NOVEMBER, 1907

AMERICAN CARPENTER AND BUILDER

THE WORLD'S GREATEST BUILDING PAPER

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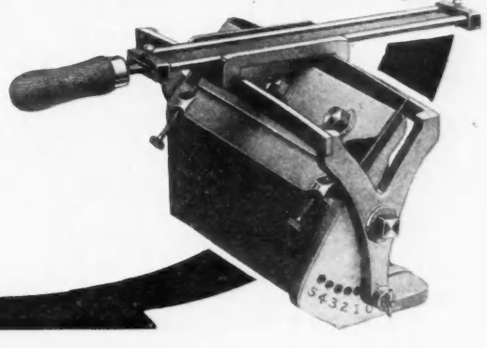

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TO equip your house, church, school or store with the **Hess Steel Furnace?** Send us a sketch of the building with the information following, and we will tell you what our charge will be for a complete equipment, fully guaranteed.

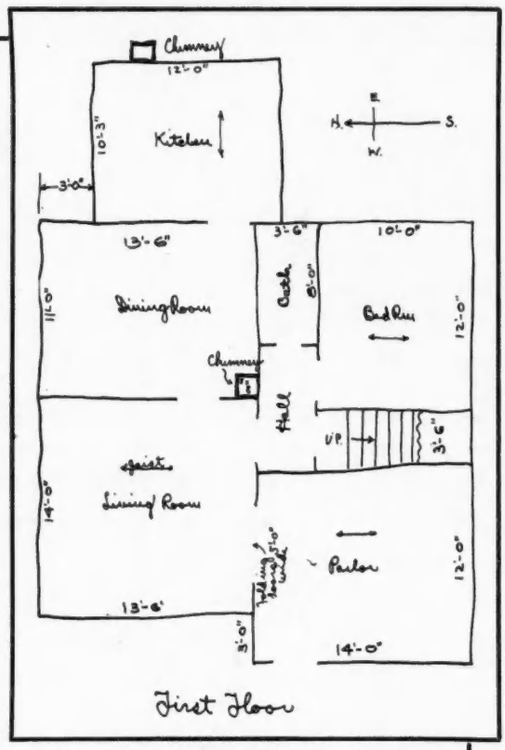
Your sketch need not be to a scale; but should clearly indicate the position and sizes of the rooms, measuring inside, from wall to wall.

Show the partitions by single lines; the doors by spaces in the lines; the chimney by a square; stairs by parallel lines; mark folding or sliding doors, if any.

Make a separate sketch for each floor, and mark the size of each room in figures.

Our sketch on this page shows about what is wanted, though of course, your sketch should be larger.

In the cellar plan indicate the piers, posts and beams, the location of chimneys, fuel supply, and the cellar stairs or entrance. Show the direction of the joists by an arrow, thus <———>



ON THE PLAN PLEASE INDICATE

1. The points of compass .....
2. In what stage of construction is the building?.....
3. Is the upper story a full story or a half story?.....
4. How much below the first story joists do the beams project, if any? .....
5. Height of cellar?.....first story?.....second story?.....
6. If cellar is not 7 feet where furnace will stand, can you make it 7 feet?.....
7. Width of stairways—mark on plan.
8. Width of joists, first story?.....second story?.....
9. Thickness of floors, first story?.....second story?.....
10. Width of studs in partitions? .....
11. Width of studs next to sliding doors?.....
12. What kind of fuel will you use? .....
13. Is the cellar ceiling plastered?.....
14. Width of doorway through which furnace must pass?.....
15. If church, school or store, show position and width of aisles? .....
16. Are any pipes or registers now in the house, if so show sizes and positions? .....

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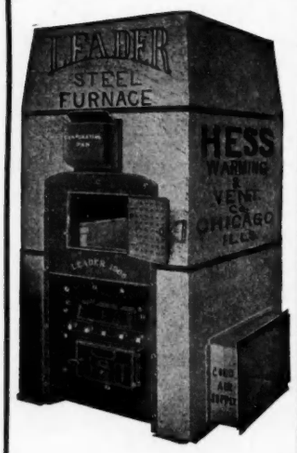

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AMERICAN CARPENTER AND BUILDER

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The World's Greatest Building Paper

American Carpenter and Builder

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Short practical letters and articles on subjects pertaining to the carpentry and building trades are requested.

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DON'T mistrust every man, nor do not trust every one; either extreme is sure to bring dire results.

✣

IF YOU mistreat your enemeis you may have to offer them an apology afterwards.

✣

SHUNNING a man because his clothes are shabby is a bad practice; he may be more worthy of respect than yourself.

THE greatest man is he who can see himself as he really is and be guided accordingly.

✣

THAT which constitutes a gentleman is a man who is not afraid to be both generous and truthful.

✣

EVERY man who strives will be rewarded with a measure of success. Don't be deterred by first failures.

✣

THE sooner we see some good in every one, the more readily will we become considerate for the faults of other men.

✣

Don't Be a Cheap Man

THE term "cheap," originally meant something good at a small price, but in the course of time, because of the attractiveness of the word, it grew to have many uses and took as a secondary meaning "of small value, common, mean," and in the course of time there developed an expression "dog cheap," which meant very cheap, and the phrase is said to have probably been formed by the catachrestial transposition of "good" cheap. In common usage the term cheap has been made to apply to things objectionable so much that there is now an odium attached to it which makes the mere thought of it objectionable to most people. Probably it is justly so, too, in connection with some of the things done and accepted in the name of cheapness, and has but little excuse for existing.

If there is anything that every workingman should avoid and strive against in his career, it is the idea of being classed as cheap.

While this applies in equal importance to wages and other matters, the point of view that it is desired to take here is that of arguing against the appearances of cheapness in one's work. There is an old homely saying that "Anything worth doing is worth doing well," and when a man has a piece of work on hand, no matter what price he receives for it, he should see that every bit of it is done in the best possible manner. If you have accepted a job at too low a figure, that should make no difference so far as quality is concerned, or workmanship, for no matter what you may get out of any given work, there is a chance that the greatest im-

portance—especially if your reputation is not already well established—is in the fact that it may have an indirect influence. And not only should the workman see that *his* work does not partake of the ordinary quality of cheapness in the proper sense, but it frequently pays him to use his best efforts to prevent those for whom he is doing the work from following out too far the idea of cheapness in purchasing materials. When the house is complete or any other job of work is done and is paid for, the man for whom it is done almost immediately forgets the cost, and his future opinion of the work is influenced by the pleasure it gives him afterwards. It is easy to reason from this that with a poor job completed, made of cheap stuff cheaply put together, a man will soon become dissatisfied, and though it may be his own fault, the chances are that nine times out of ten he will blame it on the man doing the work, and not only fail to recommend him to others but will likely spread adverse criticisms. On the other hand, if his idea of avoiding the "first cost" can be kept in tow, even though it comes a little hard, the cost of the building is soon forgotten and the man is so well satisfied with the results afterwards, that he is ready to praise in some measure the workman doing it, though of course he may take home to himself the lion's share of the credit.

Going a little further, it might be said along this same line, that a man should avoid cheapness in his tools, for the pleasure in his tools does not come from buying them at a bargain, but from the service they give him long after the original cost is forgotten. There is probably nothing which will do more to help a man to eliminate cheapness from his work than to start out with a splendid equipment of tools in which there is nothing suggesting cheapness, not even a cheap chest. With better tools he will do better work, and take better care of the tools themselves, and take more pride in his work, and in the end will have something to be proud of. So make the tool box a starting point in this fight against cheapness and keep it up all along the line, making your aim not that of being a common or a cheap man, but in being as near as possible the best man in the country in the calling. Let every piece of work you turn out tell its own story, and let that story always be one of which you will be proud.

Two Large Conventions

THE west is to have a cement exposition December 17 to 21, inclusive, that promises to eclipse any event of the kind ever attempted.

It will be held in the great Coliseum in Chicago.

The Cement Products Exhibition Company, composed of western cement men, has been organized permanently, and the great opening show at the Coliseum is intended as the premier event that may be looked forward to each year by the trade.

The exposition will include displays of every possible use of cement and machinery that is allied with it and to attend it will be as instructive as many months given to study on the subject. This event, together with the great convention of the National Association of Cement Users at Buffalo, N. Y., in January, will make the winter fruitful in opportunities for instruction.

The Chicago exposition, coming as it does the week before Christmas, affords the cement man, the contractor and the user in all parts of the west an opportunity to come here and do his Christmas shopping while visiting the show. It will not interfere in the least with the convention a month later in Buffalo, and it is hoped that thousands will find the time to attend both events.

As a matter of fact the Coliseum exposition, with its display of cement products, will be, as it is intended to be, a tremendous educational force that will boost the industry in the entire country as it never has been boosted before, and the enthusiasm aroused will be a great aid in adding interest to the Buffalo convention to follow. The cement men of the west who are backing the Coliseum event are men of unlimited capital, who will make it a success, revealing to the layman the wonders of this material that has come to the aid of humanity at the time when the forests are being depleted.

The organization of the Cement Products Exhibition Company is the outgrowth of the spirit of enterprise in the west that seeks to educate the people in the value of cement as a constructive material. The show must result in tremendous good in this respect.

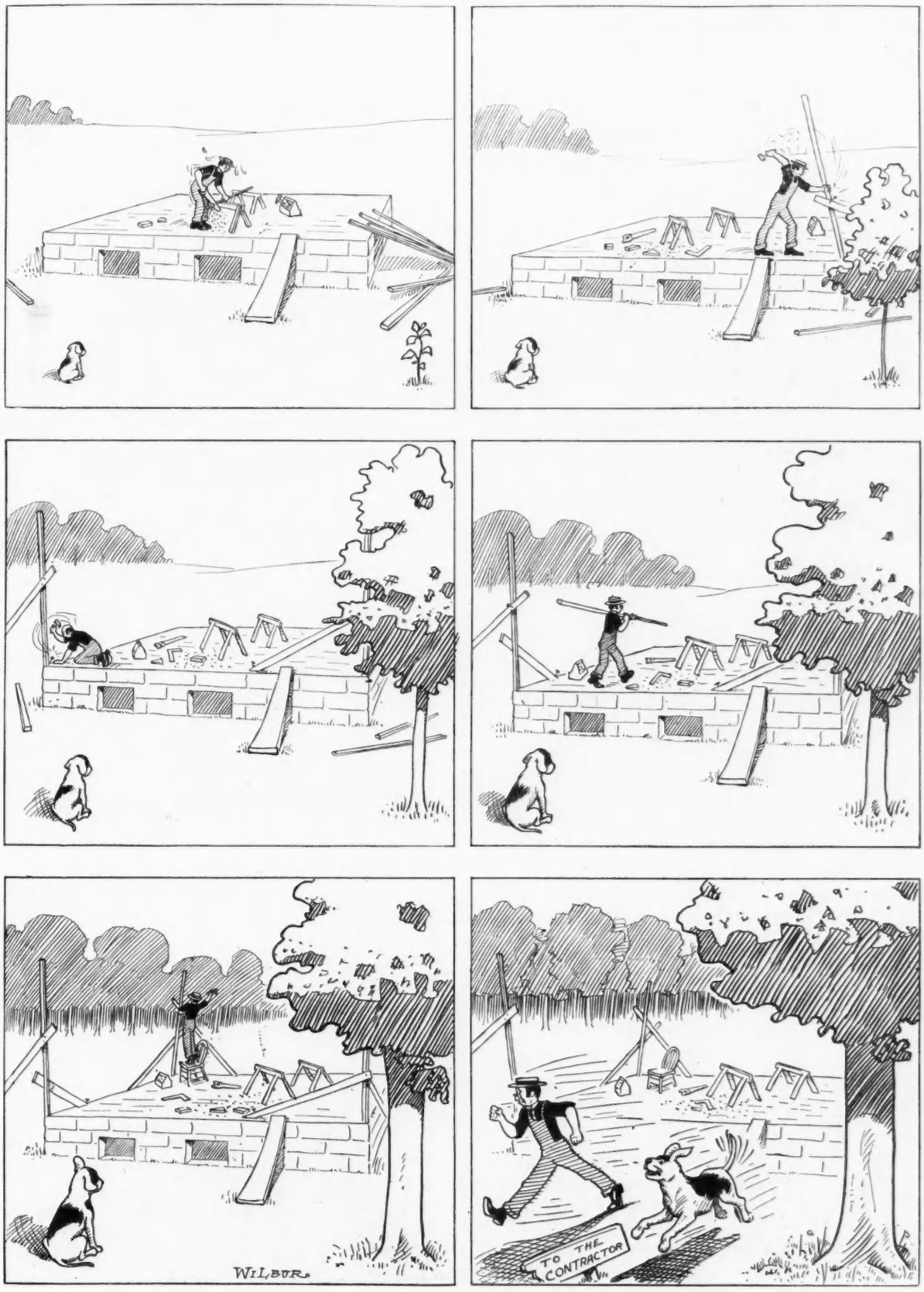
M. L. L. Fest, who has had charge of most of the great shows in other trades at the Coliseum, is to have the direction of this exposition and he already has commenced work.

It behooves every company, every cement man, every machine man and every contractor in the central west to begin at once to make preparations for an exhibit.

It goes without saying that a creditable exhibit at the Coliseum will be a good starter for business in 1908, and with the Buffalo event coming the next month it will mean the best send off in the new year that the industry ever had. The space in the great building is ample for all who want to be represented. There will be music, beautiful decorations for which the mammoth structure well lends itself, instruction by demonstrators, and features without number. The word sent out in advance to the trade of the west is simply, *"Come and see."*

The Cement Products Exhibition Company has established headquarters at the New Southern Hotel, Michigan boulevard and Thirteenth street, Chicago, and inquiries about space in the big show should be sent there immediately. In a few days a diagram of the floor space will be ready and will be sent out to intending exhibitors at their request.

Biography of Mr. Thinks E. Knows. No. 3—He Erects the "Studding"



The Construction of Barns and Stables

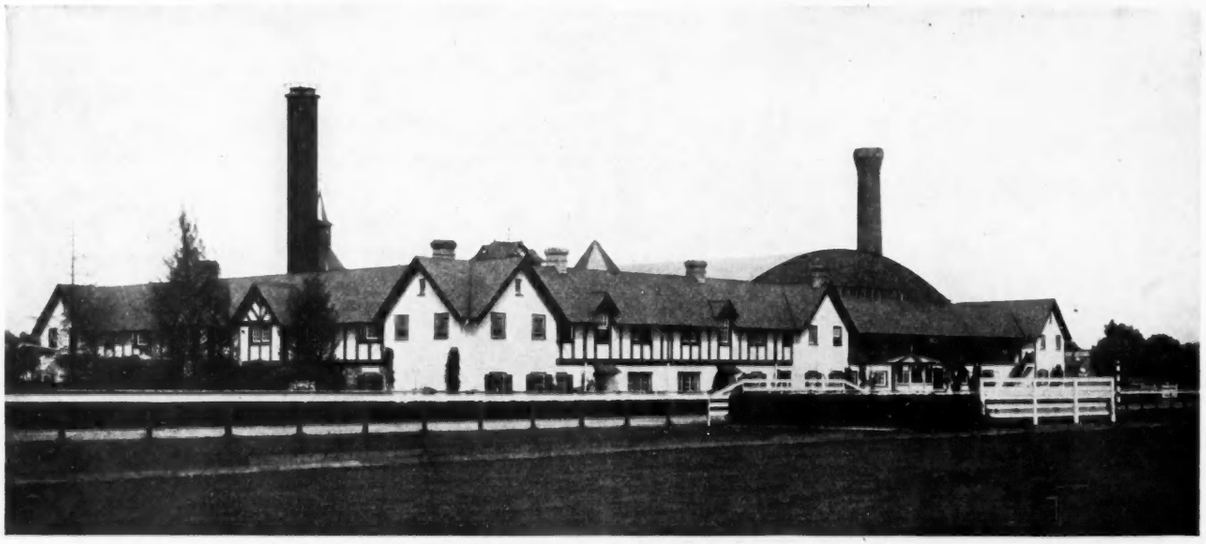
By Waldon Fawcett

CARPENTERS and builders and contractors in general have, during the past few years, seen that class of buildings that embraces barns and stables and kindred structures attain a new importance as factors in their operations. Not only is there a call for this class of structures in more expensive form than was known in years gone by, but the increase in the number of such contracts upon which builders are asked to bid has been tremendous. Indeed, the expansion in this line of construction has exceeded, proportionately, that in almost any other sphere of the building world.

There are a number of influences which have contributed to bring about the greater activity in this branch of the field. First and foremost, of course, is the prosperity enjoyed by the American people for a number of years past, and which has encouraged a more expensive style of living in both city and country. Luxuries have been brought within the reach of an enlarged percentage of the population, and the favorite luxury—the maintenance of horses and carriages—has perforce necessitated the provision of stables. Similarly, the enhanced incomes of persons already well-to-do has enabled many of them to indulge in enlarged stables and more costly appointments.

Stables on the Elkins Estate, near Philadelphia, Pa.

Another contributory cause is found in the growing fondness of the American people for country and suburban life. Recently there has been a marked tendency on the part of city dwellers to migrate to the country or suburbs and, as a rule, such a migration is no sooner made than the head of the household comes into the market for some sort of a stable if he does not find one ready at hand on the property that he has acquired. Then the automobile craze has been no inconsiderable factor in bringing about the boom in this class of construction. Thousands upon thousands of automobile houses have been erected in this



Power House and Stock Stables on P. A. B. Widener Estate, near Philadelphia, Pa.

country within the past few years, and in many instances a householder starting out to contract for a shelter for his motor car has decided upon reflection to go a little further while he is about it and provide accommodations for a horse or a cow as well.

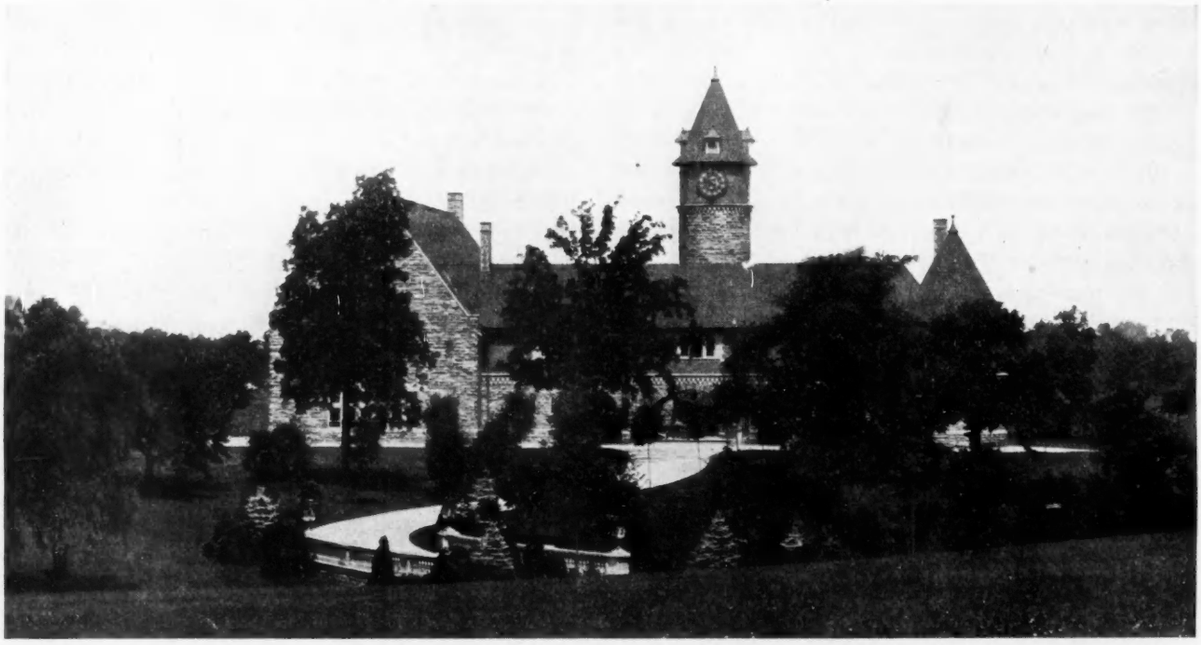
Finally, the American farmer has come into the field as an awarder of contracts for professionally built barns to an extent unheard of heretofore. In the old days the average tiller of the soil had his barns built on the time-honored co-operative principle. There was an old-fashioned "barn-raising" to begin with, in which all the men of the countryside participated and then the neighbors pitched in from time to time as opportunity offered and assisted the barn builder through the various stages of construction until the last nail was driven. Of course, the farmer who was thus assisted reciprocated by lending a hand in turn to each of his neighbors when they sought to provide structures in similar manner.

With bumper crops, however, that have paid off the old pinching mortgages, the well-to-do farmers have become employers of skilled labor in carpentry. For one thing the farmers have been too busy to devote the time that they formerly did to barn construction, and then again their improved financial condition has enabled them to seek a higher grade of construction, which can be obtained, naturally, only by having recourse to the labor of skilled and experienced artisans. The city-bred folks who have hied themselves to the country as a place for vacation or all-the-year residence have pointed the way by bringing out city carpenters to beautify their estates by the erection of handsome stables and the farmers have profited by the lesson thus set before them and consequently we find many a carpenter or builder whose headquarters are in town or city spending practically the entire summer season on country jobs of one kind or another.

However, the present-day folk who are spending money liberally for barns and stables so handsome that they would have scandalized our grandfathers are not content with mere integrity of construction. They are demanding also the embodiment of the most up-to-date progressive ideas in the arrangement of the structures. Consequently, the far-sighted carpentry contractor must be keen to keep abreast of the times regarding innovations of practice in this field. Nor are exactions on this score unreasonable, for any person who is at all familiar with the subject must admit that convenience of arrangement is of the highest importance in a stable or a barn. If it has not been observed much time will be lost in handling horses and vehicles.

Stable at Country Seat of John R. McLean near Washington, D. C.

The average city house or suburban estate requires, as a rule, only one small and often handsomely constructed stable, but an extensive country seat, such as is now in vogue with many an American of wealth, may necessitate horse, cow and hay barns in the form of as many different structures or a composite affair under one roof. So many important considerations bear upon the location of a stable that the site is apt to be fixed rather arbitrarily and without too much regard to building conditions. However, the contractor who is limited to a site on a hillside or on low ground need not despair, especially if the soil be sandy. Even wet or soft ground, if a compulsory site, may have the ill effects counteracted in no small measure by coating the foundation walls with asphalt and placing tile drains around the footings of the walls. If such a building is placed on low ground, however, it is desirable to have a circulation of air under the wooden floor beams through the medium of small



Stables on the Harrison Estate near Philadelphia, Pa.

openings, protected by iron or wood. Where the floors are concreted they may be placed directly on the ground, if care be exercised regarding the disposition of surface drainage.

Important as is the question of floor plan arrangement in the modern stable, there is great diversity of opinion as to the ideal solution, and there have not as yet been evolved any schemes which are accepted as standard. A very advantageous plan, however, is to have a stable (if the size will permit) built around three sides of a courtyard, with a wall and gate closing the fourth side. Whatever be the general contour of the building, it is generally considered desirable to have entrance doors on opposite sides of the carriage house, so that a turnout may be driven out of the door opposite to that through which it entered, thus saving the annoyance of backing out.

There are many points which must obviously make every stable a law unto itself, as, for instance, the question of whether or not rooms for a coachman shall be incorporated in the building, and if so, how extensive these accommodations shall be—whether merely a sleeping room or a housekeeping suite for the coachman's family. Many stables are, of course, planned with no provision of this kind whatever, but if the matter is left to an architect-builder he usually advises the inclusion of a groom's room or two in the loft as a precaution against future necessities.

As to technical details covering stable construction, it may be said that most builders deem 11 or 12 feet the proper height for the first story, with perhaps a 14-foot entrance and carriage room. The carriage wash varies in dimensions proportionate to the size of the building, but must invariably be well lighted and ventilated, with a floor of asphalt sloping to a central drain. The location of this carriage cleaning compartment is important, it being rather essential that it be convenient to the carriage house, yet removed sufficiently so that its general dampness will not affect the latter. If we may judge by most of the handsome stables erected in this country during recent years, the vogue of the open carriage wash has passed, it now being the general custom to have this space under roof, with a more or less liberal allowance of skylights.

The question of the size and arrangement of stalls is a mooted one with both horsemen and stable builders. Conservative and representative specifications call for ordinary stalls of dimensions of 9 by 5½ feet, with side partitions vertically sheathed about 4½ feet high, surmounted by an iron screen 2 feet high. This screen is preferably of perpendicular bars. The generally approved dimensions for a box stall are 10 by 12 feet, such a stall being provided with doors sliding laterally or swinging outward. One box stall is provided in every stable of large size for use as a sick stall. This compartment is larger than the regular box stalls, say, 12 by 16 feet in size, and is so arranged that it can be entirely cut off from the other stalls if desired.

The flooring of stalls is another question of vital importance, upon which there is sometimes conflict of opinion. The builder who desires above all else cleanliness and durability is often wont to employ brick, but if the comfort of the horses is to be a paramount consideration, elm or oak is likely to be utilized. The flooring must needs be pitched at a very slight incline toward a branch drain in the center of the stall. The location of stall windows is yet another detail of construction, as to which there is no universal procedure. In some instances, the windows are located on a level with the heads of the horses, but as a rule

stall windows are 9 feet from the floor and carefully screened. Many innovations are constantly being tried out in stable construction. One of the most recent of these, which would seem to have much to commend it, is the installation of a cement floor throughout the entire stable, but with movable plank floors for the stalls.

With barns and stables ranging in cost all the way from $450 to $250,000, it goes without saying that every known form of construction and combination of building material is employed. Frame construction still has the call, however, in a majority of cases. Shingle as outside covering is naturally popular, since it lends itself to more artistic effects than clapboards. On the inside the studding is usually covered with yellow or Georgia pine ceiling strips, 2½ or 3 inch widths being used.

Where an especially simple and inexpensive treatment is desired, the studding is exposed, use being made of 3 by 4-inch studs, placed 3 feet apart, instead of those with dimensions of 2 by 4 inches, and 16 inches on centers. A horizontal piece is usually set in between the studs 4 feet above the floor and the timber is mill-worked.

In this class of construction spruce is, in the estimation of most builders, accounted the best timber for framing, but good hemlock is also extensively employed for all except the beams. For the first tier beams, if exposed to dampness, chestnut is a wood that has preference. Yellow pine is most often used for girders, trusses and small parts. Spruce, two inches in thickness, makes an excellent flooring for ordinary purposes, but in the carriage and harness rooms it is customary to provide a double floor, the upper part consisting of Georgia pine, comb-grained. The doors and windows of a moderate price stable are often trimmed merely with boards without moldings. In the case of brick stables, the interior is usually furred and ceiled with matched strips. A rat-proof grain room is a desirable adjunct of the modern stable, being located over the stall room and fitted with tin-lined bins.

The choice of material for a stable roof lies between shingle, slate and tile, according to the architectural style of the building. Indeed, the architectural style of a building of this class is usually conveyed more by the roof treatment and proportion than by molded and monumental detail. For instance, the deep eaves and narrow moldings in shingle have, as is well known, become a distinctive feature of a most common type of American country barn.

The introduction of concrete construction on an extensive scale is probably the most recent radical innovation in barn and stable building in America. As has already been explained, the material has for some years past had great vogue for barn and stable floors, even in frame buildings, and lately its sphere of usefulness has been considerably extended. Barn or stable floors, it may be noted in passing, are usually laid in the same manner as sidewalks. The thickness of the porous sub-base is 6 to 12 inches, the base 3 to 5 inches and the finishing surface 1 to 1½ inches thick. Latterly it has been discovered that concrete is an ideal material for box stalls, since it provides a structure warm in winter and cool in summer. The standard stall of this material is 4 inches in thickness and reinforced with one-quarter inch steel rods 12 inches apart.

Concrete is also coming into its own as a principal material for barn and stable construction. Such buildings, constructed partially or throughout of reinforced concrete, are becoming common. There was recently completed in Southern New York State an excellently representative example of this class of construction containing forty-two straight stalls and sixteen box stalls. The building is entirely of concrete, except the roof, which is framed and shingled in the

Stock Barns at County Seat of Senator Knox of Pennsylvania

usual style and lathed inside with wire lath on furring strips. On the wire lath there was laid a scratch-coat of plaster, after which the cement plaster was applied and troweled smooth.

While the average builder has to do only with stables of medium cost, it may be observed that the past quarter of a century has witnessed the development in this country of a growing class of stables that are in every sense equine palaces, and are from every standpoint almost as noteworthy achievements in construction as the mansions of the republic's multi-millionaires. Frank Work was the pioneer in the provision of luxurious private stables when he more than a score of years ago contracted for a building in New York City that cost about $145,000. The second floor of this stable contains a complete suite of bachelor apartments for the use of the owner.

One of the most imposing stables ever constructed is that erected some years since at the estate of the late William C. Whitney at Westbury, Long Island. This building has a frontage of 870 feet and is strongly suggestive of the Swiss chalet style of architecture. A feature of the interior is a 12-foot wide winter exercising ring, which measures two and one-third laps to the mile. On the second floor are quarters for sixty stable hands. Rivaling in magnificence any stables on this side of the Atlantic are those built in the suburbs of Philadelphia by the "traction magnates," Messrs. William and George Elkins and P. A. B. Widener. These buildings, located near the villages of Ogontz, Ashbourne and Elkins, were all designed by the same architect, Mr. Horace Trumbauer.

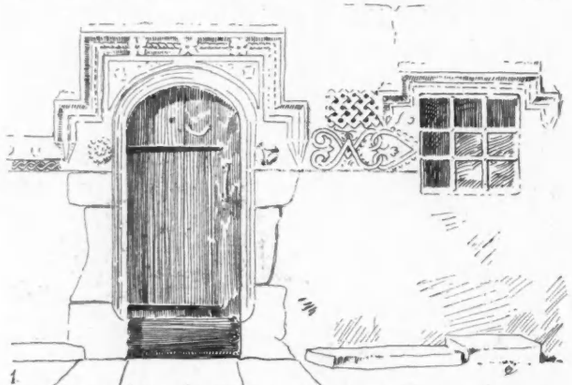
The stable erected for Mr. George Elkins is arranged to surround two courtyards, one known as the stable court and the other as the barn yard. The ground floor contains offices, a carriage shed designed as a temporary shelter, a carriage house 40 feet square and an elevator by means of which carriages can be quickly transferred to or removed from the main storage room on the second floor. Around the court yard are found stalls, harness and cleaning rooms, while surounding the barn yard are tool and machinery houses, quarters for work horses, etc. The Widener stables are famous from an architectural standpoint, being constructed of Indiana limestone, in conformity with the medium employed in the residence on the estate. The automobile quarters which are now a feature of many a modern stable, are usually little more than a single large room, liberally provided with closets, etc. In instances where a stable contains a machine shop, it is usually placed adjacent to the motor car space.

A Study of Doorways

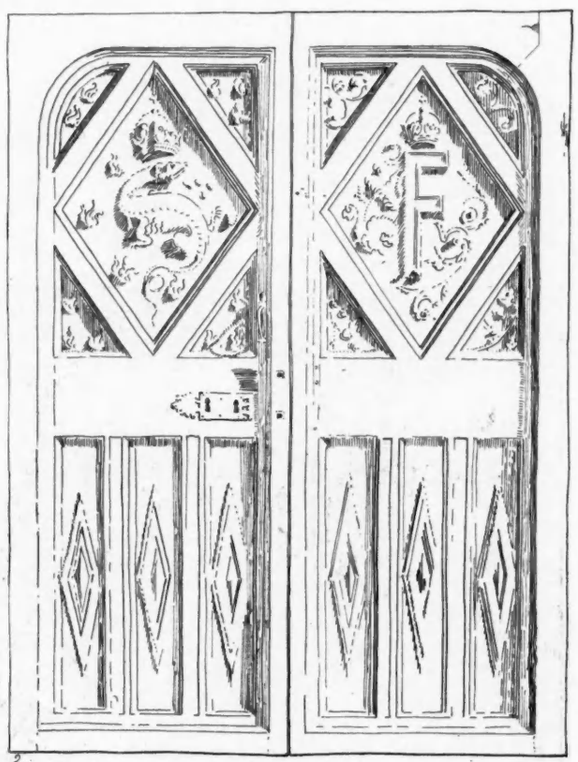
IMPORTANT PART A DOORWAY PLAYS IN THE APPEARANCE OF A BUILDING—SEVERAL HISTORICAL DESIGNS SHOWN

By C. Bryant Schaefer

THE entrance of a building is, of all places about a structure, the most apt to receive especial elaboration. If a house is new it is intended for the most prepossessing feature and in case of old places may often come in for a little improvement. This is because the front entrance is the one part about a private house that partakes of a public character. The unknown, passing throng, some of whom may be desirable of acquaintance, form their impressions from its appearance and dispose themselves according to its attractiveness or austerity. So it is that much fine art and much benefit to the residents may be involved in the taste displayed in making the entrance ways. It is not a matter of securing a model of art but of having the style appropriate to



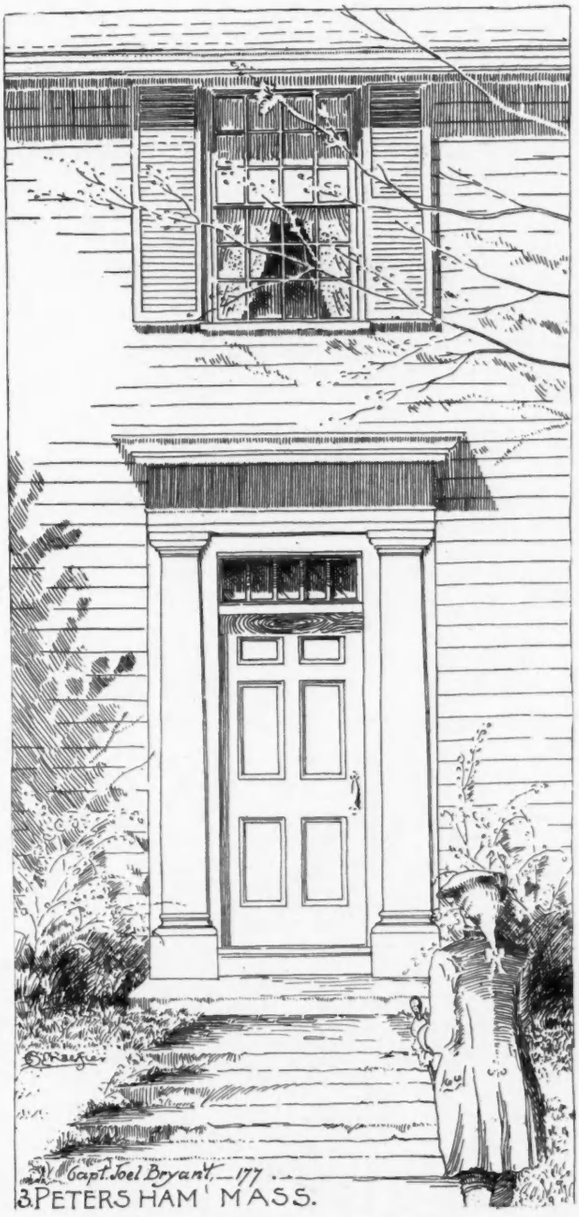
1. GALWAY, IRL. ANCIENT HOUSE DOOR, ORIGINALLY CARVED FOR IDENTIFICATION.



2. FRENCH CHATEAU DOORS. "F" FOR FRANCIS I, THE SALAMANDER FOR HIS FAMILY, THE ◇ FOR HIS STATUS.

the employment and character of the occupants that secures its success.

Much is truly said about the importance of a workman realizing from whence he inherits his aptitude for a trade, whether it runs in the family or whether by adoption the young aspirant takes after some favor-



ite person of good influence. It becomes a great help in case of neglect or difficulties.

What is true of personal talent is also true of a trade or vocation as a whole. It grows from the past, solving one necessity after another. In inventing wholly anew, some of these requirements might be overlooked. Hence it saves much study to refer to that which has stood the test of time as the best. So we have here some selections from the history of doorways that will prove an advantage to persons interested.

