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(NORTHERN HARD)
The War and Business

SINCE this page appeared last month the war in Europe, the probable effects of which were then discussed here, has begun; and, contrary to experience in 1914, its first effect apparently has been to stimulate business in this country. Why “apparently”? Because, in spite of constant threats of war, this country’s business in general already had been slowly gaining for almost four months; and it is impossible to tell how much of the accelerated gain that occurred in September would have occurred if the war had not commenced.

Anyway, the war has commenced; and also during the last month general business has made one of the most marked advances ever recorded in the same length of time. The steel mills, whose output is the best single measure of durable goods production, have suddenly received orders compelling them to operate almost to their actual capacity. In the first eight months of the year railroad freight loadings averaged only 60 per cent as large as in 1929; but by the middle of September they were almost 75 per cent as large.

CAN we reasonably expect a continuance of improvement in our business for some time if we stay out of the war? The correct answer seems to be, “Yes,—if we act sensibly.” We have had for years at home a vast and increasing potential demand for goods—especially housing and other durable things. All we have needed for restoration of prosperity have been changes that would convert this vast domestic potential demand into effective demand—i.e., buying. The war—if we stay out of it—is sure, for some time at least, to increase foreign buying of many American goods—buying, for example, from South America of goods formerly bought from the nations now warring in Europe. This increased foreign demand may not only add directly to our volume of business, but may indirectly start changes that will help increase our effective domestic demand for many commodities.

But let us not fool ourselves. The war, if we stay out of it, probably will, at least temporarily, help our business. But we can easily exaggerate how much it will help. And it is certain that American producers must continue to depend almost entirely upon American buyers for their markets. The buyers of consumers’ goods are individuals; the buyers of durable goods are principally business concerns; and we can’t have recovery and prosperity unless we greatly increase buying by both—especially the latter.

HOW, then, increase buying—especially of durable goods, including housing, and the materials and labor used in it? By reducing government spending and taxing, and government interference with business. This needs to be emphasized now more, and more strongly, than ever. The country has waited for six years under the New Deal administration for the increase in the buying of durable goods by private enterprise that is still necessary to starting a real recovery. But private enterprise thrives only on freedom—freedom from excessive taxation; freedom from government spending that often subsidizes competition with it; freedom from too much government regulation.

General business in this country declined during over four months of this year, and then had improved almost four months before the war in Europe began. It now promises to continue improving during the rest of this year and at least the first half of next. How assure its continued improvement? We repeat: “By—not increasing, but—reducing government spending and taxing and government interference with business.”
When Winter sets in and weather gets really cold, you're all set for it. But these sunny Fall days fool you; nights turn cold when you least expect it. Down goes the thermometer... and, unless you're prepared, frost may nip the concrete.

Be on the safe side. Use 'Incor' 24-Hour Cement... heat the mixing water... to avoid heat loss, protect the concrete promptly after placing. For 24-hour service strength, supply heat in order to maintain curing temperature at about 70°.

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No Building Blackout Here

While there are no sure-fire answers to such questions as the above, we can profitably examine the war factors already affecting the building business, compare them with 1914 and attempt to draw conclusions that will be of value in planning business for the coming months.

Perhaps it should be said that the only thing anyone can be sure of today is that as long as the fate of nations hangs on the unpredictable decisions of dictators Hitler, Stalin and their axis partners, uncertainty must be expected.

Bearing this in mind, the first fact of importance for building men to consider is that when the first world war broke out in 1914 the building industry was in a declining market.

For several years construction had been lagging and the twelve months previous had seen a sharp drop. In spite of the fact that when war was declared the stock market closed for five months and U. S. business for a time came almost to a standstill, building volume was not materially lessened. It leveled off the first few months, the decline was stopped, and by the end of the first year construction had turned up.

Now on Rising Market

This time we are on a rising building market with a definite shortage of homes. The stock market has spurted upwards at once—and a rising stock market has always been an aid to home construction. The American banking system today is strong. Business in general is better prepared for war—psychologically and otherwise. The anticipated war demand for American goods will come at a time when business indices are moving upward. The result should be a sharp upturn in business of all kinds—not just in war materials.

It is important to note that a good part of increased sales of American products will not go to belligerents but to neutrals—including South America—whose orders were formerly filled by the now warring nations.

It is a natural conclusion, therefore, that better business, more wages, higher incomes and higher market values will have a favorable effect on home building.

"Buy Now," Says Wenzlick

Roy Wenzlick, president of Real Estate Analysts, Inc., speaking before the National Association of Woodwork Jobbers in Chicago a few days ago, said, "If you are going to build a house, now is the time to do it."

November and December should show good construction gains, he declared, and predicted that the first six months of 1940 will be good. After that, rapidly advancing building costs will affect the rising volume, he indicated.

There has been much loose talk about rising building costs. If the war continues there will eventually be a considerable rise. But American Builder believes more harm than good is done by scaring the public, as did the prominent New York banker who announced a $500 to $1,000 price increase in his houses effective in one week! The American public is in no mood to be rushed into building by talk of sharp increases in building costs. A few may be stampeded, but the more likely result is that the majority of prospective buyers will decide that costs have gone out of sight and will just decide to postpone buying.

What About Prices?

Opinion differs as to the extent of rise possible. Wenzlick points out that building costs advanced 218 per cent in the six-year period after the start of the first world war, and implies that a similar rise may take place this time. On the other hand, Roger Finkbine, president of the National Retail Lumber Dealers' Association, has pledged the 100 per cent co-operation of the entire retail lumber industry to oppose any unjustifiable increase in items used in home building, thereby jeopardizing the recent gains in low-cost home construction. Very few increases are thus far justifiable, and those occurring can be put down largely to speculation. While individual builders should by all means point out the advantage of buying now, the industry as a whole should vigorously set itself to oppose sharp increases, such as occurred in 1937 and killed off the then promising boom.

One powerful argument that builders and realtors can use to effective advantage today is that in a world full of uncertainty and confusion, the average citizen can make.

"Buy Now," Says Wenzlick

Roy Wenzlick, president of Real Estate Analysts, Inc., speaking before the National Association of Woodwork Jobbers in Chicago a few days ago, said, "If you are
While rents go up, the home buyer can today finance his home at low interest rates with charges fixed, no matter what happens to the nation’s price structure. A timely warning should be made, however, that present low interest rates are the result of a plentiful supply of money that may not continue indefinitely. As industrial expansion increases, the trend in interest rates will be upward. The present softening of the government bond market is an indication of this trend.

But If U. S. Enters

All of the above is based on the assumption that the U. S. will not enter this war. Any building industry man who wishes to see his industry continue to function will certainly join in every effort possible to see that we do not get in. Several members of the American Builder staff and thousands of its readers passed through one war in which the U. S. partook. The world was not saved for democracy, the war debts were not paid, and we are still suffering from the economic dislocation that war caused. When the United States entered the war, private and residential building volume dropped precipitantly, and finally practically stopped except for construction of cantonments and other emergency government work.

Keep Out and Keep Busy

The only really valid argument against the purchase of a home today is by the young man of army service age who says, “I would be a fool to tie myself up with payments on a house. If I go into the army, how can I keep them up on $30 a month!”

One answer to this is, of course, we do not expect the United States to enter the war. But a further and more complete answer would be to secure the co-operation of your local financing institution in having a clause inserted in the mortgage to the effect that in case of war, payments on the principal of the amortized mortgage would be deferred until the mortgagee is discharged from service. Fortunately, most prospective purchasers of homes are married men with children who would be last to be called in time of war.

The best slogan for the building industry is “Keep Out and Keep Busy.” The effect of industrial payroll expansion is already being felt. More men are being put back to work and plants and industries long idle will soon be putting more money into circulation. Higher prices for farm products will mean prosperity on the farm and a consequent increase in farm building and improvements. In the cities, where residential vacancies already are in many areas less than one per cent, the increase in business, plus a movement of workers to the cities, will quickly create a need for more housing. The job for every building industry man is, first, to help keep the U. S. out of this war and, second, organize a private “Build Now Campaign” of his own, for it is entirely possible that those who build homes during the next six months will get them at lower prices than they will see again in this generation.

“TRUCOST” MARCHES ON

A FURTHER improvement in the “TruCost” estimating figures, which are given for all home designs illustrated in American Builder, now puts these accurate quantities right on the home design page along with the photograph and floor plans. Up to this time this information has been carried on a separate page in tabular form. The editors believe that having the “TruCost” estimating figures right alongside the house design will make them much more usable and convenient to refer to. Look for this new feature in the home design section this month.

The “TruCost” system of estimating, fully protected by copyright and patent registration, was introduced to American Builder readers in the magazine of May, 1938. So it is just eighteen months old; and in that comparatively short time has won many friends. As a method of quick, accurate estimating, which does not require figuring the complete detailed bill of materials, “TruCost” is worth hundreds of dollars. If a contractor’s time, to say nothing of his eyesight and general health, is worth anything at all, an estimating system like this that relieves him of hours and hours of detailed work figuring estimates on houses that he never builds, adds up as something mighty valuable. And so “TruCost” has been adopted by many contractors, builders and dealers; and it has relieved them of much non-productive labor, at the same time helping them to a quick, accurate price to quote a customer promptly and to close many a sale.

Basic Idea Is Very Simple

The central idea of “TruCost” is very simple. It is a perfected system of estimating “by the square” instead of by individual pieces of lumber and other items of material. A “square of outside wall,” for instance, includes not only the outside siding but the building paper, the sheathing and the studding and sills as well. Each contractor makes up his own list of materials and cost of construction of this “square of outside wall,” and that cost then becomes his own individual, accurate cost which can be applied to any house he undertakes to build.

The “TruCost” estimating figures give the exact number of each of the units of construction to complete the “TruCost” estimate. These figures are, of course, fixed and unchanging for each design as illustrated. However, the method of construction and the use of materials, and the resulting costs are entirely within the control of each individual builder. In this way, these “TruCost” figures are accurate and hold good for any and every community.

The “TruCost” system leaves the fixing and quoting of the price where it should and must be, namely, with the local dealer and contractor who have the responsibility of making good on such quotations by actual delivery and performance. Many American Builder readers have put their own cost records into the shape and form required for “TruCost” estimating, and these convenient quantity figures now listed alongside each design should be a real help to the active men of the building industry.
Prize Winning
A. G. A.
 Builders' Competition
Homes

ON THE following thirteen pages is shown a selected group of prize-winning homes in the American Gas Association's Builders' Competition. From the hundreds of houses entered by builders from all parts of the country, the judges picked a group of well equipped, well laid out houses that show that operative builders and building professionals as a whole are making real progress in home design, construction and equipment.

THE CONTEST SHOWED that there is a strong tendency towards more practical, salable design. Only a small percentage of the entries was of the flat roof, modernistic type. The jury which picked the prize winners was composed of two prominent builders—George F. Nixon of Chicago and Hugh Russell of Seattle; two architects—Otto Teegen of New York and Miles Coles, assistant administrator of FHA, Washington; and Bernard L. Johnson, editor of the American Builder.

Better Kitchens—
STEP SAVING, labor saving kitchens with modern arrangements such as the one above set a new record in this Builders' Competition. The U-shaped kitchen above is in the mountain home at top of page detailed on the two following pages; designed by Harold J. Bissner.

OUTDOOR LIVING ROOM with barbecue fireplace is feature of $1,000 prize winner built by Frederick J. Zimowski at Altadena, Calif. (Plans on page 35.)
Mountain Home—Rough Redwood Board Exterior

CLOSE-UP OF EXTERIOR shows unusual brick entrance detail and use of horizontal redwood contrasting with vertical battens. BELOW is interior looking towards the dining room from the living room.

Frederick J. Zimowski, Builder
Harold J. Bissner, Architect

THIS $1,000 ALL-GAS, PRIZE-WINNING HOME has an unusual exterior and floor plan that are ideally suited for the location overlooking a canyon near Altadena, Calif. Large windows and glass doors face out over the view, and the house naturally opens out into an outdoor living room where the family will undoubtedly spend a large part of its time. The rough redwood boards of the exterior are 1" x 12" placed vertically with 2" battens. The boards are given only 1 coat of raw linseed oil. Underside of the 30" eaves, however, has been given 3 coats of olive green paint to blend with the sage brush and greasewood.

GAS EQUIPMENT includes a Betz vertical closet-type gas-fired air conditioning system located in a closet off center hall. Hot water is supplied by Crane “Champion” 20-gal. automatic storage unit. The refrigerator is an Electrolux G-410.

FLOORS throughout are of “Diacrete” lightweight concrete—a 4" reinforced slab laid on a cinder bed. All rooms are fully carpeted except bath, kitchen and service porch. House is fully insulated with 4" Gimco mineral wool.

“TRUCOST” ESTIMATING FIGURES FOR THIS HOUSE:
Trench Walls, 220 lin. ft.; Basement Floor, 42 sq. ft.; Garage Floor, 250 sq. ft.; Outside Walls, 18.00 sqs.; First Floor, 42.00 sqs.; Ceilings, 12-30 sqs.; Roof Pitch, 45° rise per ft. run; Roof, 22.10 sqs.; Hills and Valleys, 20 sq. ft.; Cornice, 36" x 220 lin. ft.; Partitions, 170 lin. ft.; Inside Finish OS Walls, 175 lin. ft.; Roof and OS French Doors, 7 sqs.; Stairs and Grace Eaves, 2 sqs.; Garage Door 8 ft. wide, 2; Inside Doors and Cased Openings, 16 sqs.; Windows and Casements, 18 sqs.; Chimney, 20 sq. ft.; Porch Floor, 3.00 sqs.; Porch Ceilings, 152 sqs.; Porch Beam, 26 lin. ft.; Porch and Balcony Post and Newels, 2; Porch and Deck Rail, 4 lin. ft.
THE MANNER IN WHICH THIS HOUSE is fitted to its site, as well as the interior arrangement, shows a fine understanding of the living requirements of the occupants. The living and dining rooms open naturally upon a well-laid-out outdoor living room on the edge of the canyon. The large glass doors and windows facing towards the view bring light and air into the interior. The kitchen is compact and well laid out, convenient to the dining room, and also has access to the front door through the powder room. The master bedroom has large corner windows which also overlook the view, and the boy’s room has built-in bunks. Since there is no basement the gas-fired heating unit is located in a closet off the hall.

Expertly Planned
For Outdoor as Well as Indoor Living Space

ENTIRE PLOT is skillfully laid out with space for badminton court, ample parking, and an “outdoor living room” with space for ping pong and other activities.
7-Room French Provincial with Stone Exterior

R. W. Bramberg, Builder, Oak Park, Ill.

$1,000 PRIZE WINNER
GAS EQUIPPED

THE MAIN PORTION of this imposing French Provincial home is flanked by two large stone chimneys. A two-car garage balances the living room porch at opposite end. The two bow windows repeat the curved lines of the three front dormers breaking through the cornice, giving the exterior a pleasing and refined styling. The kitchen, as viewed on the opposite page, is efficiently laid out with straight-line production from the refrigerator at the rear entrance to the stove at dining room door.

THE LIVING ROOM, as seen at the right, indicates the clean-cut, modern detailing of interior in this French Provincial home built by R. W. Bramberg, Oak Park, Ill., and shown above, with plans on the opposite page. The scored mirror over the mantel is an unusual and attractive feature.
CONSTRUCTION OUTLINE

FOUNDATION: Walls and floor poured concrete; asphalt dampproofing.

STRUCTURE: Stone veneer over stud walls; sheathing, Celotex T & G Vapor-seal; inside lathed with USG Rocklath and plastered; floor construction, wood joists.

ROOF: Wood rafters and sheathing with asbestos shingles; 4" rock wool.

FIREPLACE: Black marble face.

SHEET METAL WORK: 26-gauge Toncan.

WINDOWS: White pine sash; L-O-F glazing; bronze weatherstripping; Fenestra steel basement sash.

FLOOR COVERING: Clear oak throughout. Linoleum in kitchen; baths, tile floor and wainscot; recreation room, asphalt tile.

HARDWARE: Corbin cast brass.

PAINTING: Exterior, 3 coats "Dutch Boy" white lead and oil; interior, Pratt & Lambert 3 coats.

ELECTRIC FIXTURES: Lightolier.

WINTER CONDITIONING: Gas-fired Sunbeam heating system.

EXCELLENT PLANNING was one of the major considerations in awarding a first prize to this Oak Park house built by R. W. Bramberg. From the well proportioned reception hall, there is access to the living room on one side, dining room on the other, to stairs to the basement recreation and utility rooms and to the second floor. A rear hall kept to minimum size connects servant's room, bath and kitchen, giving perfect circulation. A second stair to the basement leads down from the service and grade entrance. A breakfast set with cupboard above fits into one corner of the kitchen. On the second floor three good-sized bedrooms, two baths and plenty of closets are well planned.
IN describing this White Plains, N.Y., house the architect said that it is of "simple design capturing the spirit of early New England architecture." It also captured a $1,000 prize in the A. G. A. Builders' Competition. Floor plan is flexible and efficient, with room over garage convenient as maid's room, guest room or study. Specifications include C. A. Dunham Co.'s "Sav-T-heat" gas vapor system; 40-gal. Whitehead Monel metal gas water heater; Electrolux refrigerator; Roberts and Mander "Quality" gas range; Anti-Hydro waterproof cement; Anaconda copper termite flashing; Red River Lumber Co. redwood siding; USG Red Top Diamond, Jr. wirelath; Murphy kitchen cabinets; Armstrong linoleum; Kohler plumbing fixtures; Lightolier Colonial fixtures; Richard E. Thibaut wallpaper; Bangor slate roof; Anaconda leaders, flashing, water pipes and heating pipes; Curtis Silentite windows, doors and trim; Minwax floor finish on oak floors; Dutch Boy white lead and oil paint.

FOUR BEDROOMS and 3 baths are included in plan. Compact gas vapor system and hot water heater are shown at right.
All-Gas Dutch Colonial

GOOD DESIGN and a compact, efficient plan make this Dutch Colonial, built by M. R. Marksbury of Columbus, Ohio, a winner. Equipment includes a Sunbeam gas-fired air conditioning unit, “Overhead” garage door, Curtis Silentite windows, Armco 25-gauge flashing, Donley fireplace equipment, Toch Bros. integral waterproofing, Pratt and Lambert interior paints, Cabot’s Double-White exterior paint. The architect is W. F. Breidenbach.

"TRUCOST" ESTIMATING FIGURES FOR THIS HOUSE:
Basement Walls, 132 lin. ft.; Trench Walls, 35 lin. ft.; Basement Floor, 84 sq. ft.; Garage Floor, 200 sq. ft.; Excavation per ft. deep, 24 cu. yds.; Outside Walls, 22.00 sqs.; First Floor, 8,30 sqs.; Second Floor, with fin. fig., 9.24 sqs.; Second Floor, without fin. fig., 9.35 sqs.; Ceiling, 10.50 sqs.; Roof Pitch, 5° & 11° rise per ft. run; Roof, 28.20 sqs.; Hips and Valleys, 10 lin. ft.; Cornice, C & F, 238 lin. ft.; Cornice, 6, 40 lin. ft.; Partitions, 230 lin. ft.; Inside Finish OS Walls, 260 lin. ft.; Front and OS French Doors, 4 sqs.; Rear and Grade Doors, 2 sqs.; Garage Door 8 ft. wide, 1; Inside Doors and Cased Ops., 25 sqs.; Windows and Casements, 22 sqs.; Gable Sash and Louvers, 5 sqs.; Chimney, 34 lin. ft.; Main Stairs, 1; Porch Floor, 160 sqs.; Porch Ceilings, 2.09 sqs.; Porch Beam, 41 lin. ft.; Porch and Balcony Post and Newels, 13; Roof Roof, 1.50 sqs.; Porch Cornice, 30 lin. ft.; Porch and Deck Rail, 16 lin. ft.

MANTEL AND WINDOW DETAILS lend charm to living room.
HOMER T. BROWN of Brookline, Mass., built this rambling Colonial from plans by Royal Barry Wills, Boston architect. The equipment consists of a General Electric winter air conditioning unit, a 45-gal. Ruud Monel metal storage water heater, Servel refrigerator, Glenwood range, G-E Silent Mercury electric switches throughout. It is insulated with Sterling fibre blanket on all exterior second floor walls and ceilings.

THE FLOOR PLAN has many interesting features, including a maid's room with private outside entrance. The manner in which the kitchen and breakfast nook are placed in a 1-story room connecting main part of house with garage is good. Dining room and living room face the rear away from city traffic. There is an attractive study downstairs, 3 bedrooms and 2 baths upstairs.

$500 Prize Winner

CLEAN, AUTOMATIC HEAT makes possible this attractive pine-paneled basement room with its brick fireplace, well-cased-in windows and plastered ceiling. It adds a valuable extra room to the living space of this fine house.
A COMPACT, ECONOMICAL PLAN was worked out by George W. Long, builder of this house, for Rochester, N.Y., moderate income workers. He equipped it with gas-fired winter air conditioner, John Wood Co.'s Penfield water heater, Glenwood gas range, Standard Sanitary plumbing fixtures, Johns-Manville mineral wool insulation, U. S. Gypsum Rocklath plaster base, copper tubing throughout. One important defect in the plan, according to the judges, is the lack of a front entrance coat closet; otherwise the arrangement is well worked out.

$500 Prize Winner

28 x 21 Ft.
-6 Rooms

FIRST FLOOR PLAN

SECOND FLOOR PLAN
Low Cost 2-Family Cottage—Gas Heated

THE JUDGES of the A. G. A. Builders' Contest awarded this two-family house, built by Frank Kirkpatrick of Milwaukee, a $500 prize because of the manner in which it provided compact, comfortable, low-upkeep housing at an extremely low cost. Each unit is individually heated with a Janitrol BC 45-37 vertical gas-fired air conditioning unit with forced circulation, placed inside a closet in the approximate center of the apartment. A “Hot-stream” gas water heater is also located in the closet, and the 20-gal. water tank placed horizontally over door in bathroom, enclosed by a plywood panel. Duct work is kept to the minimum. The kitchen-dinette is cleverly arranged with built-in seats and shelves and is equipped with Alcazar Stanton gas range, Standard Sanitary sink.

The brick chimney contains a 4" glazed tile flue for the gas furnace, and the soil pipe for the plumbing fixtures. Exterior walls are of 16" red cedar shingles, double-coursed with 12" exposure, laid upon 3/8" Douglas fir plywood panels. Interior wall surfaces are also of Douglas fir plywood which was given 2 coats of I. F. Laucks “Rez” with a finish coat of Minwax.

There is no basement, but the 8" block concrete foundation walls are carried 5' below grade. Between the 3/8" plywood subfloor and the finish floor 1" sleepers are laid, over which is placed 1 layer of 15 lb. felt allowed to sag slightly to divide the air space in two.—Aubrey St. Clair, architect.


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CLEVER BUFFET arrangement built between kitchen and dining alcove, providing handy storage for dishes and silverware.

LIVING AND DINING ROOMS, master bedroom and a large porch overlook the sea in this Laguna Beach, Calif., house. Aubrey St. Clair was architect.

SMITH CONSTRUCTION COMPANY of Laguna Beach, Calif., built this livable home on an unusually striking site overlooking the water, and the floor plan shows how successfully it has been laid out to take advantage of its location. The large living room at the center has big glass windows and doors opening onto the porch towards the view side. Dining room and master bedroom also overlook the view. The builder selected gas heat and installed 2 No. 60 Series A. C. Payne gas furnaces. Other equipment includes a Magic Chef gas range, Electrolux refrigerator, Overhead garage door, Schlage hardware, Kohler plumbing fixtures. Roof is of Certigrade red cedar shingles; flashings, downsputs and gutters of 26-gauge American Rolling Mill’s Armco. Other materials include Chamberlin metal weatherstrip and spring bronze thresholds, Armstrong linoleum, Ponderosa pine paneling, Sherwin-Williams paint, Gladinning McBean tile, USG Rocklath plaster base, “A” quality Pennvernon plate glass. The architect is Aubrey St. Clair of Laguna Beach.

"TRUCOST" ESTIMATING FIGURES FOR THIS HOUSE: Basement Walls, 256 lin. ft.; Trench Walls, 125 lin. ft.; Basement Floor, 1340 sq. ft.; Garage Floor, 360 sq. ft.; Excavation per ft. deep: 75 cu. yds.; Outside Walls, 10.10 sqs.; First Floor, 16.10 sqs.; Roof Pitch, 7° rise per ft. run; Roof, 31.70 sqs.; Hips and Valleys, 230 lin. ft.; Cornices, 8°; 364 lin. ft.; Partitions, 230 lin. ft.; Inside Finish OS Walls, 126 lin. ft.; Front and OS French Doors, 4 opps.; Rear and Grade Doors, 5 opps.; Garage Door 8 ft. wide, 2; Inside Doors and Cased Opgs., 20 opps.; Windows and Casements, 46 opps.; Chimney, 52 lin. ft.; Porch Floor, 3.80 sqs.; Porch Ceilings, 5.02 sqs.; Porch Beam, 76 lin. ft.; Door and Balcony Post and Newels, 24; Porch Roof, 1.82 sqs.; Porch Cornices, 24 lin. ft.; Porch Rail, 56 lin. ft.

