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AMERICAN CARPENTER AND BUILDER

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Write to our President, Mr. Edwin L. Seabrook, 2213 Chestnut street, Philadelphia, Pa., for further information.

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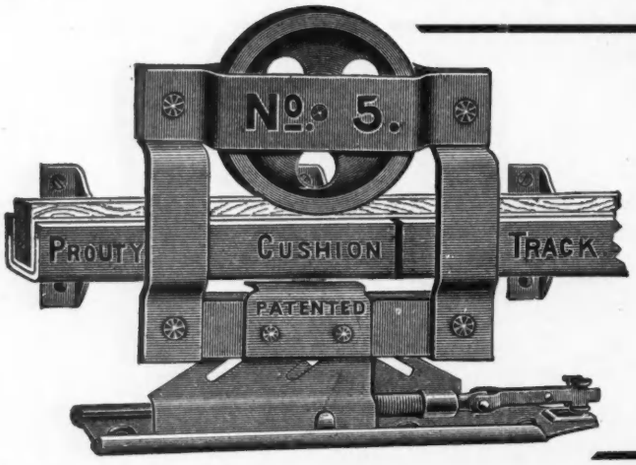

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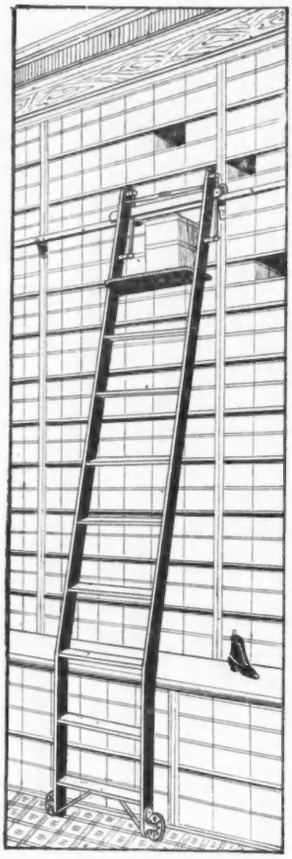

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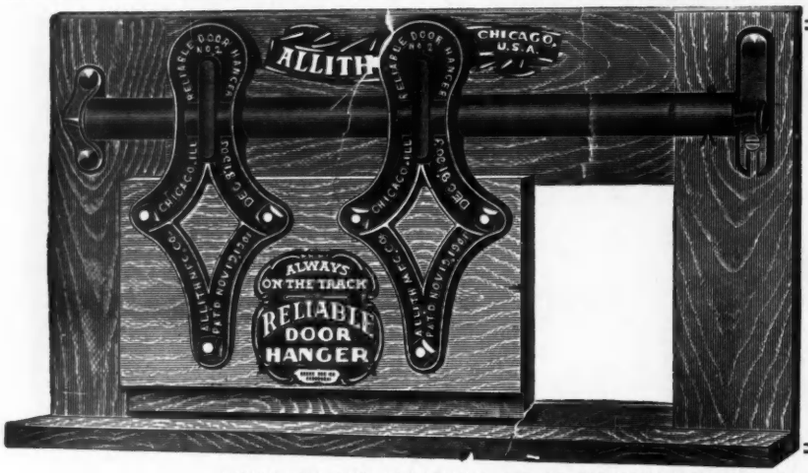

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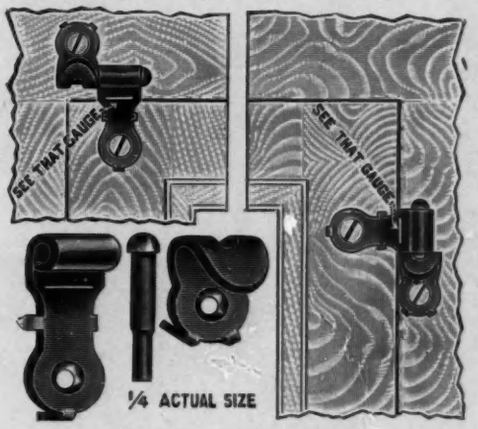

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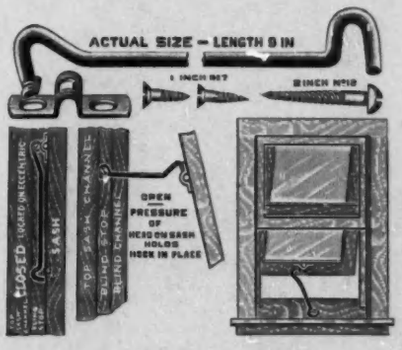

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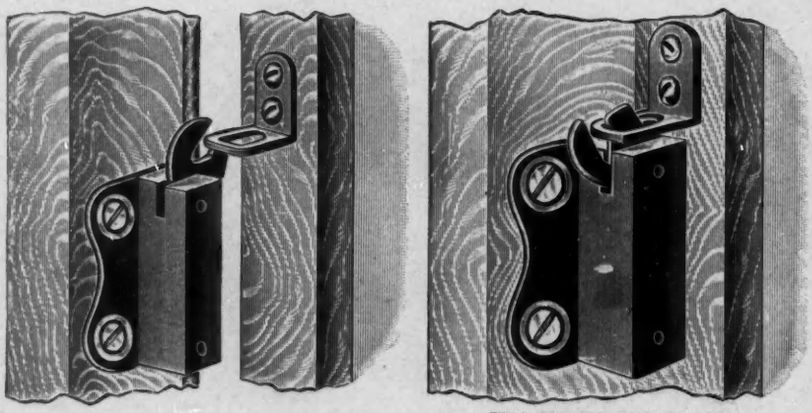

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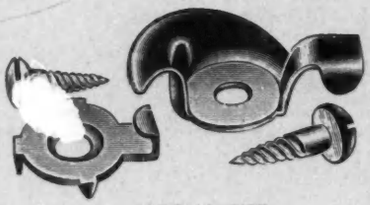

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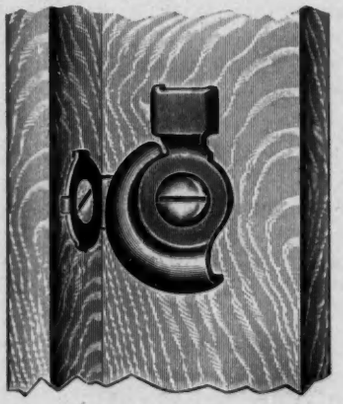

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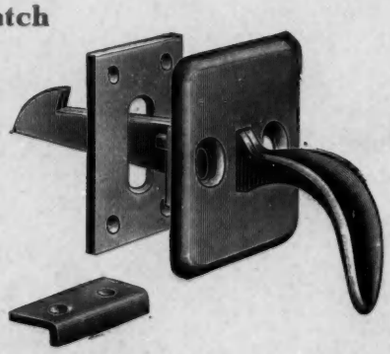

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American Carpenter and Builder

Entered as second-class matter July 1, 1905, at the postoffice at Chicago, Ill. under the Act of Congress of March 3, 1879.

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

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An Interesting Article

WE ARE fortunate this month in having an article on "The Hand of Progress in the Lumber Camp," by the best authority in the world on this subject, J. E. Defebaugh, editor and proprietor of the *American Lumberman*. This paper, which is one of the greatest trade papers in the world, is considered the best authority on lumber and the lumber industry and it has by its extensive and reliable information, made itself such.

Cement Users' Convention

PROBABLY at no time has American enterprise and inventive ability shown itself to better advantage or made more rapid strides than during the past year in the cement industry.

This infant industry has through its inherent merits and general adaptability developed into one of the greatest factors in the building world. Among its followers are the best engineers and architects in the country, who upon numerous and thorough tests have given their hearty support to this great material.

During this past month the third annual convention of the National Association of Cement Users was held in Chicago and those who attended came away filled with enthusiasm and marveling at the progress the industry has made. It is natural to wonder what has caused this great change which was so noticeable throughout the entire session. First there was an air of confidence which hitherto seemed to be lacking, the members seemed to be skating on thin ice and afraid at their own assertions but during the past year they have actually erected many buildings which have successfully withstood both scrutiny and the weather. Every member came with some photograph of a house, church, school or store that he had successfully built and it gave him and everyone present an air of confidence. Second, the "installment plan man" was no longer in such evidence. Men came with the idea of buying, and paying for what they bought. While it may for the time being increase the sales of a manufacturer to sell his goods on the installment plan, it is eventually a great evil to the industry. If a man has not enough working capital to purchase one machine how can he be expected to give the finished blocks sufficient time to cure. It takes time and the man must live. Is he going to starve or sell his blocks before they are fit to be put into a house? The past has answered that question to the satisfaction of everyone. Third, the inventive geniuses who had an idea

that they had an original idea are gradually disappearing and in their place stable business men are pushing the industry which is worthy of their best efforts and money.

✤

Trade Papers in the Cement Industry

IN THE early history of this country all that was necessary to spread the news and happenings was a town crier or a poster tacked to the village post-office. When the country grew and the population became more scattered this method proved inadequate and necessity brought forth the newspaper, until today it not only disseminates the news but shapes public opinion and brings about national reforms.

What the newspapers are doing in a general way the trade papers are doing in their respective trades, the difference being that the trade papers can concentrate all their energies along one line, while a newspaper must cover every subject. The trade paper has therefore become a vital factor to each industry, not only in spreading general information, but in giving technical information, expert opinions and presenting modern methods. Many interested in the cement industry have failed to fully realize that this country has passed the "town crier" stage and that their products cannot be sold on their local reputations. In these strenuous times there are too many people with local reputations and the only way to succeed is to acquire a national reputation. The best recourse is the trade journal; it enters every hamlet and is thoroughly read, for in many cases it is the only paper, outside of the newspaper which is received. It is referred to in their daily work and is their correspondence school, technical library and private instructor put into one. On the other hand, it is your town crier and poster in every town in the country; it displays your goods and presents your arguments as could not be done in any other way.

A manufacturer at the recent National Cement Users' convention put the situation very aptly when he said, "Our good friend, the journalist, does valiant work. He may not know all about the game, but he is powerful in talk, and he keeps up our spirits on days when things go badly. He fills his columns with the history of our past triumphs, the story of our present greatness, and the prophecy of our future magnificence."

✤

Paint Legislation

THERE is a strong undercurrent of agitation in favor of laws providing for the honest labeling of paints. It is reported that laws modeled after those recently passed in North Dakota will be introduced in several states very soon. The need of this is apparent from the revelations recently made in North Dakota, and it is believed that a strong public sentiment will compel the passage of such laws. More good, perhaps, could be accomplished by the passage of a national law, along the lines of the pure food and drug law, as suggested in a recent issue of *The Painters' Magazine,* but it might be more difficult to enact such a law than to secure the enactment of state laws.

The painters are not the only people interested in legislation of this kind, but every builder and property owner should not only be willing but anxious to urge upon his representative in the state legislature the need for a law providing for the honest labeling of paint materials. Only by the rigid enforcement of laws of this kind can the purchaser of paints and painting materials ever be sure of getting what he pays for—an honest dollar's worth of paint value for his dollar.

Painters' colors are largely sold that are adulterated as much as fifty to seventy-five per cent with barytes and other extenders. It is no uncommon thing to buy linseed oil in small quantities that has been adulterated by the dealer or jobbing house, with mineral or rosin oil, and turpentine adulteration is so common that in some places very little pure turpentine can be purchased.

Recently a paint law went into effect in North Dakota providing that all paint containing other than the orthodox paint materials should distinctly state its composition on the label. This law met with great opposition from many paint manufacturers, who opposed it on the ground that they would be compelled to disclose formulas which had taken years to perfect. Some of these manufacturers have since changed the formulas of their paints sold in North Dakota to conform to the law, other paints have been withdrawn from sale in that state, and still others have had sufficient confidence in the merits of their paints to state the formula, as required, and trust to the established record of the paint to sell it, without regard to whether it conforms to the standard established by law or not. A recent bulletin (No. 70), issued by the North Dakota Agricultural College Government Experiment Station, at Fargo, N. D., gives the results of analyses made by Drs. E. F. Ladd and C. D. Holley, and shows, in a surprising manner, the reason for the opposition which the law caused. Some of these analyses show materials which contain anywhere from fifty to seventy-five per cent of makeweight and adulteration, and which are short in weight or measure in addition, yet are offered to the public under high sounding guarantees.

The effect of the North Dakota paint law has been to drive this spurious material—which is undoubtedly profitable to the manufacturers—out of the state. People have learned that the cheap paints they had been buying were dear at any price, and dealers report that there is a growing demand for a better class of materials. The law acts to the advantage of the honest manufacturer, the honest painter and the property owner as well. EDWARD HURST BROWN.

The Hand of Progress in the Lumber Camp

IMPROVED MACHINERY AND BETTER TRANSPORTING FACILITIES HAVE TAKEN AWAY THE ROMANCE OF THE LUMBER CAMP—SOME OF THE RADICAL CHANGES WHICH THE BUSINESS HAS UNDERGONE

By J. E. Defebaugh

THE world makes progress generally at the expense of romance. The machinery of the woolen mill is less picturesque than the spinning wheel. In the great wheat fields of the middle west the sturdy plow boy has been crowded out by the plow driven by steam. Even in war we have become prosaic, for war has become a business of long distance marksmanship rather than an affair of personal valor in hand-to-hand conflict.

J. E. Defebaugh

The lumber business, particularly the logging in the woods, has felt the hand of progress. Many of the romantic and picturesque features once a part of an occupation that was nearly all manual labor have been eliminated by machinery devised to do the work of man, by an improved commissariat and by a hundred other changes which have simplified the business while destroying its romance. The picturesque, naturally enough, did not appeal to the men who were engaged in turning the forests into dollars. They hailed improved logging methods as a relief from conditions which impressed the laity as highly interesting.

Causes other than invention have brought about a change. When machinery was unknown in the woods and when the logging industry was confined to a comparatively small area in the east, it was easy to write about it. Now the industry is no longer localized. The thunder of the falling spruce of Maine is caught up by the plunging hemlock of Pennsylvania and shattered pine of Minnesota and thrown across the prairies to be echoed and mingled in the roar of stricken fir in Washington or tumbled redwood in California. Topographical differences in these widely separated areas have necessitated different methods until now the industry embraces many regions and various means. These differences extend even to the language of the loggers. The "bull donkey" of the Pacific coast forests has as little place in the vernacular of the lake states' forests as many of the terms of the Appalachian drive have in the language of the coast.

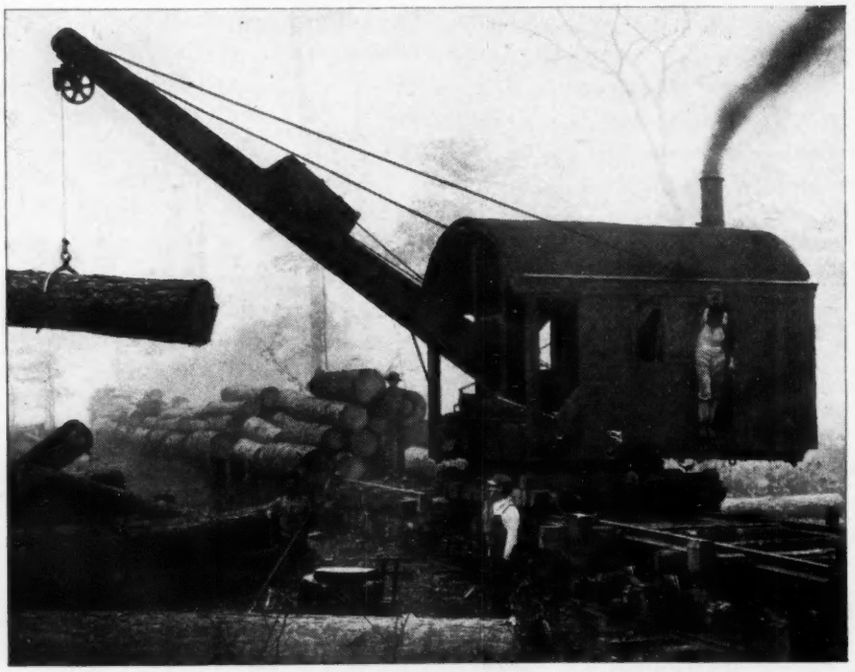
The loggers of a hundred years ago "skidded" their logs into heaps laboriously and slowly with oxen. Now the steam skidder handles a mammoth log while the ruminating oxen would be turning around. At one time there was nothing but a long haul to the "landing" and a hard "drive" down the river to bring the logs to mill, and trees remote from a running stream could not be cut to profit, it was thought. In early days timber estimators did not consider forests more than three miles from driving water valuable. Now the logging railroads have penetrated the forests and place the saw mill within a day's run of timber once considered too far away for utilization.

Once the lumber camp was cut off from the world in winter. Now many of them have their telephones and most of them are within easy reach of telegraph and rail. The old isolation drew together men who were universally picturesque. The nearness to civilization that now obtains has created a somewhat different type of woodsmen, but it has put within the reach of the "camp boss" men to whom labor is a business.

One of the classic romances of the old camp was the "grub." It was averred that "down in Maine" the men were given beans "twenty-one times a week." The nearness of supplies and the easier means of transportation have brought about a more diversified menu and more particular palates. Once a winter's supplies were taken in in the autumn. Now the railroad or supply team brings them weekly or oftener.

Log Train at Diboll, Texas

In one respect woodswork has seen little change. It never was boy's play, and it is not boy's play now. It means to be up before the sun is up and to bed long after the shadows have lengthened into night. Neither has the element of danger been eliminated. It is probable that in these days there is less bravado in the woods, and therefore, fewer fatalities to record, but occasionally a tree drops the wrong way in spite of the best efforts of the most scientific calculation of the "faller." In the old days all cut timber was "driven" to the mill, but the advent of the railroad has reduced the necessity of work on the river. Nevertheless, many streams are still "driven" and wherever man and logs follow the currents of fickle streams, there is a chance for skillful and exciting work for the driver.



Loader in Action at Wilmar, Arkansas

The rafting of lumber, in the early days a conspicuous feature along the Hudson river and other eastern streams and in later days followed on the Mississippi and other western rivers, has entirely disappeared from the industry and the quaint life on the slow moving raft, the skillful passage of bridge, pier and shoal, are now only romantic memories.

Yet there attaches to woodswork a degree of romance at the border of which progress must stop and go no further. Whether the logs are slowly drawn to the "landing" and rolled into the river to float to the mill on a spring freshet, or whether they are "skidded" almost where they fell, lifted upon the waiting cars by the mighty arm of steam and whirled to the waiting saws by puffing locomotives, over it all still hangs the glamour of out-of-doors, and every bit of toil is tempered and tinselled by the green of whispering branches and the glow of the immutable sky and sweetened with the rich incense of the growing forests.

The Old-Time Carpenter

WOODWORKING ONE OF THE FIRST CRAFTS LEARNED BY THE HUMAN RACE—CRUDE TOOLS IN USE AND STYLE OF HOUSES BUILT

By J. Crow Taylor

AS A GENERAL thing when some writer undertakes a delineation of the character and surroundings of the old time carpenter and joiner, he goes back possibly to our grandfathers and points out some of the quaint features of their methods. There is much of interest in it, too, and much that is strange, for progress has been so rapid during the last century that only a few years are necessary to completely change the aspect of a calling. But, speaking of the old time carpenter, our grandfathers were not old timers at all in the light of history, for the carpenter and joiner comes from very ancient stock. In fact, wood working is one of the first crafts learned by the human race, coming even before what is now termed civilization. That great carpenter's tool, the saw in its crude state, was one of the first tools invented. The savage of the early day, however, did not use it for ripping. He learned early that he could take a piece of jagged stone and saw a stick of wood in two. Haggle it, we would call it now, and they had crude saws made of thin stone, and sometimes made of a piece of wood on which were fixed shark's teeth or chips of stone, forming the cutting points. Later came the metal saw, and in time, as civilization progressed this saw was used for ripping as well as cross cutting, and the man power saw mill or pit saw for making lumber was a well known institution during the development of civilization, holding a prominent place up until the introduction of power saws only a little more than a hundred years ago.

In its earlier forms the preference in wood working seems to have been given to digging out, or excavating wood. That is, when wanting to make a vessel or anything of the kind, it was the practice to take a block of wood as big as desired and excavate the interior instead of waking it up with boards as we do now.

What is regarded as one of the most interesting and

instructive chapters on the savage or early man in his efforts to assist and improve on nature, is one written upon house building among the Guiana Indians, of the northeastern part of South America, by Thurn: "The houses are everywhere equally simple in structure," he says, "for the materials are everywhere much the same. Such differences as exist have evidently arisen in consequence of natural efforts to meet the special requirements of each kind of situation. Three chief types of houses are distinguishable. The Warrau built on piles over water; the Arawak and Caribs, sheltered from cold winds by the surrounding trees, built walless houses; on the open Savannah the Macusi erected habitations with thick walls of clay as a protection against the cold winds from the mountains. On hunting expeditions the natives erect temporary shelters or benabs, which may be a few leaves of some palm, laid flat one upon another, and the stalks, which are bound together, are stuck in the ground at such an angle that the natural curve of the leaf affords some shelter. A more pretentious benab is made by sticking three poles upright in the ground in the angles of a triangle, joining the tops by means of the three cross-sticks, and laying over these a bunch of palm leaves. Thus it is easy to trace the development of house building among these Indians."

In that study of industry among primitive peoples presented under the title of "The Origins of Invention," Mr. Otis T. Mason, who was at the time of this writing, 1895, Curator of the Department of Ethnology of the United States Museum, Smithsonian Institution, Washington, gives a very interesting outline of the trade of house building in Samoa in which he said that one man out of every three hundred was a master carpenter. "He had under him ten or twelve journeymen, who expected pay from him, and apprentices learning the trade. When a young man took a fancy to the trade he had only to go and attach himself to the staff of a master carpenter, and when he could point to a house that he had built, that set him up as a professed contractor. If a person wished a house built he offered a fine mat to a carpenter. If the latter accepted the mat he undertook the job. At an appointed time the carpenter came with his journeymen and apprentices, armed with axes and adzes having blades of shell and stone. The house owner provided board and lodging, and he, assisted by his neighbors, did the carrying and lifting. No price was fixed beforehand; it was left to the judgment, generosity, and means of the employer; but it was a lasting disgrace on any one to have it said that he treated the carpenter shabbily. The entire tribe or clan was his bank, upon whom he might make demands. If the carpenter from any cause decamped, no other carpenter would finish it. The employer must come to terms with the contractor."

It is evident from all this that the carpenter was not only a matter of some importance in the early stages of civilization, but he had things considerably more his own way than he has now. There may be a few carpenters now and then who are asked to come and build a house and left to name the price themselves, or would feel secure to let the employer pay according to his means, but the instances are few and far between, while in the majority of cases the price is not only one of the first things discussed, but it is generally made the subject of much dickering on the part of every man that wants a little job done.

✣

Saving Windows

Sash frames, with sash weights, locks and trim complete, may be taken out of old buildings that are being taken down, and preserved just as good as new by screwing slats and braces on them, which not only keeps the frames square, but prevents the glass from being broken. Doors, frames and trims may also be treated in like manner.

✣

To Prevent Glue Cracking

Glue frequently cracks because of the dryness of the air in the rooms warmed by stoves. The addition of a little chloride of calcium to glue will prevent this disagreeable property of cracking. Chloride of calcium is such an absorbing salt that it attracts enough moisture to prevent the glue from cracking. .

✣

To Polish Nickel Ornaments

Nickel ornaments on stoves, etc., may be kept bright by using ammonia and whiting. Mix together in a bottle and apply with a cloth. A very little polishing gives a fine lustre. It is good for silver-plated ware as well. We use pumice powder to polish tin pans when we use anything.

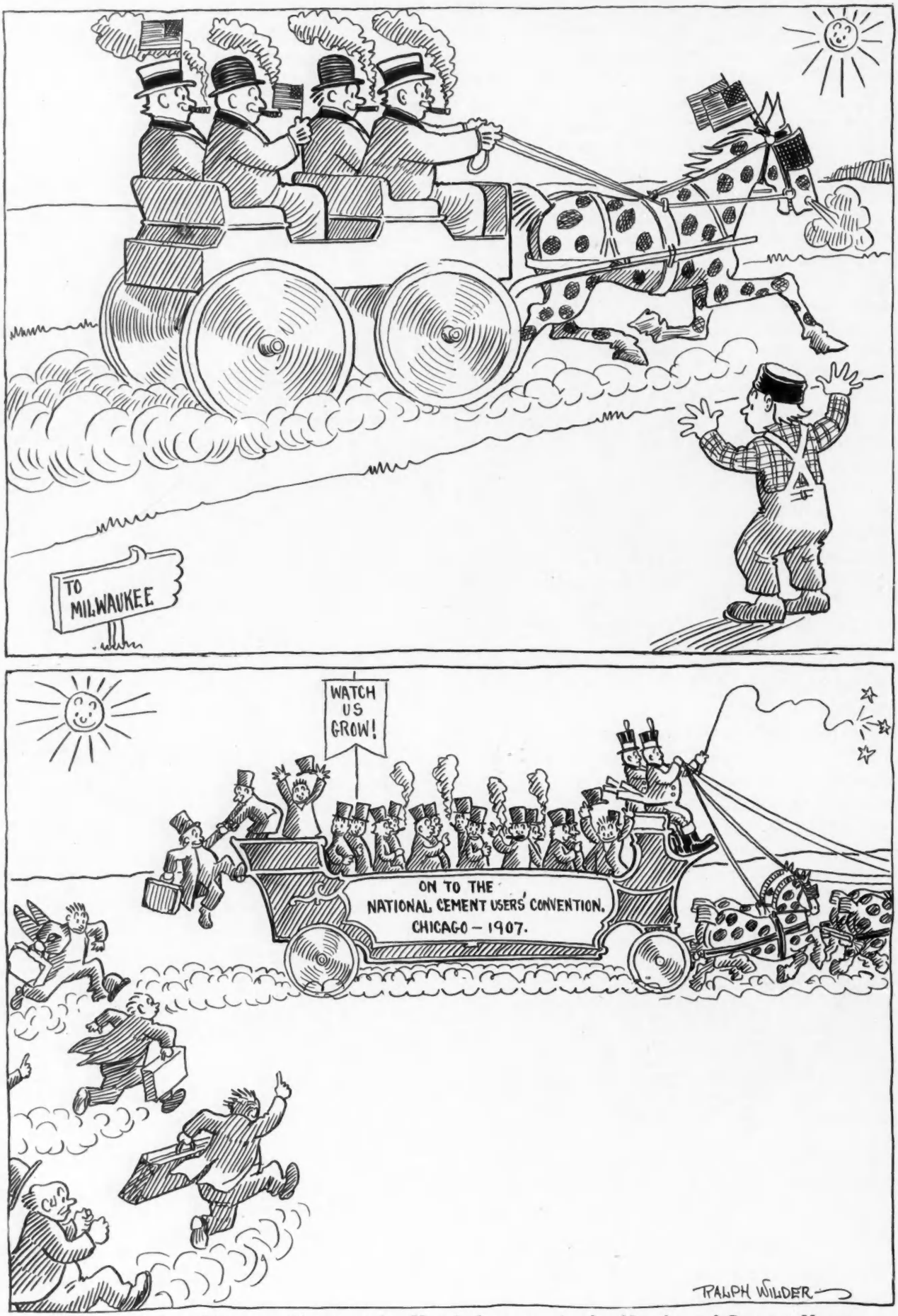
✣

Painting Tin

To paint sheet tin, first scrape off all resin that may adhere to joints and then thoroughly wash the surface with benzine, so as to remove all grease and dirt. Then apply red lead and linseed oil paint for first coat. White lead and ochre should never be used.—*Canadian Architect.*

✣

A Galveston school-teacher asked a new boy: "If a carpenter wants to cover a roof fifteen feet wide by thirty long, with shingles five feet broad by twelve feet long, how many shingles will it need?" The boy took his hat and slid for the door. "Where are you going?" asked the teacher. "To find a carpenter—he ought to know better than us fellers."



A Comparative Diagram, Showing the Year's Increase in the Number of Cement Users

Stratford-On-Avon, England

SHOWING THE CHARACTERISTIC BUILDINGS OF THE MIDLAND SECTION—HOME OF SHAKESPEARE DESCRIBED AND ALSO THAT OF A COLLIER

By George E. Holt

THE most delightfully picturesque part of England is undoubtedly the Midland section. To be sure the grandeur of high hills or the charming softness of pretty blue lakes is not to be found there. But there is a universal verdure of the fields, a never ending beauty of pretty roads overhung by

Street in Chester

large stately trees, a continuous panorama of neat, well-kept prosperous farms that is not to be found in any other portion of the British Isles. The beauty of Old England, with its characteristic hedges and gardens, its pleasing quaintness, its fresh clean air,

Memorial Theatre, Stratford

is nowhere so much to be appreciated as in the counties of Cheshire, Warwickshire and Shropshire, all in the Midland district.

And in all this district man has done much to add to the beauty which nature has bestowed, to cultivate the picturesqueness of it all in the style and the picturesqueness of the homes which he has here built for himself.

We had traveled much in the northern portions of England, we had traveled in the country districts and in the towns and cities of both Scotland and Ireland. And when we came south finally into this delectable Midland district of England we soon came to be acquainted with a style of architecture that is particularly characteristic for this region and which has been for hundreds of years. We saw here the monotony of brick or stone walls which has shown itself to us continually since we had been in the Isles, modified and broken by pleasing panelings in wood and plaster or in wood and stone. Then another local characteristic is to be found in the gables of these houses and homes of the Midlands. Riding or walking down the country districts in Warwickshire we frequently met with examples of these gabled houses of wood and plaster panels. Some of these buildings are ancient structures, and they show the effects of time and cen-

Shakespeare's Home

turies of weather upon their bent walls. But not all of them, for some are modern structures and others are even now in course of construction.

There are some famous old towns in the course which we took down through the heart of the Midlands. There is ancient old Chester, still surrounded with its heavy old stone walls sixteen feet thick in some places, which were erected back in the middle ages. There is the great and modern manufacturing city of Birmingham, with its great diversity of industries; there is the famous old castle of Kenilworth; there is the old town of Warwick, with its ancient castle, and there is that most interesting of all the

smaller Midland towns, Stratford-on-Avon, the home of Shakespeare.

Straford-on-Avon is an interesting little country town aside from having been the place in which the

Home of a Collier

great dramatist was born. Here he made his home in which he died, and here is the tomb in which he now lies buried. This little town is an interesting little place in which to learn something about the style of buildings which we have described as being one of the characteristics that make this part of England

Victoria Monument, Liverpool

picturesque. There are any number of houses built in this paneled style, many of them have stood for a hundred years, or perhaps for two hundred years. Often they show unmistakable signs of their great age and the walls may bulge or the timber that was used in paneling them may be bent or strained. But there are modern houses here too, many of them that follow the style that was popular here so long ago.

We visited the home of Shakespeare. We were told that over thirty thousand other people have done so this year and we learned that of that great number more had been American visitors than British. For the bard is popular with Americans and they have erected a memorial fountain in the very heart of the city and they maintain an American chapel in the Church of the Holy Trinity where he is buried. This house in which the poet was born two hundred and forty years ago is still in very good condition and to a surprisingly large extent the same floor upon which the poet played as a boy is still here.

The Shakespeare house may be taken as an example of the style of building which we have been mentioning herein. It is one of those peculiar houses in panels

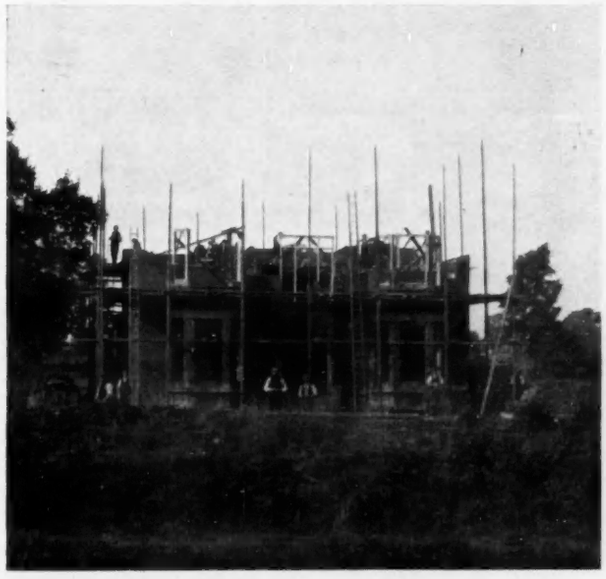
Bedford Street, Liverpool

of wood and plaster. The manner of constructing these houses was to first erect the frame work, to groove the top and bottoms of these panels, then to fit into these grooves perpendicular small beams and then to plaster over these with a material of mortar and crushed stone much in the fashion that the interior plastering of a modern house is done. The interior walls of a house of this kind were whitewashed and in some of the homes of the better class, as perhaps in the Shakespeare house, these whitewashed walls were then decorated in different colors or were hung with tapestries. The house always had an enormous fireplace in the general sitting room, as this one did, and there were smaller fireplaces in each of the other rooms.

The modern houses of this pattern in this section of the country are built in a manner that is much the same as that pursued two hundred and fifty years ago when this house was constructed. Often these houses are seen with a paneling of timber, the panels having been filled in with brick instead of this plaster material. But the paneling of wood, which is after all the characteristic thing, is quite common throughout the district. The old hostelry of Shakespeare's time, which is still known as the "Five Gables," is in much

the same shape that it was in his day. It is no longer used an an hostelry but is given over to a row of shops of different kinds. It well illustrates the other characteristics of the buildings of the region, namely the gableing.

Of course these houses which we have been describ-



Brick Building, Kenilworth

ing so far are not by any means the only kind of structures that are being erected at the present time. The ordinary brick house is quite common and becomes more and more so as time goes on. There are some apparent differences in the manner of building these houses compared with the methods followed in the states.

New Infirmary, Liverpool

In the first place a brick building, or even a large heavy stone building, is always built from scaffolds erected on the exterior of the walls that are going up. The bricklayer usually works from this scaffold. We noticed a new brick residence in course of erection just outside the town of Kenilworth. The scaffold had been erected and the men at work laying the walls were working from the outside. There were four men carrying bricks to those at work on the wall. They made their ascents and descents leisurely by means of a ladder that led up to the scaffold. They used no hods, but each one carried about ten brick at a time. They were carried on his head on a flat board. He would pile the brick carefully on the board, raise it to his head, carefully balance, and then he was away and up the ladder, never stopping to worry about the load he was carrying on his head until he reached his destination.

