American Builder
Entered as second-class matter July 1, 1905, at the post office at Chicago, Ill., under the Act of Congress of March 3, 1879.
Published on the first day of each month by
AMERICAN CARPENTER AND BUILDER COMPANY
W. A. Radford, President, Treasurer and Editor-in-Chief.
E. L. Hatfield, Vice-President and General Manager.
Bernard L. Johnson, Editor.
Roland D. Radford, Secretary.
Delbert W. Smith . L. H. Reich . Advertising
C. R. W. Edecomb . E. B. Wofrom ... Staff
Publication Offices:
Radford Building, 1827 Prairie Ave., Chicago
Telephone: Calumet 4770
Eastern Office: 261 Broadway, New York City

Table of Contents

<table>
<thead>
<tr>
<th>Page</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Around the Family Table..............</td>
<td>63</td>
</tr>
<tr>
<td>Friendly Chats with the Editor........</td>
<td>67</td>
</tr>
<tr>
<td>New Uses for Old Woods Saves $60,000,000.</td>
<td>68</td>
</tr>
<tr>
<td>Home Planning Talks..................</td>
<td>72</td>
</tr>
<tr>
<td>A Residence that Is Truly a Home.</td>
<td>73</td>
</tr>
<tr>
<td>New York’s Demonstration Home ..........</td>
<td>74</td>
</tr>
<tr>
<td>Economical Brick and Stucco Home ..........</td>
<td>76</td>
</tr>
<tr>
<td>Appealing Spanish Home with Beautiful Roof and Lines</td>
<td>77</td>
</tr>
<tr>
<td>Garlows” New Aid to Home Builders</td>
<td>78</td>
</tr>
<tr>
<td>Two-Story American Bungalow Home</td>
<td>80</td>
</tr>
<tr>
<td>Modern Colonial Home of Unusual Design</td>
<td>81</td>
</tr>
<tr>
<td>The Bungalowette</td>
<td>82</td>
</tr>
<tr>
<td>The Bungalowette</td>
<td>82</td>
</tr>
<tr>
<td>Quaint and Artistic Bungalow</td>
<td>84</td>
</tr>
<tr>
<td>Charming Bungalow of English Design</td>
<td>85</td>
</tr>
<tr>
<td>Five Double Houses Arranged in Court Plan</td>
<td>89</td>
</tr>
<tr>
<td>An Aristocratic Six-Room Bungalow</td>
<td>88</td>
</tr>
<tr>
<td>Practical and Cozy Brick Bungalow</td>
<td>89</td>
</tr>
<tr>
<td>A Barn that Became a Studio</td>
<td>90</td>
</tr>
<tr>
<td>An Eight-Room Home of Conservative and Substantial Appearance</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Proud of His Baby</td>
<td>120</td>
</tr>
<tr>
<td>Fine Cracks In His New Plaster</td>
<td>120</td>
</tr>
<tr>
<td>Here Is Brain Teaser from Holland</td>
<td>122</td>
</tr>
<tr>
<td>Troubled with Wall Scaling</td>
<td>124</td>
</tr>
</tbody>
</table>

Vol. 34 December, 1922 No. 3

AN INVITATION TO YOU

The AMERICAN BUILDER cordially invites and urges you to enjoy the privileges and benefits of its Correspondence Department. Any phase of any building question may be profitably and instructively discussed in this department. If your problem is a knotty or technical one submit it to the Correspondence Department and secure the benefits of the opinions of other experienced builders. It’s a “give” as well as a “take” department and you are asked to relate your achievements and tell how you have conquered difficulties as well as to ask for information and advice. Rough drawings are desired, for they make clear involved points. We will gladly work over the rough drawings to meet publication requirements. The Correspondence Department is your department. Use it freely and frequently.
A Frame Up in 10 Minutes

IT TAKES just 10 minutes for an average carpenter to nail up an Andersen Standard Window Frame. Many men can do it in seven minutes. We've heard of some that have done it in three.

An ordinary frame is made up of 57 separate parts. Andersen Frames combine these 57 parts into seven units. These seven units are then shipped in two compact plainly marked bundles, each weighing less than 20 pounds.

The elimination of 50 parts in an Andersen Frame is a direct saving of time, labor and money in the assembling of the complete frame. Using only a hammer, these seven units can now be nailed up in 10 minutes or less forming a frame complete with pockets and pulleys in place.

Any dealer in Andersen Standard White Pine Frames can supply immediately any one of 121 different sizes from a small stock of only 11 standard sizes. This is done by simply interchanging heights and widths.

All exposed portions of Andersen Standard Frames are of genuine White Pine. White Pine has demonstrated its ability to endure for centuries without changing with time or weather. Windows slide easily because Andersen Standard Frames are accurately made; the use of White Pine keeps them smooth running for all time.

Write for This Book

We have prepared an interesting book on the qualities and economies of Andersen Frames. Upon request, we will gladly send you a copy without charge.

Andersen Lumber Company
Department A-12 South Stillwater, Minn.
Accumulated Housing Shortage

The table below, compiled from figures secured from the Health and Building Departments of the City of Chicago by the Chicago Association of Commerce, shows that during the four normal building years of 1913-1916, permits were approved for an average of over 18,000 apartments each year. Figures also below noted and compiled from the same source indicate that on this basis of average annual construction there accumulated a shortage of approximately 71,000 apartments during the five years from 1917-1921.

Four Years of Twice Normal Building to Catch Up

Taking into account the 100,000-125,000 normal increase in the population of Chicago, there would seem to be no immediate apartment surplus. Indeed, if each year twice the average normal building of apartment buildings were done, it would take nearly four years to catch up with the 71,000 shortage which has accumulated.

Accumulated Housing Shortage the Country Over

Recent statements by Secretary of Commerce Herbert Hoover are to the effect that 1,000,000 homes are needed in the United States at this time.

L. C. Batdorff, executive secretary of the Michigan Real Estate Association, declares that in Michigan alone 31,083 homes, apartments and flat buildings must be built within the next year if the housing shortage is to be overcome—in Detroit the shortage is in excess of 8,000.

Chicago Strong for Winter Building

That winter construction of homes in Chicago and vicinity will surpass last year's record is the prediction of the well informed.

The building permits for Chicago during October showed a sharp jump over those for September, both in number and in total value. Permits numbered 1,103 for October as against 924 for September, while the total values were $14,996,150 and $12,262,100, respectively.

The surprising feature of the permits is the number taken out for single family dwellings. These numbered 561, surpassing a number of the summer months when building conditions were more favorable for this type of construction than they are in the winter.

Evidently the Chicago apartment dweller is still on the warpath and is using the most effective method possible of bringing down rents. He is getting into a home of his own as rapidly as he can, despite factors which have increased building costs over the levels in the spring of this year.

Money is plentiful and available at lower rates than a year ago. This in part offsets the increases in other lines.

Rents, too, are still at levels where it is cheaper to buy a house at a slightly inflated value and pay for it over a long period of years than to meet the monthly sums demanded for an apartment in any moderately good locality.

The amount of winter construction last year surprised veteran builders, but we think it is going to be passed this winter.

Japs Live in Standardized Houses

Houses in Japan are probably more standardized than in any other country of the world. The rooms are always of standard size, approximately 3 by 6 feet. The Japs do not ordinarily have wooden floors in their homes, but use "jo" or thick mats. The rooms are invariably built to fit a certain number of these mats, usually from four to ten. The height of the rooms is the same in all native houses, except those built in semi-foreign style by the wealthier Japanese.

The usual or common Jap house is partitioned off by the standardized sliding doors which when pushed open practically convert all communicating rooms into one large room. The windows are never of uniform size, but may extend from the floor to the ceiling or from the ceiling to several feet below it, according to the design of the house. The windows are all made to slide into a box-like receptacle built on a corner of the exterior of the house. All the windows, as well as the doors, may be slid back, thus exposing the whole side of the house to the weather.

This explains, says the lumber division of the Department of Commerce, why the Japanese don't buy more American doors and sash.
New Uses for Old Woods Save $30,000,000
Uncle Sam is Conducting the Most Novel Timber Tests Ever Attempted
By GEORGE H. DACY

As a direct result of the research investigations conducted at the Forest Products Laboratory at Madison, Wisconsin, a branch office of the U.S. Forest Service, the American lumber industry is saving annually more than $30,000,000.

This experimental station seeks to develop not only new and more efficient processes, but to find ways of utilizing material which otherwise would be wasted; to find new uses for old materials and new materials for old uses.

It renders practical assistance to the manufacturers and users of wood and wood products and at the same time promotes forest conservation and the practice of forestry.

Lessens Leaks and Losses

The government research wood shops are general clearing houses for information for the more efficient utilization of wood and timber. To take the leaks and losses out of lumber is one of its primary goals.

It answers questions and conducts complicated experiments to decide debatable and mooted intricacies of the timber trade. It presents an opportunity for every manufacturer, user and timber grower to supplement the information obtained by experience and hard knocks with technical data acquired thru scientific research.

To curtail the wastage of three-fourths of every tree that is cut and to make more efficient use of our available lumber supply are forestry ideals which the timber laboratory is striving to realize.

Solves Lumber Riddles

In co-operation with the University of Wisconsin, the Forest Products Laboratory was established by the U.S. Forest Service 12 years ago and for several years was the only establishment in existence which aimed to solve lumber riddles by turning the search.
How Uncle Sam Tests Timber

searchlight of scientific research upon such problems. During its brief history, this novel establishment has greatly increased our technical knowledge about the mechanical, physical and chemical properties of wood. In practice, it has applied these scientific data to the manufacture of wood products and chemical materials derived from wood. In addition to investigating the multitudinous matters directly associated with wood, it has also delved deeply into the study of such subjects as glues, moisture-proof coatings, wood preservatives, laminated wood and fire-retarding materials.

Merely a Matter of Nails

Take for example, the simple matter of how to nail together the ordinary packing crate or container which has to bear the brunt of "baggage busting," perhaps, from one side of the continent to the other. Commercial concerns annually lost millions of dollars worth of valuable goods while the railroads had to pay enormous yearly claims due to the collapse and failure of shipments during transit. The Forest Products Laboratory got busy. It ascertained that the chief trouble came from the methods of nailing boxes. By devising efficient methods Uncle Sam has saved the railroads many millions of dollars annually.

When the first men who inhabited the world came into being there were millions of trees—gigantic, towering masterly rulers of the forests—already in possession of the choicest soils and geographical locations. Trees were one of our first possessions, yet we know relatively little about them. That explains why the federal foresters formulated plans to investigate tree problems which previously had been neglected.

It is trying to learn everything about timber mechanics and physics, wood preservation, pulp and paper, decay, mold and stains of wood, chemical wood products such as turpentine, alcohol and acetic acid and about methods, practices, grades and specifications of the lumber industry.

Timber Strengths

Up to the present time, more than 500,000 mechanical tests of different kinds of woods under standardized conditions have been made at Uncle Sam's Madison plant. Data from tests of small clear specimens are now available on 126 species of woods grown in the United States, on 23 additional native species and...
on 60 other varieties found chiefly in South America and the Philippines. This information is most valuable in comparing the properties of different species, in locating satisfactory substitutes for the scarcer and more costly timbers, in standardizing the uses to which different woods are put and in establishing correct working stresses. These experiments have demonstrated the necessity of grading timber accurately for all uses where strength is of prime importance. Such defects as knots, shakes, checks and their effects on the strength of bridge stringers, car sills and factory timbers have been studied with the results that better grading rules and correct working stresses for structural timbers have been evolved. The influences of preservative treatments, which in some cases weaken the wood, have been investigated. Subjecting timbers to high temperatures and great pressures lessen the strength of the wood and are annually responsible for large losses. Uncle Sam has paid particular attention to the matters of kiln-drying and preservative treatments and systems of conditioning wood for bending. Detailed strength tests of plywood have been made so that, if possible, new uses for plywood and veneer products may be developed.

Use of Small Pieces

The government experts are devoting special attention to the testing of vehicle and implement parts, airplane parts, doors and other articles manufactured of wood in order to show the suitability of substitute species, to develop and to improve designs and to obtain more economical and efficient use of wood. The limitations and possibilities of laminated construction are also being studied with a view to conserving lumber thru the increased use of small pieces and low grades. If effective uses of these methods of building up materials from small pieces can be perfected, smaller trees which can be grown in comparatively short periods in addition to much material which is now wasted because of its small size, can be employed to replace larger and more valuable lumber stock.

Dry kilns are used in curing green lumber because they save many months time and produce more reliable results. Statistics show that about 10 per cent of the valuable hard-woods that are now dried artificially in kilns are wasted because the proper methods and kilns are not employed. Uncle Sam has spent considerable experimental effort in perfecting kilns and methods of drying. A special water-spray kiln has been developed which is now used successfully in many manufacturing plants where drying requirements of material are very exacting. An extensive series of experiments is at present under way to determine the proper drying schedules for all the most important woods. The results will be of great value to the wood-using industries. Detailed investigation is also being accorded such other propositions as the proper steam bending of heavy wooden parts such as artillery wheel rims. The proper moisture conditions of the stock, the length and temperature of steaming or other preliminary treatment and the mechanical details of the actual bending must all be worked out before present high losses in this process can be overcome.

The national wood scientists also do much work each year in identifying different kinds of woods for hundreds of inquisitors. Annually several thousand specimens of wood are identified for commercial firms. Microscopic slides and photomicrographs made from...
Steam Bending Machine Used by Uncle Sam's Foresters in the Federal Laboratory at Madison, Wisconsin. This apparatus has been used in investigations to reduce the losses in steambended lumber. Improper treatment will weaken the furniture, vehicle or parts handled in this manner.

Loss by Decay

Decay organisms are as effective as are forest fires in ravaging our timber crops. Federal surveys show that an equivalent amount of timber to that destroyed each year by forest fires is consumed by the decay of railroad ties, mine timbers, posts, poles and similar products. At present there are more than 85,000,000 railroad ties in the country which have never been treated with preventive measures to protect them against decay. Experts claim that the American lumber industry would save 1,500,000,000 board feet of material annually if all these ties were properly protected against rotting. Uncle Sam is now making a minute study of all available preservative materials in order to cull the chaff from the wheat and to select the best types of decay preventives. Another problem of fast economical significance in the field of wood preservation is how to protect frame construction against fire. Each year, it costs about $250,000,000 to cover our fire losses in this country. Fireproofing wood and designing buildings so that they will offer the minimum fire hazard are effective means of curtailing these heavy losses.

Lessen Logging Waste

How to eliminate logging and lumbering wastes, is the big problem that the Forest Products Laboratory

is just tackling. Less than 30 per cent of the wood in the primeval forest ever reaches the stage of seasoned, unplaned lumber. Ten to 25 per cent of this material is wasted in the process of manufacture. In some cases only 3 per cent of the wood of the forest may be used in the finished article of commerce. One of the toughest research riddles ever presented to a body of scientific investigators is associated with restricting suchlogging and lumbering losses to a minimum. Experts report that the 5,000,000,000 to 6,000,000,000 board feet of material used each year in the manufacture of small dimension stock could be drawn entirely from material which now is wasted without any depreciation in quality of the finished articles.

Uncle Sam has studied and compared the relative durability of different American woods as well as the effects of moisture and wood-destroying fungi upon them. Data have been collected upon the least and most favorable temperatures for the growth of fungi, and the amount of heat essential to stop their growth. An application of these investigations occurs in the modern methods of controlling "dry rot" in buildings. Extensive investigations to determine the prevalence of decay in buildings throughout the United States have been made. As a result of information collected over a ten-year period, recommendations have been developed as to changes in architectural design, proper species for different uses and suitable antiseptic treatments. Infections in stored lumber both in lumber yards and manufacturing plants have been investigated and protective methods have been devised to prevent the spread of the contamination to the manufactured articles.

A CERTAIN "concrete" arch bridge in the south of France, known as the Pont du Gard, was erected in the rather remote year 56 B. C., and has, therefore, been in use for nearly 2,000 years. The concrete of this structure was not composed of crushed stone or other small aggregate of the variety now employed in bridge work, but was of the old style, consisting of alternate layers of large and small stones, gravel, etc., and of cementitious materials. Vitruvius describes the materials and methods in use before the Christian era and many writers of the Middle Ages go into minute details as to how the ancients, as they called them, "used boards laid on edge, filling the space between them with cement and all sorts of large and small stones mingled together."
NOT long ago a client came into our Drafting Rooms a good deal upset in his mind over some well intended advice his friends had been giving him about going ahead at this particular time with his home building plans.

"It is a fine home," they told him, "just what you need for your family—but don’t build it, you’ll never be able to get your money out of it."

This man is not the first to get cold water thrown on his hopeful building plans by such doleful reference to getting the money out. Thousands have been stopped by giving ear to this line of talk just at the deciding moment, when all of their thoughts should have been on going ahead and building well and lastingly just the home required. Instead, they have turned back in fear, and have kept on paying rent and putting up with the shortcomings and the uncertainties of rented house existence.

We gave this perplexed client of ours what we believe was good counsel. We told him to go ahead, to build FOR USE and not for sale.

There is practically nothing else except buildings which we buy and use and then expect to get our money out of them—as much or perhaps more than we put it. You buy an automobile and put a good big chunk of money into it. You drive it five years and its resale value has shrunk to practically nothing. Yet you are satisfied. You have had the use of the car. You buy a suit of clothes, a pair of shoes, and an overcoat. They cost you a good bit these days. You wear them. You never expect to sell them off after their period of service, and "get your money out."

It is only when you propose to put money into a home that your well-meaning friends rise up and cry "It’s a fine home, all right, and you need it; but suppose you would want to sell, you would never be able to get your money out of it."

Now, it is true that a very great number of homes and other buildings have been sold after serving well for a period of years; and their full cost has been realized, perhaps more. And in this, building has it all over practically every other commodity for which we spend our money. Very often you can buy it and use it for years and then sell it for as much or more than you paid. But this should not be demanded. If it becomes desirable to sell and you can get your money out, well and good; but if not, that is nothing to cry about. You will have had the use and the enjoyment of the home all of those years.

In other words, plan right and build right; plan and build for permanency, for lasting satisfaction and for use—not for sale. The home is worth every cent it costs and will pay dividends every year in wholesome family life, self-respect, and the feeling of independence which it brings.

So we talked to our perplexed client in this wise. Our words sunk in. They had the desired effect and he has gone ahead with his building. He will have a home well suited to his requirements. The satisfaction which he will have in occupying it will remain long after the cost has been forgotten.

"T H A T'S a beautiful little house you show on page so and so of your current issue—How much will it cost me to build it?"—A fair question and an important one—but you’ve asked the young fellow. We know how much it would cost for us to build it here, but not for you there. Go to your local builder and supply dealer. They will figure it for you and stand back of their figures.
A SIX-ROOM RESIDENCE THAT IS TRULY A HOME. Here substantial construction, convenient arrangement and artistic designing have been delightfully combined. The beautiful lattice work and terrace extending across the front of the house, the attractive front entrance, and the French windows, are all outstanding features. The interior arrangement is very pleasing and the rooms are comfortable and well lighted. On entering the house one finds himself in the living room. Just ahead, being separated by a colonade, is the dining room. The kitchen as usual joins this room. Two bedrooms and bath occupy the entire left side of the house and the third bedroom is located at the rear between the back bedroom and kitchen.
New York's Demonstration Home
First of a Series to be Built to Educate the Public and to Test Home Building Costs

BY L. PORTER MOORE

ON October 9, a neat two story and a half Colonial frame house, painted white with green trimmings and occupying a landscaped corner plot in Larchmont Gardens, a New York suburb, was thrown open for public inspection. During the first day hundreds of prospective home-builders flocked to it, inspecting it inside and out and making a minute examination of its construction features, its furnishings, its electrical equipment. This house was built under the supervision of the Home Owners' Service Institute, with the co-operation of the New York Tribune.

During the first thirteen days that the house was open more than 6,000 people visited it. On the final day of Better Homes Week, 1,200 persons were on hand.

The construction of the house was undertaken to determine the actual present-day building costs and conditions. Mere cheapness of construction was not sought. The thought uppermost in mind was to obtain the best material, the best prices and the whole-hearted co-operation of the building craft. According to the verdict of the thousands who visited the home during the two weeks that it remained open, the experiment was a huge success.

The Larchmont house is one of six small houses to be built as a test to determine New York City building costs. To the prospective home builder the architect, the building contractor, the realtor—in fact, to all connected with the building trades in the vicinity

(Illustrations on next page; text Continued to page 103.)
To Show Size of Home Building Dollar

Dining Room of the Home Which is the First of a Series to Be Built in New York to Promote Home Ownership. It was built as a demonstration of Better Homes.

The Inviting Living Room of the Demonstration Home. The interior arrangement is excellent, the living room, dining room and kitchen occupying the first floor and the two bedrooms and bath occupying the second. This home won first prize in the recent National Architects' Small House Competition.
ATTRACTIVE AND ECONOMICAL BRICK AND STUCCO HOME. Here is a house especially designed for those preferring a brick and stucco home that is cozy and compact. It has a substantial and conservative appearance, is well constructed and will last long and give excellent service. The rooms are all comfortable and the arrangement is very convenient and pleasing. From the porch one enters the reception hall. Directly to the left is the living room with the three windows facing the street. Just ahead of the reception hall is the dining room. At the other end the dining room opens onto a hall. Across the hall is the kitchen. The two bedrooms and bath also open onto this hall.
UNIQUE SPANISH MISSION HOME DESIGN. While it reminds one of the quaint old Spanish missions it still retains the delightful atmosphere, conveniences and room arrangement of a modern American bungalow. The exterior of stucco, the roof of red tile and the Spanish terrace create an appearance that is very pleasing. Walking thru the vestibule one enters the reception hall. To the left is the living room with the four windows facing the terrace. The dining room with a built-in buffet takes up the rest of this side of the house. The kitchen joins the dining room at its right. The kitchen is connected with the reception hall so it can be entered from the front door without having to walk thru the living and dining rooms first. On the right side of the house are the two bedrooms and bath. They all open into a hall which is entered from the right of the reception hall.
“Garlows” New Aid to Home-builders

Chicago Realtor Builds Ingenious and Attractive Two-Car Garages That Make Excellent Homes Until Main Residences Can be Built

A NEW IDEA IN HOMEBUILDING. Group of garlows in Chicago built by Mr. Richard Cramer who coined the word “garlow” from “bungalow” and “garage” and originated the idea. Each one is built on the rear of a lot 4 feet from the alley, leaving the front of the lot for the regular home whenever the owner can afford to build it.

