perfect, or less likely to get out of order, than that known as the "pan" apparatus, so long in use; it should always be fitted with a leaden D trap, and a leaden waste tray. A very good and cheap apparatus is the glazed stoneware oval pan and trap, and it is rendered more perfect when used in connection with a small self-acting water cistern. The danger to health and the great inconvenience which result when any part of the apparatus, or piping in connection with it, is out of order, are but too well known; the utmost care should therefore be used by architect and builder to see that all is done in the selection of the appliances, and in the perfect fitting and fixing of them, to render the chance of failure in any part as remote as possible. Down pipes from closets should be of lead, equal in weight to ten pounds to the foot superficial, and be connected with stoneware or brick drains, on the outside of the wall, and the opening through which the pipe passes be filled up and made perfectly sound round the pipe. To allow of the escape of deleterious gases from the soil-pipe, an air-pipe, not less than two inches in diameter, should be connected with it a short distance below the trap, and conducted directly to a point above the eaves of the roof, removed from windows, and where the gases may safely be discharged; this pipe also tends to prevent the water from being drawn out of the syphon by the action of the closet, which sometimes occurs when no air-pipe is provided, thereby creating a passage for the escape of gases from the drain through the closet into the house. In some localities, the water possesses properties which corrode and destroy lead in pipes and cisterns; when this is the case, iron, or some other material, should be substituted.

Smoking chimneys and Smoke-flues.

The nuisance from "smoking" chimneys is very great. The causes of a flue failing to properly carry off the smoke from a fire are various. It may arise from the want of a sufficient draught of air up the chimney, from there being no special means of supplying the fireplace with fresh air, and from the closed doors and windows not admitting sufficient indirectly; this can often be temporarily corrected by the opening of a door

or window, the air thus admitted driving the smoke before it to its proper channel; it can sometimes be remedied by supplying fresh air from without to the underside of the fireplace, by means of gratings in the wall, which can be opened or closed at pleasure. It may be that the wind, when in a given quarter, beats against a portion of the building near to and higher than the chimney top, and this reflected current is driven back and rushes down the flue, and forces the smoke back into the room. It may arise from the near presence of high trees, or the great elevation of adjoining ground. Smoke will sometimes pass out of one flue and down an adjoining one into the room to which the latter belongs; this inconvenience is generally obviated by raising the one flue a little higher than the other.

When flues are filled with cold damp air, which is often the case when they have not been recently used, or when the weather is unusually damp, smoke will frequently fail to ascend, especially when the fire is first lighted. Flues which are carried up in external walls, are more subject to this, particularly in a northern aspect; hence, in such situations, the outer walls of a flue should be built of a thickness not less than nine inches; and the wind has a greater tendency to blow down flues in external walls, when it sets against the side of the building in which they are placed.

In building smoke-flues, there are established rules which should be observed; it is not always possible to ensure success, and in cases of failure it becomes necessary to ascertain, by careful examination, the probable cause of it, and apply such a remedy as seems most likely to meet the case.

The mouth of a flue should always be over the centre of the fire, and the flue should be carried up vertically for some little distance before the commencement of any bend; unless this be done, the smoke is apt to strike the brickwork before it has acquired any upward force, and is more or less driven back into the room. In determining whether to turn off the flues to the right or left, regard may be had to the probable direction of any draught from the door and window, so that the flue may be bent in the same direction.

All sharp and sudden curves should be avoided.

Chimneys should be carried up a few feet at least (the higher the better), above the highest ridge of roofs. Circular flues draw better than square ones, as being nearer the shape which a column of smoke assumes; circular pipes, made of fire clay, with a smooth surface inside, built in the walls to form flues, are to be strongly recommended, because they afford no lodgment for soot; circular flues can be formed in stone walls (and also in brick walls, when there is thickness enough) by building them round a wood core.

Where pipes are not used, the flues should be finished with a lining of mortar, mixed with cow-dung, and called "pargetting," and in doing this work the corners of square flues should be rounded a little.

A man should be sent up the flues, where practicable, when the building is finished,

to clear away projections of mortar, and to remove any materials which may have lodged in them in the course of the work.

In setting the grates, the spaces behind the back and sides should be built up solid to the beginning of the flue; this space, if left hollow, is sometimes the cause of a flue failing to draw.

When the draught of a flue is imperfect, a room is often filled with smoke by the manner in which coal is supplied to the fire; it should be put on in small quantities, and large and small coal should not be indiscriminately heaped upon it; for thereby a dense volume of smoke is created, which will, in a few minutes, fill a room.

Ventilation.

The evils which arise from defective sanitary arrangements, bad drainage, impure water, and want of proper ventilation, are such, that the importance of taking all possible precautions in these respects, for the preservation of health, cannot be over-estimated. Not the least of these is the proper ventilation of our dwellings.

Those who pass most of their time within doors, in rooms insufficiently ventilated, injure themselves as much by the vitiated air they breathe as they would do by living upon unwholesome food.

It has been proved, that if four persons be shut up in a perfectly air-tight room of ordinary size, with two gas jets burning, they could not, under any circumstances, live longer than ten hours.

All have experienced, more or less, a feeling of oppression, headache, and sickness, in crowded and ill-ventilated rooms; and we must know from this how unhealthy it is to remain long in them; yet how frequently does it appear that our sleeping apartments are very much in this condition, with doors and windows closely shut, and often every crevice closed by which fresh air could enter; the same impure air is inhaled and exhaled again and again by the occupants; how sickening it is to enter such a room in the early morn, after having been in the fresh air; can we wonder at the pallid countenances and languid movements of those who have slept in them?

How deficient are sitting-rooms, particularly where gas is burnt, in proper means of obtaining fresh air, and carrying off that which is no longer fit for breathing; this can be accomplished, it is true, by opening the window and door; but the rush of cold air is more than delicate, or even moderately healthy persons can often bear, and some self-acting system of ventilation becomes imperatively necessary.

A fireplace is fortunately, though often unintentionally, an active agent in ventilation, and its activity is increased when there is a fire, though it is not sufficient at any time to keep a room healthy; the healthiness of bed-rooms is, however, much increased by having fireplaces, and the mouth of the flue should never be closed even when a fire is not required; the air of a bed-room having a fireplace, and which has been occupied during the night, is much less impure below the mouth of the flue than

above it, with or without a fire; and fortunately the position of a person lying on a bed is often about on a level with the top of the opening, or below it.

It is to be regretted that a knowledge of sanitary matters is not more general, and the application of proper sanitary appliances more generally insisted on, for builders and owners of houses would then find themselves compelled to pay more attention to space, ventilation, drainage, and water supply.

Many systems of ventilation are in use. One of the most successful means of warming and ventilation combined is that of supplying to each apartment fresh air, warmed by passing through a heated chamber, with means provided for extracting the used or vitiated air. This system is applied to some of our hospitals and large private dwellings, but is too expensive for general adoption.

Whatever system be adopted, the fresh air must be supplied, and the vitiated air extracted, without the creation of unpleasant draughts; this, to some extent, may be accomplished, without much outlay or trouble, in rooms of houses already erected, as well as those in course of erection. In an outer wall of the room, opposite the fireplace where practicable, and as close to the ceiling as the cornice will admit, an opening, of not less than ninety square inches, should be formed, and fitted with one of Sherringham's inlet ventilators, provided with a moveable flap, and line and weight, for regulating the supply of air, and for closing the opening entirely when required; or with one of Mac Haffie's self-acting inlet ventilators. For the expulsion of foul air a separate flue should be formed from each room by the side of the smoke-flue, with an opening close to the ceiling over the centre of the fireplace, fitted with one of Dr. Arnott's self-acting flap ventilators: when these ventilators are used in existing rooms, they, of course, must be fixed in communication with the smoke-flue; but this is not so good as having a flue expressly for them, for it sometimes happens that smoke finds its way through them into the room. This simple method of ventilating sitting-rooms and bed-rooms should not be neglected in any house. There is another plan (somewhat difficult to describe in the absence of diagrams) which can often be easily and successfully applied, more particularly in rooms where gas is used; it consists of a flue between the joists of the floor above, open to the external air at both ends, with a division across it in the centre of the room over the gas-burners, and an opening to the flue on either side of the division; the fresh air being supplied through one, and the used or foul air passing away through the other; the supply being for the time from the side of the house against which the wind blows.

Openings over the doors of rooms into the passages, fitted with perforated zinc, are simple though imperfect means of ventilation.

Glass louvres and perforated glass, made to fit a compartment of the sash, are sometimes used; but these, when most needed, are obstructed by shutters and blinds.

Good ventilation to the kitchen and scullery should be provided, as it tends to keep the house free from the smell of cooking; besides ample height and window-

space there should be a separate air-flue, not less than fourteen inches by nine inches, with an opening to it just under the ceiling.

Warming.

The present system of warming rooms by open fires is doubtless wasteful, as much of the heat passes away up the chimneys; but the cheerfulness and freshness of a good fire are so much appreciated by the English, that it will probably never be superseded by any system equally agreeable and healthy.

There is much additional comfort given by a fire in the hall, which, being more or less connected with the passages and with the upper part of the house by staircases, distributes the warmth through them; and as the air on the outside of the sitting-rooms is warmed by it, a rush of cold air into them, when the doors are opened, is avoided.

Without any great additional cost, a system of heating houses by hot water can be adopted; the water passes from a boiler at the back or side of the kitchen-range through metal pipes to coils of piping in the hall, landings, or wherever required; and, by a little extra piping, the hot water can be supplied to a bath, without which no private residence can be said to be complete. In mansions and houses of any pretension, a special heating apparatus is usually provided.

There are two systems of heating by hot water, called respectively the "high pressure" and the "low pressure" systems; the former is less expensive to maintain, smaller pipes are used, and they are more conveniently fixed about a house; whichever system be adopted it is most important to have competent workmen employed, as the success and security depend greatly on the goodness of the workmanship.

The system of heating by hot air is more applicable to public buildings than to private houses.

Drainage.

There is, without exception, no part of the work connected with the building of a house that requires more special care and attention than the drainage; for upon no part of it depends more the health, comfort, and convenience of its inmates.

A proper system of drainage for a house should consist of three parts; one, for the conveying into tanks, or elsewhere, the rain-water from the roofs; a second, for carrying away the waste-water from the bath-room, and sinks in scullery, butler's pantry, and on upper floors; and a third, for conveying the sewage from the water-closets.

The rain-water drains should not, in any case, communicate with either waste-water or sewage drains; the waste-water should be conveyed away from the building into a separate cesspool, or elsewhere, and not be connected with the water-closet drains; and the sewage matter should be taken into a cesspool specially prepared to receive it.

Glazed stoneware piping, of various sizes, from three inches to eighteen inches in diameter, or larger, and in lengths of two feet, is now almost universally employed for all house-drainage. The pipes are made with a socket at the end to receive the plain end of the next pipe, and the joint should be carefully made good with cement.

Several improvements upon the ordinary description of pipes have been introduced; some are fitted with removeable "caps," or "saddles," upon the upper surface, by means of which the interior of the pipes can at any time be examined without taking up, or in any way interfering with, the drainage; these pipes are but a little more expensive than the common kind, and save expense whenever the drainage requires examination; it is scarcely necessary that all the pipes should be of this description; every third or fourth pipe will suffice; but in any case, means of some kind should be provided for getting at the drains when they are out of order.

The trenches intended to receive the pipes should be excavated before any of them are laid; and the fall of them towards the outlet should be carefully tested before they are fixed. A regular and uniform fall of three inches in ten feet is the least that should be adopted for soil drains; but in all ordinary cases this is sufficient.

When the ground is soft and yielding, a solid base of concrete, brickwork, or stonework, should be laid in the trenches to receive the drains; if this precaution be not taken, the pipes are liable to sink; and the sinking of any one is sufficient to stop the working of the drain.

Traps to prevent the passage of foul air from the drains may be formed in various ways. Those made of the same material as the pipes are durable, and admit of perfect connection with the drains, which is not the case with the iron traps so much in use; they should always be of the strongest description, to resist the action of frost. Those known as bell-traps, with moveable tops, and commonly used in sinks, can never be relied on; if the top be fixed, these traps soon get stopped; yet if this be not done, servants will generally remove the top to gain a quicker exit for the water, and will often omit to replace it, filling the house with foul air. There is a trap known as Antill's patent, lately introduced, which admits of the top being removed, and the trap cleared, without interfering with its action.

Sinks and washing-trays in sculleries and pantries should have brass perforated gratings only, fixed over the mouths of the waste-water pipes; the pipes should pass as directly as possible through the external wall into a brick or stoneware trap on the outside, which, in all cases, should have a catch-pit to receive fat and grease before it can find an entrance to the drains. The end of the waste-pipe should dip into the water standing in the trap, to prevent the passage of air through it.

Cesspools are built of brick or stone, laid in mortar or cement. When it is desirable, on account of the proximity of wells, or for other reasons, to render them water-tight, the walling of cesspools should be built in cement, and also be covered inside with a coating of the same material one inch in thickness; as an additional precaution, the space outside the walls may be filled in by a puddling of clay.

Cesspools should be ventilated by means of two or three drains, formed of common land-draining pipes, with open joints, running in different directions from the upper part of cesspool, and about fifteen or twenty feet in length. Sewage drains should also be ventilated in the same manner at intervals, to allow the gas to escape into the earth ; or this may be accomplished when caps or saddles are used to the pipes, by leaving some of them uncemented.

Lightning-conductor and Alarm-bell.

A lightning-conductor should be provided on every house, and an alarm-bell in country houses is very useful in case of fire and otherwise.

COUNTRY COTTAGES.

NO greater benefit can be conferred upon the labouring population than that of providing them with decent and healthy dwellings. It is the first step towards the improvement of their social condition. So long as sleeping-rooms are common to the older children of both sexes, and there is but one room to serve as living-room and for the performance of all the household-work, it is useless to expect any social improvement. The necessarily uncomfortable condition of such homes, drives the men to the more cheerful quarters of the ale-house, where the money required for the family is spent for drink. The poor, ill-fed, ill-clothed wives have no bright prospect to look forward to, and pass their lives in an ineffectual struggle to make the house a home, clean and attractive to husbands and children. Children reared with such surroundings can but grow up without sense of decency and self-respect, and likely to lead the same improvident lives.

Lands' Improvement Act.

It is the interest of landed proprietors to provide suitable dwellings for the working population on their estates, and where desired, money may be borrowed for this purpose, under the Lands' Improvement Act, which has been most beneficial in its operation. Considerable sums of money have thus been raised and expended in the erection of Cottages, Farm-houses and Buildings, and in draining, making roads, and other improvements.

Cottage-building as an investment.

Cottage-building, as an investment alone, can hardly be said to be in itself remunerative; but the indirect advantages arising from providing the working poor with comfortable dwellings are the surest and best return; it is but a limited view that looks only to the rent received for a good cottage and garden. It is to be hoped that proprietors of land will see the advantage of providing good cottages in order to retain on the estates the better class of labourers.

The small proportion of pauperism, crime, and unhealthy poor among a well-housed population, as lessening the rates of a district, and proving an indirect advantage to the landlord, should not be forgotten; on sanitary, moral, and economic grounds, it is well worth his while to pay the usual interest upon bor-

rowed capital, though he may receive back only a portion of it directly in the shape of rent.

The great and general interest which has been taken of late years in the subject of cottage-building has led to many publications concerning it, containing many designs, plans, and estimates of cost. Many of these are open to the great practical objection that they mislead, under the supposition that the designs can be built and finished at a given sum, which proves too small. It is doubtful whether any of these published plans, even where prizes have been awarded for them, have been carried into execution at the estimated cost.

Reports are heard, from time to time, that cottages have been built at a sum that will pay a good per-centage; but these reports never bear examination. It is found upon inquiry that the carriage of material was done by the landlord, the lime or sand, or both, were supplied from the estate, that proper outbuildings and offices were not provided, that a well, or pump and sink, were not embraced in the cost, and so on; and the addition of the value of these to the sum mentioned, would bring the amount up to what a good cottage, really fit for habitation, and with all these requirements, must cost. Locality, of course, makes a great difference; and these supernaturally cheap cottages, besides being shorn of the requirements above enumerated, probably were built where many of the heavier materials at least were ready to hand.

