

SCIENTIFIC AMERICAN

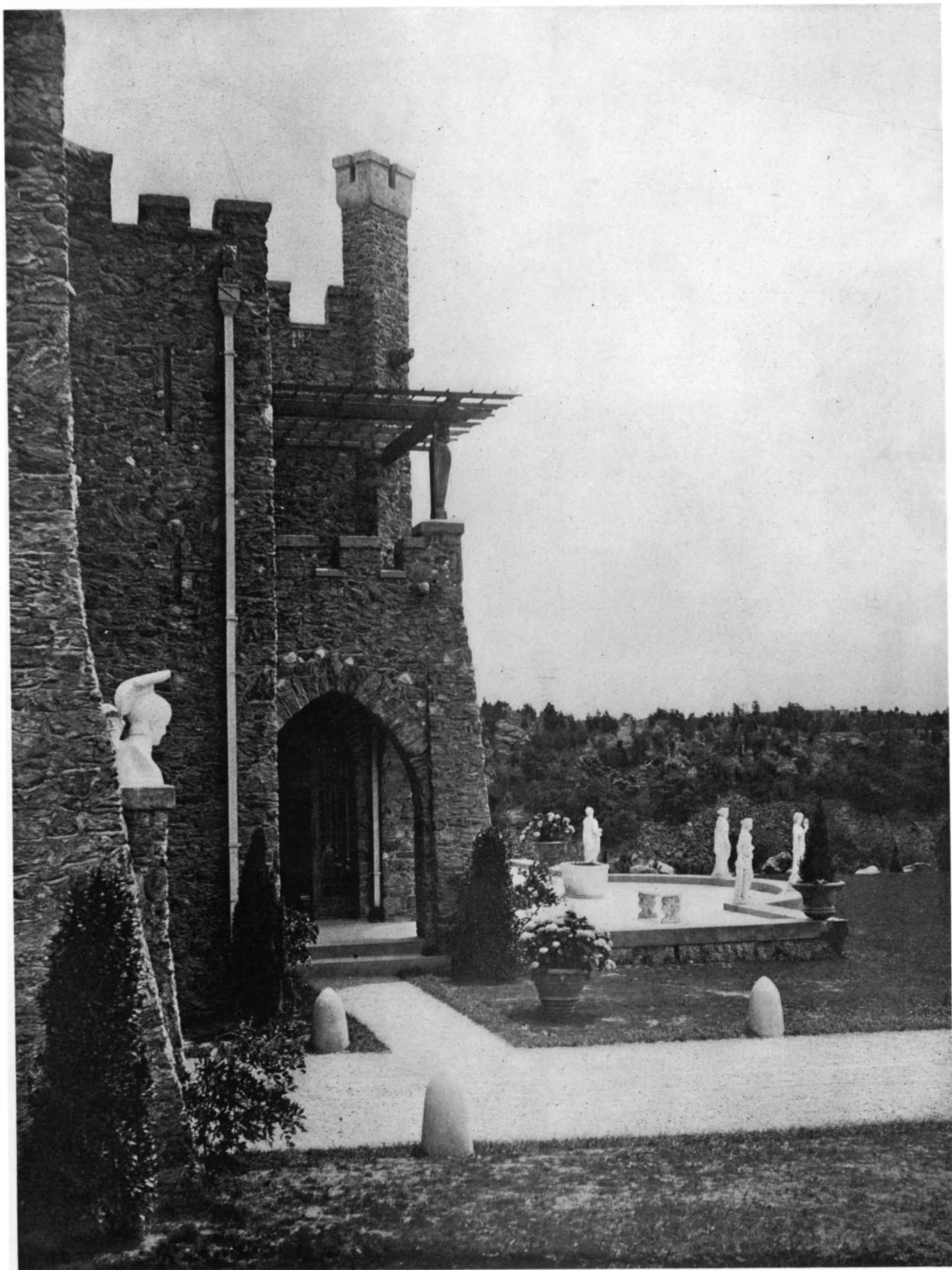
Building Monthly.

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PORCH AND TERRACE—"GREY CRAIG," ESTATE OF J. MITCHELL CLARK, ESQ., NEWPORT, R. I.—See page 91.
MR. ABNER J. HAYDEL, ARCHITECT.

SCIENTIFIC AMERICAN BUILDING MONTHLY

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CONTENTS

Monthly Comment: The Fire Losses.—Houses in the Spring.—The House and its Neighborhood.—Splendid Furnishings.—The increase of the Automobile	90
The Small House	90
Talks with Architects, by BARR FERREE: Mr. Abner J. Haydel and "Grey Craig," the Estate of J. Mitchell Clark, Esq., at Newport, R. I.—ILLUSTRATED	91
Mill-Brook, the Country Estate of F. King Wainwright, Esq., at Bryn Mawr, Pa.—ILLUSTRATED	104
The Summer House of D. C. Percival, Esq., at Marblehead, Mass.—ILLUSTRATED	105
A House at Woodmere, L. I.—ILLUSTRATED	105
Residence of W. F. Dorflinger, Esq., at Essex Fells, N. J.—ILLUSTRATED	105
Melon House on the Estate of D. O. Mills, Esq., at Staatsburg, N. Y.—ILLUSTRATED	105
A House at Bensonhurst, L. I.—ILLUSTRATED	105
A Group of Entrances.—ILLUSTRATED	105
The Household: Room Arrangement.—Summer Furniture.—A Home-Made Fly Screen.—New Folding-Bed.—Japanese Materials	106
A Bungalow at Premium Point, New Rochelle, N. Y.—ILLUSTRATED	106
Residence of Henry Blake, Esq., at Quogue, L. I.—ILLUSTRATED	106
The Garden: Time in Garden Growing.—Garden Ornaments Again.—Garden Work	106
The Woman's House: The Woman's House.—A Woman's Bungalow	107
Trees: Tree Planting for Highways	107
The Bachelor: The Bachelor's Home in New York.—Pure Air	107
Sanitation: Water Supply for Small Towns, by P. Bryne, C.E.	108
Electric Lights in the House	108
Heating Talk: Artificial Cooling.—The Furnace Water Pan.—Heating Capacity	108
New Building Patents: Brick, Stone, and Tile.—Carpentry.—Construction.—Elevators.—Fireproofing and Fire Extinguishment.—Hardware.—Heating and Ventilation.—Miscellaneous.—Plumbing.—Tools	109
English Plaster Work	109
Publishers' Department: All-Steel Sash Pulleys (ILLUSTRATED).—Water Tank for Roofs or Towers (ILLUSTRATED).—Tapestrolia Decorations.—Screens for Doors and Windows (ILLUSTRATED).—Clips.—A Cheap but Accurate American Watch.—Mantels, Fireplaces, Grilles, etc. (ILLUSTRATED)	109, 110

*. The engravings presented in this issue are made from photographs taken specially for the SCIENTIFIC AMERICAN BUILDING MONTHLY.

MONTHLY COMMENT.

THE terrible ravages by fire in the past winter have already been alluded to in these columns, but the statistics that have been collected since this waste was commented on brings out the loss occasioned by these catastrophes in a truly startling manner. Over \$90,000,000 worth of property burned in the single month of February is a record not only startling but horrible. It is a loss so great that no steps that can be taken to prevent a repetition of it can be counted as too costly. Protection by insurance counts for very little in the sum total of losses to the community at large. Insurance, of course, is necessary, and gives some satisfaction to the unfortunate owner whose buildings have been destroyed or injured by fire; but it can in no sense cover the actual loss to the general community. The statistics of fire losses for the first two months of three successive years are appalling. In 1902 the loss was \$36,043,300 for January and February; for the same months in 1903 the loss was \$29,257,150; and for the same period in 1904 the loss was \$111,841,200. The average for the current year per month has been \$55,920,660. This means a financial situation of extraordinary seriousness.

GENERAL interest in houses is now at its height. Everybody has either just moved into his new house or is enjoying his own with renewed satisfaction. Houses, no doubt, are very useful and even necessary in the cold winter time, but when the summer comes along, and one can go out of them, that is the time! It is strange that houses, which are built for protection and shelter, should only reach their most enjoyable use when one can leave them and stay away from them pleasantly. Yet such seems to be the fact. However, it is more to the point that people are looking at houses, discussing houses, testing houses, wondering about houses, building houses. The more any of these operations are performed, the better it is for

houses in the long run. Once people begun to consider houses as houses, a long step forward has been made in the popularization of architecture.

ANOTHER timely idea is that people are no longer considering houses as things apart and by themselves. We are learning, and learning every day, to consider the house in its relationship to the environment. Good houses, well built houses, attractive houses, will not sell in neighborhoods poor and undeveloped. A green field, of course, is always welcome, but even green fields fall on one when they are littered with waste paper, when they are turned into ball grounds for the Sunday crowds, when goats and other strange beasts seek food and rest upon them. Yet all these things add to the joy of existence, and help the making of a pleasant day. The sober-minded householder, certainly, does not enjoy these delights in others in close proximity to his dwelling, and so the environment of the house, the street or road, the sidewalk, the close by grass, the garden that is to be one's very own—all these things count in the perfecting of the house and the delight one should naturally take in one's own abiding place.

THERE is attraction in splendid furnishings which is sometimes irresistible. Soft curtains, rich stuffs, handsome carpets, artistic decorations, are attractive even to those who can not tell wherein lies their excellence, nor what it is which directly contributes to their beauty. A splendid house, splendidly furnished, is apt to have some special interest, even if not arranged in the best of taste or wholly filled with art works. Richness of materials helps and counts very much. Yet richness of materials will not, in itself, make a house distinguished or give it merit. Good taste is of more value than sumptuousness in decorations. It is the taste in the original fabric which makes a piece of goods beautiful and interesting. Taste in its disposition will help further in the decorative effect. A rich material is always good in itself, but it is never effectively employed in household decoration unless it is used in good taste and in a good way.

PROPHETIC souls are already looking forward to the time when the horse will be supplanted by the automobile for all city service. When that happy time arrives we are told there will be more room in the streets, for the space taken by the horses will be saved, and more vehicles can be accommodated within a given area. The argument is a specious one, yet the real effect of the popularization of the automobile is more likely to be an increase in the congestion of street traffic than a lessening of the present crowding. Low prices for automobiles will mean their vastly increased use. More people will buy them and more people will use them. Instead of fewer vehicles there will be more, and unless the laws are modified, there will be more untrained reckless propellers of such conveyances than at present infest our thoroughfares. Public matters like this often adjust themselves, but it should at least be obvious that we can not count on much additional space when the horse disappears from the streets.

THE SMALL HOUSE.

THE small house, the house for persons of very moderate means, is one of the most important architectural problems of the present day, yet it is one of the questions which receives the least consideration and attention from the architect. And the reason is not far to seek. Architects are paid by a commission on the cost of their work. The labor involved in planning and designing a small house is very considerable, the pay is very small. This sums up the position of the architects, save that, as a rule, there is small glory or distinction to be had from designing such structures. An architect whose practice was limited to work of this description would be regarded by his fellow-craftsmen as a small man, doing small work, and hardly worthy to rank with the real architects who turn out monumental structures and live in the fierce light of distinction.

It is a misfortune that such should be the case, yet architects are but human, and not one of them is engaged in his profession for the benefit of his health. When one realizes that the commission on a \$500,000 job is \$35,000, and that there is scarcely a limit to the number of such jobs every architect regards himself capable of carrying out in a single year, and that the commission on a \$1,000 house would be but \$50, it is apparent how many of the latter one man would have to do in the time in which he could earn \$25,000 on a single large piece of work. There is, therefore, a real reason, and a very good one, why architects should neglect the smaller jobs and wish only to have large ones.

But the misfortune of the situation is none the less because it can hardly be avoided. The misfortune is, indeed, very great and very real, for very many more

people live in low priced dwellings than in costly homes, and the health and well being of the masses of people is dependent, in large measure, upon their homes. The problem of small houses, therefore, constitutes one of the great problems of the day, although, as has been explained, architects contribute little toward its solution.

As a matter of fact, however, the actual situation has been somewhat understated. Small houses, it is true, do not pay the architect for the time and labor he must spend upon their design and building; but as an offset to this state of affairs is the fact that such dwellings are seldom built in single examples, but, when built at all, are built in rows and blocks, many houses at a time. New York City, in the older part, now called the Borough of Manhattan, no longer offers houses of this description. In that region land is much too costly to warrant the erection of small dwellings for the laboring classes; hence the tenement, with all its abominations and crudities. In some of the suburban regions of the metropolis small houses are being built, but no city offers so many examples of this class of dwellings as Philadelphia, where small houses for laboring people have long been a characteristic type of structure, and where they have been carried to a very tolerable state of excellence as building speculations.

The small house problem is reduced to much narrower dimensions in England, where artisans' dwellings costing less than \$1,000 are not uncommon. But here, as in Philadelphia and elsewhere, such structures are seldom erected singly, but are built in rows and groups, and the architect compensated on the gross cost of an entire series.

All through the problem runs the question of the architect's compensation. The building of houses is entrusted to architects who, quite naturally, consider themselves thoroughly competent to undertake and, perhaps, solve every architectural problem which can be devised. It will at least be admitted that they constitute the class of citizens whom we look to for building work, and if they will not or can not take up this very important problem, who else will do so?

It may be questioned if the small house, even in its simplest and cheapest form, yet reaches the class of persons which would be most benefited by it. That, however, is an aspect of the matter which has no architectural interest. If small, cheap houses are built, and people who might afford better ones insist in living in them, it is a compliment to the designer's skill, and shows how much there is to do before the masses can be reached in things architectural.

But the matter is more of a financial problem than an architectural one. If it can be shown that small houses will pay, will pay on the cost of the land, will pay in addition on the cost of the building, will pay as a permanent investment, they will be built, and not otherwise. Philanthropy may help; in some cases it has done so, and doubtless more will be done, but it is the financial aspect which interests the investor, and it is on this ground alone that the building of small houses will be furthered.

The architectural problems concerned with the building of the small house are of the simplest description. Utter compactness, small dimensions, an avoidance of waste in space and materials, and simple sanitation. The artistic, if it enters at all into such matters, is unavoidably absent and is limited to matters of planning. There is no money for frills, no need for decoration, hardly room for an ornament within the mimic house. But if the work is rightly done, it will be done well, the materials will be the best that the price affords, the sanitation will be thorough and wholesome so far as it goes.

Thus the designing architect, the artistic architect, is clearly out of the whole matter. His taste calls for expenditures which can have no place in such dwellings, and their single merit will be their wholesomeness, with, perhaps, something added in for good construction. For the small house must be well built, or the repair bill will eat up the very narrow margin of profit which is all that the most economical construction will allow.

The small house is, in a certain sense, only a rudimentary house. It is only proposed as a shelter for the inmates, and if it shelters them well and in a healthy manner it does all that can be asked of it. This, of course, is a good deal; it is more than many dwelling places, for which there is a quick competition, do for their inhabitants; but it is far from realizing the full use and value of a house.

Cheap methods and poor construction are too often characteristic of the work done on small houses. This is especially the case where they are built for sale, and the owner is not concerned with what happens to them after they have passed out of his hands. Cheap ornaments and a tawdry decoration are too often used as a means of attracting buyers, and in a foolish notion that such additions add to the appearance of a house. No absurdity ever does that, and it is true of small houses as well as of great ones.

TALKS WITH ARCHITECTS

BY BARR FERREE.

MR. ABNER J. HAYDEL AND "GREY CRAIG," THE ESTATE OF J. MITCHELL CLARK, ESQ., AT NEWPORT, R. I.

Now that Mrs. Wharton has formally introduced the Beaux Arts architect into fiction, it may be presumed that this very interesting group of designers is known of all men. As a matter of fact they constitute more than a group, since every well trained architect of the present day considers his technical education incomplete until he has passed at least a few months at the celebrated Ecole des Beaux Arts in Paris; and those who do not get this whiff of French air wish they had, and try, as best they can, to imitate the ways of their more fortunate fellow-craftsmen.

As for the work of these foreign-trained architects, this is neither the time nor the place to discuss it generally; but those who do not view architecture technically can generally discern it by its foreign aspect and by the French atmosphere that clings more or less

"Grey Craig," the estate of J. Mitchell Clark, Esq., at Newport, R. I., is a domain of considerable extent, covering about 125 acres. The building of the house was a rare and unusual opportunity which Mr. Haydel has availed himself of in a thoroughly interesting manner. The situation readily lent itself to picturesque treatment; in the background, low, dark, rocky hills; in the foreground, a plain that stretched down to the ocean's edge, with a fresh water lake so near to the salt that it might be said to be close beside it. Of space there was a plenty, but the character of the landscape, and the predilections of Mr. and Mrs. Clark determined a castellated style of architecture.

As a proposal to an architect the idea contained many elements of doubtful success. The building of castles had ceased almost before the discovery of the American continent. They belonged to an age and a civilization so distant from our own as to be rightly designated as remote. And Newport, of all places, with its gay summer life! A more exotic sort of a house it would seem difficult to imagine.

Fortunately, Mr. Haydel had made a study of

the elevations, admits of no doubt. And he has achieved these ends by the very simple method of translating the spirit of the medieval building into modern building. "Grey Craig" is genuinely castellated in style and in character, yet it is a building that thoroughly meets modern construction.

The house stands alone, with no nearby edifice with which it may come in immediate contrast. The wild, dark landscape is, of all backgrounds, the most fitted and the most natural for such a design as this. It is built of stone taken from the land on which the house stands, a pudding stone having the quality of a natural concrete. Much of it was covered with natural moss when it was put into the building, and shapes and sizes of all sorts were used. It was laid in wide joints without troweling, but with small pebbles thrust into the squashed mortar. Hardly an individual stone shows, but there is a superb massiveness in the walls, which are dark gray. Although finished as recently as last fall, the architect does not exaggerate in the least when he submits that the house looks as though it had been built a hundred years.



THE COURT—"MILL-BROOK," BRYN MAWR, PA.—See page 104.

closely to it. It is a rather significant fact, I think, that by far the greater number of men who have studied in Paris seem able to design only in French styles, and these, by preference, of the latest vogue. A Paris-trained man who designs in a free, unacademic style is very rare, and at once proclaims himself, though unconsciously, a man of strong individuality.

I can pay Mr. Abner J. Haydel no higher compliment than to place him in this class. Although still one of our younger architects and the author of more than one academically designed building, it is highly significant that his first most important work—important because of its size, cost, and import—should be a dwelling of the first rank in size and cost, which bears no mark whatever of classic predilections, which too often is characteristic of the designs of those who have studied in Paris.

And Mr. Haydel is a Beaux Arts man, a student of the Ecole des Beaux Arts, a member of the Society of Beaux Arts Architects of New York, the recipient of a medal at the last Paris International Exposition.

castellated architecture, and his Paris training had broadened his viewpoint instead of narrowed it to classic architecture, as has so often been the case. The problem involved inconsistencies. A house was required that must be a castle, and, therefore, a medieval structure and a modern dwelling house for the gayest summer spot in America. It must have medieval character, and yet be thoroughly adapted to modern use and the usage of gay society. Here were inconsistencies with a vengeance, and inconsistencies before which many a brave and well trained man might have succumbed. The success of the work depended on meeting these thoroughly opposed conditions, and in producing a resultant—a design which would be at once a combination of these differences and be thoroughly satisfactory to the owners.

That Mr. Haydel has solved his very complicated problem, joined the old with the new, made a modern building that has the outward aspect of one naturally old, created an interior that meets modern conditions without violating the external expression contained in

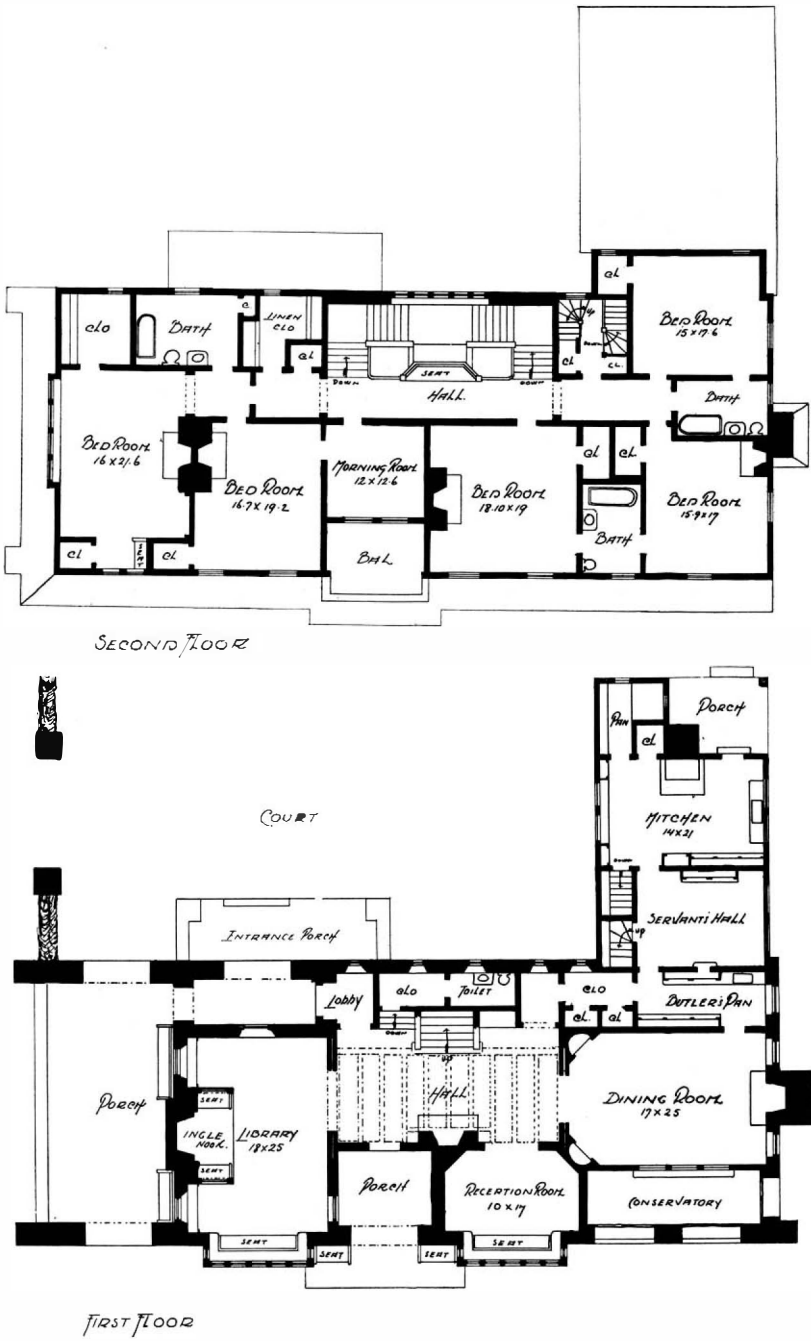
One enters the house under the great tower, a structure thoroughly massive in its effect, genuinely medieval in its character, and yet neither cold, hard, nor forbidding. One, of course, only reaches "Grey Craig" by vehicle or by horse, and the automobile drives under the great tower archway into a vaulted vestibule. The visitor dismounts here, and his machine passes under the tower into the courtyard, where, further on, is the automobile storehouse and powerhouse. For "Grey Craig" is probably unique as yet among the great country houses of America, in having no stabling at all, the owners using automobiles exclusively.