A NEW type of building, the garlow, is solving the building problem for many families. The name “garlow” is made by combining bungalow and garage, and the structure is all that its name implies. It is designed as a two-car garage, but an ingenious use of partitions, which may be made of plaster board, turns the garlow into a four or five-room home that may be equipped with all the conveniences and space-saving devices of a modern hotel apartment.

It then serves as a comfortable dwelling until the owner is ready to build his house on the front of the lot; and after the completion of the main residence may be converted into a garage by removing the partition and a portion of the rear wall, which has been designed so as to be removable without injuring the main structure of the building.

“High rents and the high cost of building brought forward this new type of construction,” said Mr. Richard Cramer, realty dealer and home builder who originated both the idea and the word in Chicago in September 1921.

“Those familiar with conditions in Chicago during 1919, 1920 and 1921,” he continued, “will recall how rents were going up sky-high along with the selling price of all types of buildings—and since there was very little building going on at that time these prices were boosted even higher.

“We found that small homes, purchased on small, down payments that the average working man could handle, were greatly in demand. It was the effort to find a solution to this situation and a means of meeting this demand that first suggested to me the idea of the ‘garlow’.

“Thus the plan was originated to meet the needs of those people who no longer wished to pay the high rent...
reants but were handicapped because they had only a small sum of money saved for a first payment. We believe that with the amount of cash they had to invest they were more likely of getting better property value thru our plan than they could in any other way. For the garlow is but a step towards owning a fine building with an income. It holds a valuable lot while the purchaser is paying for it and at the same time provides him a home.

"The purchasers of these little homes are buying with the intentions of living in them until their property is paid for, and then build in front. They can use the doors, fixtures, etc., from the little house in the main building, as they are of the highest quality, being installed with that idea in view. Then when they tear out the brick panel underneath the steel beam in the back wall, it is ready to swing garage doors.

"I believe that this 18 ft. steel beam built into the back wall with the brick beneath the beam built into a panel which can be removed without disturbing the rest of the wall is the most unique and main feature of the whole building.

"The original buildings were 25 feet wide by 20 feet deep, and were built on the back of the lot 4 feet from the alley on lots 30 by 150 feet. We have since built some 25 by 28 feet, set 12 feet from the alley, to meet the demand of people with families too large for the smaller houses. The first buildings have four rooms, a living room, dining room, bedroom, kitchen, and bath or two bedrooms, and a combination dining-room and kitchenette. The larger buildings have 5 rooms. Some are designed with two front doors, providing separate entrances into the two car garage. They are constructed of brick, with a 4 ft. concrete foundation; the interior is finished with hardwood floors, birch-mahogany trim, up to date electric fixtures and other modern furnishings.

"The four-room homes sell for $2500 and the 5 room for $3000 plus the cost of the lot on which they are erected."

Mr. Cramer is very optimistic over the future of the garlows and feels that the idea now is only in its infancy. The photographs in connection with this article are a group his company has already built in Chicago. These were so popular that they recently began construction on another and much larger group.

The idea is spreading rapidly and meeting with a hearty response wherever it is introduced, and while only a little more than a year old garlows are giving excellent satisfaction in many communities in every section of the country.
AN IDEAL TWO-STORY BUNGALOW HOME. The spacious front porch built under the sloping roof, the shingled walls, and dormer have all been combined with excellent taste. There are seven rooms. A living room, dining room and kitchen on the first floor and three bedrooms and a bath on the second. From the front porch one enters the reception hall. On the right, occupying the entire left side of the first floor is the large living room, one of the most attractive and desirable features of the home. The dining room and kitchen take up the other side of the house. The stairway, located in the reception hall, opens onto another hall upstairs. Two bedrooms and the bath are entered from this hall while the third bedroom is reached thru the alcove. The hall leads to a balcony at the rear.
MODERN COLONIAL HOME OF UNUSUAL DESIGN. While it reminds one of a stately old Colonial mansion, it still retains all the practical features of a modern American home. The broad expanse of porch, with plain Tuscan columns and projecting eaves, the sloping roof, the French doors and the shingled walls blend both these desirable types without losing the dignity of the one or the conveniences of the other. Entering the reception hall from the porch, the dining room is at the left. It leads to the kitchen. The large and comfortable living room occupies the entire right side of the house. On the second floor are the two bedrooms, the bath, two alcoves and five closets.
Another Hotel Apartment Bungalow

Architects Have Also Incorporated in This Attractive Little Bungalowette Many Space-Saving Features and Conveniences

Our front cover home in the November issue received so much favorable comment that we are illustrating another in this department this month designed along similar lines.

Like last month's home, this charming and aristocratic little three-room bungalowette artistically and economically provides all the conveniences and accommodations of a modern city apartment hotel.

It has been equipped with space-saving beds and fixtures with every convenience for comfort and efficiency. Home builders everywhere are fast recognizing...
ing the advantages of equipping their homes with space-saving equipment because it eliminates waste space, reduces the building cost, increases the living comfort and raises the rental value.

The designer of this home has delightfully worked in features of Colonial architecture, and its individuality is apparent in many ways. The clapboard walls, the casement windows, the brick walk and platform, the sloping roof and the arch over the driveway are all features that would make this little place stand out attractively and distinctively in any city.

The house is 30 by 20 feet 6 inches and may be built on an average sized lot, saving plenty of room for a beautiful lawn and the garage driveway. There are three rooms and bath, the living room, dining room and kitchen. But it has been designed so that it is possible to live just as comfortably and much more conveniently in these three rooms than it was formerly to live in five or six. And a house of this type is always much easier to take care of, particularly when the arrangement follows the plan it does.

From the front platform one enters the large and commodious living room extending clear across the house. It is 10 feet 6 inches by 17 feet 6 inches with a real fireplace for a genuine fire. This room is easily and quickly transformed at night into a bedroom by swinging out the door bed from its hiding place in the closet. The location of the bed at night may be seen from the floor plan.

In entering the living room thru the front door the entrance to the dining room is immediately to the right. A wall bed is installed in this room, making it possible to have two bedrooms whenever desired. The room is well lighted and ventilated with three casement windows. The dining room opens into the kitchen, which is a very practical size that every housewife will appreciate. It is small enough to save many steps, yet there is plenty of space for all the equipment she needs.

The bathroom may be entered from either the bed closet or the kitchen, as it is located just between them. In addition to the bed closet there is also a closet for outside wraps, conveniently located near the front door.

City friend: "How do you like the combination furniture now in use in our newest flats?"

Country friend: "Not at all. I went to bed in a piece of it at a friend's house the other night, and what do you think? When I woke up two women were serving breakfast on the foot-board, a fellow was writing a letter on the head-board and the maid was underneath the bed making coffee."

MORE wood is used for shipbuilding today than when wooden vessels were the only ones afloat.

THE only ship that comes to a man who sits down and waits is a receivership.
QUAINT AND ARTISTIC BUNGALOW. The white clapboard walls, the roof, the inviting front entrance and terrace, all lend a charm to this home that would make it stand out distinctively in any city. It is built of substantial and practical materials and could be constructed economically. The front entrance opens into the living room that is large and comfortable with a real fireplace. As can be seen by the floor plan, the living room has entrances opening into the dining room and hall. The bedrooms are located on the left of the house and are entered from this hall. The kitchen is located directly back of the living room, but is entered thru either the hall or dining room. It opens onto another terrace in the rear.
CHARMING BUNGALOW OF ENGLISH DESIGN. The exterior of this little home with its English lines creates an impression of a distinction that is very pleasing. From the inviting front porch one enters the living room which is large and comfortable being 23 feet 6 inches by 17 feet. It opens into the dining room which joins the kitchen. Both the dining and living rooms open onto a pergola terrace towards the rear at the right side of the house. While not shown in the photograph, its location may be seen from the floor plan. The two bedrooms and bath take up the entire left side of the house.
SEEKERS of ideas on planning income property projects will doubtless find in the accompanying illustrations a suggestion of quite exceptional interest. It consists, as will be discerned, of a number of houses, intended for renting, grouped into the so-called community court arrangement. The here-represented representation of the idea is, however, an especially economical one, particularly in respect to the ground area to which it is confined. It is also unusually well carried out in other ways—in attractiveness of the arrangement in general, in the interior planning of the various units, and so forth.

The ground plot utilized by this project has a street frontage of approximately 120 feet and a depth of about 150 feet, which makes it virtually equivalent to two city lots of ordinary size. By the usual method of building, this area would be made to accommodate only two houses—and three at most. Here, however, it has very satisfactorily been utilized for the erection of five houses, each of which, moreover, is a double or two-family structure. The arrangement, therefore, provides a total of ten separate apartments, or homes for ten families. The space further gives room to an automobile driveway extending down one side and to a garage for each of the ten apartments in the rear.

The five double houses are identical with each other both in exterior designing and in interior arrangement, and each apartment or half of each house is an exact duplicate of the other, in reverse order. The floor plans reproduced herewith therefore present the arrangement of the interior of all five houses. Hence, as will be observed, each apartment provides living room, dining room, kitchen and the usual screened or kitchen porch on the first floor and two bed rooms and bath room on the second floor, besides closets for the bed room and a number of excellent built-in features. Each of the five houses also possesses a roomy open porch or terrace on the front, and the living room in all instances contains a good fireplace.

The houses, it will be seen, instead of fronting upon the street, are arranged to face directly upon a small community courtyard or parking. This space, treated in particularly attractive garden style, with low-growing shrubbery and well-kept lawns, features an electric light on a neat white standard in the middle-front and an enhancing arrangement of cement-paved walks.

The buildings have concrete foundations, and their outside walls are of cement stucco over metal lath and frame construction. This stucco is given a pure white surface, and the slight trimming, confined almost entirely to the windows and front doorways, is done in light French gray. The roofs are covered with ordinary shingles, laid with every fourth course doubled, and are painted green. The chimneys are of brick construction, with an exterior surfacing of stucco, and the front porches or terraces are floored with cement and finished with low piers of concrete and stucco at the corners and entrances. Each apartment naturally has its own private entrance, and all front doors are of small glass panes. French windows further open to the front porch from each apartment’s living room.

A Community Court Arrangement of Five Two-Story Double Houses arranged on a lot 120 by 150 feet. The houses are identical with each other both in exterior and in interior arrangement. They have concrete foundations and outside walls are of cement stucco over metal lath and frame construction.
Each of the Five Houses Provides 5-Room Apartments for Two Families. The living room, dining room and kitchen of each apartment are located on the first floor while the two bedrooms and bath in each unit occupy the second.

Referring to the floor plans, it will be seen that the interior planning handles the floor space most economically, and yet provides convenient accessibility and very commodious rooms. The front door opens direct to the living room, and a broad cased opening joins the latter to the dining room. The stairway to the second floor rooms ascends from one corner of the dining room, and the up-stair hall forms direct communication with both the bath room and the two bed rooms.

The closets and built-in features with which each apartment is provided especially deserve notice. They include a coat and general utility closet under the stairway, a buffet and china cupboard in the dining room, a draft cooler-closet, fine cupboards and the other usual conveniences in the kitchen, a toilet off the kitchen porch, a linen cabinet in the up-stair hall, a wall medicine-case in the bath room, and a large wardrobe closet for each of the bed rooms. It should be noticed in this connection that the long closet of the back bed room is, in fact, virtually two closets in one, for it is provided with two doors and hence may be partitioned or otherwise divided, if desired.

The several units naturally have their interiors carried out in uniform style. The woodwork of the living rooms and dining rooms consists of pine in old ivory finish, to which is added a limited use of mahogany as trim, and in the second floor halls and bed rooms it is of pine in old ivory alone, while in the kitchens and bath rooms the pine woodwork is finished in white enamel. The walls of the kitchens and bath rooms are given a smooth, hard plaster surface.

This community court is located in Los Angeles, California, and the plans are by Floyd A. Dernier, of that city. Because of the attractiveness of the arrangement and the excellent planning of the interiors, the apartments are naturally quite easy to find tenants for, and the property constitutes, in every way, a very desirable and well-paying investment.
AN ARISTOCRATIC SIX-ROOM BUNGALOW. The artistic thatched roof, the front entrance with the white columns and cement terrace on each side and the attractive window arrangement are all features that will attract the attention of every passer-by. The floor plan follows the customary American plan of bungalows. From the front terrace one enters the living room. It opens into the dining room. It leads to the kitchen which occupies the remainder of the left side of the house. The three bedrooms and bath, on the right side of the house, open onto a hall which is entered from the dining room. There is a two-car garage in the rear built in harmony with the house.
PRACTICAL AND COZY BRICK BUNGALOW. There is something substantial and reassuring about brick that makes it a favorite, and this little home will appeal particularly to the homeseekers who want a modern bungalow of brick. A particularly attractive feature is the sun porch which is 7 feet 6 inches by 13 feet 6 inches. Its location may be seen from the floor plan. From the front porch one enters the large living room, 12 by 22 feet 10 inches, extending clear across the house. The dining room and kitchen occupy the right side and are entered from the living room thru a hall. As can be seen from the photograph there is a side entrance leading up to this hall thru which you may enter the dining room or living rooms. It is also a handy and quick entrance to the basement for the man who wants a workshop or small office down there.
A Barn That Became a Studio
A Successful Remodeling Job at Bethayres, Pa., Wilson Eyre, Architect
By ESTELLE A. RIES

THE colonists who followed William Penn to Pennsylvania and located in the suburbs of what is now Philadelphia, were almost without exception an agricultural people. They plowed the land and felled the trees and built the best evidence of their craftsmanship into their houses and farm buildings.

Standing today near suburban Philadelphia, in a locality celebrated for its fine domestic architecture, are a number of delightful residences of noteworthy artistic interest because of the correctness of their proportions.

These houses are the result of alterations of old barns into the best artistic types of residences. The reclamation of these old buildings offers unusual possibilities and it is highly desirable that these opportunities for the conservation of a fine architectural resource should be availed of.

One example that these farmers set to succeeding generations was the use of ledge stone for building purposes. This material, of a fine color and of sharp fracture, is famous through the outlying districts of Philadelphia and in that vicinity ledge stone work has been wrought into forms that it is difficult to exceed in artistic appearance.

The studio of Henry McCarter at Bethayres, Pa., is one of these examples of remodeling an old barn, carried forward in a manner that has reverently regarded all the traditions of its original architectural style and its adaption for use as a studio building. Wilson Eyre was the architect.

Many attempted restorations have resulted disastrously for the reason that the shell or fabric has not at the outset been sufficiently good to warrant its becoming the base of a remodeled structure. But the fine old barns which the colonists under William Penn built, reflected the colonists substantial competence that was so important a feature in the development of this country.

In the last analysis, good architecture is nothing more or less than the relation of solids to voids—the relative proportion of wall area to window and door spaces. The early settlers seemed instinctively to appreciate this fundamental factor in architectural design, and it is the conservation of these features, the retaining of the fine proportions, that insures the

Interior View of Barn of William Penn's Time as It Appears Today After Being Remodelled Into a Studio.

Living Room of Studio. Years ago this comfortable looking room housed horses and cattle.
Successful Remodeling

successful results in modern restoration methods. In remodelling an old house, the floor plan or its larger subdivisions are usually retained and ceiling heights are also fixed. But in adapting a barn to a house as in the present instance, the architect may fix his ceiling heights and arrange his plan to suit the needs of his client.

So well was the original barn conceived, that it has only been necessary to alter the plan of the building inside, adapting it to dwelling purposes, and to put on a new roof and such small embellishments as may be required to give the impression of domesticity and add to the convenience of the building or habitation.

This house will suggest to the observer the early type of barn which combined large spaces for the storage of hay in its upper recesses, with ample room on the lower or ground floor to be utilized for the cattle and horses. Seen from the rear, perhaps the most interesting elevation, it has simply been necessary to add the arched windows and the overhanging porch. With these exceptions the barn may be regarded as almost identical with the original structure.

A service court with lattice has been added, and a balcony from the second floor has been placed between the two units of the side elevation.

The original beams of the old barn have been retained and are exposed in the interior.

This is the Studio of Henry McCarter at Bethayres, Penn., which was a Barn Belonging to the Time of William Penn, when Pennsylvania was a colony. In remodeling it into a studio they retained all the traditions of its original architectural style.
A N EIGHT-ROOM HOME OF CONSERVATIVE AND SUBSTANTIAL APPEARANCE. Thoroughly American in architecture, it is a home anyone can well be proud to identify as "My Home." It is designed especially for a large family who demand plenty of room and comfort in an attractive house that will stand up. The front porch architecture is quite unusual and pleasing. On the first floor are the three regular rooms, living room, dining room and kitchen, also a pantry and lavatory. The home-like living room occupies the entire right side of the house, being 13 by 25 feet 6 inches. Upstairs are four bedrooms and two baths. One bathroom is located between the two front bedrooms and one between the two in the rear. The rooms are all well lighted. One of the rear rooms opens onto a balcony.
An Ideal Family Home. The large front porch and rambling lines make this house appear unusually hospitable and comfortable. There is a strong appeal in the large front porch with the roof extending clear across the driveway. This residence has been so designed that it would be especially desirable for a 50-foot lot. From the front porch one enters the reception hall—where the stairs leading to the second floor are located. The large living room, 13 by 23 feet, 6 inches is to the left. It opens into an excellent sun porch at the rear of the house not shown in the photograph. Turning to the right in the reception hall one enters the dining room. It leads to the kitchen which opens onto the back porch. On the second floor are the three bedrooms and bath all opening onto a common hallway.
The Selection of Instruments
The Second of a Series of Articles of Great Practical Value to Builders

By M. K. Teach
Instructor in Architectural Drawing, Bradley Polytechnic Institute

This article might rightfully have been article No. 1 for drawing instruments and the accessory tools are the basis of all architectural drawings. First of all let me say that no beginner can make a legible drawing with poor instruments. Several years ago a well known architect speaking before an architectural club composed of college students made the following statement, "the finest instruments are none too good, even for the best of draftsmen." A good set of instruments will last a lifetime provided they are treated with reasonable care, but a cheap set will be an annoyance from the start and will soon become entirely worthless. To the beginner a good set and a poor one may appear the same, so it is well for him to have the advice of a good judgment, or to buy from a good and reliable dealer. Alteneder, Keuffel & Esser, Dietzgen and Richter instruments are almost always sure to be of good quality and can be relied upon by the draftsman. The amateur should make sure that the set consists of substantially the following articles:

1—5½ or 6-inch compass with lengthening bar and pen points.
2—ruling pens (one to be a "Swede" pen if possible).
3—bow instruments (one bow divider, one bow pencil and one bow pen).

The next logical thing to select is the board upon which the drawings are to be made. Now, most of the drawing boards are made of clear white pine cleated to prevent warping. Boxwood has also been used but has not proven entirely satisfactory. So-called "bread boards" or those with no cleats on the back should never be selected, for in this type of board the grain of the end cleats is perpendicular to the grain of the boards. Consequently, when the board shrinks, which it is sure to do, the ends of the cleats will project beyond the longitudinal edges of the board when the lower side is used for a straight-edge. A 24 by 30-inch board is a good size for the beginner to buy.

Every draftsman should have at least two transparent triangles, altho opaque ones made of wood or hard rubber may be used. The transparent celluloid triangles are without question the best for all work for numerous reasons altho they do have a tendency to warp. For ordinary work an eight-inch 45-degree and a ten-inch 30 to 60 degrees are good sizes.

Now, in selecting a scale the amateur should make sure that he is sold an "architects" scale and not an "engineers" scale. The former is divided into feet and inches while the latter, which is commonly used in map drawing, has subdivisions in decimals. Boxwood is the most common material of which scales are made, altho paper or metal are sometimes sold. Steel scales are very thin, often flexible, and absolutely accurate in their markings but they should not be used for the divisions are difficult to see, especially by artificial light and the material will eventually rust thereby disfiguring the drawing. By far the most satisfactory scale is one of boxwood with ivory edge but is more expensive than those of the plainer type.
The most common shapes of boxwood scales are shown in Fig. I, of which the triangular form (A and B) is the commonest. In fact, it has only one advantage, it having more scales on one stick than any of the others. This advantage is offset by the delay and confusion in finding the scale wanted. However, this fault can be corrected to a great extent by the use of metal clips as shown in Fig. I (C and D) which can be bought at the instrument supply house for a few cents.


Any medium priced fixed head T-square 24 to 36 inches in length will be good enough for all ordinary work. Two T-squares of this type are shown in Fig. 2 (A and B). However, every office should have at least one adjustable head T-square as shown in Fig. 2 (C). These squares should be made of hard wood and the edges of the blade lined with ebony or celluloid, the latter being preferred.

Of course the drawing pencil is the draftsman's most useful instrument. Without a good pencil of the proper grade the draftsman is at a great disadvantage. L. C. Hardmuth Co.'s "Kohinoor" pencils are perhaps the best on the market although the "Eldorado" made by Dixon can be recommended. These pencils come in a series of varying grades from 6B (softest), 5B, 4B, 3B, 2B, HB, F, H, 2H, 3H, to 8H (extremely hard). Now, for sketching an HB or F can be recommended, but for line drawing a harder grade, such as an H, 2H, or 4H should be used, varying as the type of work demands. The pencil should be sharpened to a long conical point and kept with a fine point by the use of a sandpaper pad or a small flat file. As lines are drawn, the pencil may be rotated between the fingers, thereby keeping it sharp for a greater length of time than can be done by always keeping it in same position.

Small thumbtacks should be selected as the larger ones are more expensive, make too large holes in the board, and are too hard to pull out. The paper on the board is not held down by the prong, but by the head of the tack and for that reason should be pressed down the full length into the board.

The architect or draftsman has use for several different kinds of paper, depending upon the type of work to be done. Detail paper for ordinary working drawings may be obtained in sheets or rolls. The rolls vary in width from 32 to 54 inches. A good detail paper should possess the following qualities: (1) It should have sufficient "tooth" to take the pencil but not too rough to obtain clear, sharp lines; (2) it should be agreeable to the eye and have little glare, for this reason a cream or buff colored paper is preferred to white; (3) it should take ink well without "spreading" or "picking up"; (4) it must have good body and surface to permit of erasing. Tracing paper, a thin, white, transparent paper used for making one drawing on top of another, comes in rolls from 30 to 48 inches in width. This paper is also used extensively for sketching. Water color paper of which "Whatman," an imported paper, is the best, is used for renderings for display drawings and usually is of a rough texture. If a wash drawing is to be made this paper must be pasted to or "stretched" to the board. We will touch upon this feature later in this work.