Cost of cottages.

The cost of cottages, as of all buildings, varies very much in different places; sometimes as much as £30 or £40 in a cottage, depending upon the facility for obtaining bricks, stones, lime, sand, &c., and upon the wages, and the nature of the foundation; for instance, the price of bricks ranges from 25s. to 40s. per thousand on the site, and of stones for walling from 1s. to 6s. per yard; and other materials in proportion.

A pair of good cottages, each with living-room, scullery, pantry, three bedrooms, and outbuilding for coals, wood, oven, &c., and water supply, and where all the materials, labour, and carriage, have to be provided, will not cost less, under the most favourable circumstances, than £220 or £230, and the same pair may cost £300 or £320, or even more. Cottages with two bedrooms each will cost from £170 to £220 per pair, and cottages with one bedroom from £50 to £80 each. Single cottages cost rather more than semi-detached ones; and blocks of four or more, rather less.

Site and aspect.

Cottages should be built within a short distance of good roads; the site should be dry and healthy; and when the subsoil is clay, the ground should be thoroughly drained, and the surface sloped away from the cottage. Exposed situations, particularly to the north and north-east, should

be avoided, as well as those lying low or being swampy; a south or south-east aspect is the best. It is better, speaking generally, that the cottages in a parish should be grouped about the village-green, rather than distributed throughout a perhaps straggling parish. No doubt should exist as to the purity or plentiful supply of the water; if that from the roofs is to be in part relied upon, it should be conducted by pipes to underground tanks, and there stored for use.

Accommodation and general arrangement.

For the accommodation of a man with wife and family, there should be a living-room, not less than 12 ft. square and 8 ft. high; a scullery, not less than 10 ft. by 8 ft.; a pantry, about 4 ft. by 3 ft. (with an external window), and where possible the space under stairs should be thrown into this for storing potatoes, &c.; three bedrooms, one containing not less than 900 cubic feet, one not less than 700 cubic feet, and the third about the same size; if smaller, the partition dividing it from the stairs should not be carried up within twelve inches of the ceiling. No bedroom should be less than 8 ft. high. All windows should be of good sizes, made to open, and the top of them should be as near as possible to the ceiling. Closets by the sides of the fireplaces should be placed in the living-rooms and bedrooms; the living-room should have a range containing an oven and boiler; and a furnace-pan, or copper, should be provided in the scullery. An oven for bread-baking may be constructed in the outhouse, where one will serve for several cottages. At least two of the bedrooms should have fireplaces. The perforated zinc ventilators, mentioned in a previous page, are suitable for insertion over the doors and in the ceilings of cottage bedrooms; the floor of the living-room should be boarded; that of the scullery, pantry, porch and outbuildings paved with stone, brick, or tile, on a bed of concrete. A sink should be provided in each scullery, with waste-pipe leading to a trap outside, or simply to a bucket under the sink.

A well arranged ground-plan provides a lobby within the entrance-door, upon which opens the living-room door, and sometimes the pantry door, and in it is placed the staircase, giving access to a small landing above, from which all bedrooms can be separately reached; the scullery is approached through the living-room, and has a door to the back yard. Some model plans provide access to the scullery from the entrance lobby, and also to the back yard, and no doorway to the yard from the scullery; but the desirableness of this arrangement is questionable; for as most of the work of the cottage is done in the scullery, a doorway direct from it to the yard allows of a freer escape of the steam and smell arising from cooking, and a better opportunity for removing refuse water.

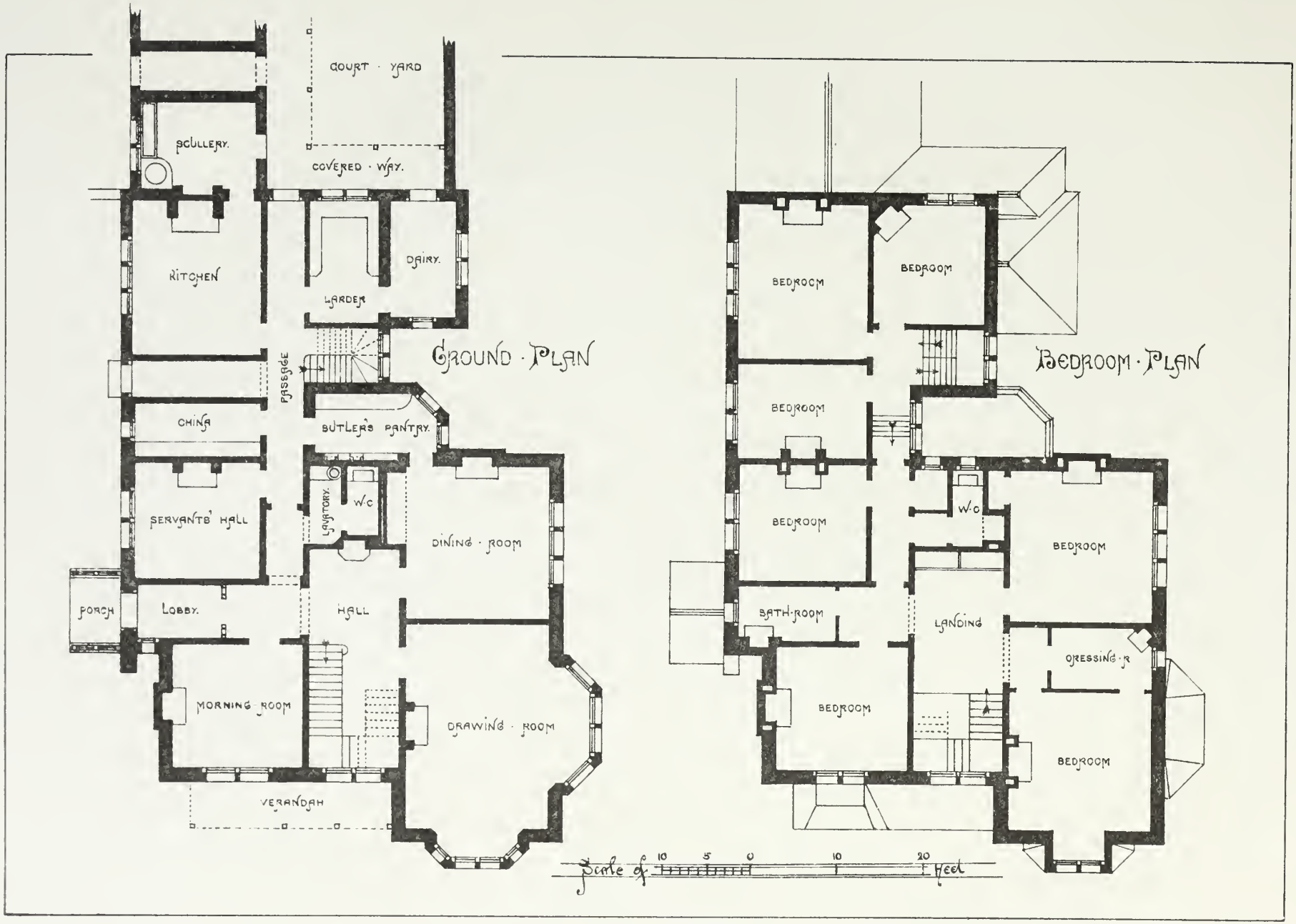
Every cottage should have a small outbuilding for keeping fuel and workmen's tools, and a closet, which, instead of having a vault under in the usual way, may be fitted with a receptacle under the seat, into which each day some dry mould should

be thrown, and the receptacle itself emptied on to the gardens as often as needed; this is a simple method of carrying out the principle of earth-closets, now so much advocated.

As to materials for cottages, and the points to be attended to in building them, the particulars in the former part of this treatise are, for the most part, equally applicable.

CHADLINGTON : HOUSE : OXON

PLATE. I



CHADLINGTON : HOUSE : OXON

PLATE · 2

PLATES I. AND II.

CHADLINGTON HOUSE, OXFORDSHIRE,

BUILT FOR THE LATE JAMES HAUGHTON LANGSTON, ESQ., M.P.

Basement Plan.

Wine Cellar.
Beer Cellar.

Ground Plan.

Drawing Room[a].
Dining Room.
Morning Room.
Servants' Hall.
Kitchen and Scullery.
Pantry and China Store.
Larder and Dairy.
Lavatory and W.C.

First Floor Plan.

Seven Bed-rooms.
Dressing Room.
Bath Room.
Linen Closet and W.C.

Second Floor Plan.

Three Bed-rooms.

The washhouse, laundry, and similar offices are placed in the court-yard, and are all approached from the house by a covered passage.

The entrance is on the west side, and the principal rooms face the south.

The walls are built with stones dug on the estate, and the roofs are covered with Stonesfield slates. The materials and labour were chiefly supplied from the estate workshops.

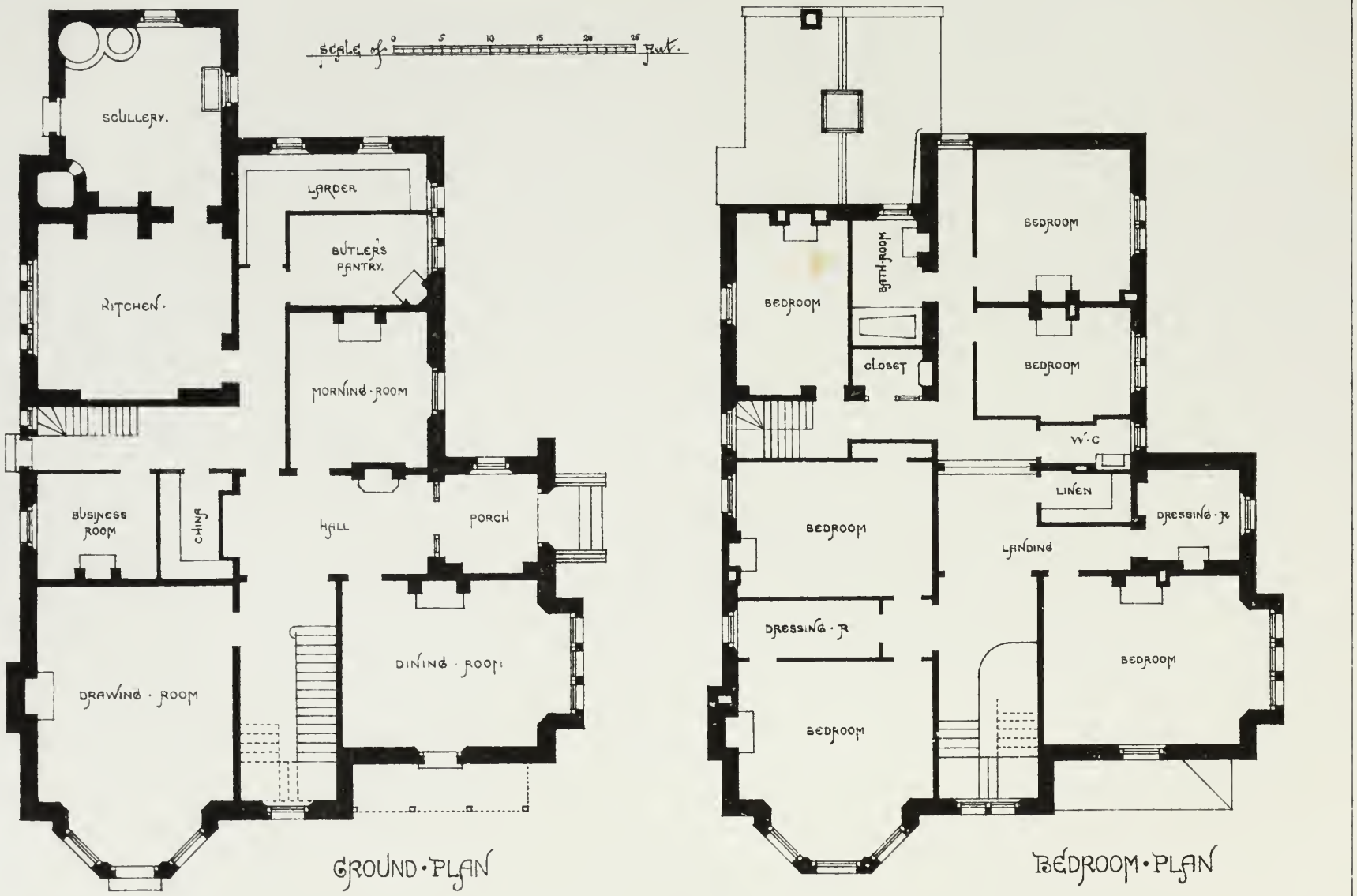
[a] The sizes of the rooms are not figured on any of the Plans, but they may be readily ascertained by means of the Scale.

Photo Lithographed by W[illegible]

W. Wilkinson, Architect, Oxford

WOOTTON : HOUSE : OXON

PLATE. 3



WOOTTON : HOUSE : OXON

PLATE · 4

PLATES III. AND IV.

WOOTTON HOUSE, OXFORDSHIRE,

BUILT FOR JOHN ROWLAND, ESQ.

Basement Plan.

Wine Cellar.
Beer Cellar.
General Cellar.

Ground Plan.

Drawing Room.
Dining Room.
Morning Room.
Business Room.
Kitchen and Scullery.
Butler's Pantry.
Larder and China Closet.

First Floor Plan.

Six Bed-rooms.
Two Dressing Rooms.
Bath Room.
Linen Closet.
W.C.
Store Closet.

Second Floor Plan.

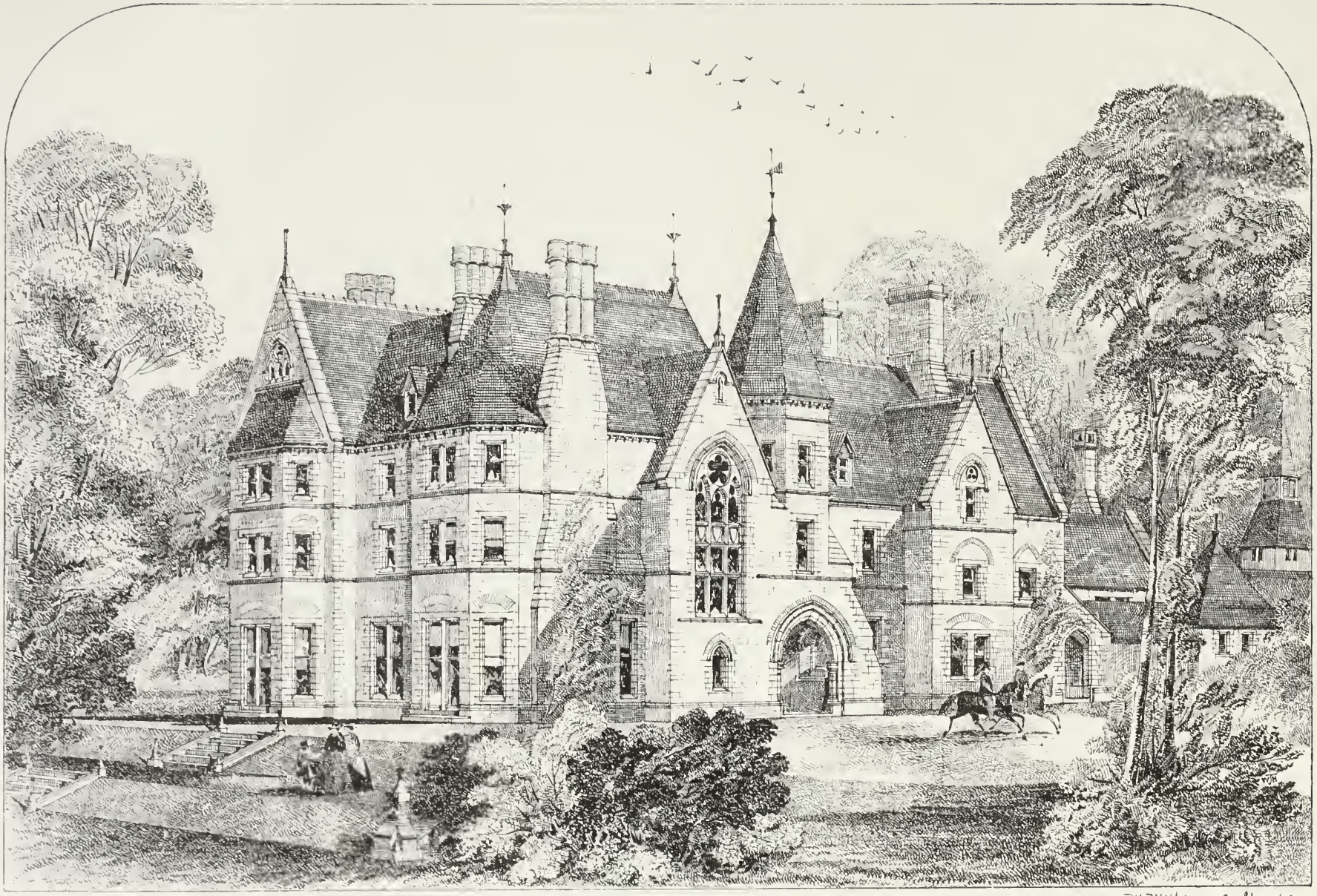
Four Bed-rooms.