L-Shaped 6-Room House by the Sea

AUTOMATIC GAS FURNACE and water heater in basement.
FARMER AND DURAN, Tulsa, Okla., builders, put up this $500 prize winner as a model home, equipped it with complete year 'round air conditioning, including a Bryant gas heater and Silica Gel dehumidifier, Sirocco blower, McQuay cooling coils, Libbey-Owens-Ford filters, Minneapolis-Honeywell controls. They also equipped it with a Magic Chef Certified Performance range with Monel metal top, a General automatic insulated storage water heater, a Majestic 3-bushel size incinerator, 2 Peerless wall-type bathroom heaters, and a Homestead Woodfire fireplace heater. The plan is spacious and well organized, with nicely proportioned rooms, an attractive downstairs library and lavatory, maid's quarter and bath at rear of garage. Two views of the model kitchen, below, show the efficient sink and gas range units and attractive built-in breakfast set.
A NICELY DETAILED COLONIAL FIREPLACE with built-in cupboards and bookshelves is the center of interest in the living room.

CLEAN AND CAREFREE COMFORT is made possible by the gas-fired winter air conditioner and automatic Monel metal storage water heater with a capacity of 45 gals.

THE ALL-GAS KITCHEN of Homer Brown's prize-winning house is cheerful, efficient and easy to keep clean. There is a built-in exhaust fan, attractive lighting fixture, well arranged work area and cabinet space. The builder selected and installed a modern insulated gas range with the new, up-to-date sales features.
HORIZONTAL LINES in brickwork and shingles give this Portland, Ore., prize winner a modern appearance. Murphy and Dean, builders.

$1,000 Prize Basementless House—Heated Floors

MURPHY and Dean, Portland builders, employed an unusual floor construction and air return to the gas-fired Mueller air conditioning unit in this house. A 4" slab of ready-mix waterproof concrete was placed on the ground; then a 3-ply membrane of roofing paper applied on tar; then 1" of concrete was placed on top of the membrane, and over this 2" x 4" Wolmanized sleepers. Next 2" x 4" Wolmanized joists were laid at right angles to the sleepers, upon which Wolmanized ship-lap subfloor was laid; finally a layer of building paper and 13/16" oak. Sleepers and joists being at right angles to each other, they form a grille-like chamber through which the air, at a temperature of 60° to 65°, is returned to the gas-fired conditioning unit. Entire flooring is thus evenly and equally warmed and ventilated. Other materials and equipment include Schlage hardware, Dutch Boy white lead, Fir-Tex insulating lath, G-E wires, switches and equipment. The floor construction was designed by C. H. Wallwork, consulting architect, in cooperation with Mueller Furnace Sales Co. of Portland.

21 Years of Successful Home Building

Lang Brothers of Cincinnati, Ohio, Have Emphasized Quality Construction in Homes of Moderate Price to Establish Reputation; Build 950 Well Planned Homes Since 1918

JOSEPH LANG and Frank Lang have been building houses in and around the city of Cincinnati since 1918 and have erected 950 homes in this time. Organizing the firm of Lang Brothers in 1918, these builders have built homes ranging from low priced dwellings to more expensive ones. Catering to the demand for a popular, low priced, quality dwelling, well within the reach of the average family budget, Lang Brothers recently completed a series of 45 homes in College Hill, a suburb of Cincinnati. The building of homes has been a specialty of this firm. The result of experience, and constant attention to new developments in home building practice, has been the creation of homes that offer the buyer everything he could want from the standpoint of practical arrangement, permanence and comfort. (See pages 48 and 49.)

As illustrated in drawings below, this concern features three basic points of construction in every house which govern its durability. The first is proper draining and waterproofing around foundation, and is assurance of a dampproof foundation and basement.

The second basic feature of Lang Brothers, Inc., houses is a furred masonry wall. As the accompanying cross section drawing shows, an air space breaks contact between the rough masonry walls and interior finish. This results in a natural insulation that provides easier and more economical heating.

The third basic feature is one of insulation. A heavy blanket of insulating wool covers the entire ceiling area of these homes. This provides still further for heating ease and comfort in winter, as well as a cooler abode in summer.

Lang Brothers have always given particular attention to windows. Much of the ease of heating a home depends on the tightness of its windows, how they are set into the walls and how they operate. Attention is given to the arrangement of the windows to provide the maximum amount of daylight.

Kitchen planning is another feature of Lang-built homes and every effort is made to keep abreast of the times with built-in cabinets, tiled walls, modern sinks and convenient refrigeration and stove locations.

CONSTRUCTION OUTLINE

Some of the materials and equipment of Lang Brothers homes are as follows:

PLUMBING FIXTURES: Standard Sanitary.
CASEMENT SASH: Detroit Steel Products Co.
WATER HEATER: Pittsburgh Water Heater Corp.

(Continued to page 49)
THIS Lang Bros. house has five rooms on the first floor, garage, recreation room and utility room in basement, and an unfinished second floor. A feature of this type of plan is access to the bedrooms and bath without going through living room.

Compact Bungalow; Five Rooms; English Style

Lang Bros., Builders, Cincinnati

“TRUCOST” ESTIMATING FIGURES FOR THIS HOUSE:
CONSTRUCTION OUTLINE
(Continued from page 47)

HEATING: Sunbeam furnace.
ROOFING: Asphalt shingles.
PAINTS: E. I. du Pont de Nemours & Co.
GLASS: Libbey-Owens-Ford.
LINOLEUM: Armstrong.
GARAGE DOOR: Frantz.
IRON WORK: Cincinnati Iron Fence Co.
LATH AND PLASTER: National Gypsum Co.

Two-Story 6-Room Colonial Home

THE six-room house shown above, with plans below, are typical examples of current Lang Bros. building in the suburban College Hills section of Cincinnati. Garages in the basements are standard practice where the grade allows, making good use of this space and contributing to high value at moderate cost.

Another feature of these homes is the careful planning, equipping and finishing of the bathrooms. Some of these details are shown in the view at the right; built-in mirrored medicine cabinets, built-in shower, tile and the accessory equipment are included in Lang-built homes.

"TRUCOST" ESTIMATING FIGURES FOR THIS HOUSE:

- Basement Walls, 154 lin. ft.; Trench Walls, 4 lin. ft.; Basement Floor, 884 sq. ft.; Excavation per ft. deep, 41 cu. yds.; Outside Walls, 18.39 sqs.; First Floor, 850 sqs.; Second Floor, with E. R., 505 sqs.; Ceiling, 8.00 sqs.; Roof Pitch, 11" rise per ft. run; Roof, 12.30 sqs.; Hips and Valleys, 29 lin. ft.; Cornice, C & F, 15 lin. ft.; Cornice, G, 56 lin. ft.; Partitions, 250 lin. ft.; Inside Finish OS Walls, 218 lin. ft.; Front and OS French Doors, 1 opg.; Rear and Grade Doors, 1 opg.; Garage Door 8 ft. wide, 1; Inside Doors and Cased Osps., 19 opgs.; Windows and Casements, 21 opgs.; Chimney, 47 lin. ft.; Main Stairs, 1; Porch Floor, 1.20 sqs.; Porch Ceilings, .70 sqs.; Porch Beams, 27 lin. ft.; Porch and Balcony Post and Newels, 8; Porch Roof, 1.20 sqs.; Porch Cornice, 24 lin. ft.

THE floor plans at the right indicate the arrangement of this Lang Bros. six-room house. One bedroom and bath are located on the first floor; two other bedrooms and lavatory above.
Home Show Staged by Three Chicago Builders

Group of Ten Model Homes on North Shore Forms a Successful Sales Demonstration

A NEW type of co-operative sales effort was staged this summer by three builders of Chicago and suburbs. It took the form of a 1939 Home Show, the first of its kind in the Chicago area. Of course, similar demonstrations have been staged by individual builders or builders' associations, such as the Greater Detroit Home Builders' Association's Duchess Project recently described in American Builder. The novel feature of this joint display in Evanston, Ill., was the fact that three independent building firms co-operated to the fullest extent in presenting the ten model homes of the exhibit.

The newspaper advertisement which announced the Home Show is reproduced below. W. C. Tackett, Inc., Chicago, W. G. Ruggles Associates, Inc., Evanston, and C. A. Hemphill Associates, Evanston, were the three firms sponsoring the idea. Each builder had three new houses, Ruggles having previously erected the tenth house on this site. The homes were exhibited fourteen hours a day and were floodlighted at night. The first announcement brought out 12,000 people, who went from one house to another comparing the various features. This gave the public a convenient opportunity to study good planning, construction and furnishing, one of the houses built by C. A. Hemphill, and shown on page 32, having been furnished. All three builders have reputations for fine home building in the medium and upper price brackets. Variations in styling and interior arrangement broadened the public's education in the art of home designing, decorating and building.

These three of these houses, one built by each of the exhibitors, are shown on the three following pages with floor plans and details about their construction.

This project, like other successful joint efforts in the building industry, demonstrates that such co-operation works to the benefit of both the builders and the buying public. To date, most of the houses have been sold by the exhibitors and a number of orders have been signed up for duplicates of the models.

LEFT: Reproduction of striking newspaper advertisement announcing the co-operative demonstration staged by three builders of Chicago and suburbs. The ten houses in the Home Show are illustrated on the diagonal band. The builders reported very gratifying results were obtained from this co-operative display.
Home Show Colonial—8 Rooms, Attached Garage

W. C. Tackett, Inc., Builder, Chicago

OF THE three houses which W. C. Tackett displayed in the North Shore Home Show, this one was considered the most popular, although the other two houses were equally well planned and built. They were sold in four days after the announcement of the opening, and orders for an additional three were taken. All were priced in a range between $10,000 and $20,000.

This one, as can be seen from the floor plan below, has a through side hall with excellent circulation to lavatory, grade entrance, garage, basement and kitchen. The basement has a large recreation room with wood-burning fireplace. Rear porch is screened for comfortable outdoor living. Kitchen has efficient U-shaped plan with built-in nook. Bath arrangement on the second floor is economical; ample closet space is provided throughout house.
7-Room French Design in North Shore Demonstration

C. A. Hemphill, Builder, Evanston

THIS is one of the larger homes in the North Shore's 1939 Home Show described on page 50. It is planned for modern, convenient living from the large recreation room in the basement to the ample bath facilities on the second floor. Some of the materials and equipment used are Vapor-seal sheathing and 4" rock wool insulation, 3-coat plaster on USG Rocklath, Bruce strip flooring, Outside Luminall on common brick, red cedar shingles, gas-fired winter conditioning and Corbin hardware.
For a Narrower Lot; Fourth Bedroom Can Be Added

ANOTHER of the 1939 North Shore Home Show models is shown above. It is very compact and well arranged, the overall width without the attached garage being 29 feet. A feature is the possibility of adding a fourth bedroom above the garage, access already being provided by the door to the roof deck. Construction materials and equipment include poured concrete foundation on 24-inch footing, select common brick veneer, No. 1 yellow pine framing, cypress exterior trim, rock wool insulation in walls and above second floor ceiling, 3-coat plaster on Sheetrock and metal lath, plastered basement ceiling, clear red oak flooring laid over sub-floors with deadening felt between, solid brass hardware, Mueller winter air conditioning, Armstrong linoleum, Ilg automatic kitchen ventilating fan, Well-McLain plumbing fixtures, porcelain lined medicine cabinets, interlocking weatherstripping on doors and windows, wiring in conduits with circuit breaker, DSA glazing, ornamental wooden mantel with marble facing and hearth, drives, walks and complete landscaping.
How Derby Does It


FOR SEVERAL weeks before the grand opening of Roger Derby's new low-cost home development, the people of New Orleans kept seeing mysterious "teaser" advertisements in their local paper. One of these said:

"They told the Wright Brothers it couldn't be done—
See classified section, Sunday, April 30."

Next day another cryptic message appeared:

"Yep! they told Marconi it couldn't be done!"

With public interest built up by these teasers, full page newspaper advertisements of the type illustrated on the opposite page appeared announcing Robert Derby's new development featuring "Magic Electric" homes selling for $25 a month. The headlines read:

"They said it couldn't be done
but
ROGER DERBY DOES IT!"

What Roger Derby had done was to build a fully equipped, well planned and soundly constructed home to sell for only $25 per month. Derby had demonstrated that it was possible to provide a home in this price range fully equipped with electric dishwasher, garbage disposal unit, electric home laundry, attic exhaust fan, electric circuit breaker, 12 gauge wiring and similar quality features throughout.

The Derby houses are attractive little five-room Colonials with good cross ventilation, an attractive screened porch and a floor plan well suited to the New Orleans climate (complete floor plans and specification details are given on page 58). They are designed by Rathbone Debuys, New Orleans architect and built by the Perrilllet-Rickey Construction Co. Fifty-four houses were planned for the original tract.

The Derby development is of interest to builders not...
1939 American Builder, October 1939.

They said it couldn't be done, but—

Roger Derby does it!

"Modern" is the word...

- DISHWASHER
  - As easy to clean as to wash
  - Finishes in highest quality stain and acid-resistant vitreous enamel

- ELECTRIC SINK AND GARBAGE DISPOSAL
  - No garbage to handle

- ADEQUATE WIRING
  - Better light home

- ATTIC VENTILATION
  - No attic mold to worry about

- BENDIX HOME LAUNDRY
  - This ingenious device saves you time and energy

- COLORED BATH FIXTURES
  - In keeping with modern features

- CONTINUOUS CONCRETE FOUNDATION
  - Double strength piers are set on a single continuous concrete foundation

- FIR DOOR
  - Delicious for door and window

- CYPRESS LUMBER
  - Beautiful cypress for door and window

Here is the General Electric Magic Home

ONLY $25.41 PER MONTH

The first community of registered homes in New Orleans

Only $25.41 per month...

This Registered Home Open for Inspection Today 10 A. M. to 9 P. M.

In Derby Place

The Shield of Protection

We are proud to announce that these homes are eligible for Certificates of Registration issued by the Federal Home Loan Bank of Washington. Registration of these homes is automatic on the sale of design, plans and specifications approved by the Federal Home Loan Bank. Certification by the Federal Home Loan Bank is predicated on the use of designs, plans and specifications approved by the Federal Housing Experts. Roger Derby Magic Electric Homes Are Registered Homes.

Exclusive Financing Agent: DRYADES BUILDING & LOAN ASSOCIATION

Roger Derby Exclusively

The Carondelet Bldg., MA. 5938

We are proud to announce that these homes are eligible for Certificates of Registration issued by the Federal Home Loan Bank of Washington. Certification by the Federal Home Loan Bank is automatic on the sale of design, plans and specifications approved by the Federal Home Loan Bank. Certification by the Federal Home Loan Bank is predicated on the use of designs, plans and specifications approved by the Federal Housing Experts. Roger Derby Magic Electric Homes Are Registered Homes.

Exclusive Financing Agent: DRYADES BUILDING & LOAN ASSOCIATION

Roger Derby Exclusively

The Carondelet Bldg., MA. 5938

Full page advertisements such as this announced the grand opening of the Roger Derby development in New Orleans. Each day during the preceding week, the smaller "teaser" advertisements at the top of the page appeared, leading up to the final slogan.
only because of the construction methods and equipment installed—which is considerable—but also because of the striking advertising and promotion methods. In the first place the houses were tied in with the Federal Home Loan Bank registration plan, each house being inspected and awarded a certificate of registration by the local Home Building Service Organization.

To dramatize to the public the quality construction methods employed, photographs were taken during construction, many of which are shown on the following pages, and a large display put up in the model home. These photographs were close-up construction details, each photograph 8½” x 11” in size, mounted on a large easel with appropriate description under each. One of the photographs for example showed the steel anchor bars which firmly tie the frame work to the foundation at each corner as a protection against movement by flood, hurricane, or other causes. Another close-up photograph shows the 6 x 6 timber sills, termite shields and slate moisture barriers inserted in the foundation. Some 17 photographs in all were mounted on the easel which gave a clear picture of the construction methods which anyone could quickly grasp.

Only a Few More Dollars

One of Derby’s theories which he set out to demonstrate in his “Magic Electric” homes was that the cost of a fully equipped kitchen represents only a few dollars per month when amortized over the 25-year period of the loan and that this cost is very slight in comparison to the benefits received by the home owner. In these small homes which cost the owner only $25 per month, Derby provides a General Electric dishwasher, modern steel cabinets with built-in sink and garbage disposal unit...
and a Bendix home laundry. Any one of these items if purchased separately by the owner would have to be financed over a short period of time and would cost the owner much more than when installed by the builder. Thus Roger Derby is able to sell his houses to the housewife on the basis of less kitchen drudgery; no messy garbage problems; better living; fewer colds (dishes washed in an electric dishwasher are immersed in scalding water which kills germs) and on other points that greatly affect the every-day life of the buyer.

One of the important selling items in these houses is scientific attic ventilation. The houses have well built ventilation with louvres at the gable ends and a center ventilator built to resemble a chimney. Installed in the attic is a large sized ventilating fan which provides a complete change of air in the house every minute.

In his advertising Derby also features the fact that the houses are adequately wired and gets the cooperation of the local utilities or the local Adequate Wiring Bureau who check plans and certify that each is properly wired with equipment of adequate size to take care of the heavy modern requirements of the electric home. Such a wiring system, it is pointed out, is more economical because it eliminates waste current caused by wires that are inadequate to carry the load. With a properly planned system, irons, electric toasters and other appliances heat more quickly and more consistently. An electric circuit breaker eliminates the use of fuses. Lumber throughout the Derby houses is of best quality, is square cut with a power saw and properly primed and painted. For example the outside siding is of cypress with all joints and intersections painted with pure white lead and oil before being nailed in place.

In addition to extensive newspaper advertising, large billboards have been installed showing the houses in color, with a large price-tag attached announcing their cost at only $25 a month. As a result of the advertising program, thousands of people turned out to the official opening and a special corps of police was required to handle the crowds. The mayor of the city was on hand.
to cut the ribbon as the model house was opened.

"In the conducting of our development," says Roger Derby, "I have kept four principles in mind, depending upon them for the success which we have so far obtained. These are:

"First, by building houses with identical floor plans, but different exteriors, we are able to approximate the assembly line method of mass production used in the automobile industry, and still not have homes too similar in appearance.

"Second, by building in quantity, the cost of materials and of supervising becomes appreciably smaller.

"Third, furnishing for people of small means, the comforts and luxuries owned only in the past by the rich—as the including of an electric dishwasher, sink and home laundry—is a selling point which carries great weight with people of moderate or small income.

"Fourth, we build only homes designed by an able architect—in this case Mr. Rathbone Debuys."

A brief list of specification and construction details includes the following:

**CONCRETE**—Ready-mixed concrete, water content 7 gals. per bag of cement, in 1, 3, 5 proportions for plain concrete, and 1, 2, 4 proportions for reinforced.

**SLATE COURSE**—Insert 2 layers good slate well lapped in third brick course above final grade as moisture barrier.

**LUMBER**—All framing lumber dense short leaf Southern yellow pine, kiln-dried or well seasoned conforming to grades of Southern Pine Association as follows:

- **Sills**—6 x 6—S4S—No. 1 Com. DSL 85% heart
- **Floor Joists**—2 x 10—S2E—No. 2 Com. DSL
- **Ceiling Joists**—2 x 6—S4S—No. 2 Com. DSL
- **Rafter**—2 x 6—S4S—No. 2 Com. DSL
- **Studs**—2 x 4—S4S—No. 2 Com. DSL
- **Plates**—2 x 4—S4S—No. 2 Com. DSL
- **Corner Braces**—2 x 4—S4S—No. 2 Com. DSL
- **Roof Sheathing**—1 x 6—T&G—No. 2 Com. DSL
- **Sub Floor**—1 x 6—S4S—No. 2 Com. DSL

**SHEATHING PAPER**—15 lb. asphalt saturated rag felt.

**SIDING**—A-grade Louisiana red cypress bevel siding, end

(Continued to page 116)
How Free Service Sells Homes and Lowers Costs for California Building Company

ARE there unsuspected minor errors of construction in the homes you build? Is the new home owner as satisfied with his purchase a year later as he was the day he first signed the contract? Is he boosting your work among his friends? Is he acting as an unofficial salesman for your new homes?

Not many contractors know the answers to these questions, but The Standard Building Company, 1500 Judah Street, San Francisco, does. A workshop on wheels solved these problems, and a dozen more like them.

Established twenty years ago, The Standard Building Company is a well known institution to thousands of San Francisco home owners. And the workshop on wheels, a little grey truck that rambles around the Beach section in this city, servicing homes, is steadily building customer satisfaction.

About five years ago Fred and Carl Gellert, who own The Standard Building Company, did some careful thinking on the matter of building low cost homes. Nearly every other type of manufacturer maintained a service department for his product, but, once a home was sold, that was usually the last a contractor knew about it.

So there and then a service department was born. The Gellert brothers had always kept a careful check on their work, but now a systematic effort was made to eradicate anything that might cause dissatisfaction. Business was growing so fast that two years later the truck was added to the department, and now The Standard Building Company employs four men whose sole job is to keep home owners happy.

Few contractors realize that there are dozens of little things that annoy the owner of a newly built home. The workshop on wheels is a real trouble shooter. It is virtually a rolling hardware store, carrying everything from a screw to a ladder.

Is the stucco dirtied by the gardener? The service crew touches it up. Does a window stick? The service crew waxes it, makes it open easily. Has the paint been scratched by furniture movers? The service crew takes care of that.

They hang clotheslines, put new wallpaper on spots soiled by owners' children. They repair stucco that has been damaged when installing the telephone. They adjust locks and doors. Sometimes they install new washers in leaking faucets, even after they have been in use for two years or more.

(Continued to page 118)
Model Homestead Community Grows Near Chicago

Smith & Dawson Develop 360-Acre Project; Sell Over 140 Low-Cost Homes in 3 Years

THREE years ago Smith & Dawson, Chicago builders and developers, saw an increasing demand for the homestead type of project consisting of an acre or more of land, and a well built, modestly priced home. Starting in a small way, this project, known as Prospect Heights, has blossomed into one of the largest developments of its kind around Chicago, and now there are almost 150 of these plots with homes on them sold, and the entire development has been spread to cover 360 acres.

Originally, the raw farm land was cut up in checkerboard fashion having houses located near the main road on plots with 100 foot of frontage. As plans have developed, however, winding roads through the newly acquired acreage and dead end streets provide more interesting home sites without traffic hazards. The original sites were of more than one acre, but it was found that lots of slightly less than an acre were equally or more salable than the larger ones; the present sites are still of 100-foot frontage and over 300 feet deep.

The houses are individually designed by Architect Carl J. Kastrup. Numerous styles have been tried, but this year it was found that variations of a Cape Cod design were the most popular. Two of these are shown, one on the next page and one on the two pages following, with variations of exterior details. Most of the houses are planned for a utility room instead of a basement, and almost all have an attached garage, with a kitchen in a portion of the connected 3,000 square foot building. It has also been found that by placing one bedroom on the first floor and leaving the second floor to be finished later, there is a greater appeal to younger couples. The other popular style is with living room, dining room, kitchen and utility room on the first floor and two bedrooms upstairs, finished.

This unique community of home owners with modest incomes has now been developed to a point where all facilities are available. A community shopping center and school were added this year. Buses connect with train service to the city, and both electricity and gas are available. A low spot in the center of the development will be transformed into a small lake surrounded by a playground for the children. All these advantages, together with the large plot of ground where owners can follow their gardening and other hobbies, has made Prospect Heights increasingly popular.

Newspaper advertising has been used to some extent as sales promotion, a reproduction of one of these ads being shown on this page. The large head above and to the left of this is part of the newspaper's own promotion which appeared page length and told how the small Smith & Dawson ad had attracted over 3,000 readers the day it appeared. Besides selling four homes, numerous mail and telephone calls added to the prospect list and made the results most gratifying. Another opportunity for promotion was used to best advantage when one of the Smith & Dawson houses was awarded first prize in the Public Service Company of Northern Illinois' home building and modernization contest.

Prices of these houses with one acre of land range from $4,250 to $5,750. They are financed with FHA insured 90 per cent loans.

$19,800.00 WORTH OF HOMES SOLD IN 6 DAYS AT AN ADVERTISING COST OF LESS THAN 1 1/2%!

FREE PUBLICITY

ABOVE: A reproduction of the heading used in the Chicago Tribune's own promotion ad telling of the success of the Smith & Dawson advertisement at the right. The Tribune promotion was three columns wide and page length, detailing how four home sales totaling $19,800 were made by Smith & Dawson in six days at an advertising cost of less than 1 1/2 per cent.

PROSPECT HEIGHTS

New 6 From Cape Cod Home

One of 100 Newly Sold Homes

How Open for Inspection

After 6 a.m. Season Homes

from $4,250 to $5,750

Well insulated solid brick home—complete plumbing. Fenced lots, hardwood floor, air conditioned, gas or oil heat. Tiled kitchen cabinets. One acre. Nicely landscaped. Take Northwestern Highway to Milk. Prospect. Turn North on Route 54—2 miles to Prospect Heights.

See This Model Home at Beautiful Prospect Heights

F.H.A. $35 per month, principal, interest, taxes and fire insurance.

PAID ADVERTISING

LEFT: 255-line advertisement which attracted 3,000 people to inspect this Smith & Dawson Cape Cod home at Prospect Heights. Besides selling four homes, it furnished a large list of prospects and brought in innumerable requests by mail and telephone for further information about this homestead project.
**Five-Room Prospect Heights Cape Cod Homestead**

This Smith & Dawson house is one of the popular models having a five-room plan and several exterior variations, two of which are shown on this page. Like most Prospect Heights houses, it has a utility room instead of basement. The kitchen is located in the connecting wing to the garage, allowing cross ventilation. There is a good sized closet underneath the stairs. Two bedrooms and bath on the second floor are finished.