Leaving our machine, we pass into a vaulted corridor or entrance hall, and thence into the great central hall, a superb apartment, two stories in height. This is not only the central room of the house, but the most important. To the left is a platform, with a fine pipe organ, flanked on either side by a cathedral-like window; below these windows are Spanish church stalls

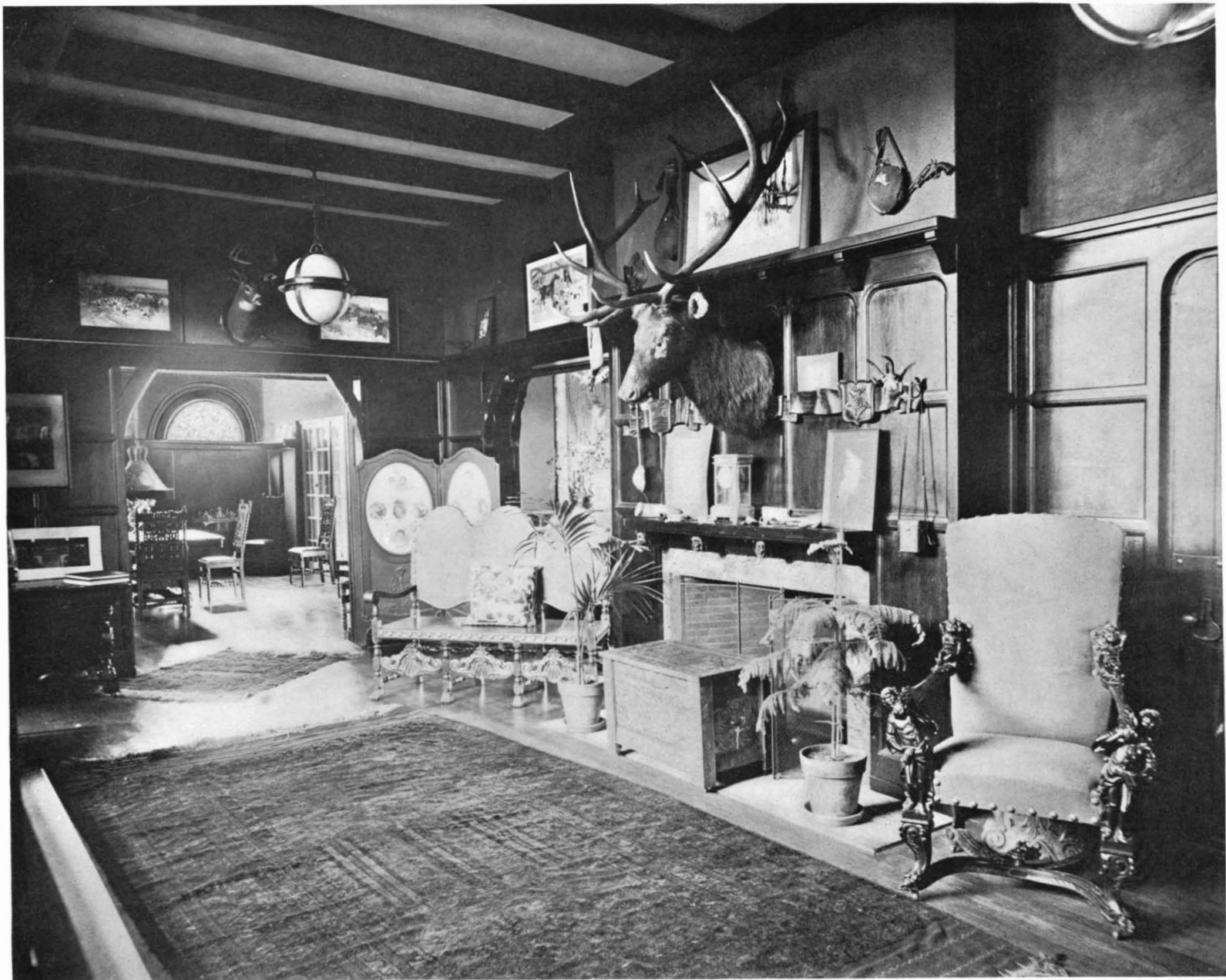
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THE TERRACE PORCH.



“MILL-BROOK,” THE COUNTRY ESTATE OF F. KING WAINWRIGHT, ESQ., AT BRYN MAWR, PA.—See page 104.
MR. CHARLES BARTON KEEN, ARCHITECT.

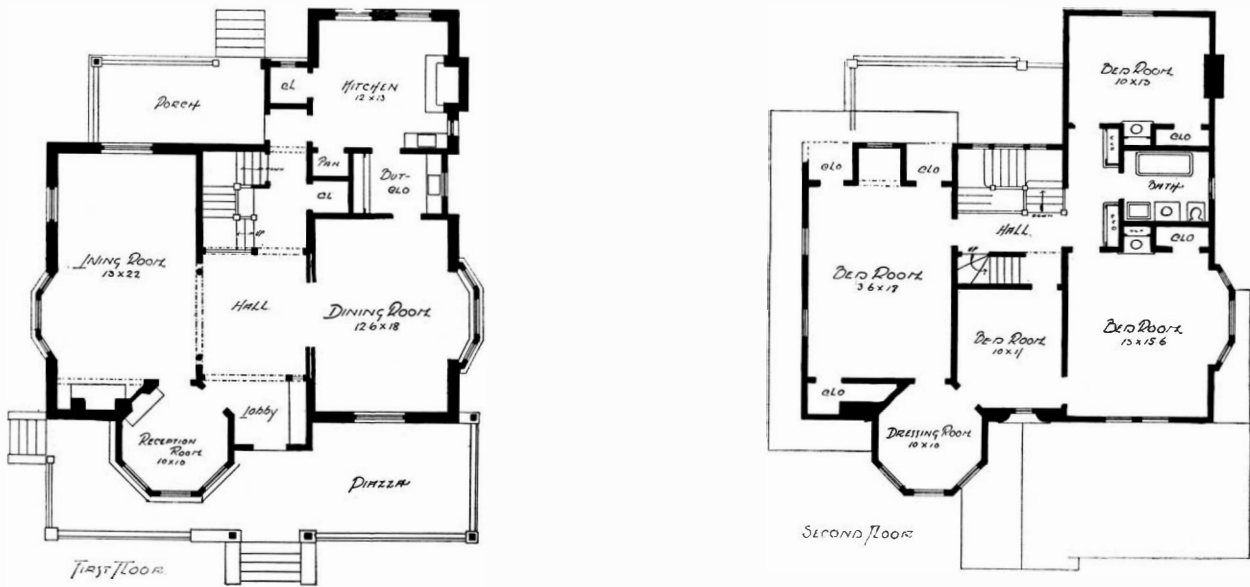


THE HALL.

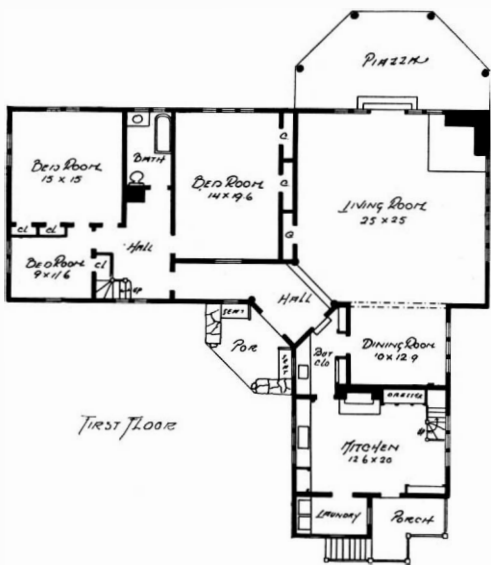


LIVING-ROOM.

“MILL-BROOK,” THE COUNTRY ESTATE OF F. KING WAINWRIGHT, ESQ., AT BRYN MAWR, PA.—See page 104.
MR. CHARLES BARTON KEEN, ARCHITECT.



A HOUSE AT BENSONHURST, L. I.—See page 105.
MR. C. SCHUBERT, ARCHITECT.



A BUNGALOW AT PREMIUM POINT, NEW ROCHELLE, N. Y.—See page 106.
MR. GROSVENOR ATTERBURY, ARCHITECT.



ENTRANCE FRONT.

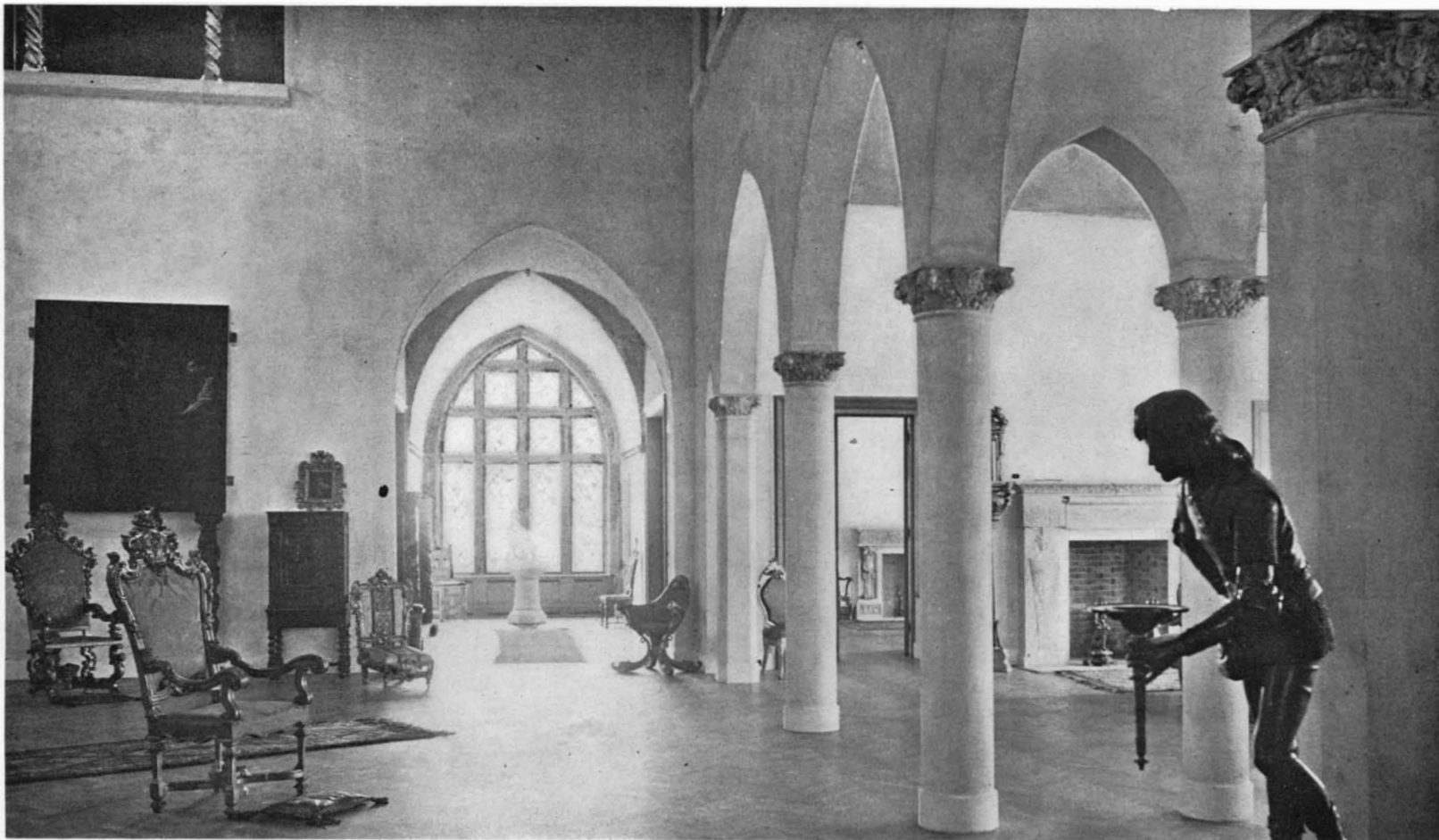


"GREY CRAIG," THE ESTATE OF J. MITCHELL CLARK, ESQ., NEWPORT, R. I.—See page 91.

MR. ABNER J. HAYDEL, ARCHITECT.



VIEW FROM THE TERRACE.

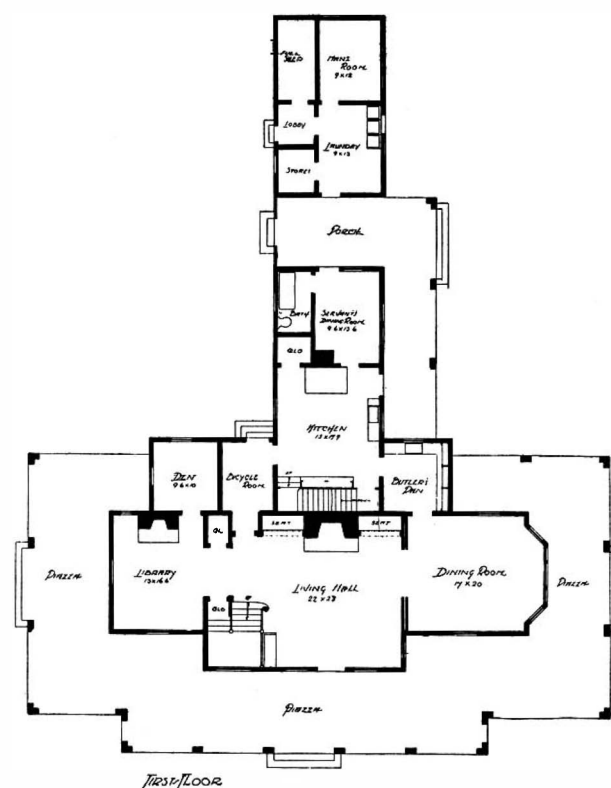
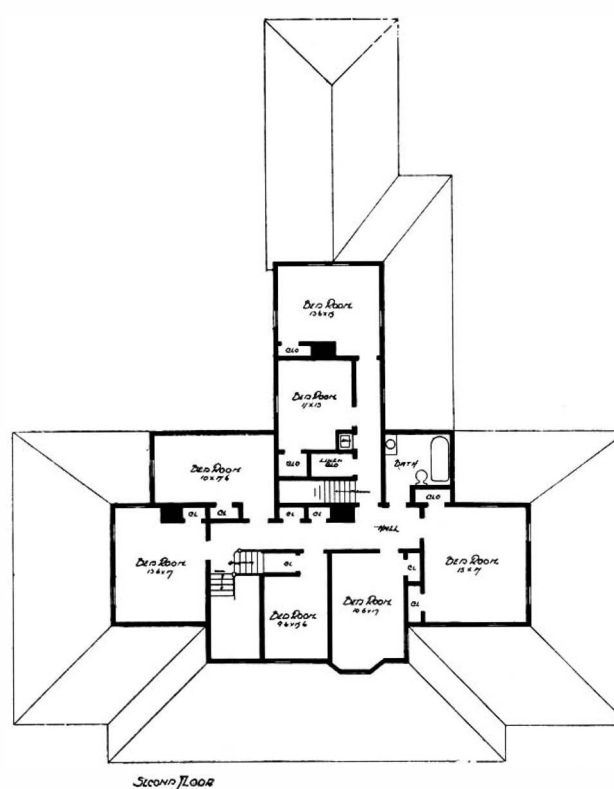


MAIN HALL.

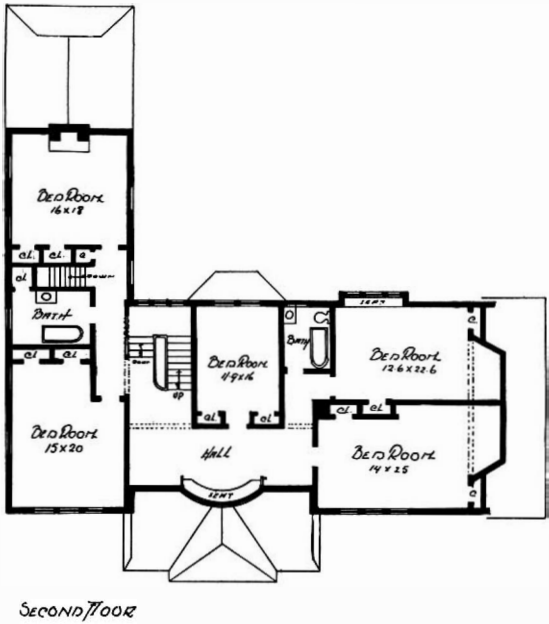
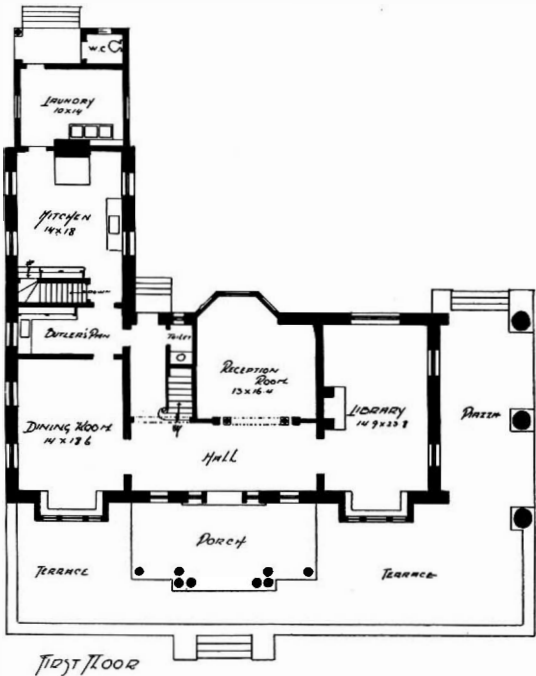


REAR VIEW FROM GARDEN.

