

MODERN decorative touch with wide horizontal paneling in redwood for office of Redwood Export Co., San Francisco. Photo by Roger Sturtevant.

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APRIL, 1937

59th Year

Vol. 59-No. 4

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BERNARD L. JOHNSON
Editor

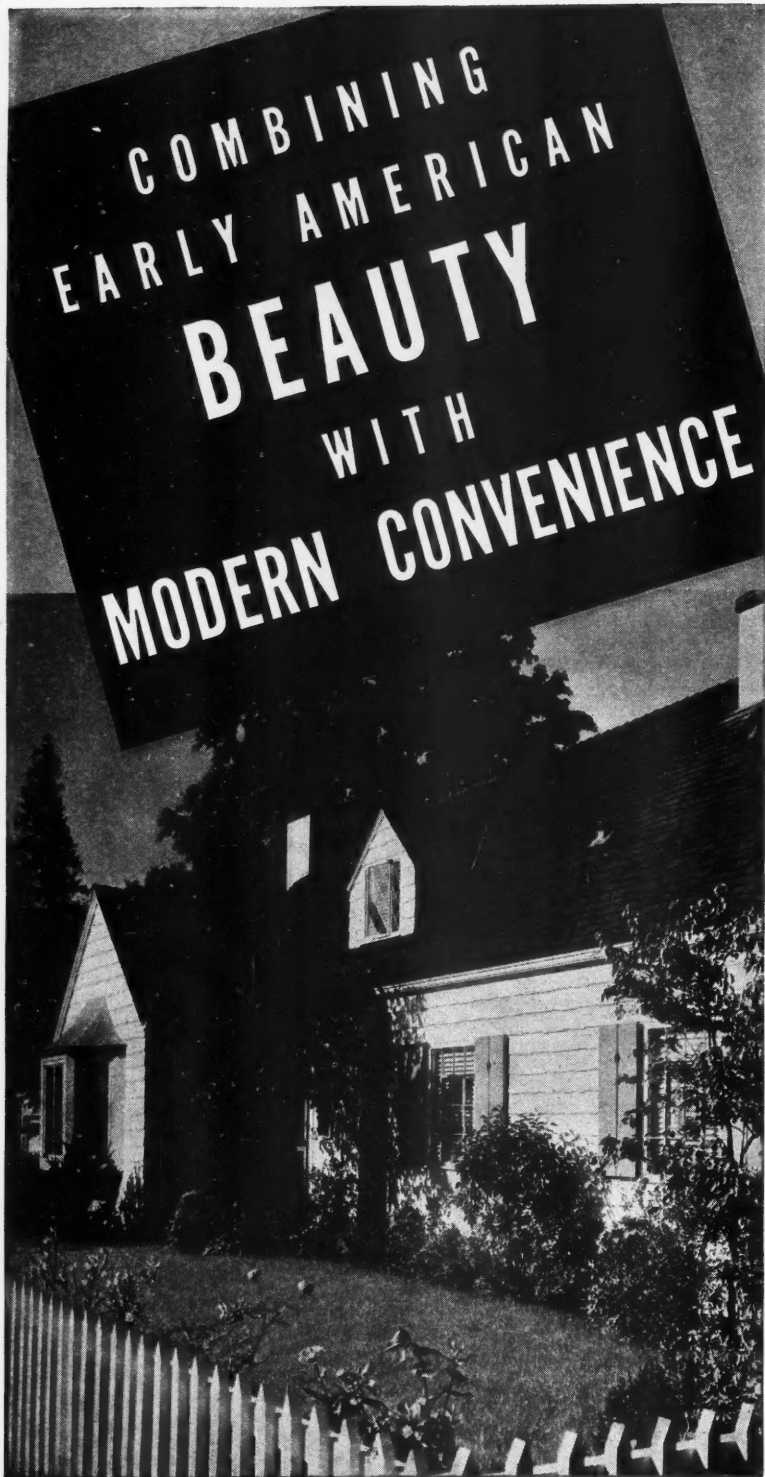
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THE COMPLETE WINDOW

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PUBLISHER'S PAGE

Production Versus Destruction

LABOR union leaders in this country inveigh against fascism. Yet some of the most important are using methods that caused fascism in Italy and Germany, that are threatening to cause a fascist uprising in France, and that helped to cause civil war in Spain.