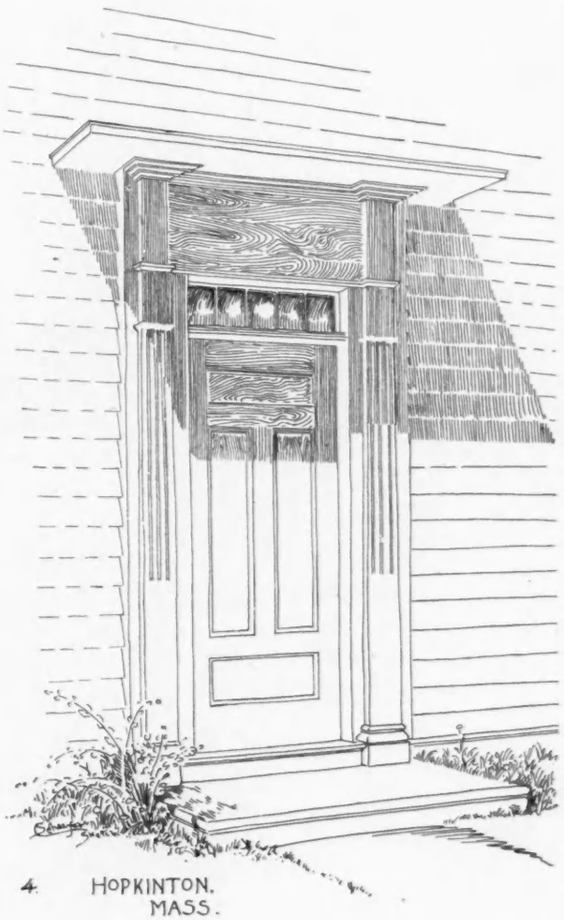
These designs are of a domestic nature, suitable to our latitude. That means suitable for residence, climate, materials and workmanship and many other needs that we have to meet.

A couple of thousand years ago North Atlantic persons of responsibility were known by individual carvings. To identify a favorable location in their travels they were wont to carve their personal marks upon the doorways. From the North Sea this system extended as far as Armenia and the east coast of India.

A good example of this kind of work is the runic doorway in Galway, Ireland, illustrated herewith. The heart-shaped convolutions are a mariner's index, the plating above represents a family and is a mode that was also established in North America. The twist to the left indicates a matrimonial alliance.

The old Saagas of the Northmen say this convenient art was copied to such an extent by careless imitators as to have finally confused its usefulness, hence its abandonment.

The doors of Francis I. of France are only a few centuries old, but the ancient custom is still maintained. One may say it has become official. His initial and family token adorn the upper panels. The diamond represents the tried moral status persons of any rank may naturally attain by a short term of perserverance and thenceforth work in the realization

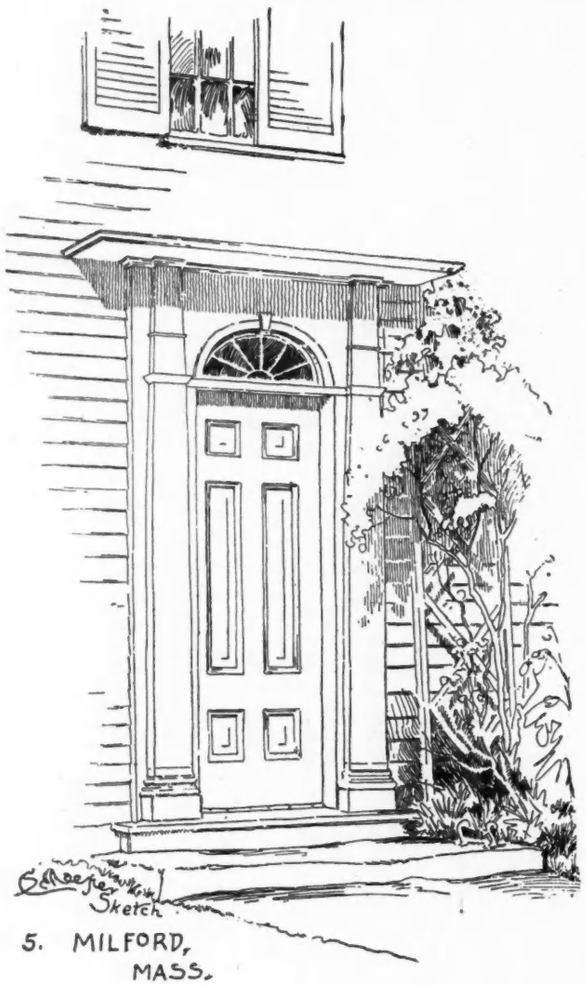


4. HOPKINTON. MASS.

of their ideals. In the case of the French king it was beautiful chateaux and sculpturings as well as broad estates.

In the old-fashioned times of our own day the front entrance was considered to indicate a place of business or public reception, while the side entrance betokened a strictly private abode.

The hospitality of the New Englander during revo-olutionary times was often somewhat formal and precise on account of political uncertainties, excepting, of course, between well known neighbors. Formal



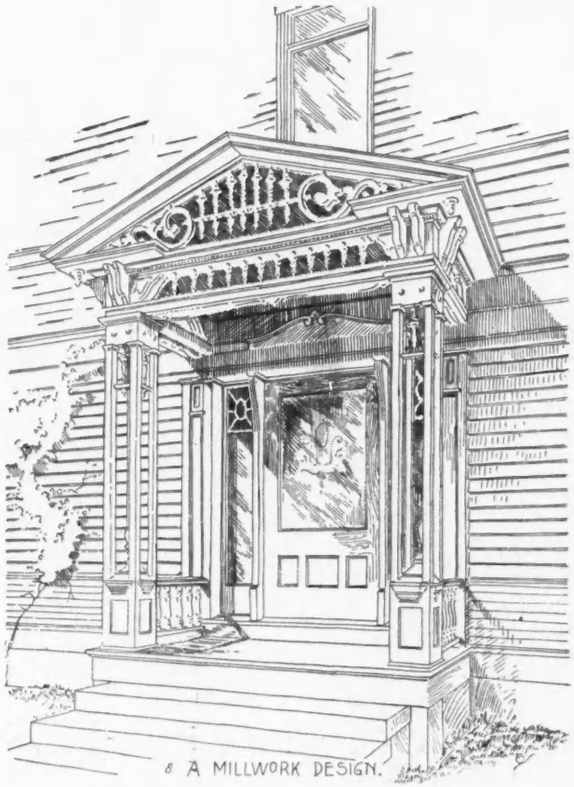
5. MILFORD, MASS.

6. PETERSHAM MASS.

7 NORFOLK, VA.

reception rooms, the front parlors, were closed and musty. Accordingly the group of old Colonial entrances illustrated may appear a trifle stiff. That makes it all the more pleasing to note the success with which they departed from scholastic examples in respect to some of the detail. Study of these historical specimens from Petersham, Milford and Hopkinton, Massachusetts, will help one out of bookish ruts without being freakish.

In colonial work the possible significance of the detail is not utilized, although the pretty custom is still remembered, for I am told by some of the stable old characters that the original settlers, their forefathers



8 A MILLWORK DESIGN.

having fled from fanaticism, would not allow a cross to appear even in the structural arrangement of the door panels of their houses, on account of its obnoxious significance.

The Virginia type illustrated is more pleasing for home use than the cumbersome porticos so often represented in examples of southern architecture.

About a quarter of a century ago, when mill work was first of the boom, there was a great display of sawed and turned work. The mode then was to introduce new features at the jointure of other features, leading on in endless variety.

While it is called old-fashioned in these days, when the ornate designs conformed to the colonial or other structural outline, they remain very pleasing. In the play of sunshine and the dancing shadows of foliage they have the effect of brilliant lace work, but by the absence of some general outline to give homogeneousness, the general clutter of spindles and scrolls came to be facetiously called "gingerbread" work.

In the west, where there was much new building, another class of mill work developed for the decoration of bare walls of frame buildings. It accompanied the introduction of balloon framing. Beaded stuff was introduced with which to wainscot the interiors. Fancy cut shingles were employed and all kinds of paneled belt courses were made use of to relieve the wainscoting of plain surfaces. This beecame very popular in the prairie towns where foliage and landscape adjuncts were scarce.

There is something indigenous in this phase of building decoration. It is suitable for expressing native ornamental motives like the sketch for a siding design.

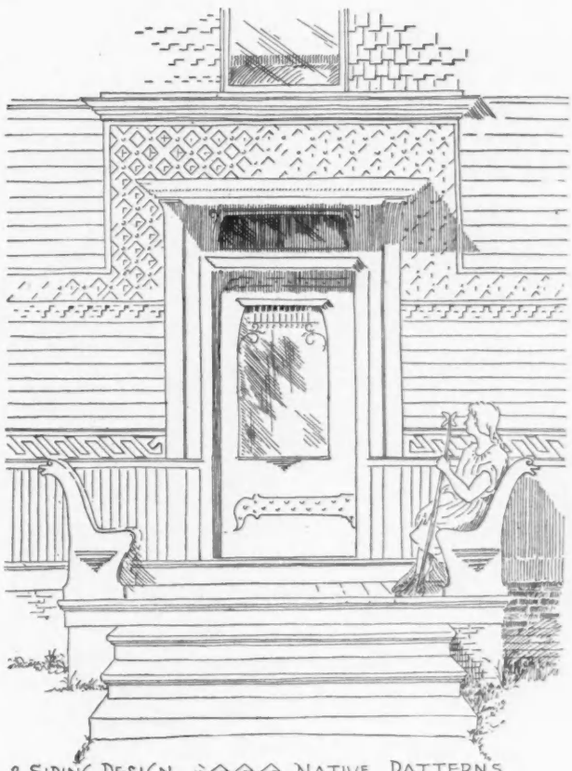
People who are accustomed to the solidity of brick and stone construction have somewhat changed the tendency of wood work lately. Some insincerely refer to most anything in the carpentry line as a lot of "kindling wood" and small town people who are prone to admire their glib and prententious city brethren have taken to imitating the massiveness of other materials.

Glued-up work is the fashion. Broad surfaces, heavy appearing but hollow, concealed joints and unadorned, bungling masses and school book temples are often exploited.

Even much well designed cement work is frequently marred by obtrusive portions of wall surface. Classic votaries also fail to realize that the slight variations they make in their facades are unnoticed by the average person. To such all classic buildings look alike.

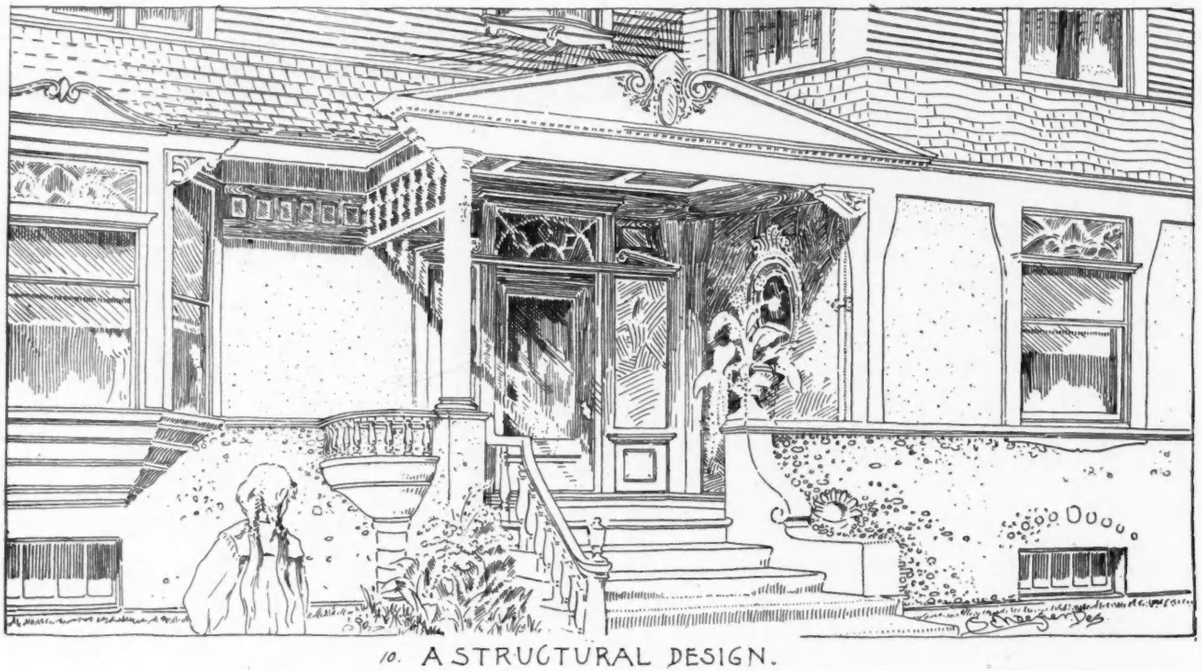
The fad of the day will not give owners and occupants permanent satisfaction. Something desirable may be found therein, however. This and the best element from previous accomplishments, from the years and centuries of study, should set the example for the new achievements. In this way we may construct better than ever.

Probably the most practical and satisfactory designs are a recent type, like the last illustration, where formalities and pedantic symmetries are dropped in preference to what is most desirable in convenience



9 SIDING DESIGN. NATIVE PATTERNS.

and materials. A structural form of design results, in which doorways and other features become incorporated in the general scheme of the building. A variety of materials can be used in this way to good advantage, and what is most desirable in sawed, carved and turned work can be adapted in many effective ways. This gives picturesque buildings. People admire them as picture houses. They really represent what good results can be attained on purely artistic



10. A STRUCTURAL DESIGN.

principles. The proportions governing art work of all kinds are kept in view but not indicated, just as a person talks without repeating the rules of grammar.

The accurately proportioned classic building may be a magnificent grammatical treatise on architecture. It may be monumental and impressive, but genre art, practical art, by combining the best resources according to our needs, is the true design. It is then the creation of art in which all the people fortunately take part.

✤

A Substitute for Marble

The lack of marble in Denmark has in the past led to many attempts to produce a substitute which would equal in decorative effect the natural product, and at the same time would not exceed it in cost. Some success has been achieved in the manufacture of a substitute in Sweden, but the thin slabs would not keep their shape. The veins were stiff and angular, and the soft transitions of color which make variegated marble a thing of beauty, were lacking. An important advance has, however, been made in the industry by a Danish master builder, who is producing a stone which is claimed to be of such delicate transition of tints and play of color that it is almost impossible to distinguish it from real marble. The claim is made that the article can be produced in any form and that it appears to have the durability of genuine marble, while the cost is about one-tenth.

✤

His Concession

Grace Simpson was the prettiest girl in town, but the young men fought somewhat shy of her on account of her father, who was a wealthy contractor and who had decided objections to having Grace's beaux calling at the house and didn't mind letting them know it. One evening a young fellow came to take Grace out. As she was not quite ready, he sat bashfully down on the porch with her father. Nothing was said for a while. Then the young man ventured to suggest that it looked like it might rain. Mr. Simpson sent a heavy stream of tobacco juice over the porch railing into the rose bushes. "'Tain't a-goin' to rain!" he snapped. This seemed to be final, and for another quarter of an hour the two sat in silence. Finally the old man's curiosity got the better of him, and he gruffly asked: "Say, who are you, anyway?" "Samuel Wilson, sir," responded the caller. "What! Not old Bill Wilson's, the carpenter's son?" (Old man Wilson and he were good friends, but he had never noticed the rapid growth of the boy). "Yes, sir," said Sam. "Well, well," mused Mr. Simpson more kindly, "it may rain, Sam, it may rain."

✤

I consider the AMERICAN CARPENTER AND BUILDER the best magazine I have ever received, and wish it a long and prosperous voyage on the seas of journalism. —W. T. Beseman, Nickerson, Kans.

STEEL SQUARE.

ALFRED W. WOODS

How to Use the Steel Square

SHOWING INDIRECT USE OF THE STEEL SQUARE IN ROOF FRAMING BY MEANS OF PATTERNS—THEIR ADVANTAGE AS A TIME SAVER—EASY TO MAKE AND ANY ONE CAN USE THEM

FOR an all around tool there is nothing that supersedes the steel square for obtaining the cuts and bevels for general framing work. Yet it has its disadvantages. It is more or less an awkward instrument to carry in the tool box from place to place. In the hands of the inexperienced it is a cumbersome tool, who see in it only an instrument for squaring the ends of timbers or as a measure, and at once drop it at the conclusion as if that constituted about all of its usefulness. They lay it aside to take up some of the more common methods when the steel square should have been applied direct to the timber to obtain the desired cut. But, after all, in resorting to some of these methods, more than likely the steel square is brought in to use to lay out a diagram from which to obtain the desired angles and to these, the bevel square is applied to obtain the cuts. In saying this, we do not mean to be understood that the steel square should be used at all times exclusive to any other method, but after having settled on the desired pitch, its use may be simplified. Patterns may be laid out with the aid of the steel square for obtaining the cuts, thus saving time in adjusting the square to certain figures for each cut, as there is but one position to apply the pattern and all that is necessary is to mark along its edges. The sides and plumb cut of a jack can be made without lifting the scratch awl from the pattern and practically with one stroke of the hand.

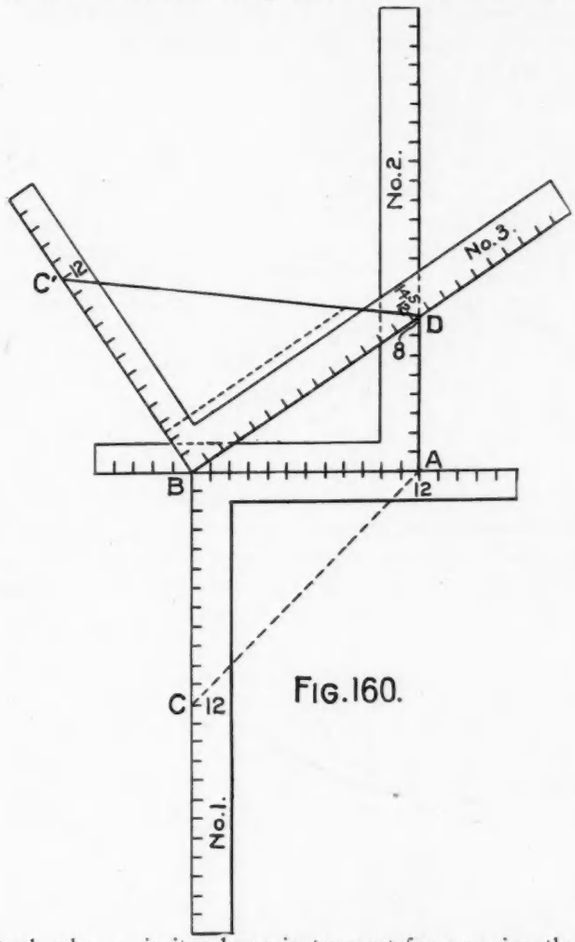


FIG. 160.

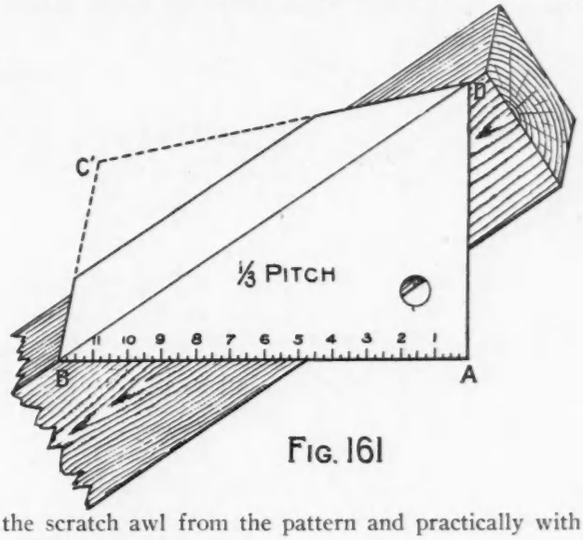


FIG. 161

Two patterns are required for an even pitch hip and valley roof, i. e., one for the common and jack rafters and one for the hip or valley, and after once made, will answer for any size roof of like pitch.

Would recommend making the patterns out of heavy galvanized iron. It is a good plan to have patterns for the leading pitches and number them as to pitch as one-fourth, one-third, or whatever pitch they may represent. By cutting a hole in the patterns they can be hung up in the shop or they may be carried in the tool chest, thus always ready for use and anybody can use them.

Now we will show how to lay out these patterns and their relations to the square.

In Fig. 160 are shown three squares. On square

No. 1, A B represents the run of the common rafter, B C the run of the hip, and A C the tangent. The points A, B, and C represent a right angle triangle of 45 degrees and therefore represents the angle or plan for an even pitch roof. From this we get the starting point for the pattern. On the tongue of square No. 2, the same point is taken as shown on No. 1. Lay off the desired rise on the blade, which in this case we will take the one-third pitch or 8 on the blade. A B represents the run of the common rafter; A D the rise, and B D the common rafter. Now to this apply square No. 3 as shown, and with B C′ equal to B C (the tangent), and draw the line C D. Then that part of the diagram bounded by A B C′ and D will be the layout of the pattern. Trim to the lines and bend to a right angle on the line B D and the pattern is complete. However, the corner C′ may be trimmed to a parallel line two or two and a half inches from the line BD, as that will take in the usual run of rafters.

In Fig. 161 the pattern is shown applied to the timber ready to lay off the cuts. The pattern could be any desired size as far as the cuts are concerned, but by making it the size as shown in the previous figure, it will be seen that the distance from A to B is 12 inches and is therefore full scale to one foot run of the common rafter. Then BD must represent the length of the common rafter for a one foot run. Therefore, by sliding the pattern along the timber, the length of the rafter is obtained precisely in the same manner as in running the steel square. By marking the inches and fractions thereof along the edge of the pattern from A to B, the length of the rafter for a fractional part of a foot or inch in the run may just as easily be handled as for even feet. Thus we have the steel square in a simplified form as follows: AB gives the seat cut; AD the plumb cut; BC the square cut across the back of the rafter and CD the side cut of the jack. The corresponding cuts for the hip or valley requires another pattern, but the lay-out would be the same as shown in Fig. 160, except the point B would be at 17 on the tongue instead of 12 as shown. These figures are fixed points for any pitch, or in other words, as though the heel of square No. 3 was pivoted at these points and by moving the blade up or down for the desired rise on square No. 2, as at AD, will determine the lines of the pattern. These same patterns can also be used to advantage in getting the angles for the cornice work pertaining to the same building.

In laying out a pattern for an even pitch hip and valley roof, all the points may be had as shown on the squares Nos. 2 and 3, because B, C is always equal to A, B, but this is not so where the pitches are unequal. In that case the proportions to be taken on square No. 1 are the respective runs of the common rafters, and therefore requires a pattern for each pitch.

The Strength of Beams

ANOTHER PRACTICAL ARTICLE ON FINDING THE STRENGTH OF BEAMS—SIMPLE EXPLANATION OF WHAT IS USUALLY CONSIDERED A DIFFICULT PROBLEM

By T. B. Kidner

THE several articles dealing with this subject which have appeared lately in this magazine have not quite exhausted the various aspects in which it is liable to crop up any day in building practice, and one or two more examples will be dealt with this month.

In the October number there was given the method of finding the breadth of a beam when the depth was already fixed; the length (span) and load being also known. The case worked out is only one of numerous instances in which the depth of a beam is limited. A very common case is that of a floor where a beam

Fig. 1

REMEMBER THE RULE !!!

To find DEPTH of a beam when the following particulars are known:—

(a) LENGTH, (b) LOAD, (c) BREADTH, (e) NATURE OF LOAD,

(f) POSITION OF LOAD, (g) SORT OF WOOD

PUT DOWN:—

$$\frac{\text{LENGTH} \times \text{LOAD} \times \text{FACTOR OF SAFETY}}{2 \times \text{BREADTH} \times \text{FIGURE FOR WOOD}} = \text{Result} = \text{SQUARE OF THE DEPTH}$$

Note. The figure 2 must be left out for a central load.

has to be placed to carry a partition above, but is flush with the lower edges of the joist below. The same formula used in the case worked in the October number will apply to that and all similar cases.

Very often, however, it happens that it is the breadth of a beam that is fixed; especially in the case of beams or girders over openings in brick walls; and the problem then is to find what depth the timber should be to carry the load safely. To find this requires, of course, merely a slight turning about of the formulas used in the cases dealt with in previous articles and presents no difficulty to any one at all acquainted with mathematics. It will be worked out, however, in the same manner as the other problems of this series of lessons, and divested as much as possible of all complicated looking and repellant algebraic signs and symbols. The writer's attempts to interest and instruct his two craftsmen friends showed that it is usually the look of the formulas in the books that scares the seeker after knowledge who is some years away from his school days. Also that if these mystifying formulas are properly and simply explained, any man with a knowledge of the elementary rules of arithmetic can make calculations for the sizes of practically all the timbers of the average building.

As before, certain conditions will be laid down, being as follows:

A beam is to carry an 8-inch wall over an opening. The beam is of southern hard (or pitch) pine; the opening is 10 feet wide; the height of the wall above the beam is 13 feet 6 inches, giving 90 cubic feet (10 feet by 13 feet 6 inches by 8 inches), say, 90 cwt. as weight to be carried on beam.

The method of putting down these particulars is shown in Fig. 1, which will be seen to resemble the earlier formulas, although the several factors are differently arranged. Fig. 2 shows the calculations for our present case, which works out in exactly the same manner as earlier ones; that is, all the values *above* the line are multiplied together and divided by the product of all the values *below* the line when they have been multiplied together.

The only difficulty is in working out the final answer, for the result obtained at first will be the square *of the required depth;* that is, the depth multiplied by itself. To arrive at the exact depth it is necessary to "extract the square root" of the answer, which means to find what number multiplied by itself will give the answer. For all ordinary practical purposes of wooden beam calculations, however, the exact result is not absolutely necessary and a sufficiently accurate one can be obtained by inspection of the first answer. For instance, in the foregoing problem the answer is 56¼. Now, the nearest square of a whole number to this is 49, the square of 7 (7x7 = 49), therefore the depth of the beam is more than 7. The next square of a whole number is 64, the square of 8 (8x8 = 64), and as that is greater than our answer, evidently our beam should be somewhere between 7 and 8 inches deep. As a matter of fact, it proves in this case to be exactly 7½ inches (7½x7½x56¼), but if the sum had not worked out so exactly as that a result quite good enough for practical purposes could have been arrived at by the method indicated above; namely, by finding the nearest squares of the whole numbers above and below the answer and al-

Fig. 2 — For distributed load

$$\frac{10 \text{ ft.} \times 90 \text{ cwt.} \times 5, \text{ factor for dead load}}{2 \times 8\text{in} \times 5, \text{ figure for pitch pine}} = \frac{4500}{80} = 56\tfrac{1}{4}$$

The square root of $56\frac{1}{4}$ is $7\frac{1}{2}$, the required depth for beam

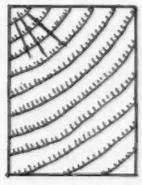
Fig 3 — For central load

$$\frac{10 \times 90 \times 5}{8 \times 5} \quad 112\tfrac{1}{2}$$

The square root of $112\frac{1}{2}$ is nearly $10\frac{3}{4}$

A piece 8"x7½" would carry the given load if it were evenly distributed

A piece 8"x10¾" would be required if load were central



lowing a sufficient amount over and above the root number of the square below. As in the previous articles, the nature and position of the load must be considered in any calculations made. The factor of safety used is 5, the usual for a dead load. That is, one-fifth of the breaking weight is considered to be the amount a beam can safely carry when the load is a stationary one.

The position of the load is important, for, as shown in the earlier lessons, a beam will carry twice as much if the load is evenly distributed along it, as it would if the load were in the center only. The figure 2 is therefore placed below the line in the present case. The effect of this is shown by comparing the result in Fig. 2 with that in Fig. 3.

From the several calculations made during this series of articles, it will be seen that if two beams or joists be of the same length and sectional area, the one of greater depth will be the stronger of the two. This can be readily seen by taking as examples two joists of the same sectional area, but of different dimensions. A piece of 12 inch by 2½ inch, another 10 inches by 3 inches, have the same sectional area (30 square inches), but their relative strength when placed on edge is as 360 to 300 when the rule given on page 368 of the June number of this journal is applied. It was there stated that the strength of a beam was as *"the square of its depth;"* that is, the depth must be multiplied by itself. $12 \times 12 \times 2\frac{1}{2} = 360$ and $10 \times 10 \times 3 = 300$, or a proportion of strength between the two as 6 is to 5.

There is, of course, a limitation in the practical application of this, for if a beam be made very deep in relation to its breadth, it will buckle and twist when loaded. In the case of floor joists, the disproportion of depth to breadth is very marked, but their tendency to buckle is overcome by strutting, either with solid blocks the same depth as the joists cut in between each pair, or "herring-bone" strutting cut from narrow battens. Many experiments have been made to find the best proportion for the breadth and depth of wood beams, and it has been laid down that a ratio of 5 to 7 gives the best section. This is a useful thing to remember and easily kept in mind.

In concluding this series on the strength of beams the writer trusts that some of the readers of the AMERICAN CARPENTER AND BUILDER who may have been deterred from going into the matter of calculating the strength of materials will have been in some measure led to see that a formula is only a simple way of putting down a rule for some arithmetical process that would take a long time to describe in words. The strength of beams is a question that is so often cropping up that the articles may have been directly valuable in showing how to find it in any given case, but the writer also hoped that his articles might lead many readers of this magazine to take up other lines of calculation equally simple and useful to the practical man.

Finishing Concrete Surfaces

A very large number of bridge abutments, retaining walls and other pieces of masonry presenting large, continuous surfaces are now being constructed in cities throughout the country of concrete, and with excellent satisfaction. In most cases they are given a smooth finish, which offers the objection of being glaring in a bright light, of showing the finest of hair cracks that any irregularity in mixing shows in the color, and that any patching is apt to result in scaling off of the surface, tells the *Municipal Journal*. A more pleasing appearance has been obtained by the Philadelphia Department of Public Works in its concrete structures by the construction of what it calls granolithic surfaces. In this the removal of the mortar leaves the surface color that of the stones used; it is not so liable to streak, and cannot be scribbled on or covered with posters. The use of a stiff scrubbing brush or wire brush in connection with the washing will expedite the work. The specifications of the Philadelphia Department of Public Works for granolithic surfaces are as follows:

Granolithic surfacing, when required, shall be composed of 1 part cement, 2 parts coarse sand or gravel and 2 parts granolithic grit, made into a stiff mortar. Granolithic grit shall be granite or trap-rock crushed to pass a ¼ inch sieve and screened of dust. For vertical surfaces, the mixture shall be deposited against the face forms to a least thickness of one inch, by skilled workmen, as the placing of the concrete proceeds, and thus form a part of the body of the work. Care must be taken to prevent the occurrence of air spaces, or voids in the surface. The face forms shall be removed as soon as the concrete has sufficiently hardened, and any voids that may apepar shall be filled with the mixture. The surface shall then be immediately washed with water until the grit is exposed and rinsed clean, and protected from the sun and kept moist for three days. For bridge seat courses and other horizontal surfaces, the granolithic mixture shall be deposited on the concrete to a least thickness of 1½ inches immediately after the concrete has been tamped and before it has set, and shall be troweled to an even surface, and, after it has set sufficiently hard, shall be washed until the grit is exposed.

✣

Most Up-to-date

After forty years' experience as a contractor and builder from Delaware to Colorado, and a constant reader of mechanical journals, I wish to say that the AMERICAN CARPENTER AND BUILDER is the best and most up-to-date journal I have ever seen. It contains the best and most valuable information for the amateur as well as the oldest carpenter of the present day, and I can highly recommend it to the trade generally.

With many wishes for the future success of your valuable journal.—A. H. Clay, Richwood, W. Va.

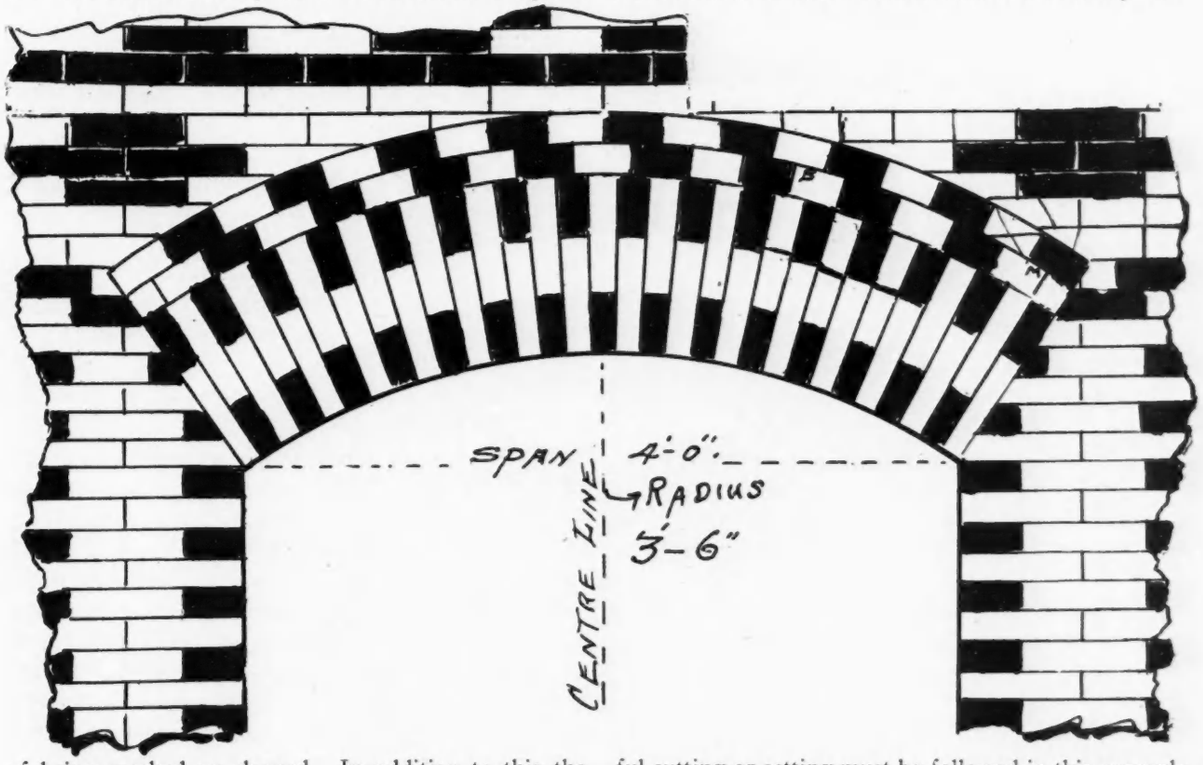
Variegated Brickwork

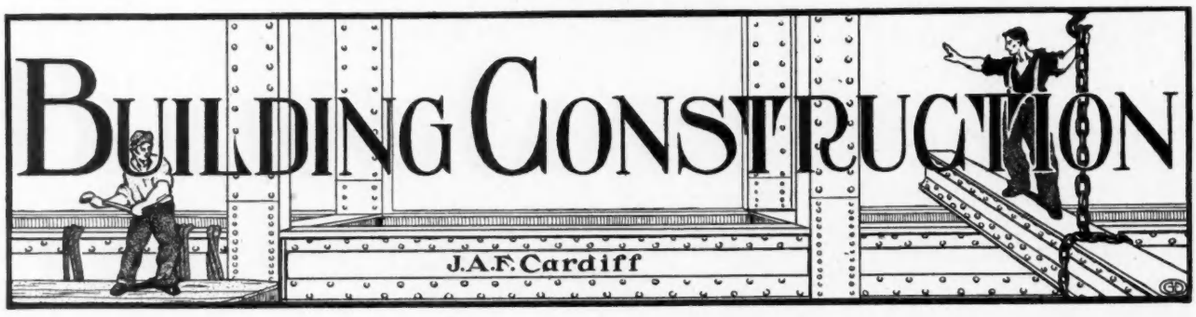
PRACTICAL USE OF COLORED AND ENAMELED BRICKS—WHERE BEST USED AND DIFFICULTY EXPERIENCED IN LAYING SAME

By Owen B. Maginnis

THIS never ending detail of building construction seems almost unlimited in its application, not only in the numerous designs which are evolved by the use of the ordinary common bricks or front bricks, but also with special brands made by different manufacturers. In this short article we will consider the matter of colored and enameled bricks. The question is now a matter which architects are earnestly engaged in developing to the betterment of their designs, both in artistic beauty and constructive strength, obtaining both in unison.