Walls are of solid brick construction with plaster furring. Roof is Barrett asphalt shingles. Equipment includes St. Charles metal kitchen cabinets, central heating and air conditioning, either gas or oil-fired. One acre of land is included in the purchase price.

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**TRUCOST** estimating figures for this house:
- Basement Walls, 9 lin. ft.; Trench Walls, 156 lin. ft.; Basement Floor, 80 sq. ft.; Garage Floor, 210 sq. ft.; Excavation per ft. deep, 11 cu. yds.; Outside Walls, 19.30 sq. yds.; First Floor, 6.30 sq. yds.; Second Floor, with lin. fig., 4.70 sq. yds.; Ceiling, 8.00 sq. yds.; Roof Pitch, 12° one per ft. run; Roof, 12.34 sq. yds.; Hips and Valleys, 15 lin. ft.; Corinage, C & F, 258 lin. ft.; Partitions, 172 lin. ft.; Inside Finish 48 Walls, 210 lin. ft.; Front and OS French Doors, 1 sq. ya.; Rear and Grade Doors, 2 sq. yrs.; Garage Door 8 ft. wide, 2 sq. yrs.; Inside Doors and Cased Open, 10 sq. yrs.; Windows and Casements, 16 sq. yrs.; Chimney, 36 sq. ft.; Main Stairs; 1; Porch Floor, 24 sq. ft.; Porch Ceilings, 10 sq. yrs.; Porch and Balcony Posts, 11 sq. yrs.; Porch Cornice, 14 sq. yrs.; Porch Roof, 11 lin. ft.; Porch and Deck Rail, 4 lin. ft.

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One of the exterior variations of the above plan is shown at the left. Floor plans have been reversed and slightly different exterior details used, including brickwork, front entrance, roof over garage and connecting wing and color of the roof and trim.
THE exterior at the right is shown in plan and side elevation on the opposite page. It has a front entrance porch which is a much appreciated feature. The variation immediately below was awarded first prize in the Public Service Co. of Northern Illinois Home Building Contest. The one at the bottom of the page more closely resembles the exterior at the right except that the plan has been reversed.

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**Basementless Economy Design for the Country**

THREE exteriors on this page are variations for the plans and details on the opposite page. This arrangement has been found very salable because, for a young married couple, the second floor can be left unfinished until a later date, there being one bedroom and bath on the first floor. The use of a front projecting gable set to one side instead of two dormers varies the appearance greatly.
RIGHT SIDE ELEVATION

Plans and Details of Prospect Heights Suburban Homestead
Smith & Dawson, Builders

ABOVE: The compact kitchen in the prize winning home shown directly opposite is well lighted and cross ventilated; clever planning makes this possible, as shown in the floor plans to the right. The utility room is handily located next to the kitchen; section detail indicates economical winter conditioning installation, the main supply duct being located in a furled-down portion of the ceilings in the hall and adjacent closet.

"TRUCOST" ESTIMATING FIGURES FOR THIS HOUSE:

BASEMENT PLAN
Old “Brownstone” Modernized Wins $500 Prize Award

Herbert Lippmann, New York Architect, Restyles Manhattan Row House; Points Way for Salvage of Others

The modernization of this old New York property is of great interest because it shows what can be done to salvage thousands of similar buildings. The fact that this project was among the prize winners in the A.G.A. Builders’ Competition, receiving one of the $500 awards, indicates the practicability and thoroughness of the undertaking.

One of Manhattan’s awkward Late Victorian row houses, built in the 1880’s, it was altered by Herbert Lippmann, New York architect, into a modern plan in Late Georgian style; “a country house in town,” the owners call it. The “stoop” was removed and an inviting random flagstone entrance was arranged on the ground floor. The numerous ugly carved ornaments and clumsy mouldings and the dormers were removed, and the front changed into this Georgian type facade with imitation stone and a few iron railings.

The kitchen was placed on the street front, so that the dining room and porch-like breakfast room, as well as the living room and the chief bedrooms,
FLOOR plans show the modernized arrangement of old Manhattan row house; dotted lines indicate old work that has been removed. There are six floors, including a cellar and basement, the former not being in evidence from the street elevation, but having windows in the rear where the grade is lower.

SOME of the materials used in this modernizing are: P. Aguedo Co. imitation brownstone; USG blocks; Covert fireplace dampers; Wheeling tile; Ketcham shower doors; United Metal Box Co. medicine chests; Kohler and Standard Mfg. Co. plumbing fixtures; Bryant winter air conditioner; Elkay stainless steel sinks; Reading hardware; Lightolier electric fixtures; Loefler phones; Murtha dumbwaiter.

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now face south away from the street and look out over a charming rear garden. The enlarged living room and its alcove card room are spaciously arranged for large gatherings; there is a special service bar pantry. The owners have a fine bedroom suite with separate dressing rooms and baths and a library-living room.

In the “brownstone era” the domestic help were obliged to climb to the top floor to their rooms; in replanning, this top floor is used for the owner’s carpentry work shop, a guest suite, and the laundry; the latter separates the visiting laundress from other daily services, and is served by dumbwaiter. Bedrooms for the domestics are conveniently close to the kitchen and service entrance—a necessity in competing with the convenience offered domestics in modern apartment houses.

The broad entrance hall and circular stairway give a graciousness to the interior that suggests a country house, particularly in connection with the view of the garden seen looking down this hall and across the dining room.

The materials such as brick and timber, hardwood floors, etc., existed and remain; new plastering is on expanded metal lath, and modern flexible electric wiring, interior telephones, brass water pipe, and modern tiled bathrooms were installed. Extent of structural changes is shown on the floor plans.

**VIEWS OF PRIZE WINNING MODERNIZED INTERIORS**

**ABOVE:** A large mirror in the entrance hall reflects the fine circular stairway and entrance doors to the living room of this house modernized by Architect Herbert Lippmann. Right: The butler’s pantry and kitchen located in the basement have plenty of built-in cupboard space.

**ABOVE:** The Bryant winter air conditioning unit was set in a pit in the cellar floor to provide necessary headroom for the ducts. Note the supply line for the conditioner humidifier.
Monthly Payments for 4½ Per Cent Loans

Here is the new FHA chart for computing monthly payments on 4½ per cent loans now being insured by the FHA. Simply lay a straight-edge across the three lines in the chart, crossing Scale A at the face value of the loan, crossing Scale B at the term in years, and the reading on Scale C will be the monthly payment required for interest and principal on a 4½ per cent mortgage.
How to Make Winter Building PAY

A Brief Outline of Cost-Cutting Cold Weather Methods, Including Data on Uses and Advantages of Calcium Chloride, High Early Strength Cements, Proper Protection. War Expected to Bring Higher Costs Next Spring

Scientific advances in materials, methods and equipment have taken winter building out of the red and into the black. Winter building has been proven profitable, providing the builder takes advantage of the factors making for lower costs but at the same time devises ways to get around the well known difficulties that tend to increase costs.

It is common knowledge that labor is cheaper and more plentiful, materials more easily available and prices all along the line lower during the cold weather season. One important factor is that subcontractors, anxious to keep at least a part of their crew busy, will figure on lower overhead and profit. Likewise, with fewer jobs to go around, architects' fees tend to be lower, financing costs more reasonable and services of all kinds easier to obtain.

The secret of success, therefore, is to make the most of these lower cost factors but devise ways and means to offset the difficulties of freezing temperatures, snow, sleet and difficult weather.

Recent improvements in the technique of winter building rather conclusively demonstrate that the high cost factors can and are being brought down while the low cost factors still remain.

Proper Organization Important

This year, with war raging in Europe, the situation is particularly favorable to profitable winter operations, since it is generally predicted that by spring a considerable rise in building costs will have taken place meanwhile.

Of paramount importance in profitable winter operation is a better thought out plan of operations, which should be carefully scheduled with an eye to the probable weather conditions that will be prevailing. It is obvious that, if possible, foundations should be gotten in before the ground is frozen and the house enclosed before really bad snow and cold. However, even after the worst has happened work can go ahead successfully and at lower cost than in the summer time. The order of operations may be changed somewhat—that is, the heating contractor may be called upon to set up the heating unit while the house is still rough-enclosed. Once it is in operation, all interior jobs can go ahead satisfactorily.

Protection of Materials

All kinds of materials must be protected against snow and moisture, and here again care in planning the job and ordering the materials is important. Deliveries must be arranged so that good dry flooring and trim, for example, are not delivered and stored inside the house before the plaster has dried and the moisture conditions return to normal.

Concreting in Cold Weather

The oldest and most difficult problem of winter construction—concrete work—has been largely solved through technological improvements. All cements, due to their finer grinding, now harden more rapidly. Increase in knowledge of the use of better proportioned water-ratio mixes that attain a safe strength more quickly has taken place. The use of high early strength cements has radically cut down the hardening time of concrete and thereby reduced the time of protection required. For
**PER CENT INCREASE IN COMpressive strength of concrete with 2 per cent admixture of calcium chloride**

Mix 1:2:4, 6/2 gal. water per sack of cement, 70 deg. F. damp curing.

<table>
<thead>
<tr>
<th>Age at test</th>
<th>Increase in strength per cent of plain concrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 day</td>
<td>128</td>
</tr>
<tr>
<td>3 days</td>
<td>64</td>
</tr>
<tr>
<td>7 days</td>
<td>31</td>
</tr>
<tr>
<td>28 days</td>
<td>13</td>
</tr>
<tr>
<td>3 months</td>
<td>9</td>
</tr>
<tr>
<td>1 year</td>
<td>8</td>
</tr>
</tbody>
</table>

**PER CENT INCREASE IN COMpressive strength of mortar with 2 per cent admixture of calcium chloride**

Mix 1:2:6 by weight, 6/2 gal. water per sack of cement, damp curing.

<table>
<thead>
<tr>
<th>Age at test</th>
<th>Increase in strength at curing temperature indicated per cent of plain mortar</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 day</td>
<td>40 deg. F. 70 deg. F. 90 deg. F.</td>
</tr>
<tr>
<td>3 days</td>
<td>300 145 41</td>
</tr>
<tr>
<td>7 days</td>
<td>117 68 23</td>
</tr>
<tr>
<td>28 days</td>
<td>75 32 15</td>
</tr>
<tr>
<td>3 months</td>
<td>20 12 10</td>
</tr>
</tbody>
</table>

Another scientific development that has had a large bearing on simplifying cold weather concreting is the use of calcium chloride. Recent tests by the National Bureau of Standards (see Table I page 68) throw new light on the effects of calcium chloride on portland cement mixes. In a report on these tests the Portland Cement Association (Bulletin No. ST 23) presents the above tables.

These National Bureau of Standards tests substantiating the results of many earlier tests show that the addition of calcium chloride to either standard or high early strength portland cement reduces by approximately one-half the time required to reach the same compressive strength at temperatures ranging from 40 to 90 degrees. A similar increase in flexural or bending strength is secured.

The action of calcium chloride is especially valuable in concrete poured at low temperatures. While it is common knowledge that the normal hardening of ordinary concrete is greatly retarded by cold weather, these tests bring out the extent to which hardening is delayed. They showed that the one-day strength of portland cement when placed at 40 degrees F. was 91 per cent less than a similar concrete mix at 70 degrees. Three days were required for the Bureau specimens stored at 40 degrees to reach the strength attained by the 70 degree specimens in one day.

With the addition of 2 per cent of calcium chloride the concrete develops a marked degree of higher early strength which serves to protect it against a drop in temperature. The adverse effect of falling temperatures is largely offset.

Of considerable important to residential builders is the effect of calcium chloride on portland cement mortars. The National (Continued to page 124)
Glass-Faced Structural Unit Developed

THE evolution of building materials in the past quarter century has been progressively toward lighter, more artistic and more durable load-bearing construction units. Recent introduction of a new light-weight concrete block faced with colored structural glass makes possible the architectural use of glass at heights heretofore thought impossible.

The new structural unit, called glastone, although only recently placed on the market by Libbey-Owens-Ford Glass Co. of Toledo, already has been used in several construction jobs in Michigan, and forms the walls of a two and one-half story office building erected at Charleston, W. Va., for the company. It has already been accepted as a load-bearing structural unit by the Detroit Building Commission, and is up for adoption in other cities where building commissioners expressed interest in it when it was first publicly introduced at their recent national convention in Detroit.

Glastone is composed of vitrolite bonded to haydite, a light-weight concrete, well known in the building trade for its strength and resistance to fire and moisture. A layer of mastic binds the colored glass and concrete into a solid masonry unit. The glass is further anchored to the concrete by a hidden, rust-proof metal binder.

Made in a variety of colors, glastone is especially suitable for commercial and public buildings, offices, service stations, store front bulkheads, theater facades, corridor walls, lobbies and swimming pools. It may be installed by any mason competent to install limestone, terra cotta or similar building materials.

Glastone has been used in the exterior construction of Lynch and Sullivan furniture store, Wyandotte; Farmington Dairy, Detroit; Atlantic & Pacific Tea Company Super Market, Ann Arbor, and Main Grocery, Ann Arbor, all in Michigan.

As an example of what can be done with glastone, the Libbey-Owens-Ford two and a half story building at Charleston is of special interest to the building trade. In that building, the glastone is in units 4 inches thick, but it may be used in units from 1½ inch thickness for remodeling work, to 8 inches for solid wall construction. Each unit is composed of a vitrolite colored glass facing supported in a cork lined metal frame which is cast into haydite to make a firm bond. Metal dowel holes in the concrete provide a ready means of anchoring. Spaces between the units are closed by caulking, and the mortar bed is confined to the concrete backing. The glastone is joined to steel frame wherever possible.

All glastone units must be made to specification and may be cast in various shapes and in sizes up to 12 square feet. Special shapes may be cast to fit window sills, curves or other unusual surfaces.

In the Charleston building, glastone units up to 4 feet by 3 feet were used. The large blocks were provided with slots to allow handling by block and tackle. Glastone varies in weight from 90 to 100 pounds per cubic foot and is tested to a strength of 1500 to 2000 pounds per cubic foot.

Right: Cross section diagram shows metal edge around vitrolite cast into concrete block for permanent anchorage. Below: Libbey-Owens-Ford Office building, Charleston, W. Va., constructed entirely of new glastone structural masonry unit.
square foot over the gross area. Aluminum or other metal ornament may be cast into glastone. The completed building shows true and plumb walls, with perfect alignment. Dirt and mortar is easily cleaned from the vitrolite surface.

This first full size glastone building is distinguished by harmony of color. There is a sun tan field, Van Dyke brown base and columns, and special green spandrels with accents of sun tan, brown, red and aluminum. A heavy rain cleans the walls of dirt and grime, quickly restoring the natural beauty and light reflections to the polished glass surfaces.

Each glastone unit is designed to bear its share of weight. The metal binder is not exposed on the face of the glass after installation, as it covers only the rear edge of the glass extending to within 1/16 inch of the face. It is completely concealed after pointing.

The form of the metal edge is important and its special (Continued to page 120)

LEFT AND BELOW: Two examples of store construction using glastone units; brilliant and attractive color combinations are possible with the vitrolite facing used on this newly developed material.
How to Estimate Accurately

In This Article of the Estimating Series
Walls, Cornice and Roofing Are Discussed

By J. DOUGLAS WILSON
Head, Building Trades Dept., Wiggins
Trade School, Los Angeles, Calif.

The last article of this series discussed the frame unit of exterior finish; the other three units, namely, walls, cornice, and roofing, are considered below. The materials considered are siding, shingles, water table, belt course, and corner boards.

Wall Unit

SIDING: Siding is finish lumber nailed horizontally on the exterior of a frame building. Sometimes it is called rustic, ship lap, channel rustic, beveled siding, novelty siding, etc., each term being applied to some special shape of material. Figure 1 shows some of the more commonly used patterns.

A piece of siding will not lay or cover as much space as is indicated by its size. A 1" x 8" board will cover 7" of space, a 1" x 10" covers 9". This is because the rabbett in the bottom edge of siding laps over the board below it. This rabbett will average 4½" in width. Another 3½" is lost in making a rough piece of lumber into siding. A third factor is shrinkage, as a rough piece of lumber will shrink from ½" to ¾". There is also considerable end waste caused by cutting siding to join on the studs. A certain fractional part must, therefore, be added to the net area to allow for these losses.

It is necessary to know whether the wall surface is a solid one, without openings, or if it has window and door openings. Gable areas are considered as a solid surface, although occasionally there may be a small ventilator or louvre frame in a gable.

Two rules are used when figuring siding. If the area to be covered is a small one, such as the side of a garage, then a convenient way is to figure the material by the piece, as follows:

Rule 1: Divide the wall height by the amount one board covers (see figure 2). Result equals number of boards. Count a part of a board as a whole one. The length of the stock is the same as the length of the wall which must be considered in even foot lengths. Repeat for each wall.

Siding Table

The following table indicates the amounts to add for various widths of siding. The explanation below the table shows the application of the table to walls without openings; gable areas and walls with openings.

<table>
<thead>
<tr>
<th>Rough lumber size</th>
<th>Coverage</th>
<th>Milling</th>
<th>Waste End</th>
<th>Constant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x 4</td>
<td>3&quot;</td>
<td>33-1/3%</td>
<td>5%</td>
<td>1.40</td>
</tr>
<tr>
<td>1 x 6</td>
<td>5&quot;</td>
<td>20%</td>
<td>5%</td>
<td>1.25</td>
</tr>
<tr>
<td>1 x 8</td>
<td>7&quot;</td>
<td>15%</td>
<td>5%</td>
<td>1.20</td>
</tr>
<tr>
<td>1 x 10</td>
<td>9&quot;</td>
<td>12%</td>
<td>5%</td>
<td>1.17</td>
</tr>
<tr>
<td>1 x 12</td>
<td>11&quot;</td>
<td>10%</td>
<td>5%</td>
<td>1.15</td>
</tr>
</tbody>
</table>

To Find Wall Area: The wall height is found by measuring from the lower edge of the bottom board of siding to the top edge of the top board. In other words, add to the wall height measurement from the underside of the mudsill to the top of the doubling plate the amount of stock which would be wasted off the top board. (See figure 2.) The perimeter of the building equals the total wall length. Increased wall height times perimeter equals wall area.

Rule 2: a. For a wall without openings: find wall area and multiply by a constant selected from the table above.

b. For a gable area: multiply roof rise by one-half the span, (see figure 3). Then multiply this result by a constant selected from the table above. Then add an additional 20% to allow for the waste incurred due to the slope of a roof.

c. For a wall with openings: find the wall area; deduct all openings 10 square feet in area, or more; then multiply the difference by a constant selected from the table above.

SHINGLES ON WALLS: Occasionally a building will be designed with exterior walls to be covered with shingles.

There are two kinds of lumber used, cedar and redwood, the former being preferable. Both are used on account of their weather resisting qualities.

The thickness of the butt end of a shingle will vary, this thickness being stated in terms of the number of shingles that will measure 2". To illustrate: shingles ordered 5/2 will measure five shingles to 2"; 6/2 means 6 shingles will measure 2". Shingles are sold by the bundle, assuming 250 four-inch width shingles to a bundle.

When estimating shingles allowances must be made for door and window openings. Deduct all openings whose area is equal to or in excess of 10 square feet.

Shingle Table

Shingles will cover the identical amount of surface whether laid on a wall or a roof. The table on the next page indicates the square feet of surface covered by one bundle of shingles for varying exposures and different length shingles.
Rule: To find number of shingles for the exterior walls of a building:

a. Figure the wall area by multiplying wall height by building perimeter.

b. Figure gable areas by multiplying roof rise by rafter run (see figure 3).

c. Combine results to get total wall area.

d. Deduct combined area of all openings ten square feet or more in area.

e. Divide remainder by a constant selected from the shingle table based on shingle length and exposure. Result equals number of bundles of shingles. Count a part of a bundle as a full one.

WATER TABLE: This is a piece of finish stock used for architectural effects at either the mudsill line of the house or at the same height as the sill line of the window frames.

Rule: The perimeter of a building, plus 12" for every outside corner for miters, equals the linear feet of water table required.

BELT COURSE: If an architect desires to make a break between a foundation and the exterior face of the outside walls, a continuous band known as a belt course is sometimes placed at the sill lines. Occasionally, a belt course will be placed at the second floor line of a two story residence. The size of the stock used for this belt course will vary according to the architect's detail.

Rule: The perimeter of the building plus 12" for every corner equals the number of linear feet of material to order.

CORNER BOARDS: Corner boards are pieces of finish stock sometimes required on exterior corners of a house finished with siding, as shown in figure 4. They provide certain architectural effects and also eliminate the necessity of making mitered joints on the siding. The size will be given on the blueprint or in the specifications. One piece should always be 1" wider than the other. The wide one is then lapped over the narrow one, so that both appear to be of the same width. The kind of lumber is usually redwood or similar weather-resisting material.

Rule: Allow two pieces of stock for every outside corner of the building. The length must be measured on the elevation sheets of the blueprint.

Cornice Unit

The cornice is that part of a roof which extends beyond the outside walls of a house. There are two types, open and closed or box. In an open cornice the rafters and sheathing are exposed. In a box cornice the rafters and sheathing are not seen and additional cornice materials are required.

OPEN CORNICE: The open cornice is divided into two parts (see fig. 4).

1. The overhang, the cornice which extends beyond the roof at the top plate line and forms the eaves.

2. The gable projection, that part of a roof which extends beyond the face of a gable wall.

The gable projection is often finished with a verge rafter which is supported by lookout or brackets. Sometimes only a molding is used to form the finish. The cornice area is covered with various materials, the one most commonly used being T & G ceiling stock.

VERGE RAFTERS: Verge rafters are pieces of finish lumber that form the finish of a gable end of a roof. The lumber is usually a better grade than that used for rafters and generally S4S. The size is indicated on the elevation sheet or in the specifications.

(Continued to page 128)
Who Builds What in the Building Business?

Survey Shows the Large Volume, Variety, and Value of Buildings Erected by Typical American Builder Readers

Most building statistics merely show how many buildings of a certain kind and value were erected over a selected period of time. Such figures give no indication as to how buildings are planned, erected, sold, or who controls buying—in other words they tell nothing about the men behind the buildings. American Builder has conducted another nation-wide survey among its readers that throws new light on the operations of typical active building men.

Information for this study was furnished by 3,110 active building men. Returns came from all states. Each reader reported the number, type, and value of his residential and non-residential projects erected during 1938. These data, combined with information regarding vocational classifications of those who furnished information, and the sizes of towns in which they are located, give quite an interesting picture of their operations.

The 3,110 building men covered in this survey were responsible for $152,958,125 worth of construction during 1938, an average annual volume of $49,182 per American Builder reader. Of these 3,110 concerns, 2,572 (82 percent) erected 17,692 new houses, valued at $95,788,707, an average of 6.8 new homes per American Builder reader, and an average annual residential volume of $37,242. In addition, 2,211 of these concerns were responsible for $57,169,418 worth of other construction, including commercial, industrial, and public buildings, an average annual non-residential total of $25,856 per American Builder reader.

Many Types of Buildings Erected

A surprisingly large variety of work was reported by the building men who furnished information for this survey. Residential projects, in addition to the 17,692 single-family dwellings previously mentioned, included new apartment buildings, conversions of houses into apartments, building of combined apartments and stores, apartment and hotel remodeling, building of camps, cottages, cabins, residential remodeling, private garages.

Commercial activity included new stores and commercial buildings, offices, business blocks, store fronts, store modernization, and service stations. Public buildings include a large volume of municipal, county, state, and federal structures; theatres and theatre remodeling, churches and additions, schools and additions, such as auditoriums and gymnasiums. Industrial building activities listed new factories and industrial buildings, warehouses, factory additions and repairs. Public works ranged from pumping stations, reservoirs, sewage disposal plants, and a coast guard station to a penitentiary cell block. Farm buildings included barns of all kinds, sheds, elevators and cribs, and miscellaneous farm remodeling. Considerable concrete and masonry work was reported, with roofing and siding, various types of marine structures or projects, and miscellaneous contracting.

Volume by Sizes of Towns

Changes in building volume occur in long cycles that average 18 years from peak-to-peak, or valley-to-valley. Volume is expanding at present, and a building boom is on the way. This American Builder survey shows that the annual volume of individual building men varies according to changes in national totals, and according to sizes of towns in which they carry on their building operations.