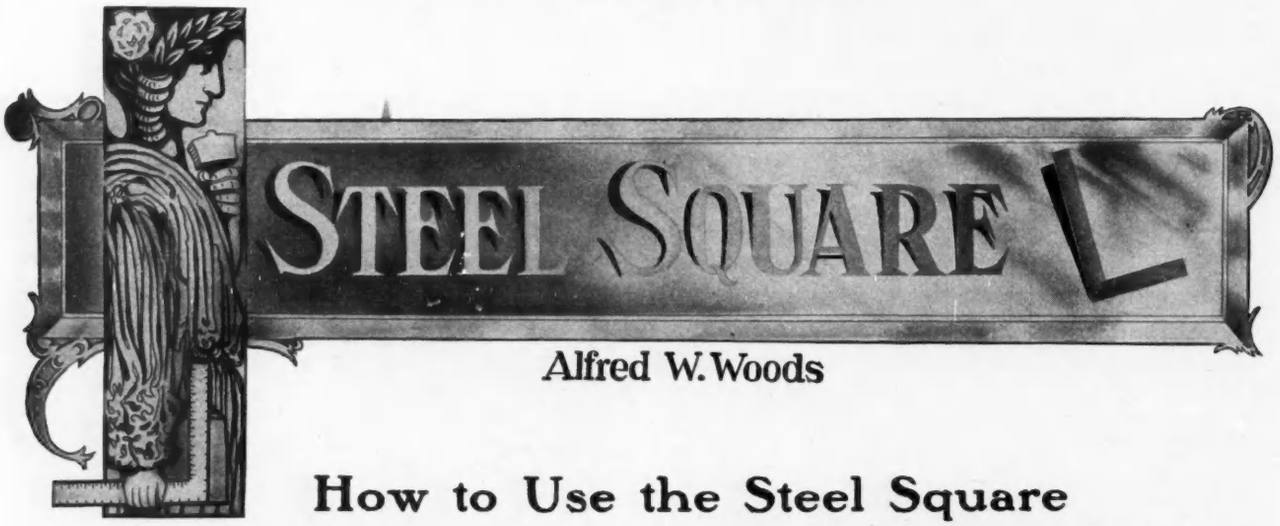
English chimneys are peculiar unto themselves, and to an American they are almost funny. Our illustration showing the home of a collier at Farnworth, England, indicates how these chimneys are built. There is one for every fireplace in the building, or for every heating apparatus. In the picture of Bedford street, Liverpool, the effect of this multitude of chimneys, on the larger buildings, may be seen—an appearance much the same as a pipe organ.

The picture of the collier's home is interesting in comparison with the miserable hovels in which so many American miners live. The house is of red brick, nicely finished both outside and inside. and is very comfortable: I know, because I have dinner in one exactly like the one in the picture. Vines and gardens add to their cosiness. The picture of the new infirmary at Liverpool is given as an example of what might almost be termed "freak architecture."

South Africa Offers a Good Market

Consul John H. Snodgrass, of Pretoria, in response to inquiries regarding the cement industry in South Africa, writes:

Since the British occupation here, South Africa has presented one of the very best markets in the world for cement because of the new life infused in the country through the public works departments of the various colonies, including harbor extensions, railway building, sanitary projects, cold-storage concerns, and the like. Business blocks have been added to all the cities in which cement has entered to a large degree, an outside veneering always being added to the brick interior both in dwellings and office buildings. It is not surprising, therefore, that during the past few years the importations of the product have not fallen much below $1,000,000; in fact 1903, the banner year in all importations, records $2,500,000 worth of cement, while 1904 was but little behind that record. In that competition America cut but little figure, shipping to the Transvaal less than $400 worth in 1903 and about double that amount the following year, while Germany's contribution during the same period was $341,875 and $529,800, respectively, England following with $217,725 and $252,325 for those two years.



Alfred W. Woods

How to Use the Steel Square

ILLUSTRATING THE ANGLES IN ROOF FRAMING BY MEANS OF AN ILLUSTRATIVE BLOCK OF WOOD—ALSO SHOWING THE SAME BY THE USE OF SEVERAL STEEL SQUARES AND OTHER ILLUSTRATIONS

SO FAR in these articles, we have dealt more on the geometrical position that the various angles occupy in the roof and how they may be obtained with the aid of the steel square. But in this, we will

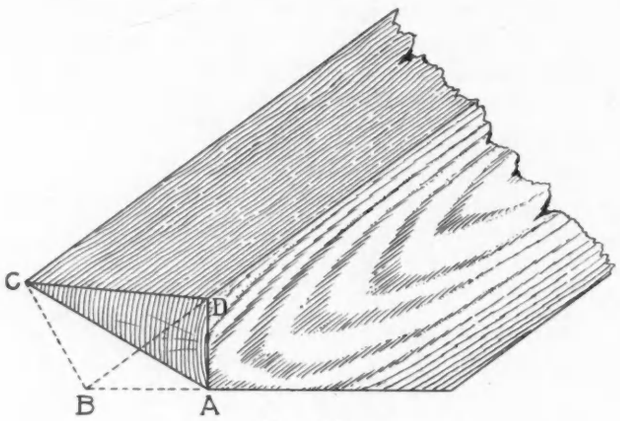


FIG. 103.

illustrate the same principle in a more practical sort of way by showing the angles on a little block of wood.

All of the cuts and bevels in any roof are represented in the cube as before illustrated in Figs. 72 and 73 of the July number, for square cornered buildings. Some may think this a kindergarten way of getting at the point. So it is. It is the beginning and if the subject matter is properly instilled in the mind, it paves the way for greater things. The little blocks, such as may be found in the scrap pile after the rafters have been framed, though cast aside fit only for kindling wood, yet they remain a tell-tale of the counter part of the cuts of the rafters that form the angles in the roof. The experienced framer can detect at sight of these blocks what has been done in the framing of the roof. He will know what the pitch is, as well as all of the cuts and bevels and what figures to use on the steel square to obtain them, though he may never have seen the building. The idea seems to be prevalent that it is better, if not necessary, to frame the rafters on the attic floor, as they are set in place; that it is a saving of time, etc. If they understood the true principles involved, they could frame the most difficult roof on the ground, cutting every piece which it will contain and do it in less time. The building in question may be a thousand miles away. It may be in some foreign land and the framer may never see its walls. It makes no difference to him, provided they are true and he has the correct measurements to work from. The rafters when set up will fit to their respective places with closed joints and a much more mechanical job than the man who depends on framing his work on the job by the cut and try method. All that is necessary for the mechanic to know is the size and shape of the building and the desired pitch. In this, it is assumed that the angles of the plates on

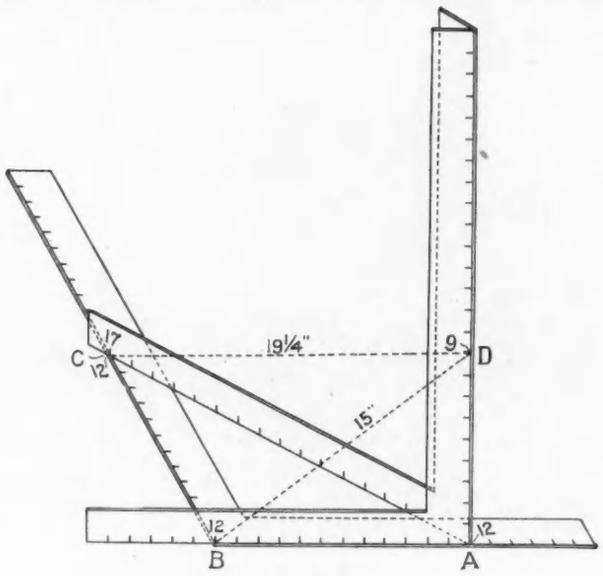


FIG. 104.

which to rest the rafters are true. If not, he should know it so that he may frame accordingly. Most any carpenter, who is worthy of the name, can frame the common rafter for a building, square or parallelo-

gram in shape, but when the roof contains angles causing hips and valleys, it is startling to know the number who are utterly lost in such work. The chief reason for this lies in the fact that the laying out is entrusted to the foreman, or to one man on the job. Thus the majority of carpenters, so to speak, just saw wood according to orders year in and year out, never learning the art of framing because some one else has done the thinking part for them. It is all right for

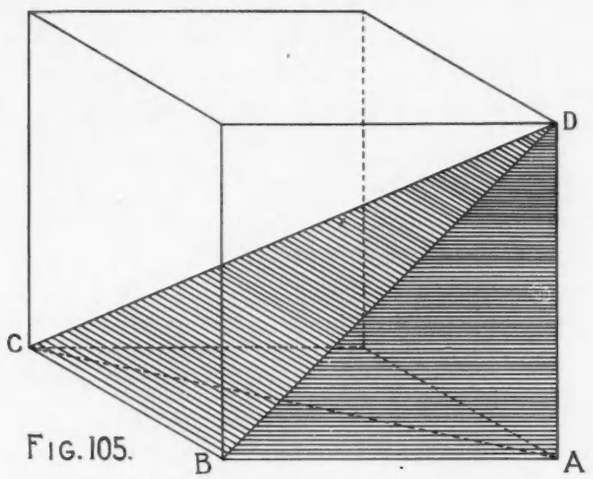


FIG. 105.

one man to take the lead, but his helpers should not be simply followers. They should be leaders ready to take up the work at any point and carry it to completion. It is the purpose of these articles to that end, although we have been accused of making them too hard and that they were beyond the average man, etc. One man was so unkind as to say that these articles were really a post-graduate course,—fit only for the kid-glove mechanics; too much geometry for the common man, etc. This makes us feel bad, since our education ended with the common country school more than a third of a century ago. Never even having the privilege of seeing between the covers of a book on geometry, except as we struggled with it in Ray's third part arithmetic. What we know about it now are the fruits gathered from the field of experience and persistent labor. It was not all easy picking, but such as we have is free to those who care to accept. So let us all be young again and go back to our blocks, but in doing so, we do not relinquish any of the so-called geometrical problems in former articles, but it is the purpose in this to show these same angles in actual position by illustrating them by means of a little block of wood.

The seat and plumb cuts of a common rafter are the simplest of all the cuts about the roof; the run and rise taken on the steel square gives them both, but how many ever stopped to think that by simply cutting off the toe of the common rafter on an angle of 45 degrees, they would have a block containing all of the angles that are used on the steel square for framing a hip and valley roof?

Fig. 103 shows the foot of the common rafter with such a block cut from it. Like letters are used in this, as are given in previous illustrations for like angles and are as follows:

B A represents the run of the common rafter; A D the rise; B D the common rafter; B C the tangent; C A the run of the hip and C D the hip rafter. Simple enough, isn't it? By measuring down the corresponding length of D A on the plumb cut on the long side of the jack and cut at right angles from it to the edge of the rafter, we would have another block of same dimensions and consequently would contain the above proportions. All of the cuts can be had from this commonly supposed useless block, by simply laying it along the edge of the rafter at the proper points and marking along the different sides, as follows:

By laying the face B D A on the rafter with B D along the edge, A D will give the plumb cut and A B the seat cut of the common rafter. By laying the face C D A with C D along the edge, A D will give the plumb cut and C A the seat cut of the hip or valley. By laying the face C B D with B D along the edge, C D will give the top, or more commonly called side cut of the jack (also the top, or side cut of the hip, if applied to the backing plane of same), and by placing C D on the edge, C B will give the face cut of the

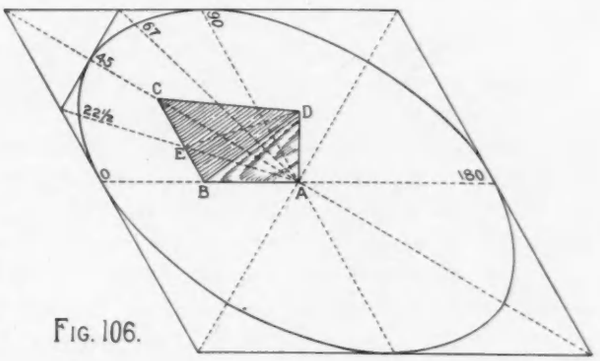


FIG. 106.

roof boards to fit into the valley or over the hip. By laying the face C B A with B A along the edge, C B will give the square cut and C A the miter cut of 45 degrees. Speaking of the backing, it is simply a three cornered strip taken off of the upper edges of the hip, the base of which will be as A B C and the proper portions are found by measuring back from B one-half of the thickness of the hip on line B A. This is not all. Suppose the dimensions C B and B A to be 12 inches and A D 9 inches (⅜ pitch), then all of the lengths of the rafters can be had by simply moving the block along on the rafter as is customary with the steel square. If B A and A D be divided into inches, and fractional parts thereof, the fractional lengths of the rafter can be found just as accurately as with the steel square. However, this would require a special block for the slope given the roof, but of course, a carpenter could not afford to handle a lot of blocks, especially of such huge dimensions and

why should he, when all of these angles may, with a little study, be obtained with the steel square.

In Fig. 104 are shown three steel squares placed in such a shape as to delineate the angles as shown on the block with the figures to use to obtain the cuts. Like letters are used as in the previous illustration to describe the parts, so that the would-be learner can easily apply the angles to their proper places. It must be remembered that the base C B A remains the same for any slope given the roof. The only change being at A D which regulates the slope. But we are not through talking about the block.

In a former article, as before mentioned, are shown the roof cuts in relation to the cube. We said then, we would touch upon the question again. So now, is a good time to touch it. The little block that we have found containing so much information, must be some specific part of a cube. Let us see. Fig. 105 shows the outlines of a cube. The shaded part represents the block in question. In this, the block is shown to the proportion of the ½ pitch. As the pitch lines rise above this point, the height of the cube would be accordingly, but of course it could not be called a perfect cube.

We have had much to say about the degree divisions of the circle and the part roof framing partakes of same, so let us see what relation this little block bears to degrees.

Fig. 106 shows a square. The dotted lines drawn diagonally from corner to corner divide the square into four equal parts and by drawing cross lines divide these parts again. Where the lines cross indicates the center and to this we will apply the block, as shown, and it will be seen that its base lines coincide with the 45-degree angle. B A rests on the starting point or on the 180-degree line and from this the angles of the base are determined by dividing 180 by the number of sides in the building. Thus four is contained in 180, forty-five times, showing that 45 degrees represents the angle of the base lines from which the other angles pertaining to the four sided, or square cornered building are determined.

To find the angle for the octagon, divide 180 by 8. The quotient will be 22½ and represents the degree of the base lines, as shown by the lines A E and A B. Using the same rise as before, the outlines for the octagon framing block would be bounded by A B E and D. The 22½-degree angle cuts the tangent (B C) of the former at 5-12 of its length. Hence, that is why 5 and 12 give the octagon cut.

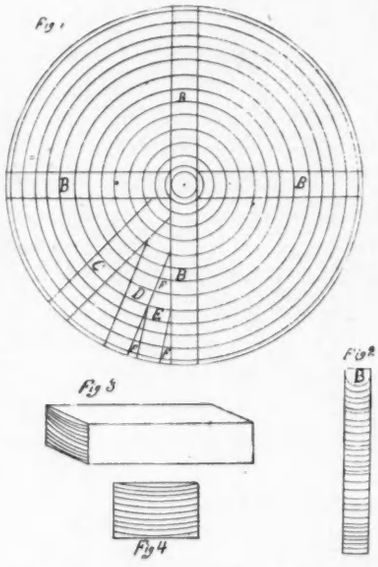
For a hexagon framing block, the base line of the hip would rest at 30 degrees and proceed as before.

All of the base angles for polygonal framing blocks, except for the triangle, would fall under 45 degrees, the triangle being at 60 degrees.

We trust the reader will bear in mind that this system of framing is not given for practical use, but more to show what may be done. It would require too many blocks and the carpenter who would attempt it would soon be dubbed a block-head framer. No, there is nothing better than the steel square. Not the new fangled kind that are covered with figures, giving tables for only a few of the more common inclines given the roof, but the good old square, void of everything except the scale and the figures that denote the inches. Indeed, what may be wrought with this simple instrument is truly wonderful. There is seemingly nothing beyond its possibilities as a calculating instrument.

Cutting Beech Plane-Stocks

Plane-makers are usually glad to get good white, straight-grained beech, for plane-stocks. One concern, the Gage Tool Co., Vineland, N. J., has repeatedly advertised in this journal for such wood. The accompanying engraving shows the method of sawing plane-stocks from the log, as used by that company. Fig. 1 represents the end of a beech or apple wood log, from which are sawed 3½ or 4-inch planks, represented by B, taken at right angles from each other. The remaining triangular shaped pieces are then sawed into planks as represented by C, D and E, F representing a portion of the waste. B, Fig. 2, represents one of the planks as it appears after removing from the log, before sawing into stocks, with the circles of annular growth as near as possible at right angles to the sides of the plank. Fig. 3 represents a plane-stock as sawed from B, Fig. 2. Fig. 4 shows the end of the plane-stock, with its circles of annular growth parallel with top and bottom of plane, and at right angles to its sides. For planes only the white or sap portion of white beech is used. Apple-wood also is used. An immense amount of beech and apple wood goes to waste every year, which might be turned to a better use. The waste in sawing logs for plane-stocks is just as valuable for firewood as would be the whole log sawed up. Slabs from beech logs where thick enough, are just as valuable for planes—in fact more so—than any other part of the timber. Near the butt part of the tree the growth is rapid, and here the slab is thickest, and from this part come the best plane-stocks.—*The Woodworker.*



Short Talks With Our Subscribers.

ONLY one more issue and the AMERICAN CARPENTER AND BUILDER will be two years old. The present year has been one of such unusual progress and prosperity that an extra effort will be made to have its "Second Anniversary Number," to be published in April, not only the greatest number ever issued of the AMERICAN CARPENTER AND BUILDER, but the greatest building paper ever published. But we will tell you about this next month. We might tell you this much just now, however. We are planning to not only make this a big anniversary number, but it will be devoted particularly to the builder. We will probably call it our "Second Anniversary Number and Special Builders' Edition."

Magazine Popular at Convention

Those of our readers who had the privilege of attending the big convention of the National Association of Cement Users in Chicago last month were undoubtedly proud of the fact that they were subscribers to the AMERICAN CARPENTER AND BUILDER. Not only was our booth at the exhibit hall pronounced the neatest and most attractive, but everybody admired the magazine itself. About three out of four men who passed our booth were already subscribers, and our representatives in charge of the exhibit had to devote most of their time to acting as a reception committee, greeting those who stopped to get acquainted.

Circulates All Over the World

Our readers probably do not realize how widely the AMERICAN CARPENTER AND BUILDER circulates. While the thousands of subscribers in every state in the Union are reading their magazines, hundreds of others are equally interested in Canada, and still others in Alaska, Cuba, Central America, England, Scotland, Australia, and the Hawaiian and Philippine Islands. An example of this was only recently brought to our attention, where one of our advertisers received a letter from a subscriber in South America, asking for catalogue, prices and special cash discounts. This letter is reproduced herewith, just as it was received by Rawson & Evans.

Advertisers Highly Pleased

Advertisers are voluntarily coming to us and expressing their appreciation of not only the magazine but of the character of our subscribers. Many of them have been keeping careful records of the returns from their advertising and report that the AMERICAN CARPENTER AND BUILDER produces the most inquiries and also the most sales. A good feature about our subscribers which they all mention, is the fact that they pay their bills promptly, nearly always sending the cash with the order.

Another evidence of the good will of our advertisers is the fact that almost without exception they remain in the magazine after once trying it. There are ninety-five advertisers in the magazine now who have been in steadily for more than a year, and thirty-two of these are using larger space today than they used when they first started.

MILCIADES LARA
Bogota. - Rep. of Colombia.

Bogotá, 11-7-06.

Messrs. Rawson & Evans
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Dear Sirs:

I request you to send me your Catalogues and Price list, stating best discounts for Export, for Goods f.o.b. steamer New York carefully packed in strong wooden boxes, cash against shipping documents through reliable commission house in N. Y.

I have seen your ad. in American Carpenter & Builder

Yours truly

Milciades Lara
for D. V.

Much Information About Concrete

In this issue we are devoting considerable space to articles and information regarding concrete blocks and concrete construction generally. The annual convention of the National Association of Cement Users demonstrated the wide-spread interest in the use of concrete, and the fact that such a large number of our subscribers attended the convention showed that they were wide awake to the rapid progress on this kind of construction. It is this demonstration of increasing interest which led us to devote so much space in this issue to the subject.

What did you think of our January issue—the big "Special Millwork Number"? Wasn't it a magazine to be proud of?

Construction of Casement Windows

SHOWING A GOOD METHOD OF CONSTRUCTION WHICH IS ABOUT THE CHEAPEST THAT CAN BE WELL EMPLOYED — COMPLETE DETAILS OF THE SAME SHOWN

A CASEMENT window opening outward in a thirteen-inch brick wall is made the subject of this installment. This type of construction is about the cheapest that can well be employed, excepting of course that the molded work and other features which are provided for appearance only may be greatly simplified. These features are subject to considerable modifications as the taste of the architect or builder dictates.

The window opening is spanned on top by a flat stone arch, the blocks of which are cut with a camber of one-quarter of an inch and set with a camber of one-eighth of an inch to every foot of span. Flat arches set in this manner give a much better effect than when set perfectly flat, inasmuch as the arch appears to sag in the center when the soffit is perfectly straight.

Back of the stone arch a rowlock arch is turned over a wood center and supports the inner two-thirds of the wall over the opening. These rowlock arches are segmental in form and are built of brick set on edge, and one rowlock is provided for every foot in the width of the masonry opening. All rowlocks should start at a brick impost cut to a line corresponding with the radius of the arch, and the key bricks of the lower rings should not be set until the upper rings are ready for their key bricks.

The masonry jamb of the opening is built straight and the window frame is secured in place by means of a lug which is left on the jamb of the frame and built into the masonry as the walls are carried up about same. This lug also serves as a wind stop.

The stone sill of the opening is cut so as to lay up accurately with two courses of brickwork and is tailed into the masonry under each brick impost. The sill is cut with a wash and has a lug or raised seat at each end to receive the brick imposts. On the underside of the projecting part a water drip is cut. The stone sill should extend under the wooden sill at least two inches.

The inside of the wall is shown furred with one by two-inch strips placed sixteen inches on centers to receive the wood lath. Where expanded metal lath or galvanized wire lath is employed, the furring strips should be set not over twelve inches on centers. The furring and lathing are frequently omitted and the plaster applied directly to the brickwork. In such cases the joints of the masonry are raked out about one-half an inch, so as to give a clinch to the plaster, and the entire inner surface of the wall, before the plastering is applied, is given a coat of damp-resisting paint so as to prevent moisture from penetrating the wall and staining or discoloring the plaster. When the furring and lathing is omitted, wood bricks are built into the wall for a nailing for the wood finish.

Another method employed when it is desired to omit the furring and lathing, is to make the inner four inches of the wall of hollow brick, the hollow spaces in the bricks providing an air space which prevents moisture from penetrating.

Fig. 162 is a vertical section showing the construction at the head of the frame. The trim is mitered, put together with slip tongues and glued. The head lining is tongued into a piece of finishing wood on the inside of the frame head.

Fig. 163 is a horizontal section showing the construction at the jamb of the frame. The frame is molded and where it abutts the stop bead a channel is provided to catch any water which may beat in between the sash and frame during stormy weather. This channel conveys the water down and discharges it on the sill in the manner shown by the dotted lines in Fig. 164. The trim is molded, built-up and hollow-backed and has a feather-edged back band.

Fig 164 is a vertical section showing the construction at the sill of the frame. The inside stool is tongued into the wooden sill, extended into the room and provided with brackets. The apron is molded and has returned ends. A small mold is provided in the angle formed by the intersection of the stool and apron. A water nose is cut on the underside of the bottom rail of sash.

To Remove Varnish from Wood

A strong application of ordinary spirits of camphor will remove almost any kind of polish or varnish. Give the spirit time to evaporate before re-polishing, or it will injure the new polish.

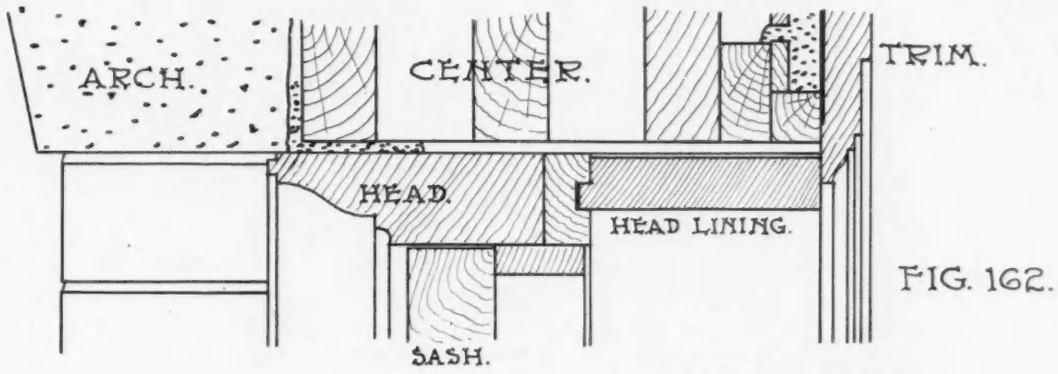


FIG. 162.

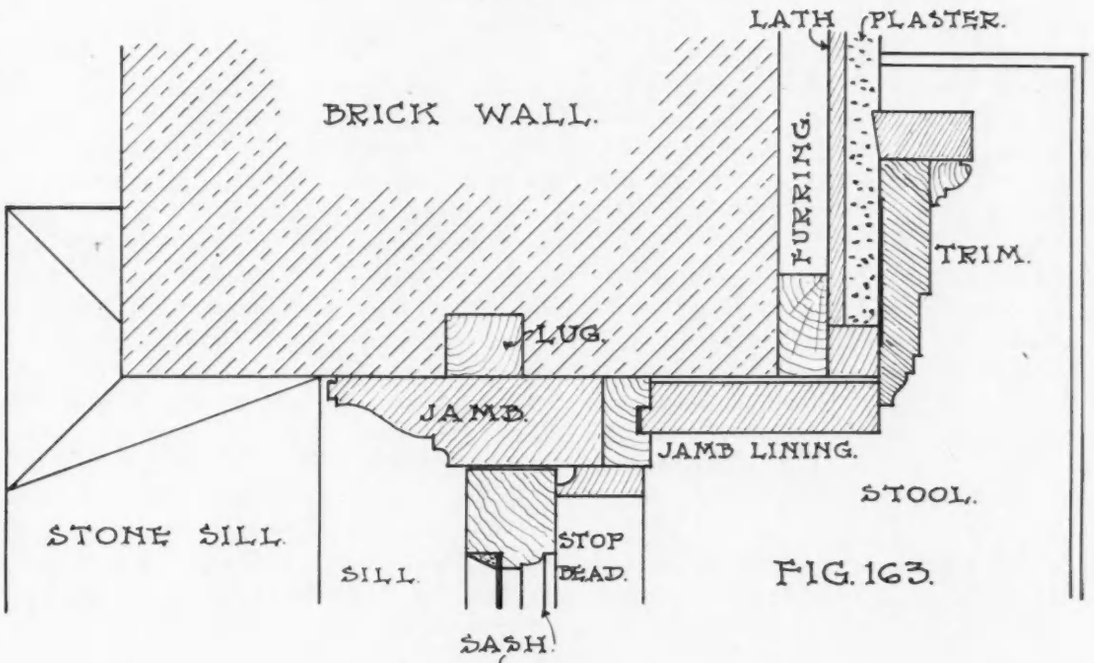


FIG. 163.

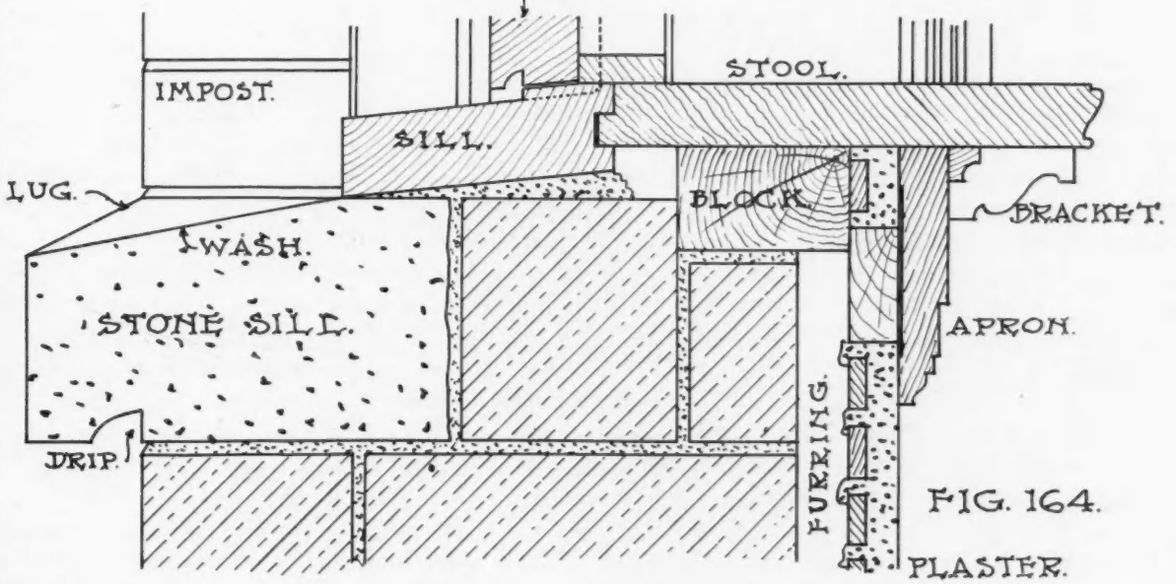


FIG. 164.

PLATE XXXVII.

WINDOWS.

Constructing a Cylinder Stairway

SHOWING HOW TO LAY OUT A WREATH OVER AN EIGHTEEN-INCH CYLINDER CONTAINING FOUR RISERS AND CONNECTING WITH A LEVEL LANDING RAIL AT THE TOP OF A STAIRWAY

By Morris Williams

IN FIG. I. is shown the plane; where the first riser next the cylinder is placed about 2 inches from the springing; and those in the cylinder spaced at an equal distance from one another. In the quadrant adjoining the hallway it will be observed that it contains only one riser, shown at *1*, and that it is kept back from the springing *a;* an arrangement which is found necessary to secure a pleasing appearance to the soffit where it intersects with the facia of the landing.

This arrangement will do away with the abruptness usually noticed in the soffit of stairways adjoining a landing just at the point where the cylinder and facia meet; and which greatly mar the general decorative appearance of the finished structure; especially when viewing it either in front of the cylinder or from below.

Risers *3* and *4* are shown slightly curved towards the cylinder from the platform; an arrangement which gives a few inches addition to the run of both the bottom flight and the two steps between the platform and the landing; which is an item of considerable importance when, as it often happens, we find ourselves restricted for sufficient run to afford a dimension of tread proportional to the riser that will guarantee an easy stepping.

In Fig. 2 is shown the same plan; and, in addition, the elevation of steps and also the pitch line of the tangents. The side plan tangents *c m* and *n o* are revolved to the ground line, as shown by the arcs *o o″* and *m m″;* also the riser 5, as shown by the arc *5-5″*.

At *5″* place the pitch-board; and draw the pitch of the straight flight.

Upon all the points on the ground line erect indefinite lines. This is what is called in handrailing the unfolding of the tangents.

Upon the line from *o″*, measure to *w* a distance equal to the height of *5* risers; and through *w* draw the landing floor line as shown.

Above this line place the central line of the landing rail, as shown, from *7* to *6*.

Point *6*, it will be observed, intersects a line drawn from *n* on ground line; thus, between *7* and *6* we have a distance equal to the length of one tangent.

As shown upon the ground line from *n* to *o″*, and as it is shown from *7* to *6*, it represents the elevation of the side plan tangent *o n;* and therefore will, when in position, stand over and above it.

From point *6* we will now draw the pitch line to stand over and above the remaining three tangents shown on plan from *n* to *m*.

As there is no arbitrary rule to determine the pitch of this line we will in this case draw it from *6* to a point approximating the center of the pitch-board, as shown, little below point *1*.

It will be observed that it cuts the perpendicular lines representing the developed tangents *2, 4, 5,* and *6* respectively.

Now where this line intersects the pitch line of the bottom flight it will be necessary to form a pleasing, graceful round, which is shown at *z*.

Through point *2* on the pitch line of the tangents draw the line *xy;* and from *w* on this line draw a square line to the pitch of tangents to *3*.

Now we are ready for the face molds.

In Fig. 3 is shown the most simple and practical method known to draw a face mold for a wreath where one tangent is level and the other inclined, such as we have in this example for the upper section of the wreath; which covers the distance shown in plan Fig. 1, from *o* to *2* and in the elevation, Fig. *2*, from *7* to *5*.

The method is simply to draw the square shown in Fig. 3 as at *o-7-6-5*.

The side *7-6* is made equal in length to the length of the level tangent shown from *7* to *6* in Fig. 2, and the side *6-5* equal in length to the length of the inclined tangent shown in Fig. *2* from *6* to *5*. The curves are drawn as shown by means of pins and string.

The bevel for this wreath is found at *6* in Fig. *2* and shown to be the angle between the pitch lines of tangents and a perpendicular line. It is to be applied to the end *7* of the face mold; the stock is held parallel to the joint, and the blade towards the outside of the mold, as shown.

The end *5* will not need a bevel, and it will be the same width as the straight rail; both conditions due to the fact of it being on the minor axis.

The bottom face mold which is to span over and above the bottom quadrant, shown in plan Fig. *1*, from *b* to *m*, is shown in Fig. *2* to have two equally inclined tangents, as from *5* to *4* and from *4* to *2*, respectively.

Another very simple method to draw a face mold for such a wreath as this is shown in Fig. 4.

To a straight line is transferred the points *1, 2, 3, 4* and *5* from the tangent line in Fig. 2. Upon *3* in Fig. 4 we erect a perpendicular line; then in *4* is fixed one leg of the compasses; the other extended to *2* and point *2* revolved to cut the line drawn from *3* in *a* and from *a* a line is drawn to *4*. The line *a4* will be the bottom tangent as it is required on the face mold; the upper tangent will be the line *4-5*.

(*Continued on page* 1323.)