It is not very usual to employ enameled brick for the exterior elevations of buildings for the reason that the surfaces, through the deposit of dust, wind and rain will become streaky and discolored and incapable of being washed or cleaned. In addition to this the cost of the bricks is extreme, as the best enameled bricks are imported from Europe, and the duty being heavy, they are rarely employed except on the very best class of public or private structures. Very fine bricks are now made in the United States and Canada in many colors, whereby various combinations may be obtained, according to the taste of the architect. These are mostly rough on the edge and end, like ordinary rough brick, but very effective if properly laid out. These front bricks are supplied by the manufacturers in almost all the well-known colors or shades of colors, mottled, speckled or lined; also in the form of stones, as rockfaced, wash face, etc. The effect of the combinations is usually forecast by building a small sample, observing another design already built, or by a colored drawing. In straight perpendicular work the observance of the bonds and the exact placing of the headers and stretchers is the only part of the workmanship to be watched, but in the construction of arches much more is required. The attached sample will illustrate to the reader the value of the care which must be exercised in the laying of colored front, or enameled bricks. It represents an arch in the basement of a public building piercing a 28-inch wall, both sides, jambs and soffit of the walls and arch being laid in blue and enameled brick, the black denoting the blue and the white the primary color. The headers are blue and the stretchers white. Extremely careful cutting or setting must be followed in this example, especially in the cutting of the voussoirs of the arch, which is generally done on the works, though they are sometimes molded at the factory from a full size detail furnished by the architect or the factory's draftsman. To save time and unnecessary labor, it is the practice to supply one-half the elevation and soffit, as it is reversible from the center line working both ways, unless the sides be of different colors, or the jambs be splayed; then details must be made for both sides. In conclusion, it might be said that only the actual manual practice will ever enable any mechanic to lay up such an arch as is here represented, even were it of common bricks.





Pivoted Windows

COMPLETE DESCRIPTION WITH ILLUSTRATION OF A PIVOTED WINDOW IN A SIXTEEN-INCH BRICK WALL—DETAILED CONSTRUCTION SHOWN

A PIVOTED window in a sixteen-inch brick wall is made the subject of this installment. The sash is center pivoted top and bottom and set in a rebated frame two and a quarter inches thick.

The masonry opening is spanned on top with a flat stone arch, the key of which projects beyond the face of the wall. Back of this arch a steel lintel, consisting of two three by four-inch angles, is provided to support the masonry. The inside of the wall is furred with two-inch ribbed full porous terra cotta blocks, to which the plastering is applied. Grounds (G) for the wood finish are nailed to this furring which, being full porous, readily receives and holds a driven wire or cut steel nail.

The joint of the wood frame and the masonry is covered with a molded staff bead. The inside head and jambs are lined with seven-eighths inch material tongued into the frame.

Small wood molds cover the joints between the sash and the frame, both on the outside and the inside, so as to make it weather-tight, forming a rebate, as shown. As part of the sash opens outward and the other half into the room, these molds are fastened to the frame in some places and to the sash in other places.

At the head the mold on the outside of the window has half its length fastened to the left side of the sash as at the dotted lines "A" in Fig. 196, and the other half is fastened to the frame. With the inside mold at the top of the window, the reverse is the case, the mold having half its length fastened to the right side of the sash. This is also the case with the inside mold at the bottom of the window, except that this mold is cut as at "B" in Fig. 196, and then slit horizontally as indicated by the dotted lines at "C" in Fig. 197.

The projecting member of the frame at "D" in Fig. 195 is cut away on the dotted line for the distance indicated by "E" in Fig. 196, so that the ends of the moldings which are fastened on the head of the sash and project above it will clear the frame at this point.

Fig. 195 is a vertical section, showing the construction at the head of the window.

Fig. 196 is a horizontal section through the window and shows the position of the sash when opened and when closed.

Fig. 197 is a vertical section, showing the construction at the sill of the window. A drip mold is let into the lower rail of the sash to keep water away from the joint at the sill, and, to take care of any water which may pass this obstruction, an undercut is made in the bottom of the sash over a channel cut in the sill. This catches any water which may beat in, and reamed holes at intervals convey the water from the channel to the sill as indicated by the dotted lines and the arrow. One of these drip holes is shown in plan in Fig. 196. The inside stool of the window receives the trim, is molded on the edge and is tongued into the sill. Under this stool an apron is provided.

The stone sill is cut with a wash, lugs at either end and extends under the wood sill two inches. The joint between the wood sill and the masonry should be well filled with mortar.

✤

A Short Cut

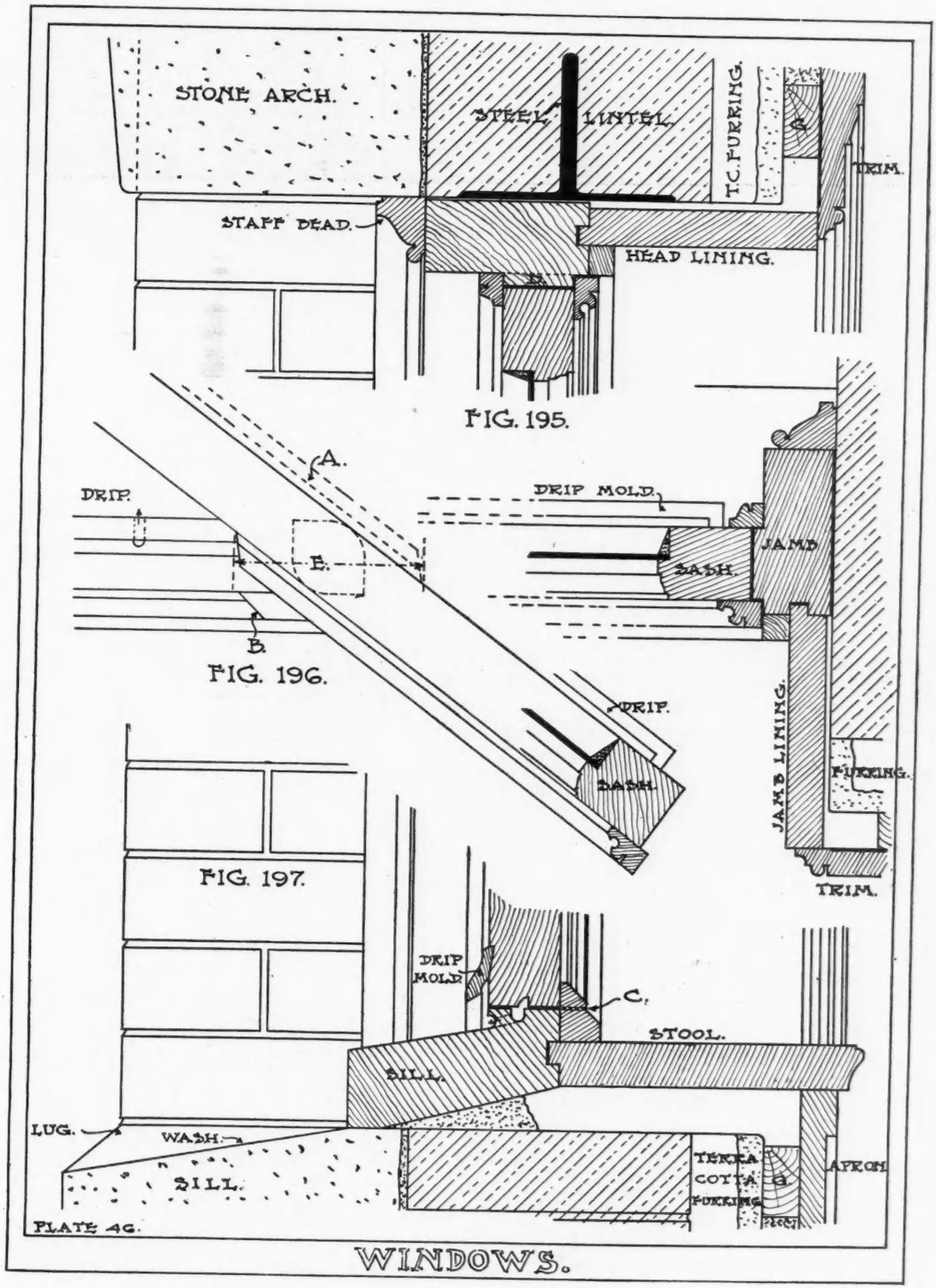
The board was 10 inches and a fraction in width, and the carpenter's apprentice with his ruler and a pencil was trying to divide it into three equal parts.

"Hang it," he said, impatiently, figuring away, getting bigger and bigger fractions, and still far from the accurate division that he sought. "Hang this business."

"Here's the way to do it," said the old carpenter.

And he took a foot rule and laid it across the 10-inch board obliquely, so that the oblique measurement just made 12 inches. Then he marked off three equal divisions, one at the 4-inch line the other at the 8.

"You will find that divides your board quite accurately," he said. "It is the easiest way for carpenters to make divisions. It works on any width or any number of desired divisions. To divide a 9¾-inch board in four parts, for instance, you'd make your ruler measure obliquely just ten inches across the board, and then you'd mark off your divisions at 2½, 5, 7½. This is a handy thing to know. It saves a man many a quarter-hour of tedious ciphering."


STONE ARCH.
STEEL LINTEL.
T.C. FURRING.
TRIM.
STAFF BEAD.
HEAD LINING.
FIG. 195.
A.
DRIP.
B.
FIG. 196.
DRIP MOLD.
JAMB
SASH.
JAMB LINING.
FURRING.
TRIM.
DRIP.
SASH.
FIG. 197.
DRIP MOLD.
C.
STOOL.
SILL.
LUG.
WASH.
SILL.
TERRA COTTA
FURRING
APRON
PLATE 46.

WINDOWS.

Pointers in Planer Practice

IMPORTANT WORK BEING DONE BY SMALL PLANING MILLS—THINGS THAT CAN BE BETTER ACCOMPLISHED ON SMALLER MACHINES

DID you ever ask the question and try diligently to find a satisfactory answer as to what constitutes good planing mill work?

There are too many planing mill men who think the correct answer to this question is to be found only in a large planing mill with heavy and expensive machines. There are probably many operators of small planing mills in country towns with only a few light machines who envy their big brothers in the city and think that there is no need to try and compete with them so far as good planing mill work is concerned, because their plants are overshadowed in magnitude by the city planing mill with all its modern equipment. Because he thinks this way, many a man operating a small planing mill doesn't get as good work out of his mill as he should, because he fails to realize its possibilities. The real truth of the matter is, as you will find when you investigate the subject thoroughly, that it is not the magnitude in planing mill equipment which puts the quality into the work, or does what might be termed good planing mill work. Every mill, no matter what its size, is made up of individual machines and every individual machine, large or small, is the same machine, and will do the same work in a small plant that it will in a big one. All it needs is the same attention.

All of this, and a lot more, might be said to open the eyes of some small planing mill men in the country and put them in a more receptive mood for pointers in planing mill practice which might enable them to better understand the possibilities of the machines they have along the line of doing good planing mill work. Too many think that there is no need to try to turn out work which will compete with the larger mills, because they have not the large equipment and because they think it is no use, rather than because of any lack of equipment or ability; such men fail to put forth their best efforts, and consequently do work that is not as satisfactory to themselves as it might be. This kind of reasoning is too much like the despairing soliloquy of the rooster in saying, "What's the use? Yesterday we were eggs and tomorrow we are feather dusters."

Did it ever occur to any of you who feel and reason in this "What's the use" way that frequently the big planing mill or other large institution will turn to the small and simple machines to get quality into their work and do the best class of planing mill work? If it didn't you have a thought coming that should put some new ideas and some fresh spice into your work, because they do those things and frequently it is the smaller machines and planers that are made use of to do the highest grade work, and also the double surfacer is discarded for the single surfacer when one wants to put real quality into the work. This argument may start a storm of protests, but it is good just the same and worth taking home and thinking about. A student of machinery and methods in a recent discussion on the subject of the development of woodworking machinery, after telling about the advent of the surfacer, said "Then came along the man who figured that the under side of a board could be finished at the same time as the upper, and he demonstrated that practically by making a double surfacer. It was only a step to put on side knives to joint or make tongues and grooves, and this is where we stop today, because after double surfacing, joining or matching a board, that is all that is required of a surfacing machine to do, unless you use it as a surfacing resaw and surface down inch boards to 3/8 inch, when the resaw is out of commission, a thing I knew of being done in a box shop once. The red flag of the sheriff was hung out before many millions of feet were 'surfaced resawed' in that way.

"Every machine man makes his claims and every machine offered does soemthing superior to the other man's surfacer. Strange as it may seem, if the superior points in every surfacer were all combined in one surfacer, that combination surfacer, instead of being a paragon of perfection, very likely wouldn't be worth a damn!"

A specific case illustrating this point was brought out recently in connection with the equipment of a plant to make parquetry flooring. This is a class of planing mill work which in some respects calls for a high degree of precision. Good flooring, as we all know, is generally made on heavy, expensive machines, and yet in the equipment of this new plant for making parquetry flooring every machine was small, simple and light running. There was not even a double sur-

facer in the plant, the strips being faced on a single surfacer and the edges jointed afterwards on another simple machine. It was so remarkable, and so different from what one might expect that it excited some comment and some inquiries as to why, and as a result of these inquiries there were obtained some pointers on planing mill practice that seem to be worth while for many of the planing mill men operating small planing mills either in the country or in the city.

The first point relating specifically to such light small work as the making of parquetry flooring strips was that holding it in rigidity for surfacing it on all four sides in the machine involves so much pressure and clamping on all the sides that it takes lots of power to force the strips through, and in case the strips happen to be cross grained or something else, there is danger of it breaking and causing delay and a lot of trouble to get it out of the machine and straighten it all out again. This one point applies specifically to light strips and there are a number of others which apply equally well to planing mill work.

One is that it takes lots of power to operate a big machine and hold the board rigidly for surfacing on all the four sides.

That is, a machine, in addition to the power required for cutting, consumes a lot of power in the friction of the pressure bars and in the power required to feed a board through. Another point and a more important one is better surfacing, better planing mill work, in fact, can be more easily done on a single head machine, a panel planer, for example, than on a big double or four-side surfacer. The one cutter head gives you an opportunity to have a rigid platen underneath and simplifies wonderfully the work of holding the board down to the planer while it is being fed through the machine. There are no complications in the way, no need to hold it up as well as down, and any man with mechanical skill and an eye to details can make a single surfacer do good work and frequently, where quality is the main object, it is found better to run a board twice through the single surfacer to dress both sides than once through a double machine. If there is a limited quantity of the work it is better to run twice through the single facer, but if it is a steady stream of work, some place where quality is an object, it is better to place two single surfacers in tandem order and use two single surfacers instead of one double surfacer. This is one of the things that is done in some of the big institutions which is an important point for the smaller planing mill men to take home to themselves, because it brings with it a realization of the fact that the little surfaecr in a small planing mill that looks insignificant is really capable, with proper manipulation, of doing better work than most of the big double surfacers in large institutions.

Take the furniture factories and some other manufacturing institutions, and the big double surfacers are used as a sort of receiving or roughing planer, and not much effort is made at getting a neat finish with it. Stock is sized to dimensions enough larger than what is ordered when finished to leave room for doing the final cutting afterwards on the panel planer. Then, after the work is ready for finishing it comes through the single surfacer or panel planer, which is kept sharp and carefully adjusted for smooth work, rather than for speed or heavy cutting.

This line or argument is not offered as a species of fault finding against the larger and more complicated machines. These larger machines, that is the double and four-side surfacers, are made to fill a purpose which many of them fill well, and that purpose is to save time and extra handling of the stock to get two or four sides surfaced at once. Saving of time, however, is one thing and putting quality into the work is another, and without finding fault with any of these larger machines the idea that it is desired to bring out is that many of the planing mill men have in their shops some small surfacers that are not doing good work as they ought to do simply because they do not realize the possibilities of the small single surfacer and are sometimes kept from realizing them by an erroneous impression that the only way to get good mill work is to have big, complicated, expensive machines and a whole lot of them.

Good work in planer practice might be analyzed and set forth in a formula as 10 per cent skill and 90 per cent detail, and that analysis would pretty well cover the majority of cases. There are some who may take a different view and think that the heavier precentage should be skill, but when they get down to it right, skill itself is largely made of attention to details. There are certain elements of thought and manual training which come from practice only, but with due credit to all of this the fact remains that the larger element in good work is that of close attention to details. It begins in the selection of the knives for the planer and doesn't end until the board is finished and delivered. It is not much in itself to select a knife that is not quite up to the grade of some other knife to save a little on the price, and this alone might not seriously mar the work of the planer, but it is a little step that leads to others and it is the aggregate of these same little steps that, if allowed to accumulate enough, will seriously mar, if not entirely destroy, the quality in planer work.

The man who takes pride and pains in selecting the best planer knife to be had, after thoroughly testing and trying, will naturally take more pains in grinding that knife, and will be careful that he doesn't burn it, will see that he gets the right bevel and perfectly straight from end to end, and when he begins to put it on the machine his pride in the knife and his work will continue to grow on him until it is a dominating factor, and he will take more pains in seeing his knife exactly balanced, and seeing that all the bolts and washers balance, and that they are neatly tightened down, not strained, and he will be more patient and

(*Continued on page 227*)

Complete Church Design

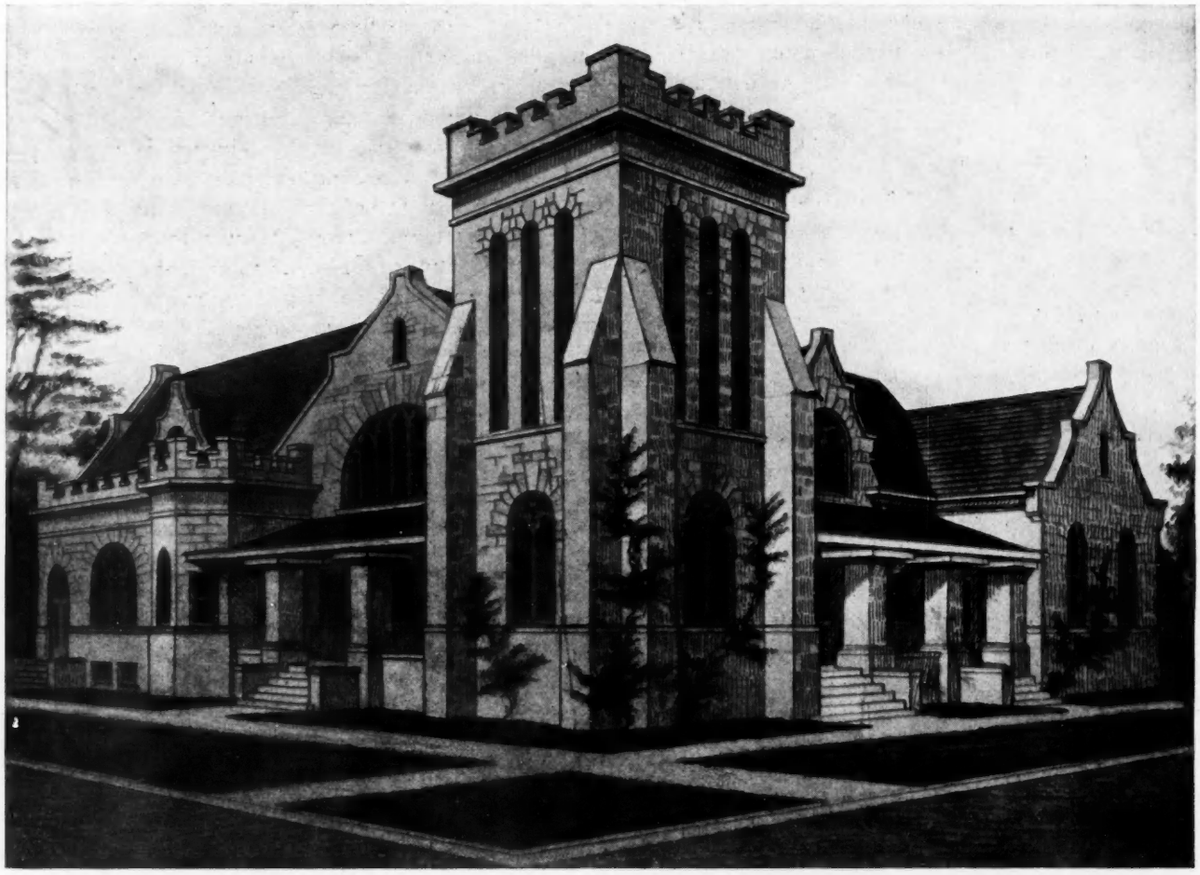
PERSPECTIVE, ELEVATIONS AND FLOOR PLANS OF A CHURCH—DIMENSIONS GIVEN AND MATERIAL TO BE USED IN THE BUILDING

THE church we are herewith illustrating is to be built for the Presbyterian congregation at the corner of Mountview boulevard and Dahlia street, Denver, Col. The plans were drawn by G. W. Ashby, architect. The building is to be built of random rubble range stone with cut stone trimmings and the finished effect will be very beautiful. The prominent exterior features are the large tower and the porches, which not only add greatly to the design, but are also useful. The Roman arched windows are amply large to give plenty of light and are well proportioned to harmonize with the massive stone walls.

In accordance with all modern church plans, there is a dining room, kitchen and serving room in the basement. Entirely separated from these rooms are the boiler and coal rooms.

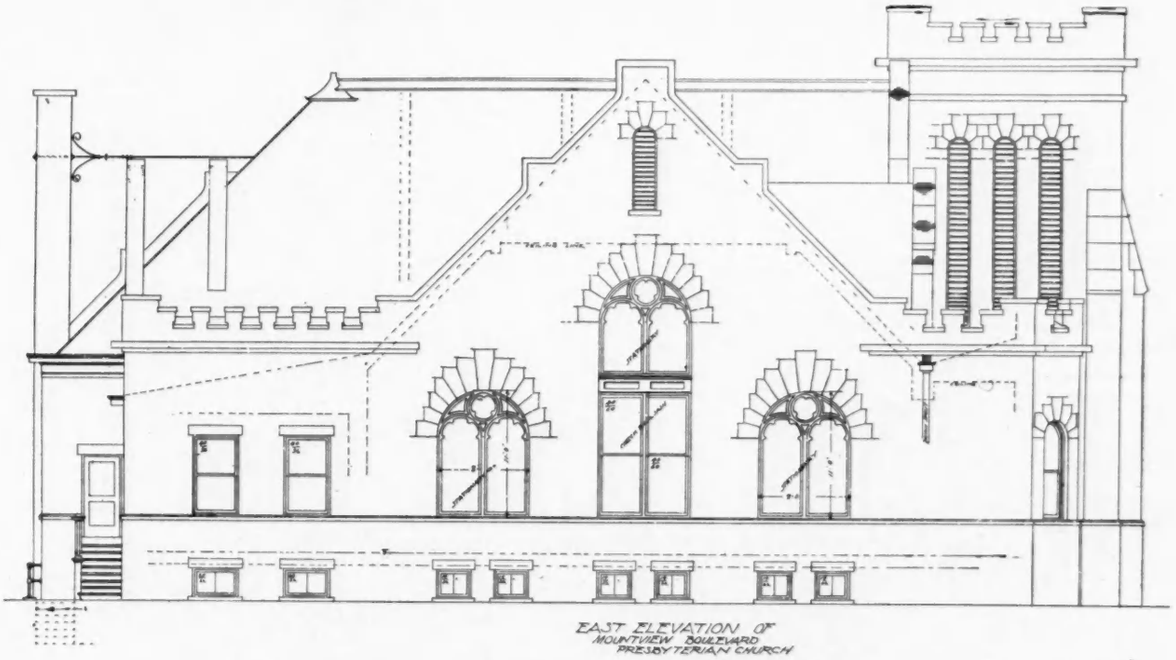
The first floor plan is divided into a large auditorium, Sunday school room, class room, lecture room and study. The auditorium and Sunday school room are divided by sliding doors which can be pushed aside, making one large room. The arrangement of the main auditorium is very good, the seats are all arranged in a large semi-circle and there is a pitched floor. The pulpit is in the center toward the front, back of which is a large space for the choir and back of this is place for the organ.

Off from one side of the choir is the lecture room and on the other side is the pastor's study room. Both of these rooms are nicely equipped with fireplaces and made as comfortable as possible. The various elevations and cross sections give a good idea of the detailed construction of the building and the dimensions of the material used in the construction.

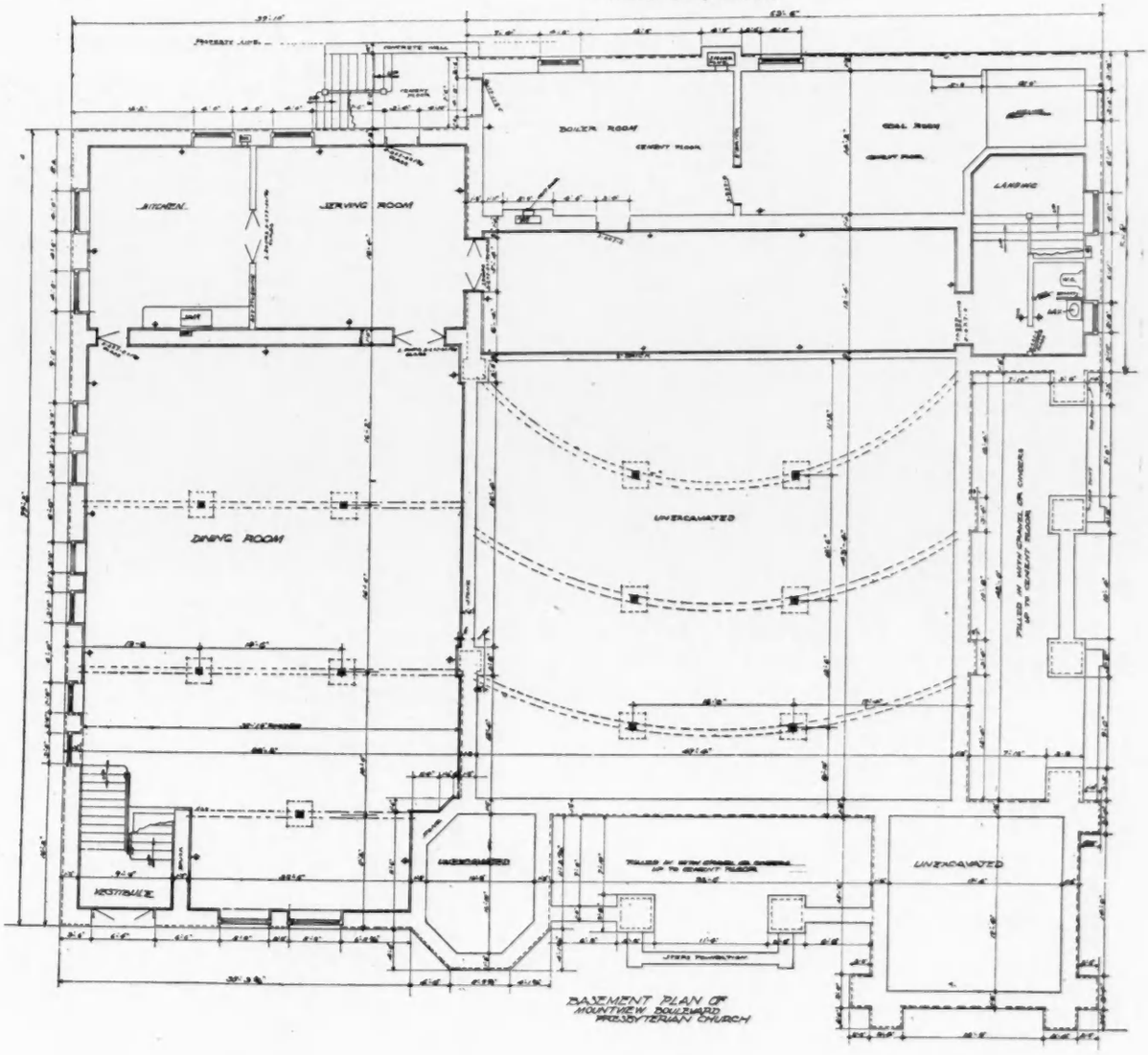


Oldest Church in United States Burns

The oldest church edifice in the United States was destroyed by fire recently. The ruins of adobe and stone are to be removed, under the direction of the Catholic church authorities, and a thorough search made for hidden treasure, which, according to legends that have been handed down for generations, lies buried beneath the floor of the building. The records go to prove that Ysleta, Tex., is older than St. Augustine, Fla. In the records of the great cathedral of Madrid, Spain, is found the report of Marcus de Niza, a French monk, who says that he left the City of Mexico and made his way north, finally crossing the stream that is now known as the Rio Grande. He says that he followed the road that he left for his mule

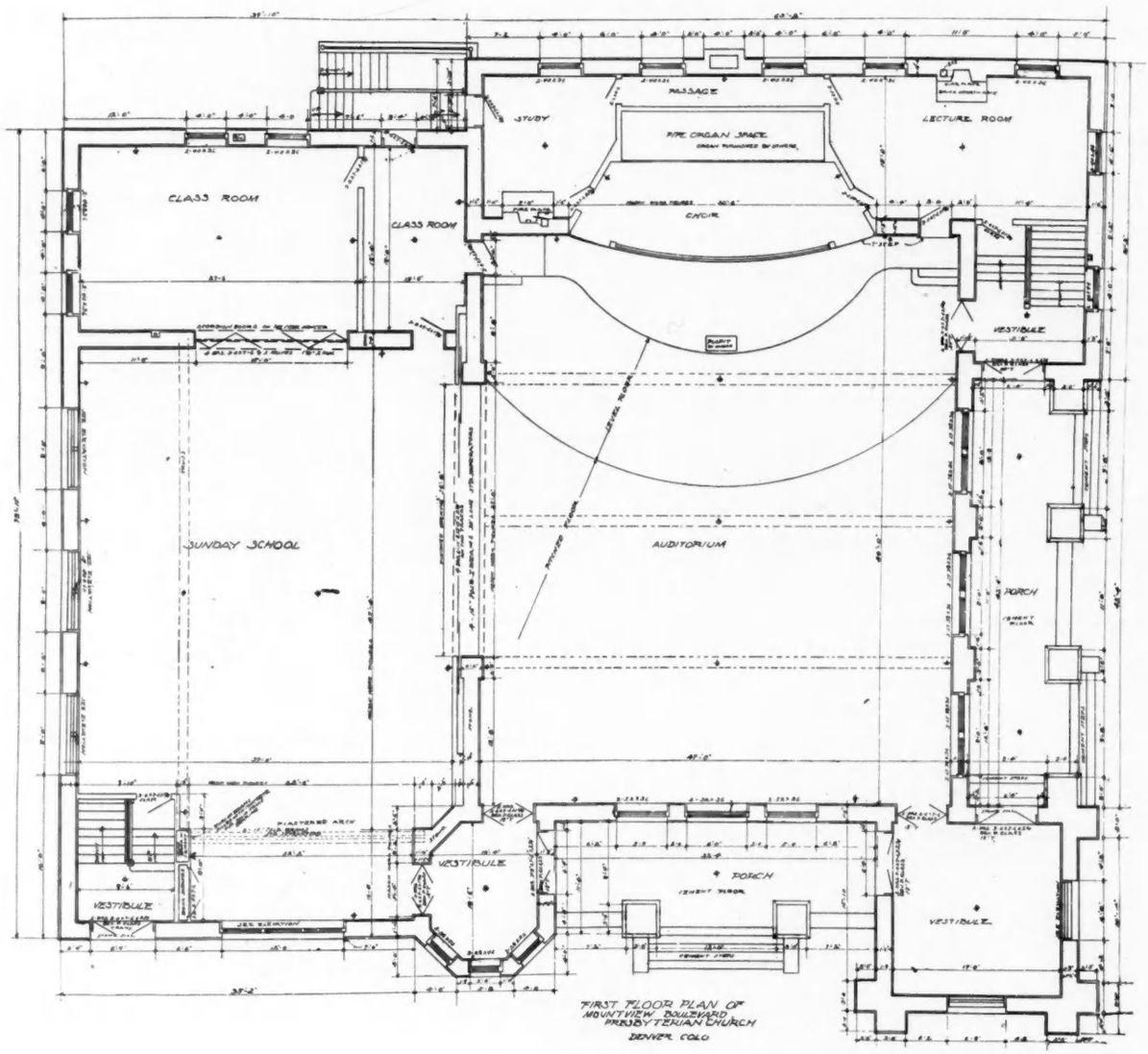


EAST ELEVATION OF
MOUNTVIEW BOULEVARD
PRESBYTERIAN CHURCH



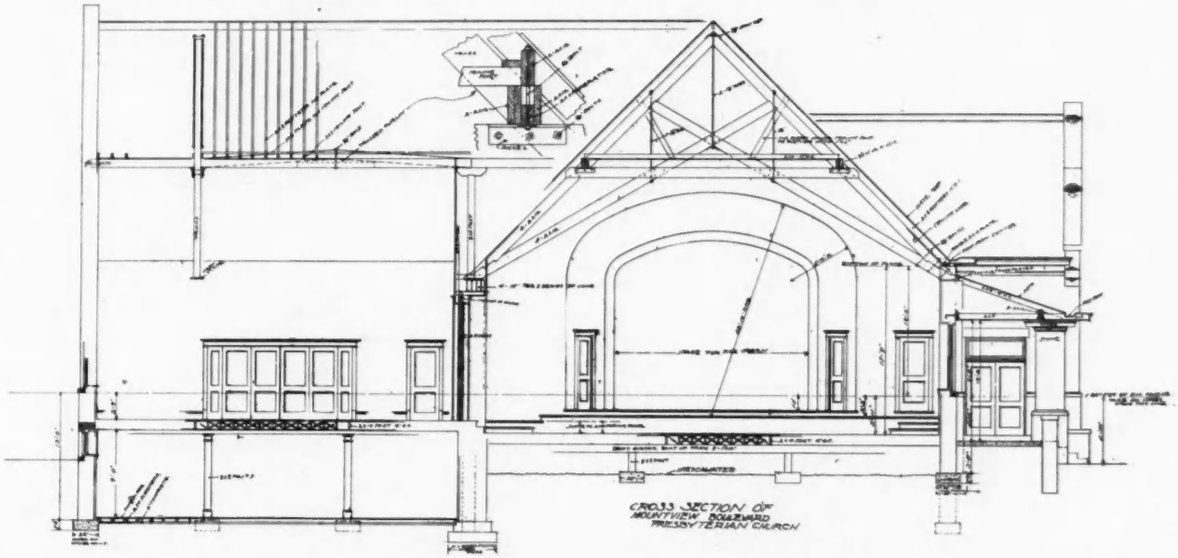
BASEMENT PLAN OF
MOUNTVIEW BOULEVARD
PRESBYTERIAN CHURCH

NORTH ELEVATION



FIRST FLOOR PLAN OF MOUNTVIEW BOULEVARD PRESBYTERIAN CHURCH DENVER COLO

to take. Part of this manuscript is written with the blood of a deer for ink, and his own forefinger nail for a pen. He says that in 1537, across the Rio Grande, he found the village known as Ysleta, occupied by the Pueblo Indians, whose traditions all point to their having been of the ancient Aztec race, or to a people of even more remote origin. Franciscan missionaries arrived at Ysleta four or five years later, and the mission church, which was destroyed by fire, was erected. It was completed about 1550. In many respects it was the most unique mission building in the southwest. Owing to the fact that it was remotely situated it was seldom visited by tourists, and little has ever been written about it. It was a very large structure, and was built with the idea of serving as a fortress in case of attack by Indians, as well as for worshipping purposes. The walls were four feet and six inches thick. It was the boast of the worshippers that the candles which burned at its altar had shed their light continuously for more than 350 years. It was one of these candles that caused the destruction of the church. A piece of tapestry was wafted against the blaze by the wind, and in an instant the inflammable material of the altar was afire. It was as dry as tinder and the flames quickly spread to the other woodwork of the edifice. The interior was soon a roaring furnace. The town has no means of fighting fires, and the people were forced to stand idly by and watch the building go to its doom. There was great sorrow among the people on account of the destruction.