An accompanying table shows variations in annual volume according to sizes of towns. Nine different population groups are shown, ranging from towns of less than 2,500 to cities of more than 500,000 population. The number of replies received from building men in towns of each population group is shown, together with the total volume of business reported, and the average annual volume per reader. Note that 733 replies were received from towns under 2,500 and that the total volume reported was nearly 21 million dollars. Two hundred and four replies were received from cities of more than 500,000 population, and here again a total volume of slightly more than 20 million dollars was reported. The average annual volume of building concerns in the smallest towns is slightly over $28,000, while that of builders in the biggest cities is nearly $100,000. The table shows that between these two extremes the average annual volume of business increases in direct proportion to population, and that the larger the town or city, the

<table>
<thead>
<tr>
<th>Populations of Towns</th>
<th>Total Number of Replies</th>
<th>Total Volume Per Population Group</th>
<th>Average Annual Volume Per Reader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 2,500</td>
<td>733</td>
<td>$20,885,446</td>
<td>$28,493</td>
</tr>
<tr>
<td>2,500 to 5,000</td>
<td>322</td>
<td>9,595,681</td>
<td>28,902</td>
</tr>
<tr>
<td>5,000 to 10,000</td>
<td>324</td>
<td>12,162,972</td>
<td>37,540</td>
</tr>
<tr>
<td>10,000 to 25,000</td>
<td>436</td>
<td>11,681,959</td>
<td>45,142</td>
</tr>
<tr>
<td>25,000 to 50,000</td>
<td>299</td>
<td>19,120,661</td>
<td>63,948</td>
</tr>
<tr>
<td>50,000 to 100,000</td>
<td>247</td>
<td>16,852,515</td>
<td>68,228</td>
</tr>
<tr>
<td>100,000 to 250,000</td>
<td>279</td>
<td>25,757,270</td>
<td>92,319</td>
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<tr>
<td>250,000 to 500,000</td>
<td>179</td>
<td>8,711,600</td>
<td>46,688</td>
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<tr>
<td>Over 500,000</td>
<td>204</td>
<td>20,190,021</td>
<td>98,970</td>
</tr>
<tr>
<td>Reported no building</td>
<td>77</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This table shows the number of questionnaires received from "American Builder" readers located in towns and cities of various sizes, together with their average annual volume of business. Note that with a single exception, average annual volume grows larger with each increase in size of town.
New Building Materials and Equipment

Balsam-Wool Sound Insulation System

A NEW type of sound deadening for standard methods of construction, called the Balsam-Wool sound insulation system, has been announced by the Wood Conversion Company, St. Paul, Minn., manufacturers of Balsam-Wool and Nu-Wood. This system is easy to apply, economical and efficient. All that is needed for complete installation are Balsam-Wool, Balsam-Wool clips and wood strips. The Balsam-Wool is placed over the area to be insulated, acting as a stop or absorption agent against noise that would ordinarily pass through the wall, floor or ceiling. The clips are then fastened at intervals of 24 inches on the underside of sleepers at right angles. This clip unit consists of a flat piece of spring steel and four nails, two of these nails holding the spring steel clip to the sleeper, and the other two, cushioned in felt washers, fastening the sleeper to the floor, wall or ceiling. The interior finish is then nailed to the top of the sleepers, as shown below.

Because of the special design of the Balsam-Wool clips, no movement or creeping is allowed in the horizontal direction, but sufficient free action is allowed vertically. Therefore the system acts as an insulator, and also gives the floor a resiliency or softness which is highly desirable. Due to the fact that the sleepers are supported continuously, there is no sagging under heavy furniture or piano loads.

Balsam-Wool sound insulation clips are sold as an individual unit, cartoned in packages sufficient to treat approximately 1,000 square feet of area. Balsam-Wool sound insulation is not shipped as part of the unit, but is available 33 inches wide, ½-inch thick, and packaged in rolls. Standard Balsam-Wool in ½ and 1-inch thicknesses may be used as a sound deadener with this system.

CROSS SECTION of new sound deadening construction.

Stainless Steel “Lumber”

A NEW stainless steel lumber was recently placed in production by the Allegheny Ludlum Steel Corporation, Pittsburgh, through its Ludlute division, in Watervliet, N.Y.

These lumber panels, known as Ludlite Bord, consist essentially of thin sheets of 18-8 stainless steel, permanently bonded to an inert mineral backing material to form strong, rigid panels of convenient building size.

The mineral backing material is relatively inexpensive, consisting of asbestos fibres, Bentonite (volcanic clay), portland cement and calcined magnesite. This material is processed under great pressure and bonded to the stainless steel facing by means of a special pressure-cementing process to form semi-rigid and extremely flat lumber panels.

Some of the outstanding features of this new product are as follows: It is fireproof and fully weather-resistant; the permanent and highly reflective steel facing reflects about 90 per cent of all heat rays directed at it; in addition, backing material has high thermal insulating value; and while it will absorb moisture, such absorption does not cause the product to warp or distort, thus making it immune to high humidity and equally suitable for indoors or outside applications; it is acoustically a sound absorbing material; the surface has excellent resistance to denting or marring by impact.

Ludlite Bord is made in two standard size panels—2 x 4 feet and 2 x 8 feet, the 4-foot length being especially suitable for wainscoting and the 8-foot length for wall surfacing. It comes in two standard thicknesses—½ and ⅞-inch, weighing 1.54 and 2½ pounds per square foot respectively. The ⅞-inch panel is flexible enough to be bent 180 degrees to suit the requirements of a job, without losing any of its flatness. The ½-inch panel is extremely rigid and possesses high load-bearing strength.

New Hollow Core Flush Door

THE M and M Wood Working Company, Portland, Ore., has announced a new “Sturdibilt” hollow core flush door, available in unselected birch, unselected gum, vertical grain fir and Philippine light and dark red mahogany, with which woods natural finishes, stains and bleaches, as well as paint finishes, can be achieved. Smooth, easy painting surfaces of birch and gum give the newest in modern appearances. Hardwood face veneers, 1/16-inch thick, assure ample depth for decorative routing if desired. “Swing touch” balance is obtained by rigid construction and elimination of all excessive weight. Features are three-piece glued-up stiles, and ventilation system; by securely gluing the three-ply panels to the core, a rigid “bridge girder” unit is made.

NEW hollow core flush doors available in above woods.
NEW PRODUCTS—
(Continued from page 75)

Garage Door with New Lock and Sash

A FREE-SPINNING cylinder lock, to be included as standard hardware equipment on the Craw-Fir-Dor, and a new sash design, known as Craw-Fir-Dor No. 39, have been announced by the Fir Door Institute and the Crawford Door Company, manufacturers of the hardware and holders of the patents on the door. The new lock, which is similar in design to quality automobile trunk locks, replaces the original handle locking device and is included at no extra cost.

Garage door Design No. 39, a companion door to the standard 8-panel model, is a 16-panel layout and comes beaded for glass in the two upper inside panels; glazing will be done by distributors or dealers. This durable Douglas fir door, manufactured according to the rigid specifications of the Fir Door Institute, will fit any house or garage style since its layout conforms to current design trends.

Boiler for Small Houses Uses Any Fuel

A NEW boiler which is especially designed for the small house market, and which can be used with coal, oil or gas, has been announced by the National Radiator Company, Johnstown, Pa.; it is known as the National No. 1 Series heat extractor.

This boiler can be used on either steam or hot water heating systems, and can be installed on the first floor when a basement is not available. It is made in four sizes, with net load ratings for the hand-fired models ranging from 170 to 350 square feet for steam, and from 275 to 550 square feet for hot water. The ratings for the oil-fired model range from 230 to 430 square feet for steam, and from 370 to 680 square feet for hot water. It operates with exceptional efficiency, due to the intermediate sections with extended heating surface, flues being broken up into five passages, and the “wet bottom” design which permits the boiler to be set on wooden floors without danger from overheating.

The boiler is very compact, being 20 inches wide and 55 inches high overall, and is shipped from the factory with the sections completely assembled to reduce installation time.

NEW, efficient boiler for small houses burns coal, oil or gas.

Turn-Over Hardware for Garage Doors

COBURN Trolley Track Co., Holyoke, Mass., has developed a set of Turn-Over hardware with which a carpenter can easily transform a pair of swinging garage doors into a smooth-operating, one-piece upward-acting door.

Features of this hardware set for converting doors at low cost are as follows: New doors are not necessary; the door opens itself, and closes easily and quietly; adjustable pivot arms can be attached directly to the side walls with jamb space up to 12 inches; overhead position provided with strong horizontal pipe support; simple adjustment, ease of weatherstripping; outside padlocking are incorporated.

RIGHT: Hardware set easily converts swinging garage doors into upward-acting type.

Complete Upward-Acting Garage Door

A COMPLETE upward-acting garage door unit consisting of door panels and operator has been announced by the Carr, Adams & Collier Co., Dubuque, Ia. It is known as the “Carr-dor” and is designed with narrow line, sturdy construction and simple streamline operator. Snow, ice or wind will not affect the easy, smooth action or the positive closing. Because of simplicity in construction and operation, there is nothing to get out of order.

The “Carr-dor” consists of two matched units, each unit being made with six divided panels. White pine stiles and rails are thoroughly kiln-dried. Panels are 3-ply laminated fir, made in 1¼-inch thickness. The door is prefitted for an 8 by 7 foot opening with ample allowance for satisfactory operation, and is bored for hardware joining the two units. Installation instructions, which are included with the package of hardware, include directions for mounting hardware on door.

Swiveling Chop Saw

A POPULAR priced swiveling chop saw that is adaptable for use throughout the building trades has been placed in the hands of dealers by the Hollywood Manufacturing and Supply Co., Glendale, Calif. The saw has an exclusive swiveling base which permits any mitre cuts to be made in a 90 degree range. It is equipped with quick stops which are set at the factory for making 45 degree mitres and 90 degree right angle cuts without trial, and other intermediate positions can be set by making the handy adjustment in the base. The saw cuts any wood up to 3 x 4 inches in one operation and with such precision that sanding is unnecessary. The saw is equipped with a 10-inch Atkins’ combination blade running at 6,000 r.p.m. and the spindle is equipped with dust-proof ball bearings for long life. A 1/3 h.p. motor operates the saw through a V-belt.

ACCURATE mitre cuts quickly made on new chop saw.
Stud Cutting Rig

We have found that the simple template made of odd pieces of scrap (as shown below), when used with an electric hand saw, makes possible worthwhile savings in framing a group of houses. This stud cutting frame takes 16 pieces of 2x4 at one time and serves as a guide for cutting all members of the same length. Two men can cut between 300 and 400 studs on it in an hour's time by merely laying the material on the base (Fig. 1), turning down the hinged guides of the frame Fig. 2, and running the power saw along both sides. It will be noticed that one side is adjustable for different lengths.—H. C. FONDE & SON, Knoxville, Tenn.

FIG. 1. Lengths of 2x4 are laid on the cutting frame.

Figuring Concrete in Walls

A SHORT cut for calculating the cubic yards of concrete in walls or floors is to multiply the length by the width or height and divide by the number corresponding to the thickness of the wall, as listed below:

- For 3 in. walls divide by 108
- For 4 in. walls divide by 81
- For 6 in. walls divide by 54
- For 8 in. walls divide by 40.5
- For 10 in. walls divide by 32.4
- For 12 in. walls divide by 27

Thus, for a wall 48 ft. x 5 ft. high and 8 in. thick—48 x 5 x 8 = 240; 240 ÷ 40.5 = 5.92 cu. yds. of concrete required.—OSCAR WEST, Bryan, Ohio.

How to Repair Used Corrugated Sheets

IT IS a laborious task to solder nail holes in used corrugated sheet metal.

An easy and effective method for mending these holes is by means of the use of BB shot or ordinary air rifle shot. It not only saves time and energy as well as money, but it is much easier on the patience of the builder using used tin.

Place a two-inch pipe in the corrugation under the hole. Place a BB into the hole and rivet it down with a hammer. It forms a perfect seal. Unnecessary pounding should be avoided. This is also a very effective way to mend new tin in case of necessity.—ALWIN L. TOEWS, Angwin, Calif.
Closet Planning for Economy and Convenience

In this Reference Data section, as well as basic information, tables, etc., two major problems of planning are considered—closets and bathrooms. Basic plans and arrangements for both of these are shown.

In closet planning, the recent trend to cut down the number and size of these storage spaces has made it imperative that they have the maximum capacity for the cubage allowed. General practice has been to equip closets with a hook rail or moulding; and an added shelf with perhaps a cross bar considered as full equipment. In some of the more expensive houses, a shoe shelf and mirror door complete the furnishings. It has been found, however, that like the kitchen, the closet can be dressed up to give added sales appeal to homes.

Like any other portion of the house, careful planning and adequate equipping of closets can produce more house for the money. For instance, while planning closet features and accessories which will fully utilize closet sizes, the actual usable capacity can be increased to a point where the space saving will more than pay for cost of equipment.

Manufacturers are now offering well designed and sturdily built fixtures for use in closets. For example, Knape & Vogt Manufacturing Company have a complete line which was designed to cover all closet needs, and is called K-Veniences. Other builders' hardware manufacturers, such as Stanley, have individual items of closet equipment.

Fixtures for Better Closet Planning

Some of the more important closet fixtures for equipping space-saving, convenient storage space are illustrated below and are as follows:

- **CLOTHING CARRIER** attaches under the shelf and slides in and out of the closet on ball-bearing rollers. This is ideal for closets of great depth. A slight pull forward on the handle of the Carrier brings the whole wardrobe out into the light, in full view, making clothing accessible for easy selection; keeps clothes orderly, protects the clothing, reduces cleaning and pressing bills, and virtually doubles the amount of hanging space. It is made in a wide variety of sizes.

- **ADJUSTABLE EXTENSION CLOSET ROD** is a pleasant relief from the old, rough wooden or unfinished iron bar. This is especially adaptable to shallow closets where the clothing carrier cannot be used to advantage and is perhaps even more adaptable to the average closet. This Rod is also made in an assortment of sizes, the sliding extension feature making it adjustable to the full width of any closet. It is substantially built, will hold a full quota of clothing without sagging, and is attractively finished in chrome and nickel, permitting hangers to slide easily back and forth over the rod.

- **10-INCH GARMENT BRACKETS** hold six suits or dresses on hangers in the space formerly taken up by one—on a single hook.

- **SHOE RACKS** attach to door or wall and hold many pairs of shoes in orderly array off the floor.

- **TIE RACKS** provide for dozens of ties.

- **SWINGING TROUSER HANGERS** hold four pairs full length in crease, flat against the door or wall, out of the way except for selection.

- **HAT HOLDERS** with large, rounded knobs to protect the hat, attach to either the closet shelf or to door or wall, and keep hats off the shelves in the same way as the attachable Shoe Rack keeps shoes off the floor. They are made individually, as well as in combination units holding up to six hats and in addition providing a place for ties or scarfs.
Six Basic Bathroom Plans and Six Special Baths for Unusual Conditions

BASIC PLAN A
Lavatory and closet on one wall—tub on opposite wall.

BASIC PLAN B
Lavatory, closet and tub all on same wall.

BASIC PLAN C
Lavatory and tub on one wall—closet on opposite wall.

BASIC PLAN D
Closet and lavatory on opposite wall—tub on adjoining wall.

BASIC PLAN E
Lavatory and tub on one wall; closet on opposite wall.

BASIC PLAN F
Lavatory and closet on one wall. Tub on adjoining wall.

THE RUSH HOUR SPECIAL
Here's a bathroom plan that provides a complete bath which is accessible both to the master bedroom and to the hall—with an additional lavatory and closet that can be used with privacy at the same time. In some installations a closet and lavatory are installed in one room—bath, tub and lavatory in the other. The arrangement requires little more room than a conventional bathroom.

THE TOILET STALL
From England comes the idea of taking the toilet out of the bathroom proper and putting it in a separate little compartment by itself. A hall door to this little room gives a double service feature by providing both privacy and accessibility. A second lavatory might be added providing extra convenience.

THE HALF-BATHROOM
Tucked away on the main floor, beneath a stairway, or in a small clothes closet, a room equipped with a lavatory and closet is a worthy addition to bathroom facilities in any home. Small-size fixtures and inexpensive toilets, plus some individual color selections can make your half-bathroom charming, as well as useful.

FOR THE UNUSUAL SPACE
In remodeling it is often possible to wall off the end of a bedroom or part of a hall and have the comfort of an additional bathroom. The Nu-rogate Receptor Bath makes it possible to have a full-length bathtub with a shower even in this narrow space.

TWO LAVATORY COMBINATION
If space does not allow you to have more than one bathroom in your house, think about putting two lavatories in that bathroom. That's a way to beat convenience at its own game. Or perhaps you would prefer to have the extra lavatory in the hall or in a bedroom—at any rate its modest cost will prove a worthwhile investment in relieving congestion.

THE PARTITION BATH
Another "rush hour" idea is the partition bath which uses only the space ordinarily required for one bathroom. The floor area is divided by a partition—a toilet and a lavatory occupy each section of the space, and the tub is accessible to both. Ideal for homes that have adjoining bedrooms.
### Number of Gallons in Round Cisterns and Tanks

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### Weights of Building Materials—Dry Woods

- **Ash, American White**: 3.9 lbs per cu. ft.
- **Birch**: 3.7 lbs per cu. ft.
- **Beech**: 3.8 lbs per cu. ft.
- **Birch, American**: 4.0 lbs per cu. ft.
- **Cedar, Pl. Orford**: 3.0 lbs per cu. ft.
- **Cedar, Incense**: 3.1 lbs per cu. ft.
- **Cedar, Western Red**: 3.2 lbs per cu. ft.
- **Chesnut**: 3.4 lbs per cu. ft.
- **Cork**: 3.6 lbs per cu. ft.
- **Elm**: 3.9 lbs per cu. ft.
- **Fir, Douglas**: 2.9 lbs per cu. ft.
- **Hemlock**: 2.5 lbs per cu. ft.
- **Hemlock, Pacific**: 2.6 lbs per cu. ft.
- **Hickory**: 3.7 lbs per cu. ft.
- **Larch**: 3.8 lbs per cu. ft.
- **Pine, Southern**: 3.5 lbs per cu. ft.
- **Pine, Western White**: 2.7 lbs per cu. ft.
- **Pine, White**: 2.1 lbs per cu. ft.
- **Spruce**: 3.4 lbs per cu. ft.
- **Sycamore**: 3.2 lbs per cu. ft.
- **Walnut**: 2.3 lbs per cu. ft.
- **Yew**: 3.0 lbs per cu. ft.

### How to Make Watertight Concrete

Concrete made from properly selected aggregates, combined with portland cement in suitable proportions, when thoroughly mixed to the right consistency carefully placed and adequately protected during early hardening, will be watertight under all ordinary conditions.

Wet concrete means good concrete. A few fundamental principles of good construction should be carefully observed.

1. All portions of the structure should be strong enough to resist the head of water, either internal or external, to which the concrete may be subjected.

2. Use clean, well graded aggregates.

3. Use a relatively rich mix, say 1:2 or better 1:1.2.5.

4. Use the minimum amount of mixing water that will give a workable, plastic consistency; not over 6 gallons per sack of cement.

5. Mix the concrete thoroughly, at least 1½ minutes per batch mixer.

6. Place the concrete carefully in layers 6 to 12 inches deep, spading or rodding it thoroughly to prevent the formation of stone pockets or voids.

7. If possible place the concrete in one continuous operation to avoid construction joints. If placing is interrupted, make sure we can get a good bond between the fresh concrete and that placed previously.

8. Keep the concrete warm and damp for the first ten days. Concrete made from properly selected aggregates, combined with portland cement in suitable proportions, when thoroughly mixed to the right consistency carefully placed and adequately protected during early hardening, will be watertight under all ordinary conditions.

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BARRETT VB BATT
WORKS BOTH WAYS

EASY TO APPLY . . . PROFITABLE TO SELL

Barrett VB *Batts are made just the right size for a snug fit between 16" or 24" framing.

And the waterproof paper backing makes an overlapping flange 1½" wide on all four sides.

Result: You can stock both the full and semi-thick VB Batts for all types of jobs—no need to carry rock wool batts in different widths.

Here is a saving that means money to you. And remember, too, that important plus factor—the Barrett name. Homeowners expect the best and get it when they see that familiar Barrett trade-mark . . . which is now the pattern theme on the paper backing of all Barrett VB Batts.

THE BARRETT COMPANY
40 RECTOR STREET, NEW YORK, N. Y.

BATTs
BLOWING FIBRE
LOOSE WOOL
hundreds of All-GAS homes like these

TYPICAL A. G. A. PRIZE-WINNING HOME DESIGNED FOR "BETTER LIVING"
One of the five $1,000 Prize Winners in the A. G. A. All-Gas Home Builders
Competition. R. W. Bramberg, Oak Park, Ill., builder, built this delightful home for Mr.
Richard Jones at 1101 Fair Oaks Avenue.

This home has a conveniently arranged all-gas kitchen—featuring a modern, automatic
range and silent, trouble-free gas refrigeration.

With gas for automatic

house-heating and

water-heating, there are

no coal bins, fuel tanks

or ash cans. Spacious

basements like this

make fine game rooms.

- Now, more than ever, home-seekers are looking for homes that offer most for their money in living comforts and conveniences. That is why leading builders all over the country are now installing Gas equipment for the 4 Big Jobs—Cooking—Water Heating—Refrigeration—House Heating.
SWINGS TO GAS
are being built throughout the country

ANOTHER A. G. A. PRIZE-WINNING HOME FEATURES SUMMER AIR-CONDITIONING
This delightful modern home belongs to J. T. M. Knox, Jr., at 16 East 26th Place. Built by Farmer & Duran, Tulsa, Okla., it is one of the $500 prize-winners in the A. G. A. All-Gas Home Builders Competition.

Gas is used in today's convenience-designed kitchens—because only gas makes possible silent refrigeration and 100% heat control for effortless, automatic cooking.

Not only for house-heating but also for winter and summer air-conditioning, gas assures greater convenience, greater comfort and greater economy of operation.

• For full information and detailed specifications of the new gas ranges, refrigerators, water heaters, and house heating equipment, consult your local gas company.

AMERICAN GAS ASSOCIATION
### Covering Capacity of Shingles

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<td>353</td>
<td>353</td>
<td>353</td>
</tr>
</tbody>
</table>

Some allowance must be made for waste but as no two jobs are identical in this respect, the builder must add his own allowance for waste.

### Number of Lath in Plaster Work

14 lath are required per square yard.

### Working Strength of Various Building Materials

**STEEL AND IRON**

The safe carrying capacities of various building materials (except in case of columns) are as follows: The strength given being the working strength in pounds per square inch of section.

#### Rolled steel

- Cast steel: 16,000
- Wrought iron: 12,000
- Cast iron (in short blocks): 16,000
- Steel ribs and rivets (bearing): 25,000
- Wrought iron pins and rivets (bearing): 15,000

### Compression (Direct)

#### TIMBER

<table>
<thead>
<tr>
<th>With # Across Grain</th>
<th>With # Grain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak</td>
<td>1,000</td>
</tr>
<tr>
<td>Yellow pine</td>
<td>900</td>
</tr>
<tr>
<td>White pine</td>
<td>860</td>
</tr>
<tr>
<td>Spruce</td>
<td>800</td>
</tr>
<tr>
<td>Locust</td>
<td>700</td>
</tr>
<tr>
<td>Chestnut</td>
<td>600</td>
</tr>
<tr>
<td>Hickory</td>
<td>500</td>
</tr>
</tbody>
</table>

#### CONCRETE

- Concrete (Portland) cement, 1 sand, 2 stone: 290
- Concrete (Portland) cement, 1 sand, 3 stone: 280
- Concrete (Readale, or equal), cement, 1 sand, 2 stone: 128
- Concrete (Readale, or equal), cement, 1 sand, 2 stone: 111

#### STONEWORK

- Rubble stonework in Portland cement-mortar: 140
- Rubble stonework in Readale cement-mortar: 100
- Rubble stonework in lime-mortar: 70

#### BRICKWORK

- Brickwork in Portland cement-mortar: 100
- Brickwork in Readale, or equal, cement-mortar, cement: 100

*The stresses given in these tables are those recommended by the National Board of Fire Underwriters.

### Safe Loads Uniformly Distributed for Rectangular Spruce or Pine Beams One Inch Thick

The following table has been calculated for extreme fibre stresses of 250 pounds per square inch corresponding to the following values for modulus of rupture recommended by Prof. Lanza.

#### Spruce and white pine

<table>
<thead>
<tr>
<th>3,000 lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak</td>
</tr>
<tr>
<td>Yellow pine</td>
</tr>
</tbody>
</table>

#### 1" thick

<table>
<thead>
<tr>
<th>Span</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>500</td>
<td>600</td>
<td>600</td>
<td>1,120</td>
<td>1,260</td>
</tr>
<tr>
<td>7</td>
<td>520</td>
<td>620</td>
<td>620</td>
<td>1,280</td>
<td>1,420</td>
</tr>
<tr>
<td>8</td>
<td>550</td>
<td>650</td>
<td>650</td>
<td>1,360</td>
<td>1,500</td>
</tr>
<tr>
<td>9</td>
<td>580</td>
<td>680</td>
<td>680</td>
<td>1,440</td>
<td>1,580</td>
</tr>
<tr>
<td>10</td>
<td>600</td>
<td>700</td>
<td>700</td>
<td>1,520</td>
<td>1,660</td>
</tr>
</tbody>
</table>

#### 2" thick

<table>
<thead>
<tr>
<th>Depth of Beam</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

### Beams

- Oak increase values in table by 2/3.
- White oak increase values in table by 2/3.
- For yellow pine increase values in table by 2/3.