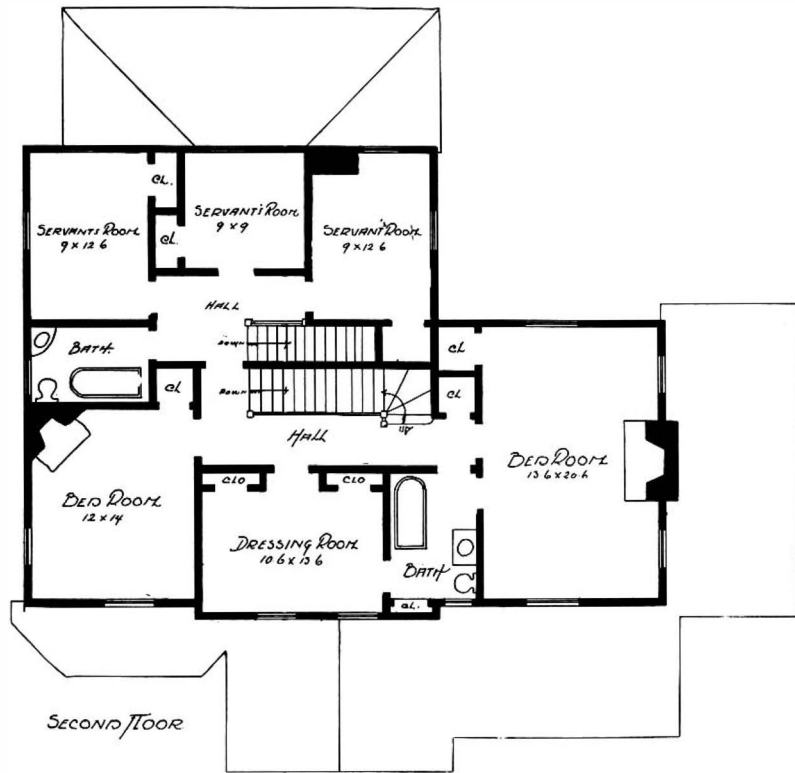
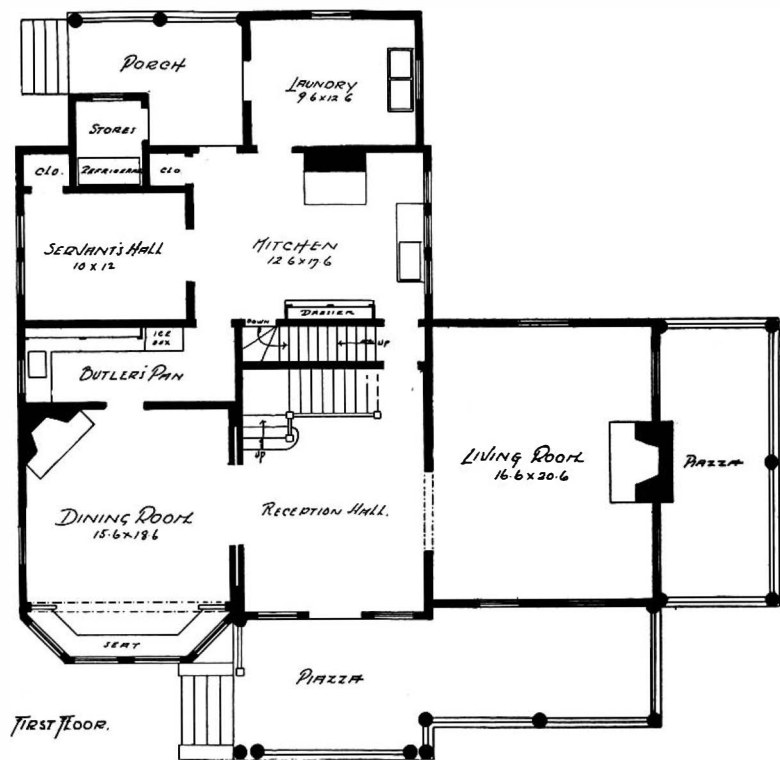
“GREY CRAIG,” THE ESTATE OF J. MITCHELL CLARK, ESQ., NEWPORT, R. I.—See page 91.
MR. ABNER J. HAYDEL, ARCHITECT.



MR. H. P. KIRBY, ARCHITECT.



RESIDENCE OF W. F. DORFLINGER, ESQ., AT ESSEX FELLS, N. J.—See page 105.
MR. LAURENCE VISSCHER BOYD, ARCHITECT.



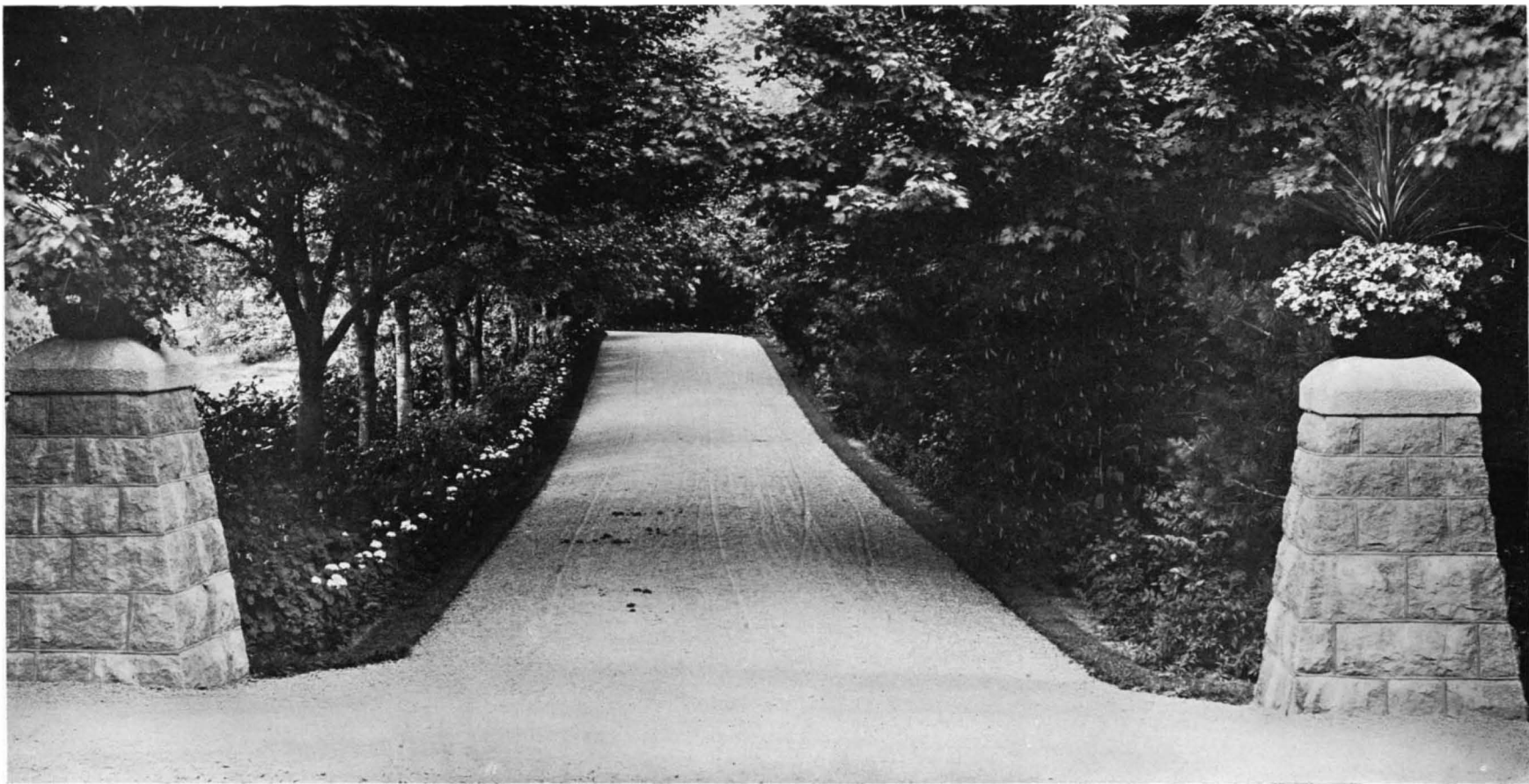
A HOUSE AT WOODMERE, L. I.—See page 105.
MR. FRANK COTTOR, ARCHITECT.



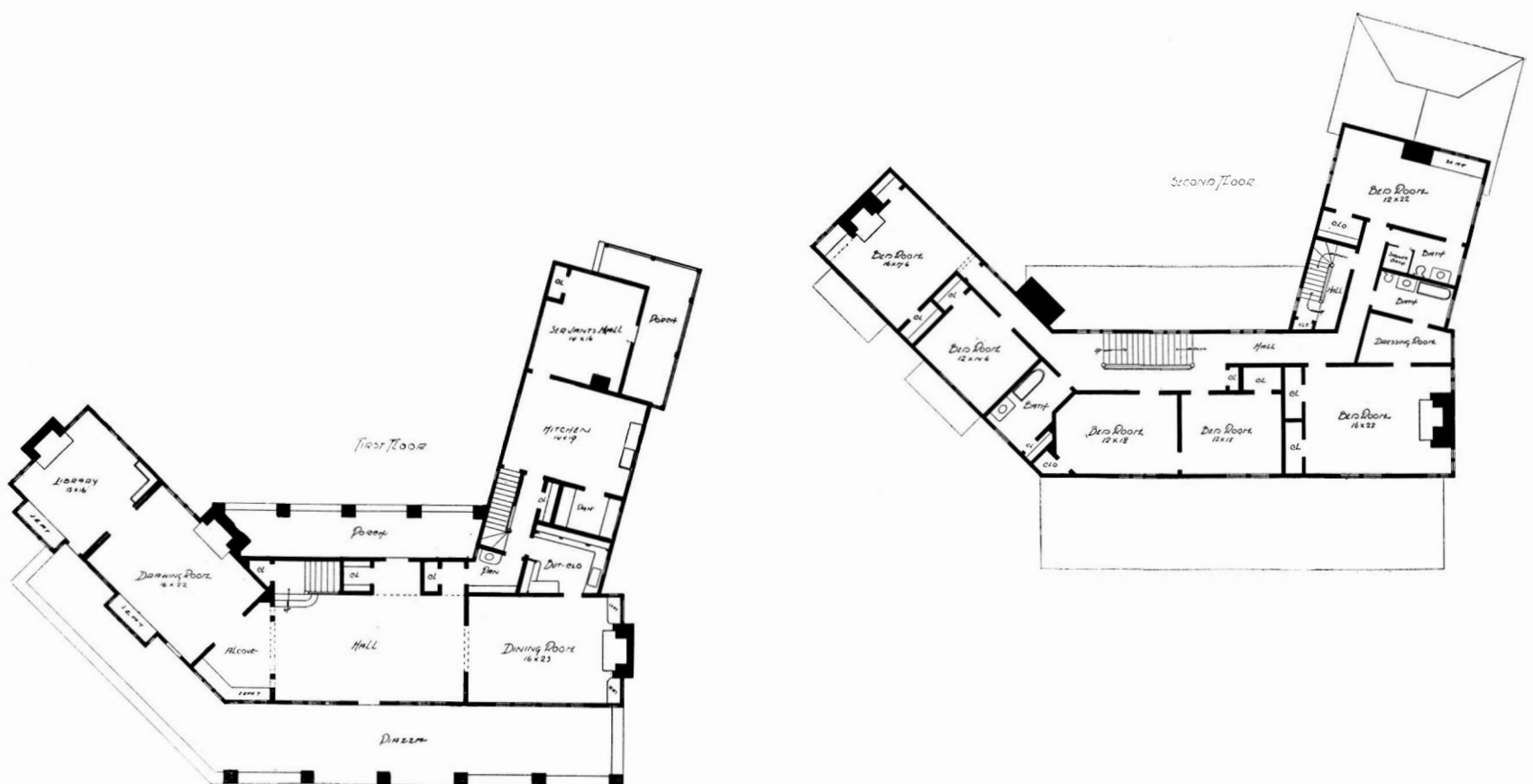
ENTRANCE—ESTATE OF W. C. MORGAN, ESQ.



ENTRANCE—ESTATE OF E. C. CUSHING, ESQ.



ENTRANCE—ESTATE OF A. C. GURNEE, ESQ.
THREE GATEWAYS TO ESTATES AT BAR HARBOR, ME.—See page 105.



THE SUMMER HOUSE OF D. C. PERCIVAL, ESQ., AT MARBLEHEAD, MASS.—See page 105.
MR. EDWIN J. LEWIS, JR., ARCHITECT.



INTERIOR OF HALL, LOOKING INTO BILLIARD-ROOM.



DINING-ROOM.

THE SUMMER HOUSE OF D. C. PERCIVAL, ESQ., AT MARBLEHEAD, MASS.—See page 105.
MR. EDWIN J. LEWIS, JR., ARCHITECT.

**MR. ABNER J. HAYDEL AND "GREY CRAIG," THE
ESTATE OF J. MITCHELL CLARK, ESQ.,
AT NEWPORT, R. I.**

(Concluded from page 91.)

with high, heavily carved backs with oval panels with heads in the center, fine black oak stalls of unusual beauty, admirably placed. On the opposite side is a row of columns and pointed arches, a certain irregularity being given to the space by cutting off a part with curtains. The walls are of rough gray plaster with sand finish, and, save the carved capitals of the columns, there are no moldings or decorations beloved of the architects. The coffered ceiling is of California redwood, with beams supported by old Florentine shields; in the center is a large skylight with a brilliant sunburst in the center. At night this is lit above.

Cold? Not a bit of it. The walls are hung with superb old tapestries and rare paintings. The parquet floor is covered with rich rugs. The furniture is old, and chiefly Italian. In the center is a delicious Italian fountain. Hardly any of these furnishings are shown in the accompanying illustration, which is made from a photograph taken before the interior was entirely completed. It is a room of the greatest interest, both because of its size and its architectural treatment. Newport abounds with rich rooms of red and gold, of white and gold, of gold alone, one might almost say. One can readily believe that when the grand dames of our fashion capital walked into this room, fresh with remembrance of their own gorgeous apartments, they must have had a new insight into the meaning of walls and furniture.

Standing in this hall, the interesting originality of the plan is apparent. The general shape of the building is rectangular, with the entrance at one end. We have already traversed the entrance hall, but in coming into the central apartment we, perhaps, have not noted the small corridor to our left which leads to Mr. Clark's den, nor the elevator which, also recessed, is just before his door. Immediately opposite, on our right as we enter, is a staircase to the second floor, a staircase quite small and inconsequential—for who ever heard of a broad staircase of honor in a castle?—and, moreover, there is the elevator just across the hall, which is certainly an easier way of ascending to the heights above.

Passing into the hall, one is at once attracted by the great window at the end of a corridor exactly opposite the one by which we have entered, and which, indeed, may be considered a continuation of it, broken by the splendid oasis of the central hall. To the left of this is the dining-room; to the right the drawing-room, the two rooms and the separating corridor being so arranged that, from the dinner table, one may, if one is not dining at too late an hour, look out through the drawing-room windows upon the view beyond. Surely here is a plan both of interest and of novelty; for the dining and drawing rooms, which, in the standard plan, are apt to be near the entrance, are here removed as far as possible from it. The resultant advantage of space and arrangement is apparent to those who have visited this interesting dwelling.

The dining-room is three steps above the level of the entrance corridor. Like all the interior, except the drawing-room, it has sand finished walls. The furniture is gilt and red, and over the vast marble sideboard is a mirror which reflects the view from the great bay window opposite.

The drawing-room has an elliptical vault, lit at night by lights placed in stars, about a hundred, a brilliant effect that needs to be seen to be appreciated. The walls are hung with cloth of gold material, against which are placed mirrors and pictures. The furniture is gilt and of Italian origin.

The second floor—and we may reach it by the elevator or by the staircase—has a series of corridors and loggias surrounding the central hall. Here are guest rooms and the rooms of the owner. In the far corner, adjoining the owner's bedroom, is a morning room, decorated in Chinese materials and with Oriental effect. The corner windows afford a superb view.

No one can look from any window of the house without seeing a superb view. Nature here does not need much help from man to ravish one. The gardens adjoining the house are ample and finely planted, and just before the center of the entrance front is a spacious terrace decorated with statues.

The entrance is through the stone arch from the porch to the lobby, by which the main hall is reached. This hall is trimmed with pine and is treated a dark soft brown color. It has also a paneled wainscoting to the height of seven feet, which is finished with a massive cap. The ceiling is beamed, forming panels. This hall contains an ornamental staircase with broad landing rising from a central run to a broad platform, over which there is a cluster of windows glazed with small lights, and with transoms; from this landing the stairs divide and rise in either direction to the second story. The open fireplace in hall is built of Pompeian brick with a hearth of the same and facings of green marble. The mantel shelf is supported on brackets with carved heads, and an overmantel paneled the same as wainscoting and with a scroll of emblematic design extending across the face of the hearth.

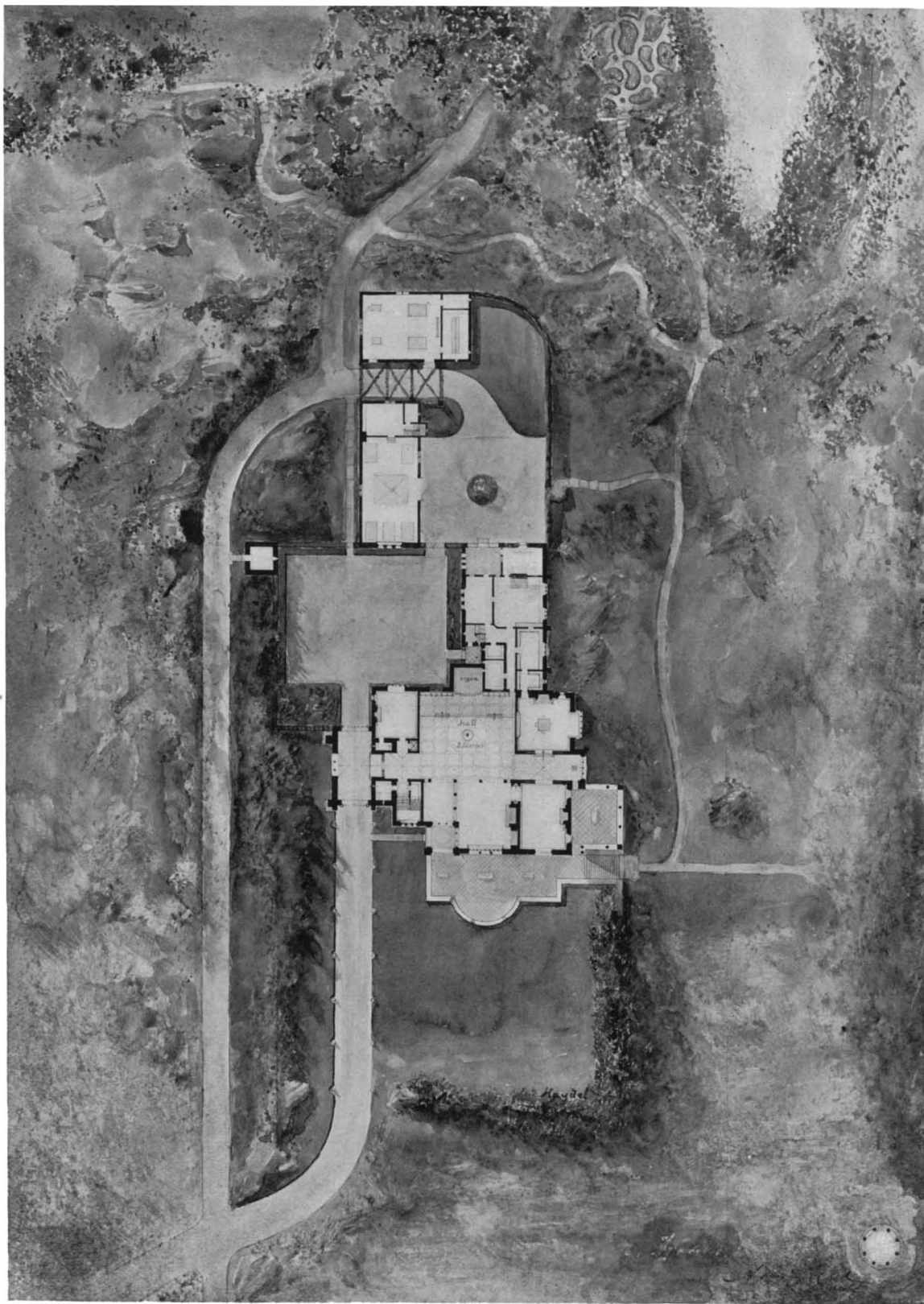
The living-room is trimmed with chestnut, stained a Flemish brown, and has a battened wainscoting, a beamed ceiling, a bay window with paneled seat, and an angle nook containing an open fireplace built of Pompeian brick, with the facings of the same, and a mantel shelf extending across the entire angle nook and supported on brackets. The hearth and the floor of the angle nook are paved with Dutch tile of a reddish color. On either side of the fireplace seats are built in, and beyond the angle nook are bookcases with ornamental glass doors.

The reception-room is treated with china white enamel. The dining-room is trimmed with Flemish oak, and has a wainscoting provided with batten strips placed at various intervals, which form panels, the whole of which rise to the height of seven feet and is finished with a plate rack. China closets are built in two corners of the room, and the other attractive feature of the room is the open fireplace, which has facings of Welsh tile and a mantel in harmony with the treatment of the room. The butler's pantry is fitted with sink, drawers, dresser, cupboard complete. The servants' hall, which is placed between the dining-room and kitchen, is a new and an important feature of the modern up-to-date house. The kitchen is fitted up complete with all the best modern conveniences, and a feature of this apartment is the roof lines, which form the ceiling of the kitchen, and affords ample ventilating space.

The second story is trimmed with white pine treated with white enamel. This floor contains a morning room, five bedrooms, each provided with a large closet, and three bathrooms. The latter have tiled wainscoting, paved floor, and each is furnished

with porcelain fixtures and exposed nickelplated plumbing. A private stairway leads from the first story to the third, which contains five servant bedrooms and bath, and a large trunk room. A cemented cellar contains the heating apparatus, fuel rooms, laundry, etc. Mr. Charles Barton Keen, architect, 1604 Chestnut Street, Philadelphia, Pa.

THE printed chintzes, cretonnes, dimities, and other cottons for summer draperies are prettier and cheaper this year than ever. Some very beautiful Japanese cotton crêpes have come in. They are the familiar blue and white, which is about as cool a combination as can be made, and there are others in green, yellow, soft violets, and reds. One pattern of iris in natural tones is exquisite, and there is a cool green and brown pattern of woodbine leaves through which birds fly and rest which is a joy to the eye.



GARDEN VIEW PLAN—"GREY CRAIG," NEWPORT, R. I.

**"MILL-BROOK," THE COUNTRY ESTATE OF F. KING
WAINWRIGHT, ESQ., AT BRYN MAWR, PA.**

MILL-BROOK, the country estate of F. King Wainwright, Esq., at Bryn Mawr, Pa., is the subject illustrated on the cover and on pages 91, 92, and 93. It is thoroughly Elizabethan in style. Its quaint windows and wooden shutters, its stone and half-timbered work, its elongated effect, and the kitchen extension are particularly characteristic of this style of architecture.