The entrance is on the east side, the position of it being influenced by an existing approach: the principal rooms look south.

The stones for the walls were dug on the estate by the contractor, and the lime was burnt on the site. The walls are lined with bricks. The hall is paved with Minton and Co.'s tiles, and the principal staircase is of stone. The roofs are covered with Bangor slates.

Cost of the house, £3,097 (exclusive of the value of the walling-stones); equal to $5\frac{1}{2}d.$ per foot cube [b].

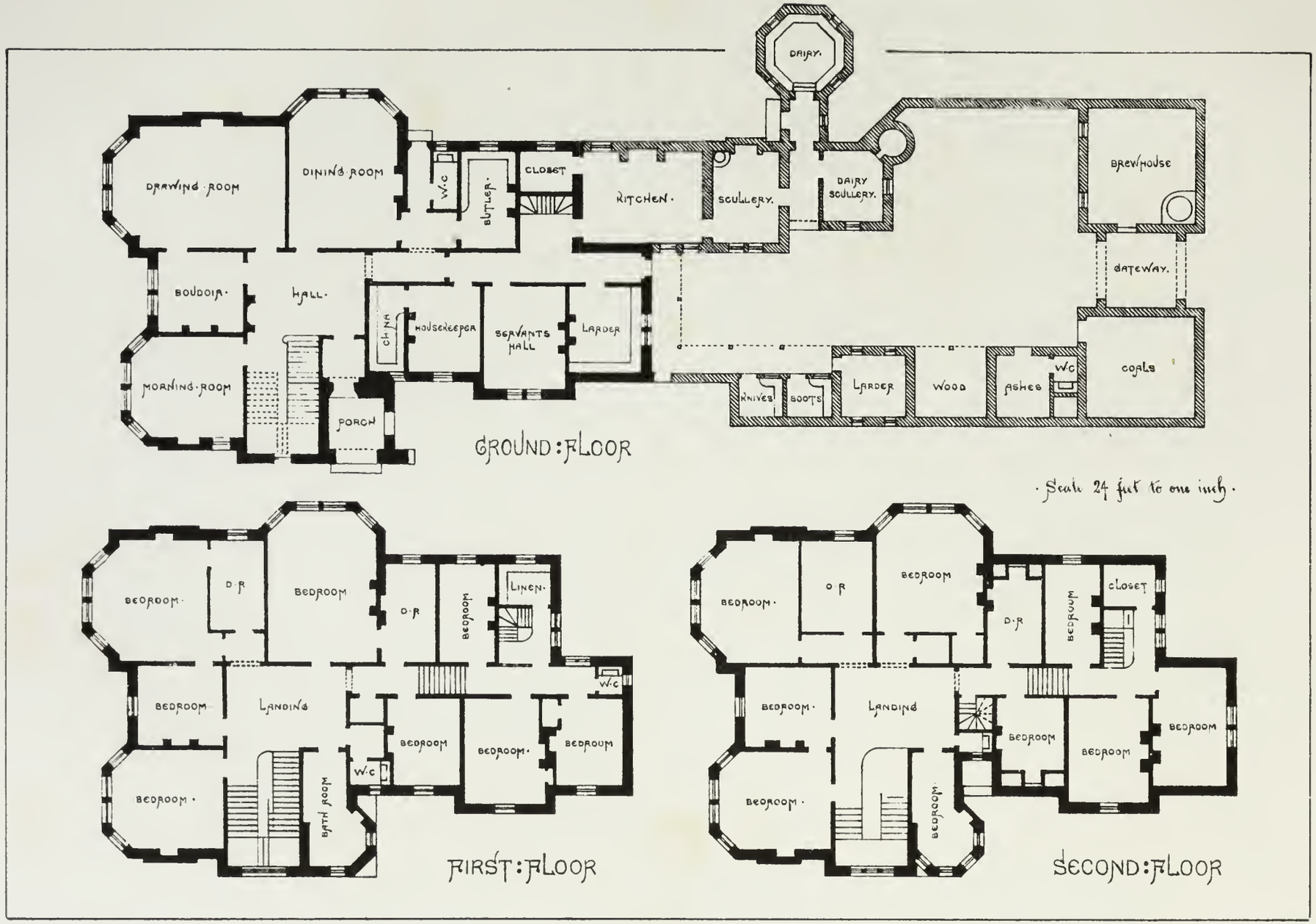
[b] The cubical contents of each building are calculated from midway between the floor-line and the bottom of foundations to midway between the plate and ridge of roofs.



W. Wilkinson, Archt Oxford.

BIGNELL : HOUSE : OXON

PLATE . 5



BIGNELL : HOUSE : OXON

PLATE · 6

PLATES V. AND VI.

BIGNELL HOUSE, OXFORDSHIRE,

BUILT FOR THE MISSES TYRWHITT DRAKE.

Basement Plan.

Wine Cellar.
Beer Cellars.

Ground Plan.

Drawing Room.
Dining Room.
Morning Room.
Boudoir.
Lavatory and W.C.
Housekeeper's Room.
China Closet.
Servants' Hall.
Butler's Pantry.
Kitchen.
Scullery.
Larder.

First Floor Plan.

Eight Bed-rooms.
Two Dressing Rooms.
Bath Room.
Linen Closet.
Two W.C.'s

Second Floor Plan.

Nine Bed-rooms.
Two Dressing Rooms.
Store Closet.
W.C.

Outbuildings.

Dairy and Dairy Scullery.
Brew House.
Bedroom over Gateway.
Knife House and Boot House.
Larder.
Wood Shed, &c.

The entrance is on the south-east side; the drawing-room, morning-room, and boudoir are on the south-west, overlooking some ornamental grounds; and the dining-room is on the north-west, with access from the servants' passage.

The walling-stones were dug, and the lime was burnt, on the estate.

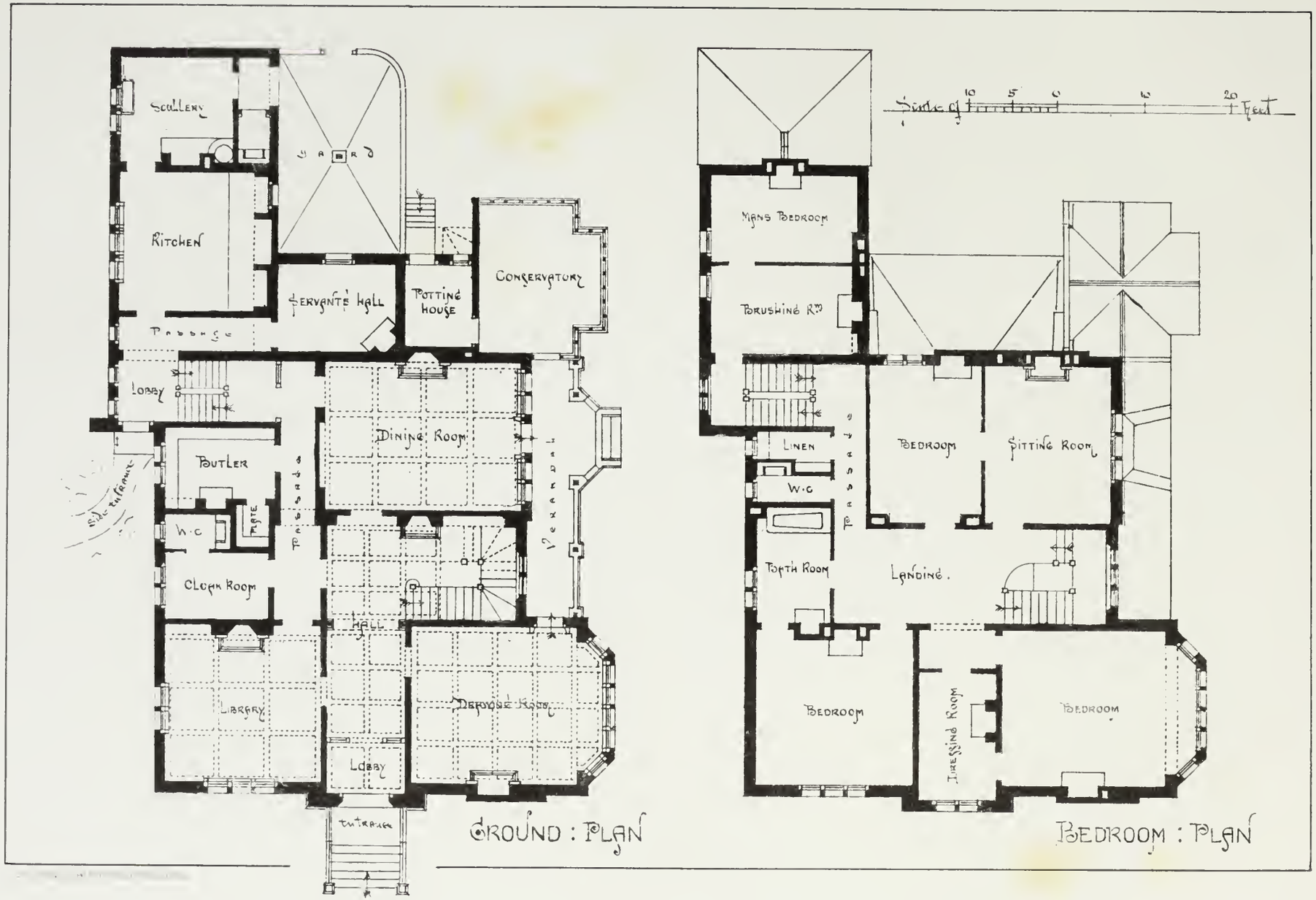
The walls are lined with brick throughout, and the freestone-work is carried out with Box ground stone. The roofs are covered with Broseley tiling. The ceilings of hall, drawing-room, and dining-room, are formed with moulded timbers framed in panels. The hall floor is of oak, but the remainder of the joinery is carried out with yellow Christiana deal. The kitchen has an open roof, for light and ventilation. The dairy is a separate building, ornamentally treated, and can be approached from the lawn.

Cost of house and outbuildings, about £5,500; equal to 6*d.* per foot cube.

W. W. Wilkinson, Archt. Oxford.

HOUSE ON NORHAM : MANOR : OXFORD

PLATE. 7



House on Norham : Manor : Oxford

Plate 8

PLATES VII. AND VIII.

RESIDENCE ON NORHAM MANOR, OXFORD,

BUILT FOR THOMAS F. DALLIN, ESQ., M.A.

Basement Plan.

Wine Cellar.
Beer Cellar.
Coal Cellar.
Larder and Pantry.
Store Room.
Heating House.

Ground Plan.

Drawing Room.
Dining Room.
Library.
Cloak Room and W.C.
Butler's Pantry and Plate Closet.
Servants' Hall.
Kitchen and Scullery.
Conservatory and Verandah.
Potting House.

First Floor Plan.

Sitting Room.
Three Bed-rooms.
Dressing Room.
Bath Room.
W.C.
Linen Closet.
Man-servant's Room.
Brushing Room.

Second Floor Plan.

Six Bed-rooms.
Cistern Room.

The aspect of the principal rooms is south; the entrance is on the west side.

The walling is carried out with local red bricks and freestone dressings. The roofs are covered with Broseley tiling. The ceilings of hall, drawing-room, dining-room, and library, are formed with moulded pitch-pine timber, framed in panels. The joinery generally is of yellow Christiana deal, varnished.

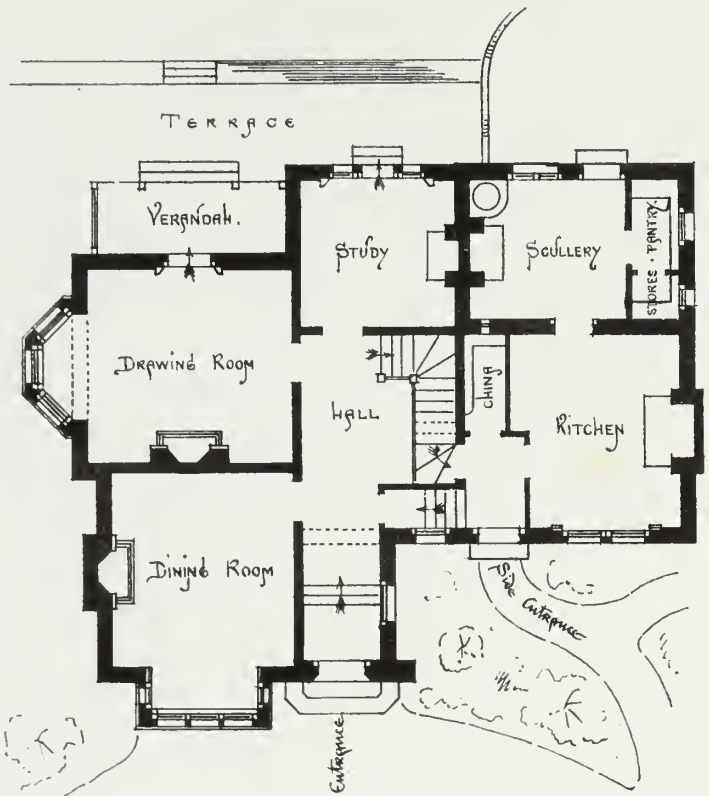
Cost of house (including conservatory, &c.), about £3,150; equal to 6*d.* per foot cube.

Photo-Lithographed by Whiteman & Bass London

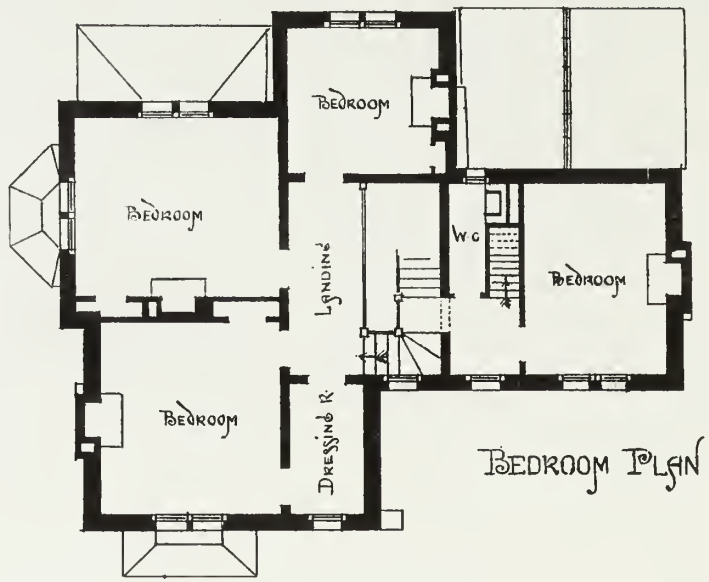
W. Wilkinson, Archt. Oxford.

HOUSE OF WALTON : MANOR : OXFORD .

PLATE. 9



Ground Plan



Bedroom Plan

Scale of 10 5 0 10 20 Feet

Photographed by Waterman & Son, London

W. Wilkinson, Architect, Oxford.

House on Walton : Manor : Oxford

PLATE. 10

PLATES IX. AND X.

RESIDENCE ON WALTON MANOR, OXFORD,

BUILT FOR EDWIN BUTLER, ESQ.

Basement Plan.

Wine Cellar.
Beer Cellar.
Larder.

Ground Plan.

Drawing Room.
Dining Room.
Study.
Kitchen and Scullery.
Pantry.
China Closet.