#### Safe Loads in Tons of 2,000 Pounds for Square Wooden Columns

<table>
<thead>
<tr>
<th>Unsup- supported</th>
<th>Column</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
<td>Column</td>
</tr>
<tr>
<td>in inches</td>
<td>in inches</td>
</tr>
<tr>
<td>2x4</td>
<td>3x4</td>
</tr>
<tr>
<td>3x4</td>
<td>4x4</td>
</tr>
<tr>
<td>4x4</td>
<td>5x4</td>
</tr>
</tbody>
</table>

#### WHITE PINE OR SPRUCE

<table>
<thead>
<tr>
<th>2,000 lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak</td>
</tr>
<tr>
<td>Yellow pine</td>
</tr>
</tbody>
</table>

#### WHITE OAK

<table>
<thead>
<tr>
<th>2,000 lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak</td>
</tr>
<tr>
<td>Yellow pine</td>
</tr>
</tbody>
</table>

#### YELLOW PINE (Southern)

<table>
<thead>
<tr>
<th>2,000 lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak</td>
</tr>
<tr>
<td>Yellow pine</td>
</tr>
</tbody>
</table>

To obtain the safe load for any thickness multiply the values for 1 inch by thickness of beam.

To obtain the required thickness for any load divide by safe load for 1 inch.

---

American Builder, October 1939.
I’ll take this house Mr. Builder!

It has Mesker easy-opening windows

Read What These American Housewives say about the advantages of Mesker Guildhall Casement Windows

"I like Mesker’s Solid Bronze Hardware. It’s so easy to keep clean and it never looks its beautiful luster." Mrs. J. T. M., Chicago, Ill.

"I can wash them from the inside. It takes me only half the time that I used to spend in our other house with the old-style windows." Mrs. R. R., Huntington, W. Va.

"With Mesker Casements, just a twist of the wrist and they are open. I like their under-the-screen operation. It’s so much simpler than the old sliding windows." Mrs. O. L. Mcl., Des Moines, Ia.

"With Mesker screens on the inside, I can take them off anytime in a jiffy. In our former house it was a man’s job requiring a ladder. I like Mesker windows for their easy-screening." Mrs. A. S. C., Cincinnati, Ohio.

"Our home is always comfortable, even in rare weather, and I know that our new Mesker-Casements help make it more possible. I’ve found they are more weatherproof than any ordinary sash in our neighbor’s new home." Mrs. C. R. S., Minneapolis, Minn.

Take a tip from Mrs. America, your No. 1 prospect! The trend in windows is towards Mesker Steel Guildhall Casements with their smart Solid Bronze Hardware, slender daylight-giving frames, satin-smooth operation, and inside easy-to-reach screens and storm sash.

See your nearest Mesker Dealer for complete prices on the entire Mesker Steel Window Line

Mesker Guildhall Casements Mesker Pivot Sash
Mesker Wicket Casements Mesker Projected Sash
Mesker Basement Sash Mesker Utility Sash
Mesker Steel Doors

Mesker

SINCE 1879

MESKER BROTHERS . . . SAINT LOUIS, MO.
These details are intended as suggestions to the builder and architect as possible ways of using Douglas Fir Plywood for walls and equipment items in modern room design.

EXPRESSING the typical modern trend of room design, these details show both the walls of a bedroom and the furniture designed for effective use of Douglas Fir Plywood. For the room walls, standard lengths and widths of plywood are advantageously employed, with a beaded moulding at the joints to emphasize the horizontal effect. Particular attention is directed to the ease with which wardrobes and closet doors can be concealed if desired. The head boards and foot boards of the beds can be made an integral part of the room design by following the details shown. A warm gray stained effect is suggested as a finish for the woodwork. An alternate finish might be a single priming coat tinted to give desired effect.

MATERIALS: Walls may be of 1/4" wallboard grade of Douglas Fir Plywood, or of a good 1-side grade for the highest quality of finish, nailed directly to studs with 4d finishing or casing nails. Since stock panels are available in even-inch widths from 12 to 32 inches, and also in 36, 42 and 48 inch widths, it will usually be possible to design with, and to utilize, standard widths without cutting.

DETAILS

WALL SECTION

SCALE 1/2 FULL SIZE

DETAIL AT FOOT OF BED

SCALE 1/2 FULL SIZE
Multiply the number of squares by the number set opposite length of sheet desired in the column for the material wanted. The result is the number of sheets required.

To Find Weights of Bars and Plates

Steel. Multiply contents in cubic inches by .27777. Result will be weight in pounds.

To Find Weights of Storage Tanks

As a basis for figuring the size of storage tank required, take the average amount of water used daily by one person, which is as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Gallons per Person Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water closet</td>
<td>10</td>
</tr>
<tr>
<td>Washing clothes</td>
<td>375</td>
</tr>
<tr>
<td>House cleaning</td>
<td>24</td>
</tr>
<tr>
<td>Toilet purposes and bathing</td>
<td>100</td>
</tr>
<tr>
<td>Drinking</td>
<td>25</td>
</tr>
<tr>
<td>In food</td>
<td>140</td>
</tr>
<tr>
<td>Total average</td>
<td>375</td>
</tr>
</tbody>
</table>

Capacity of Storage Tanks (For Domestic Use)

To Get Weight of Bar or Plate

Multiply contents in cubic inches by the number set opposite width in inches in the column for the material wanted. The result is the number of bars or plates required.

Painted and Galvanized Roofing

NUMBER OF SQUARE FEET IN ONE CORRUGATED SHEET

Multiply the number of squares by the number set opposite length of sheet desired in the column for the material wanted.

The result is the number of sheets required.

To Find Weights of Building Materials, Stacked

For Pressed Brick, Rock Face Brick and Stone Siding Sheets 28% x 60 inches, multiply number of squares by 8.5.
Among the Best Houses of Any Year Are Those with BALSAM-WOOL Insulation!

Since 1922, thousands of the country's best houses — best protected from heat, from cold, from wind, from condensing moisture within walls . . . have been insulated the SURE way: with Balsam-Wool SEALED Insulation.

Regardless of changing construction styles — of changing needs — these houses have stood staunch against the elements, giving their owners a full measure of lasting comfort. For Balsam-Wool is one insulation that has never had to change its basic principle; never has been found wanting in the tests of actual use.

In the houses of yesterday — of today — and of tomorrow — Balsam-Wool SEALED Insulation demonstrates on the job that it meets every insulation requirement . . . answers every insulation problem. The proof is yours for the asking — write us.

WOOD CONVERSION COMPANY
119-10 FIRST NATIONAL BANK BLDG.
ST. PAUL, MINNESOTA

BALSAM-WOOL—NU-WOOD—PRODUCTS OF WEYERHAUSEN
WINDOW CONSTRUCTION IMPORTANT IN MODERATELY PRICED HOMES

Low heating costs and freedom from maintenance expense are more important to the owners of modest-priced homes than these same factors in more expensive dwellings.

The First Completely Assembled Double-Hung Wood Window—Sold as a Unit Since 1929

Non-Stick WINDOWS, being completely weatherstripped, sash counterbalanced without leaky weight pockets, and delivered as an assembled unit, effect substantial savings over conventional windows.

Non-Stick WINDOWS cost the owner no more than weatherstripped weight-and-cord windows, yet add a decided appeal in ease of operation, weathertightness and beauty.

See the Non-Stick Window at Your Dealer or Write Us.

N. S. W. COMPANY, 2137 Gratiot, Detroit, Mich.

Rules Relative to the Circle

To Find Circumference:
Multiply diameter by 3.1416, or divide circumference by 0.3183.

To Find Diameter:
Divide circumference by 3.1416 or 0.3183.

To Find Radius:
Divide circumference by 6.28318 or divide by 0.50235.

To Find Area of a Circle:
Multiply the diameter by one-quarter of the diameter, or multiply the square of the diameter by 0.7854.

To Find the Surface of a Sphere or Globe:
Multiply the diameter by the circumference, or multiply the square of the diameter by 3.1416.

To Find the Weight of Brass and Copper Sheets, Rods, and Bars:
Ascertain the number of cubic inches in piece and multiply same by weight per cubic inch—Copper, 0.3212; Brass, 0.2972.

Table of Square Roots

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5</td>
<td>8</td>
<td>9.43</td>
<td>17</td>
<td>4.12</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>4.84</td>
<td>9</td>
<td>3.29</td>
<td>18</td>
<td>4.24</td>
<td>30</td>
<td>5.48</td>
</tr>
<tr>
<td>4</td>
<td>2.83</td>
<td>10</td>
<td>3.16</td>
<td>19</td>
<td>4.33</td>
<td>35</td>
<td>6.71</td>
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<tr>
<td>5</td>
<td>2.24</td>
<td>11</td>
<td>3.31</td>
<td>20</td>
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<td>40</td>
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<td>12</td>
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<td>21</td>
<td>4.51</td>
<td>45</td>
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<td>3.77</td>
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<td>4.60</td>
<td>50</td>
<td>10.40</td>
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<tr>
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<td>2.89</td>
<td>14</td>
<td>3.99</td>
<td>23</td>
<td>4.69</td>
<td>55</td>
<td>11.63</td>
</tr>
<tr>
<td>9</td>
<td>3.11</td>
<td>15</td>
<td>4.21</td>
<td>24</td>
<td>4.78</td>
<td>60</td>
<td>12.86</td>
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<td>4.87</td>
<td>65</td>
<td>14.09</td>
</tr>
<tr>
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<td>3.23</td>
<td>17</td>
<td>4.45</td>
<td>26</td>
<td>4.96</td>
<td>70</td>
<td>15.32</td>
</tr>
<tr>
<td>12</td>
<td>3.29</td>
<td>18</td>
<td>4.57</td>
<td>27</td>
<td>5.05</td>
<td>75</td>
<td>16.55</td>
</tr>
<tr>
<td>13</td>
<td>3.35</td>
<td>19</td>
<td>4.69</td>
<td>28</td>
<td>5.14</td>
<td>80</td>
<td>17.78</td>
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<tr>
<td>14</td>
<td>3.41</td>
<td>20</td>
<td>4.80</td>
<td>29</td>
<td>5.23</td>
<td>85</td>
<td>19.00</td>
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<tr>
<td>15</td>
<td>3.48</td>
<td>21</td>
<td>4.91</td>
<td>30</td>
<td>5.32</td>
<td>90</td>
<td>20.23</td>
</tr>
</tbody>
</table>

Surveyors’ Square Measure

640 acres = 1 square mile.
640 square miles = 1 township.

Surveyors’ Long Measure

160 rods = 1 chain.
80 chains = 1 mile.
3200 chains = 1 mile.
36 square miles = 1 township.

Life of Parts, and Depreciation, in a Wood Frame House

<table>
<thead>
<tr>
<th>Material</th>
<th>Average Life</th>
<th>Annual Depreciation</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ploastering</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Painting, outside</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Painting, inside</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Shingles</td>
<td>30</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Corbels</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Weatherboarding</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Sheathing</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Flooring</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Flooring (entirely carpeted)</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Doors, complete</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Windows, complete</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Stairs and newels</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Base</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Building Hardware</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Outside blinds</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Sills and floor plates</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Dimension lumber</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Porches</td>
<td>10</td>
<td>10%</td>
<td></td>
</tr>
</tbody>
</table>
Ten and twenty percent down payments—single amortizing mortgages—monthly payments like rent, that include everything—these things have changed the thinking of the man who wants to buy or build a home.

Especially the monthly payments that include everything. This idea starts him thinking about the extra expenses that might come along later when he is least expecting them. He thinks about re-painting, re-roofing, termites and the cost of heating—the very things that Carey Building Products are designed to protect him against.

Yes, getting a building contract “ain’t what it used to be.” It is now an easier job for the builder who recognizes this new situation and recommends insulating roofs; attic and sidewall insulation for comfort and economy; permanent and fireproof exterior walls that cut expenses and reduce the greatest hazard of all.

Building contracts that show savings for the home owner from the start and that also provide against extra expenses in the future, naturally come easier and help build a permanent business.
BIG PROFITS

Here's your chance to make some big money—be your own boss and get into something for yourself. There is no reason why you should not be a big success in the floor surfacing business—you already know a lot about the building game, so you naturally have a head start on the other fellow.

EFFICIENT ONE-MAN MACHINE

An American Floor Sander is easy to run—no skill is required to operate and within a few hours you can run one as well as an "old timer." American floor sanders are easy to take from job to job. You don't need any helpers.

GET DETAILS

Find out more about this interesting money-making work today by signing and sending in the coupon below for free details.

CUT OUT COUPON AND RETURN

THE AMERICAN FLOOR SURFACING MACHINE COMPANY
511 So. St. Clair Street • Toledo, Ohio

Mensuration Tables, Etc.

Linear Measure

- 1 hair's breadth = 1/48 inch.
- 1 barleycorn (lengthwise) = 1 inch.
- 12 inches = 1 foot = 0.3048 metre.
- 3 feet = 1 yard = 0.9144 metre.
- 3 1/3 yards = 1 rod, perch, or pole.
- 10 chains = 1 furlong.
- 1 furlong = 0.1094 kilometres = 660 feet.
- 8 furlongs = 1 mile = 1.6093 kilometres = 5280 feet.
- 3 miles (nautical) = 1 league.
- 1 mile = 5280 feet.
- 1 nail (cloth measure) = 3 inches.
- 1 span = 4 inches.
- 1 cubit = 9 inches.
- 1 pace (military) = 18 inches.
- 1 pace (common) = 3 feet.
- 1 Scotch ell = 37.04 inches.
- 1 yarm (Spanish) = 37.79 inches.
- 1 English ell = 45 inches.
- 1 fathom = 6 feet.
- 1 cable's length = 120 fathoms.
- 1 "knot" = 1.1527 statute miles.
- 1 degree of equator = 69.046 statute miles.
- 0.1 degree of equator = 6.9046 statute miles.
- 0.1 degree of meridian = 1.1527 statute miles.
- 1 minute of latitude = 1 sea mile.
- 1 minute of longitude = 1 nautical mile.
- 1 nautical mile = 6076.12 feet.

Circular Measure

- 90 seconds = 1 minute.
- 60 minutes = 1 degree.
- 12 signs = 1 circle or circumference.

Cubic Measure

- 9 square feet = 1 cubic foot.
- 380.25 square yards = 1 cubic yard.
- 40 square rods = 1 acre.
- 640 acres = 1 square mile.
- 36 square miles = 1 township.

Square Measure

- 144 square inches = 1 square foot.
- 9 square feet = 1 square yard.
- 2094 square yards = 1 square rod.
- 4 rods = 1 square pole.
- 640 acres = 1 square mile.
- 36 square miles = 1 township.

Decimal Equivalents of Common Fractions

<table>
<thead>
<tr>
<th>Description</th>
<th>1/12</th>
<th>1/16</th>
<th>1/32</th>
<th>1/48</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/12</td>
<td>.0833</td>
<td>.0625</td>
<td>.05</td>
<td>.0416</td>
</tr>
<tr>
<td>1/8</td>
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<td>.0975</td>
<td>.0875</td>
<td>.0765</td>
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<tr>
<td>1/4</td>
<td>.25</td>
<td>.1953</td>
<td>.1875</td>
<td>.1725</td>
</tr>
<tr>
<td>5/32</td>
<td>.1563</td>
<td>.1289</td>
<td>.125</td>
<td>.1188</td>
</tr>
<tr>
<td>1/2</td>
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<td>.4062</td>
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</tr>
<tr>
<td>1/16</td>
<td>.625</td>
<td>.5312</td>
<td>.5156</td>
<td>.4968</td>
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<td>1/8</td>
<td>.75</td>
<td>.625</td>
<td>.6075</td>
<td>.5938</td>
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</table>

Miscellaneous Data

FORCE OF THE WIND

<table>
<thead>
<tr>
<th>Description</th>
<th>Miles per hour</th>
<th>Feet per minute</th>
<th>Feet per second</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardly perceptible</td>
<td>1</td>
<td>1.47</td>
<td>.006</td>
</tr>
<tr>
<td>Just perceptible</td>
<td>2</td>
<td>2.93</td>
<td>.062</td>
</tr>
<tr>
<td>Gentle breeze</td>
<td>3</td>
<td>3.94</td>
<td>.088</td>
</tr>
<tr>
<td>Pleasant breeze</td>
<td>4</td>
<td>5.27</td>
<td>.0979</td>
</tr>
<tr>
<td>Brisk gale</td>
<td>5</td>
<td>6.44</td>
<td>.125</td>
</tr>
<tr>
<td>High wind</td>
<td>6</td>
<td>7.51</td>
<td>.159</td>
</tr>
<tr>
<td>Very high wind</td>
<td>7</td>
<td>8.58</td>
<td>.193</td>
</tr>
<tr>
<td>Storm</td>
<td>8</td>
<td>9.65</td>
<td>.223</td>
</tr>
<tr>
<td>Great storm</td>
<td>9</td>
<td>10.72</td>
<td>.259</td>
</tr>
<tr>
<td>Hurricane or cyclone</td>
<td>10</td>
<td>11.79</td>
<td>.295</td>
</tr>
</tbody>
</table>

Gentlemen: I am checking the following for free details on your machines without cost or obligation.

☐ I am a building contractor and want a machine for my own use.

☐ I want to get into something for myself.

☐ I already own one. Make _______ years old. Quote trade-in allowance.

Name ____________________________
Address __________________________
City ____________________________  State __________________________
THE OUTSTANDING TRUCK FOR THE MONEY

FORD V-8 FOR 1940

FORD FEATURES FOR 1940

- New styling
- Increased engine accessibility
- Increased chassis accessibility
- Choice of power — 95, 85, 60 hp
- 42 body and chassis types
- New Sealed-Beam Headlamps
- Bigger batteries, larger generators with automatic voltage regulation
- Big hydraulic brakes
- Full-floating rear axle with straddle-mounted pinion and ring gear thrust plate
- Two-speed axle (optional at extra cost)

Ford Engine and Parts Exchange Plan.

The big new 1940 Ford Truck line gives you value in construction, performance and economy that means "the outstanding truck for the money."

Three eight-cylinder engine sizes—95, 85 and 60 hp. Six wheelbases. 42 body and chassis types.

There's new styling. New engine and chassis accessibility, making it easier to check the oil, service the distributor and other engine accessories, as well as clutch, transmission and rear axle. New, softer, more comfortable seats in Regular cabs. These and many more improvements join a host of time-tested, time-proved Ford features in 1940.

See the new Ford Truck at your dealer's. Compare it with any other truck. Arrange for an "on-the-job" test and know the difference before you spend another truck dollar.

Ford Motor Company, Builders of Ford V-8 and Mercury Cars, Ford Trucks, Commercial Cars, Station Wagons, Transit Buses
Here's Why! Last summer in Hollywood we saw them making a movie on a dining-room "set." The property engineer told us the walls were Masonite Tempered Presdwood. He said they use that board because they can get so many beautiful effects with it. And it's so durable they can use it over and over again.

Back Home—Our builder recommended Masonite Tempered Presdwood for remodeling our dingy old dining-room. That board certainly goes up easily. It's Tempered Presdwood for remodeling the whole room. For example, the Tempered Presdwood walls, painted light blue, are offset from the old walls to provide indirect lighting. The built-in buffet is made of Tempered Presdwood and painted grey. The built-in window table and shelves are the same moisture-resistant material, white enameled. Properly applied, it will not warp, chip or crack. And they say it will last as long as the house stands.

Materials Required for One Cubic Yard of Brick
Mortar Showing Both Lime and Portland Cement Mixture

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100 0 1:4</td>
<td>152 Q</td>
<td>1 Bbl.</td>
<td>0</td>
<td>1:4</td>
<td>291 H</td>
<td>6 Sacks</td>
</tr>
<tr>
<td>100 0 1:3</td>
<td>243 Q</td>
<td>1.35 Bbls.</td>
<td>0</td>
<td>1:3</td>
<td>396 H</td>
<td>8 Sacks</td>
</tr>
<tr>
<td>100 0 1:2 2%</td>
<td>282 Q</td>
<td>1.9 Bbls.</td>
<td>0</td>
<td>1:2 2%</td>
<td>473 H</td>
<td>9.5 Bbls</td>
</tr>
<tr>
<td>100 0 1:2</td>
<td>322 Q</td>
<td>1.5 Bbls.</td>
<td>0</td>
<td>1:2</td>
<td>528 H</td>
<td>10.5 Bbls</td>
</tr>
<tr>
<td>90 10 1:3</td>
<td>219 Q</td>
<td>1.22 Bbls.</td>
<td>0</td>
<td>1:3</td>
<td>350 H</td>
<td>7.12 Bbls</td>
</tr>
<tr>
<td>90 10 1:3</td>
<td>194 Q</td>
<td>1.08 Bbls.</td>
<td>0</td>
<td>1:3</td>
<td>317 H</td>
<td>8.34 Sacks</td>
</tr>
<tr>
<td>70 30 1:3</td>
<td>170 Q</td>
<td>0.95 Bbls.</td>
<td>0</td>
<td>1:3</td>
<td>277 H</td>
<td>5.5 Sacks</td>
</tr>
<tr>
<td>60 40 1:3</td>
<td>140 Q</td>
<td>0.81 Bbls.</td>
<td>0</td>
<td>1:3</td>
<td>256 H</td>
<td>6.76 Sacks</td>
</tr>
<tr>
<td>60 40 1:3</td>
<td>130 Q</td>
<td>0.76 Bbls.</td>
<td>0</td>
<td>1:3</td>
<td>318 H</td>
<td>8.06 Sacks</td>
</tr>
<tr>
<td>40 60 1:3</td>
<td>97 Q</td>
<td>0.54 Bbls.</td>
<td>0</td>
<td>1:3</td>
<td>196 H</td>
<td>4 Sacks</td>
</tr>
<tr>
<td>30 70 1:3</td>
<td>158 H</td>
<td>3.16 Sacks</td>
<td>0</td>
<td>1:3</td>
<td>277 H</td>
<td>5.5 Sacks</td>
</tr>
<tr>
<td>20 80 1:3</td>
<td>74 Q</td>
<td>0.27 Bbls.</td>
<td>0</td>
<td>1:3</td>
<td>801 H</td>
<td>3.6 Sacks</td>
</tr>
<tr>
<td>10 90 1:3</td>
<td>24 Q</td>
<td>0.13 Bbls.</td>
<td>0</td>
<td>1:3</td>
<td>821 H</td>
<td>0.8 Sacks</td>
</tr>
<tr>
<td>0 100 1:3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1:3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10 100 1:3 1/40</td>
<td>24 Q</td>
<td>0.13 Bbls.</td>
<td>0</td>
<td>1:3 1/40</td>
<td>441 H</td>
<td>0.98 Sacks</td>
</tr>
<tr>
<td>10 100 1:3 1/40</td>
<td>24 Q</td>
<td>0.13 Bbls.</td>
<td>0</td>
<td>1:3 1/40</td>
<td>441 H</td>
<td>0.98 Sacks</td>
</tr>
</tbody>
</table>

Q Represents Quicklime.  H Represents Hydrated Lime.

Amount of Mortar Required for a Cubic Yard of Masonry

<table>
<thead>
<tr>
<th>Kind of Masonry</th>
<th>Mortar, Cu. Yd.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashlar, 12-in. courses, 1/4-in. joints</td>
<td>0.06</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Ashlar, 16-in. courses, 1/4-in. joints</td>
<td>0.03</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Ashlar, 12 to 20-in. courses, 1/2 to 1/4-in. joints.</td>
<td>0.07</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Ashlar, 20 to 32-in. courses, 1/2 to 1/4-in. joints.</td>
<td>0.05</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>Brickwork (bricks of standard size, 8x21/2x32/3 in.)</td>
<td>0.10</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>1/4-in. joints</td>
<td>0.10</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>1/4-in. to 1/2-in. joints.</td>
<td>0.25</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>1/2-in. to 1/4-in. joints</td>
<td>0.35</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>Concrete blocks or tile</td>
<td>0.50</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>Rubble course, not dressed</td>
<td>0.33</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>Rubble, roughly dressed</td>
<td>0.25</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>Squared-stone masonry, 12-in. courses and 1/4-in. joints</td>
<td>0.20</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Squared-stone masonry, 16-in. courses and 1/4-in. joints</td>
<td>0.12</td>
<td>0.15</td>
<td></td>
</tr>
</tbody>
</table>
"On bleak, cold Fall days nothing sells our houses quicker than C-S-I Insulation, with the fuel-saving, weather-tight insulation it gives us to talk about.

"Not only that, but the big sheets of C-S-I Sheathing go up fast, let us close-in the job quicker. We can finish up inside without losing days on account of bad weather.

"The cost of a house insulated with C-S-I Asphalted Sheathing is less than $50.00 more than uninsulated houses using ordinary sheathing material, building papers, etc."

Whatever price-class homes you build, you will find C-S-I (Certain-teed Structural Insulation) a complete line for every insulation need... inside as well as outside. For insulation plus a perfect plaster base use C-S-I Key Lap Lath or C-S-I Asphalted Key Lap Lath. For insulation plus an attractive self-finish use C-S-I Decorative Plank and Tile Board. Wherever it’s used, C-S-I does double-duty... adds insulation and structural strength or insulation and decoration.

Here’s another profit tip for Fall building: For the extra sale-appeal of roofs with cheerful color and animation, use Wood-Tex Shingles to get the strong contrast of shadow lines from a grain that is actually built-up on the thick butt.

Use the coupon below for practical informative literature.
YOU can make strong statements, selling statements, about U. S. heating equipment. U. S. guarantees its products for workmanship and material and to heat the published net radiator load if installed to meet U. S. specifications. This means customer satisfaction. Homes equipped with U. S. products sell faster.