The underpinning and the first story are constructed of local field stone laid very carefully, and with broad, white mortar joints. The remainder of the building is of half timber work, forming panels which are filled in with rough plaster cast. This plaster is left in its natural soft gray color, and the half timber is of hewn chestnut and stained a soft brown color. The roof is covered with cypress shingles and stained a dark moss green.

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COUNTRY SEAT OF F. KING WAINWRIGHT, ESQ., AT BRYN MAWR, PA.

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THIS ISSUE CONTAINS

"Grey Craig," the Estate of J. Mitchell Clark

**THE SUMMER HOUSE OF D. C. PERCIVAL, ESQ.,
AT MARBLEHEAD, MASS.**

THE summer house of D. C. Percival, Esq., at Marblehead, Mass., is illustrated on pages 102 and 103. The underpinnings and chimneys are built of rock-faced field stone laid up at random. The remainder of the building is of wood, and the exterior framework is covered with shingles and left to weather finish, and the roof is also treated the same. The trimmings are painted a bottle green and the sash white.

The hall is a central one, and it is trimmed with whitewood painted old ivory white, and has an ornamental staircase of Colonial style with a mahogany rail, ample coat closet, and lavatory. The ceiling is provided with heavy constructional beams. The alcove is separated by an archway, which is supported on columns with spindle balustrade between the same.

The drawing-room and library are also treated with ivory white paint, and both have bay windows with paneled seats. The drawing-room has an open fireplace built of red brick, with the facings and a hearth of the same, and a mantel of Colonial style. The library has an open fireplace built of field stone laid up in a rough manner, with a stone shelf, etc.; book-cases are also built in.

The dining-room is trimmed with whitewood stained and finished in a forest green, and it has an open fireplace built of red brick, with the facings and a hearth of the same and a mantel. Paneled seats are placed on either side of the fireplace, and a high paneled wainscoting and ceiling beams of massive construction are the features of this room. The butler's pantry, kitchen, servants' hall, and their dependencies are trimmed with North Carolina pine, and each is furnished with all the best modern conveniences.

The second floor contains an open hall, six bedrooms, nine closets, linen closet, dressing-room, and three bathrooms furnished with porcelain fixtures and exposed nickelplated plumbing. Two of the bedrooms have open fireplaces. The entire floor is trimmed with whitewood treated with ivory white paint. The third floor contains the servant quarters and ample storage space. A cemented cellar contains the heating apparatus, fuel rooms, laundry, storage space, etc. Mr. Edwin J. Lewis, Jr., architect, 9 Park Street, Boston, Mass.

A HOUSE AT WOODMERE, L. I.

ON page 100 will be found an illustration of a house built at Woodmere, L. I., for the Woodmere Land Association, of which R. L. Burton, Esq., is the owner. The house is Colonial in style. The underpinning is built of red brick, and the superstructure, of wood, is covered on the exterior with clapboards 1 in. x 11 in., with 1 in. rabbet and laid 10 in. to the weather. The clapboarding is painted a Colonial yellow with ivory white trimmings. The blinds are painted green. The roof is covered with shingles and is left to finish naturally. Dimensions: Front, 49 ft.; side, 48 ft. 6 in., exclusive of piazza. Height, cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

The reception hall is trimmed with white pine and is treated with white enamel. It has a beamed ceiling and contains an ornamental staircase. The living-room is trimmed with white pine, treated with white enamel, and it has an open fireplace built of Roman brick, with the facings and hearth of the same and a mantel shelf of limestone. The French windows on either side of the fireplace open into a sun parlor, which has been provided by enclosing the piazza with glass.

The dining-room is also trimmed and treated the same as the living-room, and has a bay window at the front with a paneled seat, and an open fireplace built of red brick, with facings and hearth of the same and a mantel of Colonial style. The butler's pantry is fitted up with drawers, dressers, sink, etc. The kitchen, laundry, and servants' dining-hall are treated naturally, and each is furnished with the best modern conveniences. The servants' porch contains an outside entrance to the refrigerator, while the ice box is placed in the butler's pantry.

The second story is trimmed with pine, treated with ivory white, and contains two bedrooms, dressing-room, and a bathroom, and three servant bedrooms and bath. The bathrooms are treated with white enamel, and contain porcelain fixtures and exposed plumbing. The third floor contains three bedrooms, bathroom, and a trunk room. A cemented cellar contains a furnace, fuel rooms, etc. Mr. Frank Cottor, architect, Woodmere, L. I.

**RESIDENCE OF W. F. DORFLINGER, ESQ., AT
ESSEX FELS, N. J.**

THE residence which is illustrated on page 99 has been built for W. F. Dorflinger, Esq., at Essex Fells, N. J. The terrace wall and the first story are built of rock-faced field stone laid up with wide mortar joints of white cement. The second and third stories are covered with white cedar shingles left to weather finish naturally, and the trimmings are painted white. The roof is covered with shingles and is stained a moss green. Dimensions: Front, 76 ft.; side, 82 ft., exclusive of porch and terrace. Height of ceilings: Cellar, 7 ft.; first story, 9 ft. 6 in.; second, 8 ft. 6 in.; third, 8 ft.

The hall and reception-room are trimmed with white pine and treated with white enamel, and each is separated, one from the other, by columns of Colonial style supporting an archway of elliptical form. The stairway is recessed, with an archway separation, and is of Colonial character, with a mahogany rail. A toilet is conveniently placed beneath this stairway.



MELON HOUSE ON THE ESTATE OF D. O. MILLS, ESQ., STAATSBURG, N. Y.

The library is trimmed with antique oak, and it has a fireplace built of Pompeian brick facings and hearth and a mantel of oak. The dining-room is also trimmed with oak, and has a plate rack placed seven feet from the floor. The kitchen and laundry are trimmed with white pine, and each is furnished with all the best modern conveniences.

The second floor is trimmed with white pine, treated with white enamel, and contains a large living hall, five bedrooms, and two bathrooms, the latter being fitted with tiled wainscoting and paved floors of tile and porcelain fixtures and exposed nickelplated plumbing. The third floor is trimmed with white pine and finished natural, and it contains four bedrooms and bath and one large trunk room. A cemented cellar contains a furnace room, fuel rooms, etc. The house was built by Messrs. Wendell & Treat, of Essex Fells, N. J., and was designed by Mr. Lawrence Visscher Boyd, architect, Harrison Building, Philadelphia, Pa.

**MELON HOUSE ON THE ESTATE OF D. O. MILLS,
ESQ., AT STAATSBURG, N. Y.**

A MOST novel feature of products on the D. O. Mills estate is that of the raising of the muskmelon for winter use.

The accompanying engraving illustrates the manner in which Mr. Mills' gardener propagates them for his table throughout the winter months, which is, indeed, quite a novelty, and only known to be practised by him of the many wealthy residents of the Hudson. The seeds are planted in pots in September, and as

they begin to mature they are transplanted in beds beneath the glass roofs of his muskmelon house. As the melons grow they are supported by strings of fiber to hold up their great weight until they ripen and are fit for use. When this picture was photographed by the artist, Mr. Burger, of Poughkeepsie, N. Y., these vines contained one hundred and forty-six melons, many of which were ripe. This house produces two crops during the winter months. The first crop becomes fit for use about the beginning of the holidays; the second, about the beginning of March, or a little later.

A HOUSE AT BENSONHURST, L. I.

THE house illustrated on page 94 was built for Gilbert T. Reeder, Esq., at Bensonhurst, L. I. The building is of brick and shingles. The underpinning and the first story are built of sand washed red brick laid in red mortar, and the second and third stories, of wood, are covered with shingles, which are stained a soft red color, and the trimmings are painted white. The tower is beamed, forming panels, which are filled in with plaster, which is tinted a yellow, while the woodwork is painted white. The roof is covered with shingles and is stained soft green color. Dimensions: Front, 42 ft.; side, 45 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second 8 ft. 6 in.; third, 8 ft.

The first story is trimmed with oak, except the reception-room, which is treated with old ivory white and gold. This room is a very attractive one, and has

a low Colonial wainscoting and an open fireplace, with facings and a hearth of white enamel tile and a mantel of Colonial style, and finished with white and gold treatment.

The main hall contains a lobby with paneled seat and an ornamental staircase turned out of oak. This hall has a paneled wainscoting. The living-room has a paneled wainscoting and an open fireplace built of Roman brick with facings and a hearth of same and a mantel. The dining-room has a beaded wainscoting in the sixteenth century style, which is finished with a plate rack and shelf. The ceiling is furnished with ceiling beams. The butler's pantry, kitchen and its dependencies are fitted up complete, and trimmed with North Carolina pine and with white glazed brick at fireplace. The floors of this story are laid with maple.

The second story is trimmed with cypress and contains four bedrooms, one dressing-room, and a bathroom fitted with a tiled wainscoting five feet in

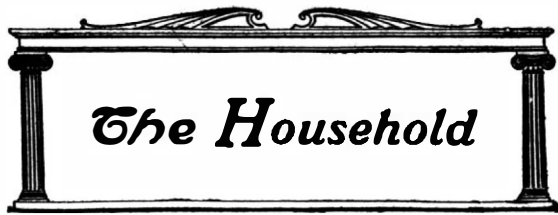
height, above which the walls and ceiling are enameled, and porcelain fixtures and exposed nickelplated plumbing. There are two rooms and a trunk room on the third floor. A cemented cellar contains the laundry, furnace, fuel rooms complete. Cost, \$6,000 complete. Mr. C. Schubert, architect, Dyker Heights, Brooklyn, N. Y.

A GROUP OF ENTRANCES.

No feature of the grounds of an extensive estate is so important to the outside public as the entrance. It sets the keynote of the whole of the sacred territory within, and is often the only spot from which a view of the interior can be had. A well made entrance, and a well kept one—and fortunately the two are generally combined, is a most important feature in all estate work.

That the entrance itself needs only to be well laid out and agreeable in a general sense is apparent from the illustrations given on page 101. Nothing could be simpler than the materials there shown. A rustic fence, with two simple rustic flower boxes, forms the motif of one design; a simple pyramid of stone forms the feature of another; and the third example, while somewhat more pretentious, is simply a low stone wall, with a decorative vase at the end, and two higher pedestals for the wrought iron lamps further back.

These illustrations are gathered from Bar Harbor, Maine, and constitute the entrances to the estates of Messrs. W. C. Morgan, A. C. Gurnee, and E. C. Cushing. They are not only good examples of the fine taste shown in laying out these estates, but they are useful and suggestive helps in the treatment of ground entrances.



ROOM ARRANGEMENT.

A SHREWD observer, some time ago, pointed out the value of changing the position of the articles of furniture in one's room. The thought is a happy one, for sameness of arrangement, the same old things in the same old places, is often conducive to mental weariness. Furniture, in a proper sense, is an aid to comfort and convenience. Its object is not to fill up a room with so many tables and chairs, but to provide means of utilizing the room. Yet there is a certain comfort in feeling instinctively, as one enters a room, that one knows just where the best chair is, or where the table is on which certain desired articles can be found. Changing the position of things gives a new life to the room, and even if it does no more than satisfy one with the previous arrangement, it accomplishes some good.

SUMMER FURNITURE.

EVERY summer brings its new furnishings, and much of it is very pleasant and delightful. There are always many new people setting up housekeeping each summer to meet a steady supply of new things. Old ones wear out; one's habitation is changed; perhaps a new chair or table, a sideboard or bookcase that could not have been afforded last year can be purchased this year.

And very pleasurable such purchases are, with the tasteful new articles to be found in every shop. Even the department store is not without its attractions, although the careful shopper of furniture, the shopper who knows good furniture, who appreciates graceful lines, pretty fabrics, and withal has an eye to strength and utility, will be chary of buying simply because the goods are cheap.

One special delight in summer furniture is its confessed simplicity. Why winter furniture can not be equally simple, unpretentious, and direct the furniture philosophers do not say. But it has become the fashion to expect nothing at all in the way of summer furnishings, and the very natural result is very simple, direct styles have come in. Light chairs of cane and wicker and reeds, flimsy curtains, gay chintzes, delicate fabrics, low in tone but beautiful in color; all these are characteristic of the summer time, and furnish the summer house very beautifully and well.

A HOME-MADE FLY SCREEN.

AN ingenious farmer's wife who succeeds in keeping the flies out of her kitchen says that she makes a long wad of newspapers and slashes the edges half-way down. She holds the unslashed ends in her hand and whisks out the flies with the other. She says it is surprising how quickly the flies will be driven out. The noise of the rattling strips of paper, she claims, helps do it as well as the whisking. Whether this be true or not, this whisk is a very effective one, and not a fly will be found in the room after it has been energetically used.

Fly paper is generally considered by people of refinement as something to be avoided. It is known to draw more flies to its vicinity than it ever kills, especially if an outside window or door be left open.

A NEW FOLDING-BED.

A NEW folding iron bed is described in which the head and foot boards fold together accordion fashion, and the bed stands flat against the wall. The bottom is concealed behind a drapery of dark green or blue sateen, and there is a valance of the same material. Thus when the bed is folded it looks something like a large screen.

JAPANESE MATERIALS.

THE Russo-Japanese war has had a singular result in increasing the popularity of Japanese materials for decorative purposes. Apparently an article or a bit of goods has only to bear evidence of genuine Japanese origin to win commendation.

Among the favorite novelties, says a contemporary in commenting on this state of things, is a Japanese material known as anatolia. It is formed of stripes of raised work in a pale color on a white ground. The prettiest, coolest, and most inviting looking cushions of the season are those covered with this material. With the top of anatolia the cushions are trimmed with a deep frill about five inches in width, at the edge of which are knotted alternate vandykes of tassel-trimmed handmade net and cords ending in tassels—a group of eight or nine tassels, then a netted vandyke, and so on.

Anatolian curtains, like the cushion coverings, are exceedingly dainty because they are washable. They are trimmed at the top and bottom and the inner edge, like the cushions, with vandykes of netted work, alternating with groups of cords and tassels. Many of these curtains show crossbars of pale green, yellow, red, and blue.

There is a narrow-width border material that comes about twelve inches wide in what is known as cotton crape—one of the most attractive Japanese textiles. The colors are soft and pleasing, and since its decorative possibilities have been appreciated it is used in many ways besides bordering and trimming.

Effective long curtains and dainty sash curtains are made of these crapes by joining the Japanese border crapes in color alternately with stripes of plain white cotton crape or crocheted insertions and laces. The seams are attractively finished by feather-stitching in ingrain cotton.

A BUNGALOW AT PREMIUM POINT, NEW ROCHELLE, N. Y.

THE illustrations shown on page 95 present a bungalow built at Premium Point, New Rochelle, N. Y. The building is erected on an island which is connected to the main land by a bridge, as the illustrations show. The whole characteristic of the site is rustic, and the house and all the improvements are carried out in a similar manner and in keeping with the surroundings.

The exterior is covered with tree slabs, placed in position with the bark on them, and the whole resting on a field stone underpinning. The roof is covered with shingles left to weather finish. All the rooms are placed on the first floor, and the entrance door, which is composed of batten strips fastened together and hung with massive wrought iron hinges, forms the entré to the hall, from which the living-room is reached. This living-room is treated with exposed timbers, rough hewn, and of yellow pine, and the whole stained a golden brown color. The ceiling extends to the peak of the roof. The open fireplace built in the corner of the room is treated in the Norwegian style, and is constructed of red brick and surmounted with an immense wrought iron hood supported on iron columns. The dining-room is recessed into an alcove, and beyond this there is a well fitted pantry, kitchen, laundry, servants' porch, etc. Over the kitchen there is a bedroom for the servants reached by a stairway from the kitchen.

The other wing of the house contains three bedrooms, fitted with good closets, and a bathroom provided with unique fixtures, etc., in character with the house. All the doors are of battens, and all the partitions and ceilings are of yellow pine, stained a golden brown color. Mr. Grosvenor Atterbury, architect, 20 West Forty-third Street, New York.

RESIDENCE OF HENRY BLAKE, ESQ., AT QUOGUE, L. I.

ON page 98 will be found illustrations of the summer residence of Henry Blake, Esq., at Quogue, L. I. The building rests on cedar posts with stone footings. The exterior of the house is covered with matched sheathing and then with white cedar shingles, which are left to weather finish; the under side of eaves is of yellow pine, and is also left to weather finish. The window sashes are painted white and the blinds are painted bottle green. The roof is also covered with shingles. Dimensions: Front, 61 ft.; side, 96 ft., exclusive of piazza. Height of ceilings: Cellar, 6 ft. 6 in.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

The living-room, library, den, and dining-room are trimmed with chestnut and stained a Flemish brown, and it has a waxed finish. The living-room has an open fireplace built of red brick, with the facings and a hearth of the same, paneled seats on either side, and a staircase treated in an attractive manner. The ceiling is beamed, and the plaster panels are treated with water color, cream in tone.

The library has an open fireplace built of brick to the underside of mantel shelf. The den is conveniently located, and has an outside entrance thereto; in fact, all the principal rooms of the first story have French windows opening out on the broad piazza.

The dining-room has a batted wainscoting to the height of six feet, finished with a plate rack. The butler's pantry, the kitchen and its dependencies, and the remainder of the house are trimmed with North Carolina pine. The former are fitted with all the best modern conveniences complete. Beyond the kitchen there is provided a servants' dining-room and bath. There is a servants' porch, beyond which there is a laundry, man's room, storeroom, and fuel shed.

The second story contains six large bedrooms furnished with ample storage and a bathroom fitted with porcelain fixtures and exposed nickelplated plumbing. The third floor contains the servant quarters and ample trunk room. There is a cellar under the kitchen extension. Mr. H. P. Kirby, architect, 23 West Thirty-fourth Street, New York.



TIME IN GARDEN GROWING.

IN these rapid American days, when one must have a thoroughly equipped and amply grown garden ready and in order at the very time one moves into one's new house, the value of time as an element in garden growing and garden making is apt to be lost sight of. A garden, of course, is an indispensable adjunct of every well ordered suburban and country house, and the sooner it is begun the better it is for the owner and the neighbors, to say nothing of the stranger without one's gates. But the rapidly begun garden is only begun; it is time that makes it beautiful.

A few years makes a very considerable difference in even the smallest garden. What can be expected of a garden that has been planted and tended for fifty years, a hundred years, two hundred, three hundred? We have none of the latter class in our country, for three hundred years ago our ancestors were busy with other things than the planting of flower gardens, while it is the solemn truth that only a few of them had arrived at that distant date.

Europe, however, both England and the Continent, abound in such gardens, and much of the beauty we enjoy in these ancient estates to-day is due to their prolonged cultivation. Think what can be done with a lawn that has been grown and mowed for two centuries! We try as best we can, with our rapid methods, to make up for lack of time in growth; we sometimes think we accomplish a good deal, and that, of course, is true; but after all the Old World gardens have the advantage of ours in the matter of continuous growth and continuous care.

GARDEN ORNAMENTS AGAIN.

A CORRESPONDENT writes to call our attention to what he regards as a discrepancy in the notes in this column. A short time ago (March) we took occasion to comment on the horrors of superabundant garden ornaments, and then calmly quoted a description of a foreign garden in which many decorative features abounded. Our correspondent thinks we should be consistent in our remarks, and not recommend one thing in one paragraph and condemn it in another.

He is quite right in that, but there was no inconsistency in the case to which he refers. Perhaps our remarks on garden ornaments were not quite definite enough, and we did not clearly express what was in our mind. Let us say frankly that the paragraph in question was inspired by the sight of two green cast iron lions peacefully slumbering beside the steps of a wooden house. Anything more out of taste than such garden additions it would be hard to imagine. Apparently, the person who put these green lions in place thought that if there was anything better than two green lions it would be three, or possibly four.

It is such so-called garden ornaments we had in mind when we urged the folly of their use. The gardens of the Old World are quite a different matter. It is true that in the old formal gardens there is an abundance of ornaments, of benches, statues, vases, and other architectural features. But most of these gardens are large, and of a size quite exceeding the mimic gardens wherein Americans are apt to set up their lions and stags of cast iron. Moreover, the ornaments of European gardens are, in most cases, real works of art, not always of a high grade, but far in advance of the machine finished products which are favorites in America. It is obvious, we hope, that one series can be condemned and the other commended without any inconsistency, apparent or otherwise.

GARDEN WORK.

THE garden season is on, and the spade and the rake are busy in the land. What is done now is done for all summer, and work neglected at this time can never be made up during the present season. Owners of large estates, supporting a corps of trained gradeners, are never at a loss how to proceed or what to do. In such places the garden work is planned ahead for several years, and is never completed. But the small garden is a very different matter. The spring is a season of trial to the beginner, because he often wants to do so much, and finds even a part of what he plans a heavy task.

And, in truth, there are few harder sorts of work than digging with a spade, although the lawn mowing is often a good second to it. The safest plan is not to try to do too much. But be sure to do something. The more one does, the more one will enjoy the result of one's labors; and of garden work, as of most other kinds, it is impossible to obtain results without effort.



THE WOMAN'S HOUSE.