The only organized agency authorized in any civilized country to use force, excepting in physical self-defense, is government. The use of force by any private organization, unless promptly stopped by government, invites the counter use of force by other private organizations. Labor unions in Italy were the first to try sit-down strikes. Having thus stopped operation of plants, the strikers attempted operation of them on their own account. This caused, first, the formation of fascism by the middle class to force the government to protect private rights in property, and finally seizure of government by a fascist dictatorship over both labor and property. The story of Germany is much the same.

LABOR has a legal right to strike—i.e., to quit work and *walk out*. It has no legal right to use force. A sit-down strike is a forcible seizure and retention of other's property. Labor cannot complain of ruthless and lawless capital if it resorts to ruthless and lawless attacks on capital.

Collective bargaining and arbitration afford means of settling *peacefully* disputes regarding wages and working conditions. They afford means of presenting relevant facts and arguments, and therefore of settling them *fairly*. And what are

needed by employees, employers *and the public* are settlements *fair* to employees, employers *and the public* arrived at by peaceful means. For the public is a party to every industrial dispute. It is the *public's* peace that is broken if coercion by private agencies is attempted. And the *public* pays the bill if wages and working conditions are made unfairly favorable either to capital or labor.

WHAT has occurred and is occurring in other countries—Russia, Italy, Germany, Spain, France—should be a solemn warning. We want in this country not only fair distribution of wealth and income, but the largest production of them consistent with enough leisure for all classes to enjoy them. Every form of coercion and violence is *destructive* of wealth and income and ultimately injures most those with small incomes.

This nation should set the example of showing that maximum production and fair distribution of income can be secured by peaceful means under democratic government. Resort to other means, whether by employers or employees, leads toward the destruction of wealth and income and of democratic government, because *chronic* failure of democratic government to suppress attempted coercion by private organizations must finally result in anarchy or in dictatorship to prevent anarchy.

Samuel O. Dunn

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AMERICAN BUILDER

AND BUILDING AGE

Wrong For 30 Years

"I've been doing it this way for 30 years"—very old saying.

THE building industry in this good spring of 1937 is a fast moving, quick changing, rapidly developing business, full of new ideas and new opportunities for smart men. It is a business where good profits are being made in the building of good modern homes.

This is the picture *American Builder* views in common with many of its alive and active readers as it presents this April Specification and Buying Number. The men who are making money today are the ones who are open to new ideas and are boldly putting them into effect.

Who are the successful builders of today? Many of them are young men—some comparative newcomers. Others are older men who have maintained a young viewpoint. In a small Southern city one energetic 30-year old lumber dealer has built up a remarkable volume of new residential business. His principal customers are young contractors and builders. One of these—also about 30—paid an income tax on \$35,000 last year which was made in smartly styled, well built small homes.

This young builder is using the best of new materials and methods. He has an alert, open mind. He has a sound knowledge of construction—but without sacrificing soundness he is up-to-date and progressive. He hires an architect to create modern, up-to-date designs. He is constantly searching for new materials and better methods, which he tries out cautiously at first, then whole-heartedly adopts. He has proved time and again that "the old way" is not always the best way.

Men Who Stand Still

But all builders are not like this. There are far too many who do not measure up to this forward-looking standard. They are the ones who look back instead of ahead, and right now many of them are still mentally in the middle of the late depression.

"I've been doing it this way for 30 years," is the reply this type of man so often makes to anyone who suggests anything new. The best answer to this is, "Yes, you've been doing it wrong for 30 years. It's high time to find a way to do it better."

Even the best friends of the building industry are sometimes discouraged by this attitude of opposition

to new ideas. The best friends of the building industry realize that this type of man is the greatest enemy within our gates. He reflects on the progress and efficiency of all home builders. An appalling percent of the homes now being built are out of date before they are finished. The reason is that the builders are doing the same things in the same way they did 30 years ago—or almost. Kitchens badly arranged, without using the remarkable scientific planning that is free for the asking. Dark halls and small, cut-up rooms—although the "open plan" with minimum partition space has been thoroughly proved. Houses placed on lots without regard to light or sun or view. Wide, overhanging cornices, fancy heavy trim, meaningless gim-cracks that were out of date long before Henry Ford abandoned the Model T. Such crimes are still being perpetrated.

Even worse things, if possible, are being done in construction by men who are building the way their grandfathers did instead of the way their sons will. They are blindly ignoring technical improvements. There are many cases of failure to adopt improved framing methods that eliminate shrinkage. Failure to prime trim and otherwise protect lumber against moisture. Failure to study new and improved paints and painting methods that solve old problems. Failure to study, understand and adopt the amazing technical improvements in insulation, air conditioning and a host of other developments of the past few years.