First Floor Plan.

Four Bed-rooms.
Dressing Room.
W.C.

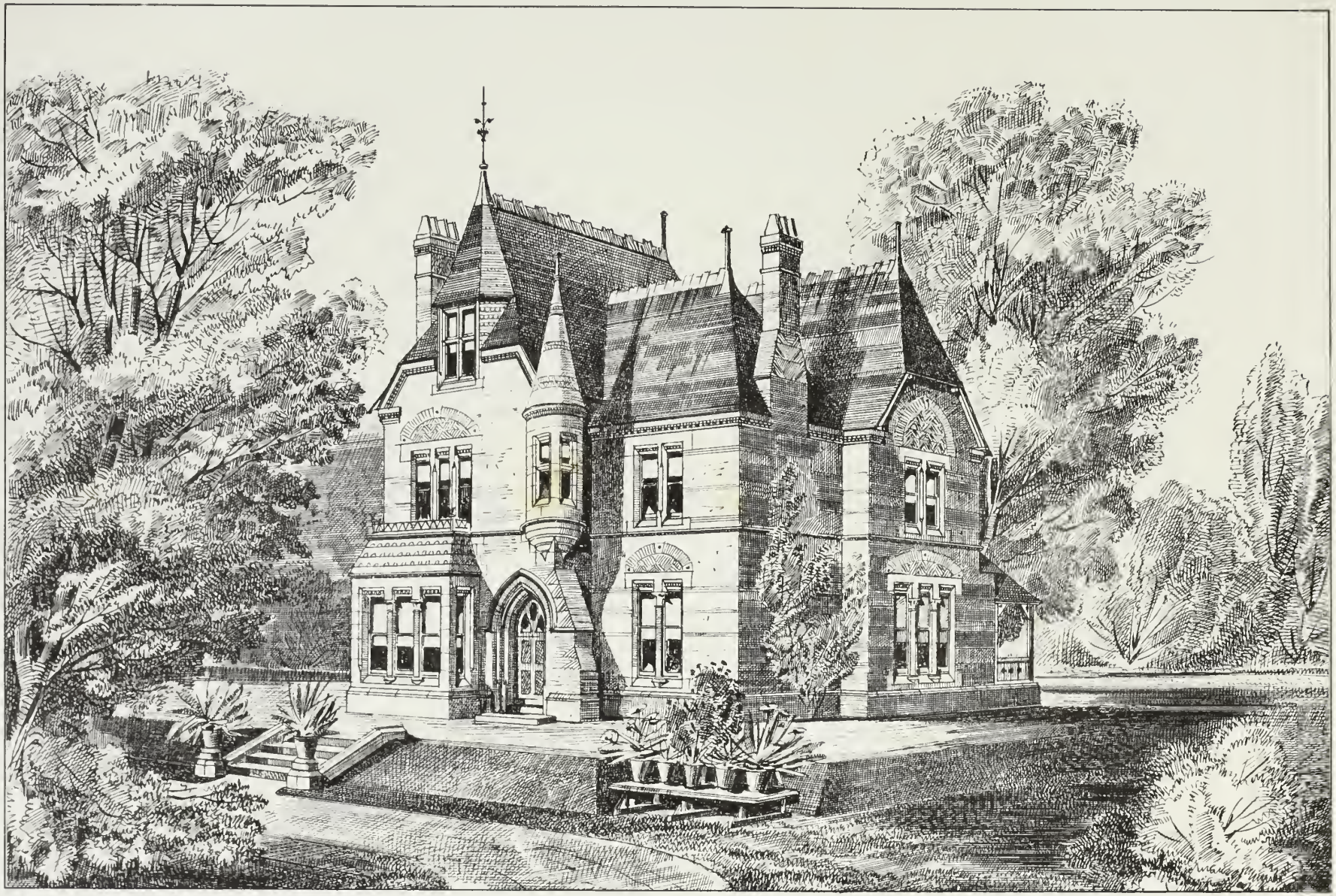
Second Floor Plan.

One Bed-room.
Linen Closet.

The walling is carried out with red bricks and Corsham Down freestone dressings. The roofs are covered with purple slates.

The plan is arranged for a conservatory, with French casements opening from the drawing-room.

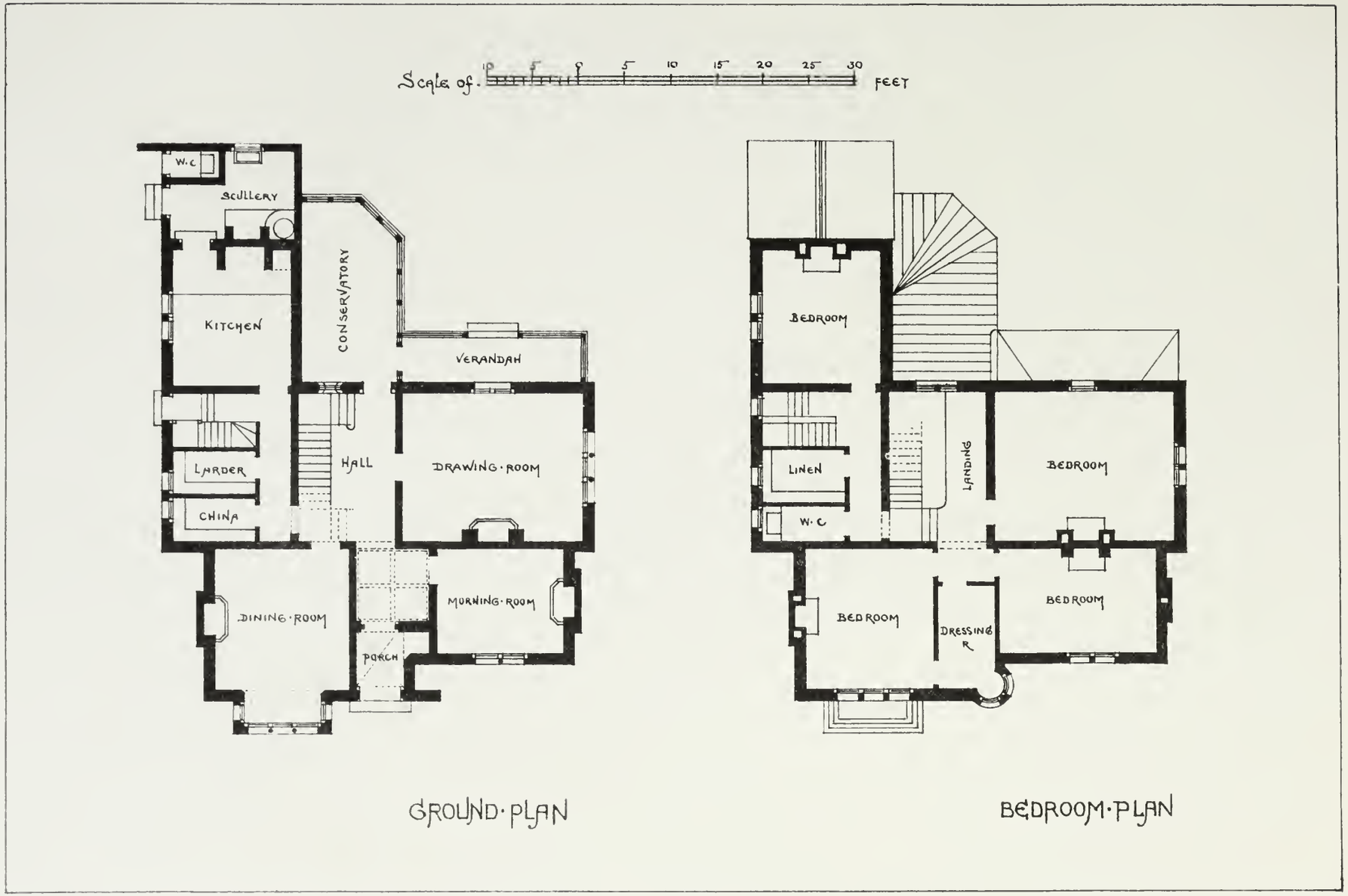
Cost of the house, £1,180; equal to 5*d.* per foot cube.



W. Wilkinson, Archt. Oxford.

HOUSE ON NORHAM : MANOR : OXFORD.

PLATE · 11



HOUSE ON NORHAM : MANOR : OXFORD

PLATE . 12

PLATES XI. AND XII.

RESIDENCE ON NORHAM MANOR, OXFORD,

BUILT FOR THOMAS G. COUSINS, ESQ.

Basement Plan.

Wine Cellar.
Beer Cellar.
Coal Cellar.

Ground Plan.

Drawing Room.
Dining Room.
Morning Room.
Conservatory and Verandah.
Kitchen and Scullery.
Larder.
China Closet.

First Floor Plan.

Four Bed-rooms.
Dressing Room.
W.C.
Linen Closet.

Second Floor Plan.

One Bed-room.
Cistern Room.

The entrance is on the west side, facing the public road. There is access from the drawing-room on the east side to verandah, conservatory, and lawn.

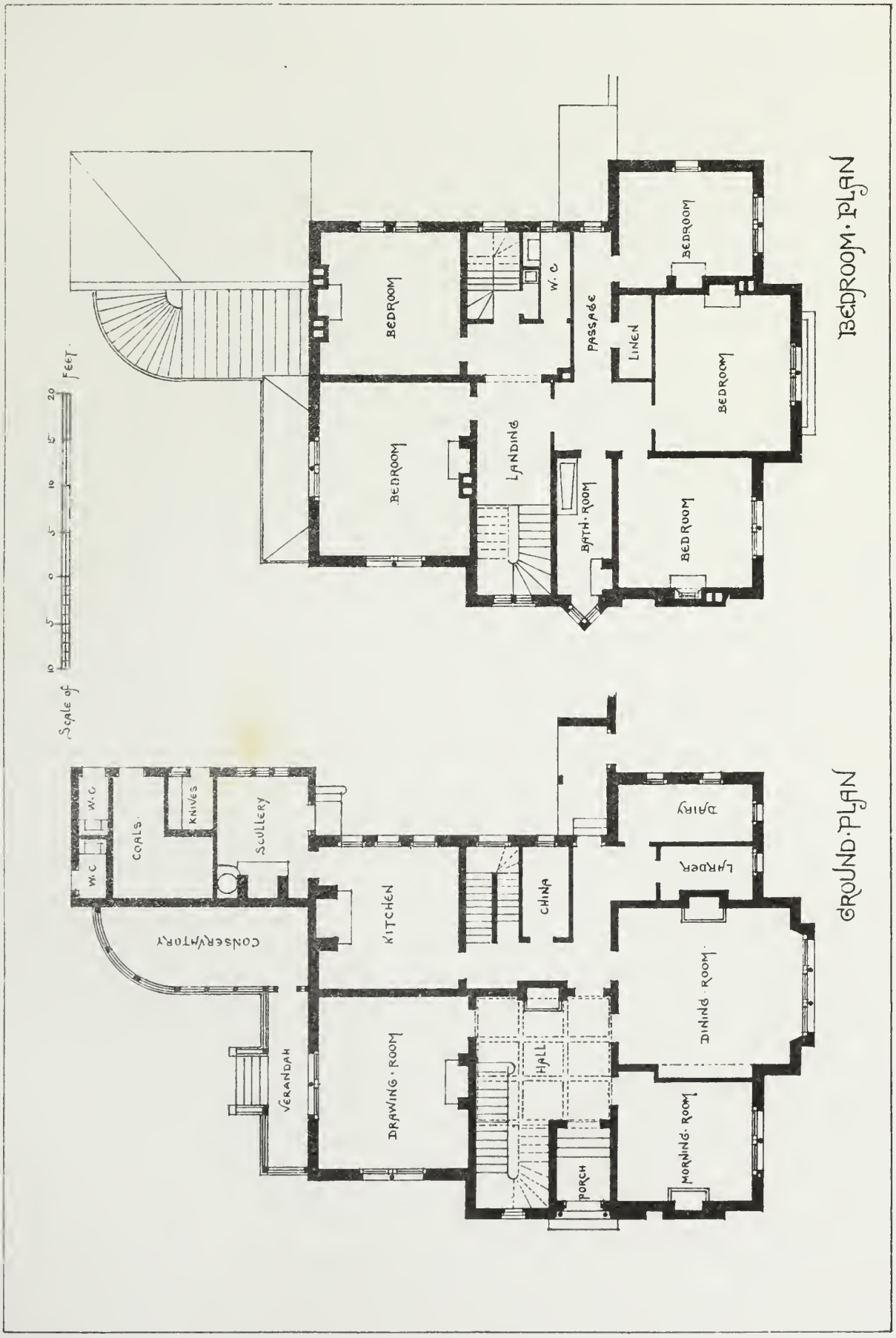
The walling is carried out with local white bricks, and the freestone dressings are of Box ground stone. The roofs are covered with Broseley brindled tiling.

Cost of house, £1,735; equal to 6*d.* per foot cube.

W. Wilkinson Archt Oxford.

HOUSE : ST GILES : OXFORD .

PLATE . 13



HOUSE : ST. GILES' : OXFORD

PLATES XIII. AND XIV.

RESIDENCE, ST. GILES', OXFORD,

BUILT FOR GEORGE WARD, ESQ.

Basement Plan.

Wine Cellar.
Beer Cellar.

Ground Plan.

Drawing Room.
Dining Room.
Morning Room.
Kitchen and Scullery.
Dairy and Larder.
China Closet.
Conservatory and Verandah.

First Floor Plan.

Five Bed-rooms.
Bath Room.
Linen Closet.
W.C.

Second Floor Plan.

Two Bed-rooms.

The extent of ground and view on the south side being limited, the principal rooms were placed towards the east facing the public road, and towards the west facing the lawn. Access is obtained from the drawing-room to the verandah and conservatory.

The walling is carried out with red bricks and Bath stone dressings, and the roofs are covered with Staffordshire tiles.

In consequence of many of the materials being supplied free of cost to the builder, the whole expense of the house was not ascertained.

W. Wilkinson, Architect, Oxford.

LINTON : VICARAGE : HEREFORDSHIRE

ENTRANCE — FRONT

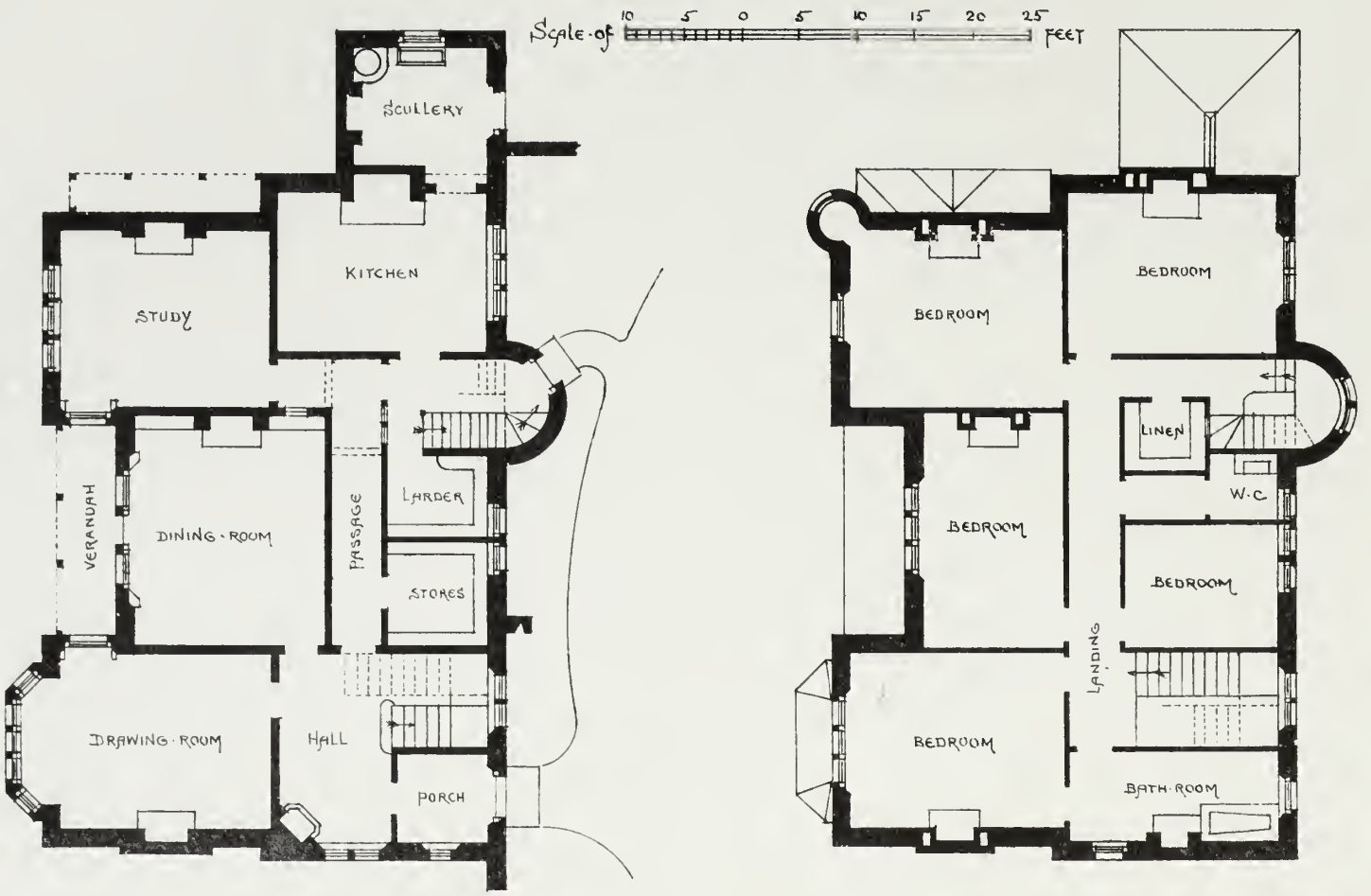
PLATE . 15

W. Wilkinson, Architect, Oxford.

LINTON : VICARAGE : HEREFORDSHIRE

SOUTH —— FRONT

PLATE · 15 —



GROUND PLAN

BEDROOM PLAN

LINTON : VICARAGE : HEREFORDSHIRE

PLATE 16

PLATES XV., XV.ª, AND XVI.