THERE are not many points at which the woman's house—the house built expressly for woman's occupancy and use—differs from the average house, intended for family use. Occasionally, however, a house is designed and built especially for woman's occupancy, and it sometimes happens that such houses have some qualities of their own. Generally speaking, however, the chief difference between a woman's house and a family house is in the furnishings and the decorations. A house built by a woman for her own use and lived in by her is very apt to have a daintiness and orderliness which do not obtain in a dwelling occupied by several persons, each of whom may have an individual taste, or, as is too often the case, none at all.

A WOMAN'S BUNGALOW.

A NEW YORK paper, a short time since, printed an account of a woman's bungalow near Asheville, N. C., which is worth reproducing. As is often the case, the owner began the work with no knowledge of building or building materials, nor of the best plans to buy the latter. Everything had to be ordered by mail and sent by freight, and then hauled over indifferent roads about two miles, so that the expense of getting proper materials on the spot was more than doubled. The total cost is, however, said to have been only \$225.

A plot of land in a sheltered valley, giving fine views of distant and near peaks, just opened to settlement by a small colony of cultured Northern families, was obtained for a nominal sum. Only one of the available carpenters could read or write, and he possessed merely the rudiments of a primary grade.

The floor space of the house was a square, divided into kitchen and living-room on the right of the entrance. At the left the bedroom, with a closet and a pantry, occupied two-thirds of the space, and the remainder was given up to the piazza. The roof was high pitched, stained red, and the walls painted yellow.

There were rough stone foundations, laid in mortar, that cost only the price of the labor for getting out and hauling to the spot, or twenty cents an hour for a man and a two mule team. A chimney of the same rough stone, with a large open fireplace, would have cost too much. So a brick flue, reaching down to the ceiling, and there receiving the pipe of a utilitarian wood airtight heater, was built as much cheaper, and giving more heat.

The external walls were covered with upright boards eight inches wide, with a narrow strip covering the joining, laid over heavy red resin sized paper, that in turn was laid over broad boards, that formed the interior walls.

The sunny living-room had three windows, commanding the best points of the mountain views. Two corners were cut off, giving a bay effect to the front of the room and a cross view from one window and the glazed door leading to the tiny piazza, adding space to the latter without deducting anything appreciable from the room. This feature also added to the picturesqueness of the exterior. Opening on the living-room was a good sized bedroom, with space for two single beds, for her companion and self, and the usual furniture, and having a commodious closet. A glass door, or "shelter," as the carpenter called it, opened on the piazza, and added much to summer comfort.

The kitchen was as compact and as convenient as a ship's galley, full of shelves and ingenious contrivances to save steps and increase storage space.

Opening from it was a small pantry, with a screened window cupboard for cold storage. The lower half of the window was hinged to open inward. Outside of this sash was built a box frame almost ten inches deep, having a front of fine wire fly netting, three shelves well placed on it, making a cool, airy place for milk, eggs, or cooked food.

The piazza floor was flush with the top of a broad, flat rock of blue limestone, that added considerably to its extent and effectiveness. A clump of young dogwood grew at one side, while persistent ebony spleenworts raised clusters of graceful, slender fronds from many a crevice. At the base of the rock grew evergreen Christmas ferns and galax, while some shy pink arbutus gave promise of midwinter loveliness. This rock made a charming extension on warm afternoons. At the rear, with a door from the kitchen, was a shed porch that gave shelter to the usual array of domestic utensils.

CANDLESTICKS of sealing wax, red, bright yellow, grass green, and blue, in enameled tin, are made for the summer home.



TREE PLANTING FOR HIGHWAYS.

TREES, says Mr. William F. Fox, Superintendent of State Forests, in a pamphlet on tree planting, should be set along every road for shade. In addition, the farm lines can be marked advantageously with fruit-bearing or nut-bearing trees that will bring money to their owner and add to the attractiveness of his surroundings. Objections may be made in certain localities to placing trees along a public road, because their shade would tend to make it wet and muddy. If such conditions exist, the fault is in the road, and not in the trees; there are some very muddy highways along which nothing has been planted. Although a row of trees may retard somewhat the evaporation of moisture at the surface of the roadbed, at the same time they drain its foundation by the rapid absorption of water through their roots. When a roadbed is properly constructed, drained, and ditched, the trees will do no harm; on the contrary, they will furnish a grateful shade to the traveler and prevent dust without creating mud.

There are roads along which no trees are allowed, because some resident argues that the sun is needed to dry up the mud and sloughs which in spring make traveling slow and difficult. But in summer the sun-baked mud is pulverized under the wagon wheels, creating clouds of dust that are worse than mud. With a well-built highway, shaded by trees, both of these nuisances would be avoided. Even a poor road will permit of one row of trees, which should be placed on the south or west side, as its direction may require, to temper the heat of the afternoon sun.

Nothing has been found that will equal the American elm and hard maple for wide roads and double rows. The elms should be at least seventy feet apart, as they often attain a spread of 100 feet, and the trees should not be allowed to crowd or interfere with each other until they assume their full size and natural shape. Transplanted or second growth hard maples along a country road attain a large size and beautiful appearance, which require a fifty-foot space. Other species—oak, basswood, white ash, locust, willow, horse chestnut, black cherry, button-ball, beech, and the two soft maples—can be used with good results to obtain variety. It is also suggested that by planting the scarlet oak, red maple, and pepperidge the brilliancy of the autumn coloring may be enhanced by the bright reds displayed by the leaves of these species. The birches, and especially the yellow birch, are not desirable for streets or roadside use, as they assume a different form when grown in the open instead of the forest, the branches growing lower and the trunk failing to reach its usual height, although it may attain a large diameter. Nut-bearing trees, the chestnut, butternut, and the hickory are also available for highway planting.

There are many reasons, says Superintendent Fox, why trees should be planted in cities and villages. During the hot days of summer the streets which are shaded by trees are preferred to those which lack this protection. The temperature is much lower; and as the pavements are not exposed to the glare of the sun, there is less of reflected heat. The streets that are lined with shade trees are more attractive to the eye; and their superiority is readily apparent when compared with those on which there are no trees. The shaded streets being cooler they are more desirable for residences, and, other things being equal, property is more valuable and commands higher rents. The air is purer by reason of the foliage, which inhales carbonic acid and exhales oxygen. The leaves absorb the poisonous gases generated in hot weather by the decomposition of animal and vegetable matter, and thus an active source of disease is eliminated. During hot summer days the diseases incidental to that season are not so prevalent in streets and localities which are protected from the heat of the sun by large overhanging trees.

In street planting the trees should be placed with reference to the room they will need when fully grown, rather than with reference to the lot boundaries; otherwise, there will be irregularity, overcrowding, and unoccupied spaces. The average city lot is too narrow to permit a tree on each, and so the proper spacing on a block must be determined irrespective of the wishes of the property owners, each of whom might want a tree in front of his house. If a block is fully planted, the trees on one side of the street should stand opposite the spaces on the other side. Planting at half distance, with the intention of removing every other tree in time, is sometimes done in order to obtain more shade at the start.



THE BACHELOR'S HOME IN NEW YORK.

It is possible for the bachelor in New York to be much more comfortable nowadays, says the Sun, than he was formerly, and at little or no increase in price.

Take the typical landlady of a men's lodging house ten years ago. She hired a servant of the cheapest possible grade, and furnished her rooms as meagerly as she could and yet get lodgers. Sometimes she gave them coffee in their rooms, although in nine cases out of ten they preferred not to tax the resources of her establishment to that extent. Her service ended there.

In many cases this landlady was a dressmaker and rented her upstairs rooms to enable her to live in a fashionable neighborhood. In such a case the bachelor who lodged with her was likely to have even less comfort than in the care of a professional landlady.

Then came the great increase in the number of bachelor apartment houses. In the new places built for them, tenants had the attendance of a valet, there were men in the house to wait on them at all hours, and there were, above all else, private baths as an understood feature of all the suites, and even of one room. Then came the use of the telephone in every apartment.

To meet the competition the professional landlady supplies nowadays as many of these conditions as she can. In some cases the lodging houses of the old type are still prosperous. But these houses are about as expensive in price as the best of the bachelor apartments, over which they possess only one advantage—to the bachelor not a very important one—they have larger rooms.

A furnished room in a made over house of this kind can not be had for less than \$15 a week. When the hall room is included, the price will probably be more by \$5 or \$7. A single room on the second floor with a small bath built in the closet will cost \$15, or \$12 at the least.

Attendance is better than it was in the past, but it is rarely so good as that to be found in the apartments, and practically comes to an end at 10 o'clock; whereas in the other houses it lasts all night.

Some of these houses are, nevertheless, very comfortable, and the landladies are able to get high prices. One in the Fifties is typical of the best of this kind.

It is a large twenty-five foot house with bathrooms added to the rooms on each of the three floors. There is a Japanese valet, telephone service in the house, but not in the rooms, and breakfast of coffee, rolls, and eggs for thirty-five cents.

The rooms on the first floor rent for \$25 a week. The two large rooms on the floor above are \$20 and \$18. No rooms are let for less than a year.

In one of the Thirties is a popular house where the prices are even higher. There a large room, two small rooms (really an alcove and a hall room), and a bathroom rent for \$1,100 a year, and they are unfurnished at that. This house has electric light and no telephone.

Bachelor apartments can, of course, be rented for almost any price that the tenant is able to pay. The most expensive house in the city will let two rooms, a good sized sitting-room and a small bedroom and bath for \$1,500 a year. That is, of course, without furniture, and this house, for the sake of sticking it on a bit, charges extra for light and heat, although attendance is included and there is a telephone in each apartment. This rent is the cheapest in the house. Some of the apartments cost \$4,500, but the difference is only in the number of rooms.

But these are the highest priced abodes for the single man. It is possible to get unfurnished in the best neighborhood in the city a bedroom, sitting-room, and bath for \$50 a month. In less desirable regions the same rooms may be had for \$10 a month less, and may even be had furnished over toward the West Side for that amount.

PURE AIR.

THE best air we can obtain is that which is floating over the oceans, and contains in varying volumes 2.66 to 3.12 vols. of CO₂ per 10,000 vols.; we may at once ask, What is the relative purity of the air we ordinarily breathe? An authority states that air is:

"Pure" to breathe when it contains 5 to 7 vols. of CO₂ per 10,000.

"Passable" to breathe when it contains 7 to 10 vols. of CO₂ per 10,000.

"Bad" to breathe when it contains 10 to 20 vols. of CO₂ per 10,000.

"Very bad" to breathe when it contains 20 to 40 vols. of CO₂ per 10,000.

Sanitation

WATER SUPPLY FOR SMALL TOWNS.

ONE of the first questions to be answered is as to the amount of water required to supply the present and future demands of the town, so as to avoid the expense of additions to the plant before many years have gone by.

The New England waterworks association gives the daily per capita consumption of water by fixtures in gallons as follows: For each faucet, 7 gallons; for each bath, 3.5 gallons; watercloset, 7.5 gallons; hose, 1.1 gallons; stores, 3.5 gallons.

From the above, based on actual, everyday service (which is the only correct method of ascertaining the amount of water used), for domestic use: A family of five persons will require 35 gallons, or 100 families, 3,500 gallons. With bathtub, 52.5 gallons; or 100 families, 5,250 gallons. A family of five persons, with bathtub and closet, will use daily 87.5 gallons, or 100 families, 8,750 gallons; stores, with five persons, 17.5 gallons; stores, with closets, 52.5 gallons; 100 stores, five persons, 1,750 gallons; 100 stores, with closets, 5,250 gallons. Taking the above as a basis for calculation, it is necessary to ascertain the number of connections to make a fair approximation of the amount of water required. In such a town as has been referred to only 100 connections would probably be made the first year—possibly not more than 250 in the first five years. Estimating on 250, and allowing fifty gallons per day for each connection—an excessively liberal allowance over the above figures, which are based on actual measurement—the amount required daily for domestic purposes would be 12,500 gallons.

The next question to be considered is the quality of the water—the source of supply. The most important point to be considered is its purity. The health of the inhabitants takes the first place; the location, its convenience of access, and the quantity obtainable, the second. The River Pollution Commission, of Great Britain, after years of investigation on the subject, summarizes as follows the various sources of supply: "Whole-some—springs and deep wells; suspicious—surface or stored rain water; dangerous—river or creek water and shallow wells." In the other and more settled portions of the United States the question of pure water supply for towns has received considerable attention in later years, and it has been considered of such vital importance to the public health that several States have taken the matter up as a question pertaining to the public welfare which the State should look after and regulate. Commissions have been appointed to examine and report on the healthfulness of the water supply of the towns within their respective jurisdiction. The results have been very beneficial from a sanitary standpoint, the disease and death rate being from twenty-five to forty per cent. below the rates prevailing before the commissions were created.

The consulting engineer should be careful in adopting or recommending the source of supply. Branches or small creeks are classed as the most dangerous, and he should under no circumstances recommend them, unless he also recommends some system of filtration. As water supply systems from small streams are usually constructed, the impounding dam in the stream forming the reservoir or pumping basin is simply a catch-basin for all the filth that enters from above. The drainage from such source of supply catches all the filth deposited on the area drained and carries it to the reservoir. Dead animals are often to be found on such a watershed, where they are allowed to putrefy, and the rains finally carry the debris to the stream. Vegetable matter of every description growing on the watershed finally decays, and finds its resting place in the reservoir. Thus the reservoir soon becomes a mass of decayed and decaying filth, and will carry the germs of several cases of typhoid fever to each gallon of water it contains. In summer, when the water gets low or diminished in quantity, such a source of supply becomes most dangerous to health, and under no circumstances is it fit to be used as a water supply.

A water supply obtained from a large stream has in the past been considered satisfactory. As the country becomes more thickly settled, however, the sewage from the towns and refuse from manufacturing plants, which discharge their wastes and filth into such streams, are a serious source of contamination; and it becomes a matter of serious doubt whether any running water is fit for a city water supply, unless the water is subjected to an efficient system of filtration.

The water from springs, if of sufficient quantity and within a reasonable distance of the town, can generally be used for a water supply with safety, unless it has become impregnated with mineral matter injurious to

health. If a sufficient supply can not be obtained from springs, it can usually be obtained by boring deep wells. The water obtained from deep wells can be safely classed as good, unless it contains objectionable mineral matter.

After the above information has been obtained and the pipe lines and the location of the same decided upon, it will be required of the engineer to make an estimate on the approximate cost of the proposed water-supply plant. To make the desired estimate, it is necessary that the engineer shall detail the cost of each item of material and labor that will enter into the construction of the proposed waterworks. The engineer must be perfectly familiar with the cost of machinery and material of every description that it will be necessary to use in the construction of the proposed plant. The consulting engineer is often called upon to give the approximate cost of waterworks before any definite plan is agreed upon, or the details of the same are obtained. The engineer must make an estimate of the above kind from his previous experience and the cost of other plants constructed in like towns under similar conditions. The cost of a plant in towns of from 1,500 to 2,500 inhabitants will range, under favorable conditions, from \$15,000 to \$20,000; in a town of 4,000 inhabitants the cost would be about \$25,000; and in a town of 5,000 inhabitants the plant would cost about \$30,000. The figures given would apply only to compact and closely-built towns in which the water supply was obtained.

The local conditions may change the foregoing estimates materially, and the consulting engineer will have to make his approximate estimate to meet the local conditions in every case.

P. BRYNE, C.E.

ELECTRIC LIGHTS IN THE HOUSE.

APART from the question of inefficient lamps, remarks a recent writer, one of the principal causes of dissatisfaction with the electric light is insufficient distribution of light. This is due to a variety of causes, the chief being ignorance or miscalculation on the part of those who lay out the installation, and fads on the part of the consumer. The small wireman of little experience, who dwells in small rooms himself and has failed to grasp any elementary rule for the proper distribution of light, is responsible very frequently for bad advice on this point. He has no knowledge of the fact that light decreases as the square of the distance, or that rooms with somber decorations require about twice as much diffused light to give a brilliant effect as those with light colors. Accordingly, if the consumer wishes lights put on the ceiling in a high room, up they go, or if the wall paper be of dark hue, no extra provision of lamps is made, and the result is dissatisfaction. A room sixteen feet high will require four times as many lights on the ceiling as a room eight feet high, in order to produce the same degree of illumination on the carpet.

Halls are usually fitted with lanterns which are so designed as to give as little light as possible. Smoked or opalescent glass is the fashion, and while this may look very quaint or antique, the lighting is necessarily poor. Halls are not required to be as brilliantly lighted as living-rooms, but they should have an aspect of cheerfulness, and nothing is better than red glass for this effect. The lantern should contain two or three eight candle power lamps, with two controlling switches, one lamp being used for ordinary occasions and the whole of them for festive times. As regards other passages, staircases and "offices," these are usually over-lighted. As a rule, five candle power lamps are quite sufficient, and for the bathrooms, etc., three candle power lamps will often suffice.

Many mistakes are made in the lighting of bedrooms, especially large ones. As a rule, it is considered the thing to have a one or two-light rise-and-fall pendant over the dressing table and a small pedestal lamp by the bedside, the rest of the room being in gloom. A bedroom should be well supplied with wall-plugs, one on each side of the bed and on each side of the fireplace; there should be a pendant in front of the wardrobe and a ceiling light for general illumination, with, of course, a switch for each fitting. One switch by the door controlling the ceiling light should be two-way, and there should be another similar switch by the bedside, so that this light can be operated from either point. Servants' bedrooms should have one light only over the dressing table, with one switch by the door and as far from the bed as possible, so as to discourage reading in bed. Nurseries should only be illuminated by means of ceiling lights, preferably with metal reflectors and wire-guards, etc.; switches should be well out of reach, or of the keyless pattern.

There are certain conventional methods of lighting these rooms based on experience and fashion, but which may not always give the best results. The conventional dining-room has a rise-and-fall umbrella shaped silk shade which throws a white glare on the tablecloth, and brackets on each side of the buffet and chimney piece inclined at such an angle as to strike right into the diners' eyes.

Heating Talk

ARTIFICIAL COOLING.

THE weekly Scientific American prints an interesting communication from Mr. G. Epprecht, of Paterson, N. J., on the subject of artificial cooling and a new system of heating.

The subject of artificial cooling, he writes, is one of those that each summer arises anew and figures among the few that are felt as an incongruity in our age of high technical advancement. That an electric desk or ceiling fan does not only not cool the atmosphere of an interior, but helps to heat it through its rapid motion, is well enough known, but strong artificial draft continuously interchanges the hot air immediately surrounding the human body for cooler air and accelerates the evaporation taking place, especially on our faces, thus creating the sensation of cooling with which we satisfy ourselves.

Why are interiors not cooled effectively and in the same way as in heating? Cold, in the shape of ice, is a market article, very common and very cheap, and which is brought daily to everybody's house. A 100 pounds of it costs 20 cents, and with that amount 57,000 cubic feet of air can be cooled from 90 degrees F. down to 70 degrees. Such an expense apparently would be no hindrance to the practical introduction and general use of ice for cooling restaurants, residences, or any other interiors. But what has prevented up to the present time the utilization of ice for that purpose is the lack of the proper means for transferring the cold from the ice to the air. Experiments on a large scale conducted during last summer in cooling a store at 553 River Street, Paterson, N. J., have enabled the writer to convince himself and others of the perfect feasibility of the plan to cool any premises by the use of ice. An apparatus of extreme compactness, consisting of one or more segments, each of which represents an actual cooling (radiating) surface of 275 square feet with but 6 cubic feet of space displacement, cools the air driven therethrough by a blower, before delivering it to the locality to be cooled; where cold spring water is at disposal this will be sufficient to assure satisfactory results.

Any premises provided with such a cooling plant may with advantage be heated in winter by the very same means, i. e., the same apparatus and the same ducts, adding only a simple hot water heater and omitting the use of a fan. Such a system of heating would then coincide in principle with the well-known hot air furnace heating; however, without the latter's drawbacks of possibly overheating the air or deteriorating it in consequence of a leak in the furnace, since in the new system it is the hot water which heats the air. By means of the special above mentioned apparatus and its accessories—a fan and the hot water heater—a system of combined cooling, heating and ventilating is established, which, wherever the best of hygienic conditions are cared for or demanded, is unsurpassed, supplying an interior continuously with pure, dust and odor free air of a temperature that will insure perfect comfort both in winter and during the hot summer months.

THE FURNACE WATER PAN.

THE water pan should receive at least an annual washing and cleansing, and the summer is naturally the season when this very useful bit of work can be done. It should be thoroughly cleaned and scrubbed every year; a coat of whitewash is said to improve the process. To clean a permanently connected water pan a cork or corn cob should be placed in the pipe leading to the inside pan to stop the supply. The pan should then be detached and the inside scraped and washed.

HEATING CAPACITY.

THE close of the winter has been signalized by an outbreak of talk against our overheated houses, and suggestions that we borrow a friendly hint or two from the cool dwellings of Europe. The suggestions, it must be admitted, are more seasonable at this time of year than when the mercury is trying to find how far down it can go in the tube without bursting the bulb. Those, however, who have been fortunate enough to test the winter on two continents are likely to find a deal of comfort in our warm American houses. It is, however, very true that the average house is much overheated, and there is unquestioned room for much improvement in this respect. The householder, however, will do well to insist that his dwelling be provided with ample heating capacity. When one wants heat one wants it badly, and in very cold, windy weather the most ample apparatus is often found inefficient. The need of heat is often so great that the additional cost of ample apparatus can safely be discounted.

New Building Patents

The following list of New Patents relating to Building and Sanitary Science is prepared expressly for the SCIENTIFIC AMERICAN BUILDING MONTHLY by MUNN & CO., Solicitors of American and foreign Patents.