Such blindness to progress is inexcusable. The building industry cannot, and must not, stand still. It must continue to improve and advance, giving better houses for less money. We must not build for the past. The overwhelming majority of prospects today are the young families, and they are the ones who are setting current standards. They want houses that are planned and built for this generation, houses that are compact, well equipped, full of light, scientifically constructed.

Scientists have been working overtime for the building industry during the depression. Laboratories are bursting with new helps for better homes. Never before has there been such an array of new and improved materials, processes, equipment. It is up to the alert, progressive builders of the land to take these products of the laboratories and the factories and use them in making homes that are more modern, healthful and livable than ever before. In that way lies progress, and in that way lies success.

"Small Towners" Do Most Building

U. S. Figures Show \$42.67 Per Person Spent in 1936 in Smallest Towns, Compared with \$25.54 in Largest Cities

PEOPLE who live in small towns spend almost twice as much for building purposes as people in large cities, figures just released by the Construction Division of the U. S. Bureau of Labor Statistics show. The report of the Bureau summarizes construction in the United States for 1936 based on building permits taken out in 1,689 towns and cities. The population (1930 figures) of these cities was 60,584,171, and the total construction performed in them was \$1,543,675,000.

This U. S. Bureau is to be congratulated for throwing some additional light on the subject of how and where building construction is carried on. Although the report covers only 60,584,171 people, or less than half the population, it still gives one of the most complete national pictures of construction available. It is hoped that the Bureau will soon extend its reports to the smaller towns and rural areas where the remainder of the population live and do a large volume of building.

Small Towns Lead in Homes

The chart below shows some facts that will surprise many people concerning home building in small towns. People who live in towns of 5,000 to 10,000 have the highest per capita expenditure for home building—\$24.47 for each person. This is more than twice the amount spent per person in most of the larger cities. In 1936, 54.7 families per 10,000 population were provided for in

new homes in towns of 5,000 to 10,000 as compared with a low of 21.4 homes in cities of 50,000 to 100,000. These figures clearly show that small town people on the average spend a great deal more on their homes than do people in large cities.

Modernizing Fairly Consistent

Residential modernization, on the other hand, goes on at about the same rate per person in the big cities as in the small towns, and averaged \$2.20 for each person in 1936. Non-residential modernizing was a little heavier in the cities than in the small towns, and the average for the country was \$3.13 per person.

Few people realize the extent and ramification of the building industry, and this new comprehensive tabulation by the Construction Division of the Bureau of Labor Statistics provides a revealing picture of its size, although it does not attempt to report construction in the smallest towns and in the farm and rural sections. The Bureau collects its report from 1,689 cities through local building commissioners and officials and through its own staff of field men. The work is under the direction of Herman B. Byer, chief of the Construction Division.

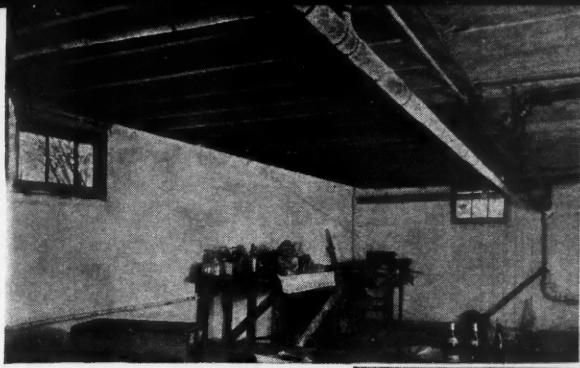
These data would indicate that per capita construction is most active in the two groups of cities 2,500 to 5,000 and 5,000 to 10,000 (of which there are 842). This is true of both residential building and non-residential work.

SUMMARY OF CONSTRUCTION IN 49 PER CENT OF U. S.—1936

Analysis of Building Permits Showing Residential and Non-Residential Classifications, including Per Capita Expenditures in 1,689 Cities, by Size of City—U. S. Bureau of Labor Statistics