United States Radiator Corporation
General Offices: Detroit, Michigan
Branches and Sales Offices in Principal Cities

Table of Weights of Pine Joists, Studs and Rafters Based on a Weight Per Board Foot of 2.8 Pounds

<table>
<thead>
<tr>
<th>Spacing</th>
<th>Size x Size</th>
<th>Weight per Sq. Foot</th>
<th>Weight per Size Sq. Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;</td>
<td>2&quot; x 4&quot;</td>
<td>1.57</td>
<td>2.5</td>
</tr>
<tr>
<td>14&quot;</td>
<td>2&quot; x 6&quot;</td>
<td>1.40</td>
<td>2.5</td>
</tr>
<tr>
<td>16&quot;</td>
<td>2&quot; x 6&quot;</td>
<td>1.40</td>
<td>2.6</td>
</tr>
<tr>
<td>18&quot;</td>
<td>2&quot; x 6&quot;</td>
<td>1.25</td>
<td>2.5</td>
</tr>
<tr>
<td>20&quot;</td>
<td>2&quot; x 10&quot;</td>
<td>1.12</td>
<td>2.5</td>
</tr>
<tr>
<td>24&quot;</td>
<td>2&quot; x 12&quot;</td>
<td>1.02</td>
<td>2.5</td>
</tr>
<tr>
<td>28&quot;</td>
<td>2&quot; x 14&quot;</td>
<td>0.90</td>
<td>2.5</td>
</tr>
<tr>
<td>32&quot;</td>
<td>2&quot; x 16&quot;</td>
<td>0.80</td>
<td>2.5</td>
</tr>
<tr>
<td>36&quot;</td>
<td>2&quot; x 16&quot;</td>
<td>0.69</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Weights of Partitions

<table>
<thead>
<tr>
<th>Lbs. per sq. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gypsum partition blocks 3&quot; thick.</td>
</tr>
<tr>
<td>&quot; 4&quot;</td>
</tr>
<tr>
<td>&quot; 5&quot;</td>
</tr>
<tr>
<td>&quot; 6&quot;</td>
</tr>
<tr>
<td>&quot; 8&quot;</td>
</tr>
<tr>
<td>&quot; 10&quot;</td>
</tr>
<tr>
<td>&quot; 12&quot;</td>
</tr>
</tbody>
</table>

Weights of Ceiling

<table>
<thead>
<tr>
<th>Lbs. per sq. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lath and plaster, 2 coats</td>
</tr>
<tr>
<td>Lath and plaster, 3 coats</td>
</tr>
<tr>
<td>Suspended ceiling (metal lath and steel ties)</td>
</tr>
</tbody>
</table>

Weights of Sheathing, Flooring, Etc.

<table>
<thead>
<tr>
<th>Lbs. per sq. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pine, Hemlock, Spruce, Poplar, Redwood, per inch thick</td>
</tr>
<tr>
<td>Chestnut, Maple, Birch, Oak</td>
</tr>
</tbody>
</table>

and Hot Water Heating in Residences and Other Buildings

<table>
<thead>
<tr>
<th>Steam Radiation*</th>
<th>Size of Flue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Round</td>
</tr>
<tr>
<td></td>
<td>Diam. In.</td>
</tr>
<tr>
<td>250</td>
<td>400</td>
</tr>
<tr>
<td>300</td>
<td>500</td>
</tr>
<tr>
<td>400</td>
<td>700</td>
</tr>
<tr>
<td>500</td>
<td>850</td>
</tr>
<tr>
<td>600</td>
<td>1,000</td>
</tr>
<tr>
<td>700</td>
<td>1,200</td>
</tr>
<tr>
<td>800</td>
<td>1,350</td>
</tr>
<tr>
<td>900</td>
<td>1,500</td>
</tr>
<tr>
<td>1,000</td>
<td>1,700</td>
</tr>
<tr>
<td>1,200</td>
<td>2,100</td>
</tr>
<tr>
<td>1,400</td>
<td>2,400</td>
</tr>
<tr>
<td>1,600</td>
<td>2,700</td>
</tr>
<tr>
<td>1,800</td>
<td>3,000</td>
</tr>
<tr>
<td>2,000</td>
<td>3,400</td>
</tr>
<tr>
<td>2,200</td>
<td>3,700</td>
</tr>
<tr>
<td>3,000</td>
<td>5,100</td>
</tr>
<tr>
<td>3,500</td>
<td>5,800</td>
</tr>
<tr>
<td>5,000</td>
<td>8,500</td>
</tr>
</tbody>
</table>

NOTE—When a considerable amount of "indirect" radiation is to be used, increased boiler capacity is necessary; and in many cases such demands require a larger chimney due for the same number of square feet of radiation used.

Safe Bearing Loads on Masonry

<table>
<thead>
<tr>
<th>Lbs. per sq. in.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
</tr>
<tr>
<td>Granite—</td>
</tr>
<tr>
<td>Cap Stone</td>
</tr>
<tr>
<td>Squared Stonework</td>
</tr>
<tr>
<td>Sandstone—</td>
</tr>
<tr>
<td>Cap Stone</td>
</tr>
<tr>
<td>Squared Stonework</td>
</tr>
<tr>
<td>Rubble Stonework, lime mortar</td>
</tr>
<tr>
<td>Rubble Stonework, cement mortar</td>
</tr>
<tr>
<td>Limestone—</td>
</tr>
<tr>
<td>Cap Stone</td>
</tr>
<tr>
<td>Squared Stonework</td>
</tr>
<tr>
<td>Rubble Stonework, lime mortar</td>
</tr>
<tr>
<td>Rubble Stonework, cement mortar</td>
</tr>
</tbody>
</table>
THROUGH many exclusive processes of manufacturing and methods of testing, it is made certain that every Mack part and every complete Mack provide the most dependable, most economical hauling job money can buy. Through 39 years of specialization, Mack has held to a policy of rigid control of quality—right from the selection of raw materials. This control is maintained through the largest research and engineering facilities ever devoted exclusively to truck manufacture.

MACK TRUCKS, INC.  
NEW YORK, N. Y.

LOWEST-PRICED MACK! At upper left, the new Mack ED, 8,500 lbs. gross vehicle weight, priced at $675.00, for standard chassis f.o.b. Allentown, Pa. Cab, body and taxes extra.

AT LOWER LEFT, Mack Model BX—one of the big Macks for use in the heavy hauling field.
IF WOMEN BOUGHT CASEIN PAINT

I'LL TAKE POWDER—I REFUSE TO PAY FOR WATER!

- Thrifty Housewives Buy Flour—Not Dough
- Thrifty Paint Users Buy Powder Casein—not Paste

MRS. HOUSEWIFE: I want to do a little decorating and I understand that casein paint gives an attractive effect at low cost.

MR. PAINT DISTRIBUTOR: Yes—it does. We have it in two forms, paste and powder.

MRS. HOUSEWIFE: What’s the difference?

MR. PAINT DISTRIBUTOR: There’s no difference as far as the finished product is concerned—both have to be mixed up. Both meet the same Federal Specifications.

MRS. HOUSEWIFE: Then, I suppose paste and powder are the same price?

MR. PAINT DISTRIBUTOR: No—casein paint in powder form costs about 25% less than the paste.

MRS. HOUSEWIFE: Why is that?

MR. PAINT DISTRIBUTOR: Well, the paste contains water and has to be packed in expensive metal containers. The powder is concentrated.

MRS. HOUSEWIFE: I’ll take the powder casein paint then. When I bake a cake I buy flour not dough—I wouldn’t think of paying for water!

The Lady is Right! Anyway you look at it—savings in cost; ease of mixing; fresh paint for every job—powder casein paint is the “buy” and the call is for MODEX.

Modex
THE CONCENTRATED CASEIN PAINT IN POWDER FORM

SEND FOR COMPLETE INFORMATION

The Reardon Company, 2200 N. Second Street, St. Louis, Mo.

Please send me your new illustrated folder on Modex, the concentrated powder casein paint.

Name
Address
City State

American Builder, October 1930

Number of Pieces of Lumber Required for a Full Thousand Feet

<table>
<thead>
<tr>
<th>Length in Feet</th>
<th>2x4 Pieces and Exact Amount</th>
<th>2x6 Pieces and Exact Amount</th>
<th>2x8 Pieces and Exact Amount</th>
<th>2x10 Pieces and Exact Amount</th>
<th>2x12 Pieces and Exact Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>125 1000</td>
<td>66 1008</td>
<td>69 1008</td>
<td>50 1000</td>
<td>43 1000</td>
</tr>
<tr>
<td>14</td>
<td>108 1008</td>
<td>72 1008</td>
<td>54 1008</td>
<td>43 1000</td>
<td>36 1000</td>
</tr>
<tr>
<td>16</td>
<td>94 1002 100%</td>
<td>63 1008</td>
<td>67 1008</td>
<td>43 1000</td>
<td>36 1000</td>
</tr>
<tr>
<td>18</td>
<td>94 1008</td>
<td>56 1008</td>
<td>42 1008</td>
<td>34 1000</td>
<td>26 1000</td>
</tr>
<tr>
<td>20</td>
<td>75 1000</td>
<td>56 1008</td>
<td>38 1008</td>
<td>30 1000</td>
<td>26 1000</td>
</tr>
<tr>
<td>22</td>
<td>69 1012</td>
<td>46 1012</td>
<td>35 1008</td>
<td>29 1000</td>
<td>23 1000</td>
</tr>
<tr>
<td>24</td>
<td>63 1008</td>
<td>42 1008</td>
<td>32 1004</td>
<td>25 1000</td>
<td>21 1000</td>
</tr>
</tbody>
</table>

Wt. of Fresh Fallen Snow

5 to 12 pounds per cubic foot.

Costs of Oak Flooring Per Square Foot of Floor Area

<table>
<thead>
<tr>
<th>B. M. Price Per M Sq. Ft.</th>
<th>Cents Per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 1/3 x 1 1/3</td>
<td>3 3/4 x 3/4</td>
</tr>
<tr>
<td>$ 25.00</td>
<td>35 c</td>
</tr>
<tr>
<td>$ 26.00</td>
<td>36 c</td>
</tr>
<tr>
<td>$ 27.00</td>
<td>37 c</td>
</tr>
<tr>
<td>$ 28.00</td>
<td>38 c</td>
</tr>
<tr>
<td>$ 29.00</td>
<td>39 c</td>
</tr>
<tr>
<td>$ 30.00</td>
<td>40 c</td>
</tr>
<tr>
<td>$ 31.00</td>
<td>41 c</td>
</tr>
<tr>
<td>$ 32.00</td>
<td>42 c</td>
</tr>
<tr>
<td>$ 33.00</td>
<td>43 c</td>
</tr>
<tr>
<td>$ 34.00</td>
<td>44 c</td>
</tr>
<tr>
<td>$ 35.00</td>
<td>45 c</td>
</tr>
</tbody>
</table>

Note: Allowance should be made for any irregularities in shape of rooms, also for floor-layer’s cutting waste.
This new Johns-Manville Insulating Board Plant at Jarratt, Va., says:

YOUR RESPONSE TO THE NEW J-M LINE HAS BEEN SO GREAT I'VE ALREADY HAD TO INCREASE MY CAPACITY...

THE new J-M Insulating Board was introduced less than 90 days ago. Yet thousands of dealers and builders have already learned that it is exactly what their customers want.

This quality wood-fiber board has the new smooth, durable Glazecoat Surface in an attractive Ivory color which reflects light beautifully. There is a full line of bevel panels and planks in four pastel colors, and equipped with the famous Lightning Joint which conceals nailing. And rounding out the complete line there is Asphalt-Coated Weatherite Sheathing, J-M Insulating Lath and J-M Service Board, a new low-cost product. No wonder the most modern and best equipped insulating board plant in the world is already adding new production equipment to meet the demand!

NO EXPOSED NAILS MAR THE BEAUTY OF DECORATIVE UNITS... THANKS TO EXCLUSIVE J-M LIGHTNING JOINT!

J-M Bevel Panels and Planks go up easily and quickly because of the new J-M Lightning Joint. Simply nail the tongue. The adjacent panel fits snugly into the groove and stays firmly in place. Nailheads are completely concealed! Only the new J-M Insulating Board has this important feature... yet it costs no more! Get samples and details at once. Write—Johns-Manville, 22 E. 40th St., New York City.
Unfast

SAVES YOU 8 OPERATIONS
ON EVERY DOOR
... ...

One Phillips machine screw secures the combined rose and key plate firmly to the mortise lock itself. You save the time and labor required to center and drive eight wood screws—and the annoyance and kicks that result when they don’t “stay put” in the thin doors. You furnish a modern rose and key plate design that is authentic and always in good taste.

Unfast can be used with glass, metal or Patrician metal-and-plastic knob sets, and is available in brass, brush brass and chromium, and other hardware finishes. It’s the ideal lockset for 1½” stock doors—the ideal profit builder for you. Write for further details or consult any Lockwood Builders’ Hardware Dealer.

For the modern effects and latest improvements in builders’ hardware—see Lockwood.

LOCKWOOD HARDWARE MFG. CO.
Division of INDEPENDENT LOCK CO., FITCHBURG, MASS.
This new, exclusive Insulux design—the "Circon," No. 330—answers perfectly the demand of builders for a glass block with unusual decorative value. It harmonizes with almost any style of residential architecture. It adds striking beauty to store fronts, restaurants, theaters and other business buildings.

The design creates an all-over decorative pattern that gives unity to the glass block panel. It transmits a high percentage of light but maintains privacy. Like all Insulux Glass Block, it has high insulation value that helps to lower heating costs.

The addition of this new decorative block emphasizes the unequaled variety of designs that Insulux offers to dealers and builders. Whether you sell building materials or complete houses, Insulux Glass Block will boost your sales and help you give owners the satisfaction that builds good will. Owens-Illinois Glass Company, Insulux Products Division, Toledo.
Builds will find in this complete Moncrief line a type and a size for every warm air heating and winter air conditioning need—all moderately priced and of the finest design, construction and appearance. Furnaces are made in both cast and steel; winter air conditioners in specialized types for either coal, oil or gas. For big value, high efficiency and low operating cost, you can rely on Moncrief. Get in touch with the Moncrief dealer near you.

Send for Literature
Clearly written, profusely illustrated with cutaways, diagrams and charts. Of interest to every builder, architect and engineer.
Today's home buyer demands winter protection — and he knows that Storm Sash will give it to him. Winter Windows, properly applied with quality Storm Sash Hardware, not only eliminate the discomforts that come from drafts but tests show they save up to 20% on heating costs, a selling point you shouldn't overlook!

In the complete Stanley line you'll find exactly the Storm Sash Hardware you need. Made of heavy wrought steel in durable rust-resistant finishes, Stanley Storm Sash Hardware will "stand up" under the severest conditions. A few of the items are shown here. Your hardware dealer has them ready for you. The Stanley Works, New Britain, Conn.
NOW—ADD NEW PROFITS TO YOUR REGULAR VOLUME WITH INTERNATIONAL STEEL BUILDING MATERIALS

Industries in your city are expanding...outgrowing their old buildings...looking for a quick and economical solution to their new housing problems.

With International's help, you can fill the building needs of the industries in your locality...and add profitable new volume to your regular business.

International Steel Buildings are individually designed to fill special industrial requirements, but are assembled from standard parts carried in stock. They are low in first cost, inexpensive to maintain, durable and fire-safe.

Whether you want a steel building for an industrial plant, trusses for a garage or steel sash for an apartment, International can give you prompt delivery from its vast stock—at competitive prices!
JUST WHAT DOES CALCIUM CHLORIDE DO FOR COLD WEATHER CONCRETE?

Do You Know These Facts:

- **National Bureau of Standards** tests show that the one-day strength of 40° F. concrete was 91% less than 70° F. concrete. It takes three days for 40° F. concrete to equal the one-day strength. That at seven days, the 40° F. concrete was still 50% weaker than 70° F. concrete.

- **Solvay Calcium Chloride** is a definite aid in offsetting the effects of low temperatures.

  National Bureau of Standards tests prove that addition of calcium chloride to 40° F. concrete increased the one-day strength 300%... three-day strength 117%... seven-day strength 75%.

- **Solvay Calcium Chloride** used with all Portland cements—halves time with high early, as well as standard, white and colored Portland cements.

- **Better Concrete, Added Safety, Lower Costs.**

  - Solvay Calcium Chloride increases final strength 8 to 12%... provides dependable curing... produces denser, more waterproof concrete.
  - Early strength shortens cold weather danger.
  - Total costs are substantially cut since delays are avoided, forms removed earlier, finishing speeded.

Get All the Facts From This New Book


Solvay Sales Corporation
Alkalis and Chemical Products Manufactured by The Solvay Process Company
40 Rector Street
New York, N. Y.
WHY INSTALL PAYNE GAS FLOOR FURNACES IN LOW COST HOMES?

BECAUSE THEY SAVE MONEY! Payne Gas Floor Furnaces eliminate costly basement excavations, are quickly and easily installed. Scientifically designed and precision-built for years of trouble-free service, Payne furnaces do away with expensive service calls.

BECAUSE THEY GIVE Satisfaction! Payne Gas Floor Furnaces are the finest built — provide instant, healthful, circulating warmth. Homeowners are enthusiastic about Payne's unitized heating — warmth when and where it is wanted, at the right temperature, with no waste fuel. Profit by the prestige of Payneheat!

Recirculating air system provides constant circulation at uniform temperature. The air never comes in contact with the gas flame. No oxygen depletion. No sweating walls. No excessive dryness. Manual or automatic control. Eight sizes from 15,000 to 80,000 B.T.U.'s per hour.

... BUT DON'T STOP THERE ...

Finish up a good installation with the famous Payne "A" Vent — the safest, most efficient vent pipe you can buy! An inner tube of 99.6% pure aluminum, impervious to burned gas, produces a hot stack almost immediately, assuring perfect draft. Two layers of asbestos and an outer casing of galvanized iron give full insulation which prevents cooling of the inner tube — overheating on the outside.

Don't take a chance on inferior venting. Look for the orange-spiral stripe that marks Payne "A" Vent!

PAYNE FURNACE & SUPPLY Co., Inc.
BEVERLY HILLS, CALIFORNIA

News of the Month
Building Activities and Meetings

September Building Continues Upward Trend: 50 Per Cent Above 1938 Likely

For the first half of September contract figures from F. W. Dodge Corporation showed that residential building amounted to $52,674,000 in 37 eastern states. Since this figure is almost 50 per cent larger than that for the same period last year, the foreign situation had not caused any adverse change in the upward trend of residential building during this first two weeks for which figures are available. The statistics for the four classes of construction, as recorded during August, are as follows:

<table>
<thead>
<tr>
<th>Class</th>
<th>August 1939</th>
<th>August 1938</th>
<th>Sept. 1-15, 39</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>$127,163,000</td>
<td>$99,732,000</td>
<td>$2,874,000</td>
</tr>
<tr>
<td>Non-Residential</td>
<td>69,882,000</td>
<td>27,316,000</td>
<td>1,670,000</td>
</tr>
<tr>
<td>Public Works</td>
<td>95,170,000</td>
<td>88,113,000</td>
<td>5,660,000</td>
</tr>
<tr>
<td>Utilities</td>
<td>20,113,000</td>
<td>37,980,000</td>
<td>24,331,000</td>
</tr>
</tbody>
</table>

Total $312,328,000$313,141,000$160,251,000

NEWS BRIEFS—

H. H. SIMMONS, advertising manager of the Crane Co., has been promoted to manager of advertising and sales promotion, succeeding Russell G. Creviston, who assumes a new position as director of trade relations. . . JAMES A. STERLING, former advertising and sales promotion manager of the Norge Div., Borg-Warner Corp., has been advanced to the position of general merchandise manager for all Norge products; George G. Whitney succeeds Mr. Sterling as advertising manager. . . BERGER Mfg. Div., Republic Steel Corp., has been awarded the largest recorded U. S. order of kitchen cabinets to be used for Metropolitan Life's Parkchester Development, which has 12,247 kitchens.

H. H. SIMMONS

BUILDING BUZZ by Edgar Allen, Jr.

"I think you'd better put in an additional large closet—my husband insists on a den!"
"ROUGHING IN"
Starts Immediately when you use

Wheeling
CORRUGATING COMPANY

LONG-SPAN
STEEL FLOOR AND ROOF SYSTEM

The Quick-Welded Fireproof Construction

There is no waiting for concrete to dry when you build floors, roofs or ramps of Wheeling Long-Span Steel joists. Each unit is pre-fabricated of 12 or 14 gauge Wheeling COP-R-LOY to correct dimensions and is ready to put into position and weld to adjoining joists. No cutting. No fitting. And no chance of wrong assembly. Accuracy does not depend upon the skill of the workman. The completed deck is instantly available for the supplies of steamfitters, electricians and tradesmen. "Roughing in" starts immediately. Write for full details.

Wheeling Corrugating Co.
Wheeling, West Virginia
Offices in Principal Cities
Quick and accurate estimates on all door requirements... accurate designs and working drawings... the full cooperation, at the time of installation, of a trained construction crew... relief from the responsibility entailed in speedy and proper installation... these are a few of the reasons Kinnear Doors have won such wide favor among contractors. They have learned that when they accept the Kinnear bid, they are money ahead... and, at the same time, they protect their reputation for rendering client satisfaction.

STEEL ROLLING DOORS

Rugged, highly efficient and space-saving. Interlocking steel-slat curtain rolls upward in steel jamb-grooves, and coils compactly overhead. For manual, mechanical or electrical operation. The original door of this type—its efficiency proved over nearly half a century!

Roll-TOP DOORS, Wood or All-Steel

Highest Quality, sectional, upward acting doors that operate on special ball bearing rollers in rigidly mounted steel tracks. Counterbalanced for easiest operation. Weathertight "keystone" seal. The all-steel Roll-Top is exceptionally durable—can’t sag, warp, split or pull apart. Built in any size with provision for any number of light sections.

Kinnear also makes Steel Rolling Fire Doors and Shutters, Bi-folding Doors, Barrier Roll-TOP Doors, the famous Kinnear Steel Rolling Grille and other special types of upward-acting doors. Write for catalog.

THE KINNEAR MANUFACTURING COMPANY
1560-80 FIELDS AVENUE COLUMBUS, OHIO

Offices and Agents in Principal Cities
Factories: Columbus, Ohio; San Francisco, Cal.

KINNEAR ROLLING DOORS

LETTERS from Readers on All Subjects
Facts, opinions and advice welcomed here

Correcting Davison’s Figures

Washington, D.C.

To the Editor:

This letter will prove that I have not entirely forgotten my promise to send to you some material in reference to the relative bearing of interest rate and building cost reduction on the total expense to the owner in acquiring a house.

The following example illustrates the effect of a 10% reduction in building costs as compared to a 10% reduction in interest rates, as prepared by our Research Division.

Assuming a $5,000 house, a $500 down payment, a $4,500 mortgage for 25 years, 3% of 1% FHA premium, a tax rate of $25 per $1,000 (the approximate national average), hazard insurance premium of $30 per year, and water rent of $15 per year, the monthly payments based on a 5% mortgage would be:

($4,500 mortgage) $263.11
Average FHA premium 1.12
Average taxes 10.42
Average hazard insurance premium 2.59
Average water rent 1.25
Total monthly payment $416.46
Based on a 4.5% mortgage, the monthly payment would be:

($4,500 mortgage) $250.02
Average FHA premium 1.13
Average taxes 10.42
Average hazard insurance premium 2.59
Average water rent 1.25
Total monthly payment $282.12

Consequently, a 10% reduction in the mortgage interest rate from 5% to 4.5% results in a reduction in the home owner’s monthly payment of $134.34 or 31.72%.

On the other hand, assuming that the $5,000 house can be produced for $4,500 as a result of a reduction in material, labor, or land cost, and with the same down payment, the monthly payment would be:

($4,000 mortgage) $234.00
Average FHA premium 1.00
Average taxes* 9.38
Average hazard insurance premium* 2.22
Average water rent 1.25
Total monthly payment $277.75

*Based on the reduced value of the property.

This is a reduction of $437, or more than 10%, in the monthly payment.

In other words, a 10% reduction in the original cost of the house is more than three times as effective as a 10% reduction in the interest rate. A 10% reduction in the interest rate results in a saving to the borrower over the entire 25 years of $390, but a reduction in any or all of the items entering into the original construction of the house, amounting to 10% of the original cost of the house, results in a saving over the entire period of $1,311.

FEDERAL HOUSING ADMINISTRATION,
By Miles L. Coleen, Assistant Administrator.

More About John T. Flynn’s Article

To the Editor:

I am sending you a copy of a letter which I recently sent to The Reader’s Digest, Pleasantville, N.Y. It reads as follows:

"In the last issue of your magazine, there appears an article (Continued to page 110)"
MORE SALES! MORE PROFITS!

WITH McKinney FORGED IRON SAMPLE BOARDS

McKinney Forged Iron Sample Boards tell a complete sales story of authentic design, master craftsmanship and beautiful texture.

Available in nine standard panels that make easier selling for you and easier buying for your customers.

Write for Complete Details

McKinney MANUFACTURING COMPANY - PITTSBURGH, PA.

DESIGNERS AND MANUFACTURERS OF GOOD HARDWARE FOR 73 YEARS

ONE MAN CAN MORTISE 400 DOORS PER DAY!

Carter Lock Mortiser Makes BIG Profits for Contractors

ON one Ohio real estate development alone, a Carter Lock-Mortiser paid for itself in just five days... and then went right ahead piling up profits for the contractor.