An irregular curve, a French curve as it is commonly called, of celluloid composition, should be considered in the list of materials for the draftsman. It will come into use in drawing curves other than circles or circle arcs.

To all the above discussed articles we will also add the following as essential requisites: Pencil eraser, art gum or sponge rubber, Higgins India ink (black), pen holder, protractor, several pen points and pen wiper or lintless piece of cloth.

Let me now tabulate these instruments and accessories which are necessary before attempting any architectural drawing:

1—One set of drafting instruments.
2—One 8-inch 45-degree triangle.
3—One 10-inch 30-60 degree triangle.
4—One 12-inch architects scale.
5—One French curve.
6—Eight (or more) small thumbtacks.
7—One pencil eraser.
8—one piece art gum.
9—one HB, and one H or 2H pencil.
10—one bottle Higgins black India ink.
11—one penholder.
12—Several penpoints.
13—one protractor.
14—one piece of lintless cloth.
15—one sandpaper pad or flat file.
16—Drawing paper, to suit.

The use of the above articles will be touched upon in the next article.
T

HUS far in the articles of this series, the reader has analyzed the stresses in a simple beam, that is, the beam freely supported at the ends. He has followed thru the derivation of the working equations needed in design. The rectangular and Tee beams were treated and problems were solved to show how to determine the dimensions of the cross sections of the beams. The reader was further made familiar with the methods of computing the reinforcing steel, and was shown how to place it in the beam in order to resist the stresses.

Beams Not Always Simple Beams

Actually, a beam is not always a simple beam because of the methods and details of construction. For instance, a piece of flooring will rest on, and is nailed to, a number of floor joists. Such a piece, supported at a large number of points, instead of at the ends only, is called a continuous beam, while the floor joist itself is supported at the ends and acts as a simple beam. Now, suppose that the flooring is sawed so that each piece will extend from the center of one joist to the center of the next. If the pieces are not nailed they will act as simple beams. But, if these pieces are nailed, they are called beams fixed at the ends. The reader might try this experiment. Let him take a twelve-foot board and place it on supports two or three feet apart, and let him stand on the board near the middle of its length between supports. There will be a certain amount of sag or deflection of the board due to the effect of the reader's weight. Let him note the amount of this sag. If he will then take a piece of the same board just long enough for two supports, one at each end, and note the sag under the effect of his weight, he will find it greater than in the first case. Now let him nail the short piece to the two supports and observe the sag under his weight, and he will note that this sag will be the same as for the long board but much less than for the same short piece not nailed. Such an experiment is, of course, crude, because it requires rather delicate apparatus to measure the sag accurately. The reader will state his conclusions as follows: that both the fixed and continuous beams are stronger and stiffer than the simple beam.

The reader may ask, "Why not design all beams as simple beams?" The answer is, while the simple beam
will give us the largest cross section, the reinforcing steel as placed in this beam does not meet the requirements in the fixed beam. In order that we may make the difference in design evident, let us proceed with this further explanation. For instance, take the concrete floor. Usually a large section of it is placed at one time, and it may extend across a large number of supports, or across the building without a break. For purposes of design, we assume the floor divided into strips one foot wide, which are computed as beams actually continuous over a number of supports. The beams which support the floor will extend from column to column, or between cross beams in such a way that due to the continuity of the concrete these beams are either continuous over a number of supports or else fixed at the ends. In Fig. 1 we have sketched the different kinds of beams.

**Comparative Strength and Stiffness**

These beams with the same cross sections and distances between supports have different strengths as well as deflections. But by means of higher mathematics we are able to derive working expressions which enable us to determine how each kind of beam will sag under load and how much load it will safely carry. These equations show us that a simple beam carrying a uniformly distributed load will deflect five times as much as the same beam would if fixed at the ends. The strengths may be compared by computing the fiber stresses, which in turn depend on the bending moment. The expressions for the bending moments are as follows: For a simple beam, \( M = \frac{WL}{8} \) at the middle; for either the fixed or continuous beam, \( M = \frac{WL}{12} \) at the supports, and \( M = \frac{WL}{24} \) at the middle. Comparing these equations, we find that the stress in a simple beam is one and one-half times the stress in either the fixed beam or the continuous beam. Or, for equal stresses in the beams the fixed beam would support a load one and one-half times as great as the simple beam. In practice it is sometimes difficult to build a beam which is entirely fixed at the ends. In any case, tests show that the beam is much strengthened by partial fixing. Engineers have compromised by using the expression \( M = \frac{WL}{10} \) to determine the moment in case of doubt regarding the rigidity of the support.

**Design Affected by Supports**

The difference between the simple and fixed beams brings us to a very important step in the design. In the simple beam, the tension is in the lower part of the beam and the reinforcing steel is placed there, while in the fixed beam there is an upward bending at the fixed ends and a downward bending at the middle. As a result, tension will exist in the upper part of the beam and the reinforcing steel will be placed there. Engineers have compromised by using the expression \( M = \frac{WL}{10} \) to determine the moment in case of doubt regarding the rigidity of the support.
at the fixed ends and in the lower part at the middle. Therefore, it is necessary to place the steel accordingly in order to meet these conditions. Fig. 2 shows exaggerated views of beams assuming the curved shapes under the action of the loads. The simple beam has the center of the curve above. The fixed beam assumes a reverse curve. A portion of the curve at each end has its center below, while the middle portion has its center above. The point where the center of the curve changes from one side to the other is called the point of inflection. At this point there is no bending, and also there is very little bending for some distance on each side of this point. Therefore, this region of the beam is where the tension reinforcing may conveniently pass from the tension region in the bottom of the beam to the tension region in the upper part at the fixed ends. The general arrangement of the steel is shown in Fig. 3 (a) and (b). The tension steel could be placed horizontally with the upper steel independent of the bottom steel. However, the bending up is desirable because of the shearing stresses.

![Diagram of Tension Steel and Compressive Steel](image)

**Figure 4. Showing Resisting Moments in Beam with Compressive Steel.**

**Tee Beams a Special Design**

If the beam is designed to be rectangular as is the case with the floor slab, no further difficulties are met. But in the case of the beam or girder designed as a Tee beam, careful design is required at the fixed ends. The flange of the Tee is in compression at the middle of the span, and in tension over the support; at the supports the compression will be in the stem or web. Since the flange is no longer available for compression, the reader will see at once that there is not sufficient concrete area below the neutral axis to resist the compression without increasing this area in some way, or else by adding steel reinforcement for compression. In order to compute the area of the compressive steel needed, we must work out some relations between the tension and compression. The tensile stress is assumed to be in the steel alone, but the compression is made up of the compressive stress in the concrete plus the stress in the compressive steel. Since the total compression in a beam section must equal the total tension, a part of the tensile steel must balance the compressive stress in the concrete, and the remainder of the tensile steel must balance the compressive steel. The reader may now readily see that the resisting moment of the beam may be divided into two parts: first, the resisting moment of the beam reinforced for tension only; second, the resisting moment of the compressive steel acting with a portion of the tensile steel. These two resisting moments are shown in Fig. 4. The moment due to the concrete below the neutral axis may be expressed as

\[ M_{c} = \frac{f_{ck} A_{c} d^{2}}{2} \]

This moment is also equal to the moment of that part of the tensile steel which balances the total compression in the concrete. Then,

\[ \frac{f_{ck} A_{c} d^{2}}{2} = f_{a} A_{a} j d \]

The reader will at once set down the other part of the resisting moment as

\[ M = f_{a} A_{a} j d + f_{c} A_{c} d \]

**Illustrative Example**

Suppose we have given a Tee beam with a total depth of 18 inches and a width of web of 10 inches. The bending moment from a previous computation is 550,000 inch pounds. Let the allowable unit stresses be 16,000 pounds per square inch for steel and 700 pounds per square inch for concrete. The values of \( k \), \( p \) and \( j \) are computed from the expressions for these quantities previously derived. It is found that \( k = 0.397 \); \( p = 0.87 \) per cent and \( j = 0.868 \). And \( A_{t} = 10 \times 10 \times 0.0087 = 1.57 \) square inches. Then the resisting moment of this amount of steel will be

\[ M = f_{a} N_{a} j d = 16,000 \times 1.57 \times 0.868 \times 18 = 392,000 \text{ pound inches} \]

An additional amount of tensile steel and an equal amount of compressive steel must be added in order that the total resisting moment may be equal to the bending moment. Assume that the center of the compression steel is 1½ inches above the compression surface, then the moment arm of the steel will be equal to 18 inches minus 1½ or 16½ inches. Then \( f_{s} A_{s} = 0.500,000 = 392,000 = 158,000 \text{ pound inches} \). And 16,000 X 16.5\% A = 158,000; A = .6 square inch. The total tension steel will be (1.57 + .6) = 2.17 square inches. Three ½-inch square rods would serve as tension steel, and three ½-inch square rods for the compression steel. Any beam intended to be reinforced for both tension and compression may be treated in the same way. While we have indicated an analysis for a fixed beam, the continuous beam is treated similarly, since each span length is restrained by the spans beyond.

**Sacks Take 17,000 Miles of Cloth**

Every year the textile manufacturers of the United States are called upon to furnish the cement companies with 30,000,000 new sacks. It requires a piece of cotton cloth 30 inches wide and 17,000 miles long to make these sacks. At the present time there are approximately 200,000,000 cotton sacks, either in sack storage houses, at the mills, or in customers' hands.
A Well Wired Dining Room

Wired Table that Permits Better Use of Electrical Cooking Device a Factor in Making Home Pleasant

Any man, much less wise than Solomon, might have discovered that vanity is a part of every person's make-up. And vanity, like many other characteristics, serves a useful purpose. That vanity, which may be better termed self-respect or reasonable pride, is a quality which spurs all of us on to better effort and better accomplishment.

Who can question the perfectly natural feeling that the home owner has in being proud of his home? If it were not for that sense of pride he might never have a home of his own. And who can wonder that a woman wants her company to carry away pleasant recollections of her entertainment of them?

The central event of every occasion when company comes is the dinner or the luncheon. And the importance of the dining room is making that "big" event successful can scarcely be overlooked.

Hostesses have special delight in their electrical cooking equipment when they entertain. Of course the every-day economies and usefulness of such devices more than justify their use but they come in handy in an unusual sense when outsiders are guests.

The use of the electric percolator, the chafing dish, the toaster and like utensils permits the hostess to sit at the table and visit with her friends while some of the cooking duties are being discharged. They also permit the serving of food in a hot and wholly fresh condition. Then, too, there are some dishes which can best be prepared by these devices.

Popularity of Wired Furniture

It is this situation which has given rise to the wide use of wired furniture in the past few months. An old table which has been wired or a new table bought as a wired table accommodates a larger number of cooking devices than is possible when lighting fixtures are used. Such furniture also permits a more practical use of the devices.

Home is a wide word. It means not only the structure but its equipment.
Selling the Home Seeker
What a Real Estate Women Has Learned About Home Buyers
By ZELIA M. WALTERS

In a modest way I deal in the building and selling of homes, and I have learned some things about home buyers. Especially I have been obliged to notice their mistakes and misconceptions. I believe that every head of a family, who has good health and a steady job, is justified in buying a home. He can do so safely if he will learn to avoid the common mistakes. In fact I know he can do it. I bought my first home with a five-dollar down payment. I lived in it several years, planted the lot, put improvements in the house costing two hundred, and sold at a profit of two thousand dollars. And at that time my income was far from secure.

Error number one, I should say, is the tendency of the man, or his wife, or both of them, to expect too much in the first home. They have been living, perhaps, in an apartment, and paying fifty dollars a month. They see an advertisement for a house at moderate price. They have an inspiration. Why shouldn’t that fifty dollars a month go on a house of their own? So far they have reasoned well. They go to look at the house. It is in rather an unfinished section of town. The street is muddy. The house needs paint. They immediately begin to talk of the things they cannot do without. They go back to their four room apartment, with its conveniences, and go on paying rent to the end of their lives. Another buyer and his wife come to look at the same house. They, too, are apartment dwellers, but for the sake of the children they have decided that they must have a bit of land. And they see the advantages instead of the defects. The house needs paint. "Well," says the husband, "I can paint it myself, and it will look like a new place." They pick out locations for the fruit trees, the vines, the roses, the vegetable garden, "Such a nice big lot. The children can have a playhouse here." The inside of the house is inconvenient. But they will all help and make it do until they can afford the alterations. The city will put cinders on the muddy walks. The house is for sale for four thousand, four hundred dollars down and forty dollars a month. "We can easily afford that," they say jubilantly. Next day they are home owners. In another year their house is easily worth another thousand dollars, tho they have spent very little money. They have had a year’s rent applied on it. They are saving without any painful effort, and their work in the house and on the lot is bringing them health and happiness. To be sure the neighborhood is not fashionable, and there are makeshifts in the house. Never mind, this family is on its way to prosperity, and can move into a better neighborhood some day if it desires.

There isn’t a middle sized city or town in the country where you cannot buy a house on these terms and at this price or even lower. It will not be an up-to-date modern dwelling in a fine neighborhood. But if you have faith and courage, and a will to work, you can make it a real home, and when you sell you can make a profit on your investment.

Error number two is closely related to number one. Many people pledge themselves for payments that are larger than they can afford. Fifty dollars a month doesn’t sound like much if you are accustomed to paying rent in a modern apartment. But if you have also pledged yourself to meet interest twice a year on five thousand dollars, to pay taxes, to put in some improvements, and perhaps pay street assessments, you may easily find that you cannot meet your obligations. I believe in pledging a good amount on monthly payments. You’ll find you can save for your home as you couldn’t for a mere abstract bank account.

The Living Room Is the Most Important Part of a House to the Women; There It is That Guests Are Welcomed
What Home Buyers Want

Do not be like the man in the Bible, who laid the foundations of his tower, and had not wherewithal to finish it. Take time to consider all your obligations as related to your income. Then assume the largest payments you can, and go ahead without fear.

Let me illustrate by a case. I had a pretty seven room house to sell. It was just outside the city, set in a grove of trees, near a new allotment that will probably be made up of fine residences. The lot is 100 by 150. I found I could sell it as it stood for $10,000. A family with children went to look at it. They found all the defects: its proximity to a railroad, its distance from a paved street, no electricity, the rear of the lot was low, etc. But at length they said they would take it if I would put in a number of improvements. I agreed, and before we were thru meeting the wife's demands the improvements cost $1,000. They were greatly astonished at the total, and they had been informed what each desired improvement would cost. They moved in, still protesting. I did not feel that I had a stable sale. They made their monthly payments until nearly time for the first interest payment. Then they came to tell me they could not meet the interest.

"Very well," I said, "I will take the interest out of what you have paid, and apply the remainder on the principal."

"But we are getting nowhere," they protested; "only twenty dollars a month is going on the house."

"It isn't much. But I should think it would be better than nothing at all."

However, they decided they couldn't carry it, and moved out.

I sold again to a young couple who had a thousand dollars saved, and had a slightly larger income. They have very ambitious plans for their house and grounds. But they are putting them in as they go along, doing much of the work themselves. They made their monthly payments until nearly time for the first interest payment. Then they came to tell me they could not meet the interest.

"Very well," I said, "I will take the interest out of what you have paid, and apply the remainder on the principal."

"But we are getting nowhere," they protested; "only twenty dollars a month is going on the house."

"It isn't much. But I should think it would be better than nothing at all."

However, they decided they couldn't carry it, and moved out.

I sold again to a young couple who had a thousand dollars saved, and had a slightly larger income. They have very ambitious plans for their house and grounds. But they are putting them in as they go along, doing much of the work themselves. The low wet spot they seized upon with joy. It is to be a lily pond, and sunken garden. The allotment near them is building fine homes. Their property is already worth more than they paid. They belong to the class which had an equal opportunity, will always wonder where they lost out.

Error number three is timidity. When you come to deal with home buyers you find there is a much larger streak of cautiousness in the American nature than you suspect. After the irresponsible person, who habitually agrees to pay out more than his income, you are sure to meet the very timid one who dares not accept the responsibility of a four or five thousand dollar home, even if his income amply justifies him in buying.

A young couple came to me to look at a house. They had eighteen hundred dollars in the bank, drawing four percent. They were paying forty dollars a month rent, and saving twenty-five dollars a month. They ardently wished they had seen my little four thousand dollar house before it was otherwise disposed of. I could show them one for six thousand that was a good bargain. Their savings would have reduced it enough that the carrying of it would have been no burden. They waited, and hesitated, and at length decided that they dared not undertake it. They are still renting a small and unattractive house. They have no incentive to improve it, for they may lose it any month. But I doubt if that extremely timid pair will ever obligate themselves for more than a month's rent at a time.

You must have faith if you're going to buy on a small income, and then bend every energy to justify that faith. I've known a dozen people who took what looked like a long chance in buying. But not one of them lost. Some of them have sold at a profit, and then bought again and again, until they have made a considerable sum. You'll find unsuspected ways of earning extra money, or saving once you have the incentive of putting it into "our own home." You'll be a better employee, and have a better prospect of having your salary raised. You'll make it, if you're just ordinarily intelligent and courageous.

For the person who has only a small sum of money, or can make a small monthly saving, there is no better investment than to buy an old unattractive house, improve it judiciously, and sell it. You'll find unsuspected ways of earning extra money, or saving once you have the incentive of putting it into "our own home." You'll be a better employee, and have a better prospect of having your salary raised. You'll make it, if you're just ordinarily intelligent and courageous.

Keep Home in Repair By Timely Painting
Perhaps the fourth error is the failure to plan for beauty in the house or site. This applies more to the builder of a new home than to the buyer of one already built. The young home planners realize that they must economize. So they rigidly cut out of their house budget every thing that makes for beauty. Utility, they sternly reason, is the only consideration for the economical. That is a great mistake. Place two houses side by side, with exactly the same amount of room, and at the same cost. The one that has the plan, and the little touches that make for beauty, will sell at a higher price than the one that lacks these things. It will sell quicker too. And it should. We are going to live in our homes, to shape our characters and destiny there. The life that would exist without beauty is a barren one indeed. It costs very little to add beauty to a house. You need not hire a high priced architect if that is beyond your means. All of the domestic magazines picture artistically designed houses, planned by high class architects. And the working plans for these houses are sold for a trifling sum. These architects seem to make a specialty of designing beautiful and convenient low priced houses. Surely there is no longer an excuse for anyone allowing a contractor to built a box of a house. And do not neglect to make the lot beautiful whether you expect to live in it or to sell it. You need not turn it over to a high priced landscape artist. You can do your own planting if you will take pains to learn how. Friends will give you roots of perennials. There will be bargain sales. One of my prettiest lots was planted almost entirely by shrubs from the five and ten cent store. And do not forget the nearest woods. Our native shrubs alone will make a large or small lot a place of beauty. The despised elderberry is a beautiful ornamental shrub. If it came from Japan and boasted an unpronounceable name, and a high price, we would all be buying it eagerly. It makes a good boundary shrub. It grows tall and thick quickly and gives you privacy.

What do women want in a home? I am a woman and I know what I want, but that alone wouldn't count for much. I have been noticing women buyers closely and getting ideas for any new house I may build. Most real estate men think a pretty and convenient kitchen is the chief attraction for women. They are mistaken in most cases. A woman wants first, a large well proportioned living room with a pretty fireplace in it, next a pleasing exterior, and next plenty of closets and cupboards. I have known women to decide to buy a house before they had seen the inside. The exterior and the surroundings pleased them. The living room, where guests are welcomed, where casual caller and intimate friend alike get their impressions of the family, is the important room. The kitchen is the workshop and should be designed for convenience and attractiveness, but the living room houses the soul of the home, and must be considered before the kitchen. In the living room women want well placed groups of windows, preferably not of the old conventional type. They like bookcases and a window seat. Of course there never could be too many cup-
What Home Buyers Want

New York’s Demonstration Home

(Continued from page 74)

of Greater New York it is well known that in various districts within the metropolitan district, home building costs vary from ten to twenty per cent for various reasons. This proposed educational campaign, for one thing, will determine the variance in costs in the different districts. The greatest amount of information for the prospective home builder, it is believed, can be gathered thru the construction of small houses of different architectural design which have been selected by the Building Plans Committee.

Other model houses to be erected to determine costs include an Italian adaptation, cement stucco on metal lath; a Dutch Colonial of frame; an English stucco type using magnesite finish; a structure architecturally depicting Middle-west traditions, of cement block stuccoed, and two houses of brick, using face and common brick, respectively.

The construction of the model house at Larchmont was begun August 1. On October 9 it was completed in every detail, within and without, and was ready for immediate occupancy. It cost $8,842.06, including the builder’s profit. The cost of the land and the landscaping brought the total cost to $11,896.32. At this cost, the structure represented the very highest construction standards, and was what its builders intended that it should be—a thing of trimness and stability. Some slight changes from the original plans and specifications for the house were made during the course of construction, but without these changes the Colonial frame house can be erected for $7,505.07.

The house was designed by J. Floyd Yewell, New York architect, winning first group prize in the recent National Architects Small House Competition.

The plan for the model house includes living room, dining room and kitchen on the first floor, and two porches. There are two bedrooms and a bath on the second floor. The house is 20 feet by 34.6, not including three porches. As planned and specified, the cubical contents were 18,673 cubic feet. As built at Larchmont the cubical contents were 20,311 cubic feet.

The National Lumber Manufacturers’ Association, the Associated Metal Lath Manufacturers, the Copper and Brass Research Association, the Portland Association, Society for Electrical Development and the American Gas Association collaborated in planning and equipping this house.

Arkansas Will Protect Forests

A TEMPORARY organization of the Arkansas Forestry and Game Association was completed recently. Its main purpose will be the preservation of Arkansas forests and to insist on deforestation that will not strip the woods as has been done in some states.
An Economical House
Built for Mrs. L. M. Lockwood, in Hackensack, N. J.
By R. C. HUNTER & BRO., Architects

The basic economy in home building may be said to rest on the plan. That is, the arrangement of the various rooms with reference to the halls, closets and other space, and whether the required construction is simple or complex.

A rectangular plan is the most economical, and hall space is of doubtful value. Closet space is, of course, absolutely necessary, but it must be so arranged that every inch of space can be utilized.

The architects designed the house illustrated herewith with these factors in mind.

An entrance vestibule with coat closet allows the usual hall to be eliminated, while the stairs start up from the rear of the living room and land in the center of the house in the second story, thus serving the bedrooms with a short hall space. Steps from the main stair platform lead down to the kitchen, thus eliminating the service stairs.