PRACTICAL CARPENTRY

Estimating Cost of Building

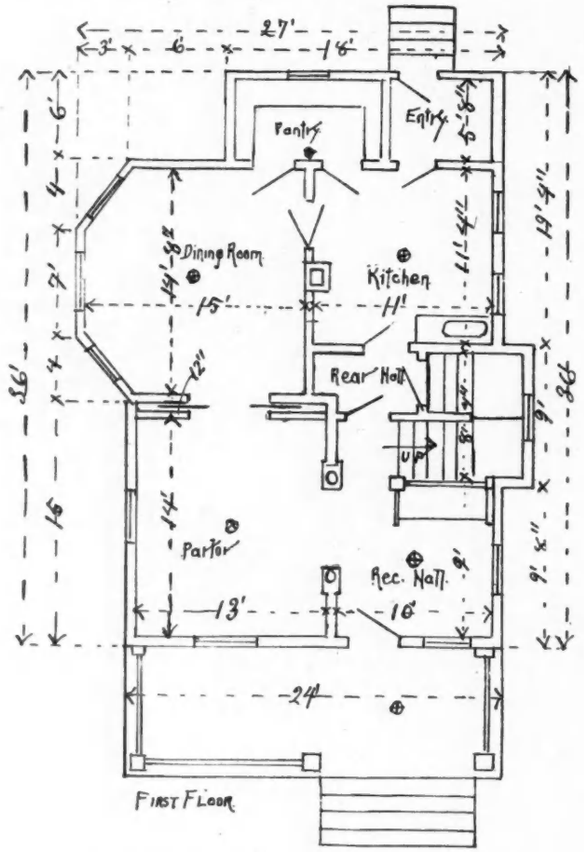
COMPLETE AND DETAILED ESTIMATE GIVEN—NUMBER, SIZE AND COST OF ALL MATERIAL USED IN HOUSE

By I. P. Hicks

DURING the past few months we have shown various arrangements of the plans of the same house. We are again taking the same floor plans and giving an estimate of all the work and material necessary to build the house. It may be of special interest to the readers as each item of the lumber and millwork is given.

Excavating and Masonry

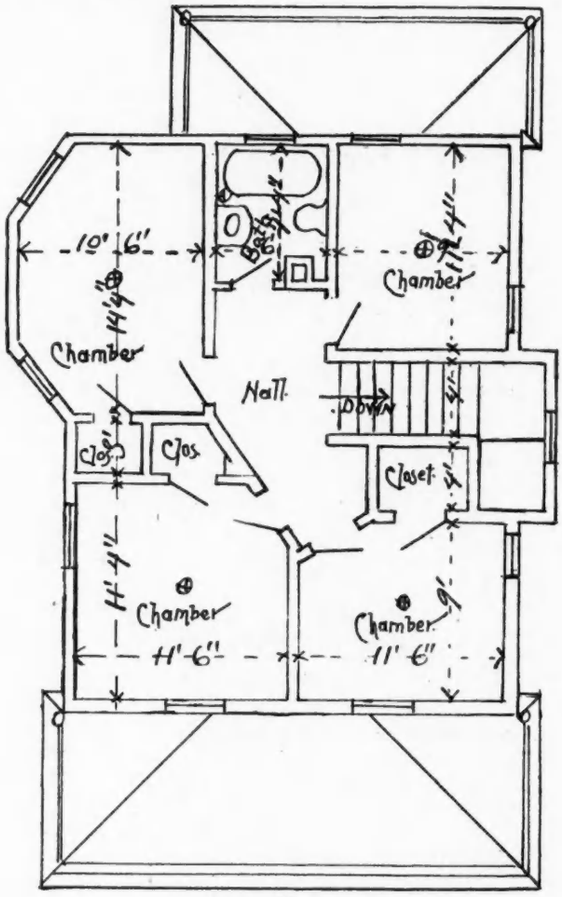
170 yards excavating, 25 cents.....$ 42.50



14,000 brick laid in foundation wall, $13	182.00
85 yards cementing cellar, 45 cents	38.25
37 lineal feet 8x12 flue chimney, $1	37.00
Total, excavating and masonry	$299.75

Lumber Bill

	Feet
1 6x8x16 ft. girder	48
1 6x8x20 ft. girder	80
3 6x6x14 ft. posts in cellar	126
26 2x8x24 ft. floor joists	832
26 2x8x16 ft. floor joists	546
26 2x8x12 ft. floor joists	416
5 2x8x18 ft. floor joists	120
12 2x6x12 ft. porch joists	144
2 2x6x16 ft. porch joists	32
12 2x4x16 ft. porch ceiling	132
10 2x4x18 ft. porch rafters	120
20 2x4x14 ft. partitions in cellar	180
40 2x6x14 ft. ceiling joists	560



14 2x6x18 ft. ceiling joists	252
180 2x4x18 ft. outside studding	2,160
50 2x4x16 ft. plates	550
80 2x4x16 ft. second story partitions	880
20 2x4x16 ft. dormers	220
4 2x6x20 ft. hip rafters	80
36 2x6x18 ft. rafters	648
20 2x2x16 ft.	110
20 1x3x18 ft. backing	180
30 1x6x12 ft. braces	180
Total feet framing lumber	8,596
8,596 ft. framing lumber at $25	$214.90
4,250 ft. No. 2 Y. P. shiplap at $25	106.25
2,000 ft. No. 2 8 in. Y. P. sheathing at $27	54.00
16 M. 5 to 2 clear cedar shingles	72.00
2,600 ft. No. 1 ½x4 in. clear cedar siding at $30	78.00
2,000 ft. 1x3 clear Y. P. flooring at $35	70.00
250 ft. 1x4x16 ft. clear fir flooring at $40	10.00
660 ft. ⅝x4x12 to 16 ft. No. 1 Y. P. ceiling at $27	17.82
50 sq. ft. 1x4x12 to 16 ft. clear fir finish at $45	2.25
125 sq. ft. 1x6x12 to 16 ft. clear fir finish at $45	5.63
200 sq. ft. 1x8x12 to 16 ft. clear fir finish at $45	9.00
100 sq. ft. 1x10x12 to 16 ft. clear fir finish at $45	4.50
325 sq. ft. 1x12x12 to 16 ft. clear fir finish at $45	14.62
200 sq. ft 1⅛x12x16 ft. clear fir finish at $45	9.00
100 sq. ft. 1x12x16 ft. clear Y. P. finish at $45	4.50
50 sq. ft. 1⅛x12x16 ft. clear Y. P. finish at $45	2.25
Total lumber bill	$574.72

Millwork

3 porch columns, 10x10x8 ft., $3	$ 9.00
2 half columns, $1.75	3.50
2 pieces porch rail, 12 ft., 6 cents	1.44
2 pieces porch rail, 16 ft., 6 cents	1.92
168 ft. 1¾x1¾ beaded balusters, 2 cents	3.36
18 ft. ridge cresting, 10 cents	1.80
4 finials, 15 cents	.60
220 ft. 4½ in. crown mold, 2½ cents	5.50
20 ft. 3½ in. crown mold, 2 cents	.40
240 ft. 2 in. bed mold, 1½ cents	3.60
200 ft. 1½ in. band mold, 1 cent	2.00
100 ft. ⅞ in. quarter round, ½ cent	.50
100 ft. ⅞ in. cove mold, ½ cent	.50
1 outside door frame, 3′ 0″x7′ 0″, $2.50	2.50
1 outside door frame, 2′ 8″x6′ 8″, $2.25	2.25
1 outside door frame, 2′ 8″x6′ 6″, $2.25	2.25
1 front door, 3′ 0″x7′ 0″, 1¾ glazed B. P	12.00
1 rear door, 2′ 8″x6′ 8″, 1¾ glazed D. S	4.00
1 side door, 2′ 8″x6′ 6″, 1¾ glazed D. S	4.00
1 window frame, 44x16-40	3.00
1 window, 44x16-40, 1⅜ D. S	6.00
3 sash frames, 30x20, 1 lt., $1.50	4.50
3 sash 30x20, 1 lt., 1⅜, $1.20	3.60
4 window frames, 30x28, 2 lt., $2.25	9.00
4 windows, 30x28, 2 lt., 1⅜, $2.00	8.00
2 window frames, 24x24, 2 lt., $2.25	4.50
2 windows, 24x24, 2 lt., 1⅜, $1.60	3.20
2 window frames, 20x20, 2 lt., $2.25	4.50
2 windows, 20x20, 2 lt., 1⅜, $1.50	3.00
6 window frames, 30x26, 2 lt., $2.25	13.50
6 windows, 30x26, 2 lt., 1⅜, $1.90	11.40
2 window frames, 20x26, 2 lt., $2.25	4.50
2 windows, 20x26, 2 lt., 1⅜, $1.60	3.20
1 dormer mullion sash frame, 20x24	3.00
2 sash, 20x24, 1⅜, $1.75	3.50
1 set sliding door jambs, 5′ 0″x7′ 0″	1.40
2 doors, 2′ 6″x7′ 0″, 1¾″, $4	8.00
6 set door jambs, 2′ 8″x6′ 8″, 60 cents	3.60
3 set door jambs, 2′ 6″x6′ 8″, 60 cents	1.80
6 set door jambs, 2′ 4″x6′ 8″, 60 cents	3.60
6 doors, 2′ 8″x6′ 8″, 1⅜, $2.50	15.00
3 doors, 2′ 6″x6′ 8″, 1⅜, $2.40	7.20
6 doors, 2′ 4″x6′ 8″, 1⅜, $2.30	13.80
6 cellar sash, 12x16, 2 lt., 1⅜, $1	6.00
340 ft. door stops, ½x1¾x14 ft., 1 cent	3.40
364 ft. window stops, ½x1⅜x14 ft, ¾ cent	2.73
76 plinth blocks, 5 cents	3.80
480 ft. 5 in. casing, 12 ft., 3 cents	14.40
200 ft. 5 in. casing, 16 ft., 3 cents	6.00
240 ft. 5 in. head casing, 3 cents	7.20
240 ft. 2½ in. cap mold, 2 cents	4.80
240 ft. ½x1⅜ in. fillet mold, 1 cent	2.40
240 ft. ⅝x ¾ in. embossed mold, 1 cent	2.40
80 ft. 3½ in. window stool, 3 cents	2.40
80 ft. 4½ in. apron, 3 cents	2.40
5 thresholds, 10 cents	.50
1 corner bead, 15 cents	.15
560 ft. 7½ in. Y. P. base, 4 cents	22.40
560 ft. ½x¾ in. floor mold, ½ cent	2.80
Stairs	65.00
Cased opening and pedestals	15.00

Recapitulation

Excavating and masonry	$ 299.75
Lumber bill	574.72
Mill work	357.58
Hardware and tin work	110.00
Carpenter labor	550.00
Painting	165.00
Plumbing and gas fitting	270.00
Furnace, complete	145.00
Electric wiring	30.00
Plastering, 700 yards at 27 cents	189.00
Incidentals, 5 per cent	134.55
Total estimate, according to Omaha prices	$2,825.60

Pointers on Planer Practice

(*Continued from page 221*)

take more pains to see that each knife on the cutter head sets exactly right, so that all will cut the same. By this time his pride in the work and looking carefully after details will have such effect that he will not have to be reminded to see that his cutter head journals are in good order, and that his pressure bar and chip breaker come into position right, and that his planer bed is clean and sets firm and rigid the same distance from the cutter head on each side, and the rollers are high enough to clear the bed, but not enough to make the stock wavy. All of these things will follow in their natural order if he but once starts right, starts out with the idea that nothing is insignificant and every detail is important, and that everywhere the best is none too good. When he does this the work of his little planer, no matter how small, or how simple, will not only compare well with the best work of any mill but best of all it will keep alive in the man pride in his work, which is a great stimulating influence.

About the best advice that can be given is that no matter how old or how simple a machine in your planing mill may be, you can get good work out of it if you but go about the thing right.

A Suburban Home

ARTISTIC HOME WITH GOOD INTERIOR ARRANGEMENT—MATERIAL USED AND COLOR SCHEME—ADVANTAGES IN THIS PARTICULAR ARRANGEMENT

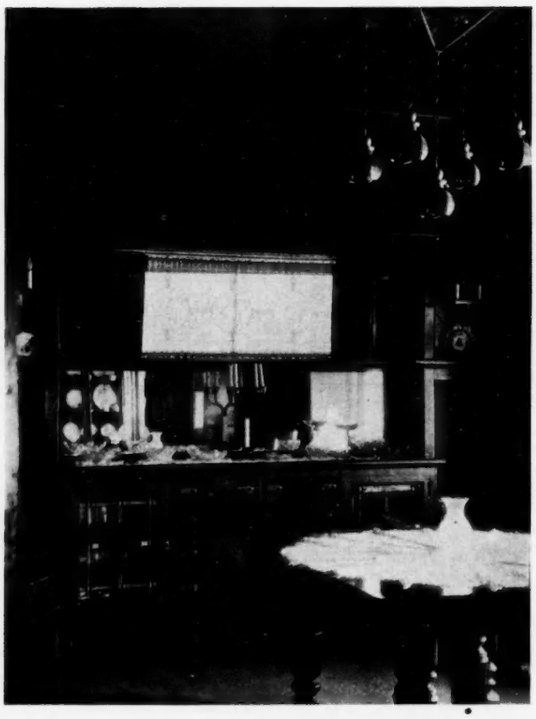
THE suburban home illustrated this month has been selected for two reasons mainly. Its exterior shows what good taste can do in the way of combining different materials of construction and its interior shows a finish which, for richness and completeness of detail, is seldom excelled in a house of this size.

The foundations are of rubble to the ground line. Upon this is a course of cut stone. Pressed brick completes the foundation. The manner in which the brick have been used to carry up the wall under the triple casement windows, both front and rear, and to form the lower part of the porch, can readily be seen from the photograph of the front.

The upper part of the house is lathed with expanded metal and plastered with cement plaster. A heavy corner mould separates this plaster from the overhanging cornice, which is similarly lathed and plastered. The sand used was of uniform color and the plaster given a uniform soft gray finish which looks well with the white of the wood below. The wide eaves, the low overhang, the simplicity of treatment, the emphasis given the horizontal lines, all serve to make the exterior very attractive and homelike.

The entrance is central and is covered by the wide porch, supported by square and turned columns. These columns are grouped in such a way as to suggest strength. This grouping allows a clear view from door and windows.

The entrance to the porch, being at an end, preserves the unity of the front, furnishes access from a walk common to both entrances, front and rear, and allows the use of the entire front of the yard for lawn, flowers and shrubbery. A full basement extends under the entire house, and is well lighted. It contains a boiler room for the heating plant, laundry with complete plumbing equipment, fuel rooms, etc. Hot and cold soft water is supplied to every fixture. This water is forced to the attic tank by the water lift in the basement, the pressure of the hard water used



at the various fixtures being sufficient to keep the tank full of soft water.

The arrangement of the first floor is one which time has proven to be quite satisfactory. The front entrance, which is through a vestibule having a floor of marble mosaic, leads to a good sized hall. At the

FIRST FLOOR PLAN.

rear of this hall is the main stair and an exit to the kitchen and basement through a well lighted side hall. Odors of cooking are virtually excluded from the main part of the house by means of two doors to this side hall. The two doors to the butler's pantry, which is placed between the kitchen and dining room, serve the same purpose. In this way ready access is afforded to all parts of the house without that most serious drawback which usually follows the connecting of the service and the main part of the house.

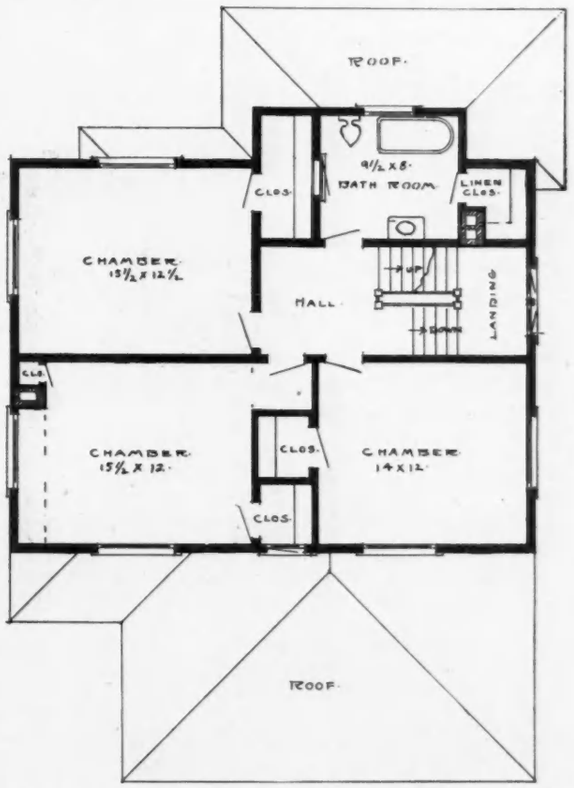
A parlor, made light and cheerful by a color scheme of French gray and white, with pink window hangings, opens off the main hall through a double-cased opening.

That there are advantages in having a parlor, no one—at least no housewife—will deny. Then why not have a parlor if you want one and call it a parlor, making it, as is this one, light, cheerful and beautiful, a place that will make one's visitors feel they have had the best the house affords?

After all has been said, it is not the arrangement of our rooms or what we call them, so long as they serve our purpose best. We of the present time were not the first to discover that the "best room" has seen abuse, for Whittier long ago spoke of "the best room stifling with cellar damp, shut from the air in hot midsummer, bookless, pictureless save the inevitable sampler hung over the fireplace, or a mourning piece, a green-haired woman, peony cheeked, beneath impossible willows."

The library or living room is made comfortable with window seats and a fireplace. On either side of the fireplace are bookcases, with doors heavily leaded with designs in keeping with the rest of the art glass throughout the house. These designs may be seen in the triple casement windows of the front and in the small windows above the cases.

The dining room, which is connected with both living room and main hall, has its ceiling beamed and the walls paneled. The features of this room are the built-in sideboard, complete in its detail, and the ample window seat, with its comfortable cushions and its beautiful setting of art windows above.



The kitchen arrangement is good, both as to lighting and the convenient placing of doors.

The second floor has large bedrooms and a good bathroom, each room being provided with plenty of closet space. The bathroom is provided with dustproof lockers for the linen. With the exception of the parlor, which is done in white enamel on whitewood, the woodwork of the main part of the first floor is of oak, finished dark brown. The service portion is finished in southern pine in the natural color.

The library walls are of a soft rich green, the ceiling a light buff. The dining room shades from burnt sienna in the panels to light orange in the ceiling.

Mr. W. G. Barfield of Chicago was the architect and Mr. J. G. Budde is the owner.

RESIDENCES

Artistic House Designs

SHOWING SOME FEATURES WHICH ARE UNUSUAL — PERSPECTIVES, ELEVATIONS AND FLOOR PLANS SHOWN — COLOR SCHEMES SUGGESTED

WE ARE herewith showing a house designed and built by Geo. O. Richardson, Waterloo, Iowa, and it is considered to be one of the best arranged houses to be built for the money. It was built of white pine and the inside finish of yellow pine, stained dark oak. The first floor is of hardwood

with the exception of the kitchen. The cost of this house was $2,200, or $1,900, exclusive of heating, lighting and bath. The following is a complete bill of all the material used:

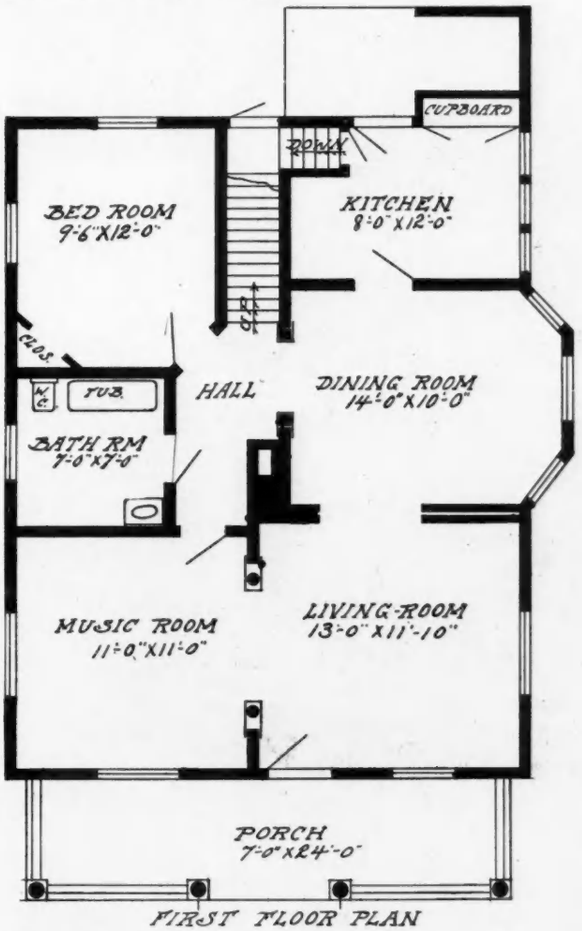
Lumber

105—2x8x14 ft. No. 1 pine.
12—2x8x16 ft. No. 1 pine.
115—2x4x16 ft. No. 1 pine.
25—2x4x14 ft. No. 1 pine.
20—2x6x14 ft. No. 1 pine.
155—2x4x18 ft. No. 1 pine.
85—2x4x12 ft. No. 1 pine.
2—6x8x14 ft. No. 1 pine.
2—2x6x16 ft. No. 1 pine.
400 ft. No. 1 common pine S2S, 1-10x16.
300 ft. No. 1 common pine, S2S, 1-6 x16.
5—1¼x10—12 C finish.
2—1¼x 8—12 C finish.
3—1¼x 6—12 C finish.
22—1x 8x16 Sel. common S2S.
2—1x12x14 Sel. common S2S.
1—1x12x16 Sel. common S2S.
16—1x10x16 Sel. common S2S.
5—1x 6x16 Sel. common S2S.
8—2x 4x16 Sel. common S2S.
1—2x 6x16 Sel. common S2S.
5—1x 4x16 Sel. common S2S.
15½ M. red cedar shingles, E*A* 6 to 2.
9¼ M. common No. 1 lath.
3540 ft. No. 3 shiplap, 12-14-16.
2000 ft. No. 2 pine sheathing, 12x14.
1800 ft. flooring maple, oak and yellow pine.
200 ft. porch flooring, ⅞x4x14, fir.

1900 ft. 4 in. sugar pine lap siding.
600 ft. 5/8 in. yellow pine ceiling.
253 ft. 3¼ in. crown molding.
400 ft. 2¼ in. bed molding.
200 ft. 7/8x1¼ cove molding.
200 ft. screen molding.
100 ft. 7/8 quarter round.

Window and Door Frames

4 window frames, 2-10x5-2.



FIRST FLOOR PLAN

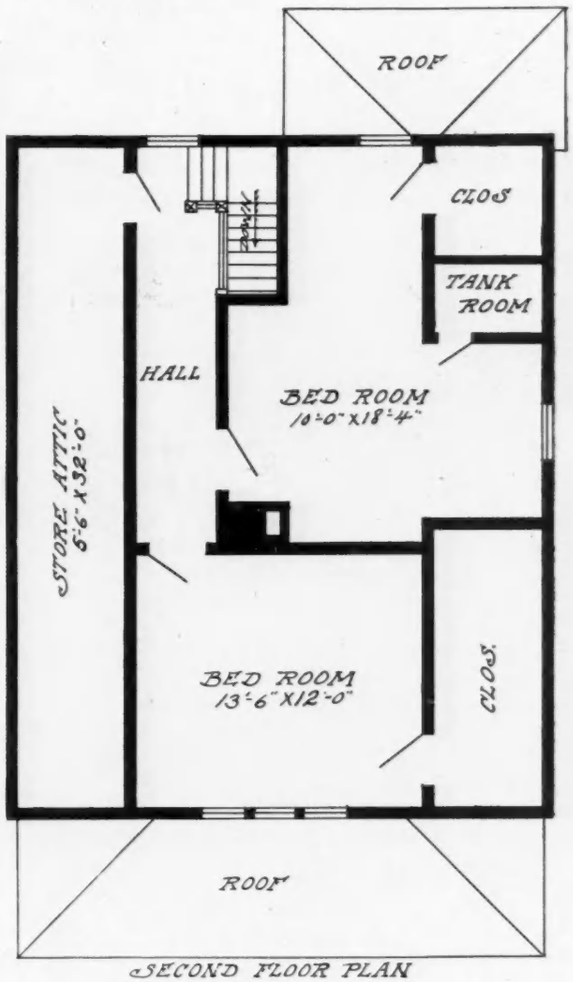
2 window frames, 1-10x5-2.
1 window frame, 3-8x5-2.
1 window frame, 4-0x5-2.
2 triple window frames, 18x20—2 light.
3 frames, 20x24—2 light.
1 frame, 20x20—2 light.
2 outside door frames, 3x7.
1 outside door frame, 2-8x6-8.

Windows

6—18x20—2 light D. S. windows.
2—18x28—2 light D. S. windows.
1—26x20—2 light D. S. windows.
1—40x28—2 light D. S. windows.
2—44x32—1 light D. S. windows.
4—30x28—2 light D. S. windows.
3—20x24—2 light D. S. windows.
1—20x20—2 light D. S. windows.
4—12x16—2 light cellar sash.

Doors

1 front door, 3x7x1¾, bevel plate glass 24x40.
1 door, 3x7x1¾.
1 door, 2-8x7x1⅜.
2 doors, 2-6x7x1⅜.
2 doors, 2-4x7x1⅜.
1 door, 2x7x1⅜.
2 doors, 2-6x6-6x1⅜.
3 doors, 2-4x6-6x1⅜.
1 door, 2x6-6x1¼.
1 door, 2-8x6-8x1⅜.
1 door, 5x7x1¾.
1 door jamb, 8x7 ft.
1 door jamb, 5x7 ft. 3 in.
1 door jamb, 5x7 ft. 5 in.
1 door jamb, 5x7 ft. 5½ in.
5 door jambs, 2-8x7 ft. 5½ in.
2 door jambs, 2-6x6-6 ft. 5½ in.
428 ft. base molding, No. 8420.
428 ft. base, No. 8421.
428 ft. shore, No. 8422.
560 ft. casing, No. 8310.



SECOND FLOOR PLAN

280 ft. embossed molding, No. 8413.
204 ft. cap molding, No. 8410.
180 ft. head casing, No. 8411.
180 ft. fillet, No. 8395.
50 base blocks, No. 2273.
48 ft. window stool, No. 8267.
72 ft. window apron.
456 ft. window stop, No. 8095.
4 porch columns, 8x8 ft., No. 1151.
2 colonnade posts, 5 ft. 6 in. base.

50 balusters, 1¾x24 in., No. 2151.
1 1¼x8 ft. yellow pine.
1 1x10 in. x16 ft. yellow pine.
3 cupboard doors, 1-8x4 ft.
2 cupboard doors, 1-8x2-6.

Foundation, Plaster and Chimney

9 cords stone.
96 cement blocks.
47 sacks plaster.
8 yds. sand.
11 bbls. lime.
1 bbl. cement.
1100 brick.

Hardware

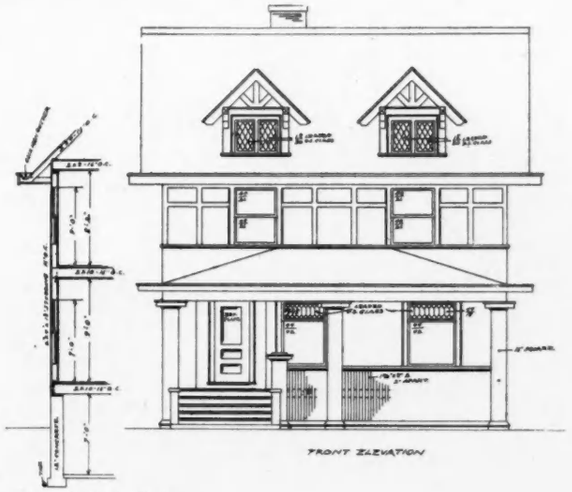
100 lbs. 10 d. wire.
122 lbs. 8 d. wire.
107 lbs. 20 d. wire.
9 lbs. 6 d. wire.
62 lbs. 3 d. gal. wire.
57 lbs. 3 d. fine.
12½ lbs. 10 d. casing.
53 lbs. 8 d. casing.
23 lbs. 8 d. finish.

25 lbs. 7 d. box.
13 inside door lock sets.
1 single sliding door outfit, 5 ft. opening.
1 single sliding door lock set.
1 doz. cupboard catches.
1 doz. sash locks.
1 doz. drawer pulls.
18 prs. door butts, 3½x3½.

LEFT SIDE ELEVATION

LEFT SIDE ELEVATION

1 doz. fancy box hinges.
3 doz. window springs.
1 pr. shelf brackets, 8x10.
1 pair shelf brackets, 10x12.
12 doz. 7/8 screws.
2½ lbs. 1 in. brads.
27 ft. valley tin, 14 in.

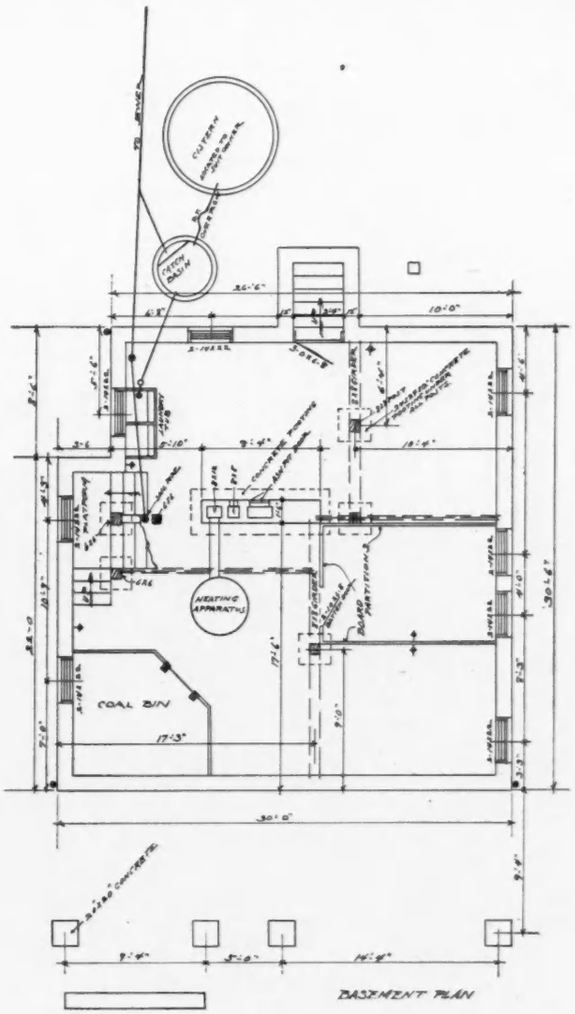


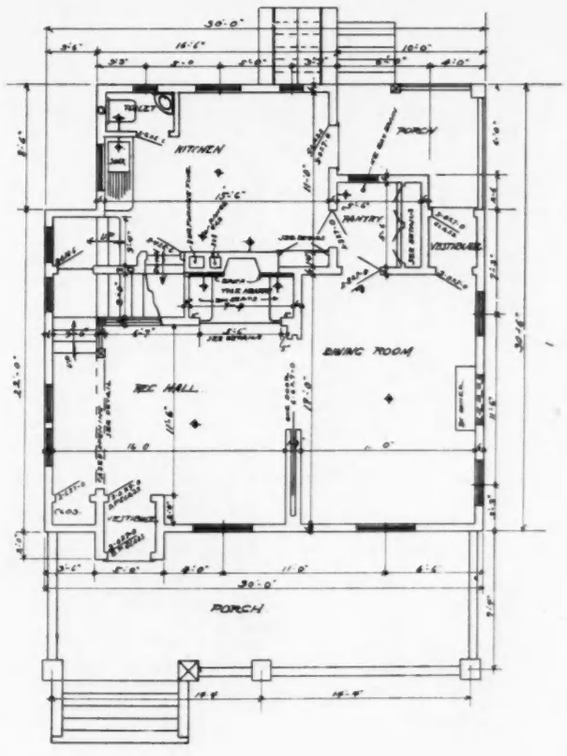
32 window tins.
176 tin shingles, 5x7.
19 8 ft. lengths ridge roll.
50 wire screen, 24 in.
50 wire screen, 32 in.
2 screen doors, 3x7.
2 stove pipe thimbles.
7 10 ft. lengths eave trough.
4 pieces outlet.
6 end caps.
8 eave trough elbows.

3 doz. eave hangers.
5 pieces conductor pipe, 8 ft.
2 bundles sash cord.
200 lbs. window weights.

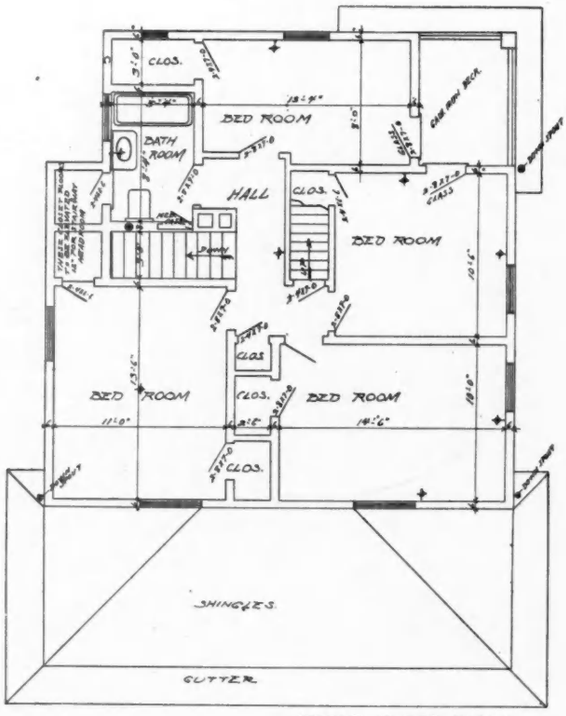
Painting and Oiling

2½ lbs. putty.





1 lb. steel wool.
15 sheets sand paper.
1 gal. floor oil.
1 gal. floor varnish.
3 gal. interior varnish.
4 pints burnt turkey umber.



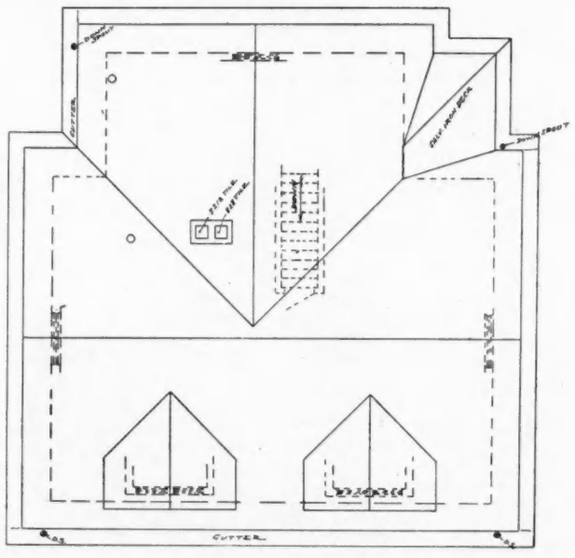
SECOND FLOOR PLAN

7 gal. linseed oil.
2 gal. turpentine.
7 gal. outside white paint, prime and trim.
4 gal. yellow stone paint for body.

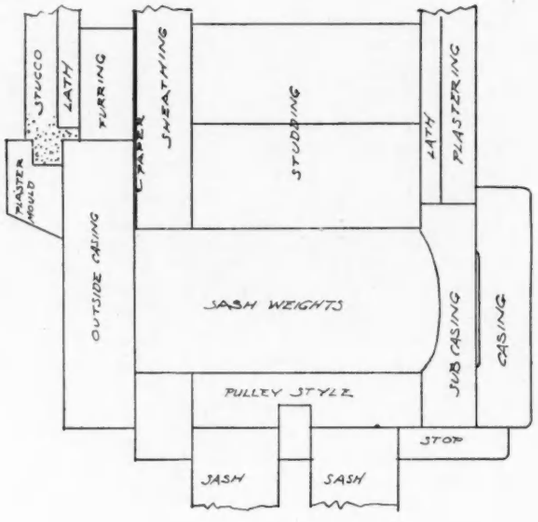
Total cost of labor, including stone work, plastering, painting, oiling, carpenter, and excavating, $500.00.