THE VICARAGE, LINTON, HEREFORDSHIRE,

BUILT FOR THE REVEREND E. PALIN.

Basement Plan.

Wine Cellar.
Beer Cellar.

Ground Plan.

Drawing Room.
Dining Room.
Study.
Kitchen and Scullery.
Larder.
Store Closet.

First Floor Plan.

Five Bed-rooms.
Bath Room.
Linen Closet.
W.C.

Second Floor Plan.

Three Bed-rooms.
Housemaid's Closet.

The house is built upon the site of the old vicarage, and has the advantage, which a new house often lacks, of being surrounded by trees.

The entrance is towards the road on the north side, and all the sitting-rooms face towards the south, overlooking a beautiful landscape.

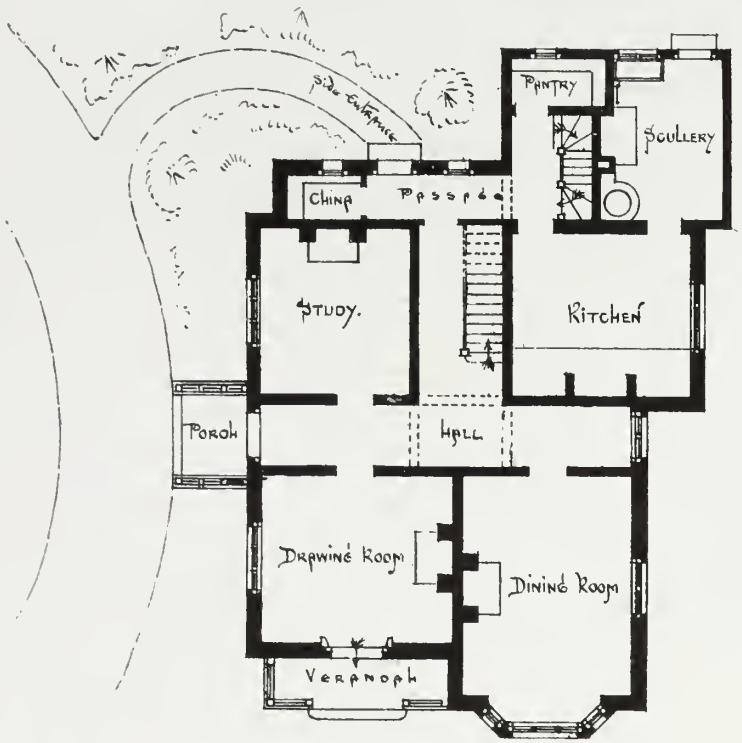
The walls are built with red and grey stones, quarried by the contractor on the glebe, and are lined with brick. The freestone-work is from the Box ground quarries. The roofs are covered with Broseley tiles.

Cost of the house, £2,051 ; equal to 6*d.* per foot cube.

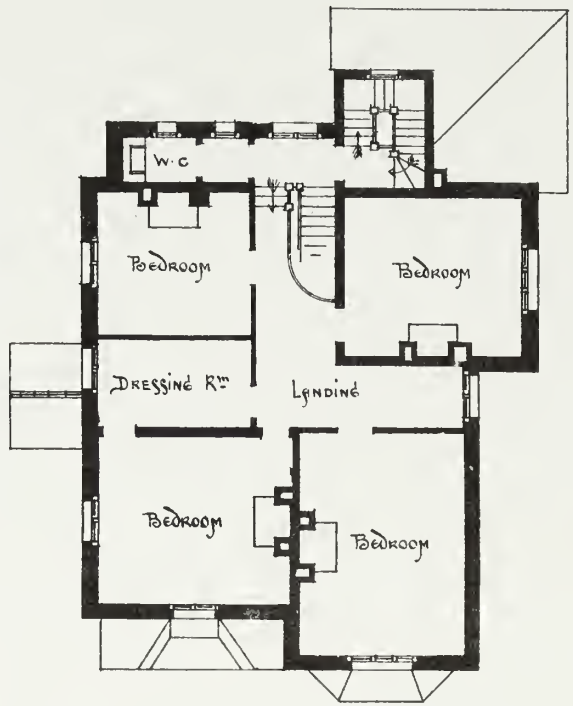
W. Wilkinson, Archt. Oxford

SWANBOURNE : VICARAGE : BUCKS.

PLATE. 17



Ground : Plan



Bedroom : Plan

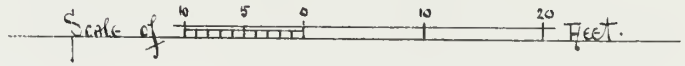


Photo-Lithographed by Whiteman & Bass London

W Wilkinson, Architect, Oxford.

Swanbourne : Vicarage : Bucks

PLATES XVII. AND XVIII.

THE VICARAGE, SWANBOURNE, BUCKINGHAMSHIRE,

BUILT FOR THE REVEREND M. D. MALDEN.

Basement Plan.

Beer Cellar.
Wine Cellar.

Ground Plan.

Drawing Room.
Dining Room.
Study.
Kitchen and Scullery.
Pantry.
China Closet.

First Floor Plan.

Four Bed-rooms.
Dressing Room.
W.C.

Second Floor Plan.

Two Bed-rooms.
Linen Closet.

This house affords the minimum of accommodation which should be provided for a country parsonage.

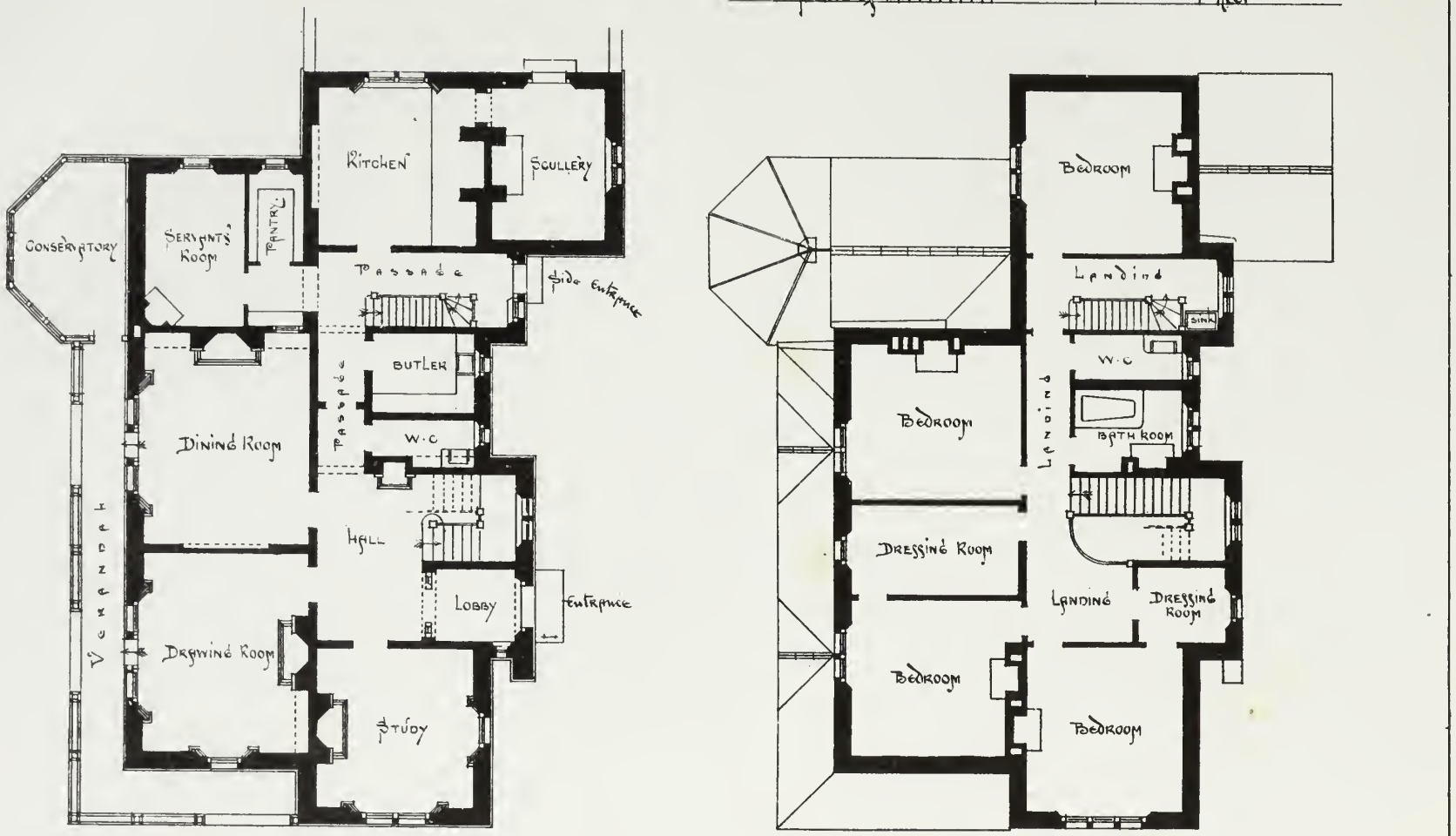
The entrance and study are on the west side, facing the village road; the dining-room and drawing-room are on the south, facing the church.

The walling is of brick, and the roofs are covered with tiles.

Cost of the house, about £1,200; equal to 6*d.* per foot cube.

UPPER – HEYFORD : RECTORY : OXON

PLATE · 19



Ground : Plan

Bedroom : Plan

Photo Lithographed by Waterman & Bass London

W Wilkinson, Architect, Oxford.

Upper : Heyford : Rectory : Oxon

PLATES XIX. AND XX.

THE RECTORY, UPPER HEYFORD, OXFORDSHIRE,

BUILT FOR THE REVEREND C. B. MOUNT.

Basement Plan.

Wine Cellar.
Beer Cellar.
Potting House.

Ground Plan.

Drawing Room.
Dining Room.
Study.
Conservatory and Verandah.
Servants' Room.
Butler's Pantry.
W.C.
Kitchen and Scullery.
Pantry and China Closet.

First Floor Plan.

Four Bed-rooms.
Two Dressing Rooms.
Bath Room.
W.C.

Second Floor Plan.

Four Bed-rooms.
Linen Closet.
Lumber Room.

This house possesses good accommodation for a country rectory. The plan is arranged to suit a site, in some respects, peculiar. The entrance is on the east side, and the chief rooms face south and west.

The walling is carried out with local stones, lined inside with brick. The freestone-work is executed with Box ground stone, and the roofs are covered with Broseley tiling.

Cost of house, about £2,200; equal to 6*d.* per foot cube.

FARM : HOUSE AT UPTON : OXON

PLATE · 21

PLATES XXI. AND XXII.

FARM-HOUSE AT UPTON, OXFORDSHIRE,

BUILT FOR MISS YOUDE.

Basement Plan.

Wine Cellar.
Beer Cellar.
General Cellar.

Ground Plan.

Parlour.
Sitting Room.
Office.
Kitchen.
Scullery.
Dairy.
Larder.
Store Room.

First Floor Plan.

Four Bed-rooms.
Dressing Room.
W.C.
Linen Closet.

Second Floor Plan.

Two Bed-rooms.
Store Room.

Outbuildings.

Fuel Shed.
Garden Closet.
Servants' Closet.

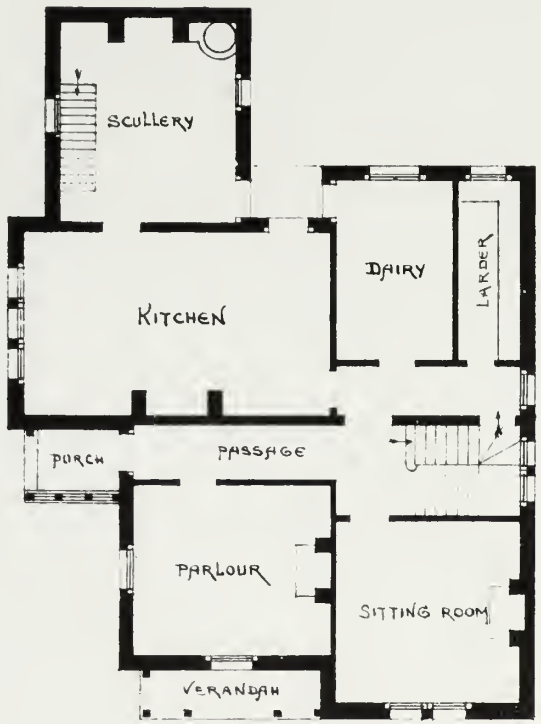
This house is suitable for a farm of from 300 to 500 acres.

The walls are built with stone quarried near the site, and the freestone-work is carried out with the Milton stone. The roofs are covered with tiles.

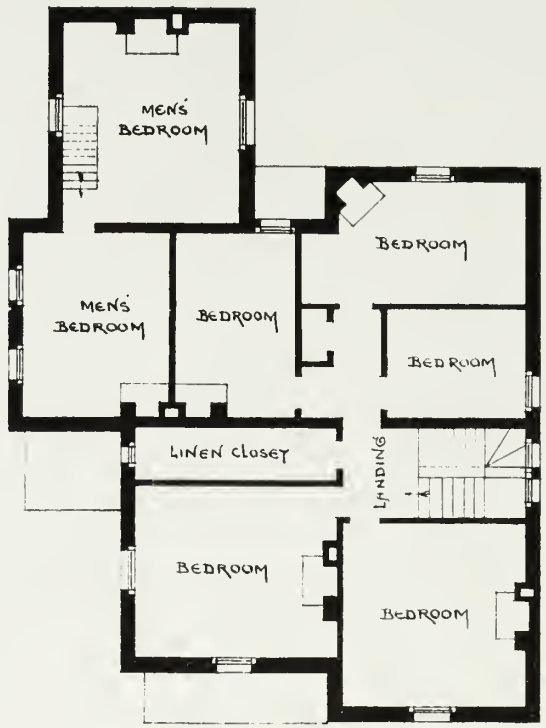
Cost of the house and outbuildings £1,390; equal to $4\frac{3}{4}d.$ per foot cube.