This scheme gives a large unobstructed living room. The second floor provides three bed rooms and a bath.

The exterior of the house is a modified Colonial treatment; a Dutch type roof, white shingle walls and a green slate roof. The pergola ends are interesting details on the porches.

A generous attic is provided and a cellar extends under the entire house.

This Beautiful and Substantial Dutch Colonial with White Shingled Walls and Green Slate Roof Has Been Designed Along the Lines of Convenience and Economy. The construction is simple and the floor plan utilizes every inch of space efficiently. The house measures 38 feet 6 inches by 27 feet 6 inches on the ground.
The question of the liability of a subcontractor, for breach of his contract to the principal contractor which causes loss to the latter, is one of great importance to all parties concerned. The point has been the cause of a number of lawsuits, but, as each case of this kind has necessarily been decided upon the particular facts involved, it cannot be covered by the statement of a hard and fast rule.

However, generally speaking, and without regard for specific cases, a subcontractor will usually be liable for losses caused the principal contractor by his breach of the contract which were in contemplation of the parties at the time the contract was entered into. In other words, where the subcontractor knows the terms of the principal contract, he will, generally speaking, be liable to the principal contractor if his breach causes the latter loss upon the work.

Under this rule, if the principal contractor is bound to complete a given contract within a certain time, and the subcontractor knows of this and yet delays the work so that the principal contractor is unable to complete in time, he, the subcontractor, may be liable for any loss thus occurring to the principal contractor. The application of this point in building law is illustrated in a number of cases, among them being Shurter vs. Butler, 43 Tex. Civ. App. 353. The facts which culminated in the action were substantially as follows:

A contractor undertook to construct certain sewers for the city of Houston. The contract required him, among other things, to finish the work in 120 days, and it was stipulated that upon failure to so complete the work the contractor should pay as liquidating damages the sum of ten dollars per day, for each day beyond this time limit required in completing the work.

In contemplation of this work the contractor bought 1,000,000 brick of the subcontractor, the latter agreeing to deliver the brick as needed and ordered. The subcontractor, it appears, also knew of the terms of the principal contract, and that the contractor had only the 120 days to complete if he would avoid payment of the ten dollars per day liquidating damages. All right.

Thereafter the subcontractor filed the instant suit against the contractor to collect what he alleges was due him for brick furnished. In reply to this the contractor pleaded an offset which, among other things, included damages alleged to have been suffered by virtue of the subcontractor's failure to deliver the brick as ordered and needed.

Upon the trial of the cause it was in evidence that instead of completing the contract in 120 days it had taken nearly one year. The evidence also showed that there had been delay in delivering the brick, and that the contractor had threatened to buy his requirements elsewhere; and that then the subcontractor had promised that the brick would be promptly delivered from then on.

The trial court, however, took the view that the damages suffered by the contractor by failure of the subcontractor to deliver on time, were too remote to be recovered upon. For this reason that testimony was ruled out. The trial resulted in a judgment in favor of the subcontractor, and the contractor appealed. The higher court, in passing upon the question of the correctness of this elimination of the contractor's evidence, and the right of the latter to recover from the subcontractor, in part, said:

"We think the court erred in sustaining objections to the testimony offered as to these items of damages. It cannot be said that, as a matter of law, they
were too remote to be recovered. Appellee [subcontractor] knew that the work had to be completed in 120 days, and that the completion of the work depended upon his furnishing the brick promptly as needed in the prosecution of the work.

"There is evidence tending to show that appellant [the contractor] proposed to purchase the brick elsewhere, when appellee's [subcontractor] failure to furnish them as required began to delay the work, and that he was dissuaded from doing so by appellee's agent, who promised that brick should be promptly furnished. If there was a breach of the contract by appellee, he was liable to appellant for such damages as were the proximate result of the breach; that is, for all such damages as resulted directly from such breach and which might be reasonably supposed to have been in contemplation of the parties, at the time of making the contract, as likely to result therefrom *

After considering other points, not material to the subject of this article, the court in conclusion reversed the judgment rendered in the lower court in favor of the subcontractor. Holding, as outlined in the opinion, that it was error for the lower court to sustain objections to the evidence offered by the contractor as to his damages alleged to have been caused by the failure of the subcontractor to supply the brick as agreed. In other words that the subcontractor should be liable for all damages caused directly by his contract to furnish the brick on time.

The foregoing Texas case was carefully considered and is in accord with the weight of authority upon the point decided. This authority holding, in general, that where the subcontractor has notice of the terms of the principal contract, when he enters into his contract, he will be liable for loss suffered by the principal contractor caused directly by his (the subcontractor's) breach of his contract. This, of course, assuming that the damages resulting were, by the facts involved and the terms of the contract, clearly in contemplation of the parties when the contract was made.

Companies Consolidate

The consolidation of the Patten Manufacturing Company with the Street Bros. Machine Works, both of Chattanooga, Tenn., was announced recently. Both companies are manufacturers of hoisting equipment and their products in the future will be manufactured and sold by "Street Bros. Machine Works, Inc." J. H. Street will continue as president of the new organization, and J. W. Burgess, sales manager of the Patten Manufacturing Company, will be the sales manager of the new company.

THERE are opportunities in the building field in nearly every community today for contractors and builders who will go after automobile owners and build them pleasing, practical and economical garages like the one shown in the photograph.

Now is the time of the year when a good garage is badly needed and much appreciated. Expensive machines have made it necessary to provide good buildings to keep them in. The days of the old shed for the car have passed.

This is the type of garages favored by most builders today. It is a two-car garage, designed and built of permanent and substantial materials that will last long and serve well. It is a style that will stand out attractively in any neighborhood. Windows are plentiful and the abundance of light is one of its most attractive and desirable features.

Garage hardware is a very important item in building a home for the car and the builder should take pains in selecting that equipment. There are a number of excellent manufacturers offering complete lines of these firms publish catalogs and other literature that will be helpful and valuable to you in selecting your garage hardware requirements.
For Light, Cheerful Rooms

JOHNSON’S ENAMEL

You can’t do your best work with inferior materials—and your reputation and success depend upon always turning out good work. Build up a reputation as the best contractor in your locality—then you can get the price and will never experience a poor season.

Contractors who use Johnson’s Artistic Interior Finishes soon find themselves getting more of the profitable, better class work. Johnson’s Artistic Interior Finishes are right when they go into the can and they stay right. They do not change or deteriorate in any way.

You can give your customers the finest kind of a job by finishing both walls and trim with Johnson’s Perfectone Undercoat and Johnson’s Perfectone Enamel. These products will give equally good satisfaction on wood, plaster and metal. With them you can turn out perfect work—satisfy your trade and complete more jobs each season.

FREE—Book on Wood Finishing

It’s the best book ever published on Artistic Wood Finishing—the work of famous experts—illustrated in color. This book is written for the practical man—it gives covering capacity, includes color charts, etc. We will gladly send it free and postpaid.

USE COUPON AT RIGHT

S. C. JOHNSON & SON
Dept. A.B. 12, Racine, Wis.
“The Wood Finishing Authorities”

Please send me free and postpaid your Book on Wood Finishing.
I usually buy Varnish from......

My Name........................................
My Address....................................
City and State.................................

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER
Sixteen to One
A True Success Story with a Punch to It
By B. F. CLARK

The Sixteen Members of the Three Building Committees Had Condemned the Basement Walls and Had Decided That They Must Be Wrecked and New Ones Built. The contractor knew the walls were safe. Read the interesting story of how he won them to his viewpoint.
Up the roof in no time

Nail 'em over the old shingles!

ONE is the dirt and confusion of the re-roofing job! No more scraping the old shingles off—throw away the rippers and spades.

Just lay Johns-Manville Asbestos Shingles right over the old roof.

It's as easy as laying a new roof on a solid deck—a clean quick job from start to finish.

And profitable, too

Because of the many advantages to the house owner through this method of re-roofing you are bound to get a lot of new business.

The house owner gets a double roof protection with the blanket of old shingles under the new, permanent Asbestos Shingles.

The experience of dealers all over the country has been that one of these jobs in any locality brings many more from interested neighbors.

Get in on this profitable business. Our national advertising and dealers' helps are ready to back you up.

Write our nearest branch today.

JOHNS-MANVILLE Inc.
Madison Avenue at 41st Street, New York City
Branches in 66 Large Cities

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER
Plaster Model Wins Approval

BY JOHN F. McClARREN

A VERY attractive design for a building to be used for municipal purposes in Philadelphia has just been completed by the City's Architect, John P. B. Sinkler. The building is to be a sort of sectional City Hall; that is, it is to be constructed in a section far removed from the center of the city for the purpose of facilitating for the people of that section, the transaction of city business.

The building will be of Georgian architecture fashioned somewhat after the design of the White House in Washington. It will be faced with marble. Throughout the construction will be fireproof. Columns of Ionic order, 24 feet in height will grace the front porch facing on the main street. In providing for the rotunda, this being 33 feet in diameter and 37 feet in height, the plan arranges for a chamber which is to be used as a memorial chamber.

It required the undivided time of one man for a period of three months to make the model. The model is virtually 100 per cent hand work. It was made by Joseph H. Bass, a sculptor of 2036 Rittenhouse Street, Philadelphia.

The utmost care and caution were exercised in making the model. It is constructed entirely of plaster of Paris. There is not a stick or a wire used in any part of it nor were such used in putting it together. Excepting the cornices, it is hand carved.

In proceeding with the model the first step was a careful study of the architect's plan. Every detail of this was gone over carefully and there was mapped out on the plan the approximate size of the lot on which is located the site of the building. Once this was done the sculptor proceeded to the making of the model section by section. The two sides and rear of the model were first made on the bench and molded as plain sections. Later with the plan as a guide, the carving of the windows and architectural features was proceeded with. The cornices were first molded in tin, this molding being done in sections and then the sections were fitted together on the model. The same idea as to sectional construction was followed in the dome, all of the ornamental features being later carved by hand.

The model, which is considered one of the very best ever made in Philadelphia, was developed strictly along exact scale dimensions. As it appears as finished and exhibited, the model is the third of the same building made by the sculptor. This was due to a reason which really led to the making of the model. The architect felt that inasmuch as the building was to be unique in a sense and should be not only attractive in design but meet all utilitarian purposes, it would not be wise to proceed with it until the opportunity was afforded to see just what it would look like. Consequently after the first two models were made, the advisability of some changes became evident and in the production of the third and accepted model, these changes were effected and all necessities, architecturally and otherwise, were met.

A Photograph of a Very Remarkable Plaster Model of the New Sectional City Hall in Philadelphia, Built for the Convenience of the People Who Dwell Far Removed From the Central Municipal Building. The entire structure was hand sculptured. This is the third model of the building. The first two required improvements.
85 Beautiful and Well Planned Brick Houses Available to Every Contractor

An unusually wide range of carefully selected designs—modest bungalows to five and six-room homes and pretentious dwellings. Every plan a masterpiece—drawn by a competent architect.

Beautiful and distinctive, thoroughly practical—every house has been actually built and lived in.

You Can Quickly Sell Homes Built From These Plans

These homes are so attractive in design and so practical in arrangement that once built they are in demand. They sell quickly, profitably.

They emphasize the value of good design for even with all their advantages over ordinary houses these fine brick homes are simple and economical to build. They offer a wonderful opportunity to every builder.

Plans, specifications and complete information are now available at nominal price. Send for 'Brick for the Average Man's Home' (1.00) containing supplements which illustrate these 85 valuable plans.

The Common Brick Industry of America
2131 CLEVELAND DISCOUNT BUILDING
Cleveland, Ohio

The Ideal Brick Hollow Wall is made of standard brick obtainable everywhere
Editor's Note: The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address American Builder Information Exchange, 1827 Prairie Ave., Chicago.

Aluminum Shingles the Latest

A new roofing shingle, made entirely of aluminum, has recently been placed upon the market. Two qualities make the metal excellent for roofing purposes—namely, its lightness and the great resistance it offers to the elements. Aluminum is fire-proof, rust-proof, weather-proof, hail-proof, water-proof, acid-proof, buckle-proof, sweat-proof, a protection against lightning and will wear for years.

The aluminum shingles are made by forming the aluminum plates with suitable locks and flanges to interlock one with another. They have an ornamental embossment, giving a rectangular tile effect. The exposed surface of the shingle is 12 by 14 inches. Eighty-six shingles are required per square (covering 100 square feet). The weight is 40 pounds per square. The shingles with necessary aluminum nails and instructions for application are placed in corrugated cartons, each containing sufficient roofing to cover 100 square feet.

In covering a roof with aluminum the shingles are laid downward from the ridge. By this practice scaffolding is eliminated. Instead a foot support is nailed to the roof deck five or six feet below the ridge, which is moved downward as the work progresses.

One of the most important features of this shingle is the side-locking device. This is so constructed that it automatically locks the shingles, making it impossible for them to come apart. When one shingle has been placed the next one will slide into the side of the first and firmly interlock.

The top of the shingle, which is shoved into the lock of the shingle above, is provided with corrugations acting as an expansion joint, as well as permitting a constant air circulation. Air circulation is also provided through the side locks.

Air Door Controls Aid Efficiency

Air-door control system shown in the accompanying illustrations will enable the man sitting at the desk or in the shop to control the opening and the closing of the distant doors and gates in the building.

The system may be used with any hinged doors, but not with folding or sliding doors. The controls are fastened to the doors one wishes to regulate and connected by an air supply line to levers located in any other part of the establishment. These levers open or close the doors by air pressure.

There is a special three-way valve device which makes it possible to control the doors from several different locations. The air supply line requires 1/4-inch pipe and can be easily put up, as the installation of the entire system is very simple.

The controls can be operated with any air pressure from 20 to 75 pounds, according to the size of the doors. The ordinary automatic air system which is used in the factory or garage will operate the door controls. There is included in the air pressure equipment an air pressure regulator which will keep the actual pressure necessary for opening and closing the doors at any speed you desire.

Controls are furnished for any size doors with openings from 3 by 6 feet to 12 by 12 feet.
Here comes the plumber!

Your water pipes are causing trouble. Perhaps it is a leak in the ceiling or a pipe clogged with rust that leaves only a thin trickle of water.

Anyway, you are in for it. Walls must be opened, floors ripped up to get at the leaky or clogged pipe. The plumber is not to blame. Inferior, corroding pipe has failed.

You can avoid all this—easily.

Anaconda Brass Pipe resists corrosion and is good for a generation. It insures you against the plumbing troubles that require the repair man. It saves you the cost of his service.

The added cost of an Anaconda Brass Pipe installation is negligible—only about $75 for a $15,000 house.

Isn't it worth it?

Write for our new booklet "Ten Years Hence" which tells how you can save on your plumbing. It is free.

THE AMERICAN BRASS COMPANY
GENERAL OFFICES WATERBURY, CONN.
MILLS AND FACTORIES
Ansonia, Conn. Torrington Conn. Waterbury, Conn. Buffalo, N.Y. Kenosha, Wis.
OFFICES AND AGENCIES
New York Philadelphia Boston Providence Pittsburgh
Cleveland Cincinnati Detroit Chicago St. Louis San Francisco
ANA CONDA AMERICAN BRASS LIMITED NEW TORONTO ONTARIO CANADA.
Mixers Equipped With Rubber Tires

There appears to be a growing demand for concrete mixers of smaller type, especially the one bag size, equipped with rubber tires. They are particularly useful in city work where the mixers must frequently be hauled for a considerable distance over hard surfaced roads, often brick or stone, across street car tracks and other obstructions which jar the mixers severely. Rubber tires cause few shocks to the mixer and in addition are easier on the pavement.

The mixer shown in the illustration is one of seven concrete mixers, equipped with rubber tires, operated by the city of Milwaukee, while the rubber tired paver is operated by the Milwaukee Electric Railway and Light Company.

Concerns who have been equipping a great deal of their construction machinery with rubber tires find it reduces the wear and tear considerably. The Milwaukee Electric Railway and Light Company recently moved its paver from one part of the city to another with a hammer lying on the boom for the entire distance.

Metal Ceiling Has New Features

Builders, architects and designers will be interested in learning of a new steel ceiling that has recently been perfected. As may be seen in the accompanying illustration the new ceiling has two outstanding features, the repressed beads and die punched nail holes.

The repressed beads facilitate the lining up of plates and insure a perfect fit, eliminating all hand caulking owing to imperfect beads, etc. Another advantage is that the beads of various plates will always be uniform and fit perfectly even tho they were made at different times, and on different dies.

The new metal ceilings can be easily and quickly put up and are so constructed that they give excellent service and wear well. The die punched nail holes are a great convenience for they save considerable time in erecting the ceiling and in addition make the operation of nailing thru four thicknesses of metal an easy matter.

A Handy Combination Hand Vise

A new combination hand vise is announced, a tool of special interest because of its wide usefulness both in the shop and around the house. The use of a ball and handle for tightening the jaws, instead of a wing nut, is particularly worthy of note. By this means far more leverage is possible and thus a common difficulty in hand vises is eliminated.

The hand vise is furnished with a clamp permitting its use as a small bench vise on benches or shelves having an approximate thickness of ½ inch to 2¼ inches. As shown in the illustration, the change is effected simply by removing the handle and substituting the clamp. When used with the clamp the vise can be adjusted to any point in a complete circle to meet the convenience of the user. The clamp is made purposely large and strong so that it will withstand hard use.

The jaws of this vise are tempered and polished drop forgings, 1½ inches in width. The capacity of the vise is about 1½ inches.
CONFIDENCE

Orders now being placed for Allith-Prouty garage door hardware and builders' hardware specialties, anticipate clearly the upward trend of next year's big building activities * * * and they likewise indicate a marked degree of faith in A-P hardware, reflected alike in contact with architect, builder, dealer and user.

ALLITH-PROUTY COMPANY
DANVILLE, ILLINOIS

Write for Garage Door Hardware Catalog 91

ALLITH-PROUTY
"Satisfaction in Hardware"
Correspondence

Questions Answered—Ideas Exchanged

Our Readers Are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Architects and Builders

Troubled with Sidewalk Cracks

To the Editor: Sea Bright, N. J.

I have been laying quite a number of sidewalks and I have had a lot of trouble with fine cracks. In laying sidewalks, I always excavate to a depth of 5 inches. I then lay enough concrete of a 1-3-5 proportion, well tamped, and a dress coat of 1 inch of a 1-2 proportion to get a 4-inch walk. Will you kindly inform me in any way, and as soon as possible, what seems to be the trouble?

Quite a number of my customers have brick sidewalks, and they seem to think that if I put 1 inch of dressing on the top of the brick that it would make a nice walk, but I don't think very much of the idea, because I think it will show numerous cracks. I also wish to state that all of the ground in this section has a sand bottom. Kindly give me your opinion on what I have asked and oblige.

J. E. Tepres.

A Hearty Enthusiast for Cement Block Houses

To the Editor: Elliott, Iowa.

In your correspondence department Mr. Earl R. Gambrel asks if a house can be built out of cement blocks and be all O. K. in every respect. We say, yes, if he uses good judgment, it can be done better than with any other material.

To build a house that is permanent we must first find a material that is permanent unit. It has been proven that cement products that are made right defy the ravages of time.

In the construction details for such houses we must first provide a substantial footing. Then we must select our blocks. We find in getting good cement blocks, tile, or brick, that we are getting a material that is waterproof, fireproof, decay-proof, and storm-proof.

We are asked if this house will be too damp. No, it will not be if properly constructed. As builders, we all know that any house that is to be warm, dry and healthy has to be perfectly insulated. The way to have a perfect insulation is to have two tight walls with a continuous air space. I might add dead air space.

Now if we use cement building tile we can lay a double wall and have this air space. If we use the slab block we can have it, and on all of these plaster on the inside wall, and have the house perfectly insulated. Then if we want to use the common cement block we can build up of these and then fur and lath the inside and still have our air space. Then if we were building a very large house in which we needed walls of much strength, we could use the common building block inside and use a cement brick outside, and have a wall with this same air space. This would not need furring. There are many ways we can use a cement product and make a home a real home. We always make our lintels, sills and caps a two-piece product so we will not have damp spots in these places. A house built of good cement blocks and properly constructed should have no objections. Any objection that might arise from faulty construction can be overcome, for a cement unit can be so placed that it will give more service than any other material.

We find that a block house is from 18 to 25 degrees warmer in winter and that much cooler in summer than a frame construction. This means a saving of fuel for winter and more comfort for summer. Also a heating contractor that knows his business can install a heating job for less money.

Let's Have Your Opinion

To the Editor: Craig, Colo.

Could you give me any facts on stucco cement plaster on brick to mix and make adobe coloring?

KruGer & McCoy.

Ever See a Bigger Hand Saw?

To the Editor: Philadelphia.

We recently made a hand saw that was 48 inches long. As far as we know this is the largest hand saw that was ever made for practical use. It was intended for an unusual use: namely, sawing thru rolls of paper.

It occurred to us that this might be interesting matter for the readers of your publication.

Henry Disston & Sons, Inc.

K. L. Zimmerman, Advertising Manager.

Said to be Largest Hand Saw Ever Made for Practical Use, Is 48 Inches Long. Used to saw rolls of paper.
When the New
Asphalt Shingle Roof
wears out and leaks,
as it surely will in a few years, then recommend your customers to
cover it with the "last forever"

Ambler
Asbestos Shingle Roof
which is
"Permanent as the everlasting hills"

Buy your Ambler Asbestos Shingles before the close of this year
and take advantage of our present low contracts for cement and
asbestos. This will enable you to estimate profitably on covering your
customers' old asphalt shingle roofs this winter.

Apply them over the old worn-out Asphalt Shingles and have a fire-
proof Asbestos Shingle Roof that will never require painting or repairing
and will always retain its original metallic colors which are part of the
shingles—Red, Green, Brown and Gray.

The material saving made by reduced insurance rates will also be
most gratifying to your customers.

ASBESTOS
SHINGLE, SLATE & SHEATHING
COMPANY

Department A  AMBLER, PENNA.

Branch Offices—Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Detroit, Cleveland, Minneapolis, New York,
Omaha, Philadelphia, Pittsburgh, Washington, Wilkes-Barre; Montreal, Canada; Toronto, Canada
Southwestern Distributors—R. V. Aycock, Co., Kansas City, St. Louis, Tulsa, Houston
Western Distributors—J. A. Drummond, San Francisco, Los Angeles, Fresno
Other distributors throughout the country

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER
in a building of this kind for he knows it is much easier to heat. After we consider all the savings we can make on a house of this kind is it not the cheaper house in the long run? Lumber prices are such we can build a good cement block house almost as cheap as a frame one. There is not as much maintenance cost to a cement block house as there is to others. A block house properly built never needs any more attention. It is done.