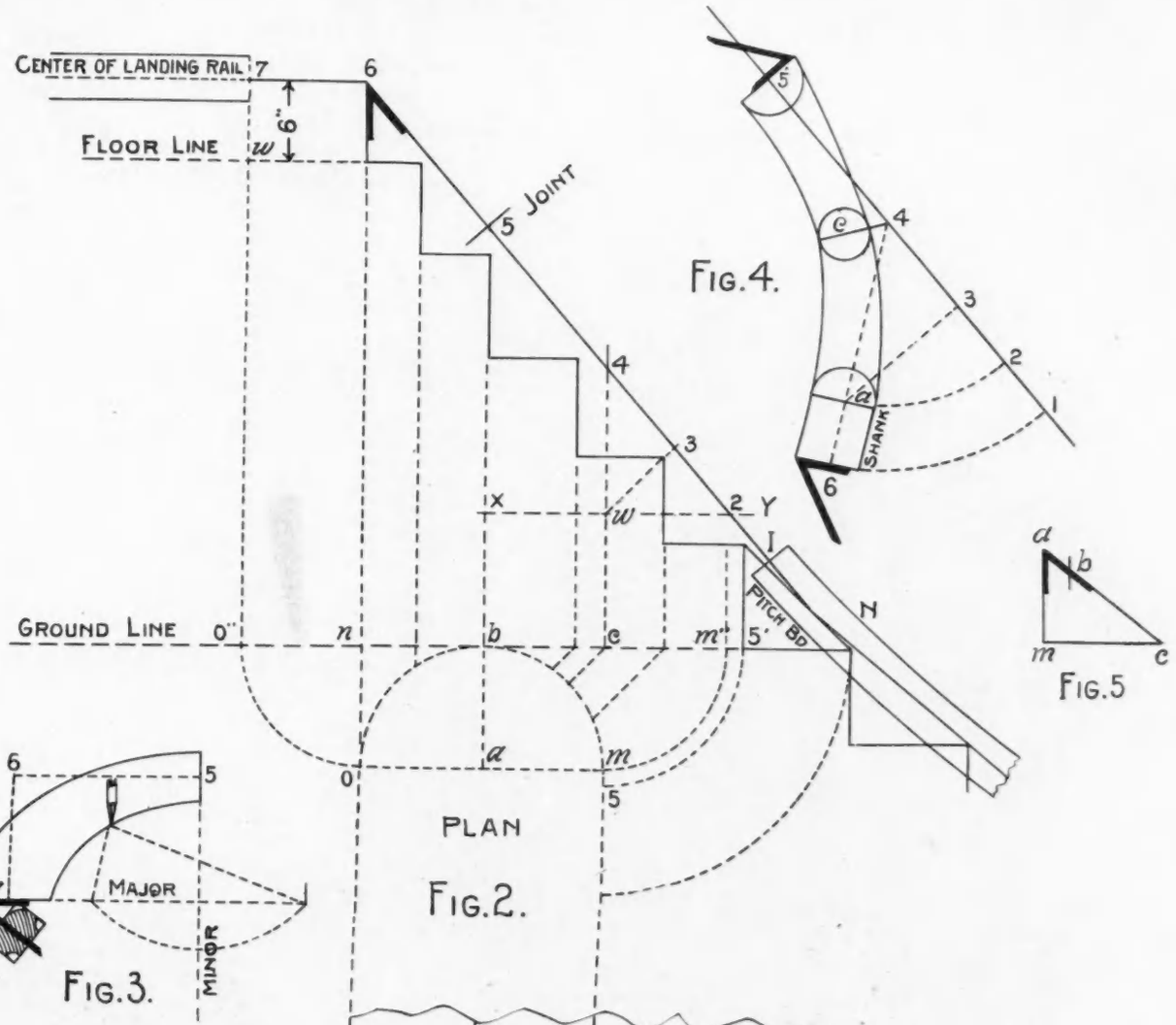


FIG. 2.

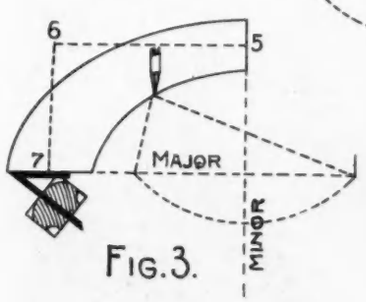


FIG. 3.

FIG. 4.

FIG. 5

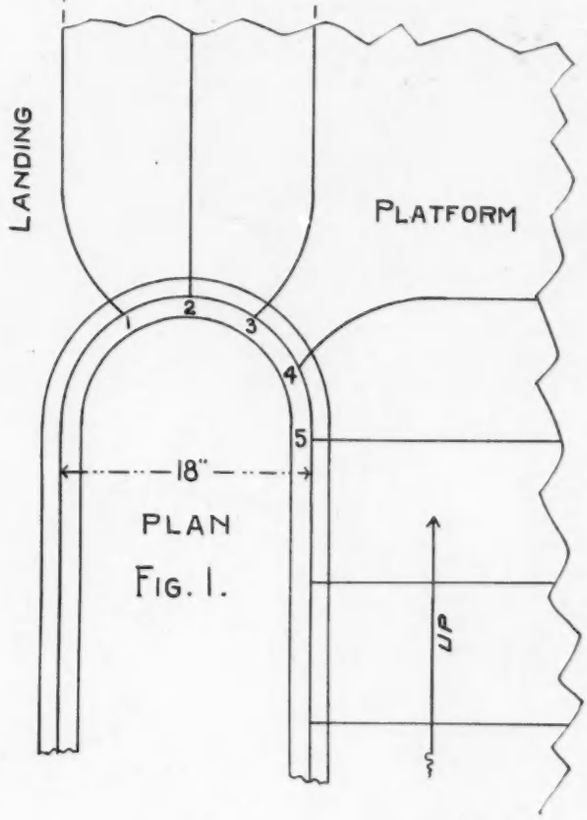


FIG. 1.

The New Traymore Hotel

A CONCRETE, STEEL AND TILE HOTEL AT ATLANTIC CITY, N. J., SIMILAR TO THE MARLBOROUGH-BLENHEIM—COMPLETE DESCRIPTION OF HOW IT WAS BUILT

By George J. Seymour

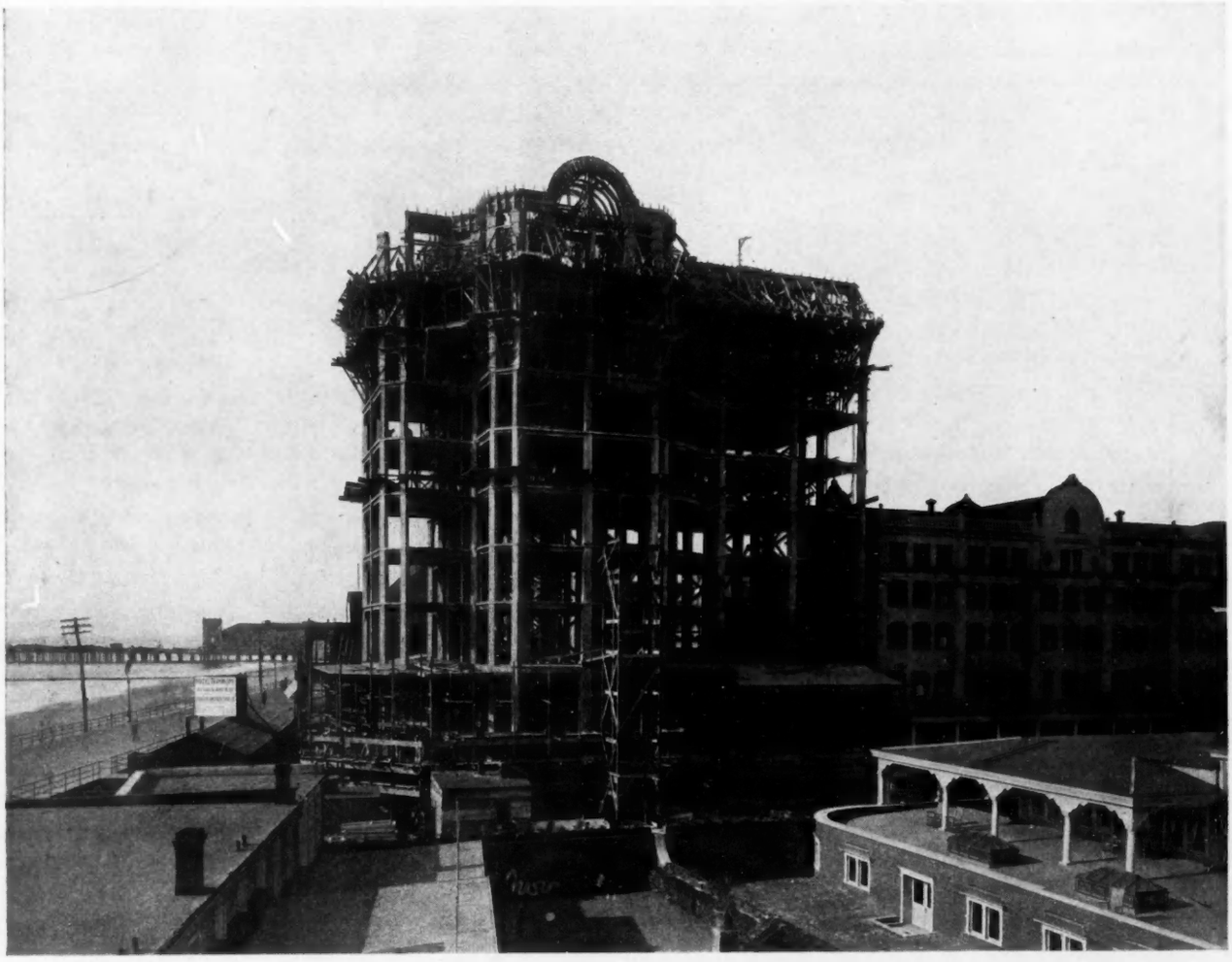
TO BUILD a large extension to a large hotel without moving or in any way inconveniencing the guests is what is being done by the Concrete Steel and Tile Construction Company of Detroit, Michigan.

The hotel is the Traymore at Atlantic City, N. J., which is right next to the board walk and faces the Atlantic ocean. It is to be replaced by a larger building which will be erected in two parts. When the first, about 76 feet wide, 122 feet long and nine stories high, is completed the guests will be moved from the old building into the new, the former torn down, and the second part of the new structure put up.

In letting this contract the things that were of the most consideration were rapidity of construction, economy, protection from fire, good external appearance, and also the carrying on of the work with as little noise as possible, so as not to disturb the guests in the adjoining building.

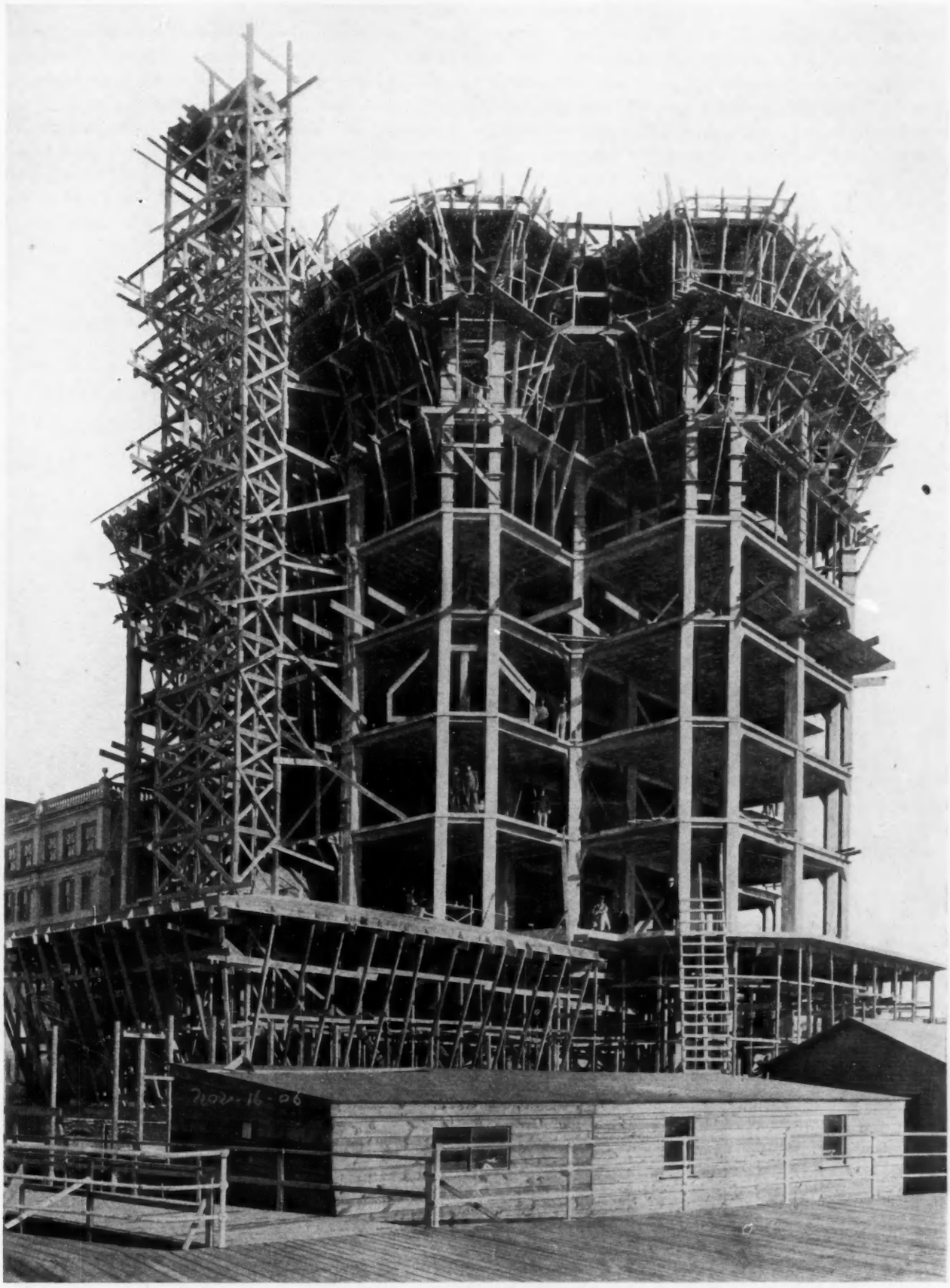
As reinforced concrete and hollow tile made such a good showing in the Marlborough-Blenheim hotel, also at Atlantic City, and erected by The Concrete Steel and Tile Construction Company, and which the new hotel will resemble, it was decided to adopt it as the form of construction.

The architects were Messrs. Price and McLanahan, Philadelphia, and Avey & Co., also of Philadelphia,



the general contractors. The structural work was designed by the New York office of the Trussed Concrete Steel Company and executed by the Concrete Steel and Tile Construction Company, of Detroit, Mich.

The foundation piles were cut off below the water level, and the tops imbedded in the footings of the concrete piers, which were built in sheeted pits, kept dry by a good deal of pumping, until the first layer of concrete that enclosed the pile tops had fully set. On this two crossed tiers of Kahn reinforcement bars were placed. Above this again, was built the offset pier, the concrete being deposited in wooden forms.



The columns throughout the building are both square and octagonal, the smallest, ten inches by ten inches, being in the upper story.

The first floor of the hotel is the same height as the board walk, being entered from it, and is about fifteen feet above the average high tide. The first floor, called the "exchange floor," is supported by the basement columns, so placed as to leave a very large

covered place underneath the first floor to be used for storage purposes and so forth. The interior basement columns are either twenty-four inches square or are octagonal, having twenty-eight-inch minimum diameters. All have eight three-fourths-inch diameter vertical reinforcing rods placed in the middles of the octagonal sides or in the middles and at the angles of the square columns. In the octagonal columns, the reinforcing rods are joined by a spiral wrapping of one-fourth-inch wire rod having a three-inch pitch which, at every intersection, makes a complete turn around each bar.

In the square columns the bars are joined by one and one-half by three-inch horizontal ties, ten inches apart vertically. The ends of the vertical bars project about three feet above the floor, so that the columns are bonded in successive stories.

The wall columns are practically rectangular piers, and their dimensions, the same as the interior columns, increase from the tops downward, reaching a maximum of twenty-six by twenty-six inches in the basement. The beams and girders, made in the standard manner, are reinforced with tension rods in the lower sides, which project nearly through the supporting columns. Additional bars, six feet long, reversed so that their prongs point downwards, extend through the columns, projecting equally on both sides, and are built into the upper portions of the beams and girders bonding them and providing for cantilever strains.

The "exchange floor" story is eighteen and one-half feet high. It is surrounded by verandas and communicates with a thirty-three by forty-foot one-story wing or pavilion. There are large arched open-

ings in the walls which necessitated a special construction. On this story are the office, parlor, dining-room, and other public rooms. The next story is twelve and one-half feet high and is used for guest rooms, as are all the others except the top one. From the second to the sixth floor the stories are each eleven feet in height, and from this to the eighth floor, ten feet high. There is a conservatory on this floor and the roof is surmounted by a large dome supported by eight interior columns which, with four other columns, support the floor beams and girders, with maximum spans of eighteen feet.

The columns and girders are of reinforced concrete, being made up of sections of hollow tile and reinforced concrete alternately, the concrete serving for the setting of the tiles and as beams and joists to support them and carry the floor loads to the columns and girders. The exterior walls of the building are of

terra cotta supported on reinforced concrete girders and cantilever floor slabs.

The building is planned for an assumed wind pressure of thirty pounds per square foot of external vertical surface and for live loads of seventy pounds per square foot on the "exchange" and eighth floors, and fifty pounds per square foot on all the others.

The concrete is proportioned for a working load of 500 pounds per square inch in compression. The reinforcement bars are designed to take all tensile and shearing stress and have a maximum working load of 16,000 pounds per square inch.

Saylor Portland cement is used throughout, with broken trap rock screened to three-fourth inch diameter to complete the aggregrate, mixed as wet as possible without running, which in the wheelbarrow makes a quivering mass, the water flushing to the top.

Construction of the Boxes or Wooden Forms

About half of the force were carpenters employed in making the boxes or wooden forms into which the concrete is poured. Special ones were built for each part of the structure and thoroughly nailed together. When once used they were taken apart and recut for use on the upper floors. The ones for the rectangular columns were made with one three-fourths inch vertical boards planed on both square edges and on the inside, fitted tightly together and secured by transverse battens in panels corresponding to the widths of the required column faces. These panels were nailed together through their edges, making rectangular tubes vertically set up on the column centers. They were placed by hand without using the derricks, as were the rest of the boxes, centering and framework. After the column boxes were set over the ends of the reinforcement bars projecting from the columns in the story below, rectangular wooden yokes were provided, made of four pieces of overlapping two by four-inch timber bolted at the corners, and large enough to enclose the basement columns and leave a little room for wedges driven between them and the boxes so as to ensure contact on all sides and maintain the true rectangular cross-section. In addition to the yokes, the faces of the columns were clamped by two by one-inch U-shaped wrought iron bars, with legs that project over the adjacent sides of the columns and secured by wedging or when the clamp is much larger than the width of the column, by wedging and blocking.

In the corners of all the column boxes, triangular filletts are placed to champfer the edges of the square columns, and are made wide enough to correspond with the faces, or the octagonal columns.

By omitting the cover board on that side at first, an open space four feet high is provided at the foot of each column. Through this opening all dust, shavings, etc., are removed from the box and the missing lengths of boards are nailed on and clamped.

Notches are made in the upper ends of the column boxes and the boxes for the floor beams and girders supported on the ends of the vertical boards and on transverse cleats nailed to both members, are fitted into them. The girder boxes are simple rectangular troughs made like the column boxes and supported at intervals between columns on four by four-inch vertical shores with their upper ends double knee-braced to transverse cleats on the bottoms of the boxes, the ends being set flush with the inner surfaces of the column boxes. When the joints are tightly nailed together the contractors consider it preferable to any other arrangement.

A tight course of one-inch boards, dressed on the upper side and both edges, supporting the rows of tiles and the intermediate concrete joists, constitutes the floor centering. The boards are supported at the ends on the upper edges of the girder boxes and intermediately on transverse joints and vertical shores the same as under the girders. The adjacent floor tiles are thinner than the rest and are practically parts of the upper portions of the sides of the girder boxes. The difference in thickness between them and the next tile allows an additional concrete space, thus practically forming a horizontal upper flange for the floor girder, increasing its compressive area.

The column reinforcement bars were wired together in the iron yard to make rigid frames with the bars in accurate relative positions and are deposited as units in the column boxes and wired in position with care. Then runways were laid on the girder boxes and the concrete wheeled on them and dumped into the column and girder boxes from the wheelbarrows. A good deal of care was taken, by means of constant tamping, to compact the concrete and see that it is well worked around the reinforcing bars, thus doing away with all chance of there being empty spaces. This is done by means of long handled spades having four by four and one-fourth-inch blades for the column boxes and simple straight poles for working the concrete in between the reinforcing rods.

A thin layer of concrete was spread on the bottom of the girder boxes, the reinforcement bars being placed accurately upon it and moved back and forth until thoroughly set in position, and then the rest of the concrete was poured in and spaded around them.

Using a straight edge the concrete is leveled off two inches above the tops of the tiles so that the floor slabs, beams and columns are monolithic, providing a continuous horizontal surface over the full area of the building from out to out of walls about two inches below the top of the finished floor.

The boxes are stripped from the columns and girders when the concrete has set fully ten days and the sides scraped clean, but not oiled, and made ready for use in an upper story.

The sand and broken stone were brought in wagons

and stored in piles on the ground, whence they are taken in wheelbarrows when needed, to a platform slightly elevated and next to the concrete mixer.

The aggregate is measured out by using two different sizes of wheelbarrows, one size with a capacity of three cubic feet, and the other with a capacity of four cubic feet. The required number of loads of stone and sand are dumped into a steel hopper and the correct number of bags of cement added, and the whole dry mass remains till the mixer has discharged its contents, when it is sent from the hopper to the mixer through a vertical sliding gate and an inclined chute.

The concrete for the foundation was dumped directly from the mixer into the wheelbarrow, but for the rest of the building it was dumped from the mixer through a movable chute to the hoisting bucket and automatically elevated to the required floor. The chute is seated on an incline bed to which it is connected by a lever that can be operated to set the lower end of the chute over the concrete bucket or to slide it back up so that the lower end clears the bucket and the latter can be hoisted or lowered past it. The concrete mixer and tower are placed in the most central position possible, thus minimizing the amount of wheeling necessary. Next to the tower is a hod elevator on which the tile and other materials were raised. The hoist delivers the concrete to an inclined chute closed at the lower end with a gate which can be raised to discharge the concrete into the wheelbarrows below.

On the fifteenth of September pile driving was commenced and the work from that time on was pushed with day and night gangs of eighty men each, a progress of one complete story every six days being made. The structure so far has been very satisfactory to all concerned and bids fair when completed to occupy a place of prominence among reinforced concrete and hollow tile structures.

The Artistic Treatment of Concrete*

SEVERAL METHODS SUGGESTED TO MAKE THE EXPOSED CONCRETE SURFACE MORE ARTISTIC – SEVERAL METHODS NOW IN USE CONDEMNED

By A. O. Elzner

THE consideration of concrete from an aesthetic point of view may strike the average cement user as inappropriate and impossible, for hitherto the term "concrete" at once suggested foundations, piers, dams, abutments, and nowadays it more than likely calls to mind columns, beams, floors, walls, and in fact the entire structural parts of buildings, but it must be evident that our experience with this new material, new only, however, in the sense of adaption, will show that like all legitimate and substantial structural materials, it too will prove to be susceptible of artistic treatment in design. Wood and stone architecture are as old as the hills, and the art of the mediaevalist in developing true styles with these humble materials rightfully belongs to the world wonders. Brick and terra cotta can scarcely claim quite so much distinction, although in point of artistic treatment they were brought to high development in the Gothic art of Italy. Iron and steel, however, do not fare quiet so well except in a small way along the lines of purely ornamental work; for when the modern rolling mill began to turn out its product of structural shapes, and engineers discovered the wonderful possibilities of riveted sections and connections, there was a great rush for structural iron and later for steel. Everything imaginable was made of it and more so in Europe than here. Bridges and viaducts, certain classes of business blocks and public buildings, even churches and cathedrals, all vied with one another in their architecture of iron and steel, and while some notable attempts achieved a measure of success, it required many years to develop an artistic style of design. And even at this late day structural engineers as a class seem determined to ignore the application of aesthetic principles to their designs of exposed work.

But we feel quite hopeful. There has been and is much teaching and preaching of aesthetics. Schools, periodicals and municipal art societies are doing much to educate the popular taste and to create a demand for beauty in public works, and this campaign, whose influence is spreading rapidly, will undoubtedly bring designers to recognize and appreciate the necessity and propriety of combining beauty with utilty in all visible construction.

This problem will be greatly simplified in concrete work, for here for the first time, we come to deal with a plastic material which can be molded and modeled at will. Beauty, however, in structural design is worthy of the name only when, like beauty in nature, it has character. It must not be a servile copy of the style peculiar to some other material, but in fact must express the individuality of its own nature.

It is just so peculiar that we must be careful of our concrete block architecture. At present the tendency in the manufacture of these blocks is to imitate split faces of stone ashlar. This is radically wrong in principle and should not be tolerated. A flat, smooth face will always look well. However, if a pitched or split face is desired, let it be produced by casting the block flat and then pitching off the face with chisel and hammer just as is done with stone. The clean fracture of the concrete thus exposed will be eminently effective and artistic and will have all the merit that belongs to truthfulness. Plain concrete

*Address made at the Convention of the National Association of Cement Users, held at Chicago, Ill., January 7 to 12.

ashlar walls might in some cases be effectively relieved by the introduction of bands of decorated blocks with some simple ornament molded in the face, very much as is done with terra cotta. But by all means avoid molded rock faced work. It is artistically bad. The frequent and constant repetition of a few regular sizes and patterns ruins an effect which should be counted largely as accidental but always expressive of a fine artistic sense in the selection and grouping of the individual blocks. Artificiality, imitation and misrepresentation are stamped all over such work and can be recognized at first glance.

Solid concrete walls have a great advantage over the block walls in that they lend themselves much more readily to artistic treatment.

This is especially true where they are used in suburban and country buildings, perhaps because of the touch of nature in the surroundings which more nearly accords and harmonizes with the broad treatment that can be so effectively employed in wall surfaces. Perhaps the best sources of inspiration that can be had for such treatment are to be found in the old Spanish missions of California, which although not of concrete, nevertheless at once suggest its use and above all are fine examples of the artistic value of broad wall surfaces relieved by exquisitely proportioned openings judiciously spaced and not infrequently embellished by a moderate use of ornamentation.

Let us say then, speaking of domestic architecture, where walls are made of solid concrete, the surfaces should be as unbroken as possible, avoiding especially artificial jointing, of which such frequent use is made, and is obtained either by scratching a joint into the fresh mortar with which the surface is plastered, or after the removal of the forms, or by planting beveled wood strips on the inner surface of the forms, thereby molding the joint directly into the concrete.

Both methods are highly objectionable, utterly senseless and aesthetically very bad and should be shunned. In work of moderate cost where effects are to be sought in an inexpensive, straightforward and natural way, there can be no offense taken if the concrete is left untouched after removing the forms. In fact this method has so much merit that it might with perfect propriety be classed as the most thoroughly artistic. That is probably just what the builders of the old Spanish missions would have done if they had had concrete to use for their buildings.

To be sure, if such treatment is to be used, some care should be exercised in the preparation of the form work, so that it will not result in the effect of a lot of patchwork.

In more pretentious work several methods of treating the exposed concrete are available.

A thin skin or crust of neat cement usually is found to cover the surface where concrete was deposited wet and was well tamped. This crust may be removed while still soft by means of a stream of water having some force, or by stiff wire brushes, in which cases the forms must be removed promptly and just as soon as the work will stand it. This, however, involves considerable danger and should be done only by thoroughly experienced persons. If successfully accomplished, the effect of the rough surface thus produced is good and consistent, for it exhibits the material in its true nature and avoids all semblance of artificiality.

This treatment, however, entails so many difficulties that it will not be very popular and it will be advisable to adopt some other simpler and safer method giving similar results. The surfaces can be tooled all over with a chisel as in some classes of stone work, but while the result may be effective, it is rather expensive and slow work and will therefore be but sparingly used. It is difficult, too, to avoid lossening an occasional pebble or stone and thus spotting the surface with objectionable blemishes, and possibly opening up some internal cavities which are quite apt to occur and so starting a leak in the wall.

A simple and inexpensive, yet thoroughly practical method of securing an artistic effect, consists of covering the wall surface with a splatter-dash coat of cement mortar applied by splashing it on with a paddle or a broom, or better still, it may be first spread on with a trowel and then roughened by stippling with a stiff broom or brush or even a flat board, in which case the roughening is obtained by suction against the board. When such treatment as this is to be used it may be highly appropriate in some cases and indeed quite interesting to decorate parts of the surface with some simple panel work or free hand modeling. In case of panels it is best and simplest to adopt sunken work, as this can be readily produced by merely planting a board or block of desired shape against the inside face of form work, which leaves its impress upon being removed from the concrete. Or else a reverse mold made of some artistic bit of carving for a panel, or over a door or window, or a frieze, etc., may be nailed against the forms, and the resulting impress will be thoroughly effective, although a much higher artistic value would be done such work if it were modeled by hand directly in the cement mortar as it is applied and before it has had a chance to harden.

This sort of work is being done extensively and successfully in Germany, where the modern style of "Nuveau Art" presents abundant opportunity for endless designs. It is already finding much favor in our own country and ought to reach a high degree of development.

Moldings, especially in continuous courses, if attempted at all should be of the simplest possible design; bold, yet of moderate projection and free from small delicate members. Square offsets and beveled projections serve very well in the place of conventional moldings and rather accentuate the character of the work and heighten its effect. Dentils of fair

size can be worked in to good advantage and with comparatively little difficulty. Such work should, however, be used sparingly on account of the impracticability of treating the surface of the resulting small members, unless great freedom and latitude are allowable without detriment to the artistic character of the design. It is particularly difficult to do this in case the walls are to be plastered over with cement mortar. Where this is done the work should be finished under the float rather than the trowel so as to minimize the tendency to map crack or craze, a great source of annoyance and disfigurement. Trowelish furthermore almost invariably produces a series of blotches of different shades and textures which if introduced into rough work have much artistic value, but must be classed as nothing better than blemishes in smooth troweled surfaces. Moreover, it is extremely difficult and well nigh impossible in plastering over moldings or projecting band courses, to keep the edges straight and true as they should be in smooth finish, with the result that the poor slovenly workmanship imparts an air of cheapness and flimsiness to the building instead of the reverse—value and substance. Such, then, are some of the readier methods that can be employed in producing artistic effects with concrete. This humble material, so replete with possibilities, but as yet so little understood, is manifestly destined to take an important place in the construction of our buildings.

✣

Breaking a Log Jam

The character of the Texas streams in which logs are run to mill or market, with their slow current and absence of cataracts and rocky bottoms, prevents the forming of the log jams so common and dreaded in the rapid, boisterous and precipitous streams of the north and east, a remarkable one of which jams and the breaking of it is described as follows.

Not many years ago a center jam formed just above the falls where the Tahquamenon river leaps forty feet to the whirlpool below. It was only a few yards back from the verge, and to break it the men were obliged to get down into the water below it, stand there with the falls behind them and the current swirling about their knees, and pry the bottom logs out with their peaveys.

The water was not deep and the jam itself sheltered them from the rush of the river, but if a man lost his footing he was gone. Carefully and cautiously they worked the first log loose, and as it started toward them they leaped upon it, and before it could get away with them jumped from it to the jam.

Loosening one stick was not enough to start the rest, and they soon found that the whole pile would have to be torn apart little by little.

More than that, other logs kept coming down and adding themselves to it, so that it grew at one end as rapidly as they could tear it away at the other; but they kept at it, and in the course of time they worked back ten or twelve rods from the brink.

Then, of a sudden, one of them saw a long piece of pulpwood coming for him. There was no time for him to dodge and it was too small to hold him if he mounted it, so, as the only chance, he tried to jump over it.

It was too quick for him. It took him across the thighs and the next instant he was down and the river was sweeping him toward the falls. On he went, faster and faster, nearer and nearer, till he was almost on the verge, and then, by some miracle of strength and agility, he got his spiked shoes against something solid, rose to his feet and started to wade back.

Little by little he forged ahead until he met some logs large enough to carry his weight, and mounting them, he jumped from one to another till he reached the jam. Then the foreman cursed him for having dropped his peavey, and he waded out again, almost to the brink, found it where it had caught between some rocks, and brought it back.

The problem of handling a drive in which the logs are not made up into rafts—as is sometimes done—but are simply turned loose on the river, is to keep them from jamming and to see that no stragglers are left behind.

It is the stragglers that give the most trouble—the stray sticks that run aground in the shallow places, and that, if the water falls considerably after the spring freshets, are often left high and dry on the banks to make what the river driver calls a dry rear.

Now and then, it is true, a whole field of logs catches in a narrow bend, and the entire crew has to go forward to the point of congestion and set things moving; but usually the men are taking care of the rear while the rest of the drive takes care of itself.

Just behind the drive a long boom, made of logs chained together end to end, is stretched across the stream from shore to shore, with a big red bateau in charge at one end and a square box-like scow at the other. A short distance ahead of the boom are two smaller boats, one following each bank, and a few men are usually walking along the shores, sometimes on land, sometimes wading in the water, and sometimes afloat on the loose.

The first time a river driver asked me if I was "any good on the loose," I thought that he was wondering whether or not I would make a congenial companion on a spree. This proved to be a mistake.

The "loose" is the term used on the drive to designate logs or pulpwood sticks floating loosely on the surface of the water, and to be good on the loose is to be able to go about on it wherever one pleases without getting wet. To ride a big pine log is not so very difficult, but to walk or run across a field of pulpwood, where most of the sticks are far too small to carry a man's weight, is like skating on very thin ice.

Cement Sidewalks

THIS IS THE FIRST OF A SERIES OF ARTICLES ON THE MAKING OF CEMENT PRODUCTS, AND AN ENDEAVOR WILL BE MADE TO GIVE A PLAIN EXPLANATION OF THE SUBJECT SO THAT EACH ARTICLE WILL BE COMPLETE IN ITSELF

By Fred W. Hagloch, C. E.