Cement Plaster House

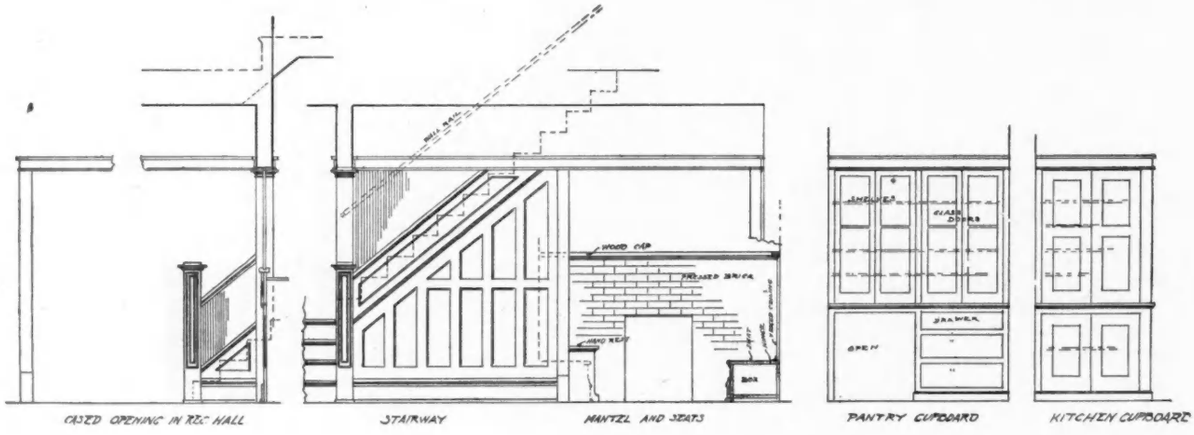
On page 232 we are showing the perspective and complete plans of a cement plaster house. Any color can be had, as all desired shades are now produced. This form of building is becoming very popular, not only because of its splendid appearance, but owing to its lasting qualities. When the house is once built the question of repainting is entirely done away with and general repairs are reduced to a minimum.



ROOF & ATTIC PLAN



DETAIL OF WINOW FRAMES



CASED OPENING IN REC. HALL
STAIRWAY
MANTEL AND SEATS
PANTRY CUPBOARD
KITCHEN CUPBOARD

There is a well lighted basement under the entire house and it is divided into laundry room, furnace room, fuel room and storage rooms. There are concrete footings under all the posts and the foundation is also of concrete.

The first floor is divided into a large reception hall, dining room and kitchen. The reception hall eleven and one-half by sixteen feet and contains a large tile hearth. Two box seats are located on either side of the hearth. The dining room is divided from the reception hall by means of a sliding door. Between the dining room and the kitchen is the pantry, both entrances being equipped with swinging doors. There is also a rear entrance to the dining room from the rear porch. The kitchen is large and well fitted up and also has the convenience of a toilet. The second floor is reached both from the reception hall and kitchen, there being a common landing. The second floor has four bed rooms and a bath room. Each room has a clothes closet and enters directly into the hall. The details give an excellent idea of the finish of the various parts of the house and the dimensions on the various floor plans are also a great aid.

Concrete Block House

On this page we are showing a concrete block house built for O. M. Sholl, Muskogee, I. T., with blocks made on a Waterloo concrete brick and block machine. The porch and balcony across the entire front of the house are constructed of wood, but rest upon concrete block pillars.

The first floor is divided into a large reception hall, parlor, living room, dining room and kitchen. The reception hall is twenty-seven feet long and contains the stair to the second floor and also to the cellar.

The parlor is divided from both reception room and living room by sliding doors which, opened, make one large open series of rooms especially adapted for social gatherings of all kinds.

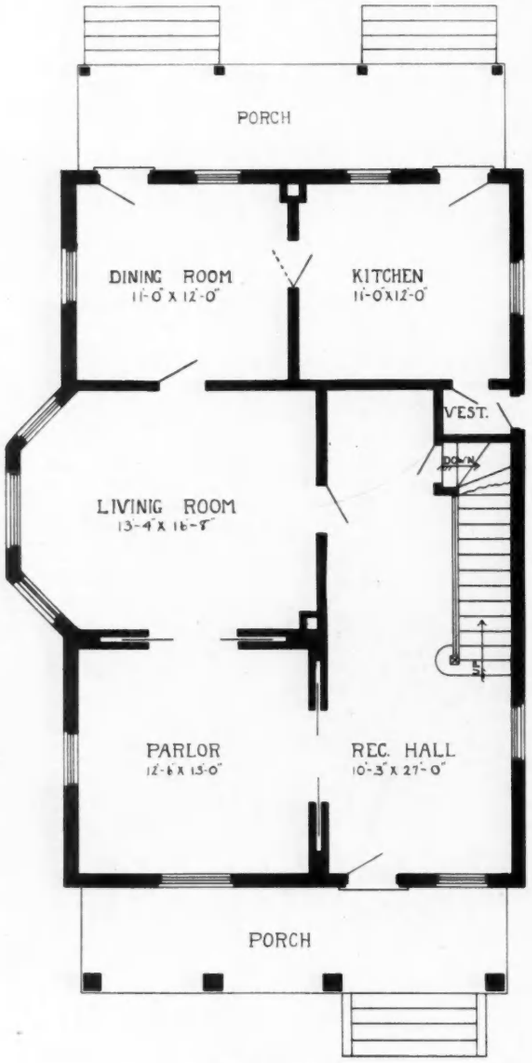
The second floor is divided into four bedrooms and a bath-room. The bedrooms are all well lighted and so arranged that good ventilation can be had. There is a door leading from one of the bedrooms onto the balcony, which is a desirable feature, especially on warm evenings. The bath-room is located directly above the kitchen, thus simplifying the entire plumbing system. The building of a frame porch takes away from the otherwise monotonous appearance.

The Waning Hardwood Supply

Although the demand for hardwood lumber is greater than ever before, the annual cut today is a billion feet less than it was seven years ago. In this time the wholesale price of the different classes of hardwood lumber advanced from 25 to 65 per cent. The cut of oak, which in 1899 was more than half the total cut of hardwoods, has fallen off 36 per cent.

Yellow poplar, which was formerly second in point of output, has fallen off 38 per cent, and elm has fallen off one-half.

The cut of softwoods is over four times that of hardwoods, yet it is doubtful if a shortage of the former would cause dismay in so many industries.

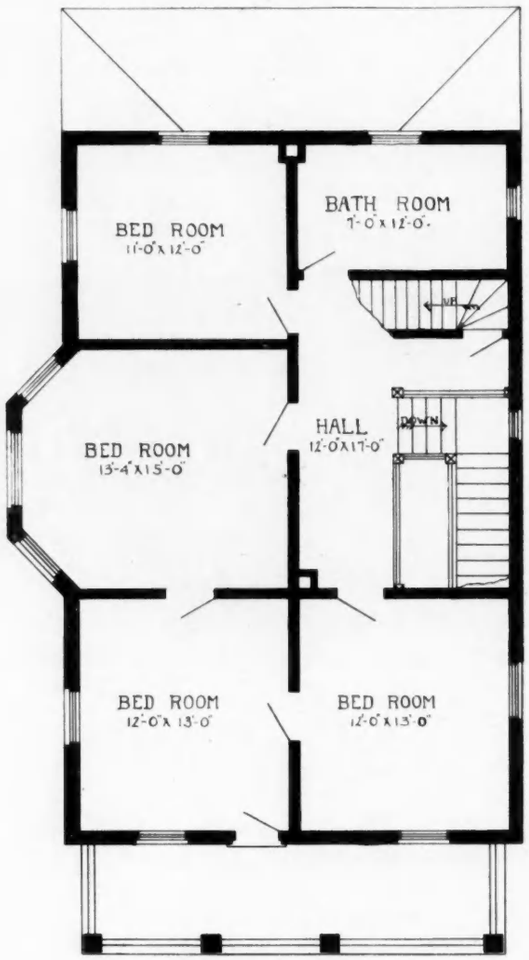


First Floor Plan

The cooperage, furniture and vehicle industries depend upon hardwood timber, and the railroads, telephone and telegraph companies, agricultural implement manufacturers and builders use it extensively.

This leads to the question, where is the future supply of hardwoods to be found, The cut in Ohio and Indiana, which, seven years ago, led all other states, has fallen off one-half. Illinois, Iowa, Kentucky, Michigan, Minnesota, Missouri, New Jersey, Tennessee, Texas, West Virginia and Wisconsin have also declined in hardwood production. The chief centers of production now lie in the lake states, the lower Mississippi valley and the Appalachian mountains. Yet in the lake states the presence of hardwoods is an almost certain indication of rich agricultural land, and when the hardwoods are cut the land is turned permanently to agricultural use. In Arkansas, Louisiana and Mississippi the production of hardwoods is clearly at its extreme height, and in Missouri and Texas it has already begun to decline.

The answer to the question, therefore, would seem to lie in the Appalachian mountains. They contain the largest body of hardwood timber left in the United States. On them grow the greatest variety of tree species anywhere to be found. Protected from fire and reckless cutting, they produce the best kinds of timber, since their soil and climate combine to make heavy stands and rapid growth. Yet much of the Appalachian forest has been so damaged in the past that it will be years before it will again reach a high state of productiveness. Twenty billion feet of hardwoods would be a conservative estimate of the annual



Second Floor Plan

productive capacity of the 75,000,000 acres of forest lands in the Appalachians if they were rightly managed. Until they are we can expect a shortage in hardwood timber.

Circular 116, of the Forest Service, entitled "The Waning Hardwood Supply," discusses this situation. It may be had upon application to the Forester, Forest Service, Washington, D. C.

FARM BUILDINGS

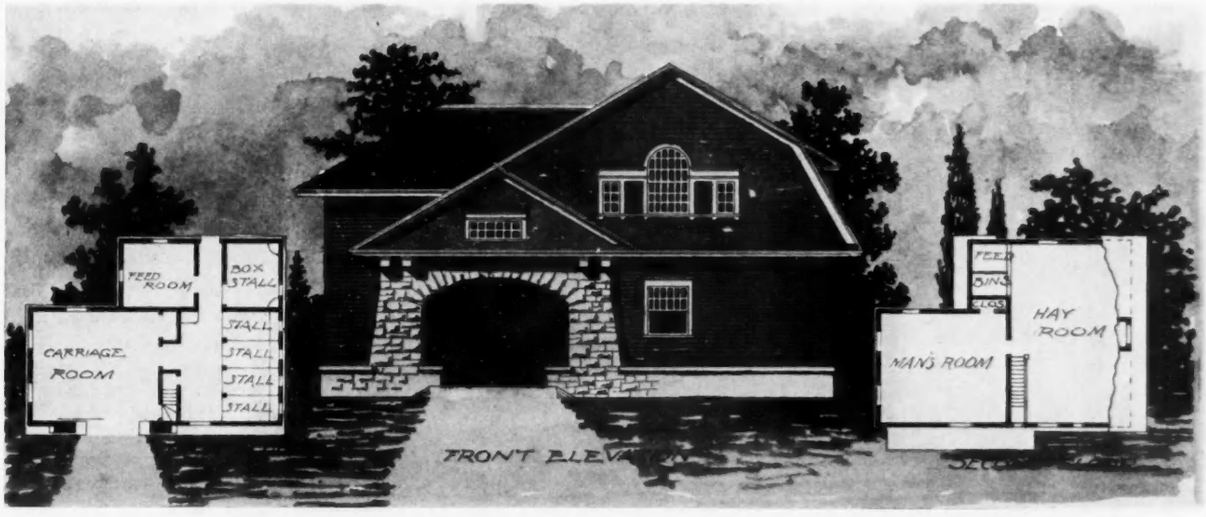
HENRY H. NIEMANN

Practical Residence Barn

CAN BE USED FOR EITHER HORSES AND CARRIAGES OR AUTOMOBILES—COLOR SCHEME SUGGESTED TO PRODUCE BEST RESULTS

THE barn hereby illustrated was designed for a residence barn for the use of four carriage horses and a spare box stall which could be converted into a cow stall if desired. The carriage room is extra large and the main entrance to this room is also extra wide so that large automobiles can be sheltered as well as large carriages. The carriage room is also provided with a closet for harness and tools, and doors leading to the stalls and stairway.

The exterior color scheme for this building is as follows: The stone is of a grey lime stone with black mortar joints. The cornice work, trimmings, window frames and sash are white enameled. The vertical side walls are of undressed boards (cypress) stained brown. The gables are shingled and stained brown and all roof surfaces are shingled and stained.



The feed room is convenient to the stalls and is provided with spouts run down from the feed bins, which are located on the second floor directly over the feed room. This room can also be conveniently used as an auto repair room by placing a door between the feed room and carriage room.

The exterior has been carefully designed along the lines of a bungalow. This style of architecture is now becoming very popular for country and suburban houses and can very successfully be carried out on all barns and shelter sheds. The windows have been well placed for practical use and made of the size and shape to give the best exterior effect, as upon the placing and shaping of the windows largely depends the beauty of a building of this kind. One of the main features of this design is the large rubble stone arched doorway and the stone base which runs two feet above the floor, all around the building and thus preventing any moisture from the ground coming into contact with the wood work.

A Plastering Wrinkle

Some architects are now including in their plastering specifications instructions that the plaster must be cut down the corners with a trowel when it is put on. The purpose is to prevent cracks from shrinkage. It is argued that when plaster is cut through at the corners with a trowel it will leave it free to shrink in drying and thus prevent in a great measure the ugly cracks that sometimes disfigure the walls. The instructions apply not only to room corners, but especially to corners around flues and chimneys. They want what cracks there are to be in these corners, ready made and straight, so that they will not show so plainly. And besides, it is easier to fill them, or when paper is used on the walls, it will cover over them without their showing. If this is a new idea to you, try it once and see whether it is a wrinkle that is worth while or not.

Painting Galvanized Iron

HOW TO TREAT IT TO GET BEST RESULTS—REPAINTING SMOKY WOODWORK—REMOVING STAINS FROM WOOD

ONE of the most difficult surfaces for the painter to coat successfully is galvanized iron. This is due to the fact that after the sheets of steel are dipped into the melted zinc, which forms the coating, they are then dipped in a non-drying oil, such as palm oil, while still hot, for the purpose of preserving them from atmospheric action. This oil has a tendency to throw off any paint; and in addition to that, the zinc coating offers a surface which seems to particularly repel the coat of paint, causing it to peel off in shreds. Red lead, which clings to ordinary iron work with remarkable tenacity, will not hold at all upon galvanized iron, unless it has been previously treated with something that will neutralize the oil and change the metallic surface of the zinc to a gray oxide. These changes will occur naturally if the galvanized iron has been exposed to the action of the weather for several months or a year, before it is painted, but most people are unwilling to wait so long.

The simplest treatment for galvanized iron is to wash it with vinegar or dilute acetic acid, which will neutralize the oil, and then to prime it with Prince's mineral brown, thinned with half oil and half turpentine. This is said in most cases to prove satisfactory. Care must be taken to avoid the cheap metallic paints that are made from the spent pyrites used in the manufacture of sulphuric acid. These paints are good enough to paint barns and box cars, or other wooden surfaces, but they contain considerable sulphur, which will unite with rain and moisture to form sulphuric acid and will rapidly eat holes through any tin or iron surface upon which such paint may be applied. After the priming coat has been allowed to harden, any good oil paint may be used for the final coats.

A painter connected with the New York Central Railroad recommends the use of a mixture of ninety parts vinegar and ten parts muriatic acid as the preliminary wash. For the priming coat, he uses Prince's mineral brown, thinned down with turpentine to make an egg shell finish.

A preliminary wash for galvanized iron that is highly recommended is made by dissolving two ounces of chloride of copper, two ounces of nitrate of copper and two ounces of sal ammoniac in one gallon of water and then adding two fluid ounces of crude hydrochloric acid. This solution must be made in glass bottles or earthenware jugs or vessels to prevent precipitation of the copper salts. The entire surface of the galvanized iron is coated with this solution. It turns the iron black at first, but after the solution has dried over night, the metal will become light gray in color owing to the formation of oxide of zinc, the same gray film that would be formed on the surface of the galvanized iron by several months' exposure to the weather. On a surface so prepared a coat of red lead thinned with half raw linseed oil and half turpentine will adhere firmly, and may be followed by subsequent coats of paint that are rich in oil.

Another preparation for galvanized iron that is highly recommended is the Concentrated Galvanic Primer, made by Rinald Brothers, of Philadelphia. This is diluted with water and applied with large brushes in a very similar manner to the wash mentioned above. At a convention of railroad painters last year, it was stated that very satisfactory results had been obtained with this primer on the galvanized iron shed of a ferry house at Camden, N. J.

Repainting Smoky Woodwork

One of the subscribers of the AMERICAN CARPENTER AND BUILDER has had an experience in refinishing the woodwork of a kitchen, which is not unusual, although always annoying. As was natural, the woodwork had become very much smoked, as the kitchen had been constantly used for about twenty years, and it had been that length of time since the woodwork had been varnished. The woodwork was to have two coats of paint. It was first scrubbed and then given a coat of shellac. After this was dry it was painted with a paint that had been mixed to dry in about eight hours, but at the end of thirty-six hours it had dried only in those places where the smoke and grease had not been very bad. The painter next gave the whole surface a coat of liquid drier—or japan. This caused the paint to dry and he was able to give a second coat of paint, which seemed to turn out all right, although he fears it may crack. It would surprise us very much if it does not crack, because he has covered up a practically soft and non-drying coat of paint with a hard and inelastic film of japan, which

building trades.—T. J. Donovan, San Francisco, Cal. must yield, sooner or later. Our subscriber seems to think there ought to be some simpler way to repaint smoky and greasy woodwork than by going over it four times in order to put on two coats of paint.

There is no greater trouble causer in repainting than smoke and grease, and it must be thoroughly removed or it will be impossible to get the paint to dry satisfactorily. Mere scrubbing with soap and water is usually insufficient to clean off all the grease and smoke, and it is better to use a fairly strong solution of concentrated lye, washing soda or pearlash. These act very injuriously on the hands and the workman should use rubber gloves in applying them. As they also act upon the surface of the paint, and if left upon the surface, would act destructively on subsequent coats of paint, they should be thoroughly washed with plenty of clean water, and then the woodwork should be given a coat of vinegar or dilute acetic acid to neutralize any of the alkali that may be left, before the work of repainting is begun. It is only by thoroughly removing the grease and smoke that satisfactory results can be obtained.

Another plan that might have been pursued would have been to rub the surface down with pumice stone or with flour of pumice on rubbing felt, or to cut it down with fine sandpaper or steel wool, while it is still softened by the soap and water.

The New York Central Railroad, in cleaning passenger coaches preparatory to revarnishing, uses a solution of two parts of commercial muriatic acid to five parts of water, instead of soap or lye. Where the surface is very dirty or greasy, the proportion of acid is increased. It is applied with a scrubbing brush and washed off with water. This treatment is specially useful where it is not desired to injure the varnish coat, but simply to clean it preparatory to applying new varnish over it. Where the surface is very greasy it may require a second application.

In the case referred to by our subscriber, we believe that the most satisfactory results would have been obtained by removing the old varnish with ammonia, or a neutral varnish remover, before painting. Either three coats of paint or one coat of shellac and two coats of paint should be given in order to secure satisfactory results. It is far better to explain the difficulties of the case and to get a satisfactory price for doing the work right than to attempt makeshift methods that are sure to prove unsatisfactory in the end.

Smoke stains on plastered walls are often a source of great annoyance to the painter, since they will come through and stain paint or wall paper and are well nigh impossible to cure. A method that is recommended for cleaning a smoky ceiling that is to be painted in calcimine or distemper color is to first brush the ceiling thoroughly and then wash it with a strong solution of pearlash and immediately rinse thoroughly with clear water. When this is dry, the ceiling should be given a thin coat of freshly slaked lime, to which a fair portion of alum dissolved in hot water should be added. When this is hard a coat of glue size, or better a thin varnish size, made by thinning a good grade of hard oil finish with turpentine, should be given before the water color is applied.

A class of stains that require radical measures to cure are those caused by smoky or smutty bricks and laths containing bark. The only remedy for these stains is to cut out the plaster and remove the brick or the lath. These stains will come through shellac or any similar coating that may be applied. The writer had an experience with one case where the stain from a smutty brick came through a marble slab five inches thick and discolored it.

It was stated, however, by a painter at the New Jersey State Convention of Master House Painters and Decorators, in July last, that a process of painting known as the salt process is not only effective in preventing stains of this character from coming through, but it can also be used with good satisfaction on a freshly coated cement surface. By this process ten pounds of salt and three gallons of boiling water are used in thinning one hundred pounds of white lead in oil that have first been broken up in one gallon of oil. The hot salt solution is stirred in slowly until the whole has been added, and then the mass should be stirred for some twenty minutes longer. This will be of the consistency of soft soap, and must be thinned with pure linseed oil to a working consistency. The first coat of paint of this character will dry flat and the second coat will have a varnish like gloss. This can be colored as desired, but the effect of such a gloss coat is very different from the soft, velvety appearance of a calcimined ceiling.

Removing Stains from Wood

One of our subscribers desires a method of removing stains from an oak and cherry hardwood floor, which have been caused by allowing wet iron nails and tools to remain upon it for a few hours.

There are several methods of removing stains from wood, or bleaching it. We presume the floors have not been varnished, and that the stain is in the wood itself, and not on the varnish. Probably the most effective bleacher for taking stains of all kinds out of wood is oxalic acid, dissolved in hot water, about one pound to the gallon. Vinegar or acetic acid may be added for particularly bad stains. This solution may be applied hot, and must be allowed to become thoroughly dry before the wood is varnished or otherwise finished. Oxalic acid will take out weather stains and similar discolorations. Sometimes more than one application is necessary. It is best to wash the oxalic acid off the surface with clean water, after it has become thoroughly dry, or to treat it with vinegar or acetic acid.

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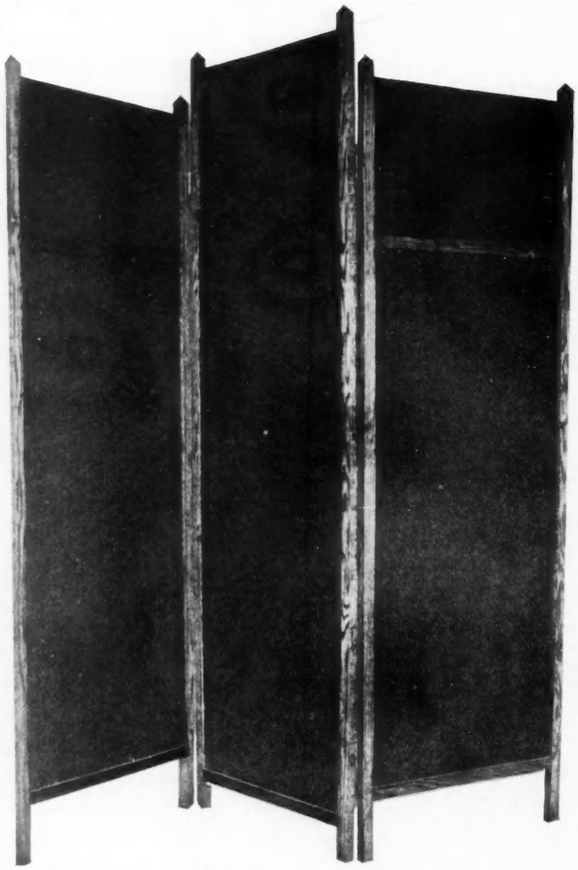
I want to say that the AMERICAN CARPENTER AND BUILDER ought to interest anybody connected with the

Something the Boys Can Make

COMPLETE DESCRIPTION WITH DRAWINGS SHOWING HOW TO MAKE A THREE-PART SCREEN—MATERIAL TO USE AND DIMENSIONS AND FINISH OF SAME

WE SHALL describe this month a three-part screen designed and built by Mr. Earl N. Rhodes, of the Hawthorne School, Oak Park, Illinois.

Usually, one or the other of two objections may be applied to store bought screens. They are so heavy that they cannot easily be moved or, if not heavy, they are so weak structurally that they will not stand



rigidly. This design is singularly free from either of these objections. The frame is light, being made up of seven-eighth inch square pieces. The panels are filled with art burlap or monk's cloth, stretched on light frames of three-eighths inch whitewood. The oak parts are thoroughly mortised and tenoned together.

It will be found more economical to buy the stock in as few pieces as possible. For the oak uprights and rails, secure a board, mill-planed to seven-eighths of an inch, with a width of ten inches and a length of sixty-four inches. Fig. 1. Red or white oak may be used and it may be quarter-sawed or plain.

For the frames which are to support the burlap there will be needed a piece of yellow poplar, mill-planed to three-eighths of an inch, with a width of twelve inches and a length of nine feet six inches. Fig. 2.

Smooth the two sides of the oak board with smooth plane and scraper. Remember that the stock is of such thickness as to allow of no more being planed off than just what is necessary in order to remove the millmarks.

To get the most out of the board and save time and labor as well, joint—that is, straighten and square—one edge of the board. Set the gauge to seven-eighths, gauge and rip close to the line. Plane to the gauge line on this piece. Repeat until nine pieces the length of the board have been obtained, marking each with face marks.

From these pieces select four and square one end of each. Place these pieces on the bench, side by side, and even the squared ends by means of the trysquare. Measure from the squared ends fifty-eight inches—Fig. 3—and square a sharp pencil line across the four pieces. Now separate and square these lines entirely around each piece. These lines locate the lower edges of slopes of forty-five degrees which are to be placed on the tops of the uprights.

Before sawing and planing these slopes select two more pieces. These are for the uprights of the middle section. Square the ends and measure from them sixty-one and one-half inches, squaring lines entirely around each piece at this point.

These slopes can best be laid off by means of the bevel. Set the blade to an angle of forty-five degrees by holding the beam against the blade of the steel square and moving the blade of the bevel so that it shall rest upon similar marks on blade and tongue of the steel square.

With the bevel, mark the slopes on opposite sides of each piece. Saw close to these lines and finish with the plane. This shapes the ends like a house roof with gabled ends. Connect, with straight-edge,

the middle of the ridge to the four corners and chisel or saw, then plane to these lines.

Prepare the cross rails by sawing off nine pieces of the stock squared to seven-eighths inch by seven-eighths inch to a length of eighteen and one-half inches each. These pieces have tenons on each end. Care should be taken to saw them off square and to the lines, so that no end planing need be done.

These tenons may as well be laid off and sawed now. Place the nine pieces on the bench side by side

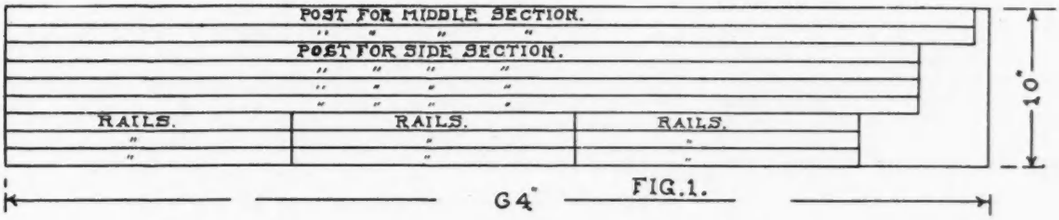


FIG. 1.

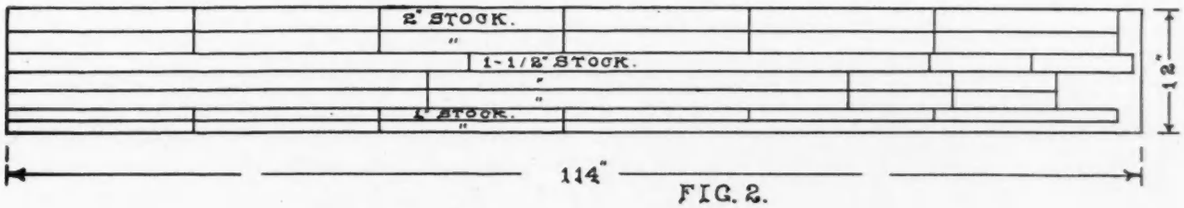


FIG. 2.

and even the ends with the trysquare. If it is not found convenient to handle so many at once, take a fewer number. When the first lot has been marked one of these may be placed with the second lot to insure their having the same length. From one end measure one-half inch and from this point seventeen and one-half inches. Square knife lines across the lot at these two points, set the gauge first to one-quarter of an inch and gauge from a face side on two opposite sides as far back as the knife lines, and on the ends of each piece at each end. Fig. 3. Again, set the gauge to five-eighths and gauge as before.

With the tenon saw rip the tenons to thickness and cross-cut the shoulders.

The mortises of the four uprights of the same length may be laid out together. Place the pieces side by side with the lower ends even and the pieces turned so that they pair. One set of face marks on all pieces must, when the parts are assembled, be on one and the same side of the frame, while the other set must face "in." In marking for the mortises the "in" faces should be turned upward.

Measure from the lower end four and one-half inches; then from this mark seven-eighths of an inch; from this, thirty-nine and three-eighths inches; from this, seven-eighths of an inch; then, ten inches; finally, seven-eighths. There should remain one and one-half inches to the lower edge of the bevel. Square knife lines across at these points.

Pair the two longer uprights and measure on the "in" faces as follows: From the lower end, two and one-half inches, seven-eighths, forty-four and seven-eighths inches, seven-eighths, ten, finally seven-eighths of an inch. There should remain one and one-half inches. Carry the lines across at these points. Fig. 4.

Between the lines which are seven-eighths of an inch apart gauge from the face with the gauge set first to one-quarter, then to five-eighths of an inch.

Cut these mortises with a three-eighths inch chisel to a depth of one-half inch full. Keep the ends of the mortises clean cut and sharp, otherwise they will show badly. Scrape and sandpaper the pieces carefully.

Glue and clamp the parts together, taking care to place the faces either "in" or to one and the same side. Use the steel square to test the corners while clamping, and so place the clamps that the faces level when the straight-edge is placed across any two pieces at a corner.

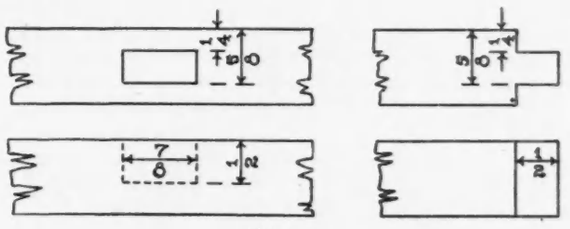


FIG. 3.

When these have set over night, scrape off the surplus glue and stain and fill as desired. When stain and filler have dried the parts may be waxed, or if preferred given a very thin coat of shellac. There are many prepared stains on the market now. As these pieces are small, no trouble will be had in following the directions which always are sent with them.

The hinges are the kind called double-acting and allow the wings to be swung either way with reference to the center. The lower ones should be set about seven inches above the floor, and the upper ones about six inches below the top of the side wings. In fastening the hinges but one screw-hole for either side

can be seen. Put the screw in this one, swing the hinge and the other will appear.

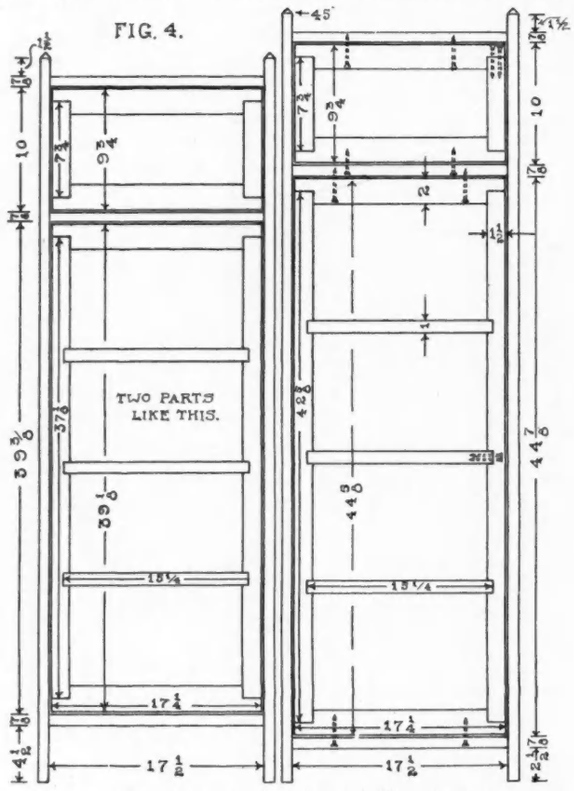
Now for the whitewood frames which are to support the burlap. Three of them are to be of the same size. Fig. 5.

Time will be saved by ripping up the three-eighths inch board to the proper widths. Fig. 2. Joint gauge and rip as was done with the oak.

For the three like frames there will be needed six pieces two inches wide by seventeen and one-quarter inches long. Saw accurately and squarely, as no end planing is to be done on any of these pieces. Also six pieces one and one-half inches wide by seven and three-quarter inches.

For the lower frames of the two wings get out four pieces one and one-half inches wide by thirty-

FIG. 4.



seven and one-eighth inches long. For the lower center panel, two pieces of the same thickness with a length of forty-two and five-eighths inches should be squared up. In addition to these pieces, the three lower panels will require six pieces two inches by seventeen and one-quarter inches, and nine pieces one inch by fifteen and one-quarter inches.

Fig. 4 shows the manner in which the upper panels are framed. Lines are squared around the two-inch pieces at one and one-half inches from each end. The gauge is then set to one inch and lines gauged from what is to become the outer edges, as far back as the knife lines. The tenon saw is used to rip and cross-cut these corners.

Very thin wire nails are used to fasten the parts together.

The corners of the lower panels are framed in the same way. The side pieces are prevented from being sprung together when the burlap is drawn tight by having three one-inch cross pieces framed into them to a depth of one-half an inch. Place the four like side pieces on edge, even the ends and measure and mark. Square two lines an inch apart at the middle of the pieces, lengthwise. Also, put lines an inch apart at the middle of the two resulting spaces. Fig. 6. Square these lines across the faces; gauge for depth; saw and chisel. The two side pieces of the lower central panel may be similarly laid out and cut.

The designer shows his ingenuity in the way he fastens the panels so that the fastener shall not show.

Before the frames are covered with burlap, the two rather stout wire nails are firmly fixed in the top rails as shown in Fig. 4. They should project not over one-half an inch. Corresponding to these nails, holes just large enough and deep enough to receive them are bored in the top and middle rails, from the under side.

Two nails are now firmly set in each of the middle and lower rails, Fig. 4, so that their points shall extend upward about half an inch, or it may be more in this case. After having marked and bored holes in the lower rails of the burlap frames, drive these nails back so that their points are flush with the surface.

Cover the frames, using small carpet tacks for fastening. The burlap is to be drawn over both sides and tacked in the edges of the frame. The tacks will then be hidden when the frame is in place.

The burlaps come in a great variety of colors; a soft or dull green or brown will look pretty. Monk's cloth makes the best covering.

Having covered the frames, insert the nails, which they contain, in the top rails, into the holes prepared for them in the oak. The upper frames must be put in place first, of course. Drive up the nails, which were placed in the middle oak rails, into the holes made for them in the burlap frames.

In like manner place and fasten the lower burlap frames.

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Mahogany as Railroad Timber

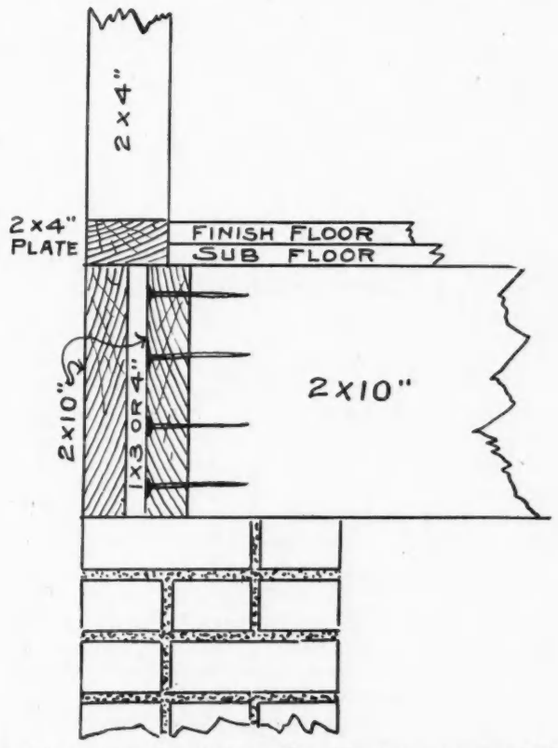
Sir William Van Horn, the Canadian railroad magnate, who is at the head of great railroad projects in Cuba, has discovered that his contractors and engineers have been using mahogany for railroad ties and bridge timber, and he has called a halt in the practice, as he regards it as a crime to cut small mahogany trees, and there is plenty of other timber in the forests suitable for construction purposes. A bridge on the Cuba railroad, near Santiago, is built entirely of mahogany, but in violation of orders. The contractor did not know, or claimed not to know, that the caoba tree, as it is called in Spanish, was the mahogany which Sir William had tabooed, and the latter did not learn that he had a mahogany bridge on the line until it had been in use for several months.