If our experience is of any value to others, it is free for the asking.

Elliott Construction Co.

Proud of His Baby

To the Editor: New Canton, Illinois.

In the September Builder, I find these lines: “Send the Editor a photo of that building you are so proud of.”

I’m proud of all of them.

Am enclosing snap shot of one that may interest some of the rural-builders.

This baby is 28 feet wide, 150 feet long. Has 12-foot drive-way of concrete the full length, which is also used as feeding floor. Contains 41 individual pens (with removable partitions) and a cooker-room. Over the drive-way there are three hopper-bottom grain-bins, and three floored spaces for storage of bedding. The spaces directly under the large windows were left open to admit light to the pens; also each pen is lighted by a window of ventilating type in roof. It is the largest hog-house in Pike County and I think it compares favorably with any in the state.

I designed and built this hog-house last fall for Mr. Forbe Clack, breeder of spotted Poland Chinas near Summerhill, Illinois, a town about twenty miles from home.

I have snap-shots of practically every building that I have erected, and if you don’t find this too tiresome, I may come again. Have one in particular that might be of interest, a remodeling job on which magnesite stucco was applied to the walls of the building. I have made numerous and thorough tests and find that it is not caused by the building settling. I have talked with the plastering contractors about their way of mixing and applying these cements and find that they are following the directions put out by the companies that make the cement. This cement does not crack when applied over brick or tile. I have not experimented with these cements only to apply them in all of the possible different ways. Changing their ingredients I think is necessary. I think these cements are too hard and glasslike. I am sure they are not elastic enough to stand the contraction that takes place as the plaster becomes dry. I notice these cracks usually appear from 4 to 12 weeks after the plastering is done, which shows, in my estimation, that they are caused by contraction and lack of elasticity. We use good clean river sand as an aggregate and have as good as the average in the way of plasterers to do the work; yet we cannot get a job that will not crack where it is to be floated finish for paint. This is very discouraging to our clients and is also giving the plasterers trouble. I hope you can offer some suitable solution and possibly suggest a formula or mixture that will overcome these difficulties. I would like very much to hear from some other brother builder.

There are other builders in this section of the country who are up against the same proposition and would appreciate suggestions.

Roy F. Croson.

Here Is a Brain Teaser from Holland

To the Editor: Rotterdam.

A father divides a lot of dollar coins among his 4 sons as follows:

The first got \( \frac{1}{2} \) of the lot, after having taken off 1 for the poor.

The second got \( \frac{1}{2} \) of the rest, after having taken off 1 for the poor.

The third got \( \frac{1}{2} \) of the rest, after having taken off 1 for the poor.

The fourth got \( \frac{1}{2} \) of the rest, after having taken off 1 for the poor.

How many coins must there have been at least if no coin was to be changed in smaller ones?

P. J. Vermaas, Architect.

Kerfing Rule Wanted

To the Editor: Beloit, Wis.

I had occasion recently to kerf a board to bend around a curve having a four foot radius. The kerf had to close so it could be painted over. I had to use the cut and try method. Will some kind reader give me a formula for kerfing different radii.

O. L. Pratt.

Troubled with Walls Scaling

To the Editor: Union, N. Y.

Will somebody tell me how to treat the wall of a church built of concrete blocks so the interior decorating will not scale off?

S. Arthur Douglas.
We Are Revising Our Agency Lists.
This leaves some very desirable territory open for business getters. If we have no agent in your section we want one—Better investigate and see what an interesting proposition we have to offer. The fuel situation makes our product unusually easy to sell.

We have agents making as high as $13,000 per year net profits.

The exclusive flexible and removable feature of Diamond Metal Weatherstrip appeals to people. They are willing to pay more for it.

We established a new agency in a Pennsylvania city and in 2 months and 10 days they closed contracts for $11,684.00 worth of business in the face of the fiercest competition and more than two-thirds of contracts were taken at higher prices than our competitors.

Building Specialty Men, Screen Makers, Job Carpenters and Weatherstrip Agencies who want a permanent, money making, year round business should investigate our proposition.

Write Today—Now, Before You Forget

ADDRESS

Sales Department
The Diamond Metal Weatherstrip Co.
626 KERR STREET
COLUMBUS, OHIO

For convenience and quick delivery we have a Western Factory Branch located at Fort Dodge, Iowa, in charge of Mr. J. E. Dunmire.

To Readers of This Advertisement

Being a believer in Truth in Advertising I personally assure you that every statement made in this advertisement is absolutely true.

C. J. PARSONS,
Gen'l Mgr.
October Construction 14 Per Cent Ahead of Last Year

Building contracts awarded during October in the twenty-seven Northeastern States (which include three-fourths of the total construction in the country) amounted to $253,137,000, according to the F. W. Dodge Company. This figure is 14 per cent ahead of that reported in October of last year. The progress of the seasonal decline in October is shown in the drop of 7 per cent from the previous month. In view of the fuel and car shortage and other restrictive factors, construction activity is continuing at a very satisfactory rate.

Residential construction continues at a very high rate. October contracts for this class having amounted to $110,776,000, or 44 per cent of the month's total. This was an average over September residential construction. Other important items in the October figures were: $41,477,000, or 16 per cent, for public works and utilities; $32,037,000, or 13 per cent, for residential buildings; $27,640,000, or 11 per cent, for industrial buildings; and $17,437,000, or 7 per cent, for educational buildings.

Construction started during the first 10 months of this year has amounted to $2,887,446,000, which is 25 per cent greater than the total for the entire year 1921, and 47 per cent greater than the total for the first 10 months of 1921.

The revival of residential construction this year has overshadowed everything else in the building field. But there has also been a revival that is very significant. Industrial construction this year has averaged 27 millions per month, compared with 14 millions per month in 1921. This increase, although it has not yet assumed large proportions, seems to indicate a substantial revival in this class of building.

Contemplated new work reported in October amounted to $416,164,000, an increase of 26 per cent over the contemplated work reported in September.

Make Metal Lath in Zinc and Copper

Members of the building industry will be interested in the recent announcement that the first expanded metal lath and building specialties manufactured of zinc and copper have been placed upon the market.

It is only since the war that builders have used these two metals to any extent in their construction projects. Their desirability for certain types of construction was recognized then and they have since gained steadily in popularity.

The Milwaukee Corrugating Company, Milwaukee, Wis., manufacturers of sheet metal building products, is one of the companies turning out the new zinc and copper specialties. At the present time they are stamping Netmesh expanded diamond metal lath, No. 1 expansion corner bead, expansion casings and expansion flashing in both copper and zinc.

Prominent Lumberman Is Dead

Mr. J. R. Moorehead, of Lexington, Mo., secretary of the Southwestern Lumbermen's Association, died at Kansas City, Tuesday, October 24, after a short attack of pneumonia and heart failure.

Mr. Moorehead operated a lumber yard in Lexington and was well and favorably known by members of the building industry throughout the country because of his work with the Southwestern Association and thru his speeches at building conventions on home ownership and building and loan associations. Mr. Moorehead staunchly advocated that every family should own its own home and that the building and loan associations were the best means of accomplishing this. He was constantly promoting building activity and was one of the most active members of the industry.

National Water Systems Week

The week beginning Monday, Dec. 4, and ending Saturday, Dec. 9, 1922, has been set aside as "National Duro Week" by the Duro Pump & Manufacturing Co., Dayton, Ohio, manufacturers of residence water systems and pumps. During this period thousands of Duro dealers and the entire Duro selling organization throughout the United States and Canada will make a concerted drive for water supply system business and endeavor to educate and familiarize the people with individual water supply systems.

Ransome Concrete Machinery Company Will Enlarge Plant Again

An increased volume of business, particularly in the paving and small mixer fields, has necessitated a further enlargement of the plant of the Ransome Concrete Machinery Company, of Dunellen, New Jersey. Something over a year ago this concern practically doubled its floor space and the decision to erect the new building—adding a third as much more space—augurs well for their belief in not only a continuation, but an increase in present building activities. The structure, one story in height with monitor roof, will be concrete and steel and covers a ground area of nearly 10,000 square feet. Its erection will be commenced immediately.

Paint and Varnish Advertising Men Organize

Organization of the advertising men of the paint and varnish industries was completed at a meeting at the Ritz Carlton Hotel, Atlantic City, on Nov. 17, thru the formation of what will be known as the Advertising Group of the Paint and Varnish Industry. This linking together of the advertising men of the industry into an organization of their own is the outcome of the conference of advertising managers at Buffalo last June.

Entire lack of formality will prevail in the operations of the new organization. For that reason the term "group" was decided upon, rather than "association." There will be no fixed meeting place nor will there be a list of imposing official titles. A chairman, rather than a president, will direct the activities of the group.

O. C. Harn, of the National Lead Co., New York, was chosen chairman; J. M. Graham, of Lowe Bros., Dayton, O., vice-chairman; W. P. Werheim, of Pratt & Lambert, Buffalo, N. Y., secretary. These gentlemen, together with H. C. Burnsley, of the Murphy Varnish Co., Newark, N. J., and C. J. Schumann, of the Hilo Varnish Co., Brooklyn, N. Y., make up the executive committee.
What Stands Between You and More Money?

IS IT LACK OF EXPERT TRAINING?

EVERY MAN whose eyes are open realizes that there are bigger opportunities for building experts today than ever before. Everywhere we see construction of all kinds going on and are told of more to be done—houses, office buildings, factories, stores, warehouses—all needing men with the training to plan the work and to direct those who do the manual labor. It is these men, trained to carry responsibilities, who make the most money in the building business. And everywhere we hear the call for them.

Ability to Read Plans, Estimate Costs, Superintend Work, Is What Puts a Man Ahead Today

As long as a man is willing to drive nails, plane boards, mix mortar, lay brick, chisel stone, string wires, wipe joints or do other manual work he will be limited to the prevailing scale of wages.

As long as a contractor is satisfied with taking on small jobs, he will see the large profits go to men who know how to handle the big jobs. That is why ambitious men are training—getting the knowledge which makes their services worth more. They know that brains always command more money than muscle or skill of hand.

Every hour you put in learning more about your trade or business is going to pay you back in real money

where they draw the high salaries or make the big profits that are paid to experts.

Hundreds of these ambitious men have stepped into the big pay class while fellow workmen remained at the bench.

Albert S. Ross of Oklahoma is one of the men who have made big money knowing how to handle your trade as a result of this training and my prospects are bright. That is why our business Mr. Ross writes: "After taking the course my salary was increased $225 a month. Am now in business for myself (contractor) and my prospects are bright."

Hundreds of other men could tell you experiences similar to these of success following the instruction they received under the Chicago "Tech" experts. The same training they were given is open to you.

Train by Mail

Chicago "Tech" is ready to give you the same training in Plan Reading, Estimating, Superintending, Our Builder's Course makes building experts—men who know every practical point about planning, figuring costs and directing all classes of construction.

No need to leave your present job to get this training. We will teach you by mail and you can use your spare time for study under the direction of our experts. No special education required.

FREE 2 Books and Blue Prints

Your request bring our two books, one on "How to Read Blue Prints," containing a lesson in Plan Reading and with it we send blue prints, drawings, etc. With this lesson you can test yourself. See how easily you can learn by our method before you decide about enrolling. The other explains the Chicago "Tech" Method of training by mail.

Just sign and mail the coupon and these books and blue prints will go to you by return mail.

Chicago Technical College
1236 Chicago Tech Bldg., Chicago, Ill.

Please send me your Free Books and Blue Prints for men in the Building Trades. Send postpaid to my address below.

Name
Address
Post Office
State
Occupation

When writing advertisers please mention the American Builder
Better Basement Windows
By W. A. HARRIS

That the popularity of steel basement windows will increase among home builders, as did the use of steel sash among industrial builders, is unquestioned. Ten years ago, steel sash was practically unknown among the building trade. Today, it is used in factory buildings, stores, office buildings, schools, banks and even hotels. This increased use of steel sash has been brought about by educating building owners, architects and contractors to its many advantages. In like manner, the home owner, contractor and architect will come to look upon steel basement windows with favor and satisfaction.

Steel basement windows have several important advantages over wood windows that are sure to appeal to the thoughtful home owner and builder.

They admit from 40 per cent to 80 per cent more daylight for the same sized masonry opening. The sash and frame are made from solid, narrow, rolled steel bars, eliminating the wide wooden members and permit the use of larger glass lights.

Steel windows cannot stick or warp. The difficulty experienced by every home owner in trying to open or close his windows, when the sash has swollen and stuck, is entirely eliminated. Steel is not affected by moisture.

Screens may be attached easily to the outside of the frames. Holes are punched thru the frame so that special screen frames are unnecessary.

Because of their construction, steel windows resist fire and stand up under hard usage. They always have a better appearance than wooden windows, and add to the attractiveness of a house.

Relative Size of Glass in Steel and Wood Sash.

in factory buildings, stores, office buildings, schools, banks and even hotels. This increased use of steel sash has been brought about by educating building owners, architects and contractors to its many advantages. In like manner, the home owner, contractor and architect will come to look upon steel basement windows with favor and satisfaction.

Steel basement windows have several important advantages over wood windows that are sure to appeal to the thoughtful home owner and builder.

They admit from 40 per cent to 80 per cent more daylight for the same sized masonry opening. The sash and frame are made from solid, narrow, rolled steel bars, eliminating the wide wooden members and permit the use of larger glass lights.

Steel windows cannot stick or warp. The difficulty experienced by every home owner in trying to open or close his windows, when the sash has swollen and stuck, is entirely eliminated. Steel is not affected by moisture.

Screens may be attached easily to the outside of the frames. Holes are punched thru the frame so that special screen frames are unnecessary.

Because of their construction, steel windows resist fire and stand up under hard usage. They always have a better appearance than wooden windows, and add to the attractiveness of a house.

Mason Inserts Anchor Clip in Channel Groove.

Here is one fact of interest to contractors and builders. Steel windows with channel frame construction save labor and expense in installing. This type of window will sit upright on the sill without bracing and it has the important additional advantage of serving as a guide to the mason. The channel frame makes it impossible to build the wall so close it will bind the ventilator. The outside leg of the channel frame is somewhat longer than the inside leg. The mason builds the wall snugly against the front leg filling the channel with mortar as he goes up. Anchorage is secured by means of four straight flat pieces of steel about 1 inch by 4 inches long. These are laid in the mortar joints in such a way that the ends extend about ½ inch into the channels at the jambs.

One advantage of steel basement windows, which appeals to architects, contractors and dealers alike, is the fact that they are standardized and made in only a few popular sizes. This assures the architect or contractor that he will not have the delay, the extra cost and trouble
He Saved 20 Minutes On Every Window!

This one mason installed Fenestra Steel Basement Windows in twenty minutes per window less than the time required for wood windows. You know what this means in cutting costs!

Let's follow the four simple installation steps and see how this was possible.

1. First, he set the window on a couple of brick chips to allow for the sill. After laying the two concrete blocks at the jambs, he inserted an anchor clip on each side.

2. After the next two blocks were laid, he plumbed up the window and inserted the last two clips.

3. Then the third blocks were set in place.

4. Finally, he grouted in the jambs and the sill, troweling the mortar flush with the edges of the blocks.

A wood frame would have had to be set, plumbed, braced, the wall built around it, the sash fitted, the hardware purchased and attached, the job pointed up and the priming coat of paint applied—the work of a mason, a carpenter, and a painter.

You can save time, labor, and money by using these new steel windows. And the best part is that they are priced right in line with wood windows!

Ask your building supply or lumber dealer about them!

Detroit Steel Products Company
2313 East Grand Boulevard  Detroit, Michigan

"The World's Largest Manufacturers of Steel Windows"
which invariably accompany the purchase and installation of special sized wood windows and also permits the dealer to carry a sufficient stock with only a small investment, and sell at a price commensurate with wood.

Another point in favor of using steel basement windows is that of low initial cost both to the homeowner and building supply dealer. Not only are they quoted at a price that successfully competes with wooden windows, but an additional saving is also effected, by the fact that these steel windows are completely equipped, sash hung, priming coat of paint applied, and all hardware in place.

Selecting Truck Equipment
By P. L. Sniffin

It has been said that the most important fundamental of successful motor truck operation in the contracting business is the selection of the proper equipment to handle the work most satisfactorily. The contractor should first of all recognize the fact that in no other field of business are motor trucks called upon to render such strenuous service as in this business. To install inferior equipment, therefore, is to seriously handicap profitable results. In loading with steam shovels, as shown in the illustration, a one-ton mass of dirt and rock is dropped from a height of several feet upon the truck. This also applies in loading bulk building materials, such as sand and gravel from overhead hoppers. In discharging the load, the truck is usually run forward and then backed sharply against an obstruction several times. Such procedure produces a terrific shock upon the body, springs and chassis but usually it is unavoidable since speed in loading and unloading is the determining factor of profit on such work. An additional feature of the service is the fact that poor roadway conditions and sharp inclines are encountered in reaching loading and unloading points.

It is well to remember, in buying a motor truck, that the heart of the truck is the motor, and for that reason the motor should be given the greatest amount of attention. A truck may have an exceptionally good appearance, but if the engine is inferior or faulty the other points are of little value to the user. In maintaining a motor truck fully 80 per cent of the cost of repairs may be traced to the motor. Consequently, the motor is the first determining standard of judgment. “First cost” is far from being the most important cost in the end. The successful truck purchase is one that renders efficient service at the lowest cost per unit mile over a period of years.

It is very unwise to base a truck’s value on its first year’s service. Many trucks that make surprising records in their first year fall down completely after two or three years continuous use.

It is well to particularly avoid the chance of having an “orphan” vehicle on hand. Out of 411 truck manufacturers in business between 1910 and 1917, more than 255 failed some time during that period.
The Roof Reliable

WHEN the season of dull days and dreary nights breaks upon us, when the lowering clouds pour forth their burden of snow and slush, when the sting of a winter's wind turns lakes and rivers into an iron of ice—then is the trying time for the roof that covers your home.

Under such conditions is where real value and honest construction become apparent. There the satisfying service of Mule-Hide gives a snug comfort to the home, and the occupants can better appreciate the meaning of the roof reliable.

Mule-Hide Cor-Du-Roy Four Panel Strip Shingles are especially desirable as an over head protection. Combining, as they do, Mule-Hide quality with a new and distinctive appearance, produced by the light and shadow effect peculiar to this shingle alone, they are the choice of home owners and builders everywhere.

THE LEHON COMPANY, Dept. A. B. 44th-45th on Oakley, CHICAGO

Send me literature and sample of Mule-Hide Cor-Du-Roy Four Panel Strip Shingles.

Check whether—

□ Dealer □ Contractor □ Architect

Name

Town

State

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER
World-Wide Buyers Guide
Directory of Tools, Machinery, and Supplies Used by Builders.

The Publishers of the AMERICAN BUILDER present this Directory with the hope that it will prove really useful to its readers. While it is as complete as our limited space has permitted, no doubt some first-rate concerns and some important products have been overlooked; nevertheless, it does cover the principal offerings of the most substantial and enterprising of the manufacturing concerns catering to the building field. We can vouch for the responsibility of every one of the concerns whose goods are listed in this Directory, and we recommend them to our readers. Builders, dealers in building materials, architects, contractors and carpenters in writing to any of these concerns can feel that they will receive most prompt and courteous attention and that their business will be appreciated.

Valuable Information—Keep It Handy for Reference

This directory contains valuable information boiled down into a few words, and will save time and effort for busy builders and dealers. The various tools, machines, or building materials are arranged alphabetically; the trade name given whenever possible, and the name and address of the manufacturer or general sales agent.

This Directory makes it easy to compare the range of offerings in any particular line you are interested in. Do not hesitate to write for catalogs and circular matter pertaining to any new goods to you, or in which you are especially interested.

ACCELERATOR—CEMENT
Anti-Hydrin Waterproofing Co., Newark, N. J. ("Ascanol").
General Fireproofing Co., Youngstown, O.

ADJUSTABLE—ARCHITECTURAL
John-Manville, Inc., 41st and Madison, New York, N. Y.

ADJUSTERS—ADDIING MACHINES
Monroe Calculating Machines Co., Wooldworth Bldg., New York, N. Y. (a form of equipment that is extensively used by contractors, builders and architects).

ADJUSTERS—CAREMENT WINDOW
Cements Hardware Co., 281 Pelousc Bldg., Chicago, Ill.
Mallory Mfg. Co., Plaistow, N. H.
Sargent & Co., New Haven, Conn.

ANCHORS—CARPENTERS
Mack Tool Co., Rochester, N. Y. ("D. R. Bartlet").
L. A. Ray Co., Newark, N. J.
L. & T. White Co., Buffalo, N. Y.

ANCHORS—BUILDING
Anchor Concrete Machinery Co., Columbus, O.

ANCHORS—JOINT
Denley Bros. Co., Cleveland, O. ("Denley").
International Steel & Iron Co., Evansville, Ind.

ANCHORS—Screws (EXPANDERS)
Ackerly-Johnson Co., 625 Jackson Bldg., Chicago, Ill.

ANCHORS—SCREW (EXPANDERS)
Ackerly-Johnson Co., 625 Jackson Bldg., Chicago, Ill.

ANCHORS—WALL
Abplan Concrete Tool Co., Detroit, Mich. ("Abras").
Ackerly-Johnson Co., 625 Jackson Bldg., Chicago, Ill.

Our Information Department at Your Service

If you fail to find in this Directory any item or line of goods in which you are interested, write the AMERICAN BUILDER, and we will immediately send you the information and put you in touch with the best concerns who are in a position to furnish what you need. We are glad to serve you in every way we can.

Editors and Publishers, AMERICAN BUILDER, 1827 Prairie Avenue, Chicago, Ill.

Buyers' Guide continued on page 128
What do people say about your roofing jobs?

Any roofing you now use—no matter what its quality—may look good and even give satisfactory service for a time.

But the important thing is—what will the owner—what will his neighbors—say about it two, three, or four years later?

If it's a roofing that stands punishment—stays waterproof and lasts—you don't have to worry. A good roofing job means a satisfied customer—the best advertisement you can have.

That's why more and more builders are concentrating on roofings of the Genasco Line. They know Genasco Roofings are QUALITY products—that they stay waterproof and last long after ordinary roofings crumble and rot away.