A PRINTED COPY of the specification and drawing of any patent in this list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, if exact date or number is furnished. Remit to MUNN & CO., 361 Broadway, New York.

BRICK, STONE, AND TILE.

BUILDING BLOCK.	J. D. Morrison, Reinbeck, Iowa.	753,286
TILE AND TILE SETTING.	J. H. Munro, New York, N. Y.	753,287
BUILDING BLOCK.	A. F. Hoffman, Pittsburg, Pa.	753,491
FIREPROOF BUILDING BLOCK OR SLAB.	R. Illemann, London, England.	753,707

CARPENTRY.

FRAME OR SASH FOR WINDOWS.	H. Romtinder, Bloomsbury, N. J.	753,315
REMOVABLE DOOR.	J. R. Hussey, Indianapolis, Ind.	753,578
WINDOW.	G. Kabureck, Jersey City, N. J.	753,579
WINDOW.	H. E. Brown, Chicago, Ill.	753,665
WINDOW FRAME AND SASH.	A. K. Lovell, New York, N. Y.	753,893
FLOORING END JOINT.	M. A. Hayward, Columbus, Ohio.	754,215
WINDOW.	O. E. Cluss, St. Louis, Mo.	754,425
WINDOW SASH.	G. H. Lawrence, Middletown, N. Y.	754,575
WEATHER STRIP.	J. S. Senglar, St. Louis, Mo.	754,819
SECURING STRIPS OF WOOD, ETC., TO IRON BEAMS.	S. Davis, New York, N. Y.	754,855
WEATHER STRIP.	H. Eagon, Newcomerstown, Ohio.	754,857
WINDOW FRAME.	T. F. Ware, Steamboat Springs, Nev.	755,419
WEATHER STRIP FOR WINDOWS.	J. T. Roberts, Claremont, Cal.	755,552
WINDOW.	H. E. Essig, Canton, Ohio.	756,006

CONSTRUCTION.

STEEL-CONCRETE CONSTRUCTION.	J. S. Metcalf, Chicago, Ill.	753,603
SHEET METAL STUDDING.	Wittekind & Bourke, Chicago, Ill.	754,270
SHEET FOR ROOF COVERING.	W. H. Bache, Boundbrook, N. J.	754,273
WALL STRUCTURE.	P. J. McGuire, Blairsville, Pa.	754,384
DOOR OR LIKE FRAME.	E. Ohnstand, Jamestown, N. Y.	754,492
MEANS FOR COVERING THE VALLEYS OF TILED ROOFS.	W. Ludowici, Tockgrin, Germany.	754,578
THEATER BUILDING.	A. Schlechter, Allegheny, Pa.	754,711
STRUCTURAL ARRANGEMENT APPLICABLE TO FLOORING, ROOFING, ETC.	E. L. Pease, Darlington, England.	754,888
FLOOR JOIST HANGER.	W. D. Dreyer, Cleveland, Ohio.	755,116
BUILDING CONSTRUCTION.	G. F. Fisher, North Tonawanda, N. Y.	755,122
NON-CONDUCTING WALL.	H. H. Judson, Stratford, Conn.	755,137
SHEET METAL REVOLVING WINDOW.	J. T. Leonard, New York, N. Y.	755,232
MANUFACTURED PLATE FOR CEILING CONSTRUCTION.	W. Gutzelt, Charlottenburg, Germany.	756,015

ELEVATORS.

AUTOMATIC ELEVATOR RETARDING DEVICE.	C. P. Hall, Chicago, Ill.	753,569
DOOR LOCKED CONTROLLER FOR ELEVATORS.	C. O. Harker, Sioux City, Iowa.	753,572
SAFETY APPLIANCE FOR ELEVATORS.	J. Cruickshank, New York, N. Y.	754,432
SAFETY APPLIANCE FOR ELEVATORS.	S. B. Trapp, New York, N. Y.	755,189
SAFETY DEVICE FOR ELEVATORS.	F. Blanding, Brockton, Mass.	755,736

FIREPROOFING AND FIRE EXTINGUISHMENT.

AUTOMATIC APPLIANCE FOR EXTINGUISHING FIRE.	H. F. Maxin, Bethel, Maine.	753,897
FIREPROOF BLIND.	E. H. McCloud, Columbus, Ohio.	754,002
FIREPROOF COVERING FOR COLUMNS, OR THE LIKE.	A. L. A. Himmelwright, New York, N. Y.	754,064
FIREPROOFING AND INSULATING STRUCTURE.	O. F. Zahn, Los Angeles, Cal.	754,109
FIREPROOF WINDOW FRAME AND SASH.	I. W. Emerson, Medford, Mass.	754,437
FIREPROOF FLOOR CONSTRUCTION.	R. C. Kyle, Columbus, Ohio.	754,574
FIREPROOF CONSTRUCTION.	G. Liebau, Maurer, N. J.	754,783
FIRE BARRIER WALL, PARTITION, ETC.	H. Root, San Francisco, Cal.	755,171
FIREPROOF BUILDING STRUCTURE.	G. B. Waite, New York, N. Y.	755,336

HARDWARE.

DEVICE FOR ADJUSTING WINDOWS.	A. F. Enquist, San Francisco, Cal.	753,479
LOCK.	H. Bryda, Woonsocket, R. I.	753,667
COMBINED LOCK AND LATCH.	J. E. Young, Wayland, N. Y.	753,783
SASH BALANCE.	G. W. Ogden, Prosperity, W. Va.	753,908
FIXTURE FOR HANGING SASH.	J. Kirby, Jr., Dayton, Ohio.	753,985
LOCK.	C. E. Long, Bannockstown, Ireland.	754,226
WINDOW SASH ATTACHMENT.	L. E. W. Banks, Camden, N. J.	754,274
LOCK.	Geo. W. Caswell, New Britain, Conn.	754,280
SASH BALANCE.	Rathbun and Lonergan, Providence, R. I.	12,202
SASH HOLDER AND LOCK.	O. E. Howe, Washington, D. C.	754,452
DOOR CHECK AND CLOSER.	J. A. Young, New York, N. Y.	754,629
DOOR CHECK AND CLOSER.	W. Pelzer, New York, N. Y.	754,690
LOCK.	H. G. Voight, New Britain, Conn.	755,195
HINGED SUPPORT FOR WINDOW SASH.	F. D. Palmer, Norwich, Conn.	755,311
SASH HOLDER.	D. O. Hiatt, Greenlawn, N. Y.	755,490
LOCK.	J. B. Miller, Kent, Ohio.	755,907

HEATING AND VENTILATION.

SYSTEM OF HEATING BUILDINGS OR DWELLINGS.	L. M. Gates, Muscatine, Iowa.	753,253
STEAM HEATING SYSTEM.	J. R. Shanklin, Charleston, W. Va.	753,324
ANTIHEAT-RADIATING WINDOW.	F. Voigtmann, Chicago, Ill.	753,765
RADIATOR.	G. A. Mower, London, England.	754,156
HEATING AND VENTILATING APPLIANCE.	W. M. Ferry, Park City, Utah.	754,293

AUTOMATIC ELECTRIC HEAT REGULATOR.	D. N. Leib, Elkhart, Ind.	754,465
VENTILATING DEVICE FOR WATER CLOSET.	J. H. Powers, Detroit, Mich.	754,695
VENTILATOR.	F. J. Prochaska, Park River, N. D.	754,805
VENTILATOR.	F. G. Yawman, Rochester, N. Y.	755,095
HEATING SYSTEM.	J. M. Seymour, Jr., Newark, N. J.	755,176
VENTILATOR.	W. P. Cosper, Chicago, Ill.	755,565
VENTILATOR.	R. S. West, Talladega, Ala.	755,973

MISCELLANEOUS.

PREPARED ROOFING.	S. R. Holland, St. Louis, Mo.	753,982
LADDER AND SCAFFOLD SUPPORT.	T. Copeman, Essex, Canada.	754,427
ILLUMINATING STRUCTURE.	F. L. O. Wadsworth, Williams Bay, Wis.	755,196
PRESERVED WOOD AND PROCESS OF PREPARING SAME.	I. P. Lihme, Cleveland, Ohio.	756,173
ROOFING.	J. H. Munro, Newark, N. J.	756,180

PLUMBING.

AUTOMATIC STOP AND WASTE COCK.	J. T. Hutton, Bronson, Mich.	753,271
WATER CLOSET.	H. O. Krakow, Dubuque, Iowa.	754,573
WATER CLOSET.	P. A. Allen, Toledo, Ohio.	754,733
WATER CLOSET.	W. Kulow, Kokomo, Ind.	755,498
WATER CLOSET.	W. H. Osborn, Louisville, Ky.	755,922

TOOLS.

PLUMB AND LEVEL.	G. C. Brown, Fort Gaines, Ga.	753,354
PLUMB AND LEVEL.	C. H. Craven, Newcastle, Pa.	753,551

ENGLISH PLASTER WORK.

A NOTABLE step in English plaster work leads straight to the classic work of Jones and Wren. French and Italian plaster workers were invited to England in Charles II.'s reign. The chapel of Trinity College, Oxford, may be cited as a good typical specimen of plaster ornamentation. A feature of some of the plaster decoration of the end of the seventeenth century is the elaborate modeling of fruit, flowers, and foliage in full relief, often in parts quite detached from the grounds, and either supported by wires embedded in the plaster or by small sticks of tough wood. This work, full as it is of artistic ingenuity and clever modeling, was by that very ingenuity departing from any true principles of stucco work, and therefore hastening the decay of the art. A notable example is the ceiling of the chapel of the Royal Hospital, Kilmainham. The next modification of style was largely due to Kent. In his designs the plaster ornamentation is mainly used as architectural enrichment, bold in treatment—sometimes too bold for the space, but effective in its way.

Publishers' Department

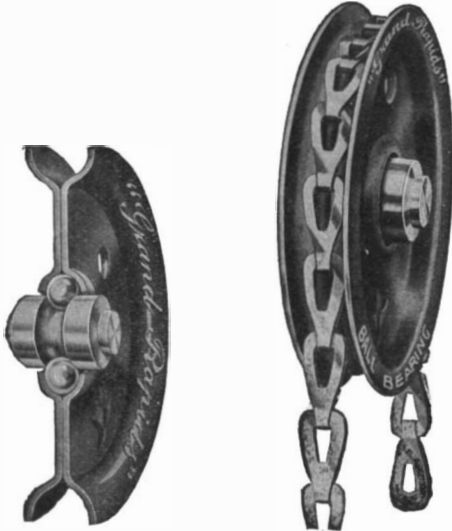
ALL-STEEL SASH PULLEYS.

THE good results of a healthy habit of business are shown in the right production of articles that are intended for long service in remote or covered places, and those interested in buildings will welcome improvements in things that are faultless and durable, and hence trustworthy for use in situations where it is costly and inconvenient to gain access in case of trouble. A sash pulley, for instance, is a device that is expected to work smoothly, instantly, and, at the same time, be able to withstand the effects of strain and corrosion in a position out of sight. The Grand Rapids Hardware Company is busy making all-steel sash pulleys, which are rapidly being adopted because they are light and strong, and have a downright sustaining strength in carrying any weight a cord or chain will support. Two-thirds freight charge is saved, and a broken pulley is never known to crop up in a consignment of these all-steel products. And then they fit a simple mortise and fasten with an unsurpassable rapidity. No pulley manufactured by the company requires counterboring to let the faceplate in the wood, and this is a great saving in time, even if one has a pulley mortiser. These pulleys are made with as much care in the direction of material, construction, and finish as any devices of like importance that are very much more liable to receive inspection. Consequently, they are fast growing into favor in spite of the long use of the older fashioned articles. The concise little catalogue of the company will answer any inquiry as to which style or styles of its "All-steel Sash Pulleys," whether the "Grand Rapids" or the "Fox," will best suit your needs and the requirements of your trade. In the new ball-bearing wheel shown in the accompanying cluster of three engravings, the ball-bearing is the finest running, the strongest, and the most durable ball-bearing sash pulley ever made by this company. Seven solid steel balls, 3-16-inch diameter, run on a turned steel cone axle. None other is made this way. It is furnished in three sizes, 2 inches, 2 1/4 inches and 2 1/2 inches, either for rope or chain, and needs no nails nor

screws, and is noiseless and everlasting. It requires no cutting, no trimming, and is guaranteed to carry any sash made. Engraving No. 1 presents the side view of this anti-friction ball-bearing wheel. No. 2 shows the ball-bearings. No. 3 gives the chain groove. Another roller-bearing wheel is made for the highest grade of buildings where windows are heavy and frequently opened. It is made for that class of trade requiring the very best sash pulley that can be made. Six steel rollers, 1/4-inch diameter, run on a solid steel



BALL-BEARING WHEEL.



BALL-BEARINGS.

CHAIN GROOVE.

axle of the same diameter, making a bearing that no amount of wear yet given has affected in the least. With the fourth engraving illustrating this article we show the No. 12 axle bearing sash pulley, a two-inch wheel. Natural steel pulleys are always shipped, unless otherwise specified. Brass, bronze, or oxidized plated finishes, and brassoline lacquered face are given to the various sash pulleys. In 1902 the Grand Rapids Hardware Company and the Grand Rapids Sash Pulley Company purchased the "Fox" sash pulley business, including patents, machinery, tools, stock, and good will of the business, and continues the well known "Fox" styles. Owning, as the firm



SASH PULLEY.

does, something like twenty of the best sash pulley patents on record, the company is strong in its rights guaranteed by the government, yet advise caution against purchasing imitations. The company also manufactures the "Grand Rapids" triple bit and quadruple bit. These make perfect mortises, and without cutting, trimming, or fitting. Also the "Grand Rapids" post-boring machine. It can be set on a post and used for general work as well as for running quadruple or triple bits. This well made machine will soon pay for itself in any shop. It has tight and loose pulleys, 3 1/4 x 7, which should run about six hundred revolutions per minute. The machine is equipped with a belt shifter on the side, and an adjustable stop for the depth of the hole. It has an adjustable counterbalance on the lever. Any one can arrange a simple foot treadle for bringing down the vertical spindle, if such a device is wanted. The spindle has a half-inch straight hole, where bits are fastened. Send to Grand Rapids, Mich., for a sash pulley catalogue.

WATER TANKS FOR ROOFS OR TOWERS.

WHILE municipal authorities throughout the country are buzzing with plans for independent water supply, suggested by the Baltimore and Rochester catastrophes, it may be well to suggest that the duty of the individual must not be overlooked. It not infrequently happens that a tank on the roof of a building will extinguish a fire when the ordinary supply has failed or has been interrupted. The cost of a tank, whether connected with a stand pipe or a sprinkler outfit, is very trivial when compared with the whole outlay upon a new building. Yet this simple addition, in case of a fire, will pay for itself a thousandfold.



TANK AND TOWER OUTFIT.

The pioneer in tank building in this country is the W. E. Caldwell Company, of Louisville, Ky., which has been in the business for twenty-eight years. This firm builds tanks of red gulf cypress, the most durable material known for the purpose, and erects them not only upon roofs of buildings of all sorts, but also upon separate towers where there is yard room. Tanks are constructed of all sizes, from a few hundred gallons capacity to others which contain several thousand gallons. All these tanks are built according to the specifications of the Associated Factory Mutual Fire Insurance Companies, and have the endorsement of leading architects and builders throughout the country.

Besides excelling in the quality of material used, these tanks are also adapted by many devices to resist climatic changes, and have patented attachments which insure their being filled easily, kept filled, and emptied as occasion requires.

The matter of hooping is a very important one, and in fact, all the strains which conceivably may come upon a tank, whether from the weight of the water within or from wind resistance or vibration from without, have been calculated to a nicety. There is no rule of thumb work about the Caldwell products, and the company has plans for tanks to be erected under all conceivable conditions.

The illustration herewith shows one of this firm's tank and tower outfits erected for the Ohio Leather Company, at Gerard, Ohio. These outfits are very likely to be found in the vicinity of the reader, and by thorough inspection one may readily discover the various features that make them so acceptable in this country. Send for a catalogue and learn of the prices and plans appropriate to the installation of a suitable water service.

TAPESTROLIA DECORATIONS.

WITH the view of offering to the intending house builder suggestions regarding the use of their burlaps and canvases, the Richter Manufacturing Company, of Tenaflly, N. J., has issued an attractive booklet that will also interest architects and builders, who frequently find difficulty in presenting to their clients the effects of interior decoration plans. The booklet is entitled "Tapestrolia," and besides showing its uses in an orderly and ample arrangement of facts, it contains useful hints in half-tone pictures, all to the extent that it is practically a faultless guide for the decorative treatment of every room. The decorative effects produced by the employment of burlap are more artistic and attractive than old wall paper finishes and designs. Burlap tinted in colors and treated with decorative figures can present degrees of shade and luster and range of patterns that are bound to create attention and encourage adoption. One instance of this appreciation is demonstrated by the commissioners in charge of the Art Building at the Louisiana Purchase Exposition in selecting, after careful consideration, tapestrolia burlap as the material most suited for the interior decoration. The competition, we are informed, was exceedingly keen for

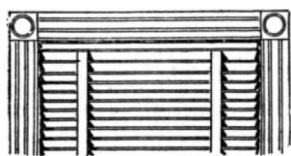
this particular contract, as its award carries with it the endorsement that the goods of the Richter Manufacturing Company have the quality and artistic merit suited for the purposes of vast decorative schemes, and at the same time are suitable for covering the walls of the building with a fabric that would enhance instead of detract from the artistic value of the paintings exhibited. It was found that tapestrolia best answered the artistic requirements because of its distinct shades of correct colorings, six of which were chosen to carry out the tone scheme laid down by the artists in authority. The booklet can not be misread or misinterpreted, for the descriptive and illustrated

portions tell the story and show with unusual clearness how each burlaped room of a house looks. It treats of burlap as to its application, its qualities of sanitation, permanency, economy, and cleanliness. How it may be removed and rehung, how painted when applied plain, and how washed down without detriment to the goods. The hall, living-room, the library, the music room, the billiard, and other rooms have each a full page of notice, and the brand of harmony could not be better stamped on walls, ceilings, and floors in relation to furniture, rugs, hangings, bric-a-brac, and woodwork than is there shown in the Richter treatment of household art. An interesting feature of tapestrolia resides in its

capacity, when required, of avoiding servile imitations of old styles and of variously introducing a mode of treatment that is absolutely original, and in establishing an original method of dealing with conceptions of new styles, tapestrolia places itself in a solid position in the sphere of decorative art. The dyeing, printing, and finishing works of the Richter Manufacturing Company, manufacturers of tapestrolia treatments of burlap, canvases, etc., are at Tenaflly, N. J., and the New York wareroom is at No. 20 East Twenty-first Street. The booklet will be sent free on application.

SCREENS FOR DOORS AND WINDOWS.

At this season of the year, before the troublesome flies and mosquitoes begin to get too much of a start, is a good time to think of wire screens for windows and doors. It is poor economy to use the usual kind



BLIND.

made by hand. In the first place, the ordinary house carpenter can not give the fine finish necessary, and in the second place, machine-made screens that are produced by a large factory making a specialty of this sort of work, such, for instance, as the Burlington Venetian Blind Company, of Burlington, Vt., are naturally more economical, since they are the product of skilled mechanics specially trained to make screens. Write for this firm's catalogue, and get information on all the details of this method of screening for doors, windows, and the like. The company also manufactures blinds to keep out the sun rays and to control the light. They are constructed so as to permit perfect ventilation, and without any pockets or unsightly projections.

CLIPS

EVERY man knows the necessity that constantly arises in business of temporarily fastening together papers, money, samples, or similar objects which it is undesirable to mar by pin holes. For such purposes the "Eureka Clip," made by the Consolidated Safety Pin Company, of Bloomfield, N. J., is particularly well adapted. It will hold anything from a couple of sheets of the thinnest paper to cardboard, or an ordinary booklet. They are extensively used by banks for fastening checks together, or by corporations for attaching checks to vouchers. Business and professional men find them particularly useful, and lawyers employ them to attach memoranda to the pages of their law books, serving at the same time as a book mark and a clip. They are stamped from sheet metal, nickelplated, and are of ornamental appearance, though so inexpensive that they cost little more than the pins they replace.

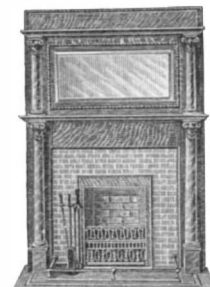
A CHEAP BUT ACCURATE AMERICAN WATCH.

THAT there is a constant and increasing demand for a cheap but accurate watch has been proved by the experience of the firm of Robert H. Ingersoll & Bro., Nos. 51-55 Maiden Lane, New York. In 1892 this com-

pany put on the market a so-called watch, which, although as good as could be produced at that time, was really a small pocket clock. It was also very convenient and readable while hanging on a level with the eye, in desks, and similar pieces of furniture. Since then the size of the Ingersoll watch has been gradually decreasing, as knowledge and new special machinery enabled the firm to perfect its output in this line, and now the works of the watch are enclosed in a standard watch case of the size known as No. 16. This device is no longer a small clock, but a watch in every sense of the word. It has forgotten the days when it was mislabeled, and of all untimely criticism it now goes scot free. The output of these watches in 1892 was one hundred per day; now it is reported by the firm as over six thousand, of which number about two thousand are exported. The principal foreign demand comes from England, and the cheaper Swiss watches have been almost driven from the market by the American timepiece. It finds particular favor among farmers, laborers, sportsmen, and others who are likely to subject a mechanism of this kind to rough usage, and as a watch for boys and for service as an "off watch," when most advisable to leave the one with complicated train and perfect compensation balance at home, it answers admirably. Owing to its non-magnetic quality, it will be found useful for electricians. These practical timekeepers, being machine-made, are all exactly alike, and, under guarantee, they are all exactly right. The inducements are very fair that are offered any one to try this timepiece for one year.