Correspondence

How to Make a Sill Rat Proof

To the Editor: Charleston, W. Va.

I see in the July number an article by J. H. Godfrey, on rat proofing a house, also in the September number a reply to same by George A. Sly. Herewith inclosed you will find a sketch which will explain itself. This is my way of making a sill and rat proofing a house at the same time. The objections I see to Mr. Godfrey's plan is that it leaves the ends of



the joists without protection and without any brace, which, under heavy weight, would be inclined to creel or fall. The objection to Mr. Sly's plan is that on a pillar foundation it makes a weak sill. The accompanying sketch shows the construction of a very strong sill either for a solid wall or a pillar foundation and makes the walls perfectly rat proof and also draught proof. In case of using a sub-floor, the sill make a good support for the ends of the sub-floor. I hope this may be of some benefit to the readers of your journal.

W. A. Foster.

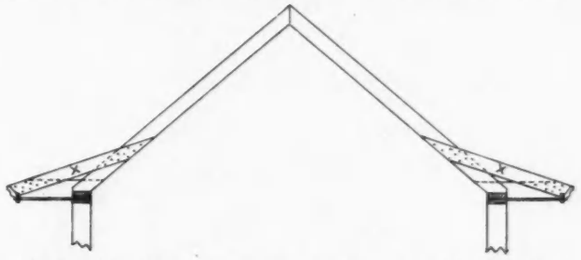
Two Good Questions

To the Editor: Ames, Iowa.

I have two question that I would like to have answered through your paper.

First.—What is the proper name for the lower piece of a rafter when it breaks off from the main rafter, as shown in the diagram. The pieces marked X is the part referred to.

Second.—Which should be given first, the run or the rise, when telling what figures to use on the steel square to find the bevels for rafters? I have noticed that some give it one way and some another. The same man will give the run in one place first and the rise in another, for example, take the one-third pitch. He will say, 12 and 8 for the seat and plumb cuts of the common rafter; then he will say 8 and 17 for the corresponding cuts for the hip or valley. So there seems to be no standard among the writers on the subject, and I have noticed that it confuses some workmen that are not familiar with roof framing. I am much interested in roof framing problems, having been studying the subject for years, and have had fair success in practice. I do most of my figuring



with the aid of the square as my mathematical knowledge is limited. The problems published in the American Carpenter and Builder have been of great help to me and have no thought of trying to get along without it.

Wishing you all the success possible in furthering the good work, I will close for this time. Ira St. John.

Answer: In answer to the first question, will say that there does not seem to be a standard name for the rafter in question, probably from the fact that it is very generally used and is of comparatively new origin. However, it is quite the style in some sections of the country, and of more recent years, to give this rafter a sweeping curve which, if properly proportioned, gives the house a pleasing architectural appearance. It has some advantage in allowing the cornice to be raised higher than would be the case with the one plane roof, thereby relieving that squatty appearance in two-story houses, especially where 18 foot posts are used, as it allows more room for the frieze above the windows. On the other hand, it has its disadvantages in the shingling of the roof in either case, whether it is curved or not. Because the shingles are more or less in a strain in the curve or at the bend and being at the lower edge of the body of the roof, they not only have to carry the water that falls on them but all that falls on the roof above, and being of a lesser pitch they are slower to shed the water, consequently will hold the moisture longer and necessarily will be the first part of the roof to give out. Pardon us. We did not mean to get so far away from the question asked, but could not resist the opportunity in calling attention to the merits and de-merits of such construction. The name of such rafters may properly be called "look-out

rafters," since they are a separate piece from the main rafter and help to form the look-outs for the upper part of the cornice.

As to the second question—it has long since been the recognized custom to give the width first for all kinds of mill work, such as doors, sash, etc. The same rule should apply to framing work, because the run represents width or space covered by the rafter and should therefore be given first. For the example in question—12 and 8 for seat and plumb cuts of the common rafter—17 and 8 for the corresponding cuts for the hip or valley. It is better to always take the figures 12 and 17 on the tongue, because they are standard for any regular pitch; the blade will admit of from 1 to 24 inch rise per foot, besides giving a greater range of side cuts without change of figures on the tongue. Then again, it helps to familiarize the mind on which member of the square gives the desired cuts.

A. W. Woods.

How to Use the Octagon Scale

To the Editor: St. Louis, Mo.

On the tongue of most all steel squares there is a row of dots enclosed between two lines and figured to a scale of tenths. Will you please explain what this is for and what use is made of it? Wm. H. Jones.

Answer: The scale is question is called the octagon scale and is designed for changing a square timber to an octagon, or for finding the width of the side of an octagon of a given diameter. In Fig. 1 is shown a part of this scale. But very few understand it or are even interested enough in it to look it up. It is quite evident that the inventor did not understand the use of the plain steel square with its standard scale of measurement, which is sufficient for solving all problems of this kind, for he wandered from the path of simplicity into a by-way to exemplify a single problem in the polygons, and

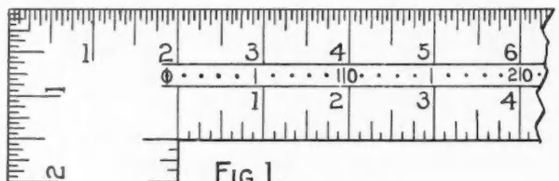


Fig. 1.

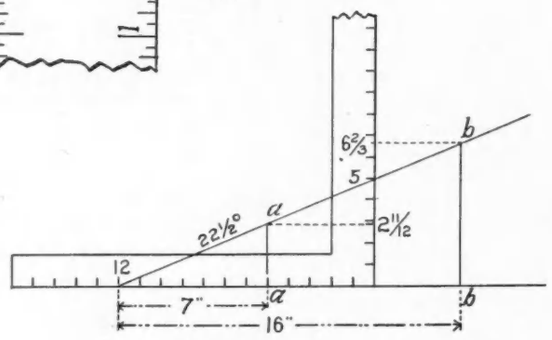


Fig. 2.

then leaving the would-be learner ignorant of any apparent reason why his scale gives correct results. The solution is as follows:

Suppose it is desired to change a seven-inch square stick to an octagon. Lay off a center line on all four faces of the timber and from either side of this line set off a space equal to seven of the spaces shown on the steel square, which will be the point for the gauge line, from which to remove the wood at the corners to form the octagon.

These same proportions may be found direct from the steel square as shown in Figs. 115-6 of our May article. However, there are other ways of arriving at the same result, and in connection with this, we are showing a rule that not only applies to the octagon but any of the other polygons as well. Referring to Fig. 2, it is as follows:

Draw an indefinite line from 12 and passing at 5 as shown. Now if the timber is seven inches square, measure back that amount from 12 on the tongue and square up to the diagonal line, as at "aa," which will be found to be 2 11-12 inches and represents the side of the octagon. If the timber is 16 inches, then "bb" represents the width of the sides and is found to be 6 2-3 inches. This rule, as we said before, applies to any of the polygons. The starting points on the square are the figures that give their respective miters and the diagonal line across the square is governed accordingly. A. W. Woods.

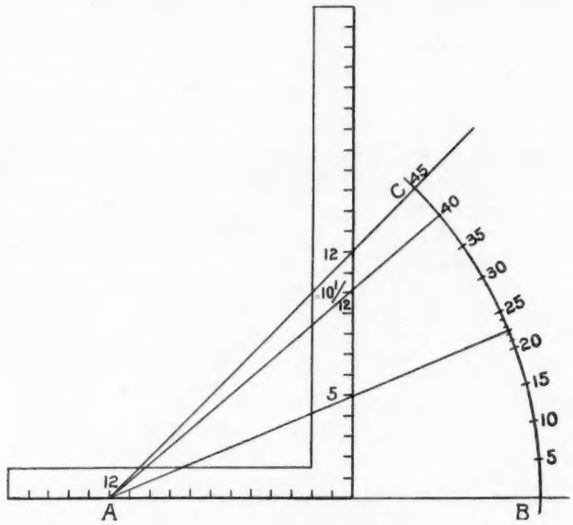
How to Frame by Degrees with the Steel Square

To the Editor: Altenburg, Mo.

Will you please kindly explain the following roof pitch? The roof to have a slant of 40 degrees. How can the cuts of the rafters be found with the use of the steel square?

G. Lohmann.

Answer: The steel squares that are in general use do not contain a degree scale for framing purposes, though unquestionably it would be a good thing instead of some of the obsolete rules that now encumber its faces. Therefore, it is necessary to resort to the use of a protractor to first find the desired angle to which to apply the square to get the figures to use, or better still, our own instrument, "The Key to the Steel Square," which gives the figures to use for any angle in degrees. However, in the absence of either of the above instruments, the angle may be found as shown by the accompanying illustration, as follows:



Lay off a line, as at AB, and apply the square as shown, and draw line AC from 12 on the tongue and passing at 12 on the blade. This line will be at an angle of 45 degrees from AB. Now with the compass strike an arc of any radius—the larger the better, for the more accurate will be the final result. Divide this arc into nine equal parts and these divisions will be five degrees apart, as shown by the figures opposite the divisions. Now, to find the figures on the blade for the degrees in question (40), draw a line from A to 40 on the arc and the line will pass at 10.06, or practically 10 1-12 inches on the blade, which will represent the figures to use on that member for either 40 or 50 degrees. The blade giving the plumb cut in the former and the tongue in the latter.

Vice versa for the seat cut. The changing point being at 45 degrees, and as 40 is less than 45, the blade gives the plumb cut. On the other hand, 50 being more than 45, the tongue gives the cut.

The reason that 12 and 10 1-12 also gives the cuts for 50 degrees is because it is the complement degree of 40, or in other words, the sum of the two equals 90. Thus it will be seen that this diagram is all that is necessary to find any angle on the square.

Suppose we wish to find the figures for 22½ degrees. Then divide the space from 20 to 25 into five equal parts and these will be one degree apart, and by drawing a line from A to 22½ on the arc, the line will be found to pass at practically 5 on the blade. Having found what figures to use on the blade for any desired degree, the procedure in roof framing is the same as in framing by the proportion of the span or per inch rise to the foot in run of the common rafter. At another time, in the course of our regular work, we will take up the subject again and more fully illustrate different phases of the subject.

A. W. Woods.

Making Window Frames

To the Editor: Red Oak, Iowa.

I will endeavor to fully explain how I make a window frame for wood buildings—2x4 studding. First I rip out my jambs 4⅝ inches wide; blind stop 1½ inches; sub-sill 1x6 inches; sill 2x6 inches. Now I am ready to begin to make my frame. My material is first jointed on one edge before being placed on same table. This edge I bevel about 1-16 inch, this being the edge the inside casing will be nailed onto. Now I run through the saw, or run a circle saw through it. Treat both jambs and head jambs in this manner. Now I take a bevel square and place it on the steel square on figure 1 on blade of square and turn blade of bevel until it touches figure 7 on tongue of square. Now I make bevel square blade secure. This, it will be seen, gives me a bevel for window sill 1-inch fall in 7 inches. Figure 6 can be used if you desire more pitch.

I take bevel square and lay off bottom end of jambs for sub-sill, having enough to receive the sill. I now take a rule and pencil and gauge in 1⅞ inches, this being the point where my lower sash will strike the sill. From this point I add twice the length of glass and 6 inches for sash rails. This being the desired length for window. I gain for header. Next I plow for parting stop. Now I cut pocket on outer edge of jambs, which, if you note, is the edge that just came from the saw, and needs no planing if ripped on circle saw. Next I mark my jambs for boring, using a wooden gauge with brads driven through, made similar to one illustrated in November issue.

Now I bore and put in pulleys. Next I nail on blind stop, gauging this on with a piece of parting stop, and nailing them on with 6 D com., allowing the stop to run the full length of jamb, and cut the head stop between.

When sub-sill and head jamb are nailed in I always drive a 6 D com., with a draw from side blind stop into head jamb. This holds the joint of head stop and side stops secure. Next I nail in my sill to the sub-sill, then from jamb into sill and blind stop to sill. Now I nail on my head casing. Cut the lower end of casing, marking by the bevel square that I used to mark gains on lower end of jambs. This done, I take a piece or strip the thickness of the casing and lay across the frame next to the sill; lay on both casings in their respective position, but up side down, which is the exact place these two points will touch when nailed on. Now mark with a knife ⅛-inch long on both casing and cut off square. Place top end of both casings against the head casing and go to lower end and press both casings in their proper position at once. This I do for the purpose of squaring up my frame. This will bring the frame up square every time if all joints are tight and securely nailed before you press casing in position. A frame made in this manner will need no bracing and will not sag in handling. I have often seen frames that would nearly fall to pieces without braces even nailed on.

Now to set this frame, which is usually the height of doors, put frame in opening each side equal distance from studding. Set this stick in frame, one end on floor, this being the height desired. Put a nail in casing at lower end. Take bevel and place on sill across window. Start nail in casing. Take bore or stick at this corner under sill so you can hold your frame steady, and when level drive your nail. Now be sure your sill is level. Start a nail at top of one as the other casing. Place level against blind stop or edge of casing, and when perfectly plumb, drive your nail. Your frame is level, plumb and square. Proceed to nail in secure. Care should be taken not to stop on sill until you have securely nailed both casings in place. Now you can step up on the sill and nail your head casing.

In making a number of frames I use the jamb for a pattern, and mark one and mark the mate by the last one marked each time. I set all frames by the same stick also use a piece of parting stop to gauge on casing.

J. M. Hibbard.

Another Problem

To the Editor: Elverson, Pa.

I have a job for my fellow carpenters or whom it may concern. Take a board 8 inches square and cut it in three cuts that it makes a strip 13 inches long and 5 inches wide. We all know that a board 8 inches square has 64 square inches and 5 by 13 equals 65. It gains one inch in cutting it.

M. W. Leininger.

CONTENTS FOR NOVEMBER, 1907

Practical Trade Appliances

Reducing the Cost with Machinery

The American Floor Surfacing Machine Company, Toledo, Ohio, reports a largely increased demand for their Floor Surfacing Machine, as contractors are substituting mechanical power for hand labor wherever it is possible. This machine has been on the market for several years and is no longer an experiment, being the only machine that will satisfactorily surface any kind of a floor to a smooth, sandpapered finish, or polish or wax it, as desired, and does as much work as twenty men could do by the old method of scraping, besides very much better. Their reports show that their machine owners are saving more than the cost of the machine every 60 days of operation.

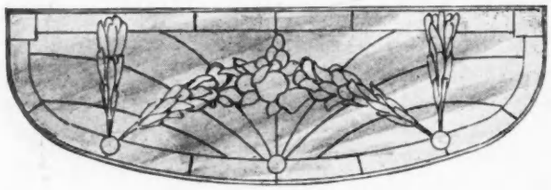
It is one of the greatest labor saving devices in the building trades, as heretofore many fine, expensively finished buildings had floors that the occupants were obliged to entirely conceal with carpets in order to hide their defects, while at the present time floors can be made to harmonize with the balance of the interior finish, and the demand for this class of work is rapidly increasing in all parts of the country.

The Use of Art Glass in Home Building

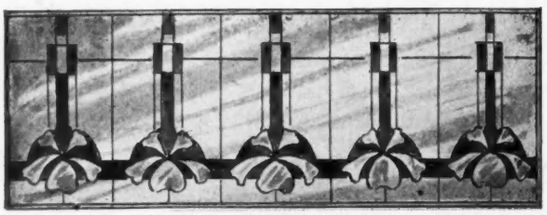
While glass was made by the Egyptians during their earliest historic period, its first use for windows was by the Romans in the third century. In the House of Faun at Pompeii a small pane remains in a bronze sash. Window glass for churches was made in the fourth century, according to Lactantius. Artists of the Middle Ages were the first to lead their tints of blue, red, yellow, amethyst and green into window glass, and the history of art glass may be said to date

back to that period. From that time on, it flourished as an industry all over Europe and was in evidence in the windows of Cairo and other eastern cities as well as in mediæval Europe. About the twelfth century it reached its highest state of perfection under the old artists and in the windows executed at that time the work of gradation of the tints is of extraordinary delicacy and of extreme reserve. An eminent authority says: "There are many restrictions which the production of art glass shares with other kinds of decoration, such as the absence of cast shadow and the prohibition of elaborate perspective with distance and middle distance, etc., as is the case with bas-relief and to inlay, as well as to wall painting where the architectural surroundings require the wall itself to retain its solid individuality. First: It is necessary that the colors be so assembled as to act together in harmony with each other and with the surroundings. Second: The different parts must be so designed that the radiating power of the colors shall appear, at the average distance of the window from the spectator, in a way that will help rather than hinder the effectiveness of the drawing or design. For instance, in the case of a human figure, a limb will be drawn more slender than the truth because the light pouring through the more translucent glass which represesents that limb will eat away the outlines of the darker surface all around and give the limb its proper size, therefore a fine church window seen at a distance of but six feet will seem strongly exaggerated and even distorted."

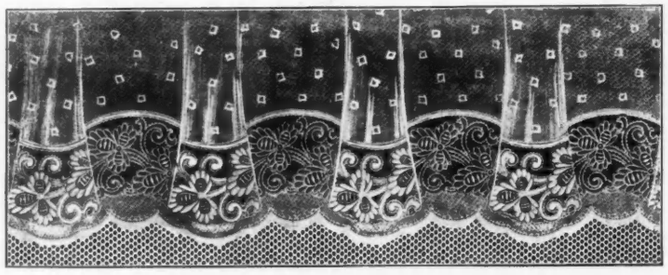
Leaded Beveled Plate



Leaded Clear Glass

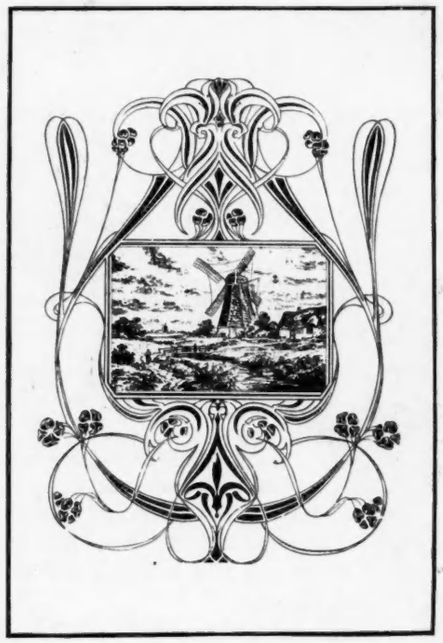


Leaded Art Nouveau Glass



Cottage Window in Lace Effect

In its use for windows and doors for modern homes, where the designs are necessarily smaller and must be of a different character from that for churches, the problems and restrictions above referred to are as great or even greater. Since about 1870 and especially in the last few years it seems to have been reserved for artists in the United States to make the most serious advance in art glass production, both from the standpoint of the highest ideals as an art as well as in the invention of methods that may be called commercial, whereby effects and results are produced that have brought art glass, in some form, into such general use, especially in homes of even very moderate cost. Advancement in building construction in this country of late years has called for the introduction of about everything having a tendency to beautify and enrich, and the use of art glass allows of such unexemplified splendor of effect that its growing use is readily accounted for.



Art Nouveau Sand Blast Glass

Art Lace Sand Blast Glass

The illustrations of some of the many types of art glass especially adapted to home building which are shown herewith were selected from a catalogue recently issued by the Suess Ornamental Glass Company, of Chicago, a prominent firm engaged in the business. They show to what extent the ideals of art are combined with commercial product in supplying the variety of ideas which has helped make the use of art glass popular and at the same time

Material FROM Sheriffs' AND Receivers' Sales

SAVE 30 TO 50 PER CENT ON YOUR PURCHASES

THE CHICAGO HOUSE WRECKING COMPANY saves you 30 to 50 per cent on staple merchandise from ***Sheriffs'*** and ***Receivers' Sales. Wrecking prices have come to be known as bargain prices.*** Here you have the most wonderful bargain offering ever advertised. Such an opportunity seldom occurs. The very best manufactured articles offered at less than original cost of production. That's our merchandising method. We do not buy our goods in the regular way, but take advantage of various sales to secure bargains. ***Our mammoth plant is the largest in the world devoted to the sale of general stocks.*** Increasing business has necessitated an addition to our already enormous institution. Over 35 acres literally covered with merchandise of every description.

OUR BUSINESS IS ONE OF ACTION. *BUY TODAY.* BARGAINS WAIT FOR NO MAN.

LUMBER! Send us your lumber bill for our estimate. LUMBER!

The Chicago House Wrecking Co.

Offers the most wonderful opportunity ever heard of to furnish you lumber and building supplies of every kind at **Prices that will save you big money.** Such an opportunity as this seldom occurs. We have lumber for your house, church, barn, meeting house, cribs, stores, factories and in fact, buildings of every kind. We can furnish absolutely everything required in construction material. Have your carpenter or builder **make up a complete list of everything that you may require,** including **Lumber, Sash, Doors, Nails, Roofing, Siding, Ceiling and every single article.** Send it to us at once, tell us where you have seen this advertisement, and we will make you a **Proposition that will be a saving of from 30 to 60 per cent.** This is not an idle statement. Thousands of satisfied customers have bought from us in the past. We guarantee absolute satisfaction. We require your good will.

Lumber From Expositions

We have had vast lumber experience. After the World's Fair at Chicago we sold **80,000,000 Feet;** at the Omaha Exposition, **15,000,000 Feet;** at the Pan-American Exposition over **33,000,000 Feet;** and at the St. Louis Exposition over **10,000,000 Feet.** You will miss one of the greatest chances you ever saw if you overlook buying your lumber now. Prices on lumber are ever advancing. Do not wait for them to go down. They never will. If you have no need for a carload yourself, get your neighbors to club in with you. By buying a carload you can save all kinds of money on freight charges. We have railroad tracks running through our main warehouses and buildings and can load a car to good advantage to you. You can include other items in the same car, such as **Pipe, Plumbing Material, Roofing, Wire, Fencing, Furniture, Machinery and Merchandise of all kinds.**

50,000,000 Feet of Lumber For Sale

We recently bought at Manufacturers' Sale over 50,000,000 Feet of all kinds of Lumber and Finishing Material. We are making special concession to those who will buy at once. Even if you have no use for this lumber at once, it will pay you to buy now. **We cheerfully invite inspection of our Lumber Stock** and will be glad to have you come direct to our warehouse and yards at Chicago, see the lumber we are offering, and you will recognize that it is all what we say of it; make your own selection and see it loaded. It is not necessary to come to Chicago; we will sell you by mail very easily and will have no trouble to convince you of the desirability of placing an order with us. Just send us your lumber bill and we will easily **"Show You."** On application we will send copies of letters from customers who have bought. They saved money, why can't you. Write us today.

WE BUILT OUR ENORMOUS BUSINESS BY GIVING OUR CUSTOMERS ABSOLUTE SATISFACTION

DOORS 40c WINDOWS 29c

10,000 good doors in various sizes, secured by us in connection with our dismantling operations. Most of them with hardware. Prices range from **40c up.**

10,000 Windows.....29c up.

Sash from St. Louis Exposition

50 Carloads of factory glazed sash from the St. Louis Exposition, suitable for use on large buildings. Glazed with 1-8 in. thick ribbed glass, giving a clear fine light. We can furnish the following sizes:

Quantity	Opening	Price each
2500	20 in. x 5 feet	$1.00
1200	4 ft. 5 in. x 7 ft. 8 in.	3.40
1000	29 in. x 42 in.	1.00
200	10 ft. x 14 ft.	2.60
300	2 ft. 8 in. x 2 ft. 10 in.	1.20
500	2 ft. 5 in. x 19 ft. 5 in.	4.70

MILL WORK All kinds of mill work, new and used. Save money by buying from us. Windows for every purpose. Columns, Newels, Trim Rails, Balusters, Block, Mouldings, Brackets, in fact, everything required for the construction of buildings of every kind.

STEEL ROOFING

PER 100 SQ. FT. $1.50.

Most economical and durable roof covering known. Easy to put on; requires no tools but a hatchet or a hammer. With ordinary care, will last many years. Suitable for covering buildings of any kind. Also used for ceiling and siding. Fire-proof and water-proof. Cheaper and more lasting than shingles. Will not taint rain-water. Makes your building cooler in summer and warmer in winter. Absolutely perfect, brand new, straight from the factory. **$1.50** is our price for No. 15 grade of Flat Semi-Hardened steel roofing and siding, each sheet 24 in. wide and 24 in. long. Our price on the corrugated, like illustration, sheets 22 in. wide and 24 in. long, **$1.75.** At 25 cents per square additional we will furnish sheets 6 and 8 feet long.

Steel Pressed Brick Siding per square,.....**$2.00**
Fine Steel Beaded Ceiling per square,..... **2.00**
Can also furnish Standing Seam or "V" crimped roofing

WE PAY THE FREIGHT

to all points East of Colorado except Oklahoma, Texas and Indian Territory. Quotations to other points on application. This freight prepaid proposition only refers to the steel roofing offered in this advertisement. Satisfaction guaranteed or money refunded. We will send this roofing to any one answering this advertisement C. O. D., with privilege of examination if you will send 25 per cent. of the amount you order in cash; balance to be paid after material reaches your station. If not found as represented, refuse the shipment and we will refund your deposit.

WE PURCHASED EVERY EXPOSITION

This includes the World's Fairs of Chicago and St. Louis; the Expositions of Buffalo and Omaha, built at a cost of $90,000,000.00. We are the foremost dismantlers and purchasers of large institutions in the world. By this means alone millions of dollars worth of the world's best products have passed into our possession and have been rebuilt and sold at 50 per cent below their original value.

The World's Bargain Center

Thousands of satisfied customers everywhere have learned to recognize the virtue or our business. We stand between you and high prices. The greater part of our stock consists of brand new, first-class merchandise from SHERIFFS' and RECEIVERS' SALES. Our enormous warehouses are overflowing with Merchandise secured from such sources. Our wonderful growth and expansion is the best evidence of our ability to serve you. Merchandise of the highest quality is sold at sacrifice prices. Each day some new addition to our stock compels us to dispose of what we have on hand. The time to buy is when these bargains, shown you in this advertisement, are calling on you for action. Send us your order today and be convinced.

OUR GUARANTEE

We guarantee absolute satisfaction. A satisfied customer means more to us than a large sale. Every article you purchase from us is guaranteed absolutely as represented. If you find it to the contrary, we hold ourselves in readiness to make good our representations.

OUR RESPONSIBILITY

We cheerfully invite investigation as to responsibility. Our capital stock and surplus is over $1,000,000.00. We refer you to any commercial institution in Chicago or anywhere else. Look us up in Dun's or Bradstreet's; ask any Express Company; write to the editor of this or any other paper; if you want any more positive proof, write to our depository, the Drovers' Deposit Nat. Bank, Chicago.

STRUCTURAL IRON AND STEEL

On account of our extensive wrecking operations we are always in position to supply your needs in iron material of every kind. Our stock consists of:

Wrought Iron	Steel Rails	Steel Trusses
Channels	Iron Rails	"I" Beams
Iron Rods	Angles	Steel and
Washers	Bolts	Iron Plates
Iron Fence	Fancy Cast	Cast Iron
Deck Beams	Iron Posts	Columns
Lattaced Beams	Turnbuckles	"T" Iron

In fact, there is nothing in the iron line that we cannot furnish. Our prices are always right. We can save you money. We can give you quick delivery. Send us blue print or diagram of your needs.

Felt Roofing, 60c per 108 sq. ft.

"Eagle" Brand Prepared Roofing

Composed of two and three sheets of carefully saturated felt; between sheets water-proof insoluble cement; compressed together making a solid flexible sheet with layers of composition thoroughly combined. Practically fire-proof against sparks and cinders, 32 in. wide, about 40 feet long. 108 sq. ft. to the roll.

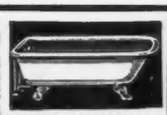
2 ply per square, 60c 3 ply per square, 90c
Roofing cement, caps and nails, additional per sq., 35c

"RUBBERIZED GALVO" ROOFING This is highest grade roof covering manufactured. Absolutely nothing finer. No coating necessary. Practically indestructible, WATER-PROOF, FIRE and LIGHTNING PROOF. Brand new, Its base is the strongest and best wool felt obtainable, closely woven and especially made to meet severe roofing conditions, It is weather-proof, fire resisting. No tar, asphaltum or paper used in its manufacture. It will last from 20 to 50 years, depending upon the ply you purchase and local condition. It is easy to lay. We furnish nails and caps, as well as sufficient to make laps. Our price is per 108 square feet as follows;

1 ply.....$1.25 2 ply.....$1.55 3 ply.....$1.75

A complete stock of Building Papers and supplies of every kind.

BATH TUBS, $6



300 "New Style" all metal tubs, finest galvanized steel finished inside with special white Japanned enamel. Nicely finished outside. Heavy wood rim. Length 5 ft. While they last **$6.00.** 5½ ft. **$6.40.**

Handsome porcelain tubs with 3-in. roll rim. Seamless white enameled on inside finest nickel plated fittings, each **$14.** Full line of other tubs up to **$25.00**

BATH ROOM OUTFITS, $25. With steel enameled tub vitreous earthern closet bowl, polished hardwood seat and tank, handsome enameled lavatory, all nickel trimmings, complete, ready to install, **$25.** Other complete combinations at **$37.50, $60.00, $54.00** up to **$150.00.**

PLUMBING MATERIAL, ALL KINDS at prices that do not represent original cost of production, We buy at Sheriffs' and Receivers' sales only.

Cast Iron Enameled Sinks.....**$1.25**
One Piece Enameled Iron Sinks with backs and nickel plated faucets.....**$11.00**
Granitine, two-part laundry tubs, best manufactured, ten year guarantee. Per set.....**$7.40**
Solid Porcelain Laundry Tubs, white glazed on inside, buff glazed on outside, complete with nickel plated bibbs, legs, stoppers, traps, etc. Set....**$18.00**

STEAM AND HOT WATER HEATING

SEND FOR ESTIMATE

OUR NEW 500-PAGE CATALOG NO. 742 FREE

It is a book such as every shrewd buyer must have. ***500 pages*** with thousands of items of the very best merchandise and supplies bought by us at ***Sheriffs' and Receivers' Sales.*** Merchandise, machinery and supplies, articles for everyone. You will find it useful in the home, in the field, in the workshop or in the office. ***WRITE US TODAY.***

Cut out this "Ad," mark a cross on those items that most interest you and we will send you much valuable information. ***Also fill in the coupon to your right and our Catalog will be sent you absolutely FREE and prepaid.*** If you do not want to cut out the Coupon, send us your name and address correctly, ***tell us where you have seen this "Ad"*** also tell us just what items in our "Ad" interests you most. Address

CHICAGO HOUSE WRECKING CO., 35TH AND IRON STS., CHICAGO

FREE CATALOG COUPON

CHICAGO HOUSE WRECKING CO.
35th and Iron Sts., Chicago, Ill.

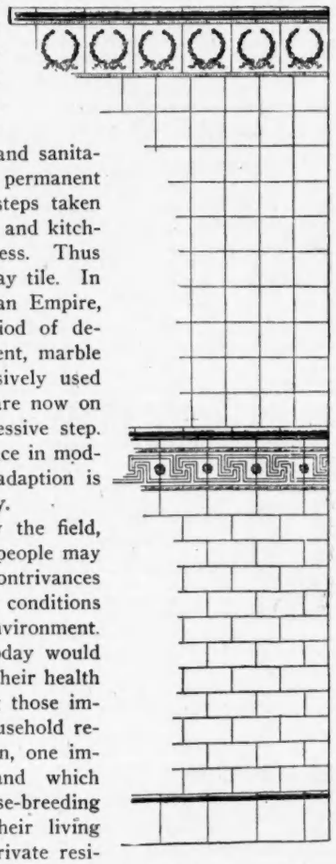
I am a reader of Am. Carpenter and Builder. **Send me** your large 500-page Catalog, Absolutely Free as advertised in this paper.

Name.....
Post-Office Address.....
R. F. D. No...... ***Post-Office Box No.***.....
County..... ***State***.....

greatly reduced its cost. The introduction of what is called the sand blast process has been a large factor in lowering the cost of production.

Sanitary Metal Tile a Necessity

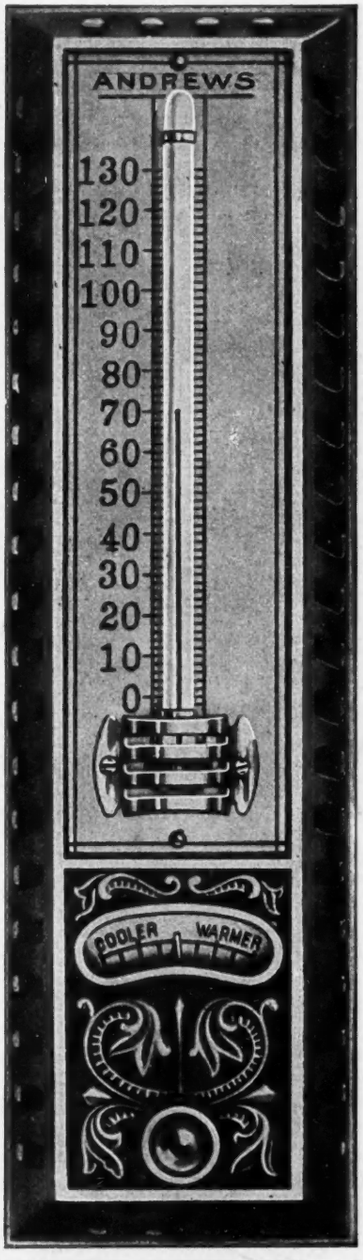
In the history of races ever since the world began, sanitation has played an important part, and has had its influence on the moral and intellectual development of communities. When modern science first compelled the thought that hygienic conditions were absolutely necessary to our welfare, and sanitation in homes became a permanent feature, one of the first steps taken was to render bath rooms and kitchens impervious to dampness. Thus we see the incentive of clay tile. In the days of the old Roman Empire, and through all that period of development up to the present, marble and clay tile were extensively used as a wall covering. We are now on the eve of another progressive step. Metal tile is finding its place in modern construction and its adaption is being increased continually.



We note, as we survey the field, that the standards of the people may well be judged by the contrivances employed that bring about conditions tending to a healthy environment. Enlightened persons of today would not think of endangering their health and comfort by neglecting those important features of the household requiring a perfect sanitation, one impervious to dampness, and which prevents germs and disease-breeding microbes. No part of their living abode, whether it be in private residence, apartment, or shack, is so susceptible to these objectionable features as the bath room and the kitchen. The trend of modern times, therefore, is to employ those methods in the bath room and kitchen that will more readily conform to the high character of sanitation sought by the housewife. Nothing evolved so far has made itself so convincing, so economical, nor so beautifying as Sanitary Metal Tile. Cleanliness and beauty is as true of the bath as the kitchen, as either may be covered with this product in the same manner that one would paper a room. The material itself is light in construction, thin and pliable, yet thoroughly durable and artistic. Its designs and highly glazed appearance equal those of the most expensive ceramic tiles. It is made of a material that is absolutely non-corrosive, and therefore permanently guaranteed against deterioration, corrosion, etc., and being of a substance that is highly substantial, requires no renewing, as we very often find is the case with wall paper, or clay tile.

The best foundation for Sanitary Metal Tile is a white plaster wall, and therefore wherever it is thus introduced it has the desirable feature of being economical in its construction. This feature is maintained permanently. It does not loosen from the wall because of excessive weight, nor crack across the face when the settlement of a building occurs. Everyone familiar with building construction knows that this is not so where clay tiles are used, since the weight of same is sufficient cause for easily breaking the bond between the tile and the cement, and when this bond is broken the artistic effect of the whole room is destroyed. Sanitary Metal Tile has been of great service in many other instances than those

ANDREWS HOT-WATER HEATING



ANDREWS THERMOSTAT IN THE LIVING ROOM

FREE UNTIL NOV. 30 ONLY

TO SUBSCRIBERS TO THIS PAPER

WITH EVERY ANDREWS SYSTEM CONSISTING OF

THE CELEBRATED ANDREWS STEEL BOILER

ANDREWS STEEL BOILER, made of 60,000 lb. tensile strength steel (same as power boilers), heats more quickly than any cast iron boiler, and will not crack. Fire pot is large and deep and completely surrounded by water down to the grate level. Easily cleaned and very economical; burns any fuel.