IN MAKING cement walks the foundation is the first essential feature; in clay, heavy or spongy soil we must provide drainage, which is best accomplished by excavating to a depth of 8 inches on one side and 12 inches on the other, recognizing the top of the finished walk as our level from which we measure. Fill this trench with broken stone, gravel or brick bats up to within four inches of the top of the walk; use care not to fill the crevices, as this footing is for drainage and must have an outlet at its lowest point, either by drain pipe or otherwise.

In sandy soil the above expense is unnecessary, as it readily drains itself and excavating to a depth of four inches only is necessary.

We are now ready for our false work, which is a frame work made of two by four studding set edgeways, one along each side of the walk with cross bars at such distances as will make separate spaces not exceeding thirty square feet each, thus a walk seven feet wide will be spaced four feet; six feet wide five feet and so on, except in narrow walks never make a block of greater length than one and one-half its width, thus a three-foot walk block should not be over four and one-half feet long.

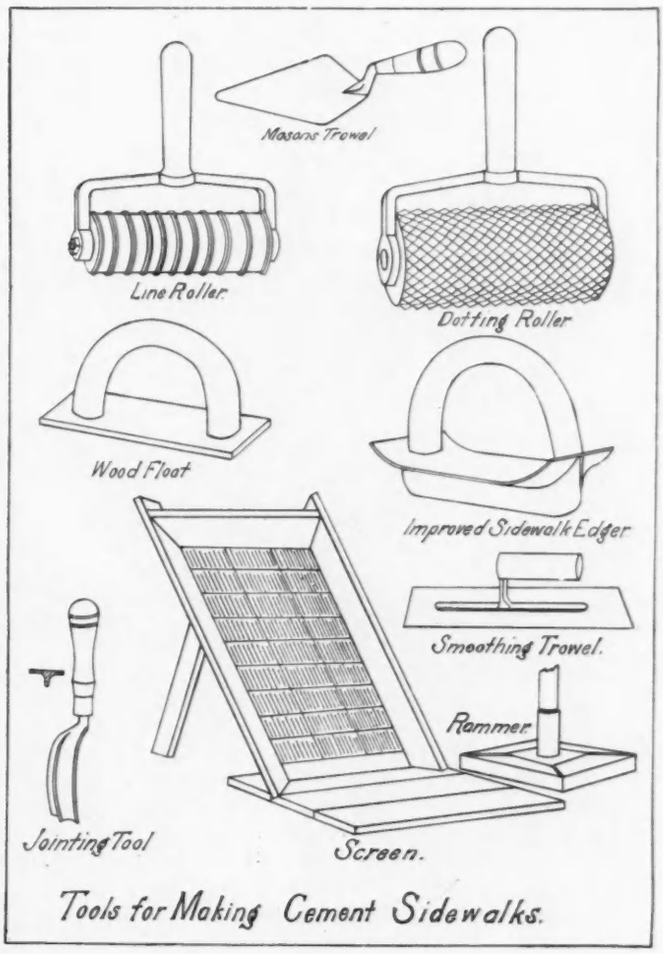
We then fasten this framework firmly in position by driving stakes on the outside of it and after having same lined true so that the top of the studding are exactly on grade line of proposed walk grade, nail firmly to stakes which are spaced from four to six feet along each side.

We are now ready for the rough or body concrete, which should consist of one part Portland cement, two to three parts sharp sand and three to five parts gravel, the exact proportion being governed by the nature of the sand and gravel, as follows:

Fine and sharp sand mixed, three parts and pea to walnut gravel mixed, five parts to one part cement will equal in strength concrete made of two parts each of uniform sized sand and gravel to one part cement, even though the latter contains double the amount of cement.

These materials must first be mixed dry until free from spots or streaks, in fact mix until uniform in color, then add water by sprinkling while mixing until same is uniformly moist so that it will not run, but will pour from wheelbarrow with some assistance with a shovel; fill every alternate section of framework and tamp firm with rammer shown, which has a handle about five feet long, fill same within one-half or one-quarter of an inch of the top of the framework.

Before the above has had time to fully set cover with finishing coat made of one part Portland cement and two parts sand mixed to the consistency of stiff mortar. Level with an ordinary straight-edge and then smooth with a wood float, as illustrated, and when partly set smooth with steel smoothing trowel. Trim the sides with sidewalk edger and the ends adjoining the cross studding are but lightly formed with the jointing tool.



Tools for Making Cement Sidewalks.

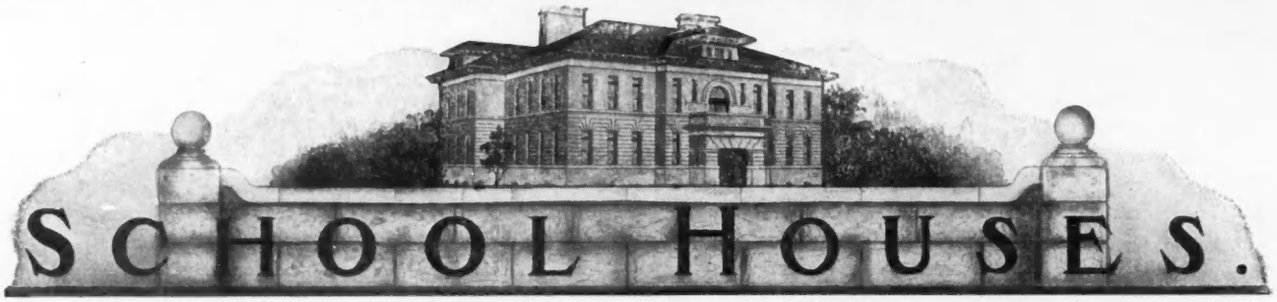
The surface is then corrugated either with a dotting roller or line roller as taste may desire. A good serviceable finish can be obtained without either, but by stroking one direction with a moistened whitewash brush, which is known as a brush finish, and which has met with much favor.

When all alternate blocks (sections) are completed we remove all cross studding and fill the remaining spaces as before except that the jointing tool is now used to make a finished joint between blocks.

The side studding should remain at least two weeks after walk is completed, thus protecting the corners while the cement is hardening.

In the illustration we show a very handy screen

(Continued on page 1323.)



Two School Buildings

PERSPECTIVES AND FLOOR PLANS OF TWO MODERN SCHOOL BUILDINGS—POSSIBILITIES OF CONCRETE BLOCKS FOR SCHOOL HOUSE CONSTRUCTION

WE ARE herewith showing the latest, most complete type of a graded school. It was designed by G. W. Ashby, architect, and combines the artistic with the practical.

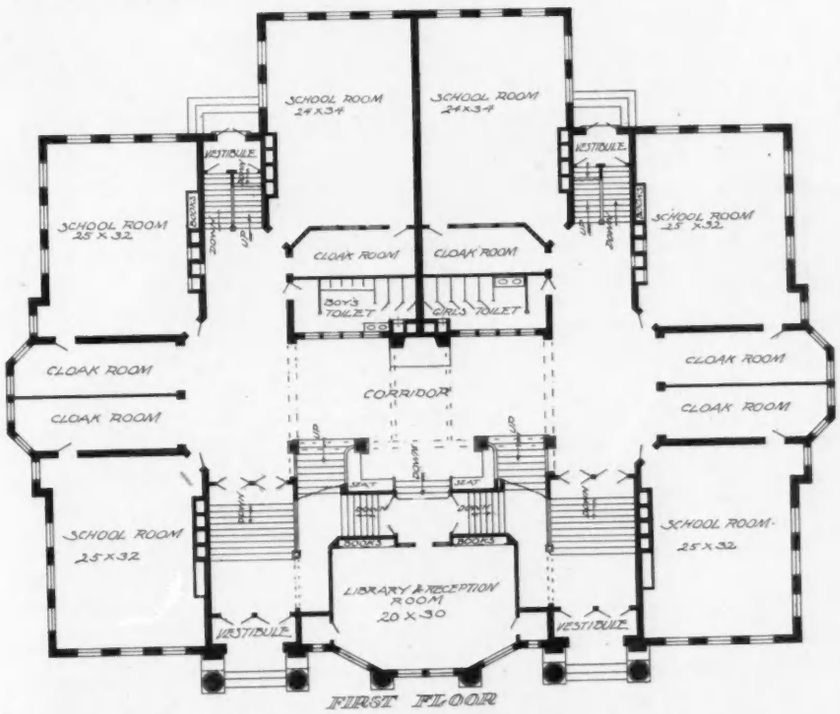
The style of architecture would be termed semi-classic and is very popular with the general public.

The building is constructed of stone up to the top of the joists of the main floor. The balance of the vertical walls are of paving brick, while the cornice is of stone. There is a gravel roof covering the building.

One feature about the building is that it can be converted into a high school with practically few changes.

The basement, which extends under the entire building, is very complete in its equipment, containing a fresh air room, engine room, blower and boiler rooms, girls' and boys' toilet, play and lunch rooms, and a manual training and domestic science room. What manual training does for the boys, domestic science does for the girls. It is conceded by nearly everyone that manual training fits a boy to better engage in life's work as it devlops his practical side, which in book work alone is liable to be neglected. Domestic science, as it is taught today, teaches the girls the art of cooking and all the various household duties. The proverbial college girl's biscuits will soon be a thing of the past, and instead of being looked upon with fear and trembling, will be appreciated as much as those her mother used to make. The first floor is divided into six class rooms and a library. Each class room is equipped with a cloak room which has two entrances, thus avoiding all confusion. There is also a boys' and girls' toilet room on this floor, which is a feature not often found in schools of this kind. Special attention is called to the arrangement of the stairs on the first floor, where it will be noticed that any part of the building can be reached from this central point, thus preventing any disorder or confusion. The sec-

ond floor is divided into four large class rooms, two small class rooms, the teachers' and principal's room and the lecture room. This lecture room is level with the second floor and extends to the roof, making a



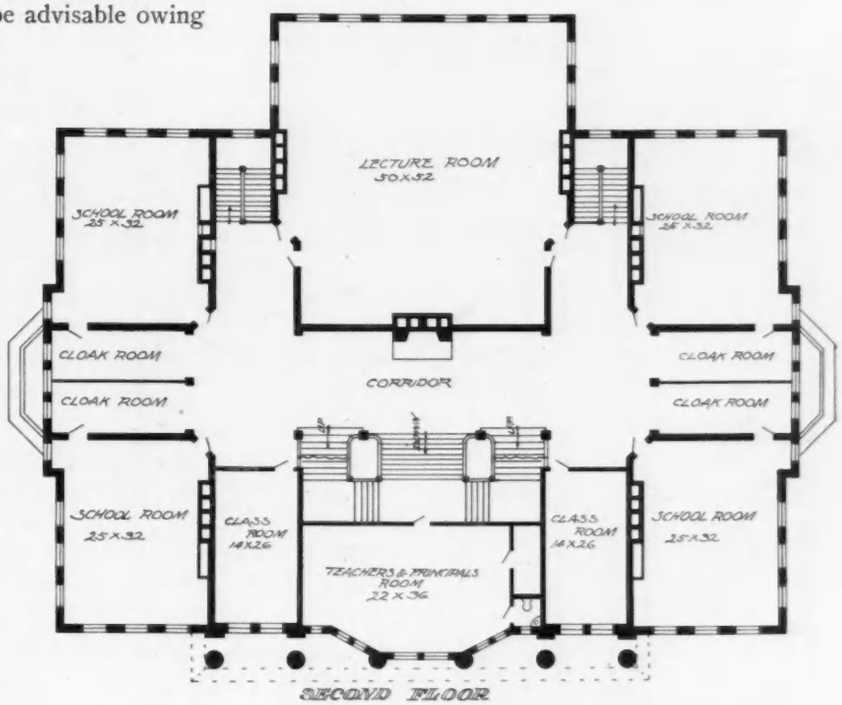
24-foot ceiling. There is also a large fireplace in each corridor, which adds very materially to the appearance of the interior, even if they cannot be used for heating purposes. This would not be advisable owing to the small children who would naturally want to satisfy their curiosity to see if it would burn.

Concrete Block School House

On page 1302 we show the perspective and floor plans of a concrete block school house recently built by the Immaculate Conception church, East Aurora, N. Y.

The blocks of which this building was constructed were made on a Nurock machine. The building is 51 by 72 feet and shows the class of work that is being done by concrete blocks.

The first floor is divided into four large class rooms and the second floor is one large assembly room. There is a large platform at one end making it an ideal room for holding the opening exercises in the morning and as a lecture room. There are stairways at both ends of the building and so avoids crowding while going to and from classes. The vestibule at the front entrance is a good feature as it prevents any draughts entering the school and also does away with the icy, dangerous stairs on the outside. The basement is divided into furnace and fuel rooms, boys' and girls' toilet and play rooms and a storage room.

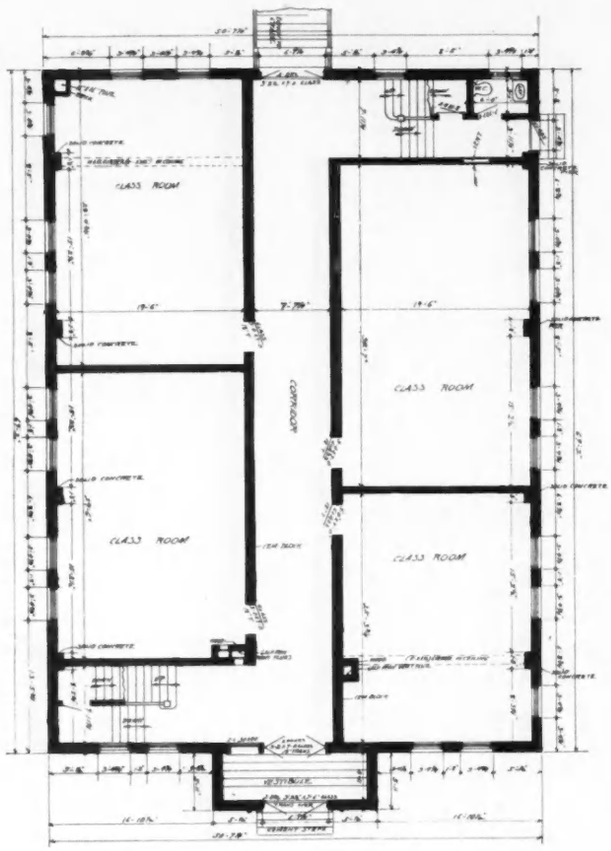


Cleaning Marble

It may be of some value to housekeepers who have marble-top furniture, to know that the common solution of gum arabic is an excellent absorbent, and will remove dirt, etc., from the marble. The method of applying is as follows: Brush the dust off the piece to be cleaned, then apply with a brush a good coat of gum arabic, about the consistency of thick office mucilage, expose it to the sun or dry wind, or both. In a short time it will crack and peel off. If all the gum should not peel off, wash it with clean water and a clean cloth. Of course, if the first application does not have the desired effect it should be applied again. Another method of cleaning marble is to make a paste with soft soap and whiting, wash the marble with it, and then leave a coat of paste upon it for two or three days. Afterward wash off with warm (not hot) water and soap.

Filling for Cracks in Floors

For filling cracks in floors boil paper pulp and fine sawdust together for several hours and mix with glue dissolved in linseed oil. Put on the filling and leave till partly dry, then cover with paraffin and smooth with a hot iron.


CLASS ROOM
CLASS ROOM
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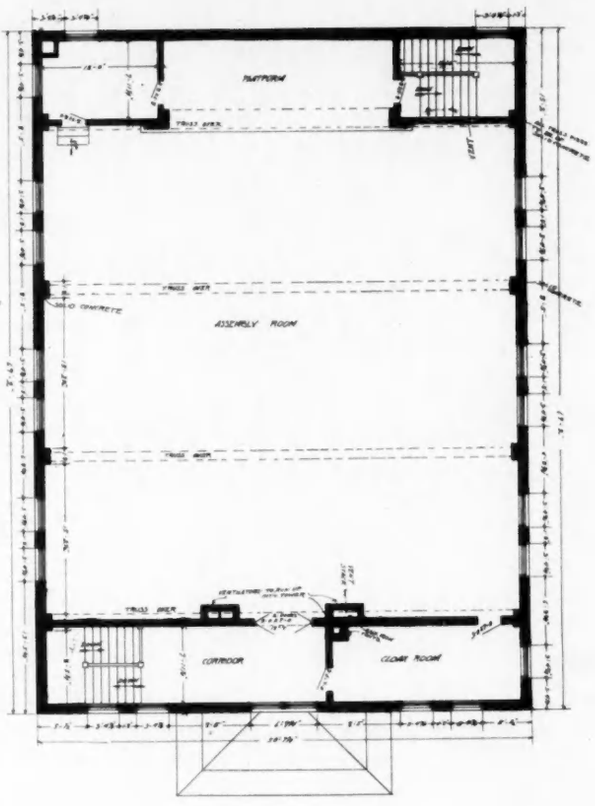
CORRIDOR


PLATFORM
ASSEMBLY ROOM
CORRIDOR
CLOAK ROOM

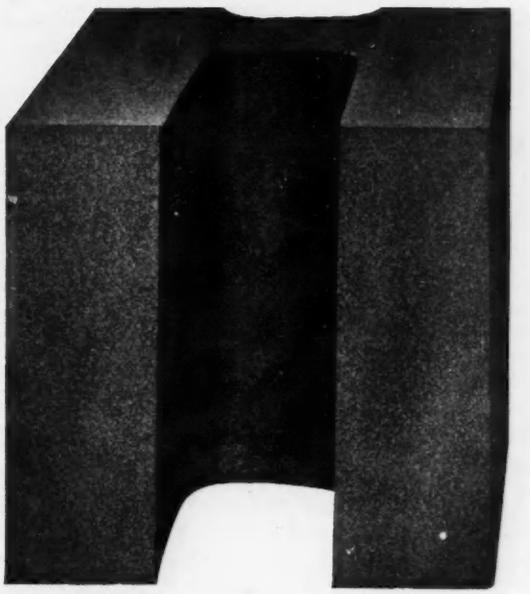
Concrete Blocks as a Building Material

BEST MATERIAL TO USE AND PROPER PROPORTIONING OF THE SAME—METHOD OF CURING BLOCKS WHEN MADE

By A. T. Bradley

THE concrete block is no longer an experiment, it has been tested and proven its true worth as a high-class building material. A few years ago, owing to lack of confidence in their stability, concrete blocks were only used in the construction of light foundations and small buildings. To-day, however, they are playing a most important part in the building of churches, factories, warehouses, public buildings, theatres, etc. The properly made concrete block is in steady demand and finds a ready sale, while poorly made blocks are a drug on the market. In undertaking the manufacture of high-class stone, the first requirement is to secure a machine so constructed as to turn out stone that is attractive in appearance, true to measure and capable of fulfilling the demands of the most particular builder.

Section of Block showing coarse Aggregate mixed wet—This is a Concrete Block



Section of Block with Sand alone as Aggregate mixture only dampened—This is not a Concrete Block

The stone most attractive in appearance are those made by tamping directly on the face or impression plate. This gives a sharp, clean-cut impression of the design and also allows for the use of a special, fine, rich mixture for the face of the block and a coarser mixture for the back. Stone made with this rich face mixture will naturally repell moisture to a much greater extent than those made of one material throughout.

The use of crushed stone or coarse material for the back of the block effects a great saving in cement and at the same time gives a much stronger stone than where sand and cement alone are used. Blocks made of sand and cement alone and merely dampened are not concrete blocks, but on the contrary simply sand blocks. The very term "concrete" suggests coarse material and plenty of water. It has been proven by actual tests that blocks composed of this coarser wet mixture (five-to-one) will out-test by far a sand block mixed damp made three-to-one.

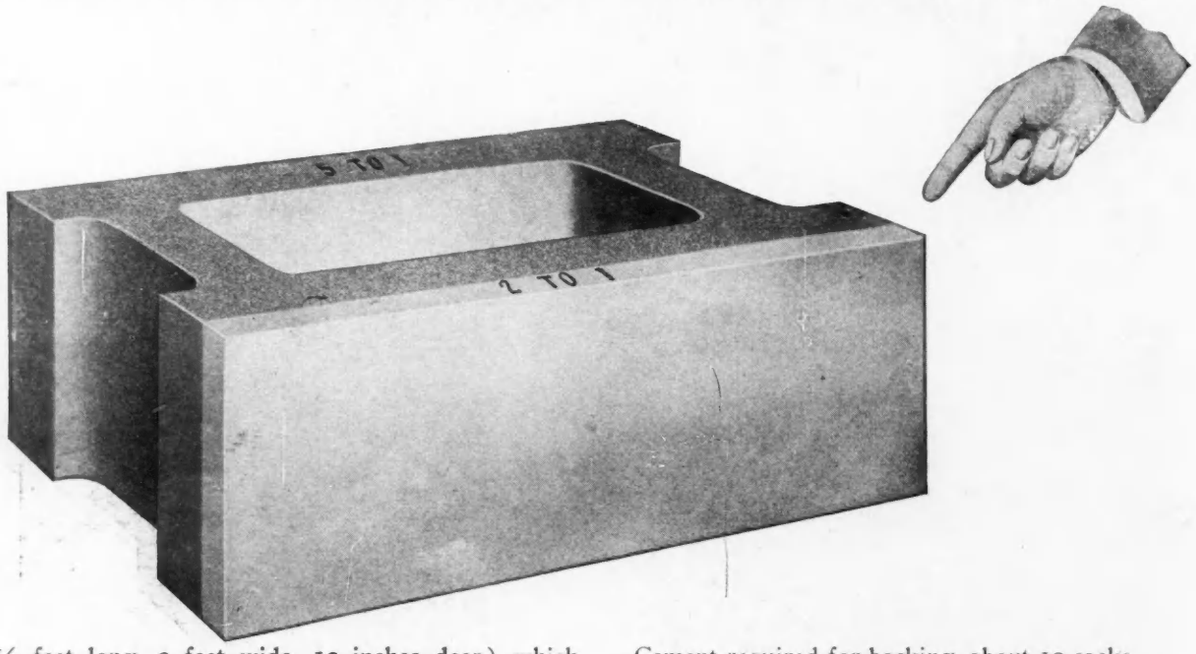
In the making of all grades of stone it becomes absolutely necessary to properly proportion the different aggregates. This applies to stone made entirely of sand as well as those made by using the coarser materials, and all stone makers should, in order to produce a first-class product, pay particular attention to this very important point.

To properly estimate the correct amount of cement to use in order to fill all voids, the following plan will be found simple and effective: Supposing for example, the mixture is to be five-to-one composed of sand and crushed stone or gravel. Take 2½ quarts of sand, 1½ quarts crushed stone or gravel ¼ to ½-inch in size, and one quart crushed stone or gravel up to one inch in size. Place the above, thoroughly mixed, into a receptacle holding five quarts or more. Level off the mixture and add water until it appears on the surface. The amount of water used will give the required amount of cement necessary to properly fill all voids. In the event of the mixture requiring more than one quart of water, it is a sign that your aggregate is too coarse for a five-to-one mixture. This being the case it becomes necessary to lessen the amount of the coarser material, adding its equivalent in finer material. Continue along these lines until one quart of water proves sufficient to fill all voids.

The perfect filling of voids gives perfect concrete and produces the water-proof block.

In order to produce stone that is to be uniform in strength and appearance, the materials must be carefully measured. Hap-hazard methods will surely result in producing a most unsatisfactory product. We give below some simple, dependable suggestions that will prove of great benefit if carefully followed.

Provide a box (12 inches square and 12 inches deep) which will hold one cubic foot, also a bottomless box



(2½ feet long, 2 feet wide, 12 inches deep) which will hold five cubic feet. Apply the results obtained from test for filling voids given above, using your materials in proportion according to the results of your test, the smaller box serving as the measure. In case you are using sand and gravel direct from the bank, which however, we do not advise, the larger box only will be required. After this has been filled with the materials, it can be lifted away, leaving the materials properly measured, ready for thorough mixing dry.

After mixing, the cement is added in the quantity required which has been ascertained from the void test.

These suggestions may to many appear lengthy and unnecessary, but we have gone into details for the reason that we feel that the business is of sufficient importance to call for the utmost care on the part of everyone engaged in the manufacture of this kind of building material and the best machine can only produce according to the materials used.

In the manufacture of stone both iron and wood pallets are used. Wood is cheaper than iron and when properly made, wooden pallets give the highest satisfaction. The material will not adhere to wooden pallets and they are lighter and easier to handle.

The cost of producing concrete blocks depends entirely on the cost of materials in different sections and the systems employed in the various plants. We give below an average estimate of the quantity of materials required in the making of certain sizes of stone. By applying the cost of cement and sand in a given locality together with the cost of labor, it is possible to arrive at a fair estimate as to cost.

Average Amount of Materials Required for Making Concrete Blocks

Based on composition:— { Facing ..... 2 to 1 / Backing ..... 5 to 1

Cement required for facing, about 2½ sacks.

Cement required for backing, about 10 sacks.

Sand required for facing, about 5 cubic feet.

Sand required for backing, about 25 cubic feet.

Crushed stone or gravel for backing, about 25 cubic feet.

Hand-mixed—employing three men, will produce about 110 blocks 8 by 8 by 16; will produce about 98 blocks 8 by 8 by 20; will produce about 79 blocks 8 by 8 by 24; will produce about 56 blocks 8 by 8 by 32.

Time required for making depends on manner of handling and arrangement of plant. A safe estimate would be from 3 to 5 minutes per block, according to size.

Colored concrete blocks can be made to represent practically any kind of natural stone and is a profitable feature for everyone to consider, as colored stone properly made always finds a ready sale. Many buildings erected with other materials owe their attractiveness to the fact that colored concrete stone has been used effectively for trimmings, etc.

In the coloring of stone it is advisable to use mineral colorings rather than those made from chemicals, as colorings made from chemicals are always more or less uncertain and have in some instances been known to affect the cement itself. Colorings naturally add somewhat to the cost of stone and this additional cost is greatly increased where it becomes necessary to color the entire block.

For the proper curing of blocks a suitable place should be provided, one that will afford protection from the sun and dry winds. Blocks should not be removed from under cover until at least seven days have elapsed since the making. In the event of your not having sufficient shelter to protect all the blocks made in seven days, it is advisable to remove a quantity of the older blocks each day to a suitable place where they should be covered with canvas, straw or some such materials which will hold moisture and protect them from the elements.

In following the latter plan, it is well in placing the blocks in tiers to place pieces of lath between each stone, as this protects the stone and allows for thorough spraying.

Spraying should be commenced about twelve hours after a block has been made and be continued for from seven to ten days. Spraying should not be neglected. It is well to give this into the hands of one responsible person who will see that it is regularly and thoroughly done. Good stone can only be produced by proper curing. Pallets can be safely removed from the blocks at the end of three days.

Blocks should never be used in buildings until they are at least from twenty-four to thirty days old. Green blocks placed in a wall are very liable to crack from shrinkage.

The real value of a cement block machine is based entirely upon what it is capable of producing in the way of sizes and designs. Judging a machine from the standpoint of its purchase price alone is a mistake often made by many prospective buyers. Many machines, apparently cheap at first cost have proven so limited as to the sizes and designs they make as to be practically worthless to the operator of any up-to-date stone plant. Those purchasing machines simply on account of cheapness in price are very apt to find themselves so handicapped by the limited variety it is possible to produce as to make the purchase of additional machines imperative. After the required number of machines for the making of the various sizes and designs of stone have been purchased, each at a cost probably exceeding the original in price, it soon becomes apparent to the operator that his investment, though small at the start, has in the end proven the most expensive.

Filing a Saw

PROPER METHOD OF FILING SAWS TO OBTAIN THE BEST WORK FROM THEM—MISTAKES WHICH ARE OFTEN MADE AND HOW TO CORRECT THEM

By A. G. Beard

DURING my experience of many years at the carpenter trade I have, very naturally, made a few observations, and chief among them is the one pertaining to filing a saw; and I have long ago arrived at the conclusion that if there is any one thing that the great majority of carpenters are deficient in, it is the art of saw-filing.

It has always seemed to me that one of the first things a carpenter should learn how to do is to file his saw. I know that I had to file mine, although I nearly used up the first one that I tried.

Now, in regard to filing: When I see a man using his file as though it were a "hack-saw," I set him down as one who will never be a success at the business. A file is made so as to cut but one way; when you draw it back and forth you are not only needlessly wearing out your file, but you are spoiling the cutting edge of the teeth of your saw.

I have seen and tried several so-called "filing machines," but have never yet come across one that could compare favorably with hand filing by an expert. And why should not all carpenters, having good eyesight, be experts at filing? What would you think of a barber who could not sharpen his razor? You would not feel safe in trusting him to work for you, yet you will employ a man who calls himself a "carpenter," and allow him to haggle away at your lumber with a saw inadequate for the work for which it was intended, and wasting the time for which you are paying.

If the following instructions are noted, and carefully followed, I think that they may be of some benefit to perhaps a few of the readers of this journal:

See to it that your saw has just enough set for the kind of work you are doing; just enough for clearance, so that the saw will not bind, as too much set is nearly as bad as not enough. Next it should be jointed; by this I don't mean just running over the teeth with a flat file, but jointed with a "jointer." This tool may be purchased in most places at small cost, or can easily be made by fastening a flat mill-file in a hardwood piece, slotted to "straddle" the blade, thus insuring an evenness of the teeth. In jointing, all of the teeth should be touched, and if the saw is hollowing it ought to be jointed till it is straight, even if some new teeth would have to be made. It would be far better if the saw was somewhat rounding, nevertheless, if straight, it would "pass inspection."

In filing a cut-off saw much depends on the kind of wood to be cut; hard wood requires the teeth to have less "rake" and less bevel than soft woods. For use in soft woods I give the teeth quite a considerable rake, or pitch, and file at an angle of about thirty degrees, the handle of the file slightly depressed, and file toward the handle of the saw. There seems to be a difference of opinion among many as to which is the better way to file, some saying that they can make a saw cut better by filing to the point, I have tried both ways, and have found that I can do better

work by filing toward the heel. But a good deal depends on the way a person commences; if he has become accustomed to file in any one direction he had better endeavor to become proficient in the manner that he accomplishes the best results. Care must be taken to hold the file at the same angle, and the same depression, throughout. Each tooth should be just brought to a point and not filed more; some of the teeth may require filing more than the one adjoining, and often the file will need to be pressed harder against that side of the tooth than the other. It requires "eternal vigilance" on the part of the filer to become an expert. Practice, alone, will teach the beginner how much he should file on either side. When he comes to file the other side of his saw he may have discovered that he filed too much on the first side; in such case the only proper thing to do is to file a like amount this time, even though it does cut some teeth more than just to a point, so that they will all have the same depth. It may now be necessary to joint it again, perhaps to re-set it, and go over it carefully again.

After the saw has been filed there is a "wire edge" on the sides. The happy-go-lucky carpenter takes a slip, or an oil stone, and grinds off the sides of the teeth. The "practical" man takes his jacknife, or some such tool, and runs it along very lightly on the sides, trimming off that wire edge.

In filing a hand rip saw I file square across, giving the teeth the proper rake, holding the file level. I file from both sides, after having set and jointed it as before stated. Having brought all the teeth to an even point I then file the back of each opposite tooth at a slight bevel on the back, but being careful not to touch the cutting edge of the rear tooth. I hold the handle of the file slightly depressed during this operation. I have found that a rip saw filed in this way will cut well in nearly all kinds of wood.

In regard to files, I prefer a slim taper file, not too large, just a little larger than the depth of the tooth, as the size of the file does not obstruct the points of the teeth so much. I have heard some men say that a large taper file makes a wider angle between the teeth; this is not so, as the angles of all taper files are the same, regardless of their size. The section of each is an equilateral triangle, and therefore the angles must be equal to each other.

There is another form of filing called "flem-tooth." To file those saws it requires a different operation, and a different vise, from ordinary filing. This method of filing is mostly used on fine saws, such as back saws, and requires but little set, and are used chiefly for sawing shoulders of tenons on fine work. In order to file a back-saw flem-tooth, I lay it flat on the work-bench, with a thin strip of wood under the blade, and secured in place by driving some small nails in the bench. I then file each side of the lower tooth, on both sides, to a "needle point," holding the file square across the blade, and depressed so that it will only just clear the back of the saw; after having filed one side, turn the saw over and repeat the operation. With a little practice one can file very nicely in this way, and have a saw that will cut keen when needed. No saws are better adapted to fine dovetail work than are these, and with care will last a long time without again filing.

A Unique Natural Product

One of nature's most wonderful and unique products is asbestos, a material, which, in spite of its extensive use, is comparatively unknown to the general public. Prior to 1850, it was looked upon principally as a curiosity, although Charlemagne (Roman emperor from 800 to 814 A. D.) is said to have had a table cloth made of asebstos, which he cleaned by throwing into fire.

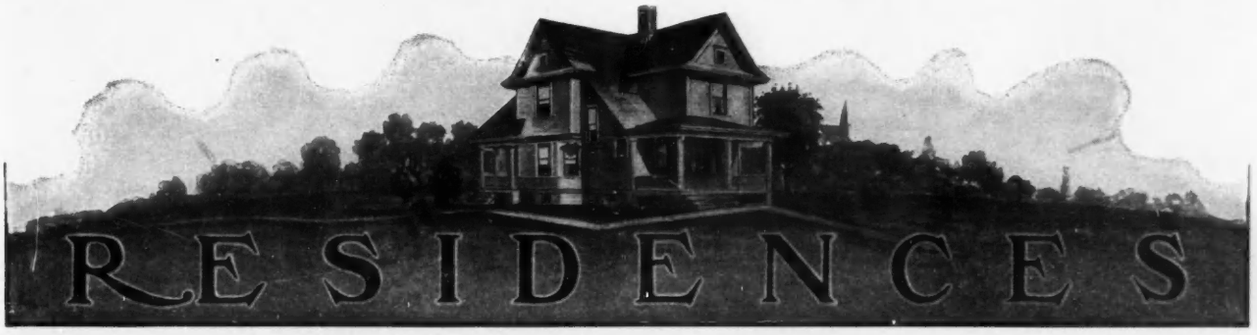
There are two varieties of commercial asbestos, known as Amphibole and Chrysotile. The former is used only to a comparatively small extent, as the fibres are short and without tensile strength and are, therefore, not suitable for manufacturing many of the asbestos products. Amphibole is used to some extent in cements, but is not well adapted even for that purpose. Chrysotile, on the other hand, has a strong and silky fibre, which adapts it for such materials as asbestos fabrics, household utensils, theatre curtains, clothing for firemen, etc.