Population Group	Number of Cities	Population (Census of 1930)	Total Construction		New Residential Buildings			
			Estimated Valuation	Expenditure per Capita	Estimated Valuation	Expenditure per Capita	Families Provided for	Ratio of families provided for per 10,000 population
Total, all groups.....	1,689	60,584,171	Dollars 1,543,675,000	Dollars 25.48	Dollars 725,514,843	Dollars 11.97	176,838	29.2
500,000 and over.....	14	21,315,411	544,484,150	25.54	274,257,861	12.86	67,486	31.7
100,000 and under 500,000.....	79	15,010,325	342,059,701	22.79	143,421,122	9.56	35,451	23.6
50,000 and under 100,000.....	100	6,495,615	143,026,485	22.02	57,659,266	8.88	13,878	21.4
25,000 and under 50,000.....	171	6,007,038	140,077,650	23.32	56,570,438	9.42	13,930	23.2
10,000 and under 25,000.....	483	7,376,328	191,608,670	25.98	97,738,876	13.25	23,760	32.2
5,000 and under 10,000.....	391	2,736,890	112,322,894	41.04	66,966,106	24.47	14,966	54.7
2,500 and under 5,000.....	451	1,642,564	70,095,550	42.67	28,901,174	17.59	7,367	44.9

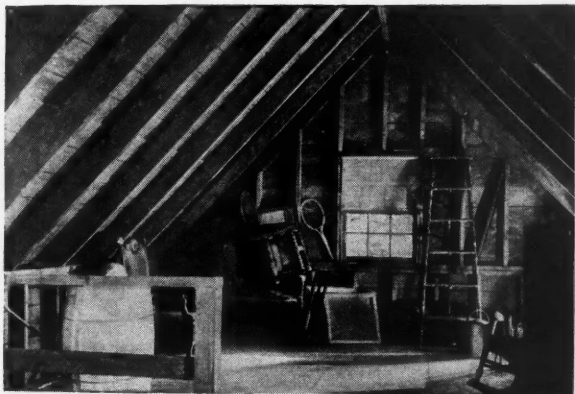
Population Group	New Non-residential Buildings		Additions, Alterations and Repairs					
	Estimated Valuation	Expenditure per Capita	Total		Residential		Non-residential	
			Estimated Valuation	Expenditure per Capita	Estimated Valuation	Expenditure per Capita	Estimated Valuation	Expenditure per Capita
Total, all groups.....	Dollars 495,480,110	Dollars 8.18	Dollars 322,680,147	Dollars 5.33	Dollars 132,980,820	Dollars 2.20	Dollars 189,699,327	Dollars 3.13
500,000 and over.....	150,020,193	7.04	120,206,096	5.64	47,793,124	2.24	72,412,972	3.40
100,000 and under 500,000.....	123,887,176	8.25	74,751,403	4.98	26,017,869	1.73	48,733,534	3.25
50,000 and under 100,000.....	49,934,115	7.69	35,433,104	5.45	14,861,900	2.29	20,571,204	3.16
25,000 and under 50,000.....	51,318,096	8.54	32,189,116	5.36	14,277,204	2.38	17,911,912	2.98
10,000 and under 25,000.....	55,897,887	7.58	37,971,907	5.15	18,391,817	2.49	19,580,090	2.66
5,000 and under 10,000.....	30,217,594	11.04	15,139,194	5.53	8,066,389	2.95	7,072,805	2.58
2,500 and under 5,000.....	34,205,049	20.82	6,989,327	4.26	3,572,517	2.18	3,416,810	2.08



THIS modernized basement by the Quality Improvement Company of Freeport, L. I., is achieved through use of J-M Asbestos Flex-board on walls and decorative insulating board tile on ceiling. Walls were furred out, waterproofed and wool rock insulated.



FROM BASEMENT TO ATTIC IN—



HOW the ordinary attic can be dressed up and made livable and comfortable is interestingly shown in these pictures. The roof should be heavily insulated to keep the room cool in summer and warm in winter. The built-in bed and bookcases make a very interesting feature of the room.



Today's Modern Home

THE MODERN home of today reflects from basement to attic the new materials and methods that have been making such rapid progress. This April issue is devoted to planning and selling the modern home. Progress is reflected in the modern designs, in new and improved materials, in the latest in plumbing, heating and kitchen equipment. New products are effective tools placed in the hands of the builder that enable him to provide better homes and give them salability in a constantly changing market.

Perfecting A Home Plan

Year to Year Improvements in Plans to Meet Trends in Home Buying Assure More Salability

By R. E. SANGSTER

IN planning a home to be built either on speculation or for an owner on contract, the importance of producing a structure which has the best sales possibilities has naturally been a principle of long standing. Operative builders have always had to plan with this in mind; the designs were changed from time to time to meet the market. More personal preferences have been included in owner-built homes and frequently to the detriment of the owner if the house was later put up for sale. FHA has recognized this and has made salability a prime feature of homes bearing insured mortgages.