MANTELS, FIREPLACES, GRILLES, ETC.

THE wood engravings inserted in this article represent two mantels and a grille direct from the factory of William F. Ostendorf, of Philadelphia. The larger piece is a golden oak or mahoganized birch



MAHOGANIZED BIRCH MANTEL.

selected lumber, seven feet high, five feet wide, heavy box top and deep shelves, and fitted with a 36 x 18 inch French bevel mirror. Four beautiful columns with capitals add to the structural grace and strength of the mantel. The piece includes enamel tile facings, 60 x 18 inch hearth, and plated frame and club house grate. The smaller mantel is made of solid oak, 78 inches high and 54 or 60 inches wide; has a 24 x 14 inch mirror, and tile and grate. The office and showroom of Mr. Ostendorf are at No. 2417 North Broad Street, Philadelphia, Pa., where he is now offering exceptional chances to procure mantels, fireplaces, grates, tile, slate, grilles, etc. A handsome catalogue has been issued, in which are shown a line of goods of interest to all those who are contemplating building. The illustrations are in half-tones, showing the output as actually appearing on the floor. The process of mounting tiles on slate, employed by this manufacturer, is understood to be so simple that any one with the slightest inclination to try can execute the work without any trouble. It has been employed with entire satisfaction, even in large cities, and no one at a distance need hesitate about ordering mantels for fear of not getting the best effect at the lowest price. The maker reports a large demand for these goods, and claims this in consequence of their suitability to the needs and tastes of people who study the values of color forms and utilities in furnishing homes. In addition to manufacturing mantels and fireplaces, the factory is busy furnishing tiles for floors and walls of bathrooms, kitchens, vestibules, etc., as well as slate laundry tubs, grates, fire sets, fenders, and grilles. One, the last mentioned, article, is shown in the engraving herewith. This grille is 48 inches, with pole. Division screens and special grilles are made to order.



SOLID OAK MANTEL.



GRILLE.

After the great fire of Nero every Roman citizen was required to keep in his house a machine for extinguishing fires, and herein lies a suggestion to the present age of what might be accomplished through legislation toward reducing fire waste. Edward Atkinson says: "The only persons who can prevent loss by fire are the owners and occupants of insured premises. Upon them rests the responsibility for heavy loss, if any occurs, in nearly every fire. All the insurance company can do is to pay indemnity for loss, which, if large, in nine cases out of ten is due to lack of apparatus for preventing loss."—Insurance Engineering.

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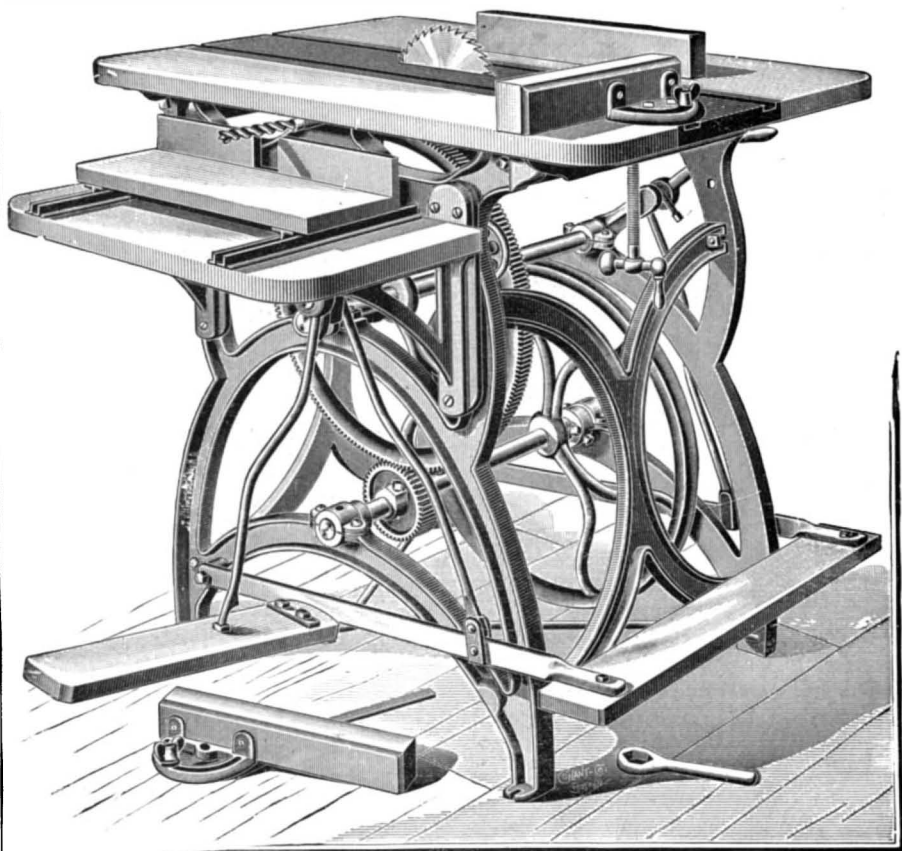
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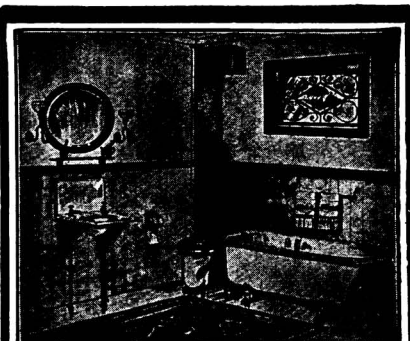
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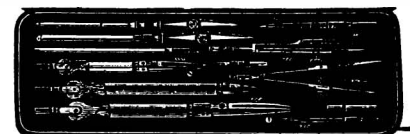


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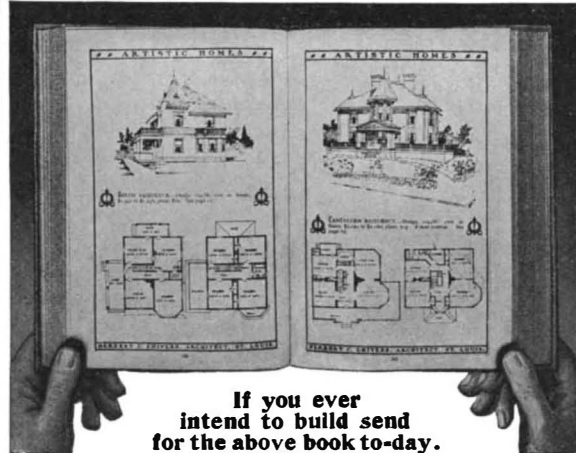
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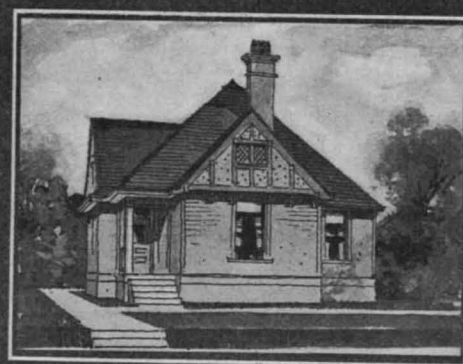
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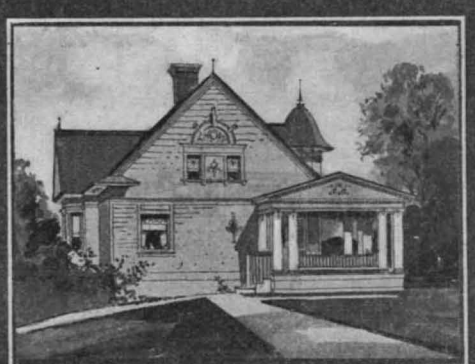
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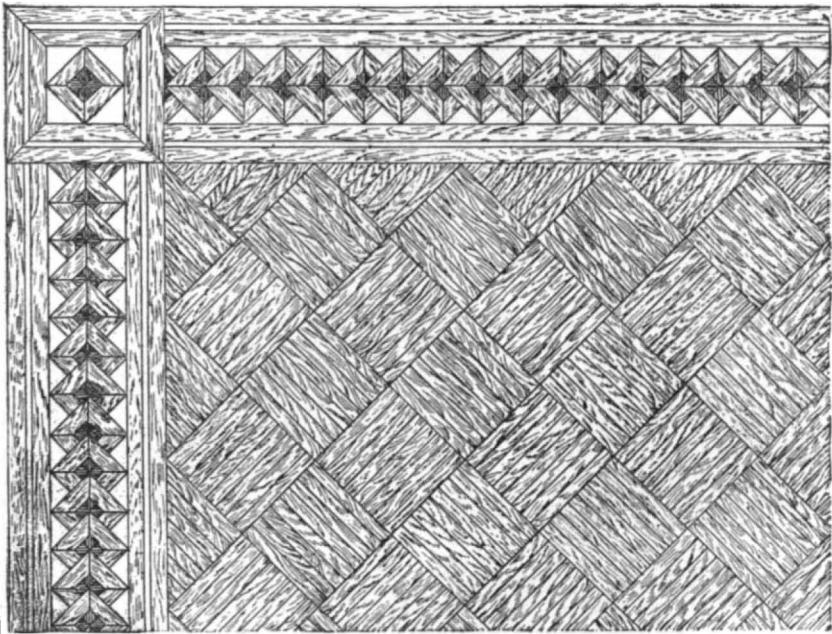


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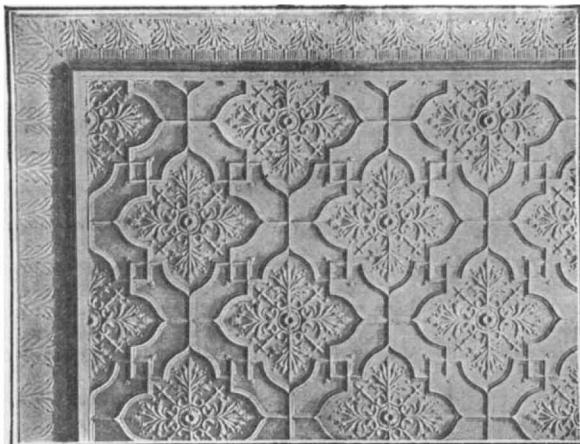
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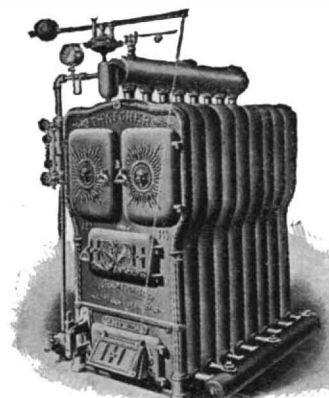
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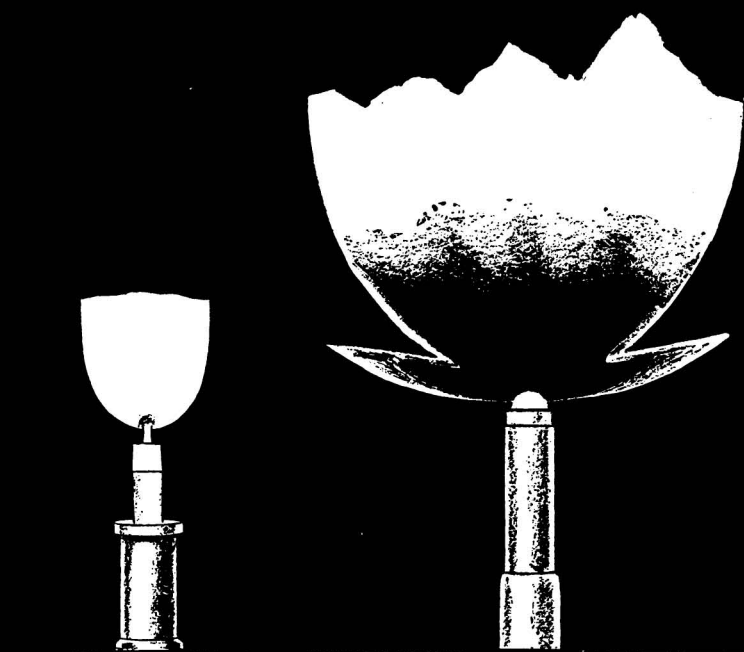
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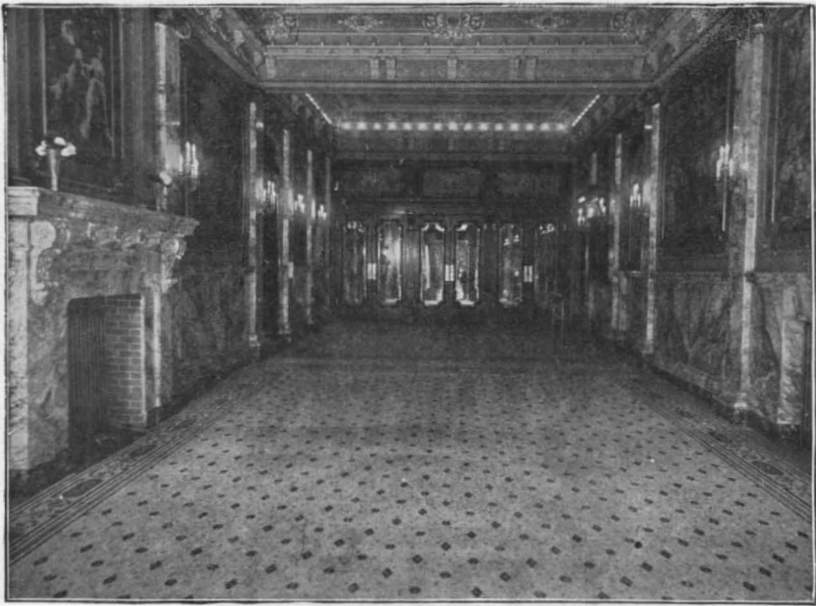


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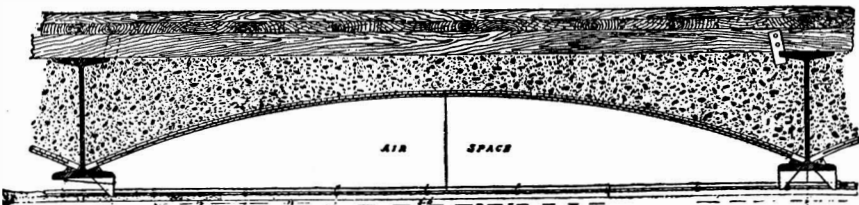
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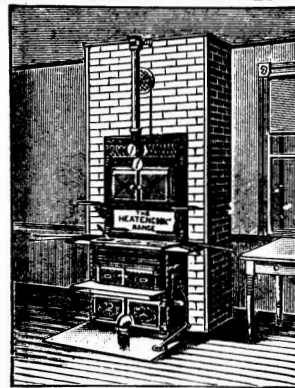
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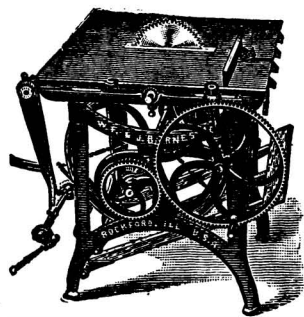
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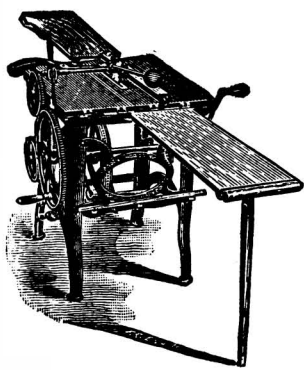
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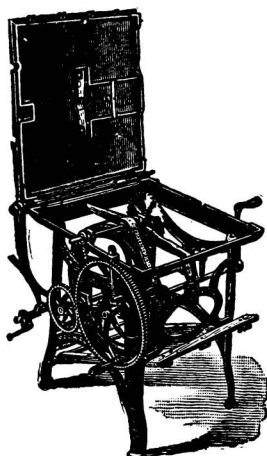
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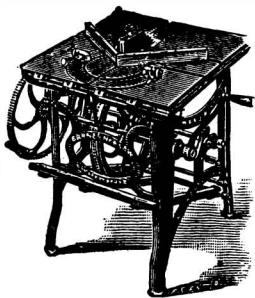
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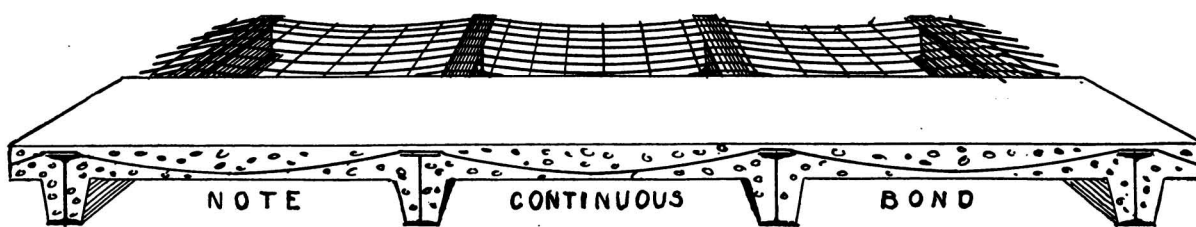