In Germany, asbestos is known as steinflachs (stone flax) and the miners of Quebec give it quite as expressive a name—pierre coton (cotton stone).

Asbestos is mined in open pits, similar to stone quarries, and although it is found in all parts of the world, the mines in Quebec, Canada, are the most famous, yielding about 85 per cent of the world's supply of chrysotile. Probably the largest of these mines is that owned by the H. W. Johns-Manville Co. of New York. In 1879 the output of the Quebec mines was 300 tons, which has steadily increased year by year to 50,000 tons in 1905.

A New Masonic Temple

A new Masonic temple building, to cost $50,000 to $60,000, is to be erected at once in Flint, Mich. Judge C. H. Wisner, care Circuit Court chambers, is chairman of the building committee; F. D. Clarke, superintendent Michigan School for the Deaf, secretary. Size of lot, 132 by 148,—being corner lot, with 132 feet west line, 148 feet south line, and 132 feet east line (alley). Of course, building not to cover entire ground, but to set back, with grass plat surrounding. Competitive sketches from architects will be received. Building to be used for Masonic purposes only. Commandery drill room, lodge rooms, banquet hall, kitchen, club rooms, and parlors. Building to be of finest pressed brick obtainable.

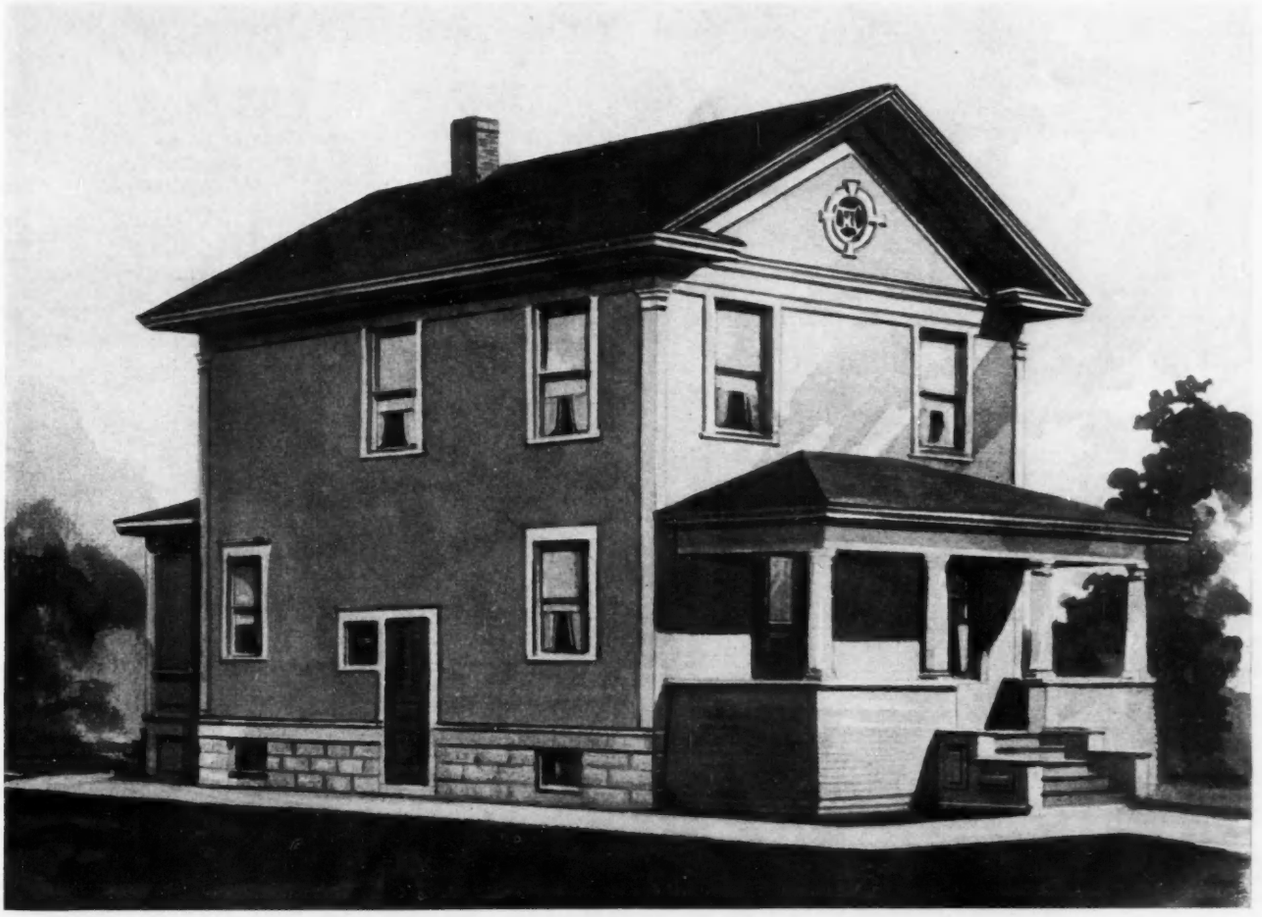


Three Modern Houses

DIFFERENT STYLES OF HOUSES SHOWN AS SUGGESTIONS TO THE CARPENTERS AND ARCHITECTS—PERSPECTIVES AND FLOOR PLANS OF EACH SHOWN

THE floor plans and perspective on this page are those of a six room house built at Lincoln, Nebraska, after plans prepared by Woods and Cordner. This is a very desirable and showy little house. The size being 24 by 30 feet on the ground. There is a basement under the whole house affording plenty of room for laundry, cellar, furnace and fuel rooms.

The first floor is divided into three rooms, kitchen, dining-room and a large sitting room, or parlor. The stairway leads direct from this room. A large column serves as a newel and the space from the ceiling to the stair-rail is grilled, thereby making the room more private and at the same time cutting off the usual unsightly well-hole and otherwise a saving of valuable space. A single sliding door separates the dining room from the parlor. The kitchen is small, but convenient. It has an open pantry with cupboard, bins and drawers. The entrance between the kitchen and dining-room is in the pantry nook, while at the other end a door leads to the basement or an outer door placed at the grade.



The second floor contains three sleeping rooms and all with ample closet space and a good sized bathroom and all entered from a well lighted hall.

It has a wide porch in front, which has flared siding up to the wide rail on which to rest the large turned columns. There is also a rear porch which is screened.

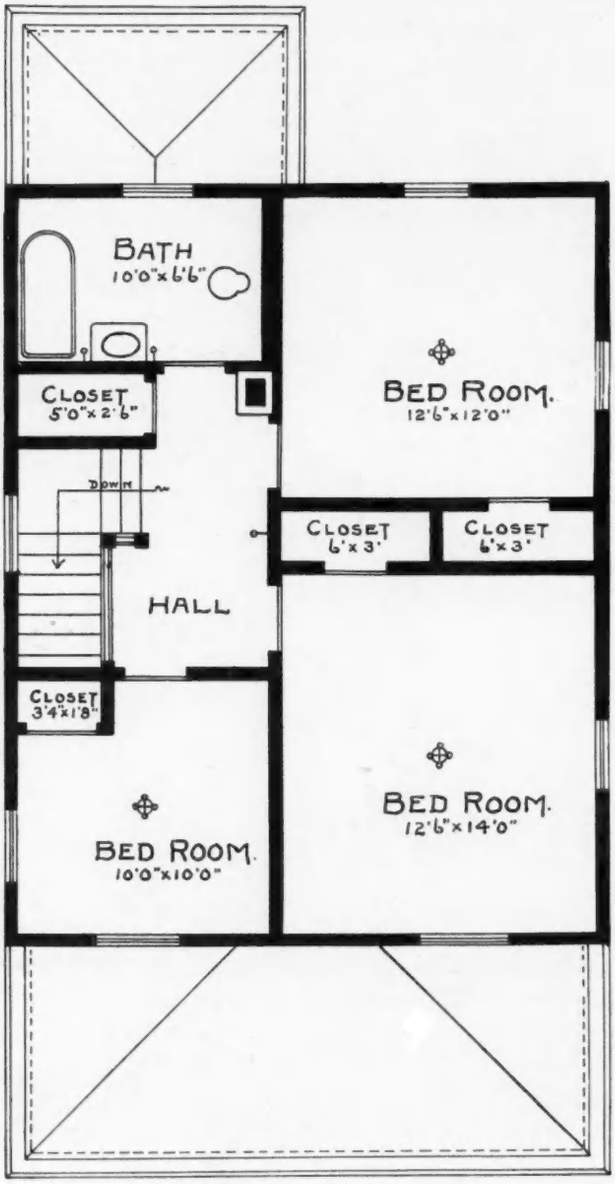
The heating is by furnace. The plumbing fixtures are first class and the lighting is by both gas and electricity.

The interior finish is of select yellow pine throughout, finished in the natural color. It makes a very economical house for a small family and at the same time a very showy one. The cost of this house complete was about $2,700.00.

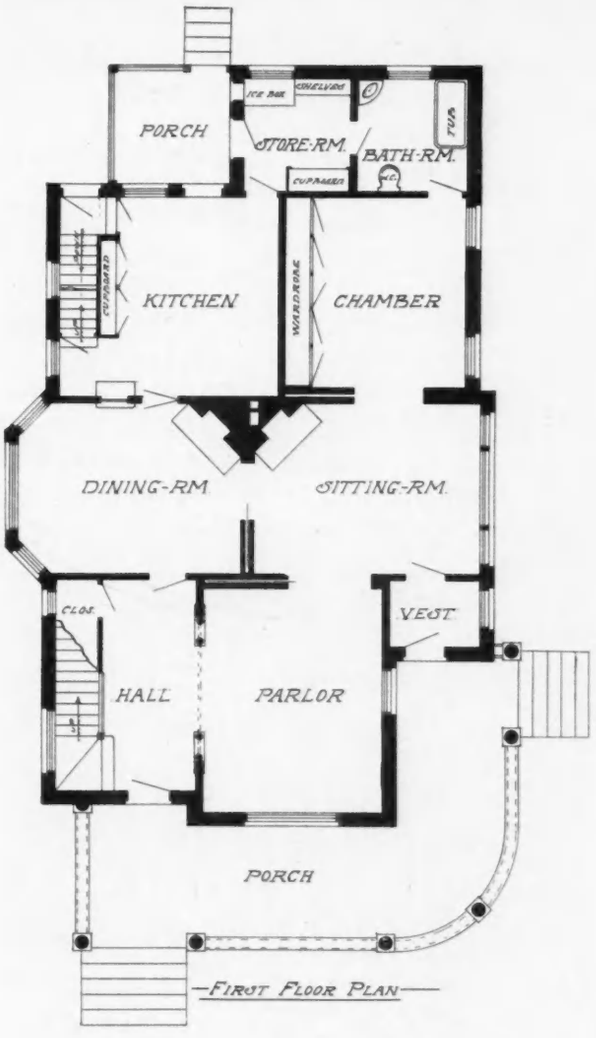
A Cement Brick House

After hearing lengthy discussions on the advantages of cement over every other material, it is natural for one to become curious and wonder how it really looks when used in a building. We are this month showing the residence of G. P. Alexander, postmaster at Kendallville, Ind., which was built entirely of cement brick with the exception of the foundation where concrete blocks were used. The porch columns, which add very materially to the appearance of the house were made with ornamental molds and show what can be accomplished with them. The cost of this residence, which is 34 by 54 feet, was $5,000. The work was done by Adolph Adams, a contractor at Kendallville, Ind. The interior arrangement of this house is worthy of comment. There are two entrances at the front, one leading into the hall, off from the parlor and dining room, and the other into a vestibule leading into the sitting room. The hall and parlor are divided by an arched entrance, while the sitting room is divided from the surrounding rooms by sliding doors. Two large fire-places add to the cheerfulness of the interior. There is a toilet room on each floor and also a front and rear stairway. The rear stairway is especially designed for the maid as it leads from the kitchen directly to her room.

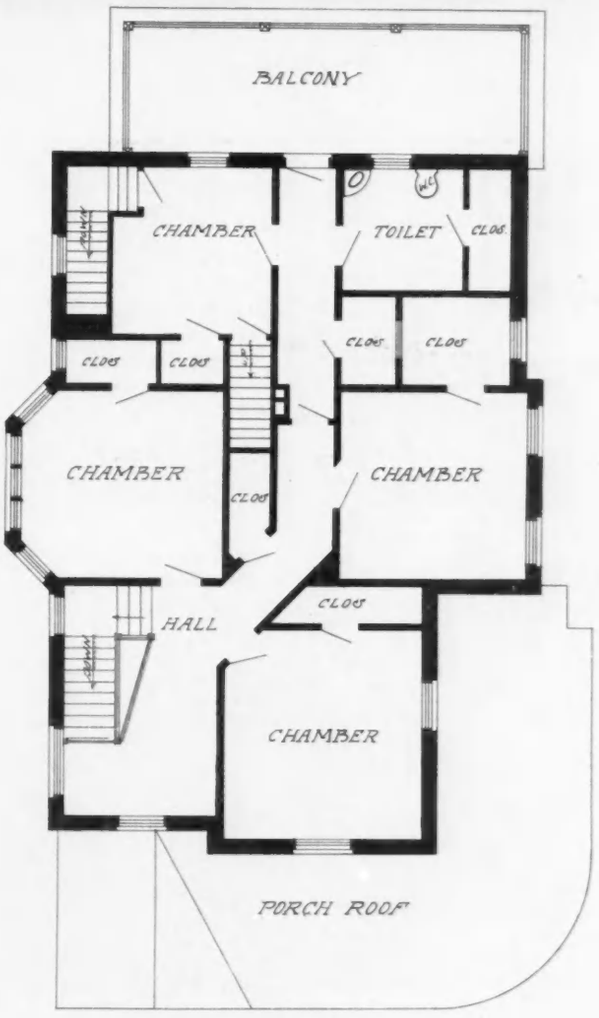
FIRST FLOOR.



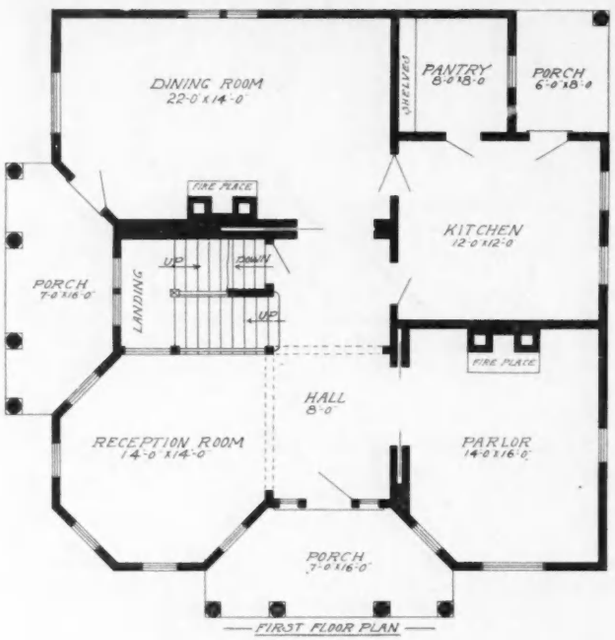
SECOND FLOOR.



—First Floor Plan—



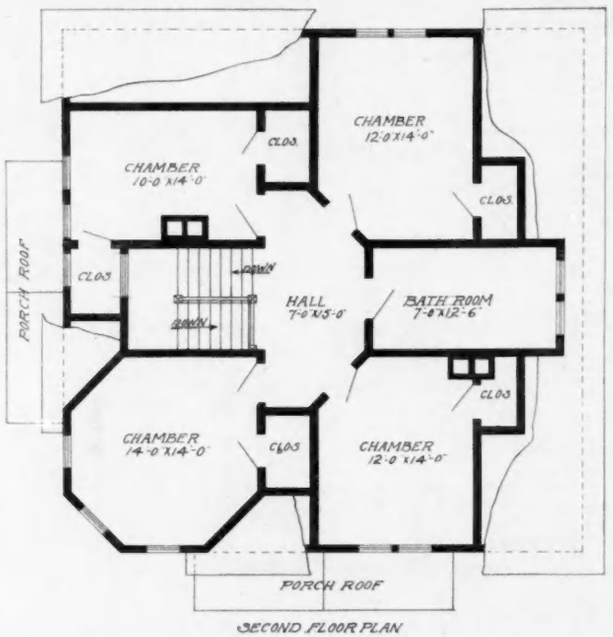
—Second Floor Plan—



FIRST FLOOR PLAN

A Compact House

The house shown on this page was designed by E. H. Ransdell, Witt, Ill. It has many desirable features that deserve special mention, among which is the arrangement of the first floor. All the rooms are centered around the large hall and are divided from it either by archways or sliding doors. The reception room is undoubtedly the pleasantest room in the house and is used mostly as the living room. The parlor and dining room are both equipped with an open fireplace which adds to the appearance and is a very material comfort besides affording good ventilation.



SECOND FLOOR PLAN

The second floor is divided into four bedrooms and a bath room. All the rooms open directly into the hall and the bath room is at the head of the stairs.

Concrete House at Janesville, Ohio

Cement Block Factory

Concrete Block House at Eaton, Ohio, Showing use of Ornamental Work

Showing Porch Columns and Trimmings

Concrete Block Post Office, Springdale, Ark.

Third Annual Cement Users' Convention

THE third annual convention of the National Cement Users' Association was the most successful that has ever been held, both in the number who exhibited and in the number who attended. There were between eighty to ninety exhibitors and the improvement in the machinery exhibited and the interest shown by the visitors were some of the most gratifying features. The business meetings were held during the morning and evening at the Auditorium, leaving the afternoon entirely to the exhibitors who, from all reports, made the most of their opportunities.

The program which was given at the morning and evening sessions was a most interesting and instructive one, and we shall from month to month publish all the papers read.

The first paper read was on "Cement Sidewalks," by Albert Moyer, New York, N. Y. He brought out the method of preventing settlement cracks, upheaval by frost and tree roots, contraction and expansion cracks and disintegration. The selection of material and use of the same was also clearly brought out.

The report of the committee on streets, sidewalks and floors was given by George L. Stanley, Ashtabula, Ohio, in which they gave the thickness of the various coats, together with the material to be used. The position of shade trees with reference to the sidewalk was also touched upon.

In his annual address President Richard L. Humphrey reviewed the advancement that has been made during the past year, the successes and the failures, and the causes of the same. He discouraged the use of cement by people with inadequate experience, as it usually resulted in failure. He gave a complete report on how concrete stood the test of the California earthquake shock as he found it shortly after the catastrophe.

Prof. W. K. Hatt, Purdue University, Lafayette, Ind., read a paper on "Mechanics of Reinforced Concrete." He spoke of the fact that several years ago very few buildings were constructed of reinforced concrete, while at present the growth is simply marvelous. In a list of constructions in which it is successfully and economically used may be included: Retaining walls, dams, tanks, conduits, chimneys, arches, culverts, floors for buildings, railway ties, etc.

Sanford E. Thompson, C. E., Newton Highlands, Mass., read a paper on "Forms for Concrete Construction." He treated of the design, construction and removal of forms. He stated that white pine or North Carolina pine was the best lumber to use for forms, and it should be either tongued-and-grooved or bevel-edged stuff, especially for floor and wall panel forms. Crude oil is one of the best materials to prevent adhesion of the concrete to the forms.

"Selecting the Proportions for Concrete" was the paper read by William B. Fuller, C. E., New York, N. Y. He stated that there was one combination of any given sand and stone which, with a given percentage of cement, made the strongest concrete and that this was the proportion which also gave the densest concrete, that is, the concrete which contained the least percentage of voids. As a result of extensive tests he gave the following rules:

The stone should all be of one size or should be evenly graded from fine to coarse, as an excessive amount of the fine or middle sizes is very harmful to strength.

All of the fine material, smaller in diameter than one-tenth of the diameter of the largest stone, should be screened out from the stone.

The diameter of the largest grains of sand should not exceed one-tenth of the diameter of the largest stone. The coarser the stone used the coarser the sand must be, and the stronger, more dense and watertight the properly proportioned work becomes.

When small stones only are used the sand must be fine and a larger proportion of cement must be used to obtain equal strength.

Report of committee on "Testing Cement and Cement Products," by E. S. Larned, chairman, Boston, Mass. They recommended the appointment of a committee on specifications to consider a number of standard specifications to cover cement and cement products, sidewalks and floors, art and architecture, fireproofing and insurance, laws and ordinances.

The time and place for the next convention was left to the executive committee with full power to act. The nominating committee presented the following ticket of officers, which was unanimously elected to serve for the ensuing year:

President—Richard L. Humphrey, Philadelphia, Pa.

First Vice-President—Merrill Watson, New York.

Second Vice-President—M. S. Daniels, Suffern, N. Y.

Third Vice-President—O. U. Miracle, Minneapolis, Minn.

Fourth Vice-President—A. Monsted, Milwaukee, Wis.

Secretary—W. W. Curtis, Chicago, Ill.

Treasurer—H. C. Turner, New York.

"Use of Concrete From an Architect's Standpoint," by A. O. Elzner, Cincinnati, Ohio, is given in full in another part of the magazine.

H. H. Quimby, Philadelphia, Pa., read a paper on "Finish for Concrete Surfaces," in which he mentioned various methods of beautifying the exterior of the blocks, among these were stucco finish, roughening, tooling, grinding the blocks with a coarse grained emery wheel or by immersing the blocks in an acid bath until the skin and some of the cement mortar between the particles of the aggregate have been dis-

solved, exposing and cleaning the particles and even leaving them in relief.

"The Artistic Treatment of Concrete" was ably discussed by Linn White, Chicago, Ill. He said imperfections in the exposed surfaces of concrete were due to imperfectly made forms, badly mixed concrete, carelessly placed concrete and efflorescence and discoloration of the surface after the forms are removed. He suggests two remedies, which were to treat the surface in some manner after the forms are removed, to correct the defects, and by using for a surface finish a mixture which will not take the imprint of and which will minimize rather than exaggerate every imperfection in the forms and which will not effloresce.

Charles D. Watson, Toronto, Canada, in making his report on "Art and Architecture," gave prominence to the fact that blocks should be handled intelligently and either the design should be made to fit the block or the block to fit the design, so there would not be the glaring discrepancies sometimes seen, where joints are made two or three inches wide in order to "make a fit."

In his paper on "Concrete Blocks," H. H. Rice, Denver, Col., compared the concrete block industry to our national game of baseball. He relegated the block maker to the pitcher's box, as he is by nature a good mixer, thorough and always in good form, Uniform excellence is far better than spasmodic brilliancy. The superintendent, machine manufacturer, mason, salesman, architect, contractor, owner of the building and the journalist were given their various positions to play in this great industry.

Spencer B. Newberry, Sandusky, Ohio, next took the floor, and owing to his extensive experience, was kept exceedingly busy answering questions on every phase of the concrete subject.

R. D. Kneale, Lafayette, Ind., gave the result of a number of tests made with concrete blocks. The proportions of material used in the blocks were one of cement to five of gravel.

In the report of the committee on "Concrete Blocks and Cement Products," M. S. Daniels, Suffern, N. Y., gave prominence to the skillful handling of the blocks, preferring a mason to do it.

J. F. Angell, Columbus, Ohio, made the report on "Machinery for Cement Users." He advised anyone going into the business to secure a complete line of machinery to enable him to turn out a good product; also to use the same discretion and judgment as is generally used in establishing any other permanent plant.

A number of short papers were next given on "Waterproofing, Cement Mortars and Concretes."

The first was H. Weiderhold, Philadelphia, Pa., in which he gave the history, method of preparing and use of asphalt mastic, which he claimed was the best waterproofing material on the market.

Edward W. De Knight, New York, discussed waterproofing by treating concrete to make it, in itself, impermeable and protecting concrete or masonry with something apart therefrom to waterproof them. He believed in "the membrane method," which belongs to the later class of waterproofing.

R. R. Fish, Sandusky, Ohio, in his paper, advocated the use of a waterproof compound which is to be mixed dry with cement before sand and water is added, thus making the concrete itself impermeable to water.

G. F. Fry, Indianapolis, Ind., advocated the use of a water-proofing paint as it would not only make the building waterproof but also prevent discoloration.

S. J. Bingswanger, Chicago, Ill., in his paper on water-proofing said, "To my mind, a colorless waxy material of an anhydrous nature that can be used in warm weather, or a resinous liquid that can be applied in cold weather, or at any time of the year, would be practically the proper coating for buildings constructed of cement blocks, or built in the usual way by throwing concrete in the box forms." The report of the committee on fireproofing and insurance was given by E. T. Cairns, New York. He stated that the tests which have been conducted tend to confirm that concrete, properly made and applied, is an excellent fire resistive material for certain uses, but has limitations which preclude its being properly classed as absolutely "fireproof."

✣

Opening for Building Material in Chile

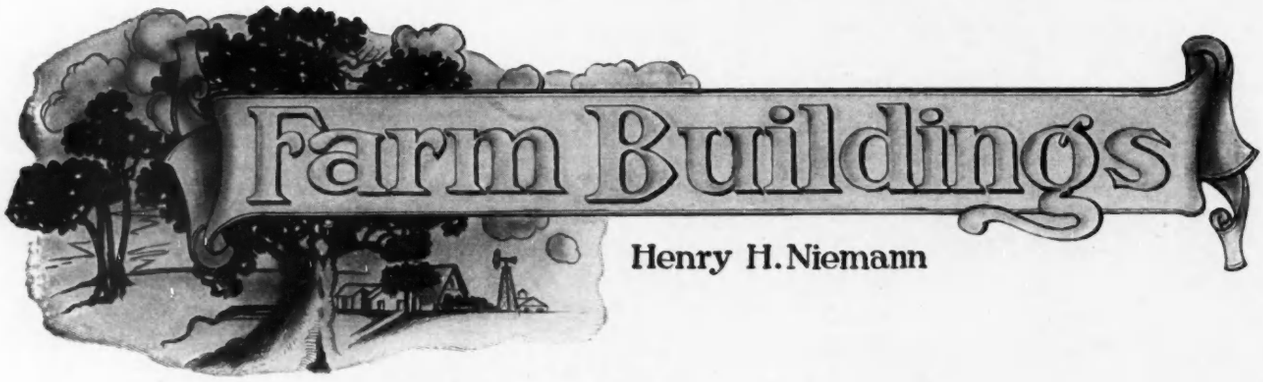
Consul Alfred A. Winslow reports that there will be a large demand for builders' hardware, cement, lumber, structural iron or steel, etc., in Valparaiso, Chile, for the next two or three years, and believes it will pay the American producer to study the field.

The United States ought to have a large amount of this business, and at good figures. German and English houses are after the business hard, but now is the time to get a foothold that will last. The visit of Secretary of State Elihu Root to this republic has had a good effect, and has had a tendency to draw the Chileans nearer to us. The demand will be especially strong for structural steel and corrugated iron, nearly all of which has hitherto come from Germany and England. More corrugated iron will be used now than ever, for it is proposed to use it not only for roofs, but extensively for sheeting or siding for buildings.

✣

Cement

Cement should never be disturbed after it has begun to set, but should be kept moist until hard. Brick or stone to which it is applied should be moistened or it will not adhere well. Cold retards, and heat quickens settings. The natural or American cements require more water than the Portland, which sets in from three to twelve hours. This should always be mixed with sand when used.



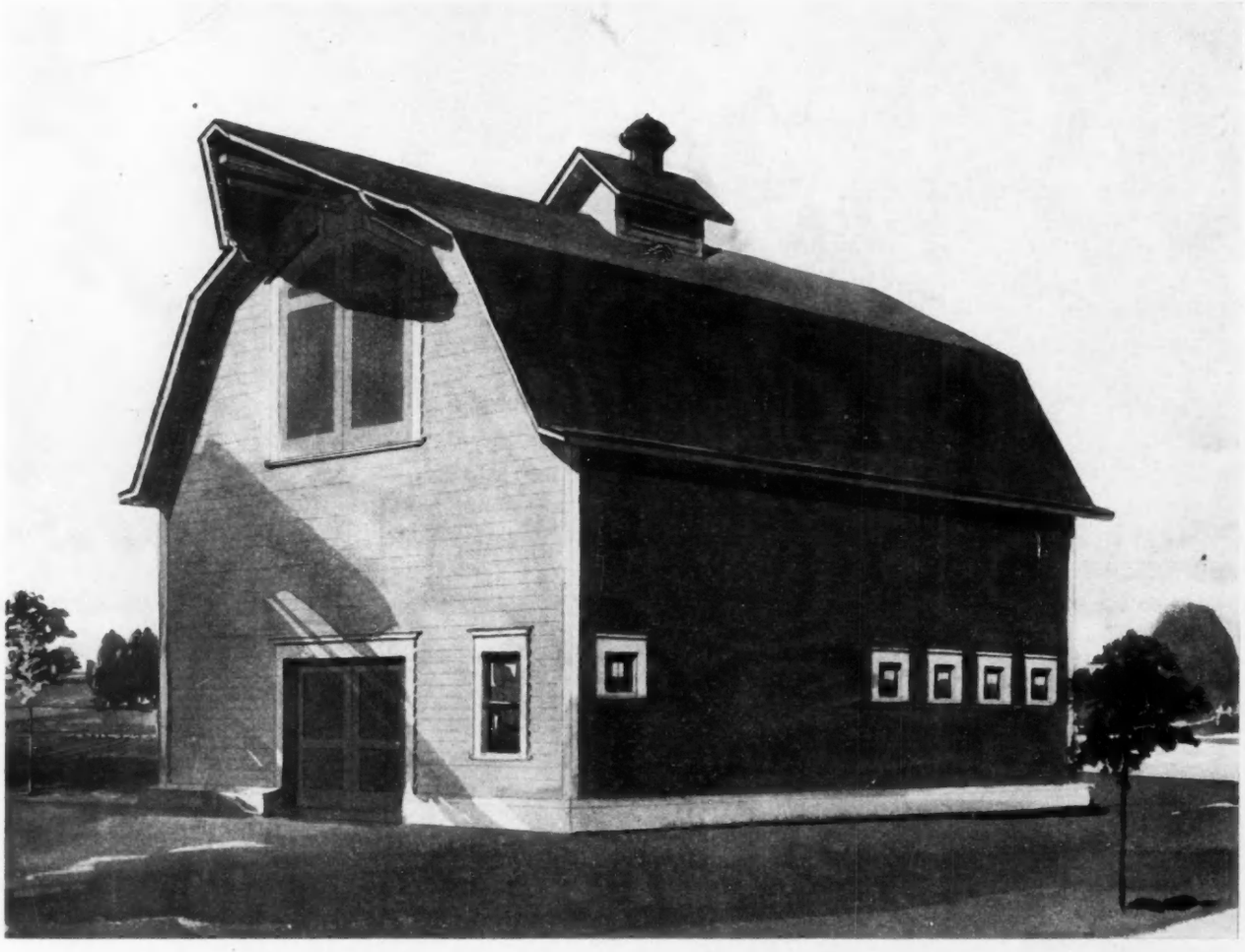
Henry H. Niemann

Stock and Grain Barn

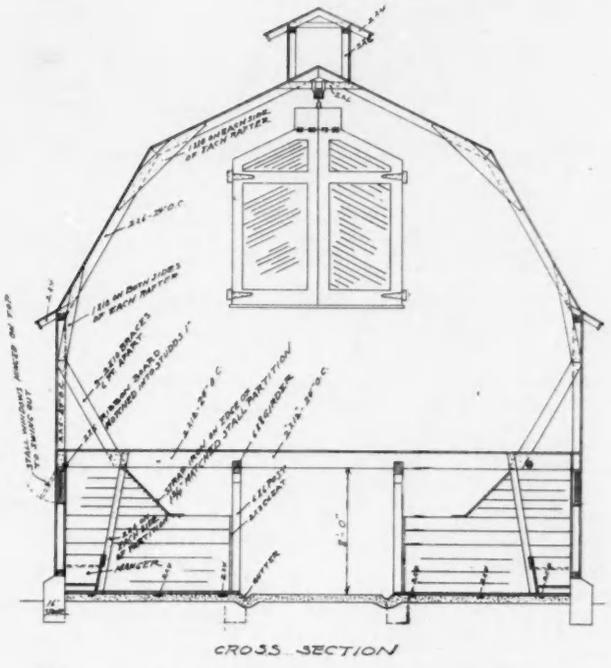
NOT ARTISTIC BUT PRACTICAL AND CONVENIENTLY ARRANGED—PERSPECTIVE AND FLOOR PLAN SHOWN—CONCRETE CITY BARN ALSO SHOWN

THIS barn is thirty-four feet wide by forty-three feet long and is built on a foundation wall of stone which runs 14 inches higher than the stall floors. This prevents moisture from the floor and the exterior from coming into contact with the frame superstructure, which consists of 2 by 6-inch studding spaced 2 feet on centers. The sectional view of the foundation shows that the interior surface of the stone wall is flush with the interior surface of the frame wall, forming a beveled wash on the top of the stone wall, which makes a very durable foundation.

There is a center driveway through the barn having large sliding doors at both ends. The horse stalls and grain bins are to the right and left of this driveway. The stalls have removable plank floors on top of a cement floor, which slopes to a cement gutter at the rear of the stalls. The mangers are built in, of wood construction and of the proper shape and dimensions for best results.