ANDREWS REGURGITATING SAFETY VALVE SYSTEM OF RADIATION AND GROUP SYSTEM OF PIPING

This system makes 100 feet of Radiation do the work of 150 feet of other plant; thus it saves one-third the cost of the radiators and piping, besides being more effective. Thousands of users—(we will furnish the names) attest this fact. The system gives quickest heating and hottest radiators in coldest weather.

RICHLY ORNAMENTED RADIATORS

are furnished for every room of the house, in size and shape appropriate for the location.

PIPING—all cut to proper lengths, reamed and threaded, so that it is only necessary to screw together. (Any handy man can do it). We furnish all elbows, unions, couplings, nickel plated ceiling and floor plates, air valves, gold (or silver) bronze, liquid and brush—everything necessary to make the plant complete—also fire tools, including flue brush.

FREE UNTIL NOV. 30 ONLY

ANDREWS SELF GOVERNING THERMOSTAT

This is a device, shown in the sketch (MOTOR) which, governed by the temperature in the Living Room of the House operates the motor that opens and closes the check-damper and draft, according as the temperature rises above or falls below the desired point.

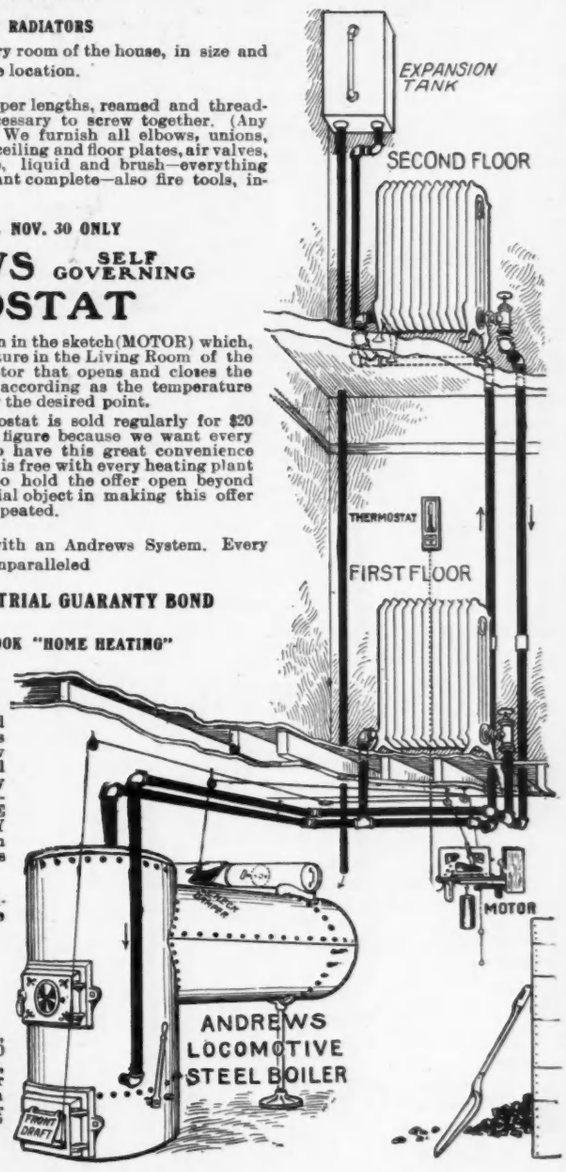
The Andrews Thermostat is sold regularly for $20 and is offered at this low figure because we want every Andrews Home Heater to have this great convenience and fuel economizer. It is free with every heating plant now. Do not expect us to hold the offer open beyond Nov. 30. We have a special object in making this offer now; and it will not be repeated.

YOU TAKE NO RISK with an Andrews System. Every plant is sold under our unparalleled

360 DAYS FREE TRIAL GUARANTY BOND

SEND FOR BOOK "HOME HEATING"

It describes fully our methods of doing business; tells how we make plans for the work and Estimates Free; shows views of our factory, how boilers are made and all material is made ready for shipments; also facsimile of 360 DAYS FREE TRIAL GUARANTY BOND, names of users in every state with pictures of houses.



Jesse Axtell of Blue Rapids, Kansas, says: "We first saw your advertisement, and as we could not get a price here less than $375.00, we wrote you for prices.

Your price was	$200.00
Freight	27.00
Cement base	3.00
Smoke pipe	.75
Labor to put in	16.50
	$247.25

"My wife put on the bronze in one day. During the month of March, the coldest of the season, we kept the whole house at from 72 to 80 degrees day and night. It was very economical and very satisfactory, and we would not exchange it for the $375 outfit. We could not be better pleased. Everything went together like clock work. I only had to buy a ten cent nipple. The fact has got out here that we have the best heater for the least money, and several have told me they will put in one like ours."

WE DO IT RIGHT IN 44 STATES

661 Heating Bldg. MINNEAPOLIS

ANDREWS HEATING CO.

603 LaSalle Bldg. CHICAGO

already mentioned, such as physicians' operating rooms, hospitals, clinics, elevator shafts, hotel ceilings, etc., wherein something more is striven for than merely proper sanitation.

Wherever Sanitary Metal Tile has been installed it has given eminent satisfaction, and has now come to be considered as necessary on those walls where it can be used, as the application of anything else on the interior of residences conducive to a modern, high class, well developed home.

A Sash Sticking Machine with Sash Cord Attachment

The Sash Sticking Machine is manufactured by the H. B. Smith Machine Company, and is known as their No. 141 A. It is built to work one, two or three sides. The one-sided machine with top head can be used as a sash, door and blind sticker or one side moulder with four side slotted head four inches long. The bed will drop sixteen inches. The two-sided machine has top and under heads and will stick the molded edge and joint the back of sash, door and blind stiles, or stick both sides of bars and muntins, while the three sided machine with outside head will bevel the check rail, thus finishing the material at one operation. The side head can be set at an angle and changing width of work will not affect the angle. There is ample clearance around all heads.

The arbors for all heads are 1½ inch in bearings, 1¼ inch where heads go, and all heads have the same size cutting circle. The under head has three bearings, the cutter of which is easily removable for change of heads, and all heads are adjustable to working face as well as depth of cut.

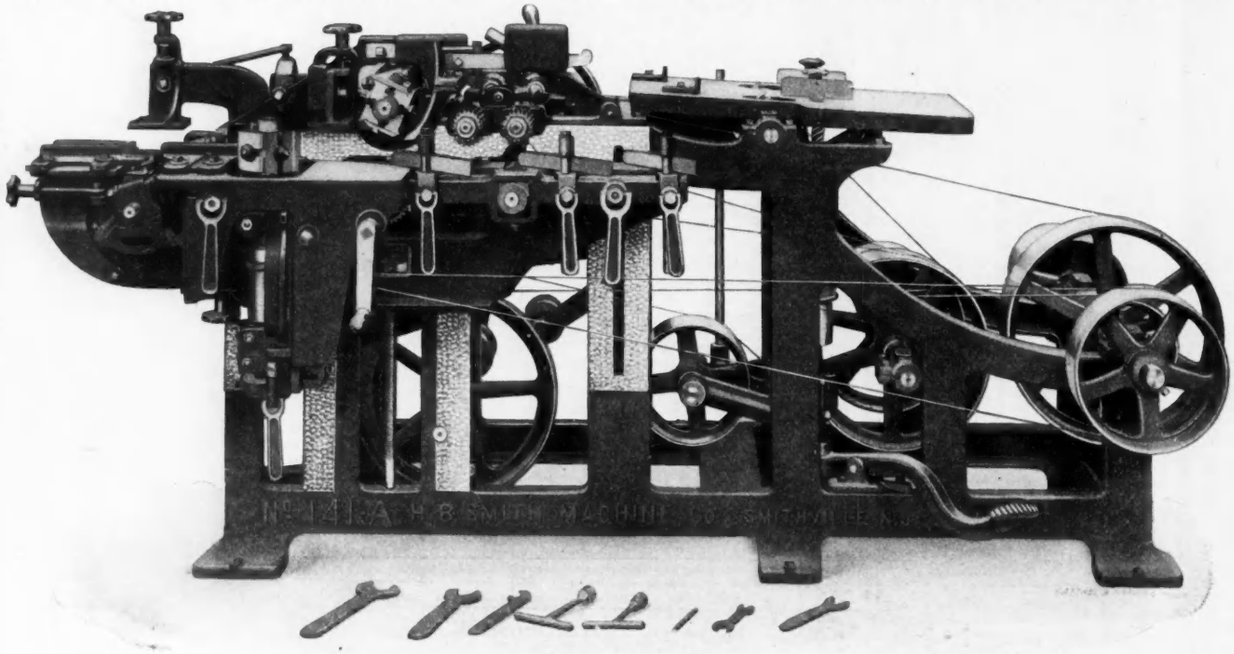
The boring and grooving attachment is not in the way of any of the other operations and by it the stiles are bored and grooved without loss of time. The grooving is done with Shimer patent grooving heads. The stile is placed on the table, pushed against a stop, depressing the treadle causes the bit to bore the hole at an angle so the knot in cord, or thimble if used, pulls back to bottom of the hole, then raising the foot, the bit drops; the stile being passed over the narrow grooving head to its stop completes the operation, when the operator places the stile between the feed rolls to run through the machine.

There are two strongly driven feed rolls, held firmly down by weights, and a large idle roll in the bed giving a very strong feed. The top rolls can be quickly raised from the material by handle provided and thus stop the feed and at the same time release the piece should there be a wish to remove it.

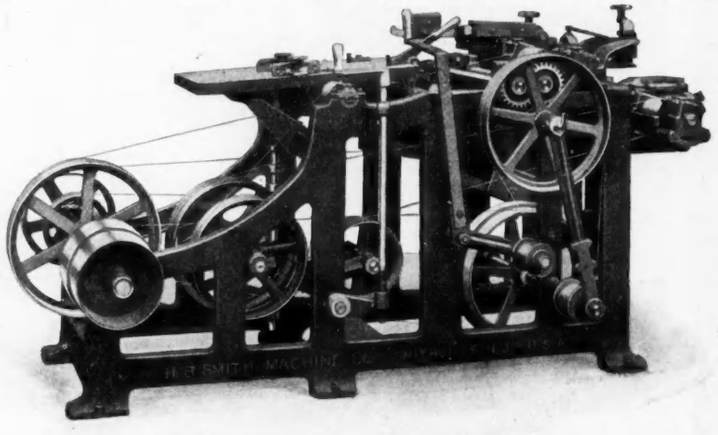
The machine is strongly belted with good length of belts running over proper size pulleys. All head arbors are fitted in the White adjustable clamp bearings, making this the most satisfactory running machine of its class on the market. The spring posts are all held by a double arm spring post binder, with wrenches attached.

There are regularly furnished with each machine one four-side slotted head for each arbor with cutters and bolts, one cap head, two Shimer patent grooving heads with cutters and one ⅞ inch bit for sash cord attachment, and all necessary wrenches.

Belting required: Top head, 13 feet 8 inches of 4 inch;

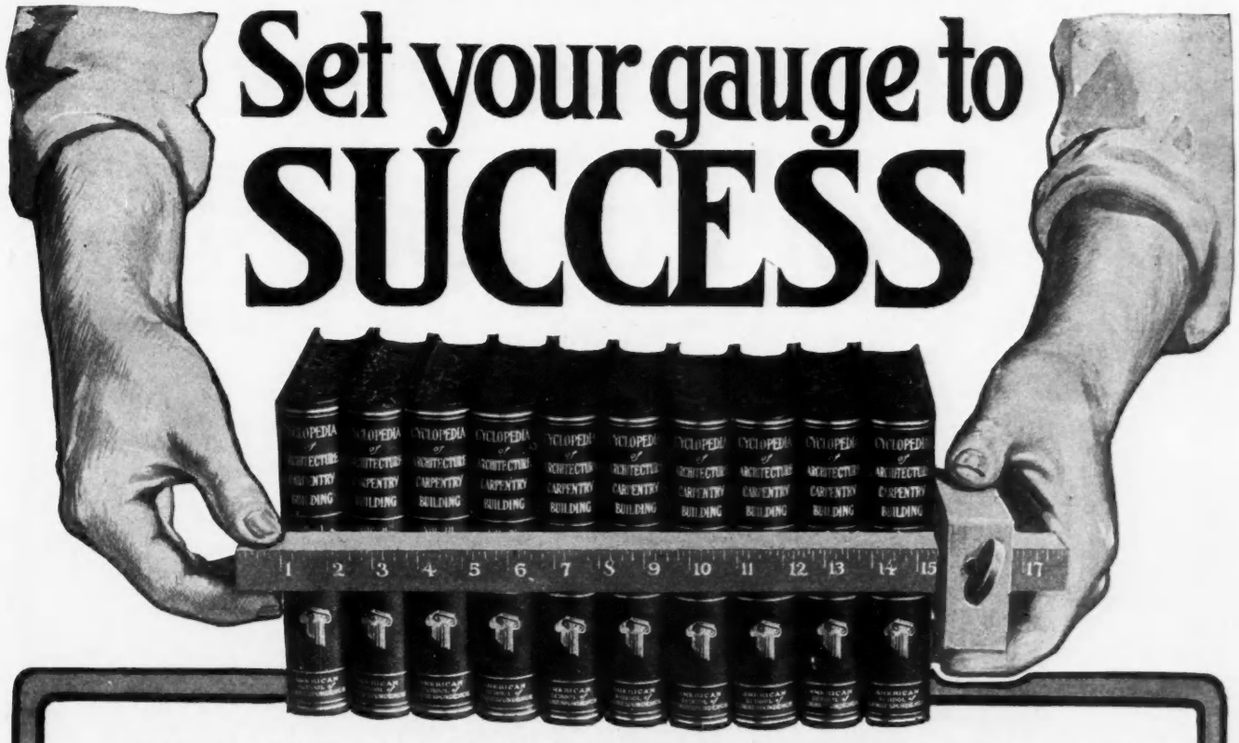


Three Side Sash Sticker and Groover



Three Side Sash Sticker and Groover—Rear View

Set your gauge to SUCCESS



If you are a Carpenter, Contractor, Builder, Real-estate Dealer, Architect, Draftsman or Mechanic, this set of books offers you exceptional chance to advance in your present occupation. If you have no regular trade or profession now, this is an exceptional opportunity to acquire the special training that you need. You should let no opportunities slip by you to make yourself master of a well paid trade, or profession. ***Set your gauge to success and turn the clamp down hard.***

CYCLOPEDIA OF
Architecture, Carpentry and Building

offers you unusual opportunities for increasing your knowledge of your trade or business. It is laden with money earning, money saving, money producing, practical plans and ideas.

Ten volumes page size 7x10 inches, bound in half red morocco, over 4,000 pages; 3,000 illustrations, full page plates, plans, sections, etc. De Luxe books in every particular.

There are over 200 complete plans of artistic moderate priced houses, chosen by a staff of architects as typical of the best work of the best architects of the entire country—invaluable to anyone contemplating building or alterations. Also over 40 practical problems in construction, based on the Rotch Scholarship Examinations of Boston, compiled and solved by S. T. Strickland, Ecole des Beaux Arts, Paris, with Chas. H. Rutan, of Shepley, Rutan & Cooledge, the well known firm of Architects, as collaborator.

The work contains not only a complete index to the subjects, but also a complete idex of the plans and elevations together with the names of the architects.

In order to advertise the ***superior methods of instruction*** of the American School of Correspondence, Chicago, a limited number of sets of this great Cyclopedia will be sold at ***one-third regular price.*** We believe our books offer the best method of acquainting the public with the superiority of our regular courses of instruction. ***We employ no agents.***

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The Cyclopedia contains hundreds of hints and suggestions that will save the house builder or the house owner many times its cost. It tells how to figure estimates, and to buy material. It tells how to plan with a minimum of waste space. It suggests hundreds of economical arrangements, artistic effects and minor details of style. The chapters on Plumbing, Heating, including steam, hot water and furnace—and Ventilation are very complete and will enable any house owner to save a great deal of useless expense. The work contains numberless practical plans and suggestions for miscellaneous carpentry work, including special decorative effects, etc.

A Few of the Many Subjects Included in This Work.

Estimating, Superintendence, Contracts and Specifications, The Law of Building Contracts, Materials, Masonry, Reinforced Concrete, Cement, Testing, Mixing, Frost Effects, Finishing, Construction Forms, Elasticity, Resistance, Retaining Walls etc., Foundations, Stair Building, Carpentry, Framing, Steel Square, Plastering, Drawing, Freehand Drawing, Perspective Drawing, Shades and Shadows, Architectural Lettering, Rendering in Pen and Ink and Wash, Water Color Hints for the Draftsmen, The Greek and Roman Orders of Architecture, Roofing, Tinsmithing, Sheet Hardware, Painting and Glazing, Heating, Furnace, Steam, Hot Water, Plumbing, Ventilation, Electric Wiring, Bells, Lights, Burglar Alarms, Steel Construction, Elevators, Practical Problems in Construction, Architectural Drawing, Mechanical Metal Cornices, Test Questions.

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A. C. & B.
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Please send set Cyclopedia Architecture, Carpentry and Building for five days' free examination. I will send $2 within five days and $2 a month until $19.80 is paid; otherwise I will notify you to send for the books.

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Write For This Catalog

If Interested In HARDWOOD FLOORING

It's

FREE

See Coupon Below

We have just published our new illustrated Catalog of Ornamental and Plain Hardwood Floors. It is the most elaborate and complete catalogue of its kind ever issued and should be in the hands of every Carpenter and Builder. We will gladly send it FREE to any interested person who will write for it—(see coupon below).

This catalog contains interesting information about the different kinds of floors—Ornamental, Plain and Parquetry and about the various kinds of woods.

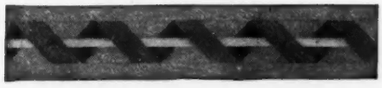
We have been making fine hardwood floors for over twenty years and are in position to give you the best value and prompt service for your money. We are located where we can obtain all the different hardwoods to good advantage. We employ skilled workmen only—nearly all our men have been with us for years.

We ship our floors anywhere. Any good carpenter can easily lay our floors over old floors. When you want good hardwood floors get

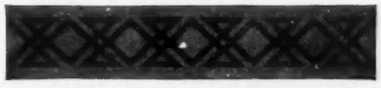
Johnson's Ornamental Hardwood Floors

"The World's Standard of Excellence"

Here are two beautiful designs with prices. We have hundreds of others.



Border No. 707—8 inch. Oak, Maple, Cherry and Dark Oak. 28c linear foot. Corners 35c each.



Border No. 836—10 inch. Oak and Dark Oak, 40c linear foot. Corners 60c each.

In this age of keen competition quality is often sacrificed for price. This is particularly disastrous in our line, for if a floor is not made of wood carefully selected and cured and extreme caution used in every detail of manufacture, the floor, instead of being one of the most beautiful and satisfactory features of the home, will be a source of constant care, annoyance and expense. The fact that we have been in business for so long, and have built it up until our trade extends all over the world, is evidence that our goods are satisfactory and our methods right.
Don't forget—send coupon today for this catalog. It will interest you and it's absolutely FREE.

S. C. JOHNSON & SON, Racine, Wis.

"The Wood-Finishing Authorities"

CUT OFF ALONG THIS LINE

S. C. Johnson & Son, Racine, Wis.

Please send me FREE your illustrated catalog of Ornamental and Plain Hardwood Floors. I understand there is no obligation incurred on my part.

Name.....

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Town.....

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State.....

ACB11

under head, 13 feet of 4 inch; side head, 13 feet 4 inches of 3 inch; grooving arbor, 5 feet 11 inches of 2 inch; boring arbor, 5 feet 8 inches of 2 inch; feed, 12 feet 1 inch of 2¼ inch, and 6 feet 3 inches of 3 inch.

Data as to styles, weights, speed, etc.:

Model	Code Word	Size	To Work	Symbol	Weight in Pounds	Floor Space Required	Size of T. & L. Pulleys	Speed of C. S.	Average H. P.	Price
No. 141–A	Obstime	4 inches	3 Sides	.....	2100	4′10″ x 8′5″	10″ x 5″	900 Revs.	6	.....
No. 141–Aa	Obstend	.....	2 Sides, Top and Bottom	.....	2050	4′10″ x 8′5″	10″ x 5″	900 Revs.	4	.....
No. 141–Ab	Obstray	.....	1 Side	.....	1950	4′10″ x 8′5″	10″ x 5″	900 Revs.	3½	.....

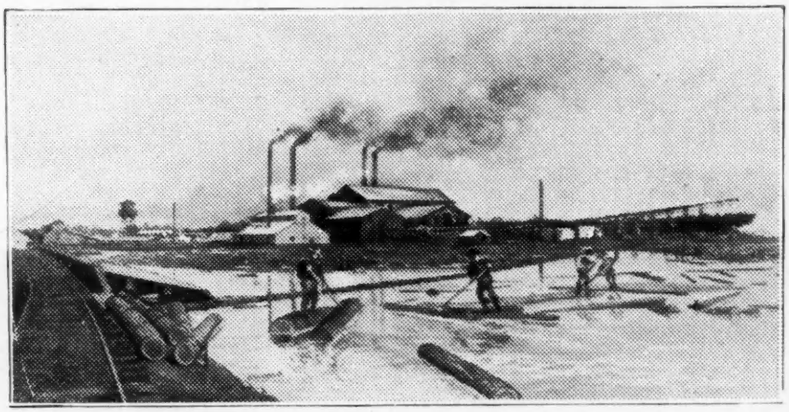
All machines sent out under the usual guarantee of the H. B. Smith Machine Company, who will be pleased to give further information. Address them at their factory, at Smithville, N. J.

A Sash Cord that Lasts

There's a lot of sash cord on the market nowadays that isn't fit to tie a dog with, much less hang windows. About two weeks after you put it in, your customer calls you up and makes remarks. The cord has given out, and so has his temper. Now, this can be avoided if you stick to the cord which is recognized as best everywhere, because it has been proved to wear many times as long as any other cord, or chain or tape for that matter. Samson Spot Cord can always be distinguished by its trademark, the colored spot. It is made only in one grade. It is made of extra quality fine yarn, and is guaranteed free from bad splicing and rough braiding. There are no rough places to cut out. It is carried in stock by dealers.

A New Way to Buy Lumber

Nowadays all sorts of merchandise is being sold direct from the manufacturer to the consumer, but it remained for the Independent Lumber Company to inaugurate a decided novelty in merchandising by offering lumber in carload lots direct from the mill to the consumer. Of course this means a saving



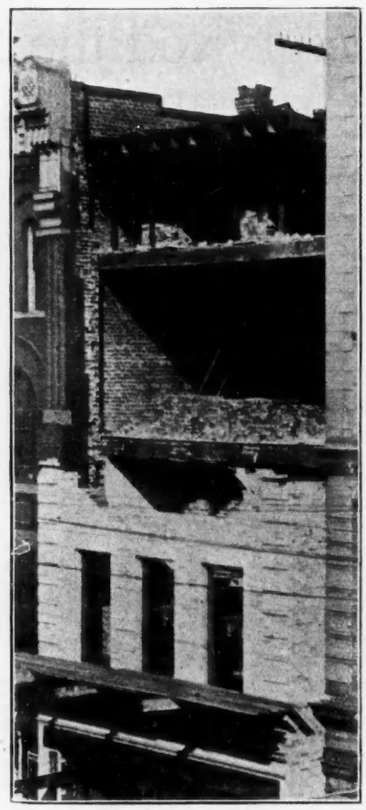
of $60 to $100 on each carload to the small builder, carpenter or owner who is keen to appreciate the difference in cost of material after being freed from the middleman's margin of profit.

The popularity of this direct method of dealing is fully attested by the fact that the mill shown in the illustration is but one of four belonging to the Independent Lumber Company that are kept busy day and night cutting up lumber for their mill-to-consumer business.

Any person interested in building will do well to write the Independent Lumber Company, Yard 6, St. Louis, Mo., for their prices, which are the same they quote to the largest lumber dealer in the country.

Durability of a Good Tin Roof

A good tin roof, rightly constructed, and given only the reasonable attention that a good article deserves, will last for years. The case reported in the letter below, showing the durability of Target and Arrow Old Style Roofing Tin, is of more than passing interest. The illustration shows a building at Lynchburg, Va., covered with this tin, regarding which the owner writes:



"In talking with the former owner of this house I am told that your tin has been on there so long that they have forgotten when it was roofed. No repairs have been necessary, and you are safe in assuming that the work has never had anything done to it since it was put there, which to my certain knowledge is twenty years. The house has been pulled down practically except the roof, and as there is no front or back on the house at this time I will ask that you write me again in about six weeks, and I will look after the matter for you, sending you a picture of the house rebuilt except the roof, which was in such good condition that it required no work, not even paint."

Column Business Consolidated

The recent destruction by fire of the eastern factory of Hartmann Brothers Manufacturing Company, at Mt. Vernon, N. Y., has resulted in the transferring of the column and porch material business of that company to its Chicago factory, operated by the Henry Sanders Company, at Elston and Webster avenues. These two concerns, although operating under different names, have long been closely allied, their interests and methods being identical. The Sanders Company took care of the column business in the central and western states, while Hartmann Brothers supplied the eastern and southern demand.

When it was found Hartmann Brothers would not be able to erect a suitable factory in the east in time to care for this season's business in their extensive column trade, it was

LORENZEN MANTELS

$2.50 to $250

YOUR HOME—Everybody's home should have a mantel. A mantel is useful as well as artistic and decorative. It saves you furnace heat on chill Spring and Autumn days, and diffuses cheer and comfort more than does any other piece of furniture in the house.

No. 468.—Modern Mission Style, 5 feet 11 inches high and 5 feet wide; heavy plan, shelves, recessed leather panels; the brackets supporting main shelf are carved with Spanish Insignia. Forian-Vitreatile hearth and facing. Hand-wrought Andirons of Romanesque design.

CHARACTER and QUALITY

Lorenzen Mantels have a distinct character and quality both in design and workmanship, not possessed by others. This has made for them world-wide reputation and enormous sales. The great volume of our output is what enables us to sell Lorenzen Mantels at such low prices. We have more than 100 designs and styles selling at from $2.50 to $250.00.

STYLES

Lorenzen Mantels embrace Colonial, Craftsman, Modern Mission and numerous other styles, and all woods and finishes. Our modern factory, large stock of air-seasoned lumber, and expert, skilled workmen all mean beautiful mantels, far above the ordinary. We are at all times prepared to furnish designs of mantels and fireplaces in the historic periods of architecture, such as Louis XIV, Louis XV, Louis XVI, Renaissance, Gothic, Rococo, Empire, Early English, Colonial, Chippendale, Sheraton, Adam, etc.

FREE CATALOGUE — The largest and finest catalogue of wood mantels ever issued, with photographic reproductions. Each copy costs us nearly a dollar to issue, but we send it **free** to all Carpenters and Builders. If you write for it now, you won't forget.

CHAS. F. LORENZEN & CO., Inc.

296 N. ASHLAND AVE., CHICAGO

LORENZEN PAYS THE FREIGHT

decided to consolidate that part of the business permanently in Chicago. This could be done conveniently and at once because the Sanders Company, within the past year, has moved into a splendid new factory with ample capacity to care for a rapidly expanding business. Its new Chicago plant is the largest and most completely equipped factory building in the world devoted exclusively to the manufacture of wood columns, pilasters and capitals. Koll's Patent Lock Joint Columns will hereafter be made at that factory.

The Sanders Company maintains an eastern office at 1123 Broadway, New York, and also has extensive warehouse facilities in that city. The fact that Mr. F. W. Hold, for the past six years in charge of the column department of Hartmann Brothers Manufacturing Company, has charge of this eastern office assures a continuation of the courteous consideration and prompt attention to their wants that eastern customers have always received. Mr. Hold, who has an extensive acquaintance with architects and contractors in the east, is thoroughly familiar with eastern business customs and methods. He had charge of the organization of the eastern office and was given every assistance in perfecting that organization so as to meet promptly and efficiently every demand made upon it. He began his new duties at 1123 Broadway on September 1.

The Sanders Company is the largest concern in the west engaged solely in the manufacture of columns, capitals and porch materials. It has splendid shipping advantages and with its New York office and warehouse facilities will be able to meet promptly all eastern demands for Koll's Patent Lock Joint Columns.

Moore's Fine Floors

Parquet and hardwood floors are a rich and, in the end, the most economical and sanitary flooring that can be placed in either a new or old home. In another column will be found the advertisement of E. B. Moore & Co., 76 Wabash avenue, Chicago, who have recently issued a very handsome catalogue of parquet floors, showing hundreds of illustrations in colors of the many designs and combinations. This catalogue is sent free to those requesting it. E. B. Moore & Co. will give you advice based on thirty years' experience in the successful laying of this kind of flooring. They handle a complete line of architectural finish, wax brushes and felt brooms. Moore's Reviver is the best product to use for restoring the color to parts of a varnished floor where the finish is worn off. Moore's Floor Wax is unequaled for floors, furniture and woodwork. Send for free catalogue.

Learn the Real Estate Business

No other interests are so closely allied to the carpenter, builder and contractor as is the real estate business. Not only is the knowledge of this business an advantage, but the opportunities of increasing your income, as a side line, are many, particularly in the smaller communities. In this present day of prosperity in the building industry the possibilities of branching out should not be overlooked. On page 266 appears the advertisement of the Gray School of Real Estate, which advertises a systematic course of instruction in the real estate business that is instructive, complete and at terms that place it within reach of all. Mr. C. H. Gray, the president of this institution, is a man of large experience and success in the

real estate business and fully qualified to advise. Write him personally and mention the AMERICAN CARPENTER AND BUILDER.

Paint that is Guaranteed

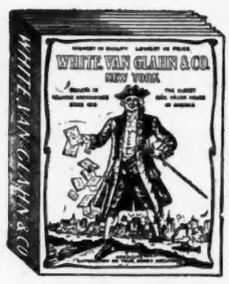
There is nothing of greater importance to the contractor than paint. An unsatisfactory paint can cause him more annoyance and trouble in one day than he can explain away in a month. There is really no excuse, however, for any contractor or builder going astray. The materials that make good paint are well known; they are strictly pure zinc, strictly pure white lead, strictly pure linseed oil, the necessary coloring matter—and nothing else. If you get these materials in ready mixed paint you have the best the world affords, and paradoxical though it may seem, the spreading capacity of such paint is so great that, regardless of the price per gallon, the cost is less in first cost per job than the cheap mixtures called in the slang phrase of the paint business, "dope."

It takes commercial courage of a high order to decide to make nothing but the best and then to hew to the line. Twenty-six years ago the Mound City Paint & Color Company, of St. Loius, now one of the largest paint manufacturers of the United States, started to make a paint of a quality that they knew could never be surpassed. The sales the first year were discouragingly small—600 gallons—today the sheer merit of their famous Horse Shoe Brand has forced its sales close to the 1,000,000 gallon mark, which will soon be passed. They have branches in Minneapolis, Boston, Omaha and Los Angeles. The Horse Shoe Brand has the entire confidence of the trade and there is every reason to believe that, in view of the absolute satisfaction it is giving to all consumers, their sales will soon pass those of any other manufacturing paint house in the United States.

Horse Shoe Paint is not a competitive article as to price. It would be made exactly the same today, no matter what it would cost the consumer. Fortunately, however, the best paint costs the least; not, of course, by the gallon, but by the job. No contractor or builder can afford to pass by the economy and satisfaction of Horse Shoe Paint without a trial. The Mound City Paint & Color Company guarantees it, not only as to composition, but as to appearance and wear.

Big, New Catalogue Free

The above cut shows the cover design of the new catalogue recently issued by Messrs. White, Van Glahn Company, of 3 Barclay street, New York City. This catalogue contains 700 pages of interesting matter on carpenters' tools, cement workers' tools, hinges, clamps, paints, plumbing supplies, roofing materials, builders' hardware and the thousand and one other things needed by the carpenter and builder. This company is the oldest mail order house in America; was established in 1816, and puts its reptuation upon each line of goods represented in its catalogue. Copies will be sent free of charge to anyone writing for them and mentioning this paper.



Automatic Blind Hinges

Having been manufacturing blind hinges for the past ten years, and making improvements from time to time, R. P. Whipple & Co., of 275 Main street, Springfield, Mass., feel safe in claiming the superiority of their latest patented blind hinge. They give ten reasons why they make their claim: (1) absolutely no slamming or rattling; (2) impossible to blow off; (3) no fastening required to hold blind in any required position; (4) no catches on window stool to interfere

with outside screens; (5) outside windows put on without removing blind or hinges; (6) easy to put on, as you need not trim blinds; (7) can be made right or left by changing pin; (8) galvanized taper pin, will not rust in; (9) of special value on mullion windows; (10) cannot get out of order. Descriptive literature will be sent on application.

Cyclopedia of Architecture, Carpentry and Building

A general reference work covering the field of the building industry and its allied arts and trades. Prepared by a staff of practical experts of the highest professional standing. Ten volumes. Illustrated with over 3,000 engravings and about 400 special plates. Red half-Morocco, gilt stamped, marbled edges. Indexed. List of plates. Published by the American School of Correspondence, Chicago, Ill. List price, $60.00. Introductory price, $19.80.

This is truly a great work, both in conception and in execution. We have not seen during the past decade a reference work whose appearance is more timely—which is more comprehensive or practical—or for which a positive necessity has been more distinctly created by the progress of events. The rapid advances made in recent years in the engineering and mechanical fields and in the evolution of constructive processes and methods, have affected the building industry more than any other. They have practically revolutionized it and have radically changed the conditions and requirements of all its allied arts and trades.

The publishers have taken time by the forelock in giving to the world for the first time a really comprehensive and authoritative work summing up the results of modern progress in this field. The task was a difficult one, but has been most admirably done. This cyclopedia is a practical working guide to modern methods of building construction in all its details, embodying the most approved practice. It will therefore be extremely valuable to architects, contractors, property owners, carpenters, steel and concrete workers, masons, bricklayers, sheet-metal workers, plumbers, eltctric wiremen, and all others interested in construction work of any kind, and also to prospective builders. It ranges from the masonry wall or steel frame to the carpentry and interior decoration, from the plumbing and draining to the heating and ventilation, from the foundation to the roof and cornice, from the drawing of the plans to the awarding of the contract and the acceptance of the completed structure.

The volumes are especially adapted for purposes of self-instruction and home study. The language is clear and simple, and the arrangement of matter such as to take the reader along by easy steps. Every section has been specially prepared for practical use by men of acknowledged professional standing, as is shown by a glance at the list of writers in the front of each volume, and at the list of architects whose work is reproduced. The books are compiled from the regular instruction papers in the architectural course of the American School of Correspondence, to fully demonstrate the thorough character of the instruction given. As an educational power, it is doubtful if the value of this quiet but forceful work is generally appreciated. Its influence is to instill a knowledge of the principles that are fundamental to all good design, and an appreciation of what is good and simple and straightforward in architecture, thus tending to prevent the awful monstrosities that are sometimes committed in the name of architecture.

The Cyclopedia has a number of unique features:

Each section is followed by a list of test questions to impress the important points on the reader.

The solution of over forty practical problems (Vol. V, Page 367) based on the Rotch Scholarship Examinations, is given. These were carefully selected to meet the requirements of

ordinary office practice by S. T. Strickland, an upper classman at the Ecole des Beaux Arts, with the collaboration of Mr. W. T. Rutan, of Shepley, Rutan & Cooledge, architects, Boston.

The section on "The Architect and His Legal Relations" (Vol. I, Page 315), defining the law as it relates to building contracts.

The section on "Reinforced Concrete" (Vol. IV., Page 11), discussing the latest developments in this new and important branch of building.

The section on "Estimating" (Vol. II, Page 229), and the section on "Steel Construction" (Vol V), as well as the sections on "Specifiactions," "Superintendence," "Wiring for Bells and Light," "Plumbing," "Heating," "Ventilation," "Sheet Metal Roofing," "Cornices and Skylights," "Elevators," etc., full of practical, ready-to-use, up-to-date information.