They know, too, that Genasco roofings, roll and shingles, provide an attractive, durable, economical covering for any type of building—home, industrial and farm.

All Genasco Roofings owe their great weather and wear resistance to Trinidad Lake Asphalt Cement, reinforced by tough-fibred asphalt felt.

Write for Illustrated Folders

THE BARBER ASPHALT COMPANY

Philadelphia

New York

Chicago

St. Louis

Pittsburgh

Kansas City

San Francisco

Atlanta

Genasco

Asphalt Roofing, Flooring, Paints and Allied Protective Products
AS ADOPTED TO

Wall Board Construction

The illustrations show cross sections of “ANKYRA” Bolts supporting Bathroom Fixtures on Sheetrock as well as other Wall Board construction. Notice how the wing nuts spread over a large area, distributing the weight thus holding the fixtures securely in place.

The “ANKYRA” Bolts have no equal for PERMANENCY—ECONOMY and GENERAL USEFULNESS in this class of Wall construction.

HOLDS IN ANY WALL

Glazed or Hollow Tile, Stucco, Concrete, Lath and Plaster, Expanded or Hollow Sheet Metal.

By using “ANKYRA” the location of fixtures do not have to be PREDETERMINED—as they adapt themselves to any finished wall.

They are being specified by our more prominent Architects and are standard equipment with many of our large Contractors.

Every job needs some
Many can’t do without them
For once you choose them
You’ll always use them

ASK QUESTIONS

Ankyra Manufacturing Co.

WAYNE JUNCTION          PHILADELPHIA

“WHERE NOTHING ELSE WILL REALLY WORK”
Brasco COPPER STORE FRONTS

STEADY PROFITS FOR THE BUILDER
One Job Means Another

The demand for Brasco Fronts grows with every installation, keeping Brasco men busy the year-round. The popularity of Brasco Copper Store Fronts is due to superior construction, great selling power and low cost.

More Builders Needed
to install Brasco Fronts. They are easy to install and there is a good profit for every installation.

We have an interesting proposition for live builders. Clip out the coupon and mail it today for booklets and information.

Send for this Catalogue

Mail this coupon today

Brasco Manufacturing Company
3030 South Wabash Avenue, Chicago
Send me your booklets on Store Front Construction.

Name: ____________________________

City: ____________________________

State: ____________________________

A. B. 11-22

When writing advertisers please mention the American Builder.
Buyers’ Guide for the Building Industry

[December, 1922]
REM EMBER THE FABLE—

how the different parts of the human body—the hand, the mouth, the heart—each felt it was the one essential. But when one refused to work they all perished.

ATLAS Portland Cement is a complex product. First the raw stone from which it is made must have exactly the right ingredients. These must then be so proportioned that, coming from the giant crushers in a dust-like powder, they fuse into a perfect chemical and physical union.

Thousands of tons of coal daily are used in this fusing process alone. The tremendous wear of grinding and regrinding Atlas in its various stages makes necessary frequent replacement of costly equipment. The most exacting chemical tests are required at every stage—of raw material, of material in process of manufacture, of finished product.

For over a quarter century Atlas Portland Cement has been tested in every type of construction. That a complex product such as Atlas can be maintained at highest quality is proved by the fact it is today called “the Standard by which all other makes are measured.”
Be A Floor Surfacing Contractor

MAKE $5,000 to $15,000 OR MORE YEARLY

The American Universal Floor Surfacing Machine is the best money maker the contractor can own. It is practically "fool proof" and can be operated by any man of ordinary ability and do only the best grade of work, for its operation is automatic. When your building is about ready to turn over to the owner, it does the last big job, the floors, when every one is anxious, quickly and perfectly, leaving every one feeling satisfied. One man and one American Universal does the work of six men and does it perfectly.

Old Floors Made Like New—New Floors Made Perfect

Contractors owning American Floor Surfacing Machines keep them going all the time at big profits on old floors when they are not needed on the new work—this is an excellent source of profits. Often, too, floor surfacing contracts are taken on other jobs. Just read what users say about the labor-saving, money-making ability of the American Universal. Hundreds of others have gone into the floor surfacing business and are independently well fixed.

Saves Labor of Six Men and Does Better Work
We can surface more floor with our "American Universal" machine than six men can scrape by hand, considering the quality of the work. Schneider & Hein, Nebr.

Would Not Go Back to Old Way
The "American Universal" is a great labor saver, doing the work of about eight men so naturally I would never consider going back to hand scraping again. M. E. Warner, Colo. M

Surfaces 1,500 Square Feet Per Day
The "American Universal" does all you claim, for it has surfaced 1,500 square feet of flooring per day for me and is doing the work of six men. L. F. Walla, Pa.

Customers Satisfied—Business Increased
The "American Universal" has replaced five men at least on my payroll, does better work than before, and so as my customers are all well pleased, I have found my business increasing right along. A. G. Thompson, Ark.

Replaces 10 Men
The "American Universal" replaces 10 men on my payroll, and surely does excellent work. J. O. Pettey, Pa.

Saves Six Men
The "American Universal" replaces six men on my payroll and I find it to be a great labor saver. E. A. Bittner, Pa.

Afraid to Go Back to Hand Work
Since the "American Universal" has proven such a great labor saver, would not dare to go back to the old method of hand scraping. C. E. Andrews, Pa.

Machine Does Better Work Than Hand-Scraping
The "American Universal" has replaced five men on my payroll, and I can do a better quality of work with my machine than by hand scraping. L. L. Howard, Kans.

Quality of Work Only Advertisement Necessary to Secure More Work
I want to tell you that the "American Universal" is some labor saver—it replaces at least five men on my payroll, and the quality of work is turns out is all the advertisement I need for my business. Hugh A. Cox, Fla.

Light and Easy to Handle
In the first place the "American Universal" machine is light and easy to handle and does less work than the other sanders of a different make which I have. W. J. Scott & Son, Mont.

No Kicks—Replaces Six Men
Want to tell you that I've never had a kick about unsatisfactory work from any of my customers ever since I bought the "American Universal" and it replaces six men on my payroll, too. A. F. Grow Bros., Nebr.

Saves 10 Men
Your "American Universal" floor surfacing machine is a labor saver. It does the work of 10 men in much better shape. M. B. Battien, 8. D.

1 Man with an American Universal—BIG PROFIT.
Six Men Surfacing by Hand—SMALL PROFIT.

How are you running your business?

THE AMERICAN FLOOR SURFACING MACHINE COMPANY
515 South St. Clair Street
Toledo, Ohio

THE AMERICAN FLOOR SURFACING MACHINE COMPANY
515 South St. Clair Street

Gentlemen: Please send me without obligation to me complete information and literature on your proposition. The following information will no doubt assist you in advising me:

Name.............................
City.............................
State..........................

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER.
COVERINGS—BOILER AND PIPE

Asbestos, slate & sheathing Co.,
Amherst, Pa.

The Mooney Co., 4522 Cottage Grove Ave., Chicago, III.

Johns-Manville, Inc. Madison and 41st, New York, N. Y.

B. Karol & Sons, Inc., 800 S. Kedzie Ave.,
Chicago, Ill.

Servedic Products Co., First Nat. Bank
buildings, Chicago, Ill. ("Servedic").

COVERINGS—COLOMBIAN

Cesarelli Bros., Chicago Heights, Ill. ("Cesarelli").

COVERINGS—FLOOR

Colubris, 111 W. Washington St., Chicago, Ill. ("Colubris").

Alburt Pick & Co., 208 W. Randolph St. Chicago, Ill. ("Pick").

COVERINGS—FORAGE

Wm. L. Barnett & Thoms, New York, N. Y. ("Barnett").

COVERINGS—WATERPROOF


Serving Co., Youngstown, O. ("Serving").

COVERINGS—SHEATHING

Servedic Products Co., First Nat. Bank
buildings, Chicago, Ill. ("Servedic").

COVERINGS—LADDER

James B. Gow & Sons, 584 S. Franklin St.,
Chicago, III.

Colonial Asphalt Co., 4611 Roosevelt Rd.,
Chicago, Ill.

Donley Bros. Co., Cleveland, O. ("Donley").

Leaflet Mfg. Co., Urbana, Ill. ("Leaflet").

Fred J. Meyers Mfg. Co., Hamilton, O.

Sterling Foundry Co., Sterling, Ill. ("Sterling").

COVERINGS—STAPLES

James B. Gow & Sons, 584 S. Franklin St.,
Chicago, Ill.

Donley Bros. Co., Cleveland, O.


DERRICKS—CIRCLE SWING

Inlay Mfg. Co., Indianapolis, Ind.


Sargent Derrick Co., 2101 Grand Ave.,
Chicago, Ill.

DERRICKS—ELETRIC MOTOR

Winther Motor Truck Co., Kenosha, Wis.

DERRICKS—MACHINERY

Inlay Mfg. Co., Indianapolis, Ind.


Sargent Derrick Co., 2101 Grand Ave.,
Chicago, Ill.

DERRICKS—CARBON HOIST

Sargent Derrick Co., 2101 Grand Ave.,
Chicago, Ill.

Winther Motor Truck Co., Kenosha, Wis.

DERRICKS—HADEWOOD AND VENEERED

Inlay Mfg. Co., Indianapolis, Ind.


Sargent Derrick Co., 2101 Grand Ave.,
Chicago, Ill.

DOORS—ZECCHELLER

Barrett Co., 40 Restor St., New York, N. Y.

Samuel Coban, Inc., Boston, Mass.

Donley Bros. Co., Cleveland, O.

General Fireproofing Co., Youngstown, O. ("General").


International Steel & Iron Co., Evansville, Ind.

DOORS—ELEVATOR

Barrett Co., 40 Restor St., New York, N. Y.

Samuel Coban, Inc., Boston, Mass.

Donley Bros. Co., Cleveland, O.

General Fireproofing Co., Youngstown, O. ("General").


International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

Willis Mfg. Co., Galesburg, Ill. ("Cincinnati").

DOORS—FIRE

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

Willis Mfg. Co., Galesburg, Ill. ("Cincinnati").

DOORS—FIREPROOF (HOLLOW METAL)

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—METAL-DOOR

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—CELLAR (METAL)

Edwards Mfg. Co., Cincinnati, O.

National Steel & Iron Co., Evansville, Ind.

DOORS—DUMP

Brasco Mfg. Co., 2023 S. Wabash Ave.,
Chicago, Ill.

Fred J. Meyers Mfg. Co., Hamilton, O.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—BRANDY

Morgan Bash & Sons, Poughkeepsie, N. Y.

Lane Bros. Co., Poughkeepsie, N. Y.

Shrauger & Johnson, Atlantic, Ia.

DOORS—FIREPROOF (MATERIAL-OWNED)

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

Detroit Steel Products Co., Detroit, Mich.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.

DOORS—IRON AND STEEL

International Steel & Iron Co., Evansville, Ind.

Meeschill-Edwards Corrugating Co.,
Cincinnati, Ohio.
Make Kitchens More Modern With These Ready-Built Units

Put a good kitchen in a house and whether you’re selling or renting, you’ll get more for it because you’re appealing to the women. The Kitchen Maid units shown below cost no more than ordinary cupboards, but they add a lot to the attractiveness and mean money for you.

“Disappearing” Breakfast Nook
Four people can eat in comfort in this cozy kitchen nook—and when breakfast is over, seats fold into wall and table into compact containing compartment. Also used with table and two seats in corner instead of nook. Ironing board unfolds from above one seat. Comes complete in beautiful white enamel. Any carpenter can easily install.

“Combination 1X” Three-In-One
Consists of Kitchen Maid cabinet with a generous dish compartment unit and broom closet. All with same beautiful white enamel finish. Compact—74 1-2 inches wide—85 7-8 inches high, maximum extension out from wall, 23 1-4 inches. Also furnished with white undercoat only, to be finished after installation.

Send for Our Complete Catalog
Write for 12-page catalog containing photographic and dimensional illustrations of Kitchen Maid Standard Unit Systems. Besides the above equipment, kitchen tables, cereal warmers, plate warmers and other useful units are shown, which will be appreciated in any apartment or private home which you build.

Wasmuth-Endicott Company, 302 Snowden Street, Andrews, Indiana

KITCHEN MAID
STANDARD UNIT SYSTEMS
**Softer than rain water—and it costs much less**

A Wayne Rapid-Rate Water Softening System will take all the hardening elements out of any city or well water and make it softer than rain water.

This system softens water as fast as it will flow at normal city pressure. There is no delay. The water does not stand in the softener or in storage tanks. Pure, clean, 100% soft water is always ready to be used direct from the faucets.

The softening process is completed in a few seconds as the water runs through the system. All the water for the home or store is softened for a cost of about 5¢ a week. Much less than the cost would be with an expensive pumping system which requires storage tanks.

Why not put a Wayne Softener into the next home you build? It will cut down your labor costs and increase your profits. And it will add another pleased client to your list of boosters.

We will be glad to send you more details. Ask for Bulletin 1600-AB.

---

**WAYNE Tank and Pump Company**

667 Canal Street FORT WAYNE, INDIANA

Chicago ... 355 Old Colony Bldg. Pittsburgh ... 841-443 Union Arcade San Francisco ... 254 Kriste Bldg. Los Angeles ... 3311 West Temple St. Kansas City ... 413 Interstate Bldg. Milwaukee ... 731 Grand Ave. St. Paul ... 300 Summit Bldg. Lincoln, (NE)... 500 Little Ridge

An International Organization With Sales and Service Offices Everywhere

---

**HIGGIN**

**ALL METAL WEATHER STRIPS**

Can you keep the family warm this winter?

SOLVE the problems of high-priced fuel and a cold winter with HIGGIN Weatherstrips.

HIGGIN Weatherstrips soon pay for themselves in these days of costly coal. They usually save one ton in every four. In new homes they frequently make a further saving by reducing the required capacity of the heating system.

Your home will be cozy and easily heated—and without drafts in the coldest blizzard. The HIGGIN patented combination of rib and Insert strip makes an air-tight, cold-proof contact around every window that keeps warm air in and cold air out.

HIGGIN All-Metal Weatherstrips never wear out or deteriorate. Once installed the job is done for all time. Send for our book on how to weatherstrip your home.

**Builders:** We have openings for representatives in some sections. Write for our proposition.

**The HIGGIN Mfg. Co.**

Newport, Ky. Toronto, Canada.

Manufacturers of Higgin All-Metal Weatherstrips and Higgin All-Metal Screens

See our catalog in SWEETS'
A Mighty Mixer of Small Size

That Does a Good Day's Work

A great, big mixer isn’t always the thing by a long shot. For all the smaller jobs, for detail work on larger work, often on bigger jobs, too,—a Kwik-Mix will prove much more economical, faster and easier to handle than a big mixer.

Kwik-Mix No. 22
Capacity 1 1/4 cu. ft. Comes with Builder’s House. This model is also furnished in size 1 cu. ft. plus and can be had on truck, without engine.

Kwik-Mix No. 30
Capacity 1 cu. ft. Equipped with Builder’s House. Comes in 4 ft. and 3 1/2 ft. sizes. Can be had on truck, without engine.

Kwik-Mix No. 33
Capacity 3/4 cu. ft. Also furnished in 3/4 ft. size. Shipped complete with Builder’s House, comes with Truck and Loader, all ready to run.

Kwik-Mix is so speedy that it will keep a good-sized crew on the run to keep up with it. It has every modern improvement. And many of them like the Special Gilson Clutch, are not found in other mixers at all.

The Kwik-Mix is so simple and sturdily made as to astonish experienced mixer men by its performance. It doesn’t tie up a lot of your capital and it saves your time because it can be so quickly moved from job to job. Before you buy, Get The Real Facts—Send For Our Valuable Kwik-Mix Booklet giving you full and complete information.

Without any obligation to me please mail me your Valuable New Kwik-Mix Booklet.

Name
Address
City

Badger Wire & Iron Works,
1016, Cleveland Ave., Milwaukee, Wis.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER
KNOW THE LUMBER

WHEN you think of a phonograph, a tooth paste, an adding machine—certain names leap instantly into your mind. You have come to know these products by certain well known trade-marks. They have become the guides to certain qualities that are at once associated with these names.

You should know the lumber, timbers, and lumber products manufactured by The Long-Bell Lumber Company. They maintain a reputation for uniform high quality. The Long-Bell trade-mark has become the guide to lumber that is dependable and of uniform high quality.

Ask Your Lumberman for Long-Bell Trade-Marked Lumber

NEW WALLS-decorate them With MURALITE

THE increasing desire for soft, velvety, quietly beautiful walls and ceilings is answered by using Muralite. Decorating or redecorating with Muralite is simple, easy, and inexpensive. You can finish an entire room for only a dollar or two.

Muralite is easy to mix and any one can apply it successfully. It can be used on any surface—plaster, wall board or tightly pasted plain paper. It may be recoated or washed off and the wall done over.

Muralite is not affected by the setting of plaster. It may be used on new walls with perfect satisfaction. Muralite is sanitary, odorless, and will not rub or chip off. It is made in white and in fourteen standard colors—from which an endless variety of shades may be obtained by intermixing.

Write for our Color Card and let us tell you more about MURALITE—the best wall and ceiling finish made.
Bommer Spring Hinge Co., Indianapolis, Ind.

HARDWARE—Screws

Allith-Prouty Co., Danville, Ill.

HARDWARE—Cabinet Hardware

Allith-Prouty Co., Danville, Ill.

HARDWARE—Cabinet Hardware

Allith-Prouty Co., Danville, Ill.

HARDWARE—Cabinet Hardware

Allith-Prouty Co., Danville, Ill.

HARDWARE—Cabinet Hardware

Allith-Prouty Co., Danville, Ill.

HARDWARE—Cabinet Hardware

Allith-Prouty Co., Danville, Ill.

HARDWARE—Cabinet Hardware

Allith-Prouty Co., Danville, Ill.

HEATING PLANTS—Warm Air Furnaces

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.

Andrews Heating Co., Minneapolis, Minn.
OLD WALLS DECORATED WITH
CRAFTTEX
LOOK LIKE NEW

Applied over Wallboards it Produces an Artistic Surface with One Coat and Covers Joints Without Paneling.

APPLIED WITH A BRUSH
WRITE FOR LITERATURE AND SAMPLE

Simmons, Gardner Co.
7 WATER STREET
BOSTON, MASS.

Stucco of Quality

The recognition of ASBESTONE EVERLASTING STUCCO as the world’s standard for Magnesite Stucco has been achieved through appreciation of the fact that ASBESTONE quality and service are beyond question.

Unsurpassed in covering power, tensile strength and resiliency

Fireproof Weatherproof Durable

Prices, samples and particulars free
FRANKLYN R. MULLER & CO.
STUCCO and COMPOSITION FLOOR MANUFACTURERS ESTABLISHED 1906

606 Madison St. WAUKEGAN, ILL.

Consult your Building supply dealer
The Correct Weatherstrip

Designed with an inside knowledge of the "best" and "near-best" types of weatherstripping. Designed scientifically; eliminating guesswork, the SHOGREN is now a complete and correct line.

A new Rib shape that keeps the contact edge perfect regardless of how much the sash may warp or shrink. The most efficient strip possible for the double hung windows.

Our new types of Brass Casement Troughs and Brass Thresholds are scientifically correct.

CARPENTERS—DEALERS

SHOGREN Strips are going big this winter. Wherever shown, their superiority is so apparent that landing the installation job is remarkably easy.

We have not sufficient representation in various good territories. Write to us about it today.

Shogren & Rasmussen Co.
1926 S. 32nd Ave.

SIMPLIFY FIREPLACE BUILDING

MAKE sure of a clean, warm, smokeless fireplace by standardizing on Donley designs and Donley Fireplace Devices that fit the designs. The addition of the new Donley Fire Basket completes the Donley line. It is interchangeable for coal or wood, beautiful in design and simple enough to harmonize with any general decorative plan. It is shaped to conform with an approved hearth plan and made in four widths, 24, 28, 30, and 34 inches. Send for working drawings of fireplace interiors that yield heat for the least fuel and that do not smoke. Then use Donley Dampers, Baskets, Ash Dumps and Ash-pit Doors.

Donley Dampers
give a smooth chimney throat and correct draft control.

New Donley Fire Baskets
burn coal or wood and are shaped for maximum radiation.
FOREST CITY BITS

Where hard use and long life are the qualities demanded in Wood Boring Tools and Hollow Mortisers you'll find Forest City tools are most used. The reason why they keep that keen true cutting edge longer is because they are built with just that idea in mind.

The illustration includes but a few of our complete line. We have a catalog that will show you the best tool for your need.

Write for catalog No. 17.
We sell direct to the users.

FOREST CITY
BIT & TOOL COMPANY
Rockford - - - Illinois
U. S. A

Lansing Equipment for Cement Contractors

Built oversize, not in capacity, but in strength of every material for each part; the Lansing equipment for Cement Contractors has built an enviable reputation for uninterrupted performance.

As we round out our 42nd year of service to the building industry it is only fitting to pay a tribute to our many friends in the field who have so largely helped to establish this record.

To these friends we extend our heartiest well wishes and assure that the same co-operation on our part will prevail to maintain and further promote the same goodwill.

Those who have standardized on Lansing Equipment are getting the real no-delay action.

Write Today for Our Catalog

LANSING-COMPANY
22 North Cedar St.
LANSING, MICH.

BRANCHES:
NEW YORK PHILADELPHIA BOSTON CHICAGO
MINNEAPOLIS KANSAS CITY SAN FRANCISCO

for 42 Years - the Best
Buyers’ Guide for the Building Industry

[December, 1922]

150

Buyers’ Guide continued on page 152
Level and Plumb With Your Own Instrument

$5.00

BRINGS IT TO YOU

Better, Quicker Work

This instrument will add immeasurably to your efficiency and put you in the big builder class—will do more to increase your business, income and prestige than any investment you ever made. The Aloe Convertible Level is the world's best—a combination of both level and transit and quickly converted to the use of either. Absolutely accurate—satisfies the requirements of the most exacting—yet so simple that anyone can use it.

Aloe Convertible Level and Transit Combined

You Learn to Use It In an Hour

No technical knowledge necessary. No previous experience needed. With our simple and complete instruction book, included free with every level, you can immediately put the instrument to work. It is a level and transit combined—takes sight either over or below the horizon. You can use it for leveling foundations, walls, plains, streets, walks or curbs—to get straight lines for driveways, sidewalks, etc. You can use it for laying out buildings, roads, streets, sidewalks, walks, driveways, etc. Write for Free Book. A. S. ALOE CO., 621 Olive St., St. Louis, Mo.