The difference in planning for these two markets is illustrated by the houses on these pages which were developed from an owner-built house to a design for the operative market by the architectural department of W. C. Tackett, Inc., Chicago, building firm.

The Cotswold Cottage type house illustrated below was built in 1935 and represents the first step in arriving at the final design. It includes features demanded by the owner and built accordingly. Some of these worked out well; others could be and later were improved upon.

Let's follow the evolution of this house through three years of planning. Notice the basic characteristics of plan No. 1 in appearance and layout.

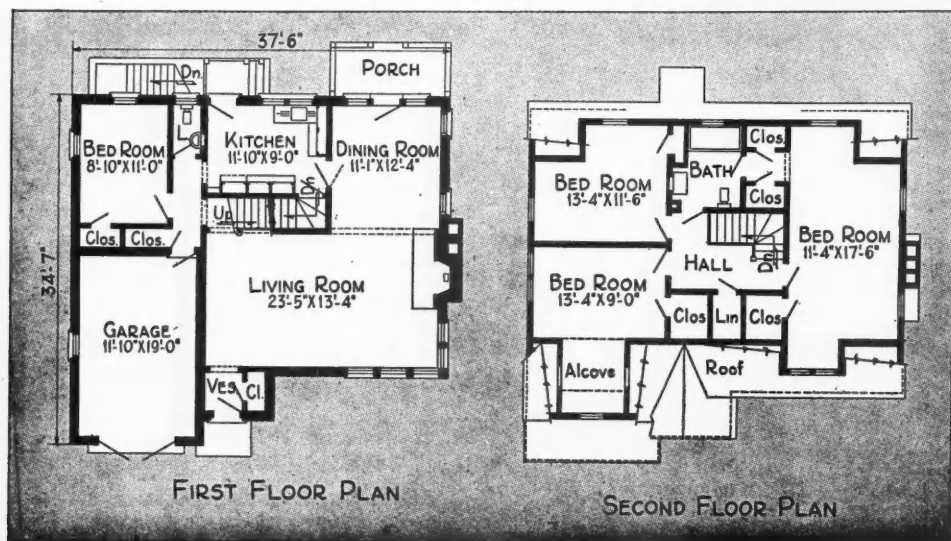
On the opposite page are perspective and plans of a house (No. 2) developed by this builder and erected for sale in 1936. It has many features in common with house No. 1 but was designed to appeal to a wider market.

The exterior retains the corner window treatment for good inside wall space. English detail was used on one house and for the same plan a Colonial exterior was also worked out as shown on the front cover and page 68, lower right; two of the latter were built last year, this style being more popular. The gable over the entrance

has been enlarged while the bedroom dormers were made of equal size and placed to balance the design. The attached garage, now an accepted feature, was included; however, it was pushed back and made less prominent.

In plan, the basement recreation room with fireplace was retained. Laundry and heater room are well placed; a single three-flue chimney for economy serves both fireplaces and the winter air conditioner. Storage space is convenient to the stairs and might be converted into a built-in-bar. In house No. 1 a beamed ceiling in the living room was obtained by using 4" x 10" beams 30" o.c. instead of 2" x 10" joists. The beams were left exposed and stained; above them, the second floor was laid of 1" x 6" T. & G. sub-floor stained on underside to match the beams; over this sub-floor 1" x 2" furring strips 16" o.c. supported the 7/8" oak finished flooring. This made an attractive ceiling treatment and gave the room increased height for better proportion without raising the second floor level. In the No. 2 house, this idea was used in both the recreation and living rooms of the English design, and in the recreation room of the Colonial design (see section in Plan No. 2).

Probably the most important feature of this house is the way the plan has been worked for circulation and
(Continued to page 68)