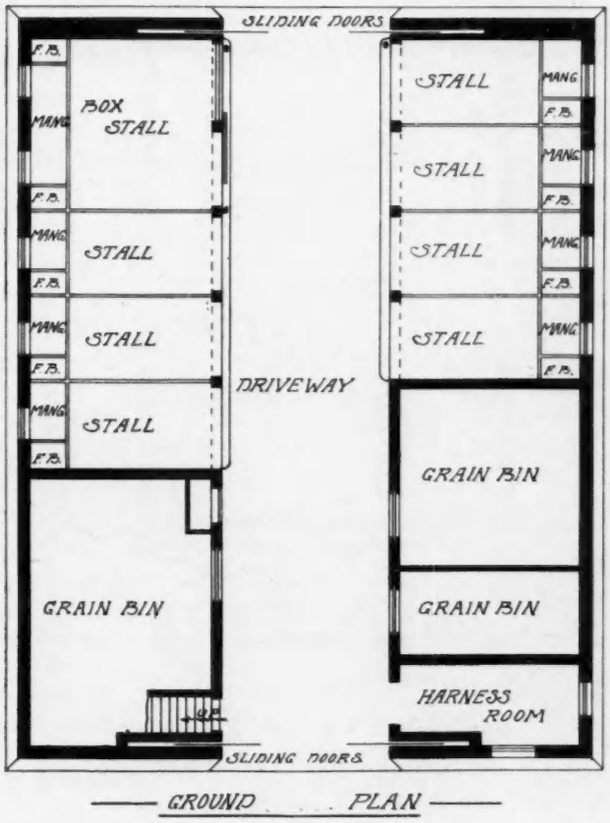
The partitions between stalls are composed of dressed 1¾-inch matched plank and at the rear of stalls run up to a height of 5 feet, and at the head



CROSS SECTION

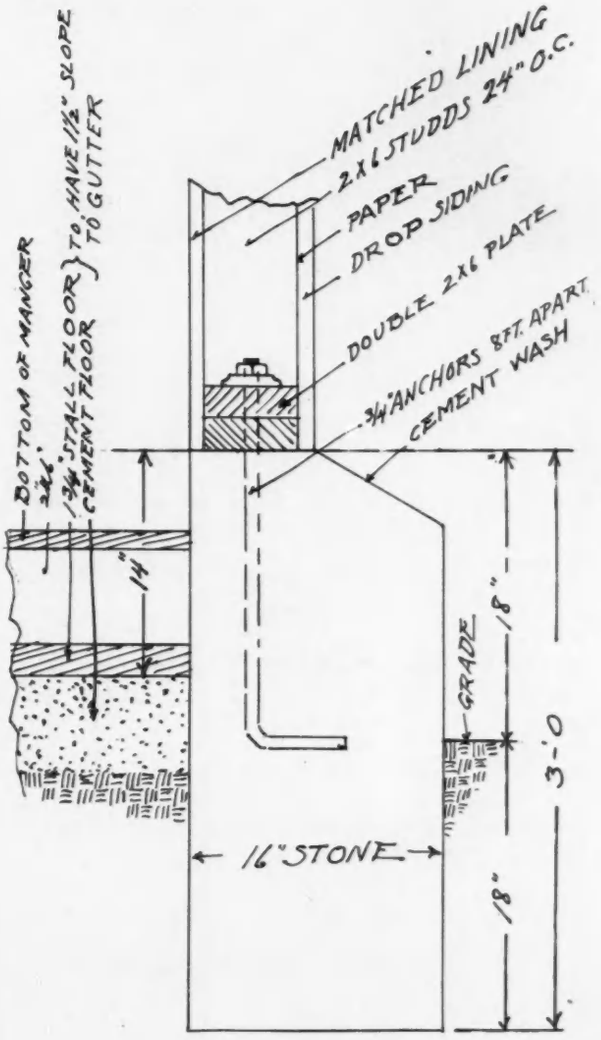
of stalls they run up all the way to the ceiling, as will be seen in the cross section.

One of the most modern features of this barn, and

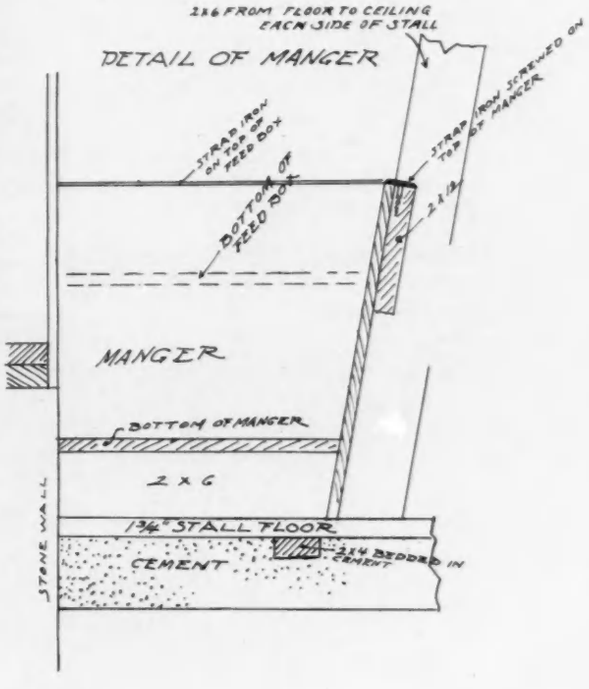


GROUND PLAN

one that will appeal to most builders is the construction of the roof, which consists of a curb roof, free from any posts or center supports that would inter-

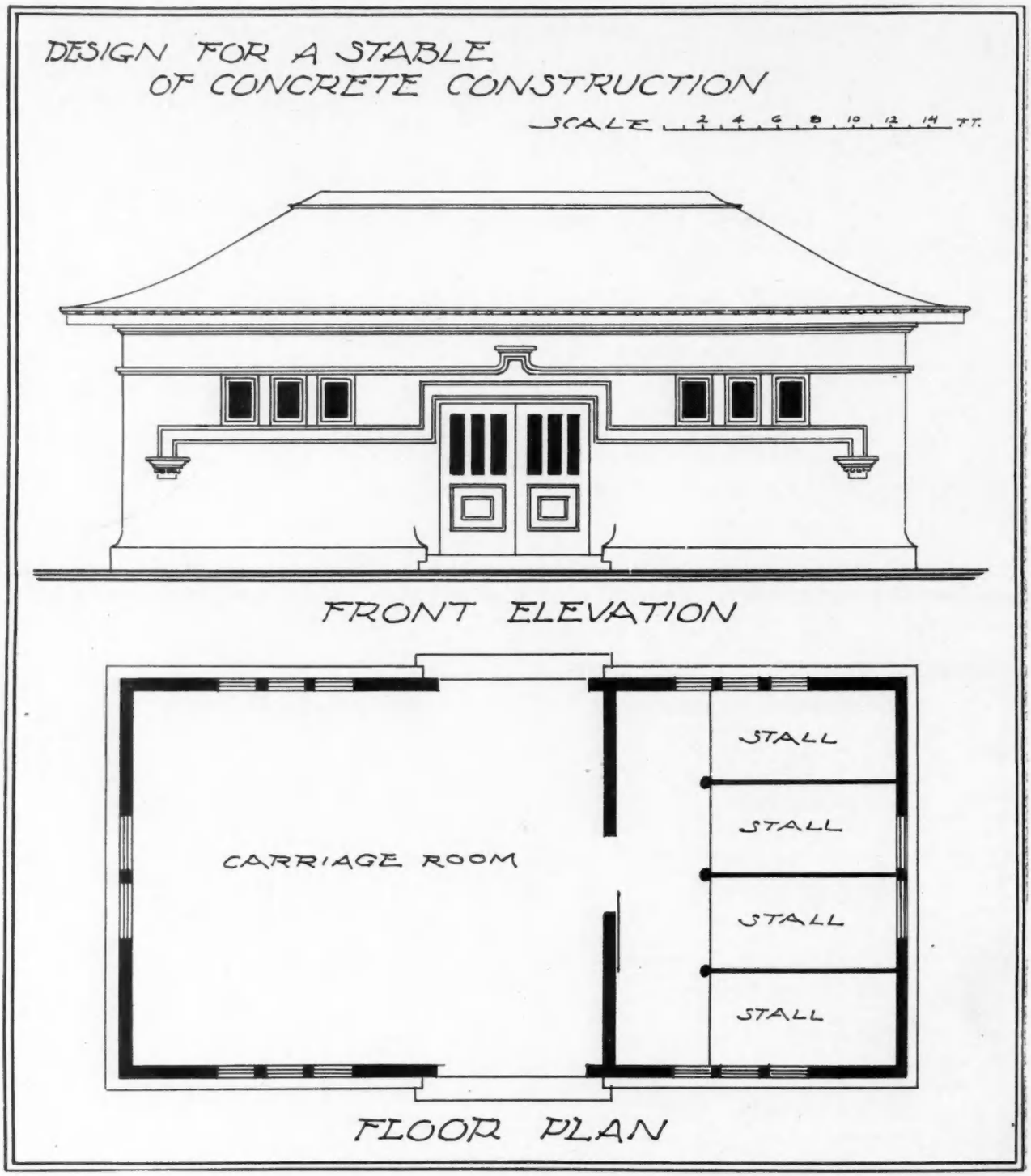


fere with the loading of hay, etc. This roof is framed on the same principle as centering for arches, etc., in fact it could be termed a wooden vault arch with the



wall plates for its springers and the ridge pole for its keystone.

The exterior of this structure has no artistic outline from an architect's point of view, as it was designed entirely for the purpose of giving the best results for the money invested, and in this respect it has been pronounced a success in every detail by its owners at Ringwood, Ill.



Concrete Horse Barn

In the best residence districts of all cities it is as necessary to have barns for the shelter of horses, carriages, etc., as it is in the rural districts; but a barn that is designed for an investment in the country would not receive many favorable remarks if built among first-class city residences. So the architect is called upon to design a building which will harmonize with the surroundings and have an artistic exterior as well as a well-arranged interior.

The design here illustrated is of a concrete building which is now growing into favor not only for its artistic possiblities, but for its fire resisting qualities, durability and cheapness.

Edward Hurst Brown.

Painting the New House

BEST FINISHES FOR OUTHOUSES, STABLES, FENCES AND SHEDS—MIXTURES TO USE AND HOW TO APPLY THEM—MANY POOR MIXTURES NOW IN USE

THE traveler through Lancaster county, Pennsylvania, is almost invariably struck with the universal neatness and prosperous appearance of the farms. Unpainted barns or sheds are almost unknown, and even the post and rail fences are painted or whitewashed. The observer scarcely needs to be told that Lancaster county farms are among the most valuable farming lands (as apart from suburban property) in the country, nor is he surprised if he is told that the banks in the city of Lancaster which hold the savings of these same farmers, are the richest in proportion to population, of any in the country. As a rule it will be found that the consumption of paint and the generally neat appearance of the farms is in direct proportion to the prosperity of the neighborhood. There are some people who will paint their houses yet who neglect utterly the barns, the outbuildings and the fences, seeming to regard their preservation as of little account. Farmers who neglect the painting of their barns and sheds will generally be found to be of the class that leave their mowings machines and wagons in the fields, where they have last used them, careless of the damage that may be caused by the elements.

While the suburban stable requires just as careful painting and the same quality of materials on its exterior surface as the house, because it practically forms an adjunct of the house, and should receive the same color treatment; as a rule the farm barn should be painted with cheaper paints than the house, because the element of beauty enters very little into the purpose for which it is painted. Protection against the weather is the main reason for applying paint to farm buildings and outhouses.

The mistake is often made, in purchasing paint for buildings of this class, of buying cheap mixed paints or low priced combination leads, either of which are largely composed of inferior quality zinc white, combined with a large proportion of the so-called inert pigments or extenders—regarded by most practical painters as adulterants,—such as barytes, china clay or silica. None of these has any affinity for linseed oil, and while it is possible that the claims that they are beneficial to paint may be true under certain circumstances, when their proportions are limited—they are nothing but a detriment to the cheap paints, in which they frequently constitute from fifty to seventy-five per cent of the white base. Not only do they have no value as a pigment, so far as covering is concerned, but they inevitably cause the destruction of the paint by peeling and scaling from the surface.

Instead of buying these cheap paints, true economy would dictate the use of some low priced pigment, such as iron oxide or graphite, which is capable of being spread over a large surface area per gallon of paint, and which possesses great durability. Of course, these points have the disadvantage of being dark colored, but dark red—the ordinary freight car color—or the dark gray of graphite are not ordinarily objectionable in a barn or other outbuilding, and if trimmed with white or dark green, may be made very pleasing.

Where still cheaper painting is desired, it is better to use good whitewash, to which salt is added to assist in its standing outside exposure, or to use a cold water paint prepared for exterior use. Of course these are by no means as permanent as an oil paint, but they do not flake off like a cheap mixed paint made on a base of zinc white and barytes, and they perish by powdering, so that they may be painted upon without the necessity of scraping or other special preparation. It is said that the cold water paints, which depend for their binding properties upon casein, and which are intended for exterior use, serve very well as a priming coat on rough work, the second coat being an oil paint. While the writer has not verified this by actual test, there is good reason to believe, judging from the behavior of cold water paints used alone, that this is true, and that where a good appearance is desired at a low cost, on wood that has not been planed, that a priming of such cold water paint would serve every practical purpose. The oil paint used on the second coat should have an excess of oil, to enable it to strike through the water paint and bind both coats to the wood.

The iron oxide paints include a number of well

known pigments known as metallic paints, Venetian red, Indian red and the ochres. The metallic paints are the reddish brown paints, largely used in painting freight cars. They are made either by roasting certain iron ores or from the spent refuse of sulphuric acid works and other manufacturing processes using iron pyrites. Where the painting of wooden surfaces, only, is all that is required from these paints, the source from which they are originally obtained does not matter very much, but where the paint is to be used on tin or other metal roofs or surfaces, great care must be taken to avoid the use of any paint containing sulphur, since this unites with the moisture in the atmosphere to form sulphuric acid, an actively destructive agent for sheet iron, either plain, tinned or galvanized. One of the best of these iron oxide paints is the well known "mineral brown," formerly known as Princes' Metallic Paint. This is a peroxide of iron, and is one of the most durable pigments known. While not particularly bright in color it still is quite agreeable in tone, and when used on a barn or outhouse, looks well in contrast with the surrounding foliage. When trimmed with white, a very agreeable color treatment is the result.

Venetian red is another iron oxide paint that is an excellent barn paint, although a trifle more expensive than the mineral brown. Both of these pigments are very durable, and examples are well authenticated where they have remained in fairly good condition for from twenty-five to forty years or even longer. Of course this requires a good quality of pure raw linseed oil, but the comparatively higher price of pure oil is amply repaid by increased durability.

Ochre is a natural earth or clay, owing its reddish yellow color to oxide of iron which it contains. While it makes a very durable paint, when a pure ochre is used, it possesses the peculiar property of causing subsequent coats of other pigments to scale off, hence it should be used on the bare wood only where the yellow color is to be retained indefinitely. Otherwise, ochre should be used only over a priming coat of white lead. Many so-called priming ochres are largely adulterated with barytes, and are dear at any price. It will be found more economical to pay for a reasonably good quality pure ochre than to buy an adulterated article at a lower price. White lead makes an agreeable trimming color to be used in combination with an ochre body.

Many paint manufacturers put up a line of so-called roof and barn paints at lower prices than their regular line of mixed paints. The colors, however, are limited to some of the iron oxide paints, ochre, cheap grades of umber and to the blue gray tone of graphite and to gas or carbon black. If made of pure quality pigments, ground in pure oil, with pure turpentine and good quality driers, these paints leave nothing to be desired for the purposes for which they are intended, but if sold for a very low price they will invariably be found either adulterated with barytes or china clay or to contain mineral oil or water in the thinners. The mixing of these pigments with raw oil to paint consistency is so simple that economy is usually obtained by doing one's own paint mixing.

Cheap Paints for Rough Work

It often happens that there are rough sheds, rough board fences or post and rail fences whose appearance would be improved and whose durability would be enhanced by giving them a coat of rough paint. For such purposes a cheap paint is all that is required, and the following suggestions are offered. But it must be borne in mind that these formulas do not apply in any case where good work is desired but only for rough and ready work.

As a thinner which is cheaper than pure linseed oil an emulsion of linseed oil and water may be employed. This is made by shaking one pound of caustic lime with enough soft water to make two and a half gallons of lime water. Dissolve one pound of sal soda in two and a half gallons of soft water. Mix the two solutions and stir into the mixture one gallon of raw linseed oil. After several days standing, this mixture or emulsion may be used with equal parts of pure raw linseed oil as a thinner for paint.

For a cheap fence paint, two parts by bulk of slaked lime of a stout consistency is thoroughly mixed with one part by bulk of white lead in oil, and either run through a paint mill or strained through a sieve, and then th[illegible]ed with enough linseed oil to make it spread well. It can be made still cheaper by using the oil emulsion, just described, as the thinner.

A cheap mineral paint for rough work is made by mixing seventy-five pounds of ochre, Venetian red or mineral brown, with seventy-five pounds of bolted whiting and twenty pounds of air slaked lime. These should be thoroughly mixed and thinned with equal proportions of raw linseed oil and skimmed sweet milk. When reduced to the proper consistency for use, it should be run through a strainer, and it is then ready for painting.

A cheap paint that looks fairly well on a rough, weather beaten surface, is made in this way. To a peck of lime, add before slaking three quarts of strong rock salt brine and two pounds of tallow, and sufficient of such dry earth colors as yellow ochre, raw or burnt sienna, Venetian red or umber to produce the shade desired, remembering that the paint will dry out three or four shades lighter. Slake the lime, let it cool and apply with whitewash brushes. The tallow makes the wash waterproof and the lime hardens it.

Stable Interiors

Where the interior of a stable is to be painted, care should be taken to avoid the use of white lead, since the ammonia gases, always present in a stable,

cause the lead to darken and discolor. If paint is to be employed, the last coat should be zinc white mixed with whatever tinting color may be desired and with from fifteen to twenty-five per cent of whiting added to keep the zinc from cracking.

A far better finish for the interior of a nice stable is a good quality varnish. Where sufficient time for drying can be allowed and where the price is not cut down to the lowest notch, a good spar coating or exterior varnish is desirable, since it will resist the dampness and ammonia gases better than an ordinary interior varnish.

Farm stables, cow sheds and the like should be thoroughly whitewashed inside, and chicken houses should be very frequently whitewashed. Whitewash can be applied either with the ordinary whitewash brush, or with a portable spraying machine. Where large surfaces are to be covered, the latter will prove most economical. In places of the character mentioned above, the whitewash should be frequently renewed, not only because of its cleanly appearance but because it is an excellent disinfectant and destroyer of vermin and is also a good fire retardent. For the latter reason it is a good plan to thoroughly whitewash all the rough timbers and the inside of the sheathing of barns, stables and other buildings, as this renders them slow burning.

Especially in the country, where it is impossible at times to summon aid quickly in case of fire, the value of anything that will make the building slow burning and permit the occupants to escape with their lives, or to extinguish the fire readily, should at once be apparent, and if a wash can be given that will be inexpensive and at the same time act as a fire retardent, the builder should certainly urge its use upon the owner.

Fire Retardent Washes

The cheapest fire retardent wash is a good heavy coat of whitewash. This should be applied before the lathing is done, to the studding, joists, under side of floors and inside of the rough sheathing, and on the outside of the rough sheathing before the siding is put on.

Another good wash for the same purpose, and perhaps one of the best, is silicate of soda—also known as water glass or soluble glass. This is a colorless liquid, that is comparatively inexpensive, and it is said that it may not only be used on rough woodwork, but may be applied as a surfacer or first coater under paint or varnish on finished woodwork. Whether it might cause the finish to crack is not known by the writer, but its use on the rough woodwork can certainly be recommended.

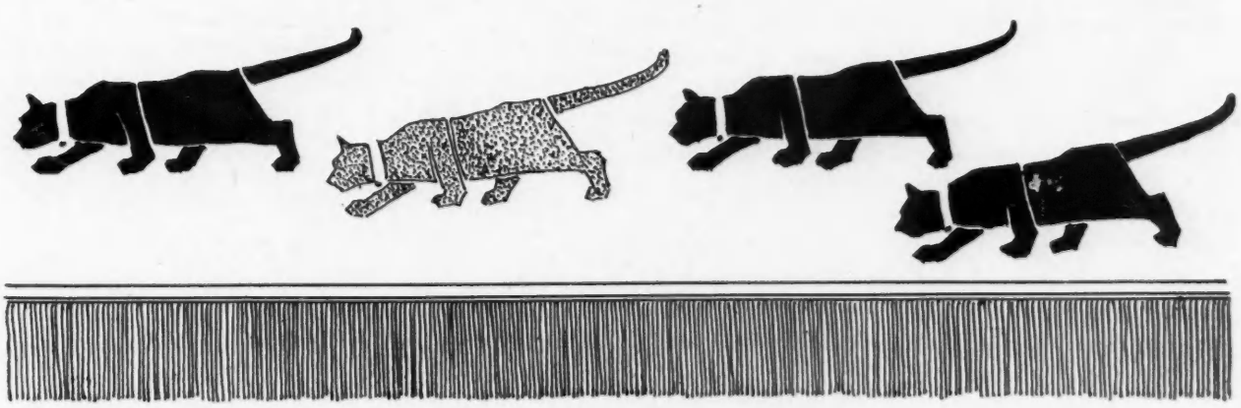
The advantages gained by fire-proofing in this way should be so manifest that the owner would gladly pay the slight additional cost.

Some Novel Effects in Stenciled Friezes

BEST EFFECTS PRODUCED FROM PATTERNS MADE BY JAPANESE—VARIOUS SUBJECTS THAT CAN BE USED TO OBTAIN DESIRABLE RESULTS

By Sidney Phillips

TO THOSE who are acquainted only with the commonplace stencils that are used by the average painter, who does not pretend to be an up-to-date decorator, the idea that novel pictorial effects can be obtained by means of stencils seems somewhat absurd, yet it is nevertheless true that the most artistic decorative effects can be produced by this means, provided the design is one which permits original treatment. The poster style of decorations is one that is admirably adapted to reproduction by stencils, since it usually consists of broad, flat masses of color, bounded by or included within sharply defined edges. Of course, a separate stencil is cut for each color, three or four being frequently cut for the production of a single design. Moreover, in the hands of the artistic workman, the single stencil is capable of considerable



color variation, since he can blend the different colors into one another to produce results that would seem to one, unacquainted with the methods used, to be possible only by means of free hand brush work.

There are no more expert artists in stencil designing than the Japanese, and some of their stencils are wonderful creations, giving pictures of birds, flowers or people, that seem more like finely executed drawings than reproduction by mechanical means. They cut their stencils from a peculiar and very tough paper,

Children offer opportunities for novel stencil decorations—using silhouettes of children at play, for nursery friezes, for example.

The modern style of drawing, so much affected by some of the designers of advertisements, wherein the picture is shown by the suggestion of high lights and black shadows, without outlines, offers many ideas for the stencil designer. The writer has seen some exceptionally good stencils that have been worked out along these lines.

and strengthen them by running silk fibres across the openings. These threads, of course, are pushed to one side by the brush, in stenciling, and do not show in the finished work. American fingers are not so deft as the Oriental, and it would be practically impossible for an American artist to cut the wonderfully fine and intricate pattern of a Japanese stencil, and at the same time avoid cutting through these fine silk threads. A similar idea, however, has been successfully used in the production of stencils, where the pattern is a very open one, or contains projecting ears which would be apt to curl up under the brush; and that is to mount the stencil, after cutting, upon a fine wire mesh or a piece of coarse mosquito netting. This not only strengthens the stencil, but it gives an effect of texture to the finished pattern, that in many designs is quite pleasing.

The modern or Art Nouveau style of decoration is peculiarly adapted to new and original ideas in stenciling. The silhouette picture, especially of animals, is often well suited for a stenciled frieze decoration in a den, nursery or dining room. For example, let us suggest a frieze for a den, in which cats are stenciled in a solemn procession round the walls of the room. Some may be white cats, others gray or others black, and there need be no regularity in the procession, even though the same stencil is used for all of them. Dogs would also give a good opportunity for the designer. We might have big dogs and little; dachshunds, pug dogs, bull dogs, setters and the like, all arranged so that their profiles stand out clearly. Dogs and cats could be used on the same frieze. Some of the German silhouette pictures from the comic papers would also offer excellent suggestions.

Landscapes, of a broad, semi-pictorial style, can be reproduced very readily by stencils, and make effective frieze decorations for dining rooms and libraries. Indeed, to the wideawake and progressive man, there is no lack of opportunity to produce novel effects by means of stencils, that will have the stamp of originality and for that reason cannot fail to please the customers.

A Timber Test

The soundness of lumber may be ascertained by placing the ear close to one end of the log, while another person delivers a succession of smart blows with a hammer or mallet upon the opposite end, when a continuance of the vibration will indicate to an experienced ear even the degree of soundness. If only a dull thud meets the ear, the listener may be certain that unsoundness exists.

Preventing Plaster of Paris Hardening

It is often desirable not to have plaster of paris harden too quickly. This may be done by adding a saturated solution of borax to the water in suitable proportion. One volume of the solution to twelve of water will prevent the hardening for about fifteen minutes; while with equal parts this will not take place for some ten or twelve hours.

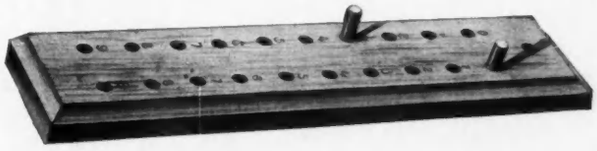
Cypress

Among the good points of cypress are cited the following: "It has more nearly the qualities of white pine than any other wood, and yet is firmer and stronger. It shrinks less, warps less and expands less.

Something the Boys Can Make

GIVING A COMPLETE DESCRIPTION AND WORKING DRAWINGS OF HOW TO MAKE A COUNTING BOARD AND A RING TOSS – ESPECIALLY APPROPRIATE FOR THE BEGINNER

AN EFFORT will be made this month to describe something suitable for those boys who have had no previous experience in handling tools. It has been some time since pieces suitable for the wholly inexperienced have been given and it is but fair that their interests should be cared for at this time. Later, there will be described objects containing advanced construction, such as paneling, dovetailing, drawer construction, hinging, etc.



The two pieces to be made by the beginners are the counting-board, Fig. 1, and the ring-toss, Fig. 2.

The counting-board, as its name implies, is a board upon which a number record can be kept. There is no limit to its usefulness. It may be hung in the kitchen and a record of the grocer or milk account kept on it. Several of them may be made and used in keeping scores of games which may be played. In fact, wherever a number record is to be kept, the board will prove convenient.

In using the counting-board, the right hand column of figures is to be considered as units column, and the left hand column as tens. There are two pegs which fit into the holes, one for each column.

To illustrate, one peg in the 0 hole of the left hand column and the other peg in the sixth hole of the right hand column would be simply 6. Again, one peg in the ninth hole of the left hand column and the other peg in the 0 hole of the right hand column would be 90. It will be seen that a record from 0 to 100 may be kept on this board by properly placing the pegs.

By making the board wider and placing another column of figures to represent hundreds, a record from 0 to 1,000 may be kept, three pegs being used. By adding a sufficient number of columns, a record of any number might be kept.

Secure a piece of soft wood; white pine, yellow poplar or cypress will do. Saw out a piece roughly to two and three-quarters or three inches wide by eleven inches long.

Boys who read this are familiar enough with tools, no doubt, to know that there are two kinds of saws; one, the cross-cut, used for cutting across the grain of the wood; the other, the rip-saw, used for cutting with or parallel to the grain. The grain of wood is parallel to the direction in which the wood splits.

With the jack-plane, smooth-plane or jointer, level one of the broad surfaces. This surface may be tested for level by laying any straight-edge, such as the narrow edge of a long try-square, upon it and holding both between the light and the eye. If the surface is not level light will show between the surface of the board and the straight-edge. A level surface will stand testing lengthwise, crosswise, and diagonally or from corner to corner across the center of the surface. Mark this surface for a working-face.

Second, straighten, and square a narrow surface to the working-face. Test it for straightness with a straight-edge, unless you know how to sight it straight

with the eye. Test for squareness with the try-square beam held firmly against the working-face. Mark this surface for a joint-edge.

Third, set the gauge for the required width, two and one-half inches, and gauge, keeping the gauge-block firmly against the joint edge.

Fourth, plane the rough edge carefully to the gauge line, testing all the while with the try-square that the edge may be square with the working-face when the gauge line has been reached.

Fifth, set the gauge for thickness, five-eighths of an

inch and gauge on both edges, keeping the block against the working-face.

Sixth, plane to these gauge lines, testing with a straight-edge that the middle be neither full nor hollow when the lines are reached.

Seventh, plane one of the ends so that it shall be square to both working-face and joint-edge when

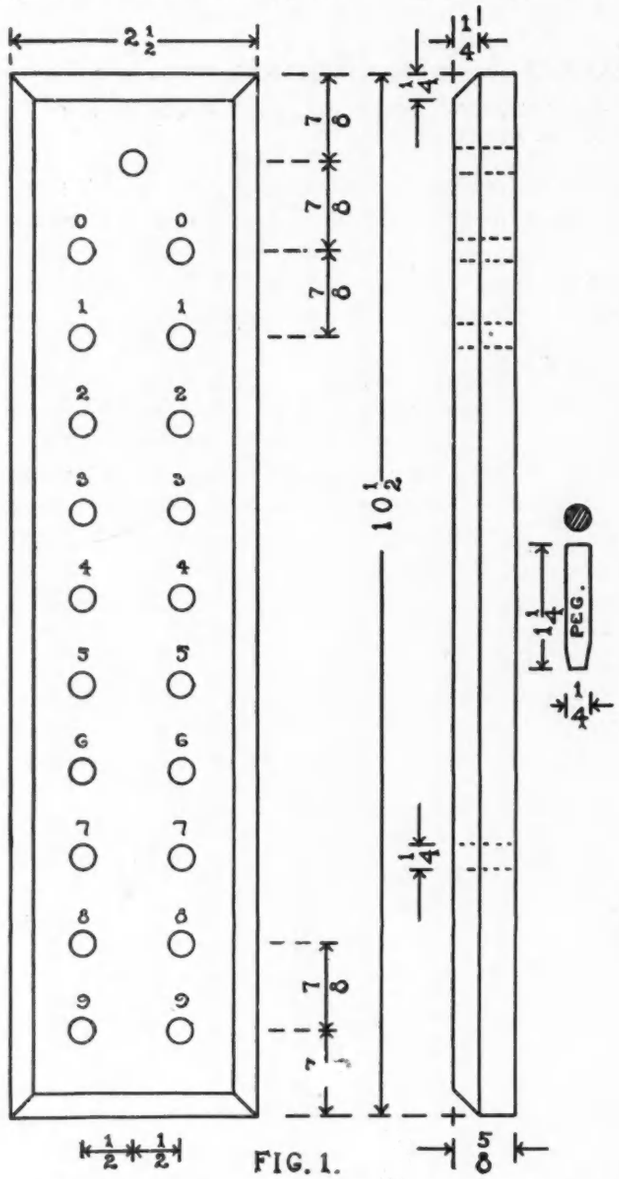


FIG. 1.

tested with the beam of the try-square against these surfaces.

Eighth, measure from this end ten and one-half inches and, with the try-square handle against either the joint-edge or working-face, square fine pencil or knife lines around the four smoothed sides.

Ninth, plane this end carefully to the lines.

In end-planing, do not plane entirely across or the piece will be ruined. Plane a little over half way from each side.

With a pencil gauge—a gauge with a pencil instead of a steel spur for a marking point—gauge for a one-quarter inch bevel on the top surface. Plane carefully to these lines.

The holes for the pins are to be bored with a one-quarter inch bit. Bore from the face side until the spur appears on the back. After all have been bored in this manner on the face, reverse the piece and finish the boring from the back.

To lay out these holes, set the pencil gauge to three-quarters of an inch and gauge lightly from the two edges the full length of the board. With the rule, begin at one of the ends of the block and mark off successively points seven-eighths of an inch apart. Do not make the mistake of measuring from the bevel. With the try-square, square light pencil lines through these points and across the piece. The intersections of these lines with the pencil-gauge lines locate the

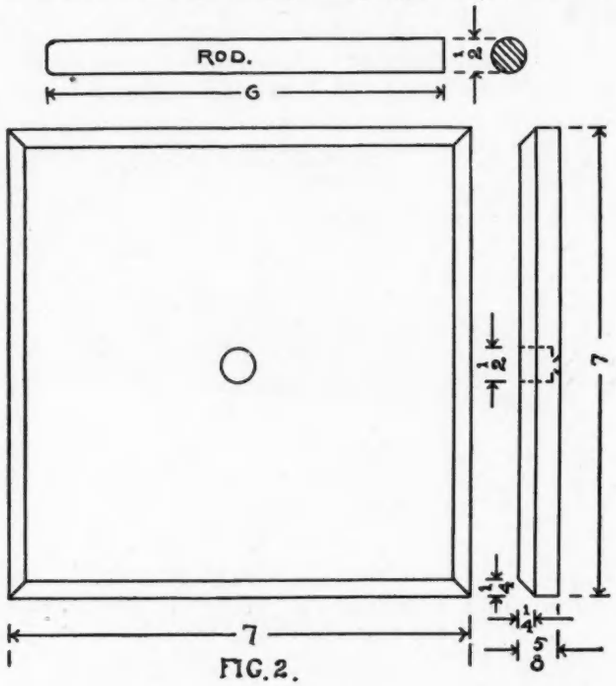


FIG. 2.

centers of the holes except at the top end, where a hole is bored on the cross-line, midway between the pencil-gauge lines.

The numbers may be put on with ink; or if a set of steel numbers is at hand, you have just what is needed to make a finished piece of work.

A very thin coat of shellac will keep the wood from becoming soiled.

The two pegs are to be one-quarter of an inch in diameter each and one and one-quarter inches long. The best tool to use is the knife. When all has been done with the knife that can well be done, finish with sandpaper.

The ring-toss, Fig. 2, is used in playing an indoor game and is for the young folks.

The base is to be squared up according to the directions for the counting-board, the length being seven inches, the width seven inches and the thickness five-eighths of an inch. The bevel is one-quarter of an inch.

The hole in the center is one-half an inch in diameter and is located by drawing the diagonals, or at least

enough of them to make a cross at the center. Bore from the face side until the spur appears on the back. Do not finish the boring from the back but countersink from the back slightly so that a small screw can be put through into the end of the pin or rod which is to serve as the upright.

This rod should be one-half an inch in diameter and six inches long. The upper end may be pointed slightly. A touch of glue on the lower end before it s put in the hole in the base will help to stiffen the whole

The best things to use for the rings, experience has shown, are ordinary fruit jar rubbers. They are of good size for indoor play so that a long distance from the board is not necessary to prevent "ringing" at every throw. They are light and noiseless. Wire rings wrapped with cloth and rings made of rattan have been used but are no better than the new jar rubbers.

A thin coat of shellac will preserve the natural color of the wood and should be applied after the parts are put together. Sand papering must be done before the parts are assembled, however, the paper being held on a block for the base and in the hand for the rod.

Constructing a Cylinder Stairway

(*Continued from page 1290.*)

The joint at *5* is made square to the tangent *4-5* and at *a* to the tangent *a4*.