Free Trial

Order the Aloe—try it for 10 days—put it to the most rigid tests. If you are not satisfied, return it at our expense and your $5.00 will be refunded.

MAIL COUPON TODAY

A. S. ALOE CO., 621 Olive St., St. Louis, Mo.

WRITE FOR FREE BOOK

Our free book—"Be A Bigger Builder"—tells you how to become a winner—how to get the producible job and become a bigger man in your community. Write for this book today.

Address:

ARMORED GLASS

A New and Improved Construction for SIDEWALK LIGHTS

Every lens, either round or square is caulked into a cast iron ring, and this is embedded in the cement. Square Fresnel Lenses give over 54% glass area.

AMERICAN 3 WAY-LUXFER PRISM COMPANY

1307 S. 55th Court, CICERO, ILL. 139 Spring St., NEW YORK CITY

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER
The Economy of Quality

For real economy there is nothing that equals Copper, for:

- Roofing
- Cornices
- Eavestroughs
- Leaders
- Flashing
- Ventilators
- Gutters
- Louvers

Copper is economical because it:
- Will last as long as the building itself—
- Saves the cost of renewal and upkeep—
- Is very light in weight—
- Is easy to handle—
- Has a high salvage value.

Copper actually saves money for your customer. He will appreciate your telling him so.

USE EAGLE BRAND COPPER
It has a century's reputation for reliability.
Prompt deliveries. An up-and-coming service.
Catalog for the asking.

Taunton-New Bedford Copper Company
Taunton, Mass.

MILLS:
Taunton and New Bedford, Mass.

WAREHOUSES:
35 Howard St. 61 Batterymarch St.
New York Boston, Mass.
PUMPS—WELL
Bonney Pump & Mfg. Co., 432 Murray St., New York, N. Y.

BOILING

FRANK C. BERRY Co., Cincinnati, Ohio ("Roch’s"").

Johns-Manville, Inc., 41st and Madison, New York, N. Y.

Boiling

Barrett Bros., 40 Rector St., New York, N. Y. ("Barrett Everlastic" rubber roofing, mineral-surfaced- roofing, octagonal-strip shingles, single shingles, "Panadum" rubber roofing.


Edward Mfg. Co., Cincinnati, O. ("Mansfield")

Oshkosh Mfg. Co., Oshkosh, Wis. ("Osh- kosh")

Johns-Manville, Inc., 41st and Madison, New York, N. Y.

Servicised Products Co., First Nat. Bank Bldg., Chicago, Ill. ("Servicised").

BOILING—STEEL

Boiling

Barrett Bros., 40 Rector St., New York, N. Y. ("Barrett Everlastic" rubber roofing, mineral-surfaced- roofing, octagonal-strip shingles, single shingles, "Panadum" rubber roofing.


Edward Mfg. Co., Cincinnati, O. ("Mansfield")

Oshkosh Mfg. Co., Oshkosh, Wis. ("Osh- kosh")

Johns-Manville, Inc., 41st and Madison, New York, N. Y.

Servicised Products Co., First Nat. Bank Bldg., Chicago, Ill. ("Servicised").

BOILING—STEEL

Boiling

Barrett Bros., 40 Rector St., New York, N. Y. ("Barrett Everlastic" rubber roofing, mineral-surfaced- roofing, octagonal-strip shingles, single shingles, "Panadum" rubber roofing.


Edward Mfg. Co., Cincinnati, O. ("Mansfield")

Oshkosh Mfg. Co., Oshkosh, Wis. ("Osh- kosh")

Johns-Manville, Inc., 41st and Madison, New York, N. Y.
A N OWNER considers his home the safest investment in the world, and wants construction materials that will give him lifetime service.

He would consider as absurd any suggestion that his home would be badly disfigured or rotted away in five, seven, or at the most ten years, and that his entire investment would then be wiped out. Yet, that is exactly what would happen if the rest of his house had the same quality of materials as his wood columns.

If you want the everlasting gratitude of every home owner, you can obtain it by installing Union Metal Pressed Steel Columns that will not split, rot or open at joints.

Send for catalog 26 and attractive agency proposition.

The Union Metal Manufacturing Co.
CANTON, OHIO

Here's a Helpful Item to Combine with Your Bids or Proposals on Residences

It Will Interest the Home Owner—and May Help You Secure the Contract

For less than $100.00 additional the plaster-base of walls and ceilings of the average home (costing in the neighborhood of $5,000) can be Bostwick Truss-Loop throughout.

One thousand wood lath equals 60 sq. yds. of wall surface and costs $12.00. Wood lath, properly spaced, takes almost exactly the same amount of plaster as Bostwick Truss-Loop. Truss-Loop, therefore, costs only the margin between 1st cost of wood lath and first cost of Truss-Loop. This works out to from $65.00 to $100.00 more for the usual types of moderate-priced homes. Just this small margin secures lasting wall beauty and fire-protection.

In addition, Bostwick Truss-Loop will save for you in Time, Labor, Lath, Studding and Waste Plaster. Let us tell you how—write us for particulars and proofs.

THE BOSTWICK STEEL LATH COMPANY
Niles, Ohio
International Steel & Iron Co., Evanston, Ill.
Johns-Manville, Inc., Madison and 41st, New York, N. Y.
Milwaukee Corrugating Co., Milwaukee, Wis.
Moores-Edwards Corrugating Co., Cincinnati, Ohio
National Sheet Metal Roofing Co., Jersey City, N. J.
Shardr & Johnson, Atlantic, Ia.

Buyers' Guide continued on page 158
You Draw The Plans and You'll Get The Job

Thousands Have Won Success This Way

Here's a proven plan to increase your business, profits and reputation. Furnish the plans and you get the job, and at a fair price. Others do it, why not you? You know plans. With the right instructions and material you can draw them as well as any man. You get everything at once—no long drawn out correspondence course. And the price is astonishingly low. Let this advertisement mean a new start and a greater prosperity for you.

A Practical Outfit

Our proposition is so fair, straightforward and easy that you cannot refuse to investigate it in justice to yourself. Everything you need is in this outfit. Don't confuse this fine, practical drawing outfit with the small and cheap students' outfits often advertised. It is the most useful, simple, practical outfit for contractors and builders ever offered.

Begin Work At Once

The two special instruction books, "How to Draw Plans" by Dale and the Kidder-Nolan "Builders' and Architects' Handbook", included free, tell you how, simply and plainly, step by step. Enables you to begin at once to make plans and drawings and thereby to increase your business, reputation and income.

A Practical Outfit Sent On Free Trial

Let us send you this complete outfit at our risk. Mail the coupon to-day—it will bring you full particulars of this extraordinary offer—tell you about the outfit in detail—explain our easy payment plan—and show you how you can easily increase your business and profits. Without obligation, send us the coupon today. Write for literature.

A Practical Outfit

Mail coupon to-day—it will bring you full particulars about your high-grade Draftsmen's Outfit.

"The Slickest Piece of Equipment—We Have Ever Used"

This is the manner in which a contractor who had placed 800 cu. yds. of concrete in 9 working days described his INSLEY MAST HOIST plant. His experience is typical of the experiences of many other successful contractors.

If your work is such that you have occasion to handle from 40 to 100 cu. yds. of concrete per day, this simple and inexpensive concrete handling plant will make money for you.

Write for illustrated circular

INSLEY MANUFACTURING CO.
Engineers and Manufacturers
INDIANAPOLIS
**Buyers' Guide for the Building Industry**

**[December, 1922]**

**S A W S—CIRC U L A R**
American Saw Mill Machinery Co., Hackett-


**SCRAPE R S—FO OT**

**RICHA RDS W. Wilson Mfg. Co., Aurora, Ill. ("R. W.")

**S C R A P E R S—BO LIN G**
Higgin Mfg. Co., Newport, Ky. ("Higin").

**S C R A P E R S—S H A S H**

**S C R A P E R S—M A N E & C O U N T E R**

**S C R A P E R S—E V O L V I N G**
Cabinet Door Co., Fond du Lac, Wis. ("Stewart").

**S C R A P E R S—B O L I N G**
Higgin Mfg. Co., Newport, Ky. ("Higin").

**S C R A P E R S—S H A S H**

**S C R A P E R S—M A N E & C O U N T E R**

**S C R A P E R S—E V O L V I N G**
Cabinet Door Co., Fond du Lac, Wis. ("Stewart").

**S C R A P E R S—B O L I N G**
Higgin Mfg. Co., Newport, Ky. ("Higin").

**S C R A P E R S—S H A S H**

**S C R A P E R S—M A N E & C O U N T E R**

**S C R A P E R S—E V O L V I N G**
Cabinet Door Co., Fond du Lac, Wis. ("Stewart").

**S C R A P E R S—B O L I N G**
Higgin Mfg. Co., Newport, Ky. ("Higin").

**S C R A P E R S—S H A S H**

**S C R A P E R S—M A N E & C O U N T E R**

**S C R A P E R S—E V O L V I N G**
Cabinet Door Co., Fond du Lac, Wis. ("Stewart").

**S C R A P E R S—B O L I N G**
Higgin Mfg. Co., Newport, Ky. ("Higin").

**S C R A P E R S—S H A S H**

**S C R A P E R S—M A N E & C O U N T E R**

**S C R A P E R S—E V O L V I N G**
Cabinet Door Co., Fond du Lac, Wis. ("Stewart").

**S C R A P E R S—B O L I N G**
Higgin Mfg. Co., Newport, Ky. ("Higin").

**S C R A P E R S—S H A S H**

**S C R A P E R S—M A N E & C O U N T E R**

**S C R A P E R S—E V O L V I N G**
Cabinet Door Co., Fond du Lac, Wis. ("Stewart").

**S C R A P E R S—B O L I N G**
Higgin Mfg. Co., Newport, Ky. ("Higin").

**S C R A P E R S—S H A S H**

**S C R A P E R S—M A N E & C O U N T E R**

**S C R A P E R S—E V O L V I N G**
Cabinet Door Co., Fond du Lac, Wis. ("Stewart").
You Can Pour Concrete During Freezing Weather When You Use “ANTI-HYDRO”

“ANTI-HYDRO” lowers the freezing point of concrete and cement mixtures to 17 degrees below that of water, making it possible to continue work during freezing weather. In addition to this “ANTI-HYDRO” makes concrete permanently hard and waterproof all in one operation.

This entire building was constructed between November and February with the aid of “ANTI-HYDRO.” You can save time and money on your jobs by working right on through freezing weather with “ANTI-HYDRO.”

Being a liquid, “ANTI-HYDRO” mixes readily with the gauging water. Requires no skilled labor. During the 18 years it has been in continuous use, “ANTI-HYDRO” has been successfully used on every type of concrete work. Use it on your next job.

ANTI-HYDRO WATERPROOFING CO.
NEWARK • • • • • NEW JERSEY

Have You Got a Skylight or Ventilator Job?

If you are about to install skylights or ventilators it will pay you to look over our line.

Write for Catalog Number Eight

This book with its discount sheet will prove of the greatest service to you in estimating your work. A copy will be sent you immediately upon your request.

WILLIS MANUFACTURING CO.
GALESBURG, ILLINOIS

WILLIS
Winter Time is Spray-painting Time
the same as any other time of year. Put an outfit to work on your "cold-weather" jobs and start increasing your profits now. The

DeVilbiss
Spray-painting System
calls for less effort and makes possible faster and cleaner work of best quality.
Two or more jobs can be done in the time and with the men now required for one. Increased profits soon pay for complete equipment.
Be the year round painter of your section—illustrated folder of new and improved DeVilbiss Spray-painting Outfits gladly mailed.
The DeVilbiss Mfg. Co., 4676 Detroit Ave., Toledo, O.

IMPORTANT CHANGE IN SELLING POLICY

The Combustion
Fuel Oil Burner
which has heretofore been sold exclusively thru the distributor, will now be sold directly thru the Fitter and the Contractor.
Write us on your letterhead and we will send you full data and prices on our ten sizes of equipment for heating the home, the store, or the factory.
As Safe and Simple As Your Electric Light
Absolutely Automatic
Every installation a satisfied customer.
Every installation sold under iron clad, money back guarantee.
THE COMBUSTION CO.
Factory: 4256 North Western Ave.
CHICAGO, ILL.
**PART-TIME BUILDINGS**

Most commercial buildings—stores, offices, factories—are in use only part of the time. The same is true of lodge halls, schools and churches. It follows that they need heat only part of the time.

By heating them with CLOW GASTTEAM radiators the owner does not waste heat. He saves the cost of boiler and chimney—even cellar excavation. He has no fuel to store, no ashes to remove. And his heating plant needs no attention.

Send for more information about CLOW GASTTEAM—gas fired radiators, generating Steam heat.

**JAMES B. CLOW & SONS**

General Office: 534-546 S. Franklin St., Chicago

Sales offices in the principal cities

---

**Send me details of CLOW GASTTEAM.**

**Name.**

**Address.**
BECAUSE they are the latest and best achievements of a company that points to a successful history concerning a period of more than twenty years—a company that has kept up with the times and is today producing the premier machines of its career. These machines are used everywhere—in this country and abroad—and never fail to please. They save time and money and pave the way for a greater profit. Every one guaranteed absolutely.

Our Building Tile Machine

has made good with a bound and is now favored everywhere for its efficiency. It delivers three tile on a single wooden pallet, with no stopping or delays for off-bearing of tile.

Our Hand Block Machines

produce fine, square blocks that make good. They are uniform, true and perfectly balanced. This efficient little hand machine will get the business to such a satisfactory extent that you will shortly install a Turnkey, Core Actuator, Conveyor and Seeder.

The Ideal Concrete Machinery Company

1308 Monmouth Street, CINCINNATI, OHIO

FREE BLUE PRINTS
of HERRICK Outside Icing

JUST stick these plans in your vest pocket—they are the handiest size imaginable for a man to carry—and it will be easy for you on short notice to plan, recommend or install Herrick Outside Icing, the big feature that makes refrigerator satisfaction.

Sooner or later, every home owner will hear of the many advantages of Outside Icing, and then he will wonder why his builder did not at least recommend this system. Play safe for future satisfaction in the home you plan or build. Speak to the owner, tell him of the comforts and the conveniences that follow the installation of a Herrick, especially with outside icing attachment, and you will build a reputation for care and thoroughness that will build your business.

Herrick Refrigerator & Cold Storage Co.
108 River Street, Waterloo, Iowa

REQUEST FOR BLUE PRINTS

Herrick Refrigerator and Cold Storage Co.,
108 River Street, Waterloo, Iowa.

Please send me free a set of Blue Prints, in the handy vest pocket size, showing dimensions and various openings necessary for HERRICK Outside Icing.

Name of Firm.

Address

Contractor or Builder
(Scratch out one)

Name of Individual

City.
## Buyers' Guide for the Building Industry

**Concrete Engineering Omaha, Nebraska**

**Steel & Aluminum Co., Niles, Ohio**

**Willis Mfg. Co., Galesburg, Illinois**

**Armstrong Cork Co., Linoleum Division, Lancaster, Pa.**

**Concrete Engineering Co., Omaha, Nebraska**

**Concrete Engineering Co., Columbus, Ohio**

**Ankry Co., Wayne Junc, Philadelphia, Pa.**

**Bostwick Steel Lath Co., Niles, Ohio**

**Concrete Engineering Co., Canton, Ohio**

**Concrete Engineering Co., North Milwaukee, Wis.**

**Concrete Engineering Co., North Chicago, Ill.**

**TILE—FIBRE BOARD**

The Upson Co., Lockport, N.Y. ("Upson").

**TILE—FIREPROOF**


**TILE—FLOOR AND WALL**


**TILE—HOLLOW BUILDING**


**TILE—PARTITION**


**TILE—SILVER**

National Fireproofing Co., Pittsburgh, Pa. ("Nacho").

**TILE—SLATE**


**TILE—WOOD**

United States Slates Co., 205 W. Monroe St., Chicago, Ill. (Gypsum floor tile).

**THRESHOLDS—SLATE**


**TILE MACHINES—DRAIN**

Republic Iron Works, Yonkers, N.Y. ("Dunn").

**TILE MACHINES—FLOOR AND WALL**


**TILE MACHINES—HOLLOW BUILDING**


**TILE MACHINES—POOFING (CEMENT)**


**TILE PLANTS**


**TERRAZZO**

Tritschler & Sons, Inc., 220 W. 42nd St., New York, N.Y. (Chips).

**THRESHOLDS**


**TILE MACHINES—HOLLOW BUILDING**


**TILE MACHINES—SILO**


**TILE MACHINES—WALL**


**TILE MACHINES—WOOD**


**TILE MACHINES—FLOOR AND WALL**


**TOOLS—CARVING**

Buck Bros., Millbury, Mass. ("Buck Bros.").

**TOOLS—CEMENT WORKERS**

Abram Conant Tool Co., Detroit, Mich. ("Abram Conant Tool Co.").

**TILES**

Rochelle Iron Works, 2438 W. 44th Place, Chicago, Ill. ("Rochelle").

**TILES**

Republic Iron Works, Yonkers, N.Y. ("Dunn").

**TILES**


**TILES**

Ideal Concrete Machinery Co., Cincinnati, O. ("Ideal").

**TILES**

Sager Metal Weatherstrip Co., 162 West Austin Ave., Chicago, Ill. ("Sager").

---

### Sager Metal Weatherstrip Co.

**The fastest selling weatherstrip of them all. It's sound, apparent real value make it the best strip for the new contractor to begin with. Our fair and square dealers policy make it the all-time favorite of every Sager dealer.**

We want a man in every locality who will maintain a selling and installing agency.

Now is the time to begin while the demand is greatest.

The demand was created by the coal shortage.

It is met with Sager Metal Weatherstrips that reduces the coal cost by 3/4.

Those far-seeing men who are going to answer this ad will be the ones to benefit by this unusual opportunity.

**Write now for full details**

Sager Metal Weatherstrip Co.  
162 West Austin Ave., Chicago, Ill.
GET THE EXCLUSIVE MANUFACTURING RIGHT FOR THIS

Patented Interlocking Tile

The Acme System enables you to turn out a perfect poured tile up to any specification of strength. Its interlocking features are revolutionary because of the absolute exclusion of moisture from its joints, which represents a decided advantage over any other building material.

35 Years Hence—What?

THE real cost of flooring is its purchase price plus its maintenance per year of service.

Oak Flooring one hundred years old is quite common in residences and Oak Flooring fifty years old is not uncommon in factories, warehouses, docks, armories, machine shops, and other structures, requiring "high duty" floors.

As years pass owners appreciate more and more the good judgment of the builder who recommended Oak Flooring. They find it reduces their cleaning bills and increases their sales and rental values 25% or more, besides giving its other satisfactory qualities.

Three booklets, in colors, containing much accurate and valuable information for a builder's files, mailed free on request.

Oak Flooring Advertising Bureau
1038 Ashland Block, Chicago, Ill.

THE MAGNOLIA BUILDING
Dallas, Texas
Oak Flooring Used
**CONTRACTORS AND BUILDERS — INSTALL A HARDIN-LAVIN PIPELESS FURNACE IN YOUR NEXT BUILDING**

Our Pipeless Furnaces Are Superior Because —

- The interior and large front are all heavy cast.
- Long circular fire travel saves fuel.
- Improved air cleaning humidifier eliminates dust.
- Reinforced dumping grates, burns hard coal, soft coal or wood economically.
- Has adjustable throat to fit any basement.

**Our Improved Pipeless Furnaces “Beat Them All”**

Other furnaces take the cold air down inside an outer casing. Notice we take the cold air down through two large separate cold air ducts outside of casing at rear of furnace. This distinctly better method of cold air circulation prevents back draft, warped casings, dust in your home, etc.

**SPECIAL ATTRACTIVE PRICES TO BUILDERS**

Send today for our pipe and Pipeless Furnace Catalog

Our Pipeless Furnaces Are Superior Because —

- The interior and large front are all heavy cast.
- Long circular fire travel saves fuel.
- Improved air cleaning humidifier eliminates dust.
- Reinforced dumping grates, burns hard coal, soft coal or wood economically.
- Has adjustable throat to fit any basement.

**$500,000 PLANTS BEHIND OUR GUARANTEE**

**TRIANGLES**

- A. S. Alco Co., St. Louis, Mo.
- Kenkel & Evert Co., Hoboken, N. J.
- Wiessler Instrument Co., St. Louis, Mo.

**TRIM—DOOR**

- Curtiss Service Bureau, Glaston, Ind.
- Milwaukee Corrugating Co., Milwaukee, Wis.
- Morgan Sash & Door Co., 2287 Rine Island Ave., Chicago, Ill.
- Morgan Corrugating Co., Chicago, Ill.
- The Facile Lumber Co. of Illinois, 2065 McCormick Blvd., Chicago, Ill.

**TRIM—INTERIOR (MASONRY)**

- Keuffel & Esser Co., Hoboken, N. J.
- Milwaukee Corrugating Co., Milwaukee, Wis.
- Morgan Sash & Door Co., 2287 Rine Island Ave., Chicago, Ill.
- Morgan Corrugating Co., Chicago, Ill.
- The Facile Lumber Co. of Illinois, 2065 McCormick Blvd., Chicago, Ill.

**TRIM—INTERIOR (METAL)**

- Concrete Engineering Co., Omaha, Neb.
- Edwards Mfg. Co., Cincinnati, O.
- Milwaukee Corrugating Co., Milwaukee, Wis.
- Moschel-Edwards Corrugating Co., Cincinnati, Ohio

**TRIM—INTERIOR (SLATE)**

- F. C. Sheldon Slate Co., Granville, N. Y.
- B. Karol & Sons Co., 800 S. Kedzie Ave., Chicago, Ill.

**TRIPODS—PORTABLE**

- Kenkel & Evert Co., Hoboken, N. J.
- J. G. Spedal, Reading, Pa.
- David White Co., Milwaukee, Wis. ("White’s Improved")

**TROLLEYS AND TRAMWAYS**

- Allis-Chalmers Co., Milwaukee, Wis.
- B. Karol & Sons Co., 800 S. Kedzie Ave., Chicago, Ill.

**TROUSERS—PLACEWORKERS**

- Abram Eisen Tool Co., Detroit, Mich.

**TREADS—STAIRS**

- Steel Scaffolding Co., Evansville, Ind.