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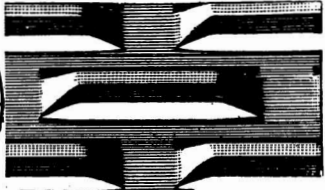
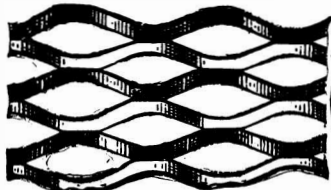
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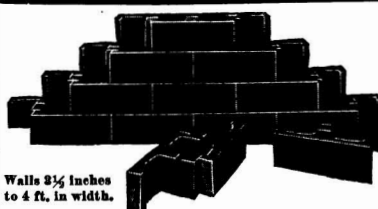
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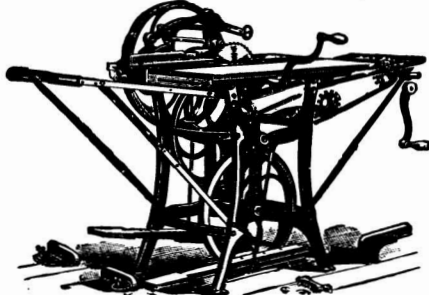
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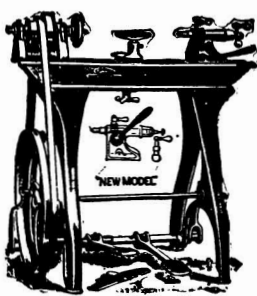
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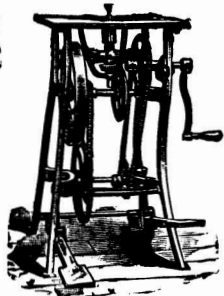
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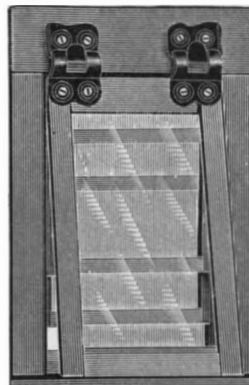
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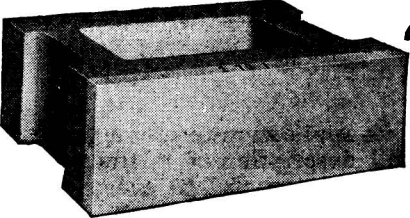
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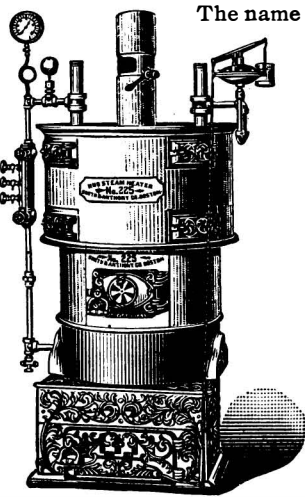
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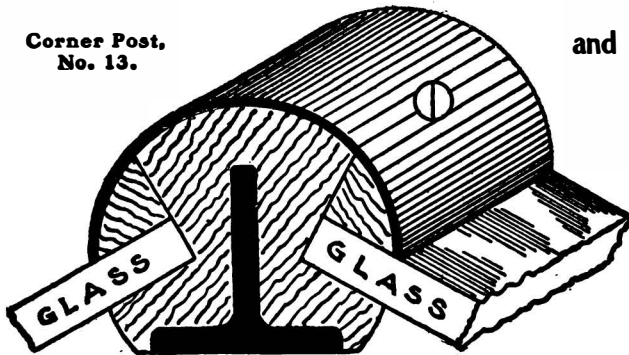
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ALPHABETICAL INDEX TO ADVERTISERS.	
A.	Page
Acetylene Apparatus Manufacturing Co.....	iv
American Hydraulic Stone Co.....	vii
American Sheet & Tin Plate Co.....	cover ii
American Tin Plate Co.....	vii
Andrews Heating Co.....	cover iv
B.	
Barnes, W. F. & Jno., Co.....	vi
Batavia Clamp Co.....	cover iii
Berger Bros.....	cover iv
Berger Manufacturing Co.....	ix
Bigney, S. O., & Co.....	cover iv
Bird, J. A. & W., & Co.....	ix
Bischoff, Fred F., & Co.....	ix
Bolles, J. E., Iron and Wire Works.....	cover iv
Bridgeport Wood Finishing Co.....	v
Bristol Co.....	cover iv
Brooks, T. H., & Co.....	cover iv
Burlington Venetian Blind Co.....	iv
Butcher Polish Co.....	cover iv
C.	
Caldwell, W. E., Co.....	i
Century Cement Block Machine Co.....	viii
Champion Iron Co.....	viii
Charter Gas Engine Co.....	cover ii
Chicago, Indianapolis and Louisville R. R. Co.....	ix
Chivers, H. C., Co.....	ii
Chicago House Wrecking Co.....	ii
Clinton Wire Cloth Co.....	vi
Cortright Metal Roofing Co.....	vii
Coulson, J. W., & Co.....	viii
Crane Co.....	cover iii
D.	
Daverman, J. H., & Son.....	ii
Dixon, Jos., Crucible Co.....	iv and v
Dorendorf, D.....	cover ii
E.	
Eastern Granite Roofing Co.....	v
F.	
Fay, J. A., & Egan Co.....	x
Foster-Munger Co.....	x
Fox Machine Co.....	i
G.	
Gorton & Lidgerwood Co.....	cover iv
Grand Rapids Hardware Co.....	x
Grant Pulley & Hardware Co.....	cover iii
Gunther, Louis F.....	cover iv
H.	
Hartford Faience Co.....	cover ii
Hartmann Bros. Manufacturing Co.....	i
Hayes, George, Co.....	v
Heatencook Co.....	v
Herendeen Manufacturing Co.....	cover iv
Holman, E. E.....	i
Hopkins, D. S.....	v
I.	
Interior Hardwood Co.....	cover iv
International Fence and Fireproofing Co.....	cover iv
Ives, Hobart B., & Co.....	cover ii
J.	
Jones, T. W.....	cover iv
K.	
Karol, B. Y.....	i
Kelsey Heating Co.....	x
Kemp, C. M., Mfg. Co.....	ii
Kees, F. D.....	vii
L.	
Lane, John.....	ii
T. Linke & Co.....	cover iv
Lord & Burnham Co.....	cover ii
M.	
MacLagan, Jr., P. T.....	ii
McCabe Hanger Manufacturing Co.....	cover iv
Mallory Manufacturing Co.....	viii
Marston, J. M., & Co.....	ii
Moore, E. B., & Co.....	cover iii
Morse, Williams & Co.....	v
N.	
Nason Manufacturing Co.....	v
New England Anchor Fence Co.....	ix
New Jersey Zinc Co.....	cover ii
New York Belting & Packing Co. Ltd.....	cover iii
Northrop, Coburn & Dodge.....	iv
O.	
Ostendorf, W. J.....	i
P.	
Philadelphia Typewriter Exchange.....	ii
Phoenix Sliding Blind Co.....	cover iv
P. cher Lead Co.....	cover ii
Q.	
Quaile, G.....	ii
R.	
Rider-Ericsson Engine Co.....	i
Riverton Manufacturing Co.....	iv
Roebeling Construction Co.....	v
Rogers Iron Co.....	x
S.	
St. Botolph Research Bureau.....	cover iii
Sedgwick Machine Works.....	iv
Seneca Falls Mfg. Co.....	vii
Smith & Anthony Co.....	viii
Standard Co.....	cover iii
Standard Paint Co.....	cover iii
Standard Sanitary Mfg. Co.....	cover iii
Standard Table Oil Cloth Co.....	vi
Stanley Works.....	cover ii
Standard Pump and Engine Co.....	i
Storm Manufacturing Co.....	ii
Stover Mfg. Co.....	v
Stowell Manufacturing Co.....	v
Sykes Metal Lath & Roofing Co.....	vii
T.	
Taylor, Wm. M., Mantel & Grate Co.....	cover iv
Thatcher Furnace Co.....	iv
Trent Tile Co.....	v
U.	
United States Mineral Wool Co.....	cover iii
V.	
Van Dorn Iron Works Co.....	cover iv
W.	
Weber, F., & Co.....	ii
Wilks.....	v
Wyckoff, Seamans & Benedict.....	v



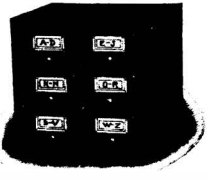
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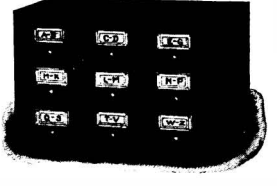
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Change of copy for advertisements should reach us not later than 5th of month to appear in issue following.

<p>Acetylene Gas Generators. Page Acetylene Apparatus Manufacturing Co.iv</p> <p>Architects. H. C. Chivers.....iii J. H. Daverman & Son.....ii E. E. Holman.....i D. S. Hopkins.....v P. T. MacLagan, Jr.....ii</p> <p>Architects' and Surveyors' Supplies. F. Weber & Co.....ii</p> <p>Architectural Brass and Metal Work Designs. J. E. Bolles Iron and Wire Works.....cover iv</p> <p>Architectural Faience and Tile. Hartford Faience Co.....cover ii</p> <p>Architectural Iron Work. Champion Iron Co.....viii</p> <p>Artists' Materials. F. Weber & Co.....ii</p> <p>Asphalt Roofing. Stowell Manufacturing Co.....ii</p> <p>Balusters, Stair Rails, Etc. Champion Iron Co.....viii</p> <p>Bank and Office Railings. J. E. Bolles Iron and Wire Works.....cover iv The Standard Co.....cover ii</p> <p>Bath Room Fixtures. Standard Sanitary Mfg. Co.....cover iii</p> <p>Bath Room Outfits. Chicago House Wrecking Co.....ii</p> <p>Bath Tubs, Porcelain Enameled. Standard Sanitary Mfg. Co.....cover iii</p> <p>Blinds, Sliding and Folding. Burlington Blind Co.....iv Phoenix Sliding Blind Co.....cover iv</p> <p>Boilers. Lord & Burnham Co.....cover ii</p> <p>Boilers (Copper Ranges). Gorton & Lidgerwood Co.....cover iv</p> <p>Booksellers and Publishers. Munn & Co.....vi</p> <p>Boring Machines. J. A. Fay & Egan Co.....x Fox Machine Co.....i</p> <p>Brass Goods. (Plumbers.) Standard Sanitary Mfg. Co.....cover iii</p> <p>Brass Railings and Grilles. The Standard Co.....cover iii</p> <p>Butts and Hinges. The Stanley Works.....cover ii</p> <p>Carpenters' and Builders' Machinery. J. A. Fay & Egan Co.....x</p>	<p>Carvings. Page Louis F. Gunther.....cover iv</p> <p>Cast Iron Work. Champion Iron Co.....viii</p> <p>Ceilings-Stamped Steel. Berger Manufacturing Co.....ix Kinnear & Gager Co.....viii Northrop, Coburn & Dodge.....iv</p> <p>Ceramic Mosaic Floors. Trent Tile Co.....v</p> <p>Clocks. Killam & Co.....ii</p> <p>Cement Block Machines. Cement Block Machine Co.....viii</p> <p>Closets. Standard Sanitary Mfg. Co.....cover iii</p> <p>Cloth Wall Covering. Standard Table Oil Cloth Co.....vi</p> <p>Coats of Arms. St. Botolph Research Bureau.....cover iii</p> <p>Columns. Hartmann Bros. Manufacturing Co.....i</p> <p>Concrete Illuminating Tile and Vault Lights. T. H. Brooks & Co.....cover iv</p> <p>Cornices, Iron, Copper and Steel. Berger Manufacturing Co.....ix</p> <p>Corrugated Iron for Roofing, Siding and Ceiling. Berger Manufacturing Co.....ix</p> <p>Door Hangers. J. E. Bolles Iron and Wire Works.....cover iv McCabe Hanger Mfg. Co.....cover iv</p> <p>Doors, Fire-proof. Kinnear Mfg. Co.....ix</p> <p>Doors, Steel Rolling. Kinnear Mfg. Co.....ix</p> <p>Doors, Windows, and Blinds. Foster-Munger Co.....x</p> <p>Drawing Instruments, Etc. F. Weber & Co.....ii</p> <p>Drinking Fountains. Standard Sanitary Mfg. Co.....cover iii</p> <p>Dumb Waiters and Elevators. Sedgwick Machine Works.....iv Storm Manufacturing Co.....ii</p> <p>Eaves Troughs. Berger Bros.....cover iv Berger Manufacturing Co.....ix</p>	<p>Electric Clamps. Page Batavia Clamp Co.....cover iii</p> <p>Elevator Enclosures Cars, and Cabs. J. E. Bolles Iron and Wire Works.....cover iv The Standard Co.....cover iii</p> <p>Elevators. Morse, Williams & Co.....v</p> <p>Enameled Iron, Plumbers' Ware. Standard Sanitary Mfg. Co.....cover iii</p> <p>Engines, Gas and Gasoline. Charter Gas Engine Co.....cover ii</p> <p>Fence Posts and Fences. Champion Iron Co.....viii</p> <p>Fences and Railings. Bolles Iron & Wire Works.....cover iv F. F. Bischoff & Co.....x Champion Iron Co.....viii Hartmann Bros. Manufacturing Co.....i Rogers Iron Co.....x Van Dorn Iron Works Co.....cover iv</p> <p>Filters. T. Linke & Co.....cover iv</p> <p>Fire Escapes and Ladders. J. E. Bolles Iron and Wire Works.....cover iv</p> <p>Fire Proofing System. Clinton Wire Cloth Co.....vi</p> <p>Fire Proof Walls. American Hydraulic Stone Co.....vii</p> <p>Fireproofing. International Fence and Fireproofing Co.....cover iv</p> <p>Floor Polish. Butcher Polish Co.....cover iv</p> <p>Foot and Hand Power Machinery. W. F. & J. Barnes Co.....vi J. M. Marston & Co.....ii Seneca Falls Mfg. Co.....vii</p> <p>Furnaces. Thatcher Furnace Co.....iv</p> <p>Gas and Gasoline Engines. Charter Gas Engine Co.....cover ii</p> <p>Gas Machines. C. M. Kemp Mfg. Co.....ii</p> <p>Glacier, Window Decoration. G. Quail.....ii</p> <p>Granite Roofing. Eastern Granite Roofing Co.....iv</p>	<p>Grates and Mantels. Page Wm. M. Taylor Mantel & Grate Co.....cover iv</p> <p>Greenhouses. Lord & Burnham Co.....cover ii</p> <p>Grille Work. J. E. Bolles Iron and Wire Works.....cover iv Champion Iron Co.....viii Foster-Munger Co.....x Louis F. Gunther.....cover iv The Standard Co.....cover iii</p> <p>Gutter Hangers. Berger Bros.....cover iv Berger Manufacturing Co.....ix</p> <p>Hand Sawing Machines. W. F. & J. Barnes Co.....vi</p> <p>Hardware. Stanley Works.....cover ii</p> <p>Hardwood Floors. Riverton Manufacturing Co.....iv</p> <p>Heating Apparatus. Andrews Heating Co.....cover iv Gorton & Lidgerwood Co.....cover iv Herendeen Manufacturing Co.....cover iv Kelsey Heating Co.....x Kinnear-Hood Steel Co.....i Lord & Burnham Co.....cover ii Smith & Anthony Co.....vii Wilks.....v</p> <p>Hinges. F. D. Kees.....vii Stanley Works.....cover ii</p> <p>Hot Air Pumping Engines. Rider-Ericsson Engine Co.....i</p> <p>Hotbed Sash. Lord & Burnham Co.....cover ii</p> <p>Interlocking Rubber Tiling. New York Belting & Packing Co.....cover iii</p> <p>Iron and Bronze, Ornamental. Standard Co.....cover ii</p> <p>Iron and Wire Work. J. E. Bolles Iron and Wire Works.....cover iv The Standard Co.....cover iii</p> <p>Iron Stairs. The Standard Co.....cover iii</p> <p>Iron Shutters and Doors. Berger Manufacturing Co.....ix J. E. Bolles Iron and Wire Works.....cover iv Champion Iron Co.....viii</p> <p>Iron Store Fronts. Champion Iron Co.....viii</p> <p>Jail and Prison Work. Champion Iron Co.....viii</p> <p>Jewelry, Chains. S. O. Bigney & Co.....cover iv</p>
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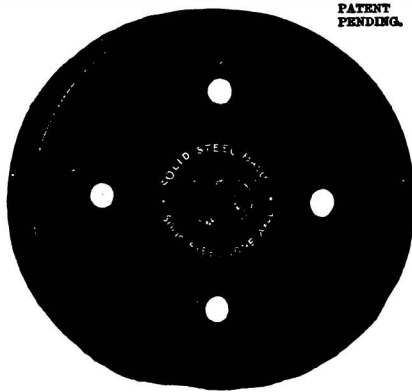
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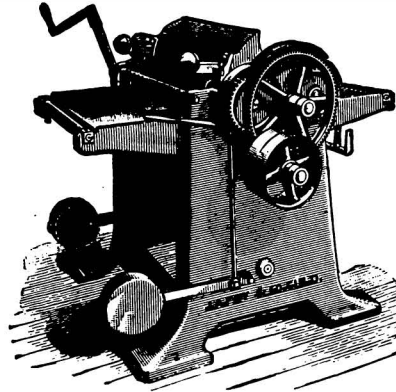
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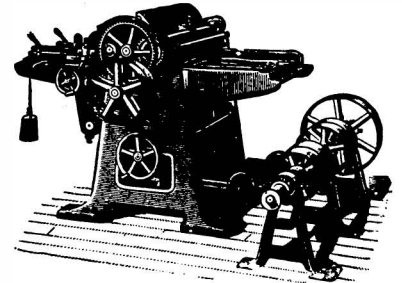
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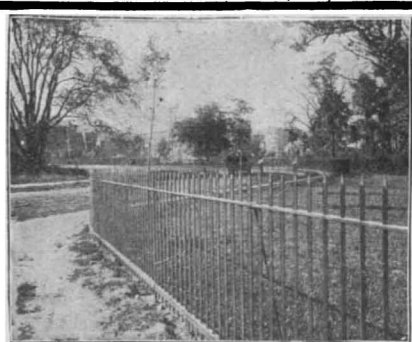


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CLASSIFIED ADVERTISERS.—Continued from page ix.

Lathing (Steel Fireproof). Roebbing Construction Co.v	Plumbers' Ware, Porcelain Enameled. Page Standard Sanitary Mfg. Co.cover iii	Saws. Page Seneca Falls Mfg. Co.vii	Tools and Foot Power Machinery. Page W. F. & J. Barnes Co.vi J. M. Marston & Co.ii Seneca Falls Mfg. Co.vii
Laundry Tubs, Porcelain Enameled. Standard Sanitary Mfg. Co.cover iii	Porcelain Enameled Ware. Standard Sanitary Mfg. Co.cover iii	Scroll Saws and Tools. W. F. & J. Barnes Co.vi J. A. Fay & Egan Co.x Seneca Falls Mfg. Co.vii	Towers and Tanks. W. E. Caldwell Co.i
Lavatories, Porcelain Enameled. Standard Sanitary Mfg. Co.cover iii	Posts, Corner. J. W. Coulson & Co.viii	Sheet and Tin Plate. American Sheet and Tin Plate Co.cover ii	Typewriters. Philadelphia Typewriter Exchange.ii Wyckoff, Seamans & Benedict.v
Lawn Fences. F. F. Bischoff & Co.ix	Pumping Engines. Rider-Ericsson Engine Co.i Standard Pump and Engine Co.i	Shutter Workers. Mallory Manufacturing Co.vii	Urinals, Porcelain Enameled. Standard Sanitary Mfg. Co.cover iii
Lead Pipe. Standard Sanitary Mfg. Co.cover iii	Radiators. Kinnear-Hood Steel Co.i	Sidewalk Lights. T. H. Brooks & Co.cover iv Champion Iron Co.viii	Valves. Crane Co.cover iii
Lead, White. Picher Lead Co.cover ii	Railings and Fences. J. E. Bolles Iron and Wire Works.cover iv Champion Iron Co.viii Van Dorn Iron Works Co.cover iv The Standard Co.cover iii	Showers, Permanent and Portable. Standard Sanitary Mfg. Co.cover iii	Vault Doors. J. E. Bolles Iron and Wire Works.cover iv
Lead and Zinc. New Jersey Zinc Co.cover ii	Railroads. Chicago, Indianapolis and Louisville R.R. Co.ix	Sinks, Porcelain Enameled. Standard Sanitary Mfg. Co.cover ii	Ventilators. Berger Bros.cover iv
Machinery—Wood Working. J. A. Fay & Egan Co.x	Ranges. Heatencook Co.v	Sliding Blinds and Screens. Burlington Blind Co.iv Phoenix Sliding Blind Co.cover iv	Vimometers. Standard Sanitary Mfg. Co.cover iii
Mantels—Iron, Slate and Wood. W. J. Ostendorf.i King Mantel Co.cover ii Wm. M. Taylor Mantel & Grate Co.cover iv	Range Closets. Standard Sanitary Mfg. Co.cover iii	Spring Hinges. Stover Mfg. Co.v	Wall Covering, Cloth. Standard Table Oil Cloth Co.vi
Marble. Standard Sanitary Mfg. Co.cover iii	Reversible Windows. George Hayes Co.v	Stable Fittings and Fixtures. J. E. Bolles Iron and Wire Works.cover iv Champion Iron Co.viii	Water Conductors. Berger Bros.cover iv
Metallic Lathing, Etc. Roebbing Construction Co.v Sykes Metal Lath & Roofing Co.vii	Ridging. Berger Manufacturing Co.ix	Stamped Steel Ceilings. Berger Manufacturing Co.ix Kinnear & Gager Co.viii Northrop, Coburn & Dodge.iv	Weather Vanes. Champion Iron Co.viii T. W. Jones.cover iv
Metallic Roofing Tiles and Shingles. Berger Manufacturing Co.ix Cortright Metal Roofing Co.vii Sykes Metal Lath & Roofing Co.vii	Rock Face Siding. Berger Manufacturing Co.ix	Stairs, Rails, Balusters, Etc. Champion Iron Co.viii Standard Wood Turning Co.ii The Standard Co.cover iii	Window Pulleys. Grant Pulley & Hardware Co.cover iii
Mineral Wool. United States Mineral Wool Co.cover iii	Roofing, Asphalt. Stowell Manufacturing Co.ii	Steel and Iron Roofing. Berger Manufacturing Co.ix	Wire Guards. J. E. Bolles Iron and Wire Works.cover iv Champion Iron Co.viii New England Anchor Fence Co.ix The Standard Co.cover iii
Office Railings. The Standard Co.cover iii	Roofing, Ruberoid. Standard Paint Co.cover ii	Steel Brick. Berger Manufacturing Co.ix	Wire Lathing. Roebbing Construction Co.v
Ornamental Iron. The Standard Co.cover iii	Roofing Tin. American Sheet & Tin Plate Co.cover ii American Tin Plate Co.vii Berger Manufacturing Co.ix Cortright Metallic Roofing Co.vii	Steel Butts. Stanley Works.cover ii	Wire Office Railings. J. E. Bolles Iron and Wire Works.cover iv Champion Iron Co.viii The Standard Co.cover iii
Ornamental Iron and Bronze. The Standard Co.cover iii	Roofing, Rex Flintkote. J. A. & W. Bird & Co.ix	Steel Sash Pulleys. Grand Rapids Hardware Co.x	Wire Signs. J. E. Bolles Iron and Wire Works.cover iv
Paints. Bridgeport Wood Finishing Co.v Joseph Dixon Crucible Co.iv and v Standard Paint Co.cover ii	Rug Borders. E. B. Moore & Co.cover iii	Steel Shutters. Berger Manufacturing Co.ix Kinnear Mfg. Co.ix	Wire Work. The Standard Co.cover iii
Park Settees and Chairs. J. E. Bolles Iron and Wire Works.cover iv	Sash, Door and Blind Machinery. J. A. Fay & Egan Co.x Foster-Munger Co.x	Store Fronts. The Standard Co.cover iii	Wood Carpet. Interior Hardwood Co.cover iv E. B. Moore & Co.cover iii
Parquetry Floors. Interior Hardwood Co.cover iv E. B. Moore & Co.cover iii Riverton Manufacturing Co.iv	Sash Locks. H. B. Ives & Co.cover ii	Thermometers, Etc. Bristol Co.cover iv	Wood Filler. Bridgeport Wood Finishing Co.v
Patents. Munn & Co.ix	Sash Operating Device. Lord & Burnham Co.cover ii	Tiles. Hartford Faience Co.cover ii Trent Tile Co.v New York Belting & Packing Co.cover ii	Woodworking Machinery. W. F. & J. Barnes Co.vi J. A. Fay & Egan Co.x Fox Machine Co.i Seneca Falls Mfg. Co.vii
Pencils, Pens, Etc. J. Dixon Crucible Co.iv and v	Sash Pulleys and Attachments. Fox Machine Co.i Grand Rapids Hardware Co.x		
Planing Mill Machinery. J. A. Fay & Egan Co.x	Sanitary Wood Work. Standard Sanitary Mfg. Co.cover iii		
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