From *a* to *6* is shown a short straight piece added to the mold and known as the "shank"; its exact length is equal the distance from *2* to *1*, as shown in Fig. 2.

Before we can draw the curve it will be necessary to find the width at each end and also at *c*.

This last point being on one minor axis determines the width to be equal to that of the stright rail; at each end the width is determined by the bevel or bevels if two will be required.

For this wreath we need only one, owing to the tangents being equally inclined.

It is shown in Fig. 5 and the way to find it is by making *m c* equal the plan radius of the rail, and *m a* equal to *w 3*, shown in Fig. 2; the angle at *a* will be the bevel, and it is to be applied to both ends of the wreath as shown at *6* and *5* in Fig. 4.

The width of the mold at each end will equal twice the distance from *a* to *b*, as shown in Fig. 5, and represented on the mold in Fig. 4 by the semi-circles shown at each end.

Now take a lath that will bend to touch the circumference of the two semi-circles, also that of the circle for both the inside and outside curve, as shown.

The bevels at the ends are shown applied reversely; at *6* in the direction of the inside, and at *5* in the direction of the outside.

It will be worth remembering that always where the tangents are equally inclined over a right angle plan, the bevels are to be applied reversely.

Cement Sidewalks

(*Continued from page 1299.*)

used in separating the sand from undesirable stone and clay lumps, at the same time making the sand more mealable for mixing.

The mason's trowel is a useful article in filling depressed places and trimming up work.

The following notes should be carefully read by the novice before attempting to carry out the above instructions.

Walks two to four feet wide need only be three inches thick, but must not exceed twenty square feet to each block.

Walks from four to seven feet wide should be four inches thick and not exceed thirty square feet per block, which alludes to walks where blocks reach across the walk, as the thickness is governed by the size and length of blocks only.

When large blocks and thin concrete is desirable, the same is possible by placing two-inch poultry netting (No. 12 wire) after one inch of concrete has been placed, thus blocks thirty feet long, six feet wide and four inches thick have been made three years ago and are intact today, but such is not always possible as freezing and thawing more or less affect large blocks.

Should it be desirable to make one block after another, same can be done by separating blocks with paper, which remains in the joint, or a thin sheet of steel which is withdrawn as soon as adjoining blocks are troweled and just before the jointing tool is used.

In finishing the surfaces with steel trowel, overtroweling brings too much cement to the surface and causes the same to wear or slough off; it also causes hair cracks and makes a glary, slippery, wavy surface, almost the same as if too much cement was used.

Insufficient troweling causes pock marks, unfinished appearance and pimples.

Some finish by dusting with neat cement, which is a labor and time saver, but I strictly forbid it as it causes checks and hair cracks same as overtroweling, and the top coat will wear off readily, thus leaving a rough, unfinished surface.

Cement allowed to dry before fully set, or dirty sand in finishing (top) coat will cause crumbling; therefore, use clean sand and keep work moist for ten days.

Insufficient water used will prevent the cement from setting and result in wear off (powdering) soon afterwards.

Too much water causes discolored spots, especially when dusting with neat cement has been resorted to to absorb the surplus water in finishing.

Driveways and crossings should be made six inches thick, but the finishing (top) coat need not be heavier than for walks.

A Concrete Reservoir

To the Editor: Bayhead, N. J.

I am sending you herewith a photograph of a reservoir built entirely of concrete above ground. It is thirty feet in diameter and six feet high. The wall is two feet thick at the bottom and tapers on the outside to one foot thick. I used a mixture of one part Portland cement, three parts sharp sand and five parts gravel mixed with just sufficient water to make the cement plastic or "sticky," but not thin enough to pour. After three days I removed the plank and then plastered the exterior with a mixture of one part Portland cement and two parts sharp sand that had passed through a screen of sixteen meshes to the square inch; this gave it a finished appearance. On the interior I did my waterproofing, which was done by the Sylvester process which you recommended to me. I washed the surface with a solution of three-quarters of a pound of Castile soap to every gallon of water. This was applied hot with a flat brush. After twenty-four hours I applied a solution of a half pound of alum to four gallons of water. The temperature of this wash was sixty degrees. This reservoir has now been in use for nearly a year and I thought it would be of interest to you and your readers to know that it has been perfectly waterproof. JOSEPH F. MORTON.

A Concrete Reservoir

Comments by a Member

To the Editor: Wolford, N. D.

As I see so many thing that I would like to comment upon, in your correspondence column, and do not wish to take up too much of your valuable space,—will try and condense my little communication so as to do the most good for the least amount of space.

Tell Mr. J. H. Godfrey, of Equality, Ill., that I think his idea of cutting siding on the ground is good,—but not original with him, for I have been doing the same for the last ten or twelve years, and have seen others do the same thing, but not to any great extent.

And may I add that the tool known as the block-plane is one that I have no use for whatever in putting on siding. Here we use all red-cedar, and blocking makes a poor joint, while I think that a man who cannot use a marker, or knife, and then *cut* to the mark, is a poor hand to have to do such work, and should be put to doing something else.

I like to get the lengths of all the pieces needed for a certain place, then cut them all say one-half inch longer

than needed, squaring one end, and if the frames and corners are plumb and true, by holding the piece tight to the casing and using a marker, one can get a perfect joint.

In the same connection I would like to say that I do not agree with Mr. Ransdell in regards to his method of preparing frieze for siding. First, his idea seems to be to save material. Now my motto is that if a job calls for one and one-eighth-inch material, his method would have the appearance only, and to me that would not seem right, and savors too much of the idea to make the job cheaper, and at the same time it is not so good, for if all siding is like what we use here, it is not as thick as lath, and that would leave a good sized crack for the wind to get through. My way to do such a job is to gauge back from the edge of board on the back side. about two inches, and from the back side, on the edge, as far as the siding is thick. Then using a scrub plane, and finishing with a jack, or fore plane, take this off on the bevel, and when the siding is in place, it can be nailed down firm and tight and make the job practically wind proof. I have been doing it this way for years, and have my first complaint to hear.

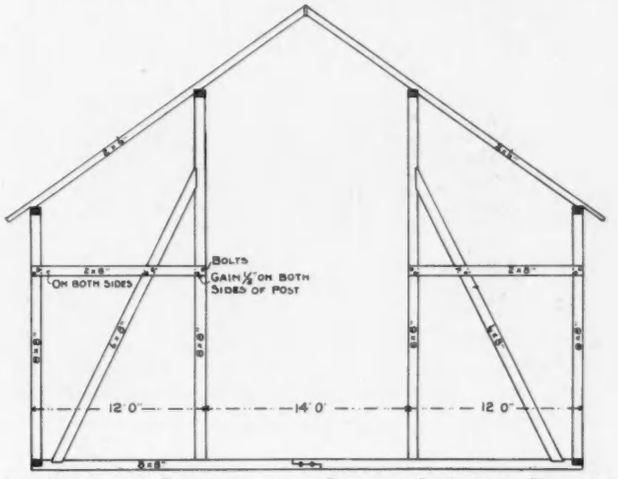
It seems rather strange that two men of different states would have the same idea in different things, I refer to the sash-pulley gauge and marker, shown by Mr. Ben Johnson, of Pittsfield, Ill.

I have, as long as I have ever used any kind of sash, used one exactly like the one he tells about, and do not know where I first got it, and although I think it is all right, have never seen anyone else use it. It looks good to me, for it is the quickest, and most practical device for the purpose I have ever seen. F. R. MARRS.

Bents for a Bank Barn

To the Editor: Fairfield Center, Ind.

Having seen a number of ways for building barn bents in



the AMERICAN CARPENTER AND BUILDER I thought I would send in a sketch of my way, which is very convenient for the use of slings or hay forks. This makes a very simple, yet strong construction. A good way to build large sliding doors for barns to keep them from springing is to cut the boards to the proper length and then stand them edgewise on the trestle and give the grooves a good coat of paint before nailing. This will prevent the siding from swelling. I have followed this way of putting doors together for several years and it has given good satisfaction. WILLIAM STOMM.

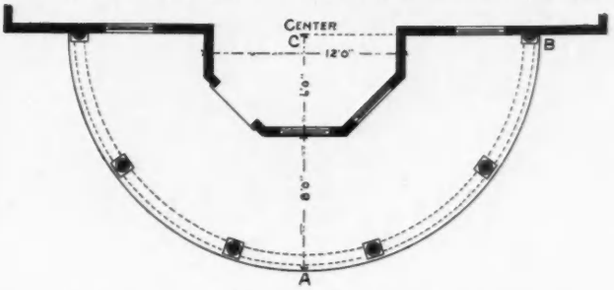
How to Build a Circular Porch

To the Editor: Wardensville, W. Va.

Enclosed find a rough sketch of a circular porch to be built around a bay window or tower. Please give me the best method for constructing this porch. How to get the circle true and how to make the plate economical?

BRANSON SNYDER.

Answer: The center being at a point inside the building, prevents striking a circle from same. It is therefore necessary to make a template of one-half of the semi-circle, as from A to B and by measuring out 14 inches from C to



these points, will locate the placing of the template from which to work out the proper curve in the frame work. The best way to form the sill and plate of this kind is to spring ⅞-inch plank to the proper curve. Five plank will be sufficient for the body of the plate, and from this fur out for the required thickness of the soffit. Mr. S. does not mention what kind of a roof he wishes to put on his porch. If it is to be a pitched roof with rafters radiating to the center, he will find that they will not strike the octagon on a level line but will rise higher at the center of the sides and will have to be framed accordingly. EDITOR.

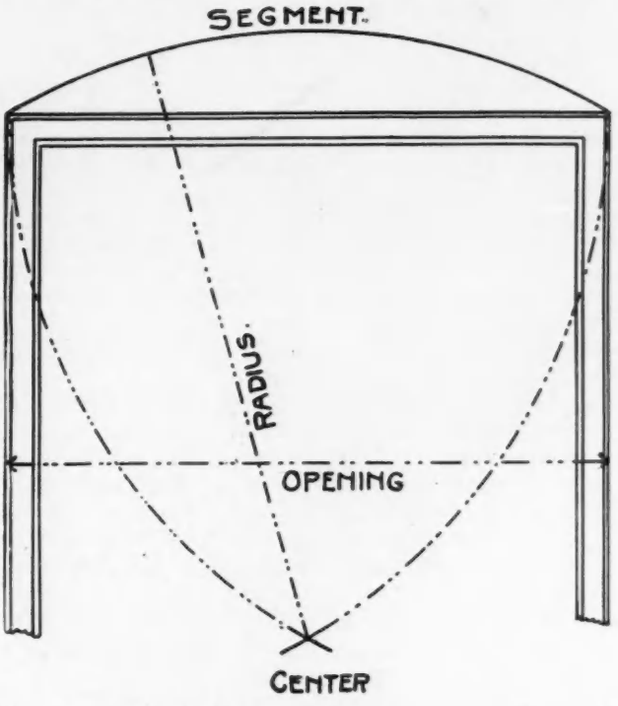
How to Lay Out a Segment Arch

To the Editor: Columbus, Ohio.

Will you please publish in the next issue of your magazine a rule for laying out segments, and oblige,

LOUIS W. SCHENERMAN.

Answer: The segment is a sixth part of a circle. The radius being equal the chord, its true shape may very easily be found by letting the desired opening represent the chord.



The intersection of the arcs locates the center, as shown in the illustration. EDITOR.

PRACTICAL TRADE APPLIANCES

Awarded First Prize

At the meeting of the Northwest Cement Products Association, held in St. Paul January 16th, 17th and 18th, the Commercial Club of Minneapolis offered a series of prizes. The Miracle Pressed Stone Company were awarded first prize for the best and most complete display of concrete machinery.

A Letter from the Gage Tool Company

American Carpenter and Builder, Chicago, Ill.

Gentlemen: We notice that you changed our advertisement in a very important particular which is unsatisfactory.

Our planes we consider very accurate in their operations —especially the self-setting device and the different arrangements for changing the thickness of the shaving—and this is the reason why we get a better price for our planes than others. Now, if our advertisement shows that they are no more exact than other planes what good is the advertisement to us?

We stated in our copy, as the copy we have shows, "The thickness of a shaving can be changed less than one two-thousandth part of an inch or more than one one-hundredth of an inch, a dozen times in planing a 12-inch strip, without breaking a shaving." Your compositor made this read less than one-two hundredth part of an inch—and the proof reader let it pass uncorrected.

Our presumption is that they thought we did not know what we were talking about and that they were doing us a favor by correcting our error.

That correction spoils the showing of accuracy which we thought very important, and as it was an actual truth we are not satisfied. We think if they thought we were in error and were not sure, they should have favored us with a proof and let us decide.

Had they examined one of our circulars they might have seen that we were dealing with thousandths of an inch when we wished to show how accurate our plane worked. We make no statement in any of our advertisements that we do not believe true and are willing to have any one come to our factory and we will show what truth there is in our statements, as well as other points of merit in the Only Self-Setting Plane made. Yours truly,

Vineland, N. J. Gage Tool Co.

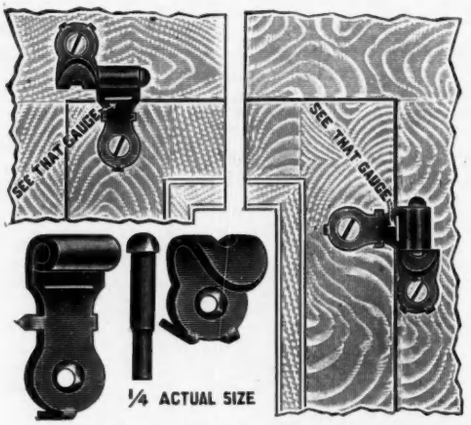
Labor Saving Screen Hardware

The E. L. Watrous Mfg. Co., of Des Moines, Iowa, are making a strong drive on Screen Hardware. They make a screen hanger which can also be arranged as a take-off hinge. They advocate the use of the hanger position for storm sash, but say that all screens, when possible, should be hinged from the side on account of greater convenience in driving out flies, washing windows, etc.

They make their strongest claims on the labor saving qualities of the device.

Each pair is marked with a gauge showing just where the edge of the wood ought to come, and the steel points permit quick location and accurate setting, patents on these features being owned by the makers, who claim that the time saved by them over the usual methods amounts to more than the cost of the hanger. Any carpenter knows that the big item in hanging screens is the labor. If he can cut that down, he can figure cheaper and make more money. It is a big job to set twelve screws, the customary number. With nothing to hold the piece in position the screws may start in crooked, drag it off to one side, and the piece does not fit after it is on. When a man is up on a ladder he has to handle his hammer, the screen, the screws, and the hinges, to say nothing of holding himself on, and if the hinge is set a little too far one side or the other of the joint, the sash either comes off too easily or won't come off at all.

With the Watrous No. 17, while on the ground, or even at the shop, the carpenter can plan where he wants his hinges, drive in the hinge pins so as to make right or left, as desired, and place the pin carrying section on the sash. The gauge shows just where the edge of the wood ought to come. The points are pressed in with the thumb, the hammer drives them home, and the setting of one screw finishes the job.



When up on his ladder, he simply sets the screen in the window, slips the hook under the pin, and one blow of the hammer drives the points home. This leaves both hands free to set in the single screw. All done and no chance for a blunder. With a little care in measuring screens may be put up from the inside, doing away with the use of ladder and helpers.

The angle of the hook is so calculated that in the hanger position a six-foot sash can be lifted off when the bottom is pushed out twenty-four inches or more, others in proportion.

It is the only hanger on the market which can be used either as a hanger or a hinge, and which will hang either a full size or half screen in either position. In their advertisement they give prices, postpaid, for the benefit of those who cannot obtain the goods from their dealer.

Every carpenter knows the annoyance caused by the breaking of the old style cast iron door buttons. This firm makes

a steel button, protected by patent, but sold at the same price as the cast, which is unbreakable, besides being far superior in finish and appearance.

Purchased Entire Lot of Material

With the wrecking of the St. Louis Coliseum, Exposition and Music Hall building, and the beautiful Tyrolean Alps buildings of World's Fair memories, St. Louis loses two of its historic edifices—the one to give place to the Million Dollar Carnegie library, the other to make way for more of St. Louis' handsome residences.

The entire building material used in above structures has been purchased by the St. Louis Wrecking & Supply Co., of 3864 Manchester avenue, St. Louis, and is being offered by them in any quantities. Structural iron, lumber, brick, sash and doors, window frames, plumbing supplies and other building material are being offered at remarkably low prices. See their advertisement on page 1358, and when writing please mention the AMERICAN CARPENTER AND BUILDER.

Importance of a Good Tin Roof

A good tin roof is the ideal form of covering for any permanent building. It is light, neat and clean. It is a protection against fire and lightning. It is proof against all kinds of weather and extremely durable—often lasting longer than the building it covers. It is an economical roof, requiring no repairs or attention other than an occasional coat of paint at five or six-year intervals to keep it in perfect condition as long as the building stands.

A good tin roof is not a temporary roof, and deserves some care and attention when it is first put on. A good, competent workman should be employed, and paid a fair price, to enable him to do the work right.

Most important of all, good tin should be insisted upon—the old-time, hand-dipped, heavily-coated tin, that has shown such excellent results in service.

Roofing tin varies widely in quality nowadays, many brands now offered on the market being worthless for permanent roofs.

In the choice of good tin, the past record a standard, established brand has made is of more interest to the architect or property owner than guarantees or promises, or extravagant claims for certain methods of manufacture, or materials used.

In this connection, the record of the house of N. & G. Taylor Company is of some interest. Since 1810 this business has been handed down from father to son—no less than four generations of Taylors having been connected with the firm. No reference to the roofing-tin industry of this country would be complete without mention of this house. In these days of huge corporations and organized companies representing widespread interests in every branch of business, it is of distinct interest to record this case of an old-time house, established nearly a century ago, steadfastly maintaining its independence and individuality, and continuing in the same line of business as a private firm. Since the early days of the roofing-tin industry they have consistently advocated the use of good tin, and have shown greater activity than any other house in presenting the advantages of good roofing-tin to roofers, contractors, architects and property-owners themselves.

As a natural result, they have built up a business that has made them the largest manufacturers of high-grade roofing-tin in this country.

In a private industry of this nature, a deep-rooted family pride exists, which is too often lacking in large industrial

corporations and stock companies. The business is under the direct, personal management of the members of the family, and the old-time reputation for fair dealing and good value in their tinplate, is carefully guarded and valued. Their "Target and Arrow Old Style" roofing-tin, formerly known as the "Taylor Old Style" brand, has established so widespread a reputation for satisfactory service on the roof, over more than sixty years, that as a matter of common business judgment the company is bound to maintain the original high standard of that brand at all hazards. This they have done, steadfastly refusing to cheapen the quality of the tin to meet price competition.

Any person who desires a durable, weatherproof covering for any permanent building can rest assured that he will get the best all-around roof known by paying his roofer a reasonable price for wood workmanship, and insisting upon the use of this old established brand.

The Hercules Exhibit

At the cement users' convention recently held in Chicago, the exhibition of the Century Cement Machine Co., Rochester, N. Y., was a leading feature. Over one hundred blocks of different sizes and designs, all made on the wonderful Hercules machine, were built into two walls, front and back of the allotted space.

The exhibition also showed many designs of coping and ornamental work, and the entire exhibit was the center of an admiring throng during the entire convention.

A sign stretched above the entire length of the back wall advised visitors to:

Listen to what the others are going to do
Then see what the Hercules has done.

The demonstration of the Hercules, which was freely given to all interested, clearly proved that it is a wonderful machine from every point of view. The strength of the Hercules is in keeping with its name, while the simplicity of mechanism and operation astonished the lookers on. Extraordinary interest was created when the operators in record breaking time produced two blocks of different size and design on the same machine at the one time.

The Hercules is a face down machine. Tamping is done directly on the face, thus insuring a clear sharp impression.

Besides a large doemstic trade, the makers of the Hercules are going after the foreign business in their usual aggressive manner, and have machines now in operation in nearly every civilized country in the world.

Hurd's Extension Clothing Carrier

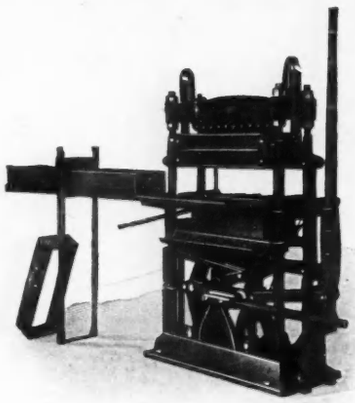
On another page of this issue of the AMERICAN CARPENTER AND BUILDER will be found an illustration and advertisement of Hurd's Extension Clothing Carrier. This is a device which should interest architects and builders generally, as it is coming into general use, not only in this country but for export. It is a device intended for use in dark closets and is so constructed that the clothing can be drawn out into full view without being taken from the carrier. Through its method of construction, even when loaded to its entire capacity and extended clear out, it positively will not sag. This has hitherto been a serious defect in other carriers, but is prevented absolutely by Hurd's mode of action and scientific construction. It is so adjusted that no undue or unequal strain is brought upon any part and yet can be moved instantly and with little or no effort. So durable, yet simple is its construction, that it will not get out of order, needs no repairs, and will last a lifetime. Architects and builders should write to Hurd's Extension Clothing Carrier Co., 10 and 12 South Clinton street, Iowa City, Ia., for full particulars of this practical device and also for information regarding com-

missions which they pay to the trade on all sales made. Arcihtects should specify this carrier for residences, hotels, theatres and other public buildings where there is occasion to hang clothing in dark closets. Where a customer once has the advantages demonstrated to him, he will not do without it. All a person has to do is to pull the device out into the light, select a garment wanted and shove the carrier back into the closet.

Helm Cement Brick Press

The Queen City Brick Machine Company of Traverse City, Mich., is advertising a line of concrete machinery which is bound to attract attention and prove of interest to anyone who is interested in purchasing concrete machinery of any description.

The first machine placed on the market by this company was the Helm Cement Brick Press which is illustrated herewith. This machine was the first hand power press to be placed on the market for making pressed cement brick by hand power and is now entering its fourth year.



This press makes ten perfect, uniform pressed cement brick at one operation and is operated two to three times a minute. When supplied with material, three men will make 10,000 brick daily or 2,000 veneer blocks for two-piece blocks. An attachment has recently been perfected for making these blocks on this machine. The machine exerts a pressure of 80,000 pounds.

The printed matter furnished by this company makes some broad claims for this machine which are substantiated in a booklet containing a number of fac-simile letters, giving the experience of some of the users of this machine. This booklet makes very interesting reading, showing what it costs to produce the brick in various localities, the selling price, uses to which the product is placed and general information bearing on the subject.

It is claimed that a better quality of brick is secured and a saving of labor effected by pressing the brick instead of tamping. Also that a stronger brick is secured since a much wetter mixture can be pressed than can be tamped, while this also does away with troweled, stroked or tamped surfaces.

This company will be pleased to furnish printed matter descriptive of their various lines upon request.

Improved Store Front Construction

The Kawneer Mfg. Co., who have recently removed their general offices and factory from Kansas City, Mo., to Niles, Mich., owing to the phenomenal growth of their business, announce a new system of store front construction. They say:

"In presenting the new 'Kawneer' system of store front construction we feel that we are exploiting the merits of a product for which there has been a 'long-felt want.' It is designed to meet all the requirements of modern ideas in plate glass setting and from an architectural as well as structural point of view, it meets with the unqualified approval of all. The construction throughout is based upon scientific

as well as architectural principles and the system we offer is the result of a determination to produce a plate glass setting which combines compactness, durability and an artistic appearance and yet does not cost an exorbitant price."

In their new factory at Niles the Kawneer Company will manufacture, in addition to the Kawneer all-metal store front construction, the Kawneer metal self-spacing wall plug, the Kawneer high-grade architectural metal mouldings and the Kawneer metal show cases. This company will be pleased to send full information to all inquiring readers who address them at Niles, Mich.

Improved Saw Filing Vise

After carefully looking into the merits of that new Circular Saw Vise manufactured by L. F. Grammes & Sons, Allentown, Pa., we must say that it is certainly a great improvement over anything that has been used heretofore for filing circular saws and cutters. We find that it can be attached to any bench or table by simply boring a hole through same to admit a bolt. By means of a lever screw at the bottom, the vise is fastened securely. There is nothing about this vise that will obstruct the filer's stroke, such as big bolt heads, thumb screws or levers.

The jaws are quickly opened by a few turns of a thumb nut, after which the saw or cutter that is to be filed can be inserted. After the saw is in the vise it may be adjusted up and down so as to make it suitable to file all sizes of teeth. When in position, ready to file, the vise grips the saw very close to the neck of the teeth so that the filer is getting solid filing without any vibration whatever.

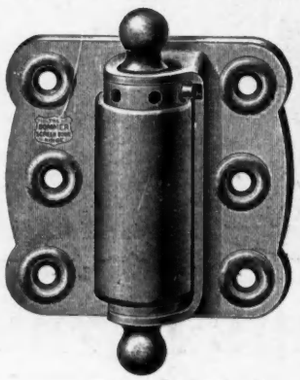
When saws with special teeth are to be filed the vise can be swung on an axis up and down or to any position within three-fourths of a circle. When the light does not strike the proper parts of the teeth the vise may be swung on a swivel so as to bring the light to the parts of teeth being filed. It is all iron so that there is no warping out of shape as is the case with the old fashioned wooden vise. It is made in three sizse, Nos. 1, 2 and 3. No. 1 vise takes saws 4 to 9 inches diameter. No. 2 vise takes saws 6 to 14½ inches diameter. No. 3 vise takes saws 12 to 20 inches diameter.

The vise can be had by any responsible firm on thirty days' trial. If it is not found satisfactory it may be returned at the manufacturer's expense.

We are fully convinced that it is the duty of every circular saw operator to investigate this device. Circulars giving full information may be had by asking for them.

New Line of Screen Door Hinges

Bommer Brothers, 255-271 Classon avenue, Brooklyn, N. Y., are putting on the market a new line of screen door hinges, with adjustable tension and covered springs for high class work, where appearance, finish and enduring quality count. There has never before been anything on the market which fills this particular want.

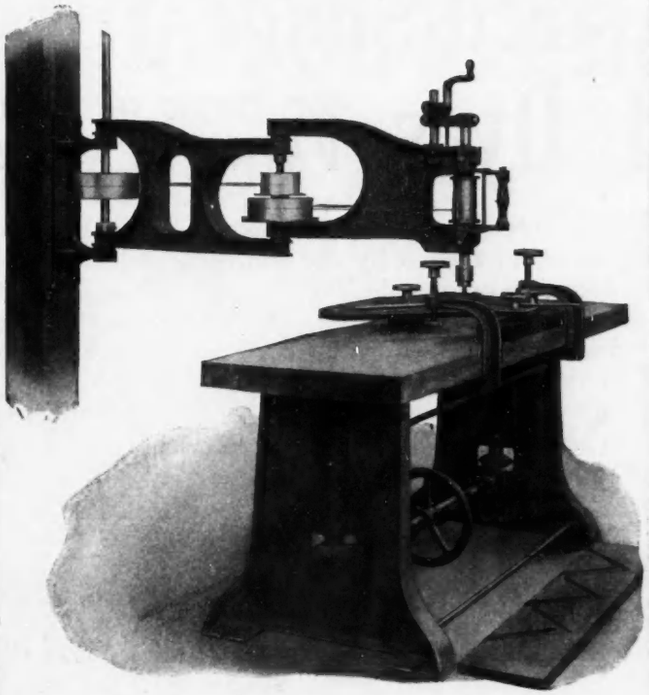


These hinges are made of steel, bronze and brass in all finishes. They are without exception the best goods ever produced for the purpose, and are not too high in price.

To Find the Exact Grade

A recent invention of great value to the carpenter, steam fitter, trackman or any one using a level or plumb is now on the market. A. W. Hight of Toledo, Ohio, is the inventor and he has named his useful appliance Hight's Micrometer, Level and Grade Finder. It is claimed that among its many features it shows at a glance a true level, true plumb or

SMITH STAIR ROUTER



THE SMITH STAIR ROUTING MACHINE illustrated above is surprising wood workers everywhere. Think of housing a pair of sixteen foot stair strings in twenty minutes. Then again it will house the winders too. We furnish an adjustable form that will change to three different thicknesses of risers and treads with detachable nozing plates. The bits furnished cut a clean cabinet finish, with taper for wedges. Users of this machine say that a machine housed stair can be set up in one-half the time required to do the same work on a stair housed by hand. Write for circulars and prices today.

H. B. Smith Machine Co.

SMITHVILLE, N. J., U. S. A.

New York Chicago Boston Atlanta

THE SIGN OF QUALITY

SMITH OF SMITHVILLE

ESTABLISHED SIXTY YEARS

WE are now building over fifty new machines of interest to contractors and builders. If you have a shop, why not put in a motor or gasoline engine and do your work in a modern way? We have started hundreds of carpenters on the road to success. We can help you. Write us today for literature. We make everything in the line of power-driven machinery.

THE SMITH SCROLL SAW
No. 318A

THE SIGN OF QUALITY

SMITH OF SMITHVILLE

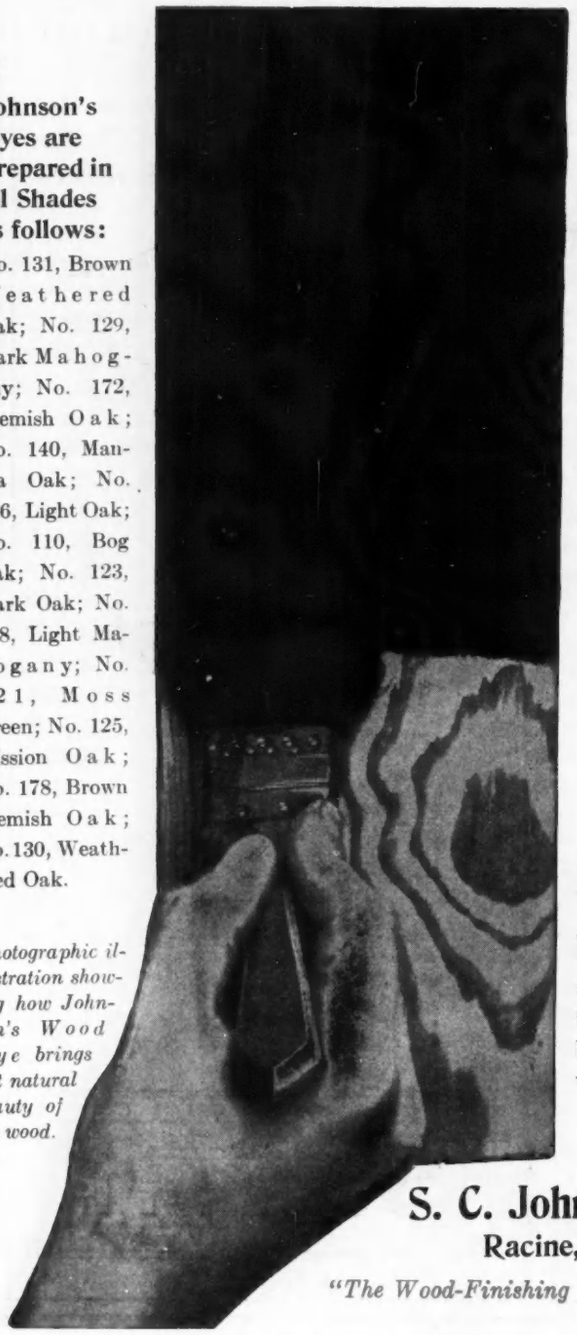
ESTABLISHED SIXTY YEARS

We Will Send You FREE
3 Cans (Any Desired Shades) of
Johnson's Wood Dyes
for Name of Your PAINT DEALER

We want every painter to try Johnson's Wood Dyes at our expense, as we know that one trial will insure continued use. Its superiority is acknowleged by the enormous sales. Don't confound Johnson's Wood Dye with various "stains" now on sale, Water "stains" and spirit "stains" raise the grain of the wood. Oil "stains" do not sink deep into the wood, nor do they bring out the beauty of the grain. Varnish stains do not properly color the wood—the color being only in the finish. When varnish finish is marred or scratched it shows the natural color of wood—revealing the sham.

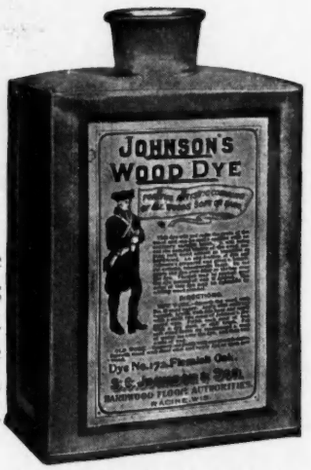
Johnson's Dyes are Prepared in all Shades as follows:

No. 131, Brown Weathered Oak; No. 129, Dark Mahogany; No. 172, Flemish Oak; No. 140, Manilla Oak; No. 126, Light Oak; No. 110, Bog Oak; No. 123, Dark Oak; No. 128, Light Mahogany; No. 121, Moss Green; No. 125, Mission Oak; No. 178, Brown Flemish Oak; No. 130, Weathered Oak.



Photographic illustration showing how Johnson's Wood Dye brings out natural beauty of the wood.

Johnson's Wood Dye



is a dye. It penetrates the wood; does not raise the grain; retains the high lights and brings out the beauty of the wood. It is the best for use on floors, interior woodwork and furniture.

Johnson's Wood Dye, any desired shade, is sold by the best paint dealers. Insist on getting the genuine—don't take a substitute.

Half-Pint Cans	$0.30
Pint Cans	.50
Quart Cans	.85
Gallon Cans	3.00

Send This Coupon for 3 Cans Dye—FREE

Our 48-pp. book printed in 6 colors, illustrated from life and written by an expert wood-finisher will interest you.

Coupon A.C.B.2
S. C. Johnson & Son, Racine, Wis.

Gentlemen: My paint dealer's name is .....

His address is .....

for which please send me Free prepaid 3 cans of Johnson's Wood Dye.....shades and copy of your new book "The Proper Treatment for Floors, Woodwork and Furniture," as per your offer.

My name is .....

Address .....

S. C. Johnson & Son
Racine, Wis.
"The Wood-Finishing Authorities"

SAMPLE CAN
Johnson's Electric Solvo

"A Perfect Remover of All Finish from Wood, Glass and Metal"

Sent FREE Prepaid for Your Paint Dealer's Name.