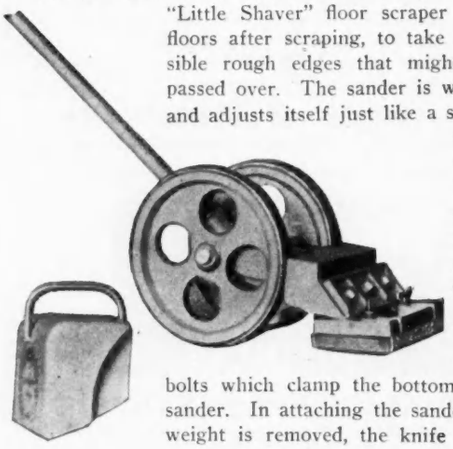
The artistic side is also well covered by section on "Perspective and Freehand Drawing," "The Greek and Roman Orders," "Rendering in Pen and Ink, and Wash," "Water-Color Hints for Draftsmen," "Architectural Lettering," "Shades and Shadows," etc.

A specially noteworthy feature is the unusual wealth of illustration. Thousands of well-executed drawings and half-tone cuts are scattered through the work, besides several hundred special full-page plates giving views and working drawingsings of residences, office buildings, etc., reproduced from designs of well-known architects and typical of the best building art as developed in America. A special list of these plates and the architects who furnished them is given at the end of Vol. X.

The books are well printed, on high-grade paper, and are substantially and handsomely bound. The analytical index to the ten volumes, with the list of plates, adds immeasurably to the value of the work for reference purposes.

The "Little Shaver" Sander

The "Little Shaver" sander is something new and just on the market. The sander is an attachment going with each "Little Shaver" floor scraper to sand the floors after scraping, to take off any possible rough edges that might have been passed over. The sander is well machined and adjusts itself just like a scraper knife, slipping up under the knife plate and bolted on. Sand paper can easily be renewed by loosening the thumb bolts which clamp the bottom and top of sander. In attaching the sander the heavy weight is removed, the knife head of the scraper being heavy enough, giving it a 30 pound pressure. Sold by the Contractors Supply & Equipment Company, Old Colony building, Chicago.



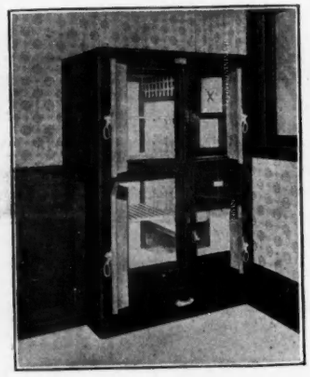
Dover Band Saw

Having made a specialty of band sawing machines for the past thirty years, the John A. White Company, of Dover, N. H., are always aiming to keep their product strictly up to date and a little in advance of others. In the construction of their band saw, shown in an advertisement on another page, they have aimed at the combination of the following features, viz.: Unsurpassed wearing qualities, perfection of operation, convenient and quick adjustment, and a capacity sufficient to meet the demands of ordinary shop work. They would be pleased

at any time to send full information regarding their band saws, together with prices, and if you are in need of anything in their line it might be wise to drop them a line mentioning your need and see what they have to offer. "A word to the wise is sufficient."

Refrigeration

If you are about to place a refrigerator in your home, it might be wise to look well into the matter before buying.



It is not always advisable to put in a cheap article, because it is good money thrown away. C. W. Trotter & Sons, 7 East avenue, Rochester, N. Y., are manufacturers, and they sell direct from the factory to the consumer. They claim that a "Trotter" will pay for itself in the saving of ice in a very short time, and that it is absolutely sanitary and durable. Their special family refrigerators are made to order to fit any space desired and are arranged to fill from the outside. Special designs submitted for residences, etc.

"Trotter" refrigerators are designed by Trotter, are built by Trotter, in Trotter's factory, from the best material obtainable, and are sold by Trotter direct to the consumer. It will pay you to write for descriptive literature.

Metal Shingles and Metal Ceilings

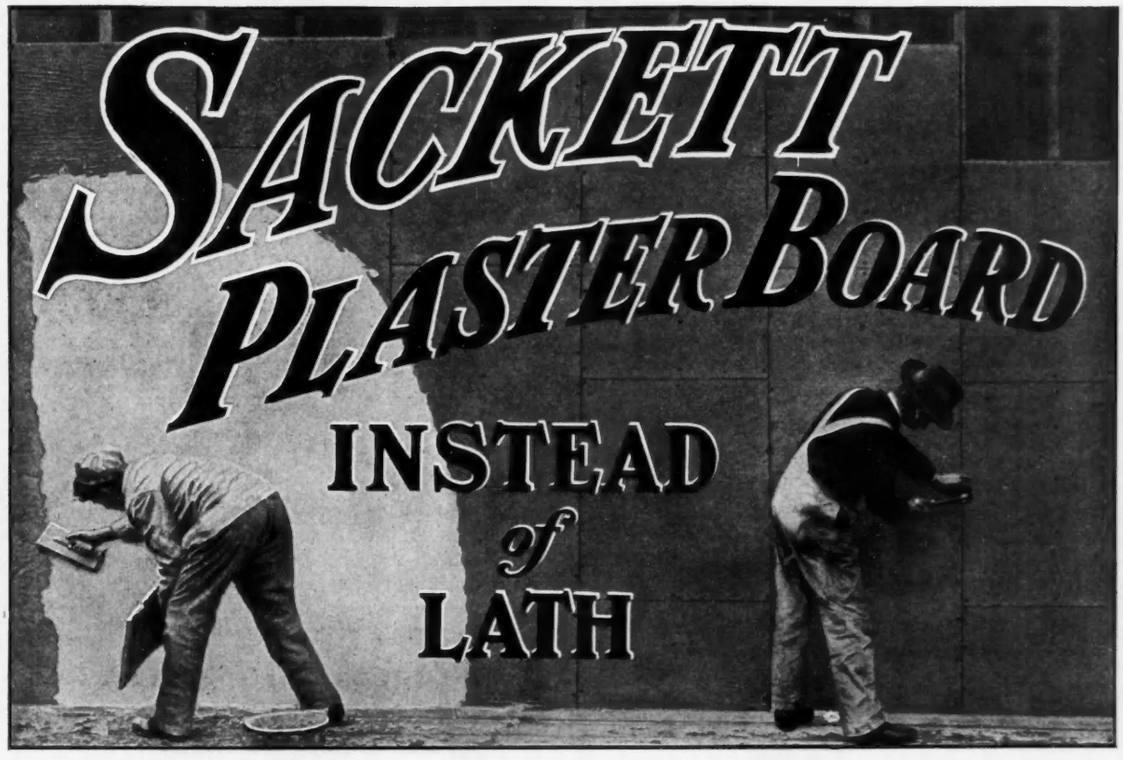
The Canton Art Metal Company, of Canton, Ohio, issues two very attractive little books entitled, "The Leaky Roof Question," and "Art Metal Interiors; a Little Light on This Subject." The first of these gives some very interesting information regarding the relative value of different roof materials. It describes the many advantages of the Canton Shingles and contains complete instructions for applying. The second book illustrates and describes the many beautiful effects which can be secured in the use of metal for ceilings and side walls. The Canton Metal Ceilings are embossed deep and the figures are clean and bold. Each sheet is stamped separately, obtaining results which cannot be secured where from four to six plates are stamped at one operation. Both of these little books will be mailed to anyone interested, together with full details as to prices.

A Carpenter's Bench Hook

One of the neatest and handiest little tools that a carpenter should have is being manufactured by R. P. Whipple & Co., 275 Main street, Springfield, Mass. It is a bench hook, and is of especial value on an outside job, as it can be quickly attached to and detached from a temporary bench, although it is very largely used on permanent shop benches. Thousands of these little tools have been sold since its invention in 1900, and they have given the best of satisfaction. Upon receipt of the price, 45 cents, one will be sent postpaid.

Practical Estimating Book

The Bradt Publishing Company, of Jackson, Mich., have just issued their fifth edition of the "Lightning Estimator," which is one of the most complete and pratcical estimating books on the market. It covers the work from the excavation of the cellar to the finished house. The estimates upon both material and cost throughout the book are based upon actual experience, which after all is the only safe and practical method of getting up a book of this kind. The work is right up to date, as it covers the entire subject of hollow concrete



FIREPROOF AND ECONOMICAL

Sackett Plaster Boards have been successfully used since 1891 in thousands of buildings of all classes, including small cottages, prominent hotels, costly residences, churches, and theatres.

Walls and ceilings of Sackett Plaster Boards will be **dry and ready in half the time** required when lath is used, as less than half the quantity of water is needed.

Less moisture means *less damage* from warped and twisted trim and woodwork.

Their superior insulating qualities make warmer houses with less fuel. The first cost is *no more* than good work on wood lath, and *less* than on metal lath.

Sackett Plaster Board is an efficient and economical **fireproofing,** not only for walls but between floors, and for protecting exposed wooden surfaces in mills, warehouses, and industrial structures. It is also used extensively instead of lumber as outside sheathing under weather boards.

Sackett Plaster Board comes in sheets or slabs 32 x 36 inches, ready to be nailed direct to the studding, furring, or beams.

For all kinds of buildings its use is ideal. It speeds construction; it lessens building cost; it reduces fixed charges for insurance; it makes fire-resisting walls and ceilings; and gives absolute satisfaction.

Carried in stock by *up-to-date building-material dealers* everywhere.

Booklet showing buildings all over the country where these Boards have been successfully used with **Samples** and name of nearest dealer, furnished on application to any of the following General Distributors]

UNITED STATES GYPSUM CO.
CHICAGO CLEVELAND MINNEAPOLIS

SACKETT PLASTER BOARD CO.
17 Battery Place, NEW YORK CITY

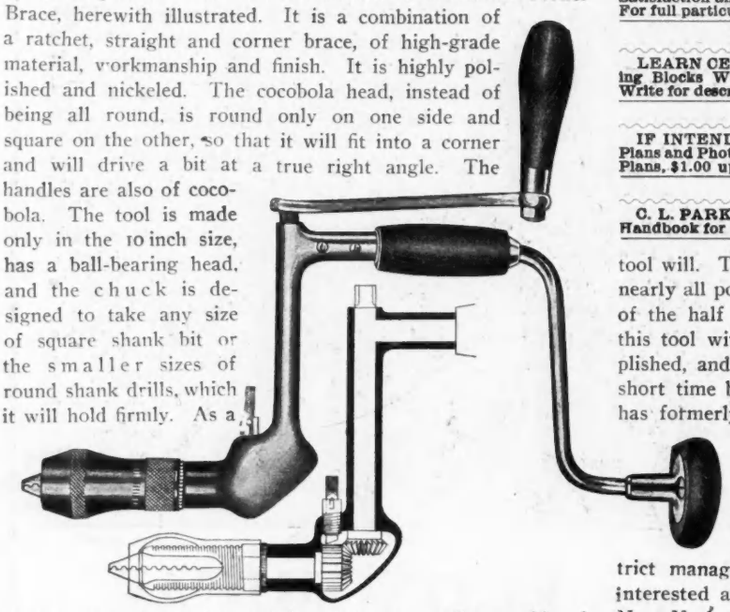
GRAND RAPIDS PLASTER CO.
GRAND RAPIDS, MICH.

HOTEL GRISWOLD, NEW LONDON
14½ Acres of Sackett Plaster Board used in its construction
R. W. Gibson, Architect

block work, concrete floors and cement work of all kinds. It is profusely illustrated, which adds greatly to the helpfulness of the book. The book is of a convenient size, and the covers are pliable. so that it can be conveniently carried around to your work, and makes a valuable addition to every carpenter's and builder's outfit. The price is $1.00, and can be secured directly from the publishers.

Lancaster Combination Corner Brace

The Lancaster Machine & Knife Works, Lancaster, N. Y., are placing on the market the Lancaster Combination Corner Brace, herewith illustrated. It is a combination of a ratchet, straight and corner brace, of high-grade material, workmanship and finish. It is highly polished and nickeled. The cocobola head, instead of being all round, is round only on one side and square on the other, so that it will fit into a corner and will drive a bit at a true right angle. The handles are also of cocobola. The tool is made only in the 10 inch size, has a ball-bearing head, and the chuck is designed to take any size of square shank bit or the smaller sizes of round shank drills, which it will hold firmly. As a



corner brace, it can be used in what are usually considered difficult positions, and will go in some places where no other tool will. There is no lost motion. It is particularly handy in nearly all positions that a ratchet brace is used, and in place of the half or quarter sweep of the ratchet brace, by using this tool with the handle, ten times the work can be accomplished, and it is confidently expected that the tool will in a short time be used in nearly all work where a ratchet brace has formerly been used.

Change of New York Office

The Union Fibre Company, of Winona, Minn., has changed the location of its New York office to 500 Fifth avenue. Mr. Walter Pendleton, district manager for the company, will be glad to see those interested at his new address, Room 211, 500 Fifth avenue New York City.

Classified Advertisements.

Advertisements under this heading will be inserted at the following rates:
One month ..... $0.45 per line
Three months ..... 1.25 per line
Six months ..... 2.25 per line
One year ..... 4.25 per line
Count 10 words to the line. Situations wanted one-half above rates.
Replies may be addressed in our care and will be promptly forwarded.

Help Wanted.

WANTED—Carpenters to read our ad. on page 181. Gage Tool Co.

AGENTS WANTED for the O-K. Weatherstrip. Made of Aluminum Coated metal, it possesses the rigidity of steel and is guaranteed absolutely rust proof. Best door and window bottom strip on the market. Price is right. Satisfaction and money in handling it. Carpenters and contractors supplied. For full particulars, write The Introstile & Novelty Co., Marietta, Ohio.

Instruction.

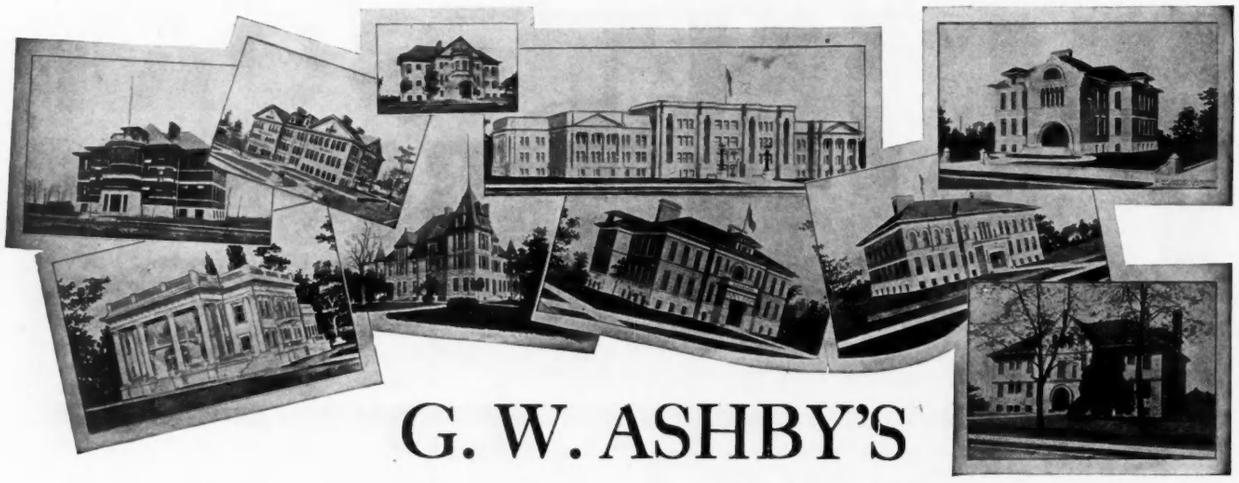
LEARN CEMENT CONSTRUCTION in all its branches for $1.50. Building Blocks Water Proof, white or any color. Bridges, Roof, Floors, etc. Write for descriptive circular No. 30. Cement Institute, St. Louis, Mo.

House Plans.

IF INTENDING TO BUILD send 25c for catalog of inexpensive houses. Plans and Photos, with cost—$900 to $5,500. LATEST AND BEST IDEAS. Plans, $1.00 up. The C. A. Eastman Co., Architects, Des Moines, Iowa.

Patents.

C. L. PARKER, Solicitor of Patents, 20 Dietz Bldg. Washington, D. C. Handbook for inventors send free upon request.

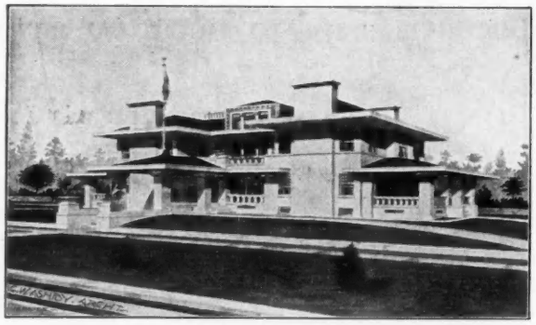


G. W. ASHBY'S

Plans and Specifications

are up-to-date, practical and include all small details that are necessary for the entire construction and all the finishing touches that complete the building

The special attention given to the designing of school houses and the satisfaction given to all *School Boards* we have done work for has made us the largest *School House Architects* in the country and enables us to furnish plans and specifications for all kinds of school buildings at a very low price.



ASHBY'S PORTFOLIO OF MODERN SCHOOL HOUSES

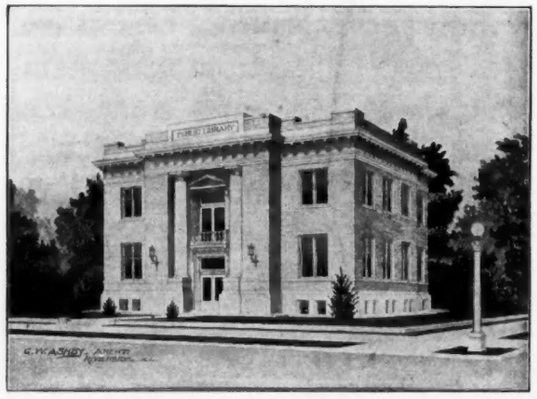
consisting of designs of modern school buildings, beautifully illustrated on heavy enameled paper; loose plates in portfolio cover, price $1.00.

Will be sent FREE OF COST to members of school boards and parties interested in the erection of a school or public building for which plans have not yet been procured.

WRITE US TODAY—

WRITE US FOR PRICES

OF COMPLETE PLANS AND SPECIFICATIONS DRAWN UP TO SUIT YOUR OWN IDEAS AND REQUIREMENTS



CARNEGIE LIBRARY, MAYWOOD, ILL.

All our designs display a composition of utility, durability and good, pure architecture without any "gingerbread."

No buildings are too large or too small for our personal and prompt attention.

We design all classes of residences from the large city mansion to the smallest cottage and with our up-to-date system of handling this class of work by none but expert designers, we can not only give you the best of service but also quote prices that you will find extremely low.

We develop your own ideas into a practical set of plans and specifications with which they can be executed to the smallest details into a home that can be built within your means and to your entire satisfaction.

G. W. ASHBY ... ARCHITECT

Eleventh Floor, Medinah Building, CHICAGO

Classified List of Advertisers

For Index See Next Page

BLACKBOARDS
Johnson & Co., E. J.

BLINDS
Burlington Venetian Blind Co.
Phoenix Sliding Blind Co.

BOOKS
American Carpenter and Builder.
American School of Correspondence.
Bradt Publishing Co.
Concrete Age Publishing Co.
Industrial Publishing Co.
Jenks, Benj. L.
Stoddard, Dwight L.

BRICK MANUFACTUREES
Bradford Pressed Brick Co.
Thomas Moulding Co.

BUILDERS' HARDWARE AND SPECIALTIES
Allith Manufacturing Co.
Atlas Manufacturing Co.
Automatic Door Rail Co.
Casement Hardware Co.
Champion Safety Lock Co.
Chicago Spring Butt Co.
Grand Rapids Hardware Co.
Ives Co., H. B.
Kees Manufacturing Co., F. D.
Lawson Manufacturing Co.
Mallory Manufacturing Co.
Milbradt Manufacturing Co.
Millers' Sons, Henry J.
Mulvey Manufacturing Co.
National Manufacturing Co.
Ornamental Products Co.
Prescott & Son, J. B.
Prouty Co., Ltd., T. C.
Pullman Manufacturing Co.
Rehm Hardware Co.
Roebuck Weather Strip & Wire Screen Co.
Samson Cordage Works.
Silver Lake Co.
Star Expansion Bolt Co.
Whipple & Co., R. P.
White, Van Glahn & Co.
Zimmerman, C. E.

CEMENT
Chicago Portland Cement Co.
Lawrence Cement Co.

CEMENT BLOCK MACHINES
Anchor Concrete Stone Co.
Ashland Steel Range & Mfg. Co.
Besser Manufacturing Co.
Brandell Concrete Block Machine Co.
Detrick, D. F.
Dunn & Co., W. E.
Francisco Block Machine Co.
Hayden Automatic Block Machine Co.
Miles Manufacturing Co., P. B.
Miracle Pressed Stone Co.
National Cement Machine Co.
Noble Concrete Machinery Co.
Olson & Richardson.
Pettyjohn Co.
United Cement Machinery Manufacturing Co.

CEMENT BRICK MACHINES
Miracle Pressed Stone Co.

CEMENT WORKERS' TOOLS
Anderson Tool & Supply Co.
Chase Foundry & Mfg. Co.
Miracle Pressed Stone Co.
Noble Concrete Machinery Co.

CLOTHING
Gents Outfitting Co.
Menter & Rosenbloom.

COAL CHUTES.
Chappell Furnace Co.
Shultz, C. H.

COLUMNS
Foster-Munger Co.
Sanders Co., Henry.

CONCRETE MIXERS
Eureka Machine Co.
Hayden Automatic Block Machine Co.
Knickerbocker Co.

CONCRETE SPECIALTIES
Hollow Wall Machine Co.

DRAWING MATERIALS
Andrews Heating Co.
Architects & Engineers' Supply Co.
Rich, J. & G.

ELEVATORS
Eaton & Prince Co.
Sedgwick Machine Works.
Sidney Elevator & Mfg. Co.

ENGRAVERS
Dearborn Engraving Co.

FLOOR SURFACERS
American Floor Surfacing Machine Co.
Contractors' Supply & Equipment Co.
Fox Manufacturing Co.
Miotke, Joseph
Star Floor Scraper Co.

GAS AND GASOLINE ENGINES
Gade Manufacuring Co.
Waterloo Gasoline Engine Co.

GLASS
American 3-Way Prism Co.
Anderson & Co., Geo. H.
Flanagan & Biedenweg Co.
McCully & Miles Co.
Suess Ornamental Glass Co.

GRILLES
Bertelsen Adjustable Grille Co.
Cleveland Grille & Mfg. Co.
Northwestern Grille Works.

HARDWOOD FLOORS
Moore & Co., E. B.

HEATERS
Andrews Heating Co.
Hess Warming & Ventilating Co.
United States Register Co.

HOISTS
Bates & Edmonds Motor Co.

HOUSE PLANS
Ashby, G. W.

HOTELS
Commonwealth Hotel, Boston, Mass.

INCUBATORS
Sheer Co., H. M.

INSTRUCTION
Academy of Architecture.
American School of Correspondence.
Cross Co., The
Engineers' Equipment Co.
Gray School Real Estate.
International Correspondence Schools.
National Salesman's Training Association.

IRON WORK
Canton Fdry. & Machine Co.
Centaur Wire & Iron Works.
Davenport Fdry. & Machine Co.
Dow Wire & Iron Works.
Stewart Iron Works Co.

LINOFELT
Union Fibre Co.

MANTELS
Burritt Co., A. W.
Colonial Fire Place Co.
Heitland Grate & Mantel Co.
Lorenzen & Co., Chas. F.
Wisconsin Mantel & Tile Co.

METAL CEILINGS
Berger Manufacturing Co.
Canton Art Metal Co.
Eller Manufacturing Co.
Foster & Sons Co., Wm.
Kanneberg Roofing & Ceiling Co.
Tiffin Art Metal Co.

METAL SHINGLES
Burton Co., W. J.
Cortright Metal Roofing Co.
Edwards Manufacturing Co.
Montross Metal Shingle Co.
National Sheet Metal Roofing Co.

METAL WORK
American Rolling Mill Co.
Burt Manufacturing Co.
Canton Manufacturing Co.
Mullins Co., W. H.
Northwestern Expanded Metal Co.
Sanitary Metal Tile Co.
Sykes Metal Lath & Roofing Co.

MILLWORK
Chicago Embossed Molding Co.
Chicago Housewrecking Co.
Chicago Millwork Supply Co.
Compound Door Co.
Gordon, Van Tine Co.
Harty Bros. & Harty Co.
Independent Lumber Co.
Malta Manufacturing Co.

MINERAL WOOL
Columbia Mineral Wool Co.

PAINTS, VARNISHES, ETC.
Buckeye Paint & Varnish Co.
Mound City Paint & Color Co.
Nice, Eugene E.
Johnson & Son, S. C.

PLASTER BOARDS
Sackett Plaster Board Co.

PLUMBERS' SUPPLIES
Central Machinery & Supply Co.
Chicago House Wrecking Co.
Karol, B. B.

PUMPS, TANKS, ETC.
Caldwell, W. E.
Myers & Bro., F. E.

ROOFING MATERIALS
Am. Sheet & Tin Plate Co.
Heppes Co., The
Patent Vulcanite Roofing Co.
Rock Asphalt Roofing Co.
Taylor Co., N. & G.

SKYLIGHTS
Galesburg Cornice Works.
Willis Manufacturing Co.

SLATE ROOFING, ETC.
Hower, J. K.
Johnson & Co., E. J.
McKenna, David
Pittston Slate Co.

STORE FRONT CONSTRUCTION
Coulson & Co., J. W.
Detroit Show Case Co.
Kawneer Manufacturing Co.
Shultz, C. H.
Voltz Manufacturing Co.

TOOLS
Am. Combined Level & Grade Finder.
Atkins & Co., E. C.
Braunsdorf-Mueller Co.
Britt & Page.
Davis & Cook.
Dixon Specialty Co.
Eden Specialty Co.
Erickson, N. A.
Gage Tool Co.
Goodell Manufacturing Co.
Goodell-Pratt Co.
Grammes & Sons, L. F.
Hight, A. W.
Lufkin Rule Co.
Marsh, H. C.
Marshalltown Trowel Co.
Mayhew Co., H. H.
Miller Manufacturing Co., A. W.
Millers Falls Co.
Morrill, Chas.
Nicholls Manufacturing Co.
North Bros. Manufacturing Co.
Ohio Tool Co.
Orr & Lockett Hardware Co.
Parker Co., Chas.
Prentiss Vise Co.
Progressive Manufacturing Co.
Sargent & Co.
Seymour & Whitlock.
Sheldon & Co., E. H.
Simonds Manufacturing Co.
Smith & Hemenway Co.
Stanley Rule & Level Co.
Starrett, L. S.
Taylor Mfg. Co., James L.
Tower & Lyon Co.
Walters Sons, Wm. P.
White, Van Glahn & Co.
Whipple & Co., R. P.
Woods, A. W.

TYPEWRITERS
McLaughlin Typewriter Co.

WIRE SCREENS
Phillips Co., The A. J.

WOODWORKING MACHINERY
Barnes Co., W. F. & Jno.
Chicago Machinery Exchange.
Crescent Machine Co.
Indianapolis Machinery Co.
Kidder, R. E.
Marston Co., J. M.
Seneca Falls Manufacturing Co.
Sidney Tool Co.
Smith Machine Co., H. B.
White Co., John A.
Wormer Machinery Co., C. C.

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NOTICE TO ADVERTISERS.

New copy, changes and corrections for advertisements must reach office of American Carpenter and Builder, 185 Jackson Boulevard, Chicago, not later than November 20 in order to insure insertion in the December number.

Four New Books

COPYRIGHT 1907

EDITED UNDER THE PERSONAL SUPERVISON OF

WILLIAM A. RADFORD

Editor in Chief of the AMERICAN CARPENTER AND BUILDER

Assisted by

ALFRED W. WOODS, the World's Greatest Expert on the Steel Square, and
WILLIAM REUTHER, the Leading Authority on Carpentry, Joinery and Building

THE STEEL SQUARE AND ITS USES

TWO VOLUMES

A Complete Encyclopedia on the Practical Uses of the Steel Square

JUST PUBLISHED. This very valuable and practical work is published for the first time. It is up to the minute, being issued January 1, 1907. This splendid edition is a brand new book from cover to cover, written in simple, plain, every-day language so that it can be easily understood and followed. Information of value that has appeared in former works, appears in this work, together with a vast amount of new, practical, every-day information, such as is necessary for every progressive and successful artisan to know.

THIS UP-TO-DATE AND PRACTICAL WORK on the application of the steel square, treats of the laying of the rafters, finding the lengths of jacks, securing bevels, laying out hopper bevels, treating of the steel square as a calculating machine, and showing how to measure solids, surfaces and distances.

SPECIAL CHAPTERS are devoted to that part of stair building to which the steel square can be applied. Other chapters treat of heavy timber framing, showing how the square is used for laying out mortises, tenons, shoulders, etc.

PRACTICA AND INSTRUCTIVE ILLUSTRATIONS to the number of more than 300 are scatttered through this work. These illustrations are not technical mathematical designs, nor geometrical problems, but are the thoroughly practical illustrations of a thoroughly practical text, bringing to the attention of the reader such points of interest and information as he needs in his every-day business. While the text and descriptive matter are so accurate and easy of comprehension that they could be understood without even the assitance of the illustrations, nevertheless the book has been thoroughly and profusely illustrated with diagrams and drawings.

REMEMBER, this work is absolutely up to date (being issued January 1, 1907). Each volume measures 6x9 inches, and contains over 300 pages, being the largest books on the steel square ever published. They are bound in cloth with attractive cover designs, handsomely stamped. Printed on the best quality of paper. Each volume contains 50 modern house plans.

PRACTICAL CARPENTRY

TWO VOLUMES

A Complete Up-to-Date Explanation of Modern Carpentry

NEW SPECIAL EDITION. This work, "Practical Carpentry," is absolutely new, being completed only January 1, 1907. It is written in simple, plain, every-day language so that it can be easily understood. It will not bewilder the working man with long mathematical formulas or abstract theories.

IT IS THE MOST COMPLETE, most accurate, most practical work upon this subject. It contains the best and quickest methods for laying roofs, rafters, stairs, floors, hopper bevels, mitering, coping, splayed work, circular work, and in fact, for forming all kinds of joinery and carpenter work.

SPECIAL CHAPTERS are devoted to building construction, which takes the carpenter from foundation to roof, with complete illustrations of each detail, such as foundation, windows, cornices, doors, roofs, perch work, etc. There are also special chapters devoted to good and faulty construction and all kinds of framing.

400 SPECIAL ILLUSTRATIONS. There are over 400 illustrations, many of them cover an entire page, and they illustrate completely and instructively the text. They show the detail and actual construction down to the minutest point. They enable the reader to understand the text easily and to follow the work in hand without difficulty.

REMEMBER, this work is the latest one published on this extensive subject. (Issued January 1, 1907). Each volume measures 6x9 inches, and is bound in cloth with cover design attractively stamped. Contains more than 300 pages in each volume. Printed on an excellent quality of paper. Each volume contains 50 modern house plans.

PRICE (Per Volume) $1.00

The Steel Square and Its Uses, Vol. I $1.00 Practical Carpentry, Vol. I $1.00
The Steel Square and Its Uses, Vol. II 1.00 Practical Carpentry, Vol. II 1.00

AMERICAN CARPENTER AND BUILDER

BOOK DEPARTMENT

185 Jackson Boulevard, CHICAGO

Buy Your Storm Windows and Storm Doors 50% Below Dealers' Prices

Our wonderfully low prices on Storm Doors and Windows make it possible to protect your home against the wintry blasts at practically no expense, as the amount you save in **fuel** alone soon pays entire cost of storm protection. Our Storm Doors are extra wide and extra long—attractively painted. All our Storm Sash are made with extra wide side and bottom rails. Don't wait until cold weather comes—**Order Now,** save money and keep your house or out-buildings snug and warm in zero weather.

STORM DOORS

White Pine

Hand Painted

Clear Glass

Made ¾ inch wider and 1 inch longer to allow for fitting on outside of door frame.

ALASKA

Hand Painted

Storm Door	
2^6 x 6^6	$1.82
2^8 x 6^8	1.91
2^{10}x6^{10}	2.02
3^0 x 7^0	2.24

SIBERIA

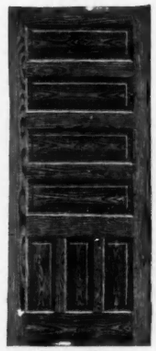
Storm Door	
2^6 x 6^6	$1.29
2^8 x 6^8	1.34
2^{10}x6^{10}	1.46
3^0 x 7^0	1.55

ICE KING

Haud Grained

Storm Door	
2^6 x 6^6	$1.94
2^8 x 6^8	2.03
2^{10}x6^{10}	2.13
3^0 x 7^0	2.36

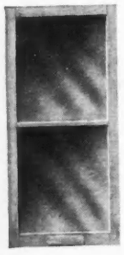
POLAND



Storm Door	
2^6 x 6^6	$1.41
2^8 x 6^8	1 46
2^{10}x6^{10}	1.57
3^0 x 7^0	1.67

Storm Windows Carried in Stock — Prompt Shipment

No. R 219, TWO LIGHTS



Size of Glass	Price Glazed Single Strength
16 x 24	$0.80
16 x 26	.94
16 x 28	.95
16 x 30	.98
16 x 32	1.04
18 x 24	.90
18 x 26	.96
18 x 28	1.00
18 x 30	1.02
18 x 32	1.08
20 x 20	.89
20 x 22	.92
20 x 24	.94
20 x 26	.98
20 x 28	1.04
20 x 30	1.12
20 x 32	1.22
20 x 34	1.31
22 x 24	.98
22 x 26	1.03
22 x 28	1.10
22 x 30	1.21
22 x 32	1.31
22 x 34	1 46
22 x 36	1.50
24 x 24	1.08
24 x 26	1.09
24 x 28	1.20
24 x 30	1.30
24 x 32	1.38
24 x 34	1.50
24 x 36	1.51
26 x 28	1.42
26 x 30	1.46
26 x 32	1.49
28 x 30	1.48
28 x 32	1.74

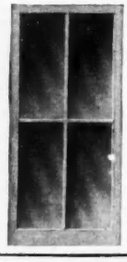
Ventilators in bottom 10c each, extra.

We carry in stock every size listed on this page and can make prompt shipments.

Always try and use stock sizes, as odd sized storm sash will cost more money and a delay. We ship odd orders in from two to four weeks but stock sizes we ship promptly.

Order your storm goods early—do not wait until cold weather comes.

No. R 220, FOUR LIGHTS



Size of Glass	Price, Glazed, Single Strength
10x20	$0.77
10x22	.85
10x24	.88
10x26	.97
10x28	1.02
10x30	1.14
10x32	1.25
12x20	.85
12x22	.97
12x24	1.03
12x26	1.10
12x28	1.15
12x30	1.28
12x32	1.34
12x34	1.49
12x36	1.50
14x26	1.28
14x28	1.33
14x30	1.45
14x32	1.52

You can order direct from Sample Bargains shown on this page or send for large FREE Millwork Catalogue, containing 5000 bargains.

STORM SASH FOR LARGE FRONT WINDOWS

No. R. 218, Two Lights, 1⅛ inches Thick

Bottom Glass	Top Glass	Price Glazed D. S.
40x40	40x14	$2.88
40x40	40x16	2.98
40x44	40x16	3.27
44x40	44x16	3.37
44x44	44x16	3.47
44x46	44x18	3.62
44x50	44x18	3.87

Ventilators in bottom 10c extra.

STORM SASH

No. R 216, Eight Lights, 1⅛ Inches Thick

Size of Glass	Price Glazed Single Strength
8 x 10	$0.79
9 x 12	.84
10 x 12	.86
10 x 14	.96
10 x 16	1.13
12 x 14	1.15
12 x 16	1.25

Swing Light 40c net extra.

Ventilators in bottom 10c extra.

No. R 217, Twelve Lights, 1⅛ in. Thick

Size of Glass	Price Glazed SingleStrength
8 x 10	$0.86
9 x 12	1.09
9 x 14	1.28
10 x 12	1.19
10 x 14	1.32

Ventilators in bottam 10c extra.

Storm Sash Hardware

Storm Sash Hangers, with Screws, per pair 10c, and Fasteners 11c per pair.

GORDON, VAN TINE & CO.

244 FEDERAL ST., DAVENPORT, IOWA