Quickly set up, the Carter Lock-Mortiser cuts a finished mortise in just 30 seconds—can be arranged to spot for knob and keyhole. In continuous operation, it will actually mortise a door a minute. Four simple adjustments change over from one size lock to another in 90 seconds. Uniform feed means a smoother cut. And every mortise is parallel with stile and exactly centered.

Send coupon right now for the facts on this money maker.

FEATURES

- Uniform Feed. No overloading of motor.
- 4 Quick Adjustments for lock-size changeover.
- 30 Seconds Per Cut—a mortise a minute in continuous use.

R. L. Carter Div., The Stanley Works
133 Elm Street, New Britain, Conn.
Please send complete literature and prices on the Carter Lock-Mortiser.
Name
Address
City State

CLIP THE COUPON NOW!
Letters—

(Continued from page 108)

by Mr. John T. Flynn condemning the building industry for its methods and practices and everyone who owns a home or pays rent as suckers.

"It was a great surprise to me, as to many others, that your magazine published this article. I have wanted to believe what I read in The Reader's Digest, and there is so much that I know is untruthful in Mr. Flynn's article."

"In our trade papers there have appeared many replies to Mr. Flynn's brain storm.

"May I call to your attention an article by R. E. Saberson in the August issue of the American Builder. Mr. Saberson has delved into the accusations made by Mr. Flynn, and points out specifically where some of them are wrong.

"You will not be fair to your readers unless you also publish Mr. Saberson's article. There are two sides to problems, and in this one you will agree, after reading Mr. Saberson's article, that plain common sense makes his side the right side.

"Be fair to one of our largest industries, be fair to all those whom Mr. Flynn brands as suckers, as your readers do live in houses, and publish Mr. Saberson's article."

BILL DAVIS, The Long-Bell Lumber Company.

Wants "Collier's" to Apologize

To the Editor:

Pardon me if I suggest that the title of your editorial, page 39, August, should be "Building Industry Wants the Public to Have the Truth."

We poor lumbermen are tired of having this stuff taken up valuable space in the trade papers. There should be brains and money enough in our industry to force Collier's to apologize for and retract some of the implications in Mr. Flynn's article, and then to publish the truth, unadulterated by political propaganda, about this business of "home building."


Detroit Project Attracts Interest

To the Editor:

I think you and your staff did a wonderful job in your presentation of the activities of our Association, the building business in Detroit, and our 1939 Project. This is an opinion which is apparently widely shared, if the evidence pointing to that conclusion continues to pile up. We have already received numerous letters and inquiries originating in all parts of the country—a distinct indication of the reader interest in your magazine.

W. J. GUINAN, Builder.

Detroit, Mich.

Fighting Building Rackets in Detroit

To the Editor:

I am enclosing our letter to the Michigan Attorney General at Lansing and his reply. Incidentally, it entirely coincided with the opinion we had formed some four weeks ago. Our letter, together with Mr. Read's, merely completes one part of the record. But the matter is not finished. In the war which the Greater Detroit Home Builders' Association is conducting for decent government, especially where it touches the building industry, this exchange represents only a minor skirmish.

GREATER DETROIT HOME BUILDERS' ASSOCIATION
By W. J. Guinan,

Detroit, Aug. 17, 1939.

Honorable Thomas Read,
Attorney General for the State of Michigan,
Lansing, Mich.:

The activity directed toward convening a Grand Jury to delve into the alleged racketeering in the building industry has assumed an ominous degree of immobility.

But while official movement appears gradually to approach a dead stop, rumors grow and multiply.

These rumors are not at all complimentary either to the law enforcing officers of the State or to the present state of political morals.

(Continued from page 112)
CONSTRUCTION COSTS REDUCED $\frac{1}{3}$

With UNITS MADE ON THIS MACHINE

THIS AUTOMATIC MACHINE PRODUCES NOT ONLY DUNBRIK but also DUNSTONE in 16 sizes, offering savings of $\frac{1}{3}$ in material costs, $\frac{1}{2}$ in mortar and $\frac{1}{3}$ in labor, thus bringing permanent construction costs down to the level of good frame.

SOME DUNBRIK MANUFACTURERS, FORMERLY CONTRACTORS AND BUILDERS, recently established, have used or sold millions of units. One sold over three million the first year. Another sold 39 out of 45 home builders. Names furnished upon request.

THEY WERE EQUIPPED WITH EXCLUSIVE LINE PRODUCTION MACHINERY enabling them to mass manufacture at lowest cost. Their equipment costs were but a fraction of former methods of equal capacity. They were granted definite franchises protecting their market, business and future, including engineering and advertising service.

WE ALSO SUPPLIED THEM WITH PROVEN PROCESSES AND FORMULAS for producing DUNBRIK-DUNSTONE in over 40 colors, shades and textures. Products now being used by Government and City Building Departments throughout the country.

INVESTIGATE. LET US PROVE TO YOU THIS OUTSTANDING MANUFACTURING OPPORTUNITY. Write today for free booklets. They tell the whole story. Prepare now to cash in on the coming shortage in building materials and price advances.

W. E. DUNN MFG. CO.
450 West 24th St., Holland, Michigan
Letters—

(Continued from page 110)

We can scarcely believe that anyone can be unconscious of the fact that there has been unceasing criminal activity during the past two years in the Detroit area, which has had as its objective the demoralizing of the local building industry.

We can scarcely believe that anyone can be unaware of the fact that such activity adds considerable to the cost of home building, and by the same token, lessens the opportunity of home ownership.

Nor can we possibly be convinced that Government, which has been in a constant state of (PUBLIC) anguish for the past five years over the condition of housing costs, and has constantly bewailed (PUBLICLY) that racketeering and criminal destructiveness add to the cost of housing. And that the subsequent burden falls on the small home owner and taxpayer.

We cannot conceive of the possibility that the officials whose sworn duty it is to protect the lives, properties and rights of (ALL) the people can be ignorant of the fact that within the last two years:

1. Homes have been blown up and destroyed.
2. Homes have been stained, damaged and wrecked.
3. Workingmen have been threatened, intimidated and beaten up.

And finally, we cannot believe that Government (PRIVATELY) is ignorant of the fact that racketeering is the constructive or effective step has been taken to correct this situation, and to eliminate such practices by convicting and punishing those responsible.

It is not strange that the air is filled with rumors; it would be very strange if the opposite were true.

If the man in the street thinks the proposed Grand Jury investigation has sunk in the cesspool of political expediency, who can say that his logic is bad? Racketeering and big money are evil twins, and who can blame the man in the street if he thinks these twins (PRIVATELY) exert more influence than the entire body of honest citizenry?

Who can blame the man in the street if he is becoming skeptical of the (PUBLIC) Government concern in the matter of Housing, when events shape themselves to indicate that this concern (PRIVATELY) is only a (PUBLIC) display of empty lip service.

We are, therefore, directing to you this inquiry, that these rumors, at least within the building industry, may cease to be rumors; that they may be destroyed or translated into fact.

And we earnestly solicit your consideration of the following questions and respectfully request specific answers:

1. Has the proposed plan for a Grand Jury Investigation of unlawful practices in the Detroit Building Industry been abandoned? Is so, why?
2. If this plan has not been abandoned, what is the present position of the plan, and when may definite action be expected?

THE GREATER DETROIT HOME BUILDERS ASSOCIATION.


Mr. Edmund Kuhlman,
Executive Vice President,
Greater Detroit Home Builders' Assn.:

For your information, I wish to advise that during the last three months, with the limited facilities available, I investigated the alleged racketeering to the end that sufficient information would be obtained to warrant the calling of a grand jury.

Under date of August 21, I filed with the Circuit Court for the County of Wayne a petition asking that a grand jury be convened for the purpose of investigating alleged building racketeering, gambling, bribery and other crimes in the Detroit area.

This petition was denied by the Wayne circuit bench sitting en banc. At the time that my petition was denied, a prior petition was before the court which was sufficiently broad to include all that I had hoped to bring before the grand jury.

I suggest that any information obtained by you by reason of your private investigation be turned over to Hon. Homer Ferguson or his staff.

THOMAS READ, Attorney General, State of Michigan.
One Room Paneled with GENUINE WOOD in Every Modern Home!
—yesterday, a designer's dream; ... to-day, a reality

DELUXE WELDBORD
DECORATIVE HARDWOOD PANELS
at $17\frac{1}{2}$
Per Sq. Ft.
F. O. B. Warehouse

abruptly take fine woods out of the luxury class and put them within the budget-reach of everyone who builds or re-models.

WELDBORD panels come in economical BIG sizes—4'x8', 4'x7' and 4'x6', in $\frac{1}{4}$" thicknesses only. They are HARDWOOD PLYWOOD throughout with faces of American Walnut, Plain White Oak or African Mahogany, all faces running the long way of the panel, and all are hot-press resin-bonded for unusual permanence. Prefinished panels with matching moldings at somewhat higher prices.

THINK OF IT! The paneling for a 12'x15' living room costs less than $55.00. Compare this with the cost of any other type of wall finish—and the WELDBORD wall is far more durable, costs nothing to maintain and has all the aristocratic yet delicate charm which man has associated with fine woods since time began.

For DRI-WALL Construction use Blue Label WELDBORD
the hardwood plywood wallboard which takes paint or wall paper perfectly. Cross-grain construction for extra stiffness—check-proof surface—no grain raising.

$7\frac{1}{2}$ per Sq. Ft. in most localities

Lumber Dealers! Write for details of our “We-Stock-It” Selling plan

UNITED STATES PLYWOOD CORPORATION

EXECUTIVE OFFICES
616 WEST 46th STREET NEW YORK, N. Y.
Branch Offices and Warehouses in Principal Cities

Concrete demonstration home erected by John D. Edwards, Milwaukee, Wis. Concrete walls, partitions, floor. Good looks, big value and aggressive merchandising pulled in the crowds—and made sales!

Builder John D. Edwards of Milwaukee builds and sells 37 firesafe Concrete Homes in one year!

Mr. Edwards set out to offer buyers homes of such beauty, of such obvious and lasting structural value that sales-appeal would be sure-fire. And he did it—by the same means that has chalked up a long list of successes in other cities.

Mr. Edwards built a demonstration home—of CONCRETE. Through newspaper advertising and sales literature, he featured the fact that concrete won't burn. Concrete is firesafe and storm-proof... resistant to rot, rust, termites and decay... warm in winter, cool in summer... thrifty in upkeep. Prospects flocked in. He sold and built 37 concrete houses in 1938, and is having another big year in 1939.

Test Concrete's Appeal in Your Community
There's plenty of proof that builders and realtors can increase their sales and profits by becoming known as local builders of concrete homes. The first step is to get an attractive design. Then build a demonstration home. And feature the beauty, firesafety, long life and economy of concrete in sales calls and advertising.

Write us for helpful information
PORTLAND CEMENT ASSOCIATION
Dept. A10-3, 33 W. Grand Ave., Chicago, Ill.

A national organization to improve and extend the uses of concrete.
The new, double-sealed sheathing!

Step up sales with Temseal

The new, double-sealed sheathing!

There's plenty of good sales ammunition for you in Temseal—the new insulating sheathing made by Armstrong! This material is doubly sealed at the factory against both air and moisture infiltration.

This double coating of asphalt and strong kraft paper reinforcement also gives Temseal unusual strength. This makes buildings more rigid. Furthermore, the use of Temseal makes it unnecessary to use building paper or felt.

Armstrong's Temseal is available in the standard sheathing thickness of 25/32", and in large boards 4' wide by 8', 81/2', 9', 91/2', 10', and 12' long. Let us send you a sample and complete details about this new Armstrong's Temlok product. Write today to Armstrong Cork Co., Building Materials Division, 979 Concord Street, Lancaster, Pennsylvania.

Letters—

Social Security Funds for Home Financing

To the Editor:

I have read the August issue of the American Builder with a great deal of pleasure, especially the articles entitled, "The Building Industry Wants the Truth" and "The Building Industry's Ills Aired," but neither article seemed to give any answer to the problems of lower-cost housing that confront the building industry.

I own a lumber yard known as the "Texas Lay-More" at Three Rivers, Texas. Three Rivers is a small Texas town of 2250 population, agriculture and oil being the business of the surrounding country, and we have the same problems in lower-cost housing which apparently confront the rest of the country. Mr. B. J. Nelson is manager of my yard at Three Rivers and is a capable sales manager who thinks ahead and tries to overcome the obstacles that confront us. On my numerous visits to Three Rivers we have discussed at length the problems of lower-cost housing for persons who can afford to pay no more than $10 to $15 per month for their home and, during these many discussions, we decided to use FHA Title I Class 3 Loans, which was apparently devised to meet this market; however, we have been unable, thus far, to find a lending institution that was willing to make this class of loan at a 75% discount with so little investment by the prospective owner.

The class of home purchasers interested in these small low-cost homes will be the eventual recipients of the Social Security funds which are being amassed by our government, and the idea struck us that these funds could be put to exceptionally good use by providing homes now for the class of people who need them most and who will eventually be drawing from the Social Security funds when their earning days are over. Incidentally, the interest returns on these funds would certainly build up substantial reserves to be added to the tremendous amount of funds now accruing. We wrote to all the departments in Washington that we could think of, including FHA, the Social Security Board, Old Age Benefit Board, and even to the President of the United States, and, of course, received courteous replies from each and every one of them explaining why it could not be done, due to the present lack of legislation permitting the funds to be invested in that manner. In other words, the "buck passing" was handled with extreme finesses by each department. Mr. Nelson and I gave the job up as being one too large for us to cope with.

Last week I made one of my usual trips to Three Rivers and found Mr. Nelson very much elated. He said to me, "Greg, we had a very distinguished visitor in the yard this week. I was sitting at my drawing-board working on some plans and wondering how we could finance the job if we got it, when three men walked in the yard. I walked over, extending my hand and said, 'Nelson is the name.' One of the gentlemen shook hands with me and said, 'Garner is the name, John Garner from Uvalde. My fishing partners and I are on the way to Corpus Christi for a little fishing trip. I saw your correspondence in regard to the use of Social Security funds for small homes and if you will proceed along certain lines to get the legislation inaugurated, I believe my office can be of help in seeing that the enabling legislation is passed.'"

We have searched the length and breadth of the country for funds to finance these small homes. The FHA has the setup for handling and insuring such loans, our only difficulty being to secure the loan. I might add that we have no building and loan association that we can turn to for this class of financial assistance and must depend upon outside funds. From our point of view, we know what it will take to cure the ills of the building industry in our small town and that is, money at a reasonable rate with which to provide homes for people in the low income bracket.

If your good office can stimulate a little agitation for the legislation needed to turn loose Social Security funds for the purpose of building small homes, you will render a tremendously worthwhile service to the building industry as a whole.

EUGENE C. TIPS,
Texas Master Builders, Inc.
Visit The French Pavilion at the New York World's Fair

They insisted that only the finest materials be used in their building at the Fair. They were particular about the interior plaster work. So Hawk Spread White Lime Finish was used and the result is a thing of beauty.

Hawk Spread White Finish and Ohio White Finish—always packed in Zig Zag Bags for easy identification—produce the finest plaster work. Write for booklet telling how they are made--why they are better.

The French

did it Right!

More and more home owners and investors are demanding protection against decay and termite damage—particularly for the “Vital 20%”—those sections of a building which are near the ground and foundations.

Use lumber treated with Du Pont Chromated Zinc Chloride particularly for these vulnerable areas. It lasts 3 to 5 times longer than untreated lumber and it is:

- Decay resistant
- Termite repellent
- Fire retarding
- Readily fabricated
- Odorless
- Paintable
- More resistant to abrasion
- Clean
- Economical.

Write today for complete details about Du Pont Chromated Zinc Chloride Preserved Lumber and the names of suppliers.
AMAZING STAIN TEST TELLS REZ STORY

THERE IS a "believe-it-or-not" difference in the two ends of this piece of wood. One is smooth, even, rich. The other rough, streaked and dull. Both were finished with the same stain, at the same time. BUT—the smooth, satin-like end was first given a single coat of LAUX REZ! Now note! That coat stops grain raise, provides a hard surface that finishes like hardwood. Try this test! See how REZ protects wood, gives a more beautiful finish. Write for free REZ sample and additional information.

LAUX SALES CO.
(Division of I. F. Laucks, Inc.)
Seattle, Oakland, Los Angeles, Houston, Portsmoutth, Va.; Vancouver, B. C.
Stocks available nationally: Harbor Plywood Corporation, distributors and warehousing in 22 leading cities; Lumber Reserve Supply Co., Des Moines; Reserve Supply Co., Minneapolis; Minot Builders, Minot, N. D.; Building Service, Great Falls, Mont.; Kohler-McLister, Denver; Rust Sash & Door Co., Kansas City; 4-Star Supply, Carthage, Mo.; E. W. Camp, Cincinnati, Indianapolis; Lawrence R. McCoy, Worcester, Mass.

Letters—
Likes New Home Design Book
New Orleans, La.
To the Editor:
I have received my copy of "Buyer-Approved Homes of Known Cost." I have also received the previous years' issues of the similar book and have found them exceedingly valuable in connection with house designing. I believe, however, that this year's book is the best of any of them, and if possible, I would like to get another copy for my office use.

W. H. SCALES,
Architectural Engineer.

Wants "Man Hours" Data
Pawling, New York.
To the Editor:
I have received my first copy of your fine magazine. I am sure I will enjoy and benefit by reading it regularly.

I honestly tell you that the "TruCost" section will be appreciated by me. However, it could be more useful and helpful if you would include in your article the "man hours" for each square, section or piece of wood. I don't believe labor varies to a great extent. If you would give us an average, it would be fine.

JOHN F. RICE, Carpenter.

Estimating Series Well Received
South Pasadena, Calif.
To the Editor:
I have mailed to you article number IX with 6 illustrations, on "How to Estimate Accurately," and will have the final article in your hands shortly to complete this series in a suitable manner. I am still receiving requests for the previous articles already published by builders who have not seen the complete series; also requests for the concluding material. I have had letters from real estate promoters, lumber dealers, carpenters, contractors, one attorney, and today one from an architect. So apparently American Builder must enjoy a wide range of readers.

J. DOUGLAS WILSON.* *

How Derby Does It
(Continued from page 58)
primed by dipping in white lead and oil. Galvanized finishing nails driven flush.

EXTERIOR MILLWORK—Clear Louisiana red cypress.


INTERIOR MILLWORK AND TRIM—Select cypress.

STRUTS—1" x 6" struts on 4 centers nailed to bearing partition added to brace rafters.

SUBFLOOR—Ends of subflooring nailed to 2" x 4" plate from underside.

SCREENS—Full length 2-panel screens, galvanized hangers with 16-mesh aluminum wire cloth.

FLOORS—Select 1" x 3" T. & G. plain red oak end-matched, machine sanded to smooth finish. One coat Pratt & Lambert oak floor filler rubbed in, 2 coats pure white gum shellac, 2 coats floor wax.

SHEET METAL—Copper bearing galvanized iron 26-gauge with 2-oz. zinc coating per sq. ft. or heavier.

TERMITE SHIELDS—26-gauge sheet metal placed to completely isolate ground connections from woodwork of building. Exposed edges neatly crimped or angled. Bed fully on piers and other bearing surfaces. Special attention directed to shielding at steps. Shields with neat tight clamps placed on pipes rising from the ground and anchor rods rising from foundation. Give 1 coat of red lead and 1 coat of lead and oil paint.

ROOFING FELT—30-lb. asphalt saturated roofing felt not less than 4".

ROOFING—Filmitkote Dutch lap asbestos shingles in colors selected to harmonize with exterior trim.

KITCHEN EQUIPMENT—G-E dishwasher, sink with garbage disposal unit, Bendix home laundry, sink with garbage disposal unit to be roughed in by plumber and attached to wall by...
Guide to Better
FIREPLACES
and Home
Conveniences

- This Twenty-First edition of the Donley catalog, fresh from the press, is much more than a record of merchandise. In every page it conveys aid and inspiration to the designer and builder of homes. Full information and details for making fireplaces work efficiently. Installation data showing the varied applications of Donley Heat Saver Fireplaces. Incinerators, septic tanks, package and mail receivers, coal chutes, basement windows and scores of helpful home devices are presented with exact data for ordering and installation of Donley Devices, sold by material dealers in every locality. Write today for this newest issue, fresh from the printers.

DONLEY BROTHERS CO.
13910 Miles Ave., Cleveland, O.

Free on Request

The New
American Builder
and Building Age
BOOK GUIDE

In the index of this 64-page, 6 x 9 catalog you will find listed the building books published or revised within the past 10 years. The Book Guide contains concise descriptions of 500 books, booklets and estimating forms. The latest plan books, up-to-date estimating books, concrete manuals, architectural handbooks and other building books of all kinds are fully described.

BOOK SERVICE DEPARTMENT
American Builder and Building Age
30 CHURCH STREET NEW YORK, N. Y.

IT HELPS YOU SELL HOUSES!

WOLMANIZED LUMBER* MEANS SAVINGS FOR HOME BUYERS, MORE SALES FOR YOU

Forty houses by one builder, 58 by another, constructed with Wolmanized Lumber! It is used because it helps make sales. And it helps make sales because in the long run it means savings for the home owner.

Use Wolmanized Lumber to put your quality-and-economy point across. Tell prospects: "Notice the sills, joists, and subfloor in this house. These are danger points where decay and termite damage often causes expensive repairs. But we have used Wolmanized Lumber at these points. Wolmanized Lumber is pressure treated with a preservative which gives thorough protection against damage. It safeguards the whole house, but adds less than 2% to the total cost, far less than an average repair bill!"

It is a real value which helps you sell houses, and which has the approval of financing agencies. Write today for samples of pamphlets which you can use in explaining Wolmanized Lumber to your prospects.

*Registered Trade-Mark

WOLMANIZED LUMBER
The new Model "O" automatic Conversion Oil Burner—for new or existing home heating plants—provides stabilized air delivery, unobstructed air travel and quiet, clean combustion. Not temperamental. High winds, cold start-ups and poor draft conditions leave it virtually unaffected.

Rear Views of Burner Assembly

Air passes across the end of the tube (not through it) with adequate rotation causing the air to spread out fan-shape in exactly the same manner and shape as the conical oil spray leaving the jet. The result is a

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¢ MOVE FASTER
¢ BUILT TO "TAKE IT"

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You're Right When You Pick CMC
You get the newest in Mixers, Tilters and Non-Tilt 
... all sizes. Mix faster, move faster. No dead weight. Built to take it. You can bid right and be on the profit side with this kind of equipment.

Write for New Catalog
Get new catalog showing latest CMC Mixers ... all sizes ...
Plaster and Mortar Mixers, Dual Prime Pumps, Hoists, Saw Rigs, Carts and Barrows.

CONSTRUCTION MACHINERY CO. Waterloo, Iowa

How Derby Does It
(Continued from page 116)

WIRING—G-E wiring, 6-panel switch box and circuit breaker. Branch wiring No. 14, except for Bendix, Disposall and dishwasher circuit, No. 10, and except for circuit to refrigerator, No. 12.

EXTERIOR PAINT—3 coats Sherwin Williams and Dewe & Raynolds exterior paint. Exterior wood finish back-primed before erection. Door and window frames primed immediately on arrival at job.

FOUNDATION ANCHORS—Set 24 ½" deformed reinforced mild billet steel bars in concrete foundation and bend upper end over joist to anchor house securely.

LINOLEUM—Bathroom floors Sealex inlaid linoleum. Walls covered with Sealex linoleum wall covering with aluminum edging.

How Free Service Sells
(Continued from page 59)
Actually, the workshop on wheels is a guarantee that all homes built by the company are perfect in every respect.

Is this an unnecessary expense to the builder? Fred Gellert doesn't think so. He is a big, solid, enthusiastic man, and he is thoroughly convinced of the value of service.

"We have sold dozens of new homes through the activities of our service department," he said.

The workshop on wheels is an advertisement in itself. According to Thomas Maddock, superintendent, prospective buyers have even stopped the car on the street and inquired about this new service.

Largely due to the leads turned up by the service department there has been no summer slump in building at Standard. Business is forty per cent ahead of 1938 and new homes for August fifty per cent ahead of the same period last year.

There are other advantages, besides sales, that have been gained from the workshop on wheels. This modern service department is helping Standard construct a better home at lower cost. Paradoxically, the longer the service department is in operation, the less need there is for it. Defects found in older homes are remedied in building the new ones. An example of the type of trouble eliminated is cited in the matter of sagging garage doors. The simple use of a strap hinge on these doors, instead of the old type, eliminated this annoyance completely.

The rolling workshop serves much the same purpose in home construction as the testing department does for an automobile manufacturer. It takes the bugs out of new construction at practically no cost to the contractor. Minor adjustments, made at the time of building, eliminate future trouble and result in additional convenience to the home owner.

Much of the experience gained by the Gellert brothers through their service department is being utilized by the local Federal Housing Authority.

In addition to their service work the crew go over new homes and see that the buildings are in first class shape for the new owner.

By keeping in constant contact with owners, and giving speedy attention to their needs The Standard Building Company, with its workshop on wheels, is illustrating the way to more sales and better homes for all progressive builders in San Francisco.—Vernon Wilkinson.
CANTIE ES SAMSON SPOT

Into your Bathroom At small additional cost
SASH CORD
Ah THES 14° GAUGE GALVANIZED HANGER, TESTED FOR f, 8000 LBS. WEIGHT, PERMANENTLY FASTENED TO §, EACH STUD ONE INCH DEEP COMPOUND AROUND
<> EV ENTIRE LENGTH OF WB MAKES IT IMPOSSIBLE

Samson Spot Sash Cord installed with the proper weights and pulleys, will give at least 25 years of service. In cost per year of service, it is by far the least expensive material for hanging double hung windows. Easily identified by the colored spots, it is made in one quality—the best. Write for samples and specification data.