We want you to try Johnson's Electric Solvo at our expense. How can we afford to do this? Simply because one trial will insure continued use. We know what it will do and that it will please you. Johnson's Electric Solvo is the most effective, most economical and easiest applied softener of paint, varnish, shellac, wax or any finish on wood, metal and glass. It will not harm the most delicate wood or have any injurious effect on glass or metal. Try it and you will be delighted.

Removing with putty knife old finish softened with Solvo.

Eight Points of Great Superiority

1—Softens old finish so that surface may be wiped clean in three minutes. 2—Has no objectionable odor. 3—Will not injure the hands. 4—Does not raise the grain of wood. 5—Does not change color of wood. 6—Very economical, as one gallon is sufficient to remove the finish from 350 to 400 square feet. 7—The old finish, after being softened, will not harden again for five or six hours. 8—Any one can easily use it.

Johnson's Electric Solvo is sold by paint dealers generally. Gallon cans, $2.50; Quart cans, 75 cents; Pint cans, 40 cents.

Special FREE Offer to Carpenters

Send us name of your paint dealer and we will ship you FREE, prepaid, sample can of Johnson's Electric Solvo. Ask for our new illustrated color book "The Proper Treatment for Floors, Woodwork and Furniture." Tells all about finishing and refinishing wood. Regular 25c edition, but sent FREE for limited time. Use coupon in lower right-hand corner; send today.

Johnson's Electric Solvo is licensed under the United States Patent No. 714,880.

S. C. Johnson & Son,

Racine, Wisconsin

"The Wood-Finishing Authorities"

Coupon ACB 2.
S. C. Johnson & Son
Racine, Wis.

Gentlemen: My paint dealer's name is

.....

.....

His address is

.....

.....

for which please send me **free** prepaid sample can of Johnson's Electric Solvo and copy of your new illustrated 25c book "The Proper Treatment for Floors, Woodwork and Furniture."

My name is.....

.....

Address.....

.....

any inclination in degrees, in inches per foot or per cent and will establish all quicker and more accurately than you can establish a true level with the best spirit level. With the use of a bevel its user can readily get the angle to set the bevel to cut any degree desired, by setting the bevel so that the diaphragm sets on the degree desired and setting the bevel to the diaphragm and the steel square can be used to get the right angle. It can be set on a track and it will show the grade instantly in degrees or per cent or in inches rise per foot.

The inventor says that the instrument almost talks. All you have to do is to set it on your work and look at the chart and the pendulum or diaphragm shows exactly where you are at. Mr. Hight will be pleased to give further information to any of our readers who will write him at the address given above.

An Opportunity to Make Money

We particularly wish to call attention of our readers to the advertisement of H. M. Sheer Co., Quincy, Ill., which appears in this issue of the CARPENTER AND BUILDER for the reason that it seems to us to offer a good opportunity for those who are not very busy at this season of the year to make a good many extra dollars. In fact it affords a chance to start a very profitable business in which the experience of carpenters and builders would prove of great value. Look up the ad. and send for the free book giving full particulars. If you have some spare time, or if you are looking for a means of making more money this advertisement may prove that opportunity is knocking at your door. A post card will bring you in touch with a live opening. Will you write it?

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.

For Sale.

FOR SALE—At a bargain, one 4 H. P. gasoline engine and wood-working machinery. For detailed descriptions, etc., write E. R. Jeffress Martin, Tennessee.

WE BUY AND SELL MACHINES, MOLDS AND TOOLS for Concrete blocks and Cement workers. Catalogue free. Ackerman & Co., Indianapolis, Ind.

Help Wanted.

WANTED—Two or three good carpenters can find a steady situation for the coming season by addressing Chas. Kirk, Gridley, Ills.

WANTED—Carpenters to read our ad. on page 1255. Gage Tool Co.

Miscellaneous.

A FEW DOLLARS will start a prosperous mail order business; we furnish catalogues and everything necessary; by our easy method failure impossible. Send for particulars. Milburn-Hicks, 726 Pontiac Bldg. Chicago.

THE CEMENT WORKERS HAND-BOOK is worth its weight in gold to any cement user. The most practical book on the subject ever written. Over 50 subjects are treated. Contains over 100 pages, cloth bound, price only 50 cents, postage paid. Is worth 50 times its cost to any carpenter or builder. Over 10,000 copies already sold. Order to-day. Address: The Concrete Age Publishing Co., Atlanta, Ga.

I MAKE careful working drawings from rough pencil sketches; good work reasonable. W. W. Daniels, No. 3312-A. Merramec St., St. Louis, Mo.

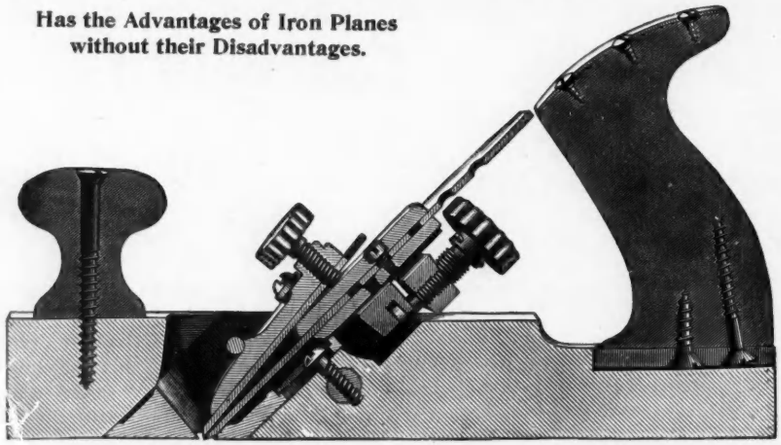
LEARN CEMENT CONSTRUCTION in all its branches for $1.50. Building Blocks Water Proof, white or any color. Bridges, Roof, Floors, etc, Write for descriptive circular No. 30. Cement Institute, St. Louis, Mo.

THE SELF-SETTING PLANE

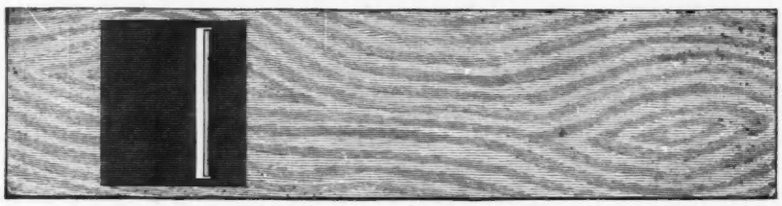
The Only Self-Setting Plane. No Other Self-Setting Plane Made. Different from All Other Planes.

SENT ON THIRTY DAYS' TRIAL WHERE NOT SOLD

Has the Advantages of Iron Planes without their Disadvantages.



Sectional View—Showing ADJUSTABLE IRON THROAT.



30 DAYS' TRIAL WON'T COST YOU A CENT AS STATED BELOW

The Self-Setting Plane Works Easier, Better and Quicker; Saving Time, Muscle and Temper

Five seconds sets it exactly right and it don't vary the $\frac{1}{100}$ part of an inch in 100 times setting. An inexperienced person can set it right the first time. The throat is iron and adjustable, holding the plane bit solid in its vice-like grip (see cut). Every plane iron is guaranteed to give user satisfaction, and any unsatisfactory one returned us within thirty days will be exchanged without charge.

The under part of the cap is tempered steel and can drop only into its exact place, the thumb screw doing the rest.

The cap does not move up and down with the bit *as other caps do*, but *stays stationary in its right place* ***as other caps don't.***

It can be used as a single or double iron plane. The thickness of a shaving can be changed less than $\frac{1}{2000}$ part of an inch, or more than $\frac{1}{100}$ of an inch, a dozen times in planing a 12 inch strip, without breaking the shaving. It will properly smooth any hard or soft cross-grained eaty wood, knots or burls, against the grain, and is perfection for floor work. It is ready for use when it leaves our factory, each plane having been tested and shavings left in the throat. The plane stocks are thoroughly saturated with hot linseed oil, to prevent change of shape. We claim an exceptionally high standard for our plane irons. The above are some of the good points of the ***SELF-SETTING PLANE.***

We send this ***SELF-SETTING PLANE*** to any U. S. towns where not sold, on *30 days trial, without cost to user*, if he returns it to us at our expense within a month of its receipt.

The first cost of this plane is more than others, but if you do not think it is *worth many times its cost* after a thorough trial on your own bench, just return to us at our expense, and the ***month's use will not cost you a cent.*** Any other information or testimonials asked for will be sent, but the best and most satisfactory way is to try the plane on your own bench, in your own way, then send it back, as above, if you don't want it.

On receipt of $3.00 we will send you a smoothing plane, delivery-charges paid by us. If you do not want it, return it to us at our expense, as sent, within 30 days of receipt, and we will return you $3.00 and you will not be out one cent. This paper, ***"THE AMERICAN CARPENTER AND BUILDER,"*** guarantees we will do as our advertisement says. If there is any risk we take it.

Send for a plane now and try it thoroughly while you have time.

Do not let dealers sell you any other plane until you have used the Self-Setting Plane made by

CAGE TOOL CO., Vineland, N. J.

LORENZEN MANTELS

A Mantel in the home is useful as well as artistic and decorative. It saves you furnace heat on chill spring and autumn days, and diffuses cheer and comfort like no other piece of furniture in the house.

Lorenzen Mantels

$10 to $250

In 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.

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-Vitrea tile hearth and facing. Hand-wrought Andirons of Romanesque design.

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.

LORENZEN PAYS THE FREIGHT

CHAS. F. LORENZEN & CO., Inc., 286 N. Ashland Avenue, Chicago

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IF U R Building U Ought to Write To-day

FOR OUR

Mantel Catalog

SENT FREE TO THOSE WHO ARE INTERESTED

Decide the Mantel Question Right

BY SELECTING A

BURRITT MANTEL

Rich in design, of elegant finish and thorough workmanship, they never fai to give satisfaction. Write us concerning your needs.

THE A. W. BURRITT CO.

"The Mantel Folks"

450 Knowlton Street :: BRIDGEPORT, CONN.

India Oilstones

HARD SHARP QUICK

Used Daily with Satisfaction by Up-to-Date Mechanics

Made in 59 Different Shapes and Coarse, Medium and Fine Grits

SOLD UNDER THE FOLLOWING GUARANTEE

"If this article should prove in any respect unsatisfactory, we agree to exchange or refund the full price paid for same."

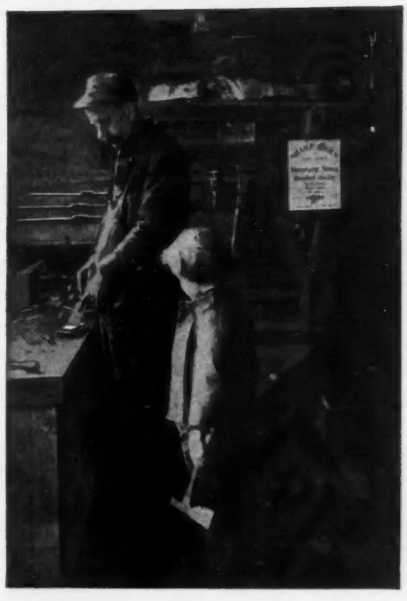
Send for New Descriptive Booklet and Price List

Manufactured by

The Norton Co.,

Worcester, Mass.

Exclusive Sales Agents



PIKE MANUFACTURING CO., Pike, N. H.

Get This Gold Pair Free

SPECTACLE WEARERS! Listen! I want to prove to you beyond the shadow of a doubt that the Dr. Haux famous Perfect Vision Spectacles are really and truly ever so much better than you have ever used before—and that's the reason why I am making the following very extraordinary but honest proposition, whereby you can get a handsome pair of Rolled Gold Spectacles absolutely free of charge.

HERE IS MY SPECIAL ADVERTISING OFFER:

SEND me your name and address and I will mail you my Perfect Home Eye Tester, free.

Then when you return me the Eye Tester with your test, I will send you a complete five dollar family set of the Dr. Haux famous Perfect Vision Spectacles for only $1, and this will include a handsome pair of Rolled Gold Spectacles absolutely free of charge.

With these famous Perfect Vision Spectacles of mine you will be able to read the finest print just as easy as you ever did in your life—and I will return you your dollar willingly if you yourself don't find them to be the most perfect-fitting, clearest and best you have ever bought anywhere, at any price.

Send for my free Eye Tester today, and address my company as follows:—

DR. HAUX SPECTACLE COMPANY,
Haux Building, St. Louis, Mo.

I Want Agents Also

And any one can easily earn as high as $100 weekly, fitting spectacles with my Improved Eye Tester. My agents need no license anywhere in the country, as I furnish necessary documents with agent's outfit.

NOTE.—The above is the largest Mail Order Spectacle House in the world, and absolutely reliable.

Bull Dog SUSPENDERS

MODEL B

50¢

New Model "B"

Will help you to forget your Suspender Troubles

They Outwear Three Ordinary Kinds

Made with sliding back, strong non-fraying, unbreakable cord ends, sliding cast offs, easily adjusted, non-rusting gilt buckles, and web that has MORE and BETTER RUBBER than any other suspender made. In LIGHT or HEAVY weights for man or boy. Extra long for big men or extra heavy, if you need them, at no extra cost.

IF YOUR DEALER CANNOT SUPPLY YOU WE WILL, POST PAID, FOR 50 CENTS

HEWES & POTTER

Dept. 359 87 Lincoln St., Boston, Mass.

VALUABLE "STYLE BOOK" FREE ON REQUEST

SHORT ORDER MILL

3 Floors 200 x 100 *Employs 200 Men*

Makes odd and special work quickly. Most of the stuff carried in stock half or three-fourths made up, ready to finish in a hurry.

The story of the

Cleveland Window Glass Co

The most complete Builders Supply House in America

Frames Doors Sash Finish Porch-Stuff Stairwork
Plate Window Art *and* Prism Glass Mirrors
Paints Varnishes

TO CONTRACTORS:

We want you to know what we can do for you and what we are doing for a thousand others.

We are after your trade, and the best way to get it is to work for your interests in every way and to help you make money by giving you the lowest wholesale prices, high quality, liberal terms, and quick service.

Our facilities for doing this are extraordinary, being large wholesalers of doors, glass and paint, and also making our own hardwood and special millwork, mirrors, art and prism glass.

There are 400 of us, making and selling. We started small thirty-seven years ago; growing ever since. Today we know of no one, anywhere, who has equal facilities or offers our advantages.

Take our Short Order Mill, a new invention of ours. WE CAN MAKE ODD SIZES OF VENEERED HARDWOOD DOORS OF THE BEST QUALITY IN ONE DAY AFTER RECEIVING THE ORDER. Have done it repeatedly. We don't expect to do this as a practice, preferring two or three weeks to handle usual odd hardwood orders, but WE CAN HANDLE RUSH ORDERS OF THIS KIND QUICKER THAN ANY MILL IN AMERICA.

Same with Sash. WE CAN MAKE AN ODD SASH OF NEARLY ANY SIZE IN AN HOUR.

Take frames for wood or brick buildings. WE FREQUENTLY DELIVER LARGE ORDERS OF BOX FRAMES WITHIN 24 HOURS AFTER WE GET THE ORDER.

So with finish, porch and stairwork. We have four acres of floor space filled with stock stuff and unique facilities for making special woodwork, art glass, mirrors and beveling.

AS TO QUALITY. Ohio grades are very high and we improve on them when possible. Our hardwood doors are the best we can make. Our windows are made of good glass backputtied, washed and paper packed to save all damage in transit.

PRICES. We give the best values in America.

TERMS. Our terms are liberal, either cash or credit.

SEND US YOUR LISTS FOR NET DELIVERED PRICES TO YOUR DEPOT. We will make low prices on your stock stuff or your entire house bills from frames to finish. Our catalogs of doors, sash and millwork, art glass, mirrors, plate and window glass, and paint stuff sent free.

CLEVELAND WINDOW GLASS CO
doors glass paints
Cleveland O

CHICAGO MILLWORK SUPPLY CO.

FROM MANUFACTURER DIRECT

239-245 W. 22nd St.

CHICAGO, U. S. A.

FROM MANUFACTURER DIRECT

We show 1,998 other designs in our BIG

New Catalog

No. 15. 315 pages, 2,000 designs

Gives EXACT NET PRICES on

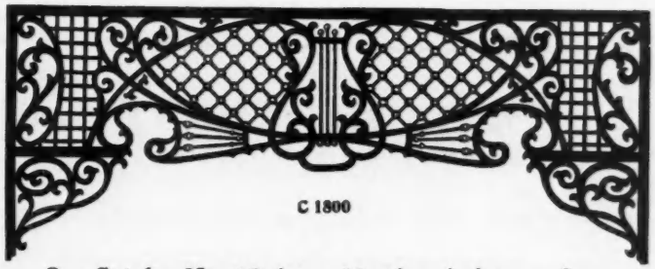
Doors, Windows, Mouldings,
Blinds, Frames, Porch Work,
Art Glass, Mantels, Stair Work,
Grilles, Wood Carpet, etc.

THIS CATALOGUE FREE

Send 10c. in coin or postage to cover actual cost of mailing.

GRILLE OR FRET WORK

C 1845

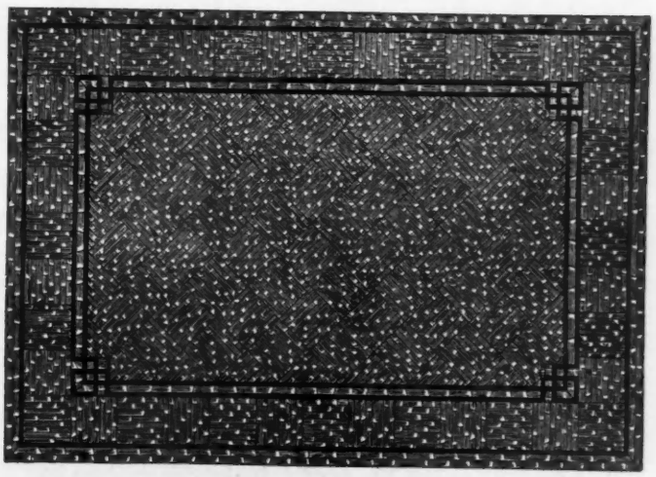


C 1800

Our Catalog No. 15 shows 90 other designs. Our prices are low.

We guarantee workmanship and material to be of the highest grade

WOOD CARPET



C 2184

Using Oak strips and 1-inch Cherry at wall line; Border of Quartered Oak Blocks and Strip Border 4-inch, and Corner Blocks Oak and Cherry; Center Quartered White Oak Field. Adapted to any shaped room.

TWO PIANOS! CASH! BIG PRIZES FREE!

If this chart gets destroyed another printed upon heavy paper will be sent upon receipt of 2c stamp for postage.

FREE If You Can Tell How Many Dots

IF YOU CAN COUNT AND PLAN YOU CAN WIN!

SUCCESSFUL FARMING will give to those who can count the dots in the piano correctly or nearest correctly, the following list of prizes: CAN YOU DO IT?

Two Elegant Pianos, one to a lady and one to a gentleman.
2nd. Two Hundred Dollars Cash.
3rd. One Hundred Dollars Cash.
4th. Fifty Dollars Cash.
5th. Twenty-five Dollars Cash.
Next 5. Ten Dollars Each.
Next 10. Five Dollars Each.
Next 25. Two Dollars Each.

CONDITIONS: 50 cents pays for one year and one count. $1.00 pays for two years and three counts. You get $50 extra if you have three counts. It will pay you to have three. See conditions below.

Don't Delay! If you want a Piano or other Prizes free, send your counts at once. **Win!**

Test of Skill—This contest is not to be confused with the guessing or estimating contests. Our contest is a test of skill in counting and planning and the best man wins. It depends upon you. There is no guess or chance about it. Do not hesitate about entering but get your counts in at once.

CONDITIONS—50 cents pays for a year's subscription to SUCCESSFUL FARMING and one count: $1.00 pays for two years and three counts and makes you eligible for the special $50.00 prizes given to winners of 1st prizes if they have three counts. See below.

AWARDS will be made as follows—The persons giving correct or nearest correct count will get first prize. Next nearest correct, second, etc.

$50 PRIZES—We believe everybody should have three counts so they can have one each side of what they think is correct to be more sure to hit it. To encourage this we will give $50.00 extra to winners of 1st prizes if they have three counts. Remember if you have one count you get 1st prize only, but if you have three counts you get $50 extra.

TIME PRIZES—$25.00 Extra. We feel early counters should be rewarded and we will give $25.00 to the person sending best answers by March 31st.

In case of tie we will write each person so tied asking them to make as few words as possible from the letters of the alphabet, using each letter of the alphabet twice and only twice, and no one word more than once, each letter left over counting as one word. To the one tied in the counting who gives us the **fewest** words as above will be awarded first prize. This practically eliminates all question of tie, but if there should by any possibility be a tie in this the prize will be divided equally between those so tieing.

Subscription without counts is 25 cents per year, additional counts after you have three entered as per our terms in paragraph "condition" above may be entered at 25 cents each.

Publisher SUCCESSFUL FARMING, 215 Tenth St., Des Moines, Iowa.

I enclose $..... for subscription to SUCCESSFUL FARMING.

and I wish to enter the.....(write ladies' or gents') Contest. If $1.00 is paid send three counts; if only 50c is paid send ONLY ONE count. The extra $50.00 go only to those having THREE or more counts entered.

My Count is: (1).....(2).....(3).....

NAME.....

P. O..... State.....

PRIZE WINNERS IN PAST CONTESTS

A Piano for $1.00. Surely people may enter your contests knowing that they will receive fair treatment How glad I was to win a piano for so small an amount and wholly unexpected. The paper alone is worth all I paid.
MRS. L. W. NOTT, Marion, Ia.

He Won a Piano. Refer people to me if they want to know whether you are honest. I got a piano for a prize and never heard of you until I answered your ad. Your paper is worth twice the subscription price. W. C. ELLIOTT, Audubon, Iowa.

$100.00 Prize. I got my $100.00 and it was the easiest I ever earned. The dots are hard to count but I know the prizes go to those who win them fairly.
AMY R. BARNES, Van Horn, Iowa.

Won $350 Cash. To Whom It May Concern: I won grand prize of $350.00 Cash in last contest. I was much surprised. I want to vouch as to Successful Farming's fairness to any and everybody.
JOHN A. GOODWIN, Richmond, Va.

$100.00 CASH

AMY R. BARNES, Van Horne, Ia.

Do You Want $100 Cash? I received the $100 in greenbacks. Thanks to you gentlemen. Your contest must be fair. The judges have been impartial Refer to me. J. W. SMITH, Rome, Okla.

$50.00 for Canada. Way up here in Canada I won $50. Never knew there was such a paper until I answered ad, now I will never be without it again.
Miss E. Forneir, Mantane, Quebec

Won a Piano. I received the elegant piano which I won in your recent contest, and all was perfectly grand. I am recommending you to all my friends and you are at liberty to use my name as reference any time you wish.
ISAAC SHOTWELL, Rockland, Ohio

$50.00 CASH

NEWTON RARICK, Ligonier, Ind.

Others Who Have Won: $100—Eva I. Buckner, Fredonia, Kas. $100—C. S. Wyman, Vinton, Ia. $50—S. Irving Steyer, 225 E. Balt., Baltimore, Md. $100—E. M. Hall, Montrose, Mo. $50—L. F. Stinson, Arcata, Calif. $50—A. J. Perdue, Altoona, Ia. $50—Albert Peterson, Holdrege, Neb. Piano—Mr. Libbie Greulick, St. Paul, Minn. Piano—W. S. Keever, 817 Freeman St., Cincinnati, O. Piano—J. Gemaehlich, Kensington, Kan. These are but a few of many. We could give a list of hundreds if we had space. You might as well be a winner, if you go at it at once.

A Piano for Illinois. An elegant Piano for a Dollar. That is what I got and anybody that thinks your prizes are not awarded fairly don't know. There can be no favorites or I would not have won.
MYRA A. FURSMAN, Panola, Ill.

A PIANO

MRS. L. W. NOTT, Marion, Iowa.

A PIANO

W. C. ELLIOTT, Audubon, Ia.

$50.00 CASH

EUGENIE FOURNIER, Matane, Quebec.

Nobody connected with our paper will be allowed to compete. Contest closes June 30, but get your counts in at once. See about time prize above.

Address all letters to SUCCESSFUL FARMING, 215 Tenth, St., Des Moines, Iowa.

CONTENTS FOR FEBRUARY, 1907

INDEX TO ADVERTISEMENTS, FEBRUARY, 1907

NO. X1 JOINTER
$.42

NO. X3 DRIVEWAY GROOVER
$.85

NO. X5 STRAIGHT END JOINTER
$.54

NO. X2-3/8 INCH EDGER
$.42

NO. X4-3/4 INCH EDGER
$.48

NO. X17 SQUARE EDGER
$.60

NO. X18 BEVEL EDGER
$.48

NO. X100 CURBING EDGER
$.85

NO. X8 GUTTER TOOL
$.85

NO. X6 CORNER TOOL
$.48

EVERYTHING IN CEMENT MACHINERY

ADJUSTABLE NAME PLATES
ANY SIZE ANY SHAPE
ASK FOR PRICES

NO.X12 RAISED POINTER
$.40

PLASTERING TROWEL
ALL SIZES
10½ IN. $ 1.15

LACED SAND SCREEN.
$2.50

NO.X015
INDENTATION
ROLLER
$8.40

NO. X016
DRIVE WAY
ROLLER
$7.00

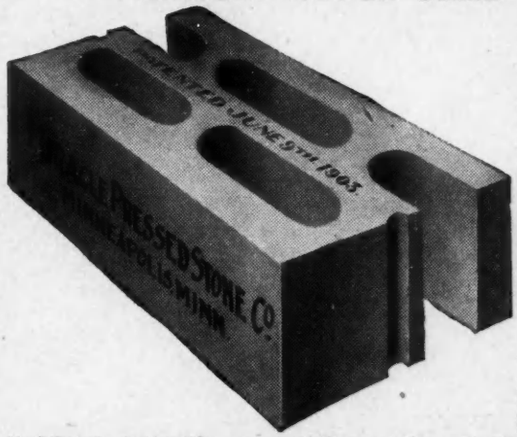
ROLLING JOINTER
$1.50

$.42 NO X11.
RADIUS TOOL.

POINTING TROWEL
$.2.5

SAND RIDDLE, $.35

MIRACLE BLOCK STILL LEADS



At the third annual meeting of the National Association of Cement Users, held in Chicago during the week of Jan. 7th, the MIRACLE DOUBLE STAGGERED AIR SPACE BLOCK occupied the front rank as usual. Years of demonstration has proven beyond any doubt the practicability of this form of construction, and at this meeting it was demonstrated that the Miracle Block is the only one that stands in a distinct class by itself. The following letter is one of hundreds received from our many well-satisfied customers:

Spokane, Wash.,
Dec. 21st, 1906.

Miracle Pressed Stone Co.,
Minneapolis, Minn.

Gents—After over 2 years' experience testing Block Machines and marketing their products, we find that the Double Air Space Block is the block that nine-tenths of the people want. Its superiority over the single air space block is recognized by all. We have tried a number of machines, all claiming to make a better, a cheaper, as well as more blocks in the same time than could be made on the Miracle Machine. So far we have found no machine to equal the Miracle in speed, and the block made on th Miracle Machine is the only perfect block made. We have two teams of three men each who will mix and tamp by hand, water, and carry out on an average of 60 blocks per man per day of 10 hours

Yours for the Miracle Block,
SPOKANE CONCRETE CO.
By D. F. Strobock, Manager

ANOTHER EXCLUSIVE FEATURE

Another exclusive feature of the Miracle exhibit at Chicago, and the only outfit of the kind shown at the Convention, is the Miracle Complete Pneumatic Tamping Outfit, which certainly made the hit of the meeting. It includes Gasoline Engine, Air Compressor, and Pneumatic Tampers. Miracle Pneumatic Tampers are in use all over this country, and are now being shipped to many foreign countries. The equipment is adapted for the use of tamping blocks; also for the use of tamping cement brick and cement sewer pipe and drain tile. Besides producing product absolutely uniform and of a much more solid texture than can possibly be procured by hand tamping, a Pneumatic Tamping Outfit saves at least one-half of the labor in tamping concrete products. Just figure how much it costs you to tamp your product, and then see if a saving or one-half will not soon return the original investment. This complete equipment consists of Pneumatic Tamper, Air Compressor, large storage tank for air, and all connections and fixtures, and is furnished for $335.

MIRACLE SEWER PIPE AND TILE MOLDS

The Miracle Exhibit also contained the only display of equipment for making bell-end cement sewer-pipe in all sizes from 4 inches to 42 inches in diameter. There is no branch of this Great Concrete Industry that is so attractive from the point of profits as that of making cement sewer pipe, and the investment is merely nominal. For $44.50 we will equip you with a complete outfit for making 18-inch bell-mouthed sewer pipe, including ten bottom pallets. The same outfit can also be used for making straight 18-inch tile. The sale of 100 pieces of 18-inch pipe will pay for the outfit and show a nice profit beside. These profits increase very rapidly with the larger sizes, although the increase of investment is very small. Complete equipment as described above for making 24-inch bell-mouthed pipe costs you only $57.50, and the sale of 50 pieces of this size pipe will show a good profit, besides paying for the outfit. Clay tile or vitrified pipe is best the day it is laid in the ground, and immediately commences to disintegrate with the action of water and sewer gases. The opposite may be truthfully said of cement pipe, as it is the poorest the day it is laid in the ground and increases in quality and strength with the time it is in use. Read the following letter received from one of our manufacturers:

Miracle Pressed Stone Co., Minneapolis.
Clarinda, Iowa, Dec 17th, 1906.

Gents—The tile mold I find to be just the thing. We had a good sale of the tile. It was too late in the year to buy these tile molds, but we had a good trade. We made about 8000 ft. of 12 in. tile, 2500 ft. of 15 in. tile, and about 1500 ft. of 24 in. tile. I think they are better than clay tile. They will stand frost better, and the older they get the better they are. A clay tile is no better than the day it is put in the ground—cement gets better the longer it is in the ground. I know this to be true. I have made clay tile for 16 years, and am still making them.

Yours, PAUL O. COOK.

MIRACLE 114-PAGE CONCRETE CATALOG

Our large 1907 catalog contains over 500 illustrations, covers the concrete industry thoroughly, and is a reliable guide to the cement user—gives proper methods of mixing, coloring, curing, and laying of concrete; also full information in regard to cement brick machines, sidewalk machines, ornamental molds, concrete mixers for hand and power, and all sorts of tools and appliances. Regular price 25 cents. FREE to you provided you say in which line you are most interested, and ask for Catalog K.

Miracle Pressed Stone Co.,

LARGEST MANUFACTURERS OF CEMENT MACHINERY IN THE WORLD

MINNEAPOLIS. U.S.A.

5000 BARGAINS IN SASH

Doors, Windows and Millwork of Guaranteed Quality

SHIPPED DIRECT FROM AMERICA'S BIGGEST MILL TO

Contractors, Carpenters, Home Owners

1st Quality
Glazed Bevel Plate
$9.75

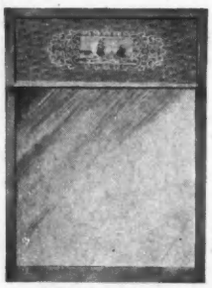
1st Quality
$3.90

Storm Door
$1.19

Storm Door
$1.72

B Quality
80c

1st Quality
$2.85



Art Window
$3.38

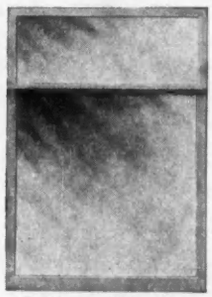
Grand FREE Millwork Catalog

WE will **SAVE** you **HALF** in **DOLLARS** of what your Local Dealer would charge you for Millwork, freight included. We guarantee this. We also guarantee that every article we sell to you direct is up to the Standard of High Quality Required by the Official Grade adopted by the Sash, Door & Blind Manufacturer's Association of the Northwest. Not all Millwork is—remember that.

You see here a few illustrations and prices taken from our catalog. These are but Specimen Values. Ask yourself if it isn't worth while to see that catalog. It illustrates the entire products of the Biggest Mill in America—the only Manufacturers of Millwork who sell direct to any man who is repairing or building, to Carpenters and to Contractors or Builders.

Our catalog is an authority on Millwork styles. It will show you what you ought to use—show you how it will look—show you prices 50 per cent below your local dealer's prices—delivered to you safe and promptly, in the best of condition to use. These are all statements that we know are true. We are shipping our Millwork to men who are repairing and building every day in every state in the Union.

BOOK OF PLANS FOR EVERYBODY Containing Plans of Houses, Barns and Outbuildings. **Worth Many Dollars to You.** Send 10c in stamps,



Cottage Window
$3.10

WHY OUR MILLWORK IS THE BEST

Our Millwork is the best made because—we have the most skilled workmen—we operate the largest mill in the world—163,000 feet of floor space (four acres)—we own our own timber lands, sawmills and lumber yards. We carry a large stock and can therefore ship promptly. Our lumber is first air-dried and then, as an extra precaution, is put through a scientific drying process. Joints are made with heavy hardwood dowel pins, glued with imported glue, pressed together by heavy steam power press. Absolutely no "come-apart" to our Millwork.

Door panels have a heavy raise on both sides. Panels are sandpapered on a special machine of our own invention before the door is put together, and the entire is then smoothed with fine grained sandpaper. Every piece of Millwork we make is just as carefully finished as labor and expense can make it. Just write a postal for that Free Catalog so you can see all of the 5,000 Bargains we offer and **save yourself many a dollar in repair work, or in building the finest home.**

Stair Newels
$2.90

$1.65

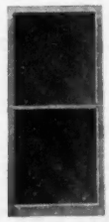
$1.60

50c

Porch Bracket
5c

Spindle
1¼c

Baluster
4c



Window
60c

33c

You Can Buy and Lay Gordon Van Tine Flintcoated Rubber Fire-proof

ROOFING

50% BELOW DEALERS' PRICES

If you've got a **house,** or a **barn,** or a **shed,** or any building that ought to be roofed or sided to keep it from leaking—going to pieces—warm—fire-proof—weather-proof—acid-proof and dust-proof for a life-time, don't think of buying shingles or any other roofing until you write us a postal card for our Roofing Catalog. We will save you half what local dealers will charge you for roofing or shingles.

Roof Book and Sample Free

For Grand Free Catalog Address **GORDON VAN TINE & CO.** Station T Davenport, Iowa