FARM : HOUSE AT NEWBALD : YORKSHIRE

PLATE. 23



GROUND · PLAN



BEDROOM · PLAN

FARM : HOUSE AT NEWBALD : YORKSHIRE

PLATE · 24

PLATES XXIII. AND XXIV.

FARM-HOUSE AT NEWBALD, YORKSHIRE,

BUILT FOR THE REVEREND CANON JEFFERSON.

Basement Plan.

Beer Cellar.

Ground Plan.

Parlour.
Sitting Room.
Kitchen.
Scullery.
Dairy and Larder.

First Floor Plan.

Five Bed-rooms.
Two Bed-rooms for men.
Linen Closet.

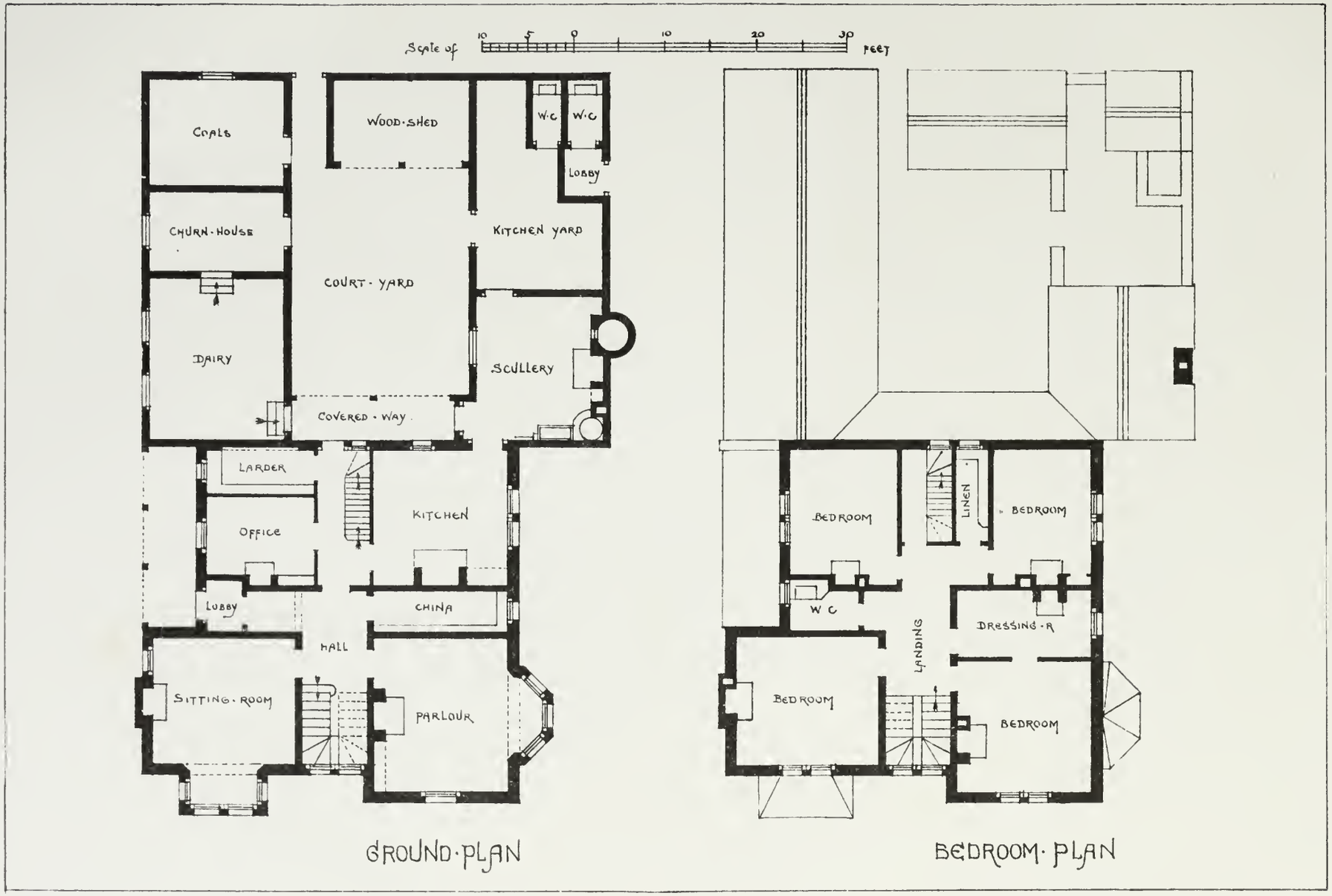
It is customary on some farms in Yorkshire to board and lodge some of the labouring men, and this house gives accommodation for that purpose. The kitchen is large that it may serve as a mess-room for the labourers, and the two dormitories for their accommodation are approached by a separate staircase.

The walls are built with brick, and the roofs covered with blue slates.

A large set of farm-buildings was carried out at the same time, and the cost of the house was not separated from the general estimate.

FARM : HOUSE AT WHITTLEBURY : BUCKS

PLATE · 25



FARM : HOUSE ON LORD : SOUTHAMPTON'S : ESTATE AT WHITTLEBURY : BUCKS

PLATE · 26

PLATES XXV. AND XXVI.

FARM-HOUSE AT WHITTLEBURY, BUCKINGHAMSHIRE,

BUILT FOR THE RIGHT HONOURABLE LORD SOUTHAMPTON.

Basement Plan.

Wine Cellar.
Beer Cellar.
General Cellar.

Ground Plan.

Parlour.
Sitting Room.
Office.
Kitchen.
Scullery.
Larder.
China Closet.

First Floor Plan.

Four Bed-rooms.
Dressing Room.
W.C.
Linen Closet.

Second Floor Plan.

Two Bed-rooms.

Outbuildings.

Dairy and Churn House.
Coal House and Wood Shed.
Garden W.C.
Servants' W.C.

This house is suitable for a farm of from 300 to 500 acres, with pasture land.

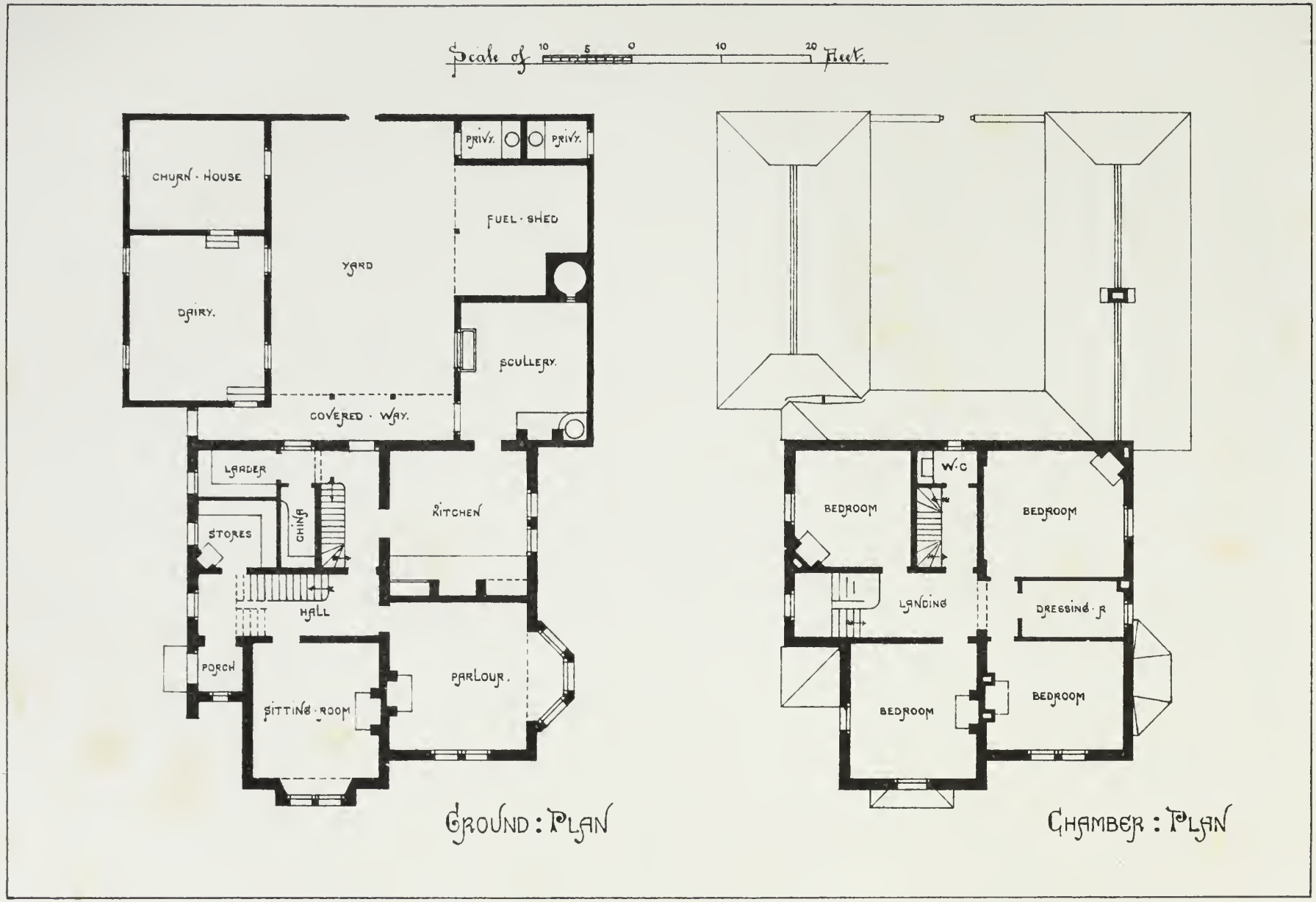
The walling is carried out with red bricks. The roofs are covered with blue slates.

Cost of the house and outbuildings, £1,295 ; equal to 5*d.* per foot cube.

W. Wilkinson, Architect, Oxford

FARM : HOUSE AT CLAYDON : BUCKS .

PLATE 27



FARM : HOUSE AT CLAYDON : BUCKS

PLATE · 28

PLATES XXVII. AND XXVIII.

FARM-HOUSE AT CLAYDON, BUCKINGHAMSHIRE,

BUILT FOR SIR HARRY VERNEY, BART.

Basement Plan.

Wine Cellar.
Beer Cellar.

Ground Plan.

Parlour.
Sitting Room.
Kitchen.
Scullery.
Larder.
Store Room.
China Closet.

First Floor Plan.

Four Bed-rooms.
Dressing Room.
W.C.

Second Floor Plan.

Three Bed-rooms.

Outbuildings.

Dairy.
Churn House.
Fuel Shed.
Garden Closet.
Servants' Closet.

This house is suitable for a farm of from 300 to 500 acres, with pasture land.

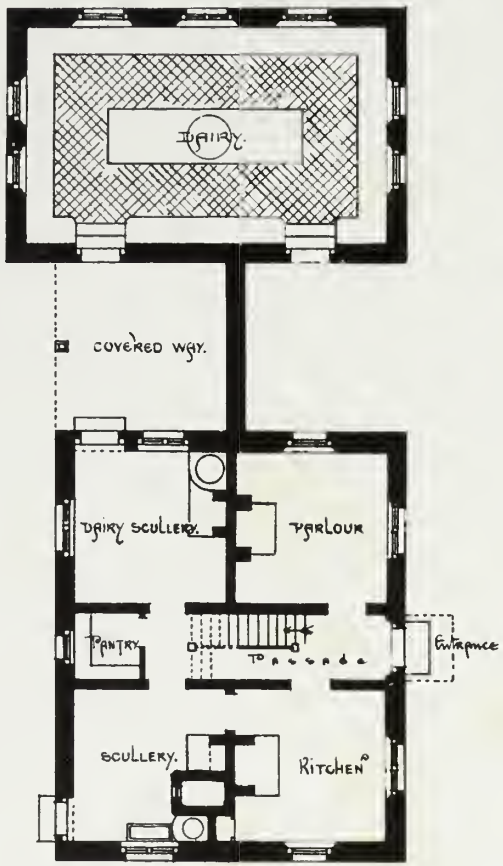
The walls are built with local bricks, and the roofs are covered with Staffordshire tiling.

Cost of the house and outbuildings, £1,235; equal to 5*d.* per foot cube.

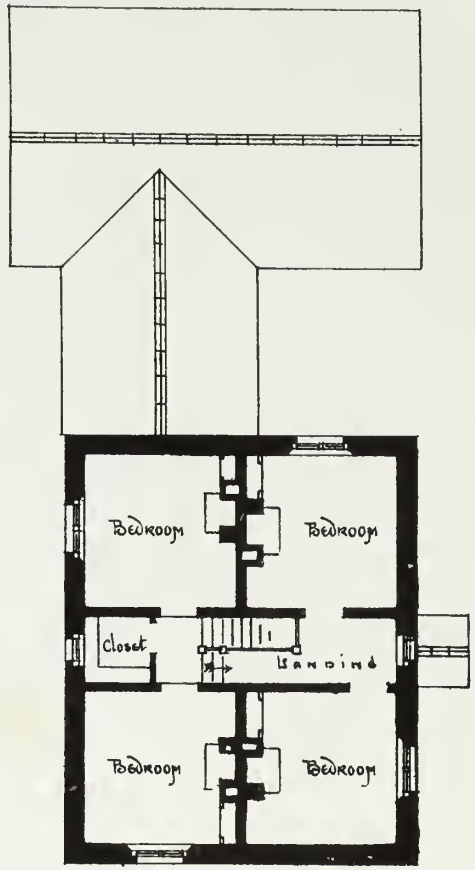
W. Wilkinson, Archt Oxford

FARM : BAILIFFS : HOUSE AND DAIRY LONGLEATE – PARK : WILTS

PLATE. 29



Ground : Plan



Bedroom : Plan

Scale of 10 5 0 10 20 Feet.

W. Wilkinson, Architect, Oxford

Farm : Bailiff's : House and Dairy Longleate : Park : Wilts

PLATE · 30

PLATES XXIX. AND XXX.

FARM-BAILIFF'S HOUSE AND DAIRY AT THE NEW FARM HOMESTEAD, LONGLEATE PARK, WILTSHIRE,

BUILT FOR THE MOST NOBLE THE MARQUIS OF BATH.

Ground Plan.

Parlour.
Kitchen.
Scullery.
Pantry.
Dairy.
Dairy Scullery.
Covered Way.

Bed-room Plan.

Four Bed-rooms.
Linen Closet.

This house was built for the farm-bailiff; and the dairy adjoining, for supplying butter and cream to Longleate House.

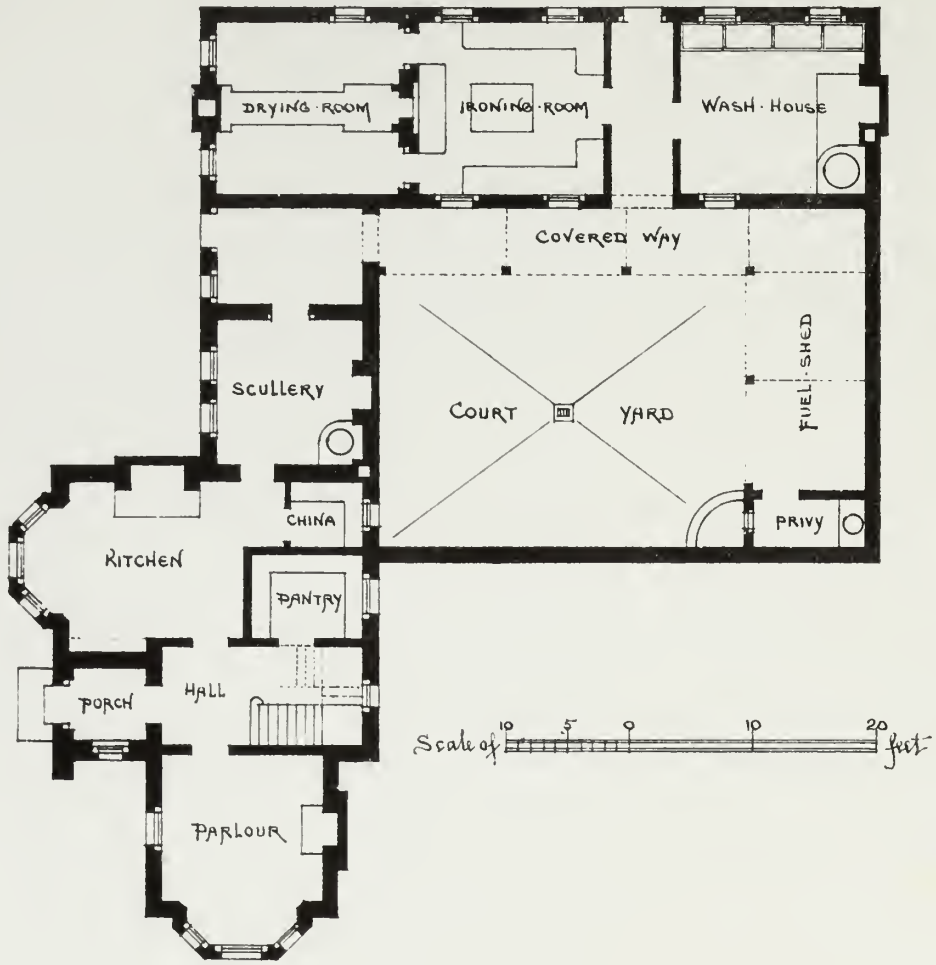
This, and a house for the clerk of the works, overlook the new farm-buildings and workshops, which were erected at the same time, the whole forming a complete set of buildings.