The Lucke Leak-Proof Tub Hangers prevent seepage between walls and tubs. End unsightly cracks and ruined plastering. Eliminate settling. Specified everywhere by leading architects and contractors for remodeling or new construction. All types of tubs. All types of wall construction. Ask your tile setter about it. Catalog free. Send for it.

THE LUCKE LEAK-PROOF BATH TUB HANGER
Manufactured exclusively by
WILLIAM B. LUCKE, INC., WILMETTE, ILL.
Boston
Minneapolis
San Francisco
New York
New Orleans
Los Angeles

Specially desirable for residential construction...
Positive, automatic protection against short circuits and sustained overloads... Proper time lag characteristics to prevent needless circuit interruptions when momentary overloads occur... No more "groping in the dark" to restore service... Convenient and handy—merely return the handle to the "ON" position, after the cause of the short circuit has been removed... Operates manually, like an ordinary tumbler switch... Unusually attractive appearance... Modern styling... Beautiful pearl gray finish... Easy to keep clean... Priced right.

For 120 volt AC service... Capacities: 15, 20, 25, 35 and 50 Amp... Approved by Underwriters' Laboratories... Send for New Bulletin No. 58...

SPECIAL OFFER...

The Blackstone
Michigan Avenue - CHICAGO
Modern Rubber Roller Drum Drive
No ring gear—no pinion—no countershaft, less wear—smooth running.

LOAD WHILE MIXING—INCREASES PRODUCTION 40 TO 50%
END DISCHARGE

Write For Bulletin 2X

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PORT WASHINGTON . . . WISCONSIN

I'LL USE THE MALLSAW
IT'S MUCH FASTER!

That's what the men on the job are saying—and what your men will say too—once they see the speed, power, flexibility, accuracy, easy operation and safety of the MALLSAW—specially designed and built for house framing and form work. Saves you TIME, LABOR, MONEY! There's a MALLSAW for every job; cutting capacities 1/16" to 4".

MALL TOOL COMPANY
1727 SOUTH CHICAGO AVENUE
Also makers of MALL Door Mortisers, Door Plates and Grille.

I would like to have your free folder on MALLSAW and other Portable Electric Power Tools.

Name __________________________

Address _________________________

City ____________________________ State ____________

Glass-Faced Structural Unit

(Continued from page 71)
design has four purposes. First, the back edge is crimped into the concrete which is cast after the metal edge is applied around the glass. Second, the metal edge has a high shoulder ½ inch wide, entirely backed by solid concrete. This flat shoulder is the load bearing point and extends 1/32 inch higher than the metal around the vitrolite. After installation the flat metal shoulders and concrete portions of the blocks receive the entire load of the wall, allowing the vitrolite surface of each block to be entirely free from any pressure or load whatsoever.

Third, the metal edge has a half-round groove at the mastic line. This allows the metal to act as a spring which exerts a continual pressure on the glass regardless of expansion or contraction. Fourth, the front portion of the metal contains a continuous layer of cork tape which prevents direct metal-to-glass contact and also cushions the edge of the glass to protect it from damage.

Glastone offers insulation two to three times that of cast stone, brick or similar building materials. A glastone block 8 inches thick offers ten per cent better thermal insulation than 8 inches of brick lined with one-half inch of cork. Plaster may be applied directly to the concrete surface of glastone.

While there is no danger of breakage except under severe impact, any damaged surface may be replaced, giving glastone an important advantage over other masonry units. In case of breakage, the mastic holds fragments to the wall, preventing possible injuries from falling particles.

Tucker and Silling Architects, Inc., of Charleston, W. Va., designed the Libbey-Owens-Ford Company glastone building in that city.

Who Builds What

(Continued from page 74)
larger the volume of business done by local building men. American Builder also grouped replies from readers according to their vocational classifications to determine the average annual volume of each. Findings are shown in an accompanying table. The largest number of replies (2,054) came from general contractors and builders, whose average annual volume is $51,669. The smallest number of replies came from sub-contractors (28) who also showed the smallest annual volume. There were 134 replies from architects and engineers, who reported an average annual building volume of $148,909. This is a very interesting figure, because 4,000 of the 7,000 architectural firms in the United States do an annual business of less than $25,000. Approximately one out of each seven architectural firms does an average annual business of more than $50,000. American Builder architectural subscribers show an average annual volume of nearly $150,000, and obviously are active concerns whose business volume is far above national averages.

The building industry is in a state of flux at all times. Its man-power is constantly shifting and growing. Building mechanics take a few jobs as sub-contractors. They continue to expand, and ultimately become general contractors and builders, as older men retire. There also are changes in the types of work done by various building men according to local conditions and the industry's current position in the national building cycle. During active years a residential builder includes commercial, industrial and public buildings in his operations. During quiet years the commercial and industrial builder may fall back on a mainstay of residential modernizing, or other light construction work.
Save up to $40 per Closet in Cubage

Little Giant Belt Sander

Information on this strikingly different and exceedingly versatile bench belt sander as well as literature on other model floor sanders will be sent on request.

Clarke Sanding Machine Co.

Make your odd sash, cabinet doors and moldings on a Shaper, using our stock size cutters for check rail sash, cabinet doors, light doors, moldings

Woodworkers’ Tool Works

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Now Ready
American Builder and Building Age Book Guide

The 1939 edition of this popular guide to books and booklets on building is now ready. In its 84 pages are described some 500 books on all subjects connected with home building, from foundation to furniture. Books which have not been revised within ten years have been omitted. Some English books are included where they are outstanding or where there are no American books on the subject.

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Book Service Department
American Builder and Building Age
30 Church Street
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delivers a 2-WAY PROFIT!

Here is a double-duty sawing combination that will make any builder's time and money show a two-way profit. First, with Speedmatic's Radial Arm attachment you can also collect the savings of a "production rig"—right on the job. Out on the lot or in the house, it is ready for accurate, high-speed, duplicate cutting—cross cuts, rips, dadoes, miters, slant cuts. Speedmatic offers quick, easy, smoothly-organized work, resulting in maximum time and money savings.

Be sure to get FULL USE and FULL PROFIT from your saw investment. Write today for full details and prices of complete range of Speedmatic sizes—no obligation.

PORTER-CABLE MACHINE CO.
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Syracuse, N.Y.

KITCHEN MAID FEATURES THAT HOME OWNERS PREFER

Towel Drier Metal Drainers Handi-sink

ONE inspection is usually enough to convince home owners that Kitchen Maid Cabinetry is the ideal solution to any kitchen planning problem. And the many exclusive convenience features add further enthusiasm which prompts an immediate "OK." Write for illustrated color catalog.

KITCHEN MAID
Who Builds What (Continued from page 120)

Two-thirds of the active building men who furnished information for this survey erected two, three, or four different types of buildings within a year. Knowledge of this variety in types of work done is important in understanding the working methods and buying habits of active building men.

It was found that 2,572 readers, out of 3,110, erect new residential buildings, and that 899 of this number erect them exclusively. Four hundred and eighty-one erect new commercial buildings: 18 exclusively. Ninety-eight erect new industrial buildings; ten exclusively. Four hundred and thirteen erect new public buildings; 34 exclusively. Two hundred and fifty-three do commercial, industrial, and public building repairs and remodeling. Many other combinations of construction activity were reported.

American Builder readers are most active in residential and light-load-bearing construction, where both the largest total dollar volume and largest number of projects will be found. Findings of mail surveys have been confirmed by field surveys in a number of cities. They show that American Builder readers control buying in 70 per cent of the nation's residential and light-load-bearing construction, the largest and most profitable segments of the building market.

<table>
<thead>
<tr>
<th>NUMBER OF REPLIES AND VOLUME, BY VOCATIONAL CLASSIFICATIONS</th>
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<tr>
<td>Classification</td>
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</tr>
<tr>
<td>General Contractors and Builders</td>
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<tr>
<td>Sub-contractors</td>
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<tr>
<td>Construction Superintendents and Foremen</td>
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<tr>
<td>Carpenter Contractors and Builders</td>
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<tr>
<td>Architects and Engineers</td>
</tr>
<tr>
<td>Real Estate Builders and Developers</td>
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<tr>
<td>Property Maintenance and Finance</td>
</tr>
<tr>
<td>Vocational Classifications not Indicated</td>
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</tbody>
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* Approximately one out of each seven of 7,000 architectural firms in the United States does an average annual business of more than $50,000; 4,000 of them average less than $25,000 a year. American Builder architectural subscribers show an average annual volume of nearly $149,000 each, and obviously are active concerns whose annual volume is far above national averages.

HERE IS a tabulation showing the number of questionnaire returns received from "American Builder" readers of various vocational classifications, together with the average annual volume of readers in each group. Note that the largest number of replies was received from general contractors and builders, the smallest number from sub-contractors, and that the largest annual volume is reported by architects and engineers.
NEW OVERHEAD-TYPE GARAGE DOOR...ONLY $28

Puts you back in overhead garage door business!

Can be installed in less than half a day!

- Pre-fitted for 8'x7' openings. 2 designs!
- Equipped with lock at no extra cost!

The Craw-Fir-Dor is the only volume-priced garage door in America that comes equipped with a lock at no extra cost. The door is durable Douglas Fir, pre-fitted and primed at mill. The hardware is extra strength. Made in 2 beautiful designs. (New 16-panel sash design now available at slight extra cost.) Can be installed by one carpenter. Cash in on its popularity. If your lumber dealer can't supply you, write Fir Door Institute, Tacoma, Wash. or Crawford Door Co., Detroit, Mich.

EMPIRE NO. 151-E ALUMINUM LEVEL

A popular model with 6 glasses. Strong Aluminum Alloy Frame, precision machined. A perfectly balanced tool...the pride of skilled workmen.

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A HEADACHE TO YOU?  A BUSINESS WITH US.

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THE INSTALLATION of a poorly planned, inadequate heating system often results in a very unpleasant and costly experience for the home builder. But heating is our business and you can avoid such "headaches" by specifying Round Oak exclusively. In this famous line (backed by a 60-year record of outstanding service) there is a heating or air-conditioning unit for every requirement. And the Round Oak name itself is a sales force.

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The experienced Round Oak dealer in your vicinity is not only equipped to supply and install every unit, but also offers you free planning service for homes of any size...a guaranteed service which always carries the factory OK. Take advantage of it. See your dealer or write direct for information.

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STOVES • RANGES • FURNACES
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The I-XL PHOTO-PLAN is the sensational new selling method developed to apply solely to I-XL quality kitchens and kitchen units. Use of this exclusive, amazing PHOTO-PLAN enables you to show the prospect exactly how the kitchen she desires and go to town! Mail the attached coupon TODAY!

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The I-XL Furniture Co., Inc., Goshen, Ind.

ATTACH THIS COUPON to your letter head and mail to the I-XL Furniture Co., Inc., Goshen, Ind., for full particulars of the NEW I-XL PHOTO-PLAN.

I am an architect, contractor, dealer, home owner.

(Check classification above)

American Builder, October 1939

Winter Building

(Continued from page 69)

Bureau of Standards report shows that the addition of 2 per cent calcium chloride at 40 degrees temperature increases the one-day strength by 300 per cent, the three-day strength by 117 per cent, and the seven-day strength by 75 per cent. In practice this means that approximately seven days can be saved in the time required to achieve 2500 lb. compressive strength in cement mortar maintained at 40 degrees F.

By cutting in half the time required to develop full-strength concrete, the danger period from freezing is greatly shortened. The time required for protection is therefore shortened and the expense of fuel, equipment, labor and covering is correspondingly reduced. By increasing workability calcium chloride permits a substantial reduction in the water-cement ratio. This, of course, means that less water is required to properly place the concrete. Coupled with the fact that calcium chloride reduces the freezing point of water this provides another safeguard against frozen concrete. It should be noted, however, that calcium chloride is not recommended to replace but rather to supplement the usual safeguards in freezing weather.

Recommended Practice

For all types of concrete, used with or without admixtures, the following suggestions for winter practice are advised:

1. Prompt protection—Heat generated by the hardening of concrete is greatest during the first hour after placing. It is thus highly important to provide protection to conserve this heat immediately after placing. Don't wait until the end of the day's work but apply protection immediately.

2. Good mix important—Rich, scientifically proportioned mixes with low water content attain strength more quickly and are desirable for cold weather work. Lean, wet mixes acquire strength slowly and are, therefore, in greater danger of freezing.

3. Heating aggregates—Aggregates should be stored in compact piles and kept free of ice. Unless adequate heat is provided in the mixing water they should be heated to a temperature of from 60 to 70 degrees. A common practice is to pile the aggregates over perforated low-pressure steam pipes.

4. Heating mixing water—The easiest method of raising the temperature of mixed concrete is to heat the water. This may be done by the use of steam coils, direct-fired boiler, or exhaust steam released at the bottom of the tank. A 5 degree rise in the temperature of the mixing water will provide a rise of approximately 1 degree in the temperature of the concrete. The following formula prepared by the Portland Cement Association may be of value in estimating the temperature of mixed concrete:

\[ X = \frac{W + W^2}{X} + \frac{t}{W} + \frac{t'}{W'} + \frac{T}{W'} \]

Where \( W = \) weight of water, \( W' = \) weight of solids (cement and aggregates), \( t = \) temperature of water, \( t' = \) temperature of solids, \( X = \) temperature of mixed concrete.

For example, assume a mix with 210 Ib. sand, 320 Ib. gravel, 50 lb. (6 gal.) total of water, 10 lb. of which is introduced with the sand. Assume temperature of materials = 45 deg. and of water = 170 deg., water added = 50—10=40 lb. Then

\[ X = \frac{40 \times 170 + 10 \times 45 + 22 (94 + 210 + 320) 45}{50 + 22 \times 624} \]

=72 deg. F.

It will be noted that only the water added was heated to 70 degrees. The water in the aggregates had the same temperature as the aggregates themselves. It will be seen that where the bulk of the aggregates has temperature appreciably below 45 degrees, it will be necessary to heat the aggregates as well as the mixing water.

5. Mix thoroughly—Cold weather work calls for exceptionally thorough mixing, permitting the use of less water and higher early strength concrete.

6. Protection of concrete—Newly placed concrete generates heat due to the chemical action that takes place in the hardening.

It is important, therefore, in cold weather to properly enclose and protect the concrete to retain as much of this heat as possible. (Continued to page 128)
eT Cent

One-day er cent, Means required for main-strength, The strength is additionally a great course. Concrete freezing chloride used usual

STANLEY SAFETY SAW
WITH DUMPLEX HANDLE

Stanley’s exclusive Duplex Handle, with two grips and two switch-triggers, makes the W-7 Safety Saw convenient and easy to use in any position. It has that comfortable “feel or hang” that speeds up work, whether operated with one or both hands on flooring; or for work on scaffold, sawhorse or bench. With just one simple adjustment for depth of cut, it rips through 2 1/2" lumber, or bevel-cuts 1 1/2" lumber at 45°.

Other Stanley Safety Saws have 1 3/4", 2 1/4", 3 1/4", 4" and 6" cutting capacities—ask your Stanley Distributor for a demonstration. Or write for Descriptive Folder. STANLEY ELECTRIC TOOL DIVISION, The Stanley Works, 133 Elm Street, New Britain, Conn.

EASIER INSTALLED
MORE EFFICIENT

Every home should have ALLMETAL weatherstrips on doors and windows. Home buyers demand it. Architects recommend it. You can make EXTRA PROFITS installing these well known, consistently good weatherstrips. Write for our prices. ALLMETAL Weatherstrip Company, 231 West Ohio Street, Chicago, Illinois.

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Spring-mounted axle - Roller bearing auto type wheels - Oversize low pressure pneumatic tires - Automatic skip vibrator - Enclosed gear reduction - Multiple V belt drive - Vertical syphon type tank.

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Brecher Wood Mantelpieces (40 authentic Period Designs) are constructed for Lifetime Beauty and assembled—ready for installation! Get your share of profits that come from selling the finest. Catalogue will be sent to Building Supply Houses and Building Contractors.

EDWARDS TROFSEAM
STEEL ROOFING
Sells at a Price to net you a Profit

Trofseam has more “good points” than many roofings in the high price brackets and every one of them means added value to the customer. The crimps are higher; inner channel doubles protection against leakage; superior galvanizing assurs longer life; fire and lightning proof. Priced to take business from all competition and still leave a decent profit for the dealer and the contractor.

Write for Trofseam Demonstration Outfit and Catalog 92

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Cincinnati, Ohio
In the first place, there is a deepening public conviction that the purchase of a home is the most prudent step a family man can take when war clouds are darkening. Security for the future is uppermost in the minds of us all. When a man has his own home, he has less to fear from political and economic dislocations.

In the second place, the public knows that war, even if it be three thousand miles away, and stays there, means higher building costs, steeper rents, labor and material shortages. Hence it is more approachable on the subject of BUILDING NOW, at present low interest rates and present building prices, both of which are bound to go up.

In the third place, business here has already amazingly absorbed the shock of war. The spectacular advance in steel production—the upping of railway traffic—the inrush of orders from countries unable to get supplies from Europe, the decrease in unemployment, all presage an industrial boom of major proportions. And when business is good, home building booms!

This Plan Book Will Help You to Work this Overnight New Home Market

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Winter Building
(Continued from page 124)

Careful analysis of all the costs involved indicates that adequate protection in which temperatures of 60 to 70 degrees are maintained for more than pays. The methods used vary greatly, with the type of structure and the exposure. Burlap, heavy beds of straw and canvas enclosures are common protection. Canvas enclosures containing perforated steam pipes or salamanders are also used. Before placing concrete in the forms, ice and frost must be removed. This is best done with live steam. Concrete should, of course, never be placed on a frozen subgrade.

How to Estimate Accurately
(Continued from page 73)

Rule: Count the verge rafters as shown on the elevation sheets. Each gable requires two. The length is the same as the common rafter and can be either measured on the elevation or figured mathematically.

NOTE: The same estimating rule will apply if a moulding is used instead of a verge rafter.

TONGUE & GROOVE SHEATHING: Tongue & groove (T & G) 1" x 6" ceiling stock is often used to cover an open cornice in order that it may have a finished appearance. As a piece of 1" x 6" stock “lays” only 5/4", additional stock must be ordered to have enough to cover a given surface. There are two rules required to figure the area of a cornice. Each applies to overhang and gable projection, respectively. (See figure 4.)

Rule 1, overhang area: Multiply the length of the rafter projection (in even feet or half feet) by the length of the eave, which is building length plus gable projection. Shed or gable roofs have two overhang areas, one for each side wall. A hip roof will have four such areas, one for each outside wall of a building. The eave length of a hip roof is building length plus twice the cornice run.

Rule 2, gable projection area: a. To find the area of a gable projection for a shed roof multiply the rafter length, from plate line to ridge, by the distance the verge rafter is out from the building. For a gable roof compute the same way but double the result as there are two such areas in a gable.

b. 1/5 must then be added to these areas to allow for some cornice boards to extend back to the second rafter to help prevent the verge rafter from sagging.

c. After the area is known then allowance must be made for loss due to milling and laying the T &G stock.

Rule 3, allowance for waste: Combine the gable projection area and the overhang area. Then add 1/6. The result equals board feet of T & G sheathing stock to order for an open cornice.

Box Cornice and Roofing Unit

A box cornice is composed of several parts, namely fascia, frieze, planscher, and moulding. (See figure 2.)

Rule: Check the detail sheets to find the sizes and number of parts to the box cornice. Use an architect's scale and measure the lengths of the cornice as shown on the different elevation sheets. Allow 12" extra for each outside corner. Then order lengths that will cut with the least waste.

The last unit of exterior finishing is roofing. Either wood shingles or composition roofing materials are used. WOOD SHINGLES: Wood shingles are used as a roof covering on many types of roofs, such as shed, gable, hip, and intersecting. The first three named are figured alike when estimating the number of shingles, as each has one or more flat surfaces. The hip and inter-
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**How to Estimate Accurately**

(Continued to page 128)

secting roofs require more shingles due to waste on the hip and valley rafters.

**ROOF AREA RULES:** The following rules indicate how to find the area for various types of roofs.

- **Shed Roof:** Rafter length times eave length equals roof area.
- **Gable Roof:** Rafter length times ridge length times two equals roof area.
- **Hip Roof:** As a hip roof has the same area as a gable roof, the same rafter length times two equals roof area.
- **Intersecting Roof:** This roof is easiest figured on the basis of plan area. The plan area is found by increasing building dimensions by the cornice run. Then multiply the width by the length and deduct any "take-away" areas. Then multiply the actual plan area of the roof by a constant selected from the following table for the required roof pitch.

**CONSTANT TABLE FOR ROOF AREAS**

<table>
<thead>
<tr>
<th>Pitch</th>
<th>Cut</th>
<th>Constant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8</td>
<td>3.12</td>
<td>1.03</td>
</tr>
<tr>
<td>1/6</td>
<td>4.12</td>
<td>1.054</td>
</tr>
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<td>5/24</td>
<td>5.12</td>
<td>1.083</td>
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<td>6.12</td>
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<td>7.12</td>
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<td>9.12</td>
<td>1.25</td>
</tr>
<tr>
<td>5/12</td>
<td>10.12</td>
<td>1.3</td>
</tr>
<tr>
<td>1/2</td>
<td>12.12</td>
<td>1.41</td>
</tr>
<tr>
<td>7/12</td>
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<td>15.12</td>
<td>1.6</td>
</tr>
<tr>
<td>2/3</td>
<td>16.12</td>
<td>1.66</td>
</tr>
<tr>
<td>3/4</td>
<td>18.12</td>
<td>1.8</td>
</tr>
<tr>
<td>7/8</td>
<td>21.12</td>
<td>2.015</td>
</tr>
</tbody>
</table>

**Rules to Find Number of Bundles of Shingles:**

1. Roof area divided by number of square feet of surface covered by one bundle equals number of bundles. Count part of a bundle as a full one.
2. For hip or intersecting roofs figure the same as rule one and then add 5% to allow for waste on the hips and valleys.
3. Hips and ridges are usually shingled by using an extra row laid in such a manner as to make them water-proof. This requires additional shingles. Allow one bundle for every 25 linear feet or fraction thereof, of hips and ridges.

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At least 12" should be added to the width and length measurements of a flat roof before finding roof area, to allow for the paper turning up at the firewalls. Add more if the plan indicates more height should be turned up as sometimes the roofing goes over the top edge of the firewall.

**Rule:** Find the roof area and divide by 100. Result equals number of rolls of roofing. Any fractional part of 100 square feet must be counted as a full roll as parts of a roll cannot be purchased.
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(Continued from page 112)

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"HOW TO PLAN THE BATHROOM YOU'VE ALWAYS WANTED"—An 16-page 4-color booklet elaborately illustrated—tells all about bathroom planning, shows proper arrangement of fixtures, piping systems and accessories, illustrates architectural and decorative design and features color harmony.

A companion piece, "Choosing the Heating System for Your Home," is a complete, non-technical discussion, 20 pages illustrated, of the history of house heating and the important type of house heating equipment now available.—CRANE COMPANY, 836 S. Michigan Ave., Chicago, III.

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"GREATER COMFORT WINTER AND SUMMER"—A 12-page application booklet on Pressstiched Kinsul Expanding Blanket insulation. Numerous ways to use this material are illustrated and described.

A companion piece of a more technical nature for architects, builders and engineers is entitled "Controlled Insulation Value." It is in vertical file form, 12 pages and covers.—KIMBERLY-CLARK CORP., Neenah, Wis.

NATIONAL HEAT EXTRACTOR BOILER—A new 8-page data sheet gives the illustrated specifications of the No. 1 Series National Heat Extractor Boiler, which is offered as "something new in heating for the small home." It comes either for hand fired coal or for oil firing and is designed for homes without a basement.—THE NATIONAL RADIATOR CO., Johnston, Pa.

"PICTURE WINDOWS FOR SMALL HOUSES"—No. 4 of a series of four portfolios of window ideas using Fenestra casements. Five design sheets on heavy art paper show exterior and interior perspective sketches and details of the picture window construction. Technical and construction details are described on the inside of the portfolio cover and in a small inserted handbook.—DETROIT STEEL PRODUCTS CO., 2250 E. Grand Blvd., Detroit, Mich.

"WHAT TO EXPECT FROM A WHITE LEAD PAINT"—28 pages and covers of dependable paint information from the Lead Industries Association. It explains the qualities of good paint and the proper application necessary to obtain the utmost service. A simplified white lead painting guide for computing amounts of paint ingredients needed is a feature which builders will find useful. Valuable information is also given in the mixing instructions for painting all surfaces.—LEAD INDUSTRIES ASSN., 420 Lexington Ave., New York, N.Y.

DRAFTING ROOM HELPS—The David White Co. is offering new folders on two improvements for the drafting room, the Dazor floating lamp, and the new Scotch edge for protecting drawings. The Dazor lamp has a counterbalanced arm so that it can be set at any angle over a drafting table and instantly adjusted. The Scotch edge is to apply cellulose edging tape to drawings or blueprints for their protection—a new proposition which building contractors as well as architects are finding very much worth while.—DAVID WHITE CO., 311 W. Court St. Milwaukee, Wis.