**TRENCHING MACHINES**

- Construction Machinery Co., Waterloo, Ia.

**TRIANGLES**

- A. S. Alco Co., St. Louis, Mo.
- Kenkel & Evert Co., Hoboken, N. J.
- Wiessler Instrument Co., St. Louis, Mo.

**TRIM—DOOR**

- Curtiss Service Bureau, Glaston, Ind.
- Milwaukee Corrugating Co., Milwaukee, Wis.
- Morgan Sash & Door Co., 2287 Rine Island Ave., Chicago, Ill.
- Morgan Corrugating Co., Chicago, Ill.
- The Facile Lumber Co. of Illinois, 2065 McCormick Blvd., Chicago, Ill.

**TRIM—INTERIOR (MASONRY)**

- Keuffel & Esser Co., Hoboken, N. J.
- Milwaukee Corrugating Co., Milwaukee, Wis.
- Morgan Sash & Door Co., 2287 Rine Island Ave., Chicago, Ill.
- Morgan Corrugating Co., Chicago, Ill.
- The Facile Lumber Co. of Illinois, 2065 McCormick Blvd., Chicago, Ill.

**TRIM—INTERIOR (METAL)**

- Concrete Engineering Co., Omaha, Neb.
- Edwards Mfg. Co., Cincinnati, O.
- Milwaukee Corrugating Co., Milwaukee, Wis.
- Moschel-Edwards Corrugating Co., Cincinnati, Ohio

**TRIM—INTERIOR (SLATE)**

- F. C. Sheldon Slate Co., Granville, N. Y.
- B. Karol & Sons Co., 800 S. Kedzie Ave., Chicago, Ill.

**TRIPODS—PORTABLE**

- Kenkel & Evert Co., Hoboken, N. J.
- J. G. Spedal, Reading, Pa.
- David White Co., Milwaukee, Wis. ("White’s Improved")

**TROLLEYS AND TRAMWAYS**

- Allis-Chalmers Co., Milwaukee, Wis.
- B. Karol & Sons Co., 800 S. Kedzie Ave., Chicago, Ill.

**TROUSERS—PLACEWORKERS**

- Abram Eisen Tool Co., Detroit, Mich.

**TREADS—STAIRS**

- Steel Scaffolding Co., Evansville, Ind.

**TRENCHING MACHINES**

- Construction Machinery Co., Waterloo, Ia.

**TRIANGLES**

- A. S. Alco Co., St. Louis, Mo.
- Kenkel & Evert Co., Hoboken, N. J.
- Wiessler Instrument Co., St. Louis, Mo.

**TRIM—DOOR**

- Curtiss Service Bureau, Glaston, Ind.
- Milwaukee Corrugating Co., Milwaukee, Wis.
- Morgan Sash & Door Co., 2287 Rine Island Ave., Chicago, Ill.
- Morgan Corrugating Co., Chicago, Ill.
- The Facile Lumber Co. of Illinois, 2065 McCormick Blvd., Chicago, Ill.

**TRIM—INTERIOR (MASONRY)**

- Keuffel & Esser Co., Hoboken, N. J.
- Milwaukee Corrugating Co., Milwaukee, Wis.
- Morgan Sash & Door Co., 2287 Rine Island Ave., Chicago, Ill.
- Morgan Corrugating Co., Chicago, Ill.
- The Facile Lumber Co. of Illinois, 2065 McCormick Blvd., Chicago, Ill.

**TRIM—INTERIOR (METAL)**

- Concrete Engineering Co., Omaha, Neb.
- Edwards Mfg. Co., Cincinnati, O.
- Milwaukee Corrugating Co., Milwaukee, Wis.
- Moschel-Edwards Corrugating Co., Cincinnati, Ohio

**TRIM—INTERIOR (SLATE)**

- F. C. Sheldon Slate Co., Granville, N. Y.
- B. Karol & Sons Co., 800 S. Kedzie Ave., Chicago, Ill.

**TRIPODS—PORTABLE**

- Kenkel & Evert Co., Hoboken, N. J.
- J. G. Spedal, Reading, Pa.
- David White Co., Milwaukee, Wis. ("White’s Improved")

**TROLLEYS AND TRAMWAYS**

- Allis-Chalmers Co., Milwaukee, Wis.
- B. Karol & Sons Co., 800 S. Kedzie Ave., Chicago, Ill.

**TROUSERS—PLACEWORKERS**

- Abram Eisen Tool Co., Detroit, Mich.

**TREADS—STAIRS**

- Steel Scaffolding Co., Evansville, Ind.

**TRENCHING MACHINES**

- Construction Machinery Co., Waterloo, Ia.
And for Yourself —

On the bench inside and out on the job you’ll find Starrett Tools have been making good for the last forty years. Starrett Tools are precision tools on whose unvarying accuracy you can always rely. Yet with this precision they are strong and rugged, ready to take the hard knocks of everyday use and come back for more. If you use Levels, Squares, Steel Tapes, a Transit, Dividers, or Draftsman’s Tools, you will find Starrett Tools a worth while investment in satisfaction and better workmanship.

Write for Catalog No. 22 "q". Sent free on request.

THE L. S. STARRETT CO.
The World's Greatest Toolmakers
Manufacturers of Hacksaws Unexcelled
ATHOL, MASS.

Self-Calculating Squares

You don’t have to be a mathematician to use the SARGENT Framing Square. Complete tables of measurements are plainly stamped on it. Even the most inexperienced carpenter can use it with speed and depend upon its accuracy.

SARGENT Framing Squares

Require no time-wasting figuring for the lengths and cuts of common, hip, valley, jack or cripple rafters. Just measure and read. Results are correct and final. SARGENT Squares are made of selected steel in five dependable finishes.

Write today for the Steel Square Booklet which gives full particulars.
Buyers' Guide for the Building Industry

[December, 1922]

BOMMER SPRING HINGE CO., Brooklyn, N.Y.

ESTABLISHED 1876

"QUALITY"

thy name is BOMMER in all that relates to Spring Hinges.

Your door is the entrance to your "sanctuary" in business and at home; "there's no place like home."

Let BOMMER Spring Hinges close your doors.

"They are the best."

BOMMER SPRING HINGE CO., Brooklyn, N.Y.

Save Half Your Painting Bill

You can actually save more than half the cost of any material and labor, and get better results, of coloring, weather qualities and wood preservation, by using

Cabot's Creosote Stains

Instead of paint, on siding, siding and all similar outside woodwork. The colors are more permanent. They wear as long as the best paint and wear better, and they are standouts of creosote, which penetrates the wood and thoroughly preserves it.

Cabot's Quilt

A genuine house-warming. It's a cushion of real air, a real thing warmer than building paper. Quilt will pay for itself in a short time in saving coal, to say nothing of making the house comfortable for all time.

You can get Cabot's States and Quilt all over the country. Send for samples and names of nearest agents.

SAMUEL CABOT, INC., MFG. CHEMISTS

BOSTON, MASS.

243 Madison Ave., New York City; 522 W. Kinzie St., Chicago

Cabot's Conservoir Wood Preservative, Sico States, Brisk States, Damp-Proofing

VENTILATORS—BOOTH

Edward Mfg. Co., Cincinnati, O.

Elfr Mfg. Co., Canton, O.

Globe Ventilator Co., Troy, N.Y. ("Globe").

International Steel & Iron Co., Evansville, Ind.

Milwaukee Corrugating Co., Milwaukee, Wis.


Maywood Edwards Corrugating Co., Cincinnati, O.

Shrager & Johnson, Atlantic, Ia.

Wills Mfg. Co., Galena, Ill.


VENTILATORS—ERIEWALK

American 8 Way-Layar Prism Co., Cicero, Ill. ("8 Way-Layar").

Edward Mfg. Co., Cincinnati, O.

VENTILATORS—STEEL BASH


Detroit Steel Products Co., Detroit, Mich.

Edward Mfg. Co., Cincinnati, O.

International Steel & Iron Co., Evansville, Ind.

Shrager & Johnson, Atlantic, Ia.

Zeari Drawn Metals Co., Chicago Heights, Ill.

VENTILATORS—STORE FRONT

American 8 Way-Layar Prism Co., Cicero, Ill. ("8 Way-Layar").


Edward Mfg. Co., Cincinnati, O.

Detroit Show Case Co., Detroit, Mich.

Edward Mfg. Co., Cincinnati, O.

VENTILATORS—WALL

Donley Bros. Co., Cleveland, O. ("Donley").

Edward Mfg. Co., Cincinnati, O.

VENTILATORS—WINDOW

Edward Mfg. Co., Cincinnati, O.

Higgin Mfg. Co., Newport, Ky. ("Higgin").

Shrager & Johnson, Atlantic, Ia.

VENTILATORS—EXHAUST

Edward Mfg. Co., Cincinnati, O.

Globe Ventilator Co., Troy, N.Y. ("Globe").

Globe Ventilator Co., Troy, N.Y. ("Globe").

"Yankee" swivel base and machine.

BOMMER SPRING HINGE CO., Brooklyn, N.Y.

ESTABLISHED 1876
Use "International Service" in 1923

OUR PRODUCTS

Air Grates  
Anchors  
Angles—Steel  
Area Grates  
Ash Dumps  
Ash Pit Doors  
Awning—Metal  
Balconies  
Bars—Reinforcing  
Beams—Steel  
Bolts  
Brick—Highway  
Canopies—Metal and Glass  
Casing—Metal  
Ceiling—Metal  
Cellar Doors  
Channels—Steel  
Chutes—Coal  
Cleanout Doors  
Coal Hole Covers  
Columns—Cast Iron  
Columns—Steel  
Copper Store Front Bars  
Corkless—Sheet Metal  
Cultivators—Corrugated  
Dampers—Fireplace  
Doors—Sidewalk  
Doors—Tin Clad Fire  
Elevators—Freight  
Fabricated Steel  
Factory Buildings  
Fire Doors  
Galvanized Steel Products  
Girders—Steel  
Guard—Steel and Wire  
H-Columns  
Highway Bridges  
Hy-Rib  
I-Beams  
Joist Stirrups and Hangers  
Kick Plates—Brass  
Ladders—Iron  
Lintels—Steel  
Lumber—Steel  
Marquises—Metal and Glass  
Office Buildings  
Oil Filling Stations  
Ornamental Iron Works  
Pier Blocks—Cast Iron  
Pipe Railing  
Post Bases and Caps  
Rolling—Balcony  
Rollings—Pipe  
Reinforcing Bars  
Roofing—Galvanized  
Sash—Steel  
Shutters—Galvanized  
Shutters—Steel  
Shutters—Tin Clad  
Sidewalk Lights  
Siding—Metal  
Skylights—All Kinds  
Stairs—Steel and Iron  
Steel Lumber  
Steel—Structural  
Store Fronts—Complete  
Thresholds—Cast Iron and Brass  
Tipples—Coal  
Treads—Safety  
Trusses—Steel  
Ventilators—Roof  
Wheel Guards  
Window Guards  
Windows—Sheet Metal  
Windows—Steel  
Wire Guards  
Wrought Iron Work  

Write for "Garage Illustrations" showing at least 50 modern buildings designed by us

International Steel & Iron Co.  
Address Dept. 18  
Evansville, Indiana

"RUFF-STUFF" Garnet Paper and Cloth

Ideal for the builder who wishes to do fast, beautiful work on floors and interior finish.

Write us for samples and prices.

WAUSAU ABRASIVES CO.  
Wausau, Wisconsin, U. S. A.

Do You Buy "Maverick" Merchandise?

In the old days of the West, stray, unbranded calves were called "Mavericks." They were without pedigrees—without identity—without known value. They were just Mavericks.

Today, unbranded, unadvertised merchandise is plentiful upon the market. Because the manufacturer has not trade-marked his product, you know not whence it comes. Who is responsible for it—who sponsors its quality and vouches for its worth? Nobody! It is a Maverick among merchandise.

An advertised, trade-marked article has the 100% backing of the man who made it. If it is an established product, it is only such because it has passed the acid test of public use. If it is new, the trade-mark is the manufacturer's pledge to stand behind the article and see it make good—or make good for it. But it is he who wants you to know it, and he tells you with his trade-mark name.

An established trade-mark name protects you. For safety and economy today—

Buy Trade-Marked Goods of Known Value

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER
This is the Flooring that Contractors and Builders are Buying!

Everywhere, Magnestone Composition Flooring is making a decided impression upon architects and contractors. Everyone who investigates this material agrees that it makes the ideal floor for hospitals, schools, stores and industrial buildings—also for kitchens, dining rooms, corridors, bathrooms and offices. It makes a floor that is at once attractive, sanitary (non-porous and seamless) warm and non-slippery, and easy underfoot. Although light in weight, Magnestone is of great tensile strength—so tough and durable as to eliminate practically all upkeep.

Magnestone, the Better Plastic Flooring
May Be Laid Over New or Old Wood or Cement Base

Magnestone may be laid plain or with borders with cove base and wallnosing in any color or combination of colors. Any competent mechanic can lay Magnestone. Simply laid one-half inch thick and trowel finished. For more profit per square foot in laying Magnestone than in laying cement. It will mean big profits for you this Fall and Winter.

Write for our Magnestone Flooring Proposition, also Free Sample and Descriptive Booklet

Write today for sample of Finished Magnestone Flooring; also for descriptive booklets and our proposition to contractors—which will surely interest you.

AMERICAN MAGNESTONE CORP.
Springfield, Ill.
Division of Floors
Installations made throughout United States and Canada

TILES & MOSAICS

Pleasing appearance, clean and wholesome, long life, combined with economic installation, are the reasons why your natural selection for wall and floor covering is tile. There is no more satisfactory floor covering.

Rich Red Quarry Tile
So long the best selection for Sun Porches, Terraces, Pergolas, Fireplaces, etc., is coming into increased popularity.

Guaranteed to be free from defect—made from shale burned to vitrification, our tile is impervious and cannot absorb stain or dirt.

Colors come in natural reds, ivory and gray.

Get This Free Book “How To Set Tile”

White Glazed Wall Tile

is found in all well appointed bathroom construction. Builders and contractors have come to know it is the one type of construction that is permanent.

We have a folder of varied new designs. Send your address and we will mail it to you.

CHAS. F. LORENZEN & CO.
521-523 W. Monroe Street
CHICAGO
AMERICA’S LARGEST TILE JOBBERS.
Carpenters—Contractors
If you’re interested in this—

You carpenters who want to break away from the hammer and saw—you contractors, too, who want to increase your incomes at least $5000 yearly—here’s your opportunity.

you’ll sell this—
ALLMETAL WEATHERSTRIP

Sell and install Allmetal Weatherstrip. Allmetal contractor-agents are found from coast to coast but there are localities, still, where good live agents are needed.

Building is on the boom. The coal supply is short. Weatherstrip as all big fuel saving equipment is in demand making it easy to sell.

Our co-operative sales plan, advertising assistance, demonstrating models, etc., make contracts easy to land.

Allmetal is the oldest and most improved pattern of metal weatherstrips on the market, well and favorably known.

Architects specify it. Building contractors recommend it. Property owners boost it.

Send for our agency plan. A few dollars sets you up in a profitable business. Clip the coupon and mail. No obligation.

ALLMETAL WEATHERSTRIP COMPANY
124 West Kinzie Street, Chicago

Gentlemen:
Without obligation send complete information on your agency plan.

Name:
Address:
Town.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER
On the Level

When you take your first squint along a Disston level you will realize that Disston levels are different. There are several things that explain this difference, but the most important are

1—Lumber

All Disston Plumb and Level lumber is air-seasoned for at least two years, and after that is given a very thorough heat treatment which results in the clearest and best stock that can be obtained. Careful tests throughout every succeeding stage in their manufacture result in levels that are absolutely true and uniform.

2—Adjustment

Disston adjustable levels have the easiest and most positive adjustment of any levels on the market. The removal of two small screws gives immediate access to all the working parts. Loosen the flatheaded (lock) screw, true up the bubble by turning the round-headed (adjusting) screw, then tighten the lock screw—the job is done. The adjustment is solid when set and there are no springs to allow inaccuracy. Moreover, this adjustment cannot rust fast, because the screws work directly into the wood.

Write to us for more information about Disston levels or any tool in the complete Disston line.

HENRY DISSTON & SONS, Inc.
Philadelphia, U. S. A.
Every Builder needs this Book

Show your prospect the plans in CONCRETE HOUSES when he asks you to build him a beautiful and comfortable house.

Houses of Concrete Block Stuccoed are easily built. They cost little, if any, more than frame construction. They are permanent, fire-safe, and need no paint.

This new volume—CONCRETE HOUSES—contains plans of 25 houses of popular types and sizes, designed by good architects. But it is more than simply a book of plans, because there is back of it a Complete Building Service

You can secure blueprints, specifications and quantity surveys of every plan shown in the book at a nominal cost. These will save you money, and in addition will enable you to bid intelligently on the job, for you will know just how much work there is to be done and what it will cost.

Blueprints

The blueprints for each of the 25 plans are complete in every detail. If the building site makes it desirable, reversed blueprints can be furnished.

Specifications

The specifications are as complete as they can be, covering plumbing, heating, wiring, and all the usual necessary work.

Send for "CONCRETE HOUSES." Every builder needs it!

PORTLAND CEMENT ASSOCIATION
111 West Washington Street, CHICAGO

Made in any size to fit your job. Adjustable for any thickness of outside wall.

Special service to Contractors, Architects and Dealers—Write for Circulars.

Priced $6.50 to $15.00

Penn-Grey Mfg. Company
809 University Ave. ST. PAUL, MINN.

The Mailing-Box

Built into the walls of any home, apartment, bank or office building.

Mail-Box is burglar-proof, weather-proof, and delivers the mail to you inside.

It is a necessity that will give as great a comfort and convenience as anything you may install and will cost less than any feature now in use in modern building.

Made in any size to fit your job. Adjustable for any thickness of outside wall.

The EASY CHANGE Combination Storm and Screen Door

2 IN 1

If your dealer can't supply you, write us and send his name.

THE SHALFORD
From Page 18, "CONCRETE HOUSES"

THE MALI0-BOX

Built into the walls of any home, apartment, bank or office building.

MAIL-BOX is burglar-proof, weather-proof, and delivers the mail to you inside.

It is a necessity that will give as great a comfort and convenience as anything you may install and will cost less than any feature now in use in modern building.

Made in any size to fit your job. Adjustable for any thickness of outside wall.

Special service to Contractors, Architects and Dealers—Write for Circulars.

Priced $6.50 to $15.00

Penn-Grey Mfg. Company
809 University Ave. ST. PAUL, MINN.

The EASY CHANGE Combination Storm and Screen Door

2 IN 1

If your dealer can't supply you, write us and send his name.

COMBINATION DOOR COMPANY
FOND DU LAC - WIS.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER
What an Architectural Engineer Says—

Distinctive FarQuar Features

An Automatic Control, actuated by the fire-box itself, which insures a uniform temperature and positively protects against overheating and its consequent dangers, while also making only one firing necessary every twenty-four hours. A Large Grate Area which insures slow combustion and a Long-Smoke Travel which means fuel economy.

An electrically welded, one-piece, Seamless Fire-box which entirely prevents the escape of fire-places.

A Vent and Return System which insures distribution of heat to all parts of the house, regardless of the weather, also prevents hot and cold spots in any room.

The Farquhar Furnace Company
312 FarQuar Bldg.
WILMINGTON, OHIO
Applying scratch coat to E-Cod Fabric

FOR ALL PLASTERING
Exterior and Interior

E-Cod Fabric builds better for less. It costs less and saves money in every operation. E-Cod Fabric is Fire Retardant, Rust-proof, Insulating Sound Deadening, Cold and Heat Proof. It saves 40% to 60% of the plaster which goes to form the key on any ordinary open mesh lath.

Write for full information to
M. J. MACADAMS CORPORATION
Conway Building, CHICAGO 101 Park Avenue, NEW YORK

H. & H. Steel Toilet Partitions

More Enduring Than Wood—Better and Cheaper Than Marble or Slate

More sanitary than wood, because they do not absorb odors—more enduring, too. They do not break or flake like slate or marble. Shipping costs and labor costs are less. Special rust-resisting filler finish. Write for drawings and specifications.

THE HART & HUTCHINSON CO.
Corbin Ave., New Britain, Conn.

"Concrete Work in Cold Weather" is a new booklet published by the Portland Cement Association, 111 West Washington St., Chicago. It will prove practical and of service to contractors who are planning to do any concrete building during the winter. It illustrates and describes successful methods of handling winter concrete work. It contains 12 pages and is 6 by 9 inches in size.

"Kitchen Equipment" is an illustrated catalog issued by Albert Pick & Company, 208-224 West Randolph Street, Chicago. It illustrates their kitchen equipment and contains interesting photographs of kitchens in leading hotels furnished with this equipment, also designs of ideal kitchens. It is 6 by 9 inches in size and has 28 pages.

The Testimony of a Decade is an interesting booklet published by the American Sheet & Tin Plate Company, Pittsburgh, Pa. It describes copper steel alloy for sheet and tin mill products and sets forth the results of service tests made with these products. Its size is 8 1/2 by 11 inches, contains 16 pages with a number of inserts, has a strong cover and is printed on good paper.

The Fred J. Meyers Manufacturing Co., Hamilton, Ohio, have issued a new catalog No. 67 showing their wire, iron, brass and bronze products. It is well edited and illustrated containing tables, weights, etc., and should prove of valuable assistance to contractors and architects. It is printed on high quality paper with 108 pages and is 7 3/4 by 10 3/4 inches.

The Detroit Steel Products Company, Detroit, Michigan, are distributing an attractive folder. "The Hows and Whys of Fenestra Steel Basement Windows." It offers important information to contractors and builders, describing various types and sizes of steel windows with details, drawings and instructions on building them into brick walls and concrete blocks.

BUILDING TRADES HANDBOOK

409 PAGES. 263 ILLUSTRATIONS.
A reference book for every man connected with the building trades. Contents:

- Blue Prints, Weights and Measures, Formule, Mensuration, Geometric Drawing, Structural Design, Materials of Masonry Construction (stone, brick, terra cotta, lime, cements, sand, mortar, concrete), Carpenters and Joiners, Roofing, Steel Square, Plumbing, Heating, Estimating, Architectural Design, etc.

Thousands sold. Complete—practical—thorough. Easy to understand. Pocket size. Just fill out the coupon below—slip it into an envelope with a dollar bill and mail, and this 409-page Building Trades' Handbook will come speedily to you by return mail. You run no risk. Money back if desired.