The walling throughout is of stone, and the roofs are covered with Staffordshire tiles.

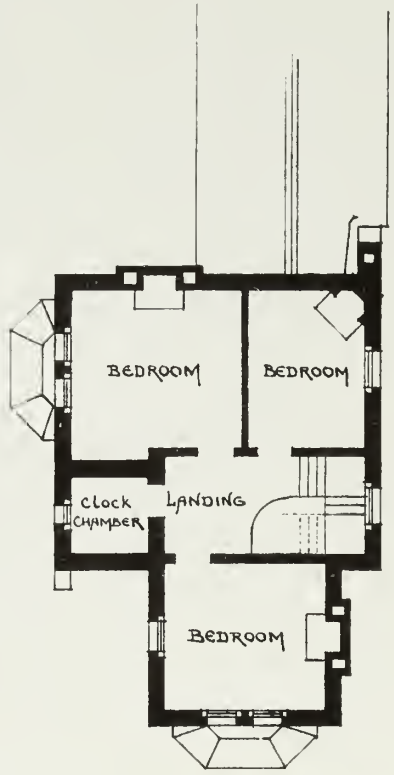
W Wilkinson, Architect, Oxford

FARM : BAILIFFS : HOUSE : HAVERING : PARK : ESSEX

PLATE · 31



GROUND · PLAN



BEDROOM · PLAN

FARM : BAILIFFS : HOUSE WITH LAUNDRY AND WASH-HOUSE ATTACHED HAVERING : PARK : ESSEX

PLATE · 32

PLATES XXXI. AND XXXII.

FARM-BAILIFF'S HOUSE AND LAUNDRY AT NEW FARM HOMESTEAD, HAVERING PARK, ESSEX.

BUILT FOR DAVID MCINTOSH, ESQ.

Ground Plan.

Parlour.
Kitchen.
Scullery.
Pantry and China Closet.
Wash-house.
Drying Room.
Ironing Room.
Court-yard and Offices.

Bed-room Plan.

Three Bed-rooms.
Clock Chamber.

This house was built for the bailiff of the Home Farm, Havering Park, forming part of a complete farm homestead. The laundry adjoins the house, and is under the superintendence of the bailiff's wife; it is fitted with Huthnance's patent stove and drying-room fittings.

The bricks for the walls, and tiles for the roofs, were made on the estate; and the whole of the works, including the Farm Homestead, and extensive additions to the Mansion, and new Stable Buildings, were performed by workmen engaged by Mr. McIntosh's surveyor, under a resident clerk of works.

W. Wilkinson, Architect, Oxford.

LODGE AT BAGLEY : WOOD : OXON

PLATE · 33

LODGE AT BADLEY : WOOD : OXON

PLATE · 34

PLATES XXXIII. AND XXXIV.

THE KEEPER'S LODGE AT BAGLEY WOOD, OXON.,

BUILT FOR THE PRESIDENT AND FELLOWS OF ST. JOHN'S COLLEGE.

Basement Plan.

Cellars.

Ground Plan.

Dining Room.
Verandah.
Living Room.
Scullery.
Pantry.

First-Floor Plan.

Three Bed-rooms.

Outbuildings.

Fuel Shed.
Gentlemen's W.C.
Keeper's W.C.

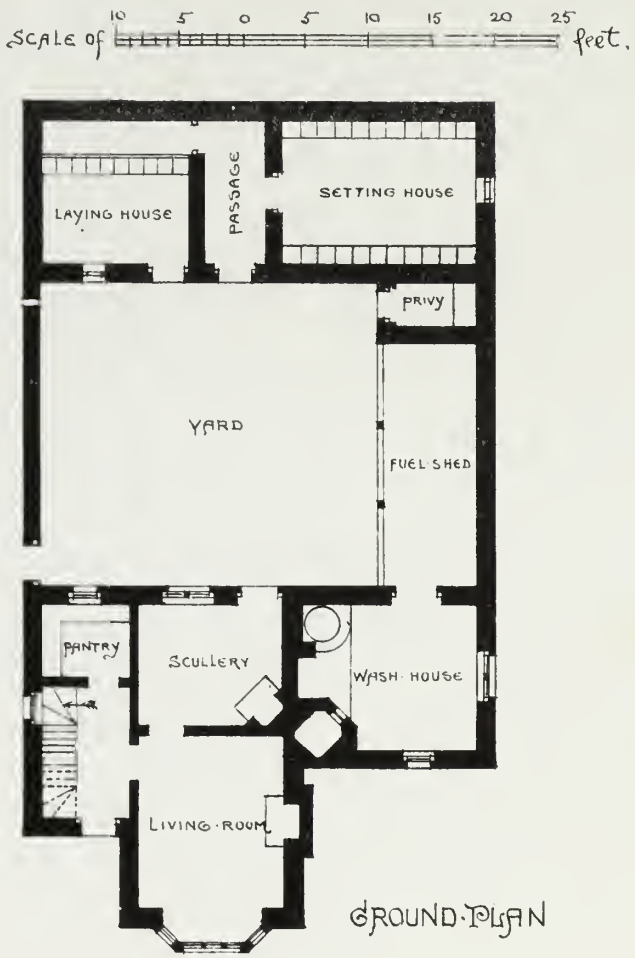
This lodge is situated in the wood, about three miles from Oxford. The dining-room is provided for the use of dining and shooting parties, and also to serve as an auction room at the college timber sales.

The walling is carried out with stone dug in the wood, with freestone dressings, and brick linings.

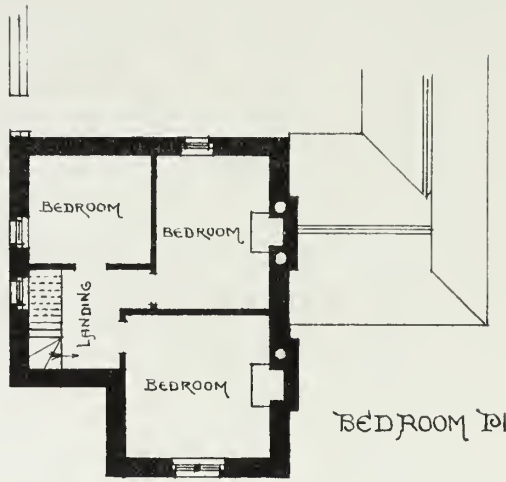
Cost of the lodge and outbuildings, £562 (exclusive of a deep well); equal to $4\frac{3}{4}d.$ per foot cube.

KEEPER'S : LODGE AND PHEASANTRY : ASTROP : ESTATE : OXON.

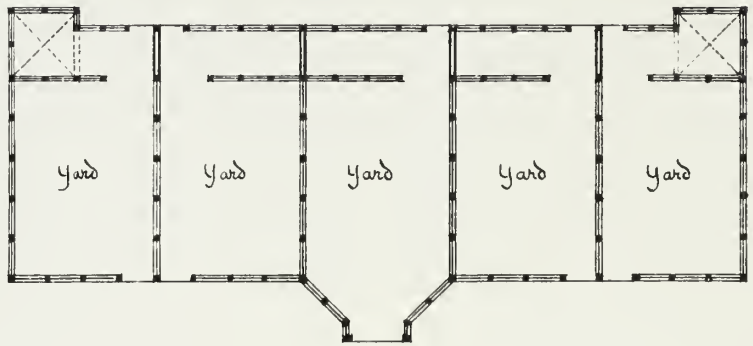
PLATE · 35



GROUND PLAN



BEDROOM PLAN



PHEASANTRY

KEEPERS' LODGE AND PHEASANTRY : ASTROP : ESTATE : OXON

PLATE 36

PLATES XXXV. AND XXXVI.

KEEPER'S LODGE AND PHEASANTRY, ASTROP, OXON.,

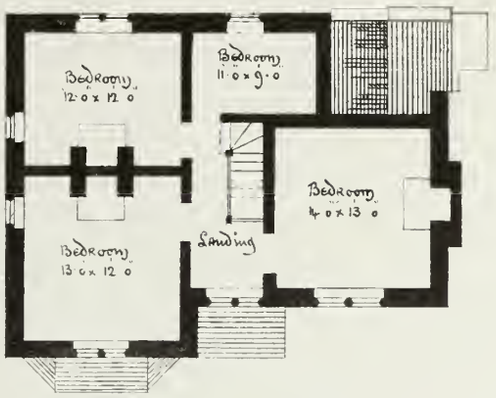
BUILT FOR SIR WILLIAM R. BROWN, BART.

Besides the accommodation for the keeper and his family, this plan provides poultry-houses, and a detached pheasantry.

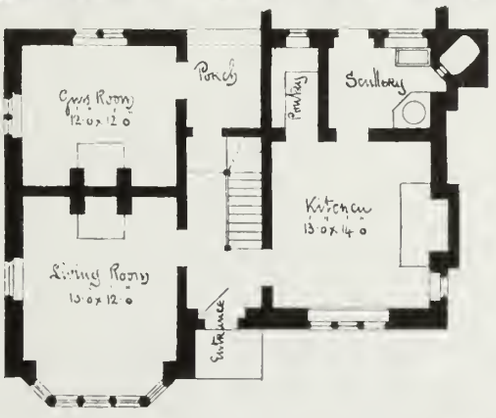
The walls are of stone delivered on the site free of cost to the contractor, and are lined inside with brick. The roofs are covered with blue slates.

Cost of the lodge and outbuildings, £364 (exclusive of well); equal to 3½*d.* per foot cube. Cost of the pheasantry, £133.

BEDROOM : PLAN



GROUND : PLAN



Scale 16 Feet to one inch.

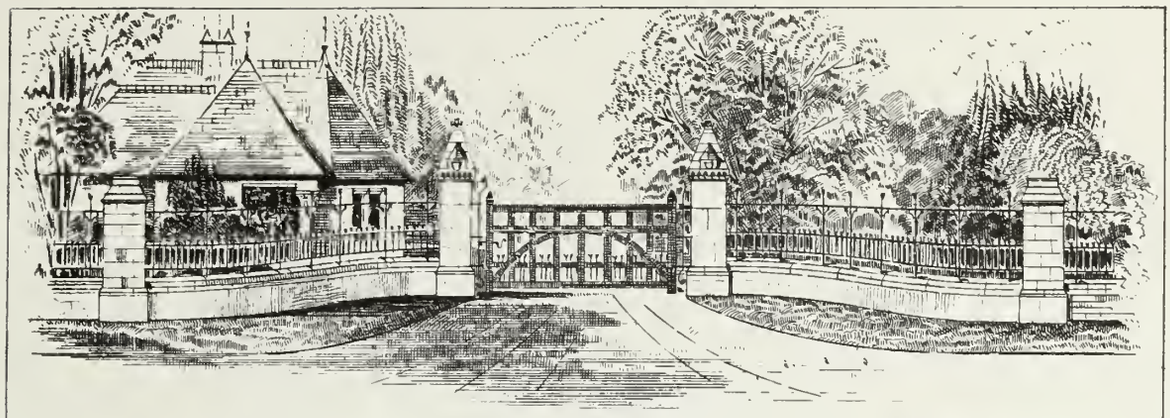
KEEPERS : LODGE AT KIRTLINGTON : PARK : OXFORDSHIRE

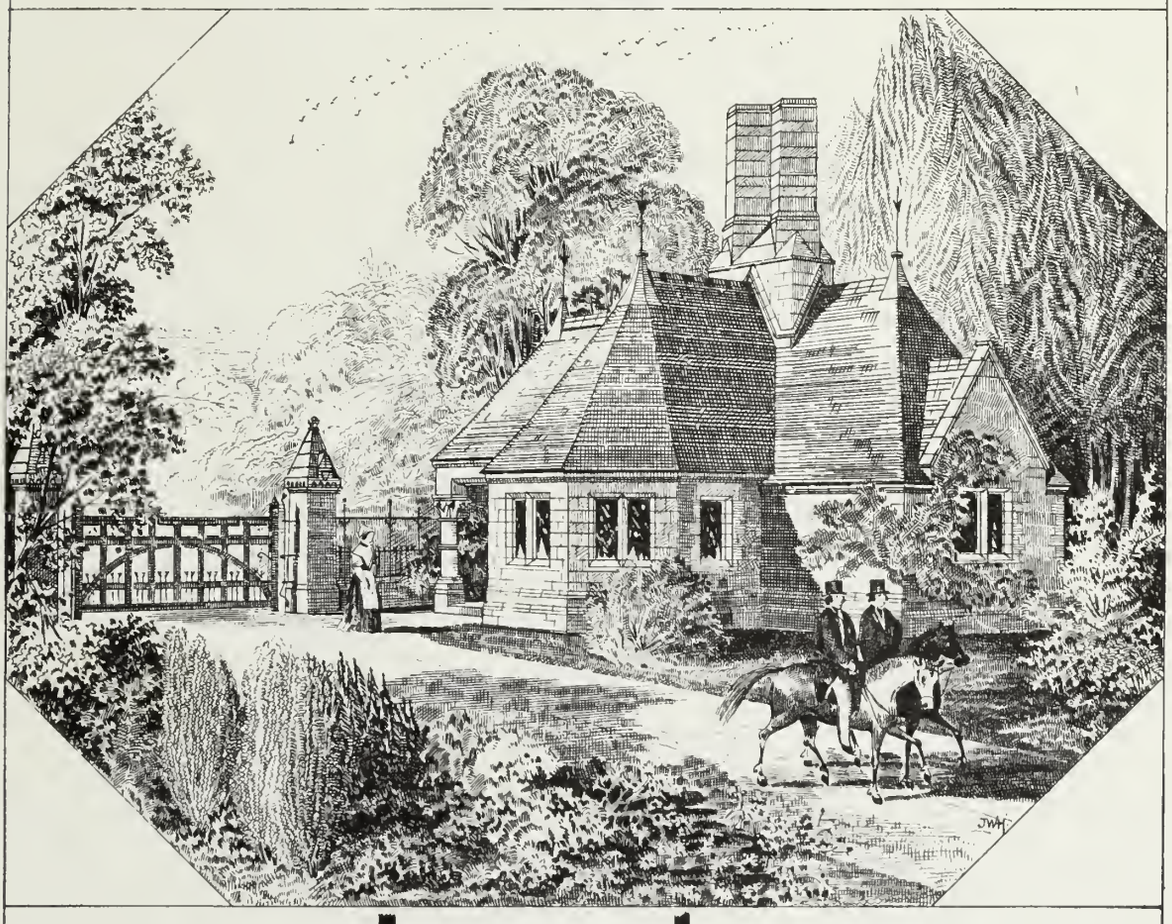
PLATE XXXVII.

KEEPER'S LODGE AT KIRTLINGTON PARK, OXON.,

Built for Sir Henry W. Dashwood, Bart.

This is of the same class as the two last buildings, varying only in plan and arrangement. It was built by the estate workmen.





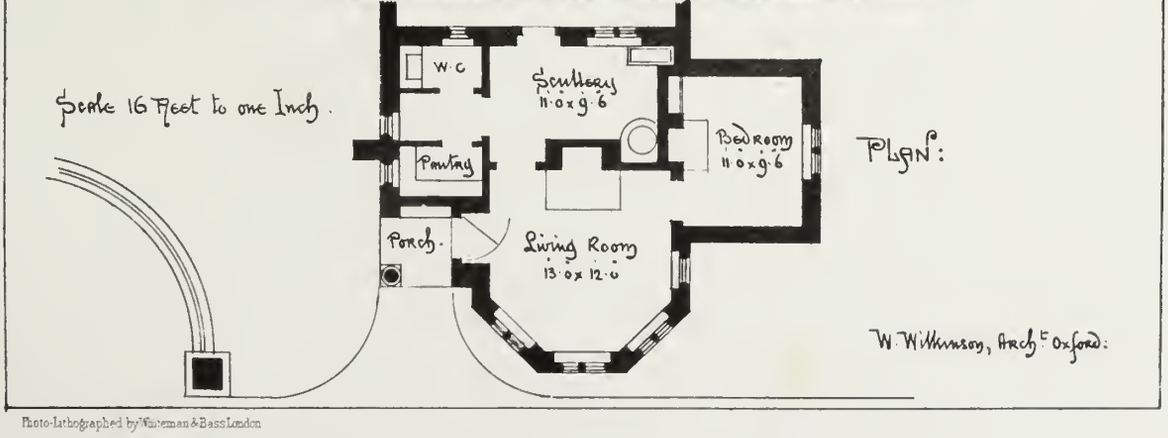


Photo-Lithographed by Whiteman & Bass London

LODGE TO MIDDLETON – CHENEY : HOUSE

NORTHAMPTONSHIRE

PLATE XXXVIII.

ENTRANCE LODGE TO THE MANOR-HOUSE AT MIDDLETON CHENEY, NORTHAMPTONSHIRE,

BUILT FOR MISS HORTON.

THIS lodge provides all the required accommodation on the ground-floor. The building is carried out with work of a similar character to that of the mansion, which was built at the same time, and the expense was not kept separate.

Photo-Lithographed by Winterman & Basa London

LODGE TO BIDNELL : HOUSE : OXON

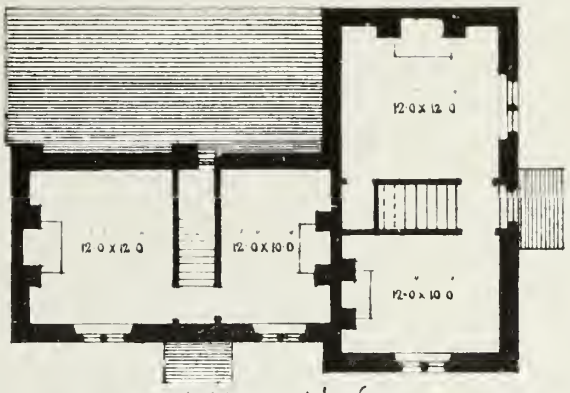
PLATE XXXIX.

ENTRANCE LODGE TO BIGNELL HOUSE, OXFORDSHIRE,

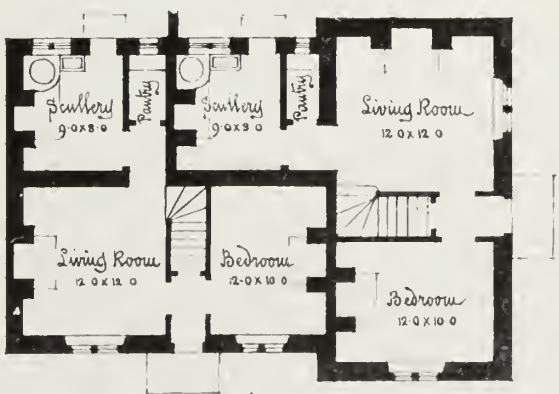
Built for the Misses Tyrwhitt Drake.

This lodge stands at the entrance to the grounds of Bignell House, illustrated on Plates V. and VI., and is of a similar character.

The cost was about £300.



BEDROOM · PLAN



Scale 16 feet to one inch

GROUND PLAN

W. Wilkinson, Archt

PAIR OF COTTAGES AT BOURTON, OXON

PLATE XL.

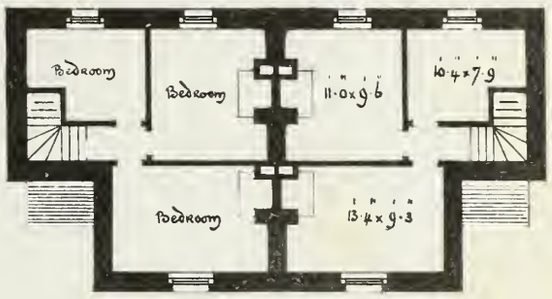
PAIR OF COTTAGES AT BLACK BOURTON, OXFORDSHIRE,

Built for His Grace the Duke of Marlborough.

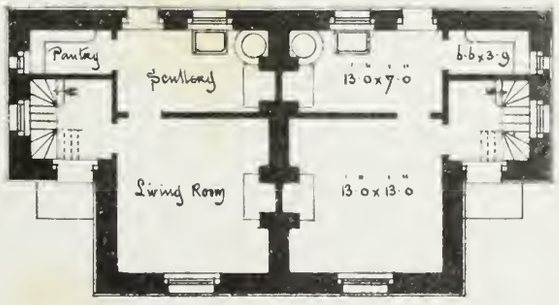
The plan of these cottages has several advantages. It may be adopted for a pair, or for a row. Each cottage has a living-room, scullery, pantry, and one bedroom on the ground-floor, and two bedrooms above. The ground-floor bedroom is found, in some cases, very serviceable for aged parents who may be living with a married son or daughter. At times, when only two bedrooms are required by the family, the ground-floor bedroom can be used as a sitting-room, dressmaking-room, or shop. The lean-to roof of the scullery is unceiled, and is useful for storing tools, &c.

The plan has been adopted on Sir Henry Dashwood's estate at Kirtlington, and at other places.

The cost of a pair varies from about £300 to £330, including outbuildings, not shewn by the plan.



BEDROOM : PLAN



Scale 16 Feet to one Inch.

W. Wilkinson, Archt. Oxford

GROUND : PLAN

PAIR OF COTTAGES AT SOUTHLEIGH, OXON:

PLATE XLI.

PAIR OF COTTAGES AT SOUTHLEIGH, OXFORDSHIRE,

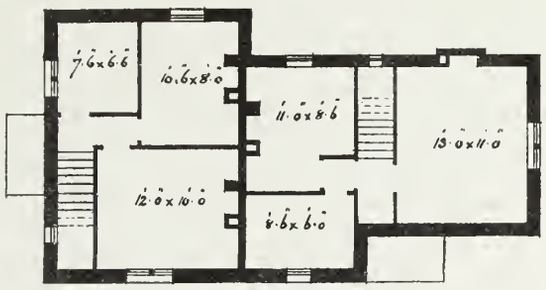
Built on the Estate of the late Major Siethorpe.

The plan of these cottages is somewhat similar to that for which a prize was awarded by the Yorkshire Agricultural Society in 1861; it is a plan which has been adopted with more or less modifications for many years.

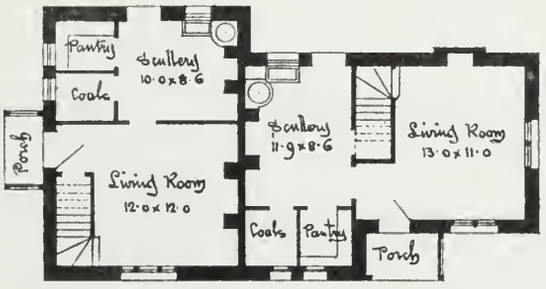
The walls are built with local stones. The roofs are covered with Broseley tiling.

In addition to the accommodation shewn upon the plans, each cottage is provided with out-offices.

Cost of the pair of cottages and out-offices, £280.



BEDROOM · PLAN



Scale 16 Feet to one Inch

GROUND · PLAN

W. Williamson, Archt. Oxford.

Photo-Lithographed by Whiteman & Bass London

PAIR OF COTTAGES AT ODDINGTON, OXON:

PLATE XLII.

PAIR OF COTTAGES AT ODDINGTON GRANGE, OXFORDSHIRE,

Built for Frederick J. Staples-Browne, Esq.

These cottages were designed for a site where two presentable fronts were required. The plan is less expensive than that shewn on Plate XLI.; the entrance-door opens directly into the living-room, an arrangement which is often adopted, but which is not so good as that of the preceding plan.

BEDROOM : PLAN

Bedroom 12·0×7·0

Bedroom 10·0×9·0

Bedroom 12·0×9·0

COTTAGE AT STEEPLE : ASTON.

OXFORDSHIRE

GROUND : PLAN

Scullery 12·0×8·0

Coals

Living Room 12·0×11·0

Pantry

Scale of Plans 16 feet to one Inch

W. Wilkinson, Archt. Oxford.

BEDROOM : PLAN

Bedroom 10·0×9·6

Bedroom 13·0×12·0

COTTAGE AT LAUNTON

OXFORDSHIRE

GROUND : PLAN

Coals

Scullery 10·0×9·0

Living Room 13·0×12·0

Porch

PLATE XLIII.

LABOURER'S COTTAGE AT LAUNTON, OXFORDSHIRE,

Built for Frederick J. Staples-Browne, Esq.;

and

LABOURER'S COTTAGE AT STEEPLE ASTON, OXFORDSHIRE,

Built for the Reverend J. B. Brooks.

The first of these plans provides two bedrooms only, the second three bedrooms. The walls are of local stone, and the roofs are covered with blue slates. They are provided with the usual out-offices.

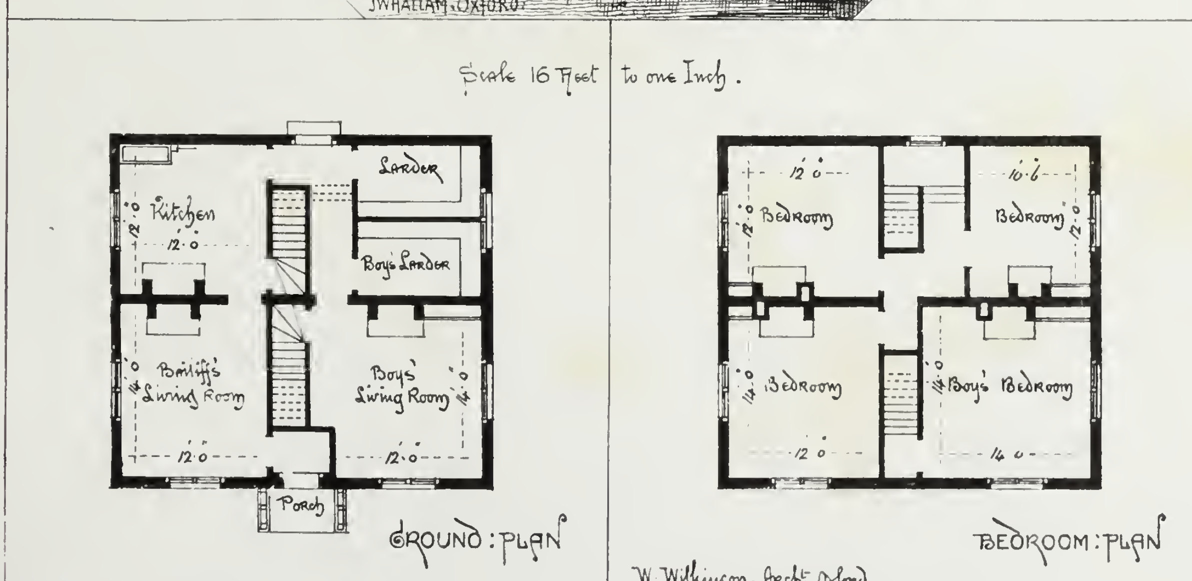


Photo-Lithographed by W...

BAILIFF'S : COTTAGE AT SHIRBURN : OXON

PLATE XLIV.

THE BAILIFF'S COTTAGE, SHIRBURN CASTLE, OXFORDSHIRE,

BUILT FOR THE RIGHT HONOURABLE THE EARL OF MACCLESFIELD.

THIS cottage was built for the working bailiff, and it also provides accommodation for boarding and lodging three or four boys working on the home farm. It is built in connection with the new homestead on the Shirburn Castle estate.

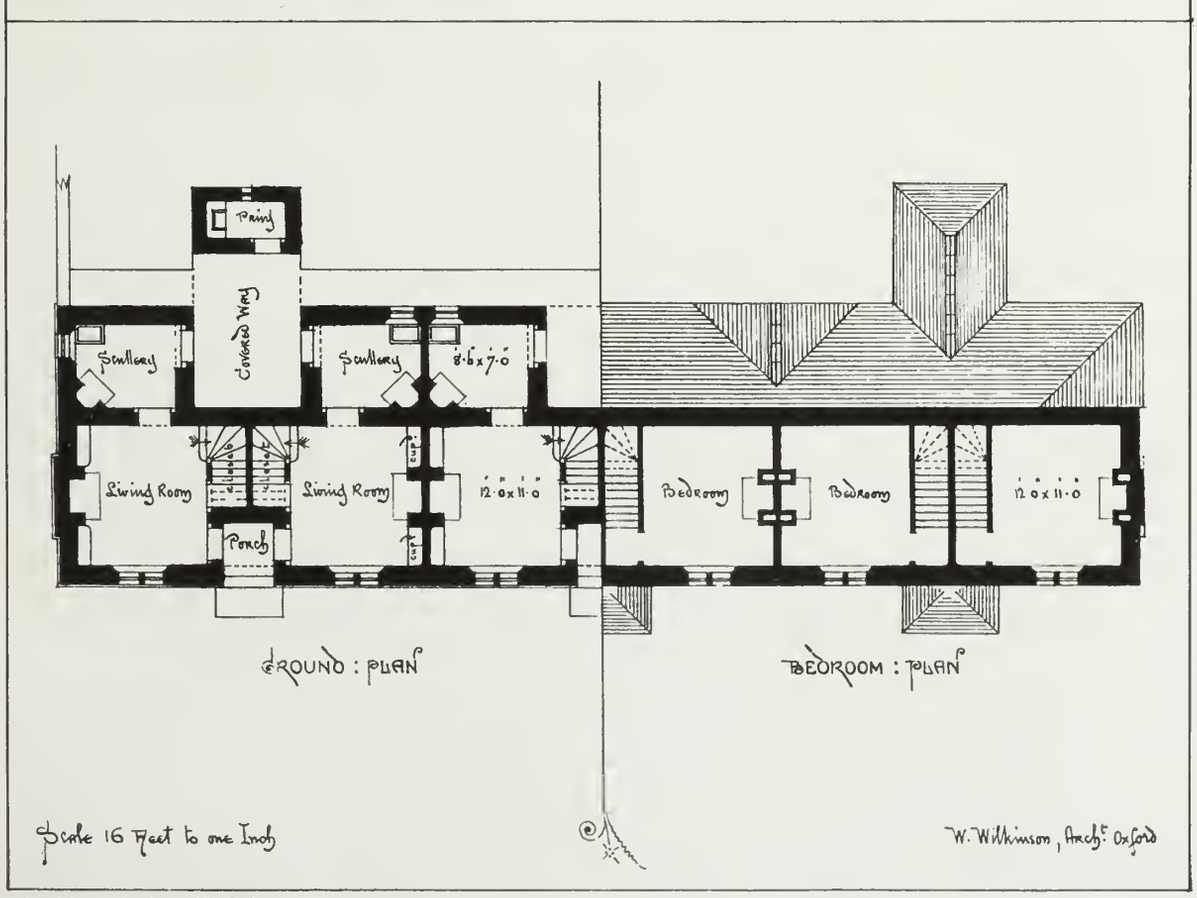


Photo Lithographed by Waterman & Bass, London

ALMSHOUSES : AT : WITNEY.

PLATE XLV.

ALMSHOUSES AT WITNEY, OXFORDSHIRE,

Built for the Trustees of Holloway's Charity.

These six almshouses are substantially built of local stone, with freestone dressings, the roofs being covered with Stonesfield slates. The walls are lined with brick.

Cost of the almshouses and outbuildings, £725; equal to $4\frac{1}{4}d.$ per foot cube.