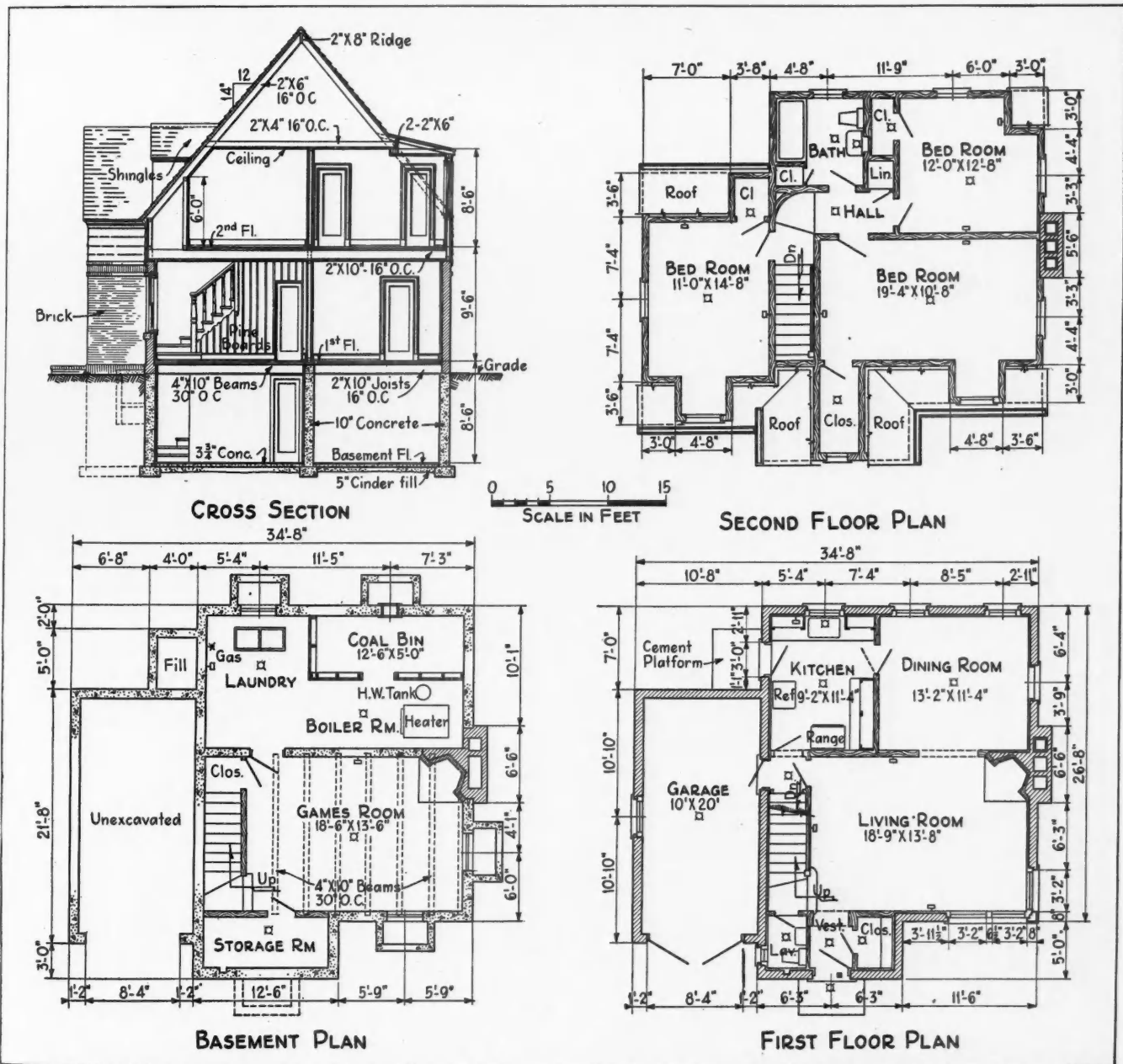
ABOVE: Cotswold cottage type home built on contract for owner in 1935. Garage doors and gable above overbalance smaller entrance detail.

PLAN NO. 1 at left shows certain basic characteristics of layout which were retained in later plans; the first floor bedroom was eliminated.

PERSPECTIVE at the right represents 1936 changes; one of the houses built last year retained English exterior design as shown on next page. Dotted lines indicate further 1937 revisions.



PLAN NO. 2 below bears some resemblance to that of the first house. The stair placement and circulation have been greatly improved. Section detail shows the Colonial exterior.



access on the first floor. Compare plan No. 1 with No. 2 and notice the passageway area at the head of the basement stairs. Although the basement is easily reached from the kitchen, it is possible to get to the recreation room without going through the kitchen. From the garage, doors lead to kitchen, basement and living room; there is front door access from kitchen without going through dining room. This is an unusually good arrangement.

A first floor bedroom, although convenient for maid or guest, is not needed by the average buyer, so it was eliminated. Stairs were moved over to the end of the living room, closer to the front door, but the open plan without hall for maximum usable space was retained. The lavatory was placed off the landing where it can be reached from both floors. To determine the public reaction to the combination living-dining room, one of the 1936 houses was built as in plan No. 1 and the other two had a separate dining room. The latter arrangement was still found to be more acceptable to the majority of buyers and future houses will be built accordingly.

Three bedrooms, the number required by the average family, are compactly arranged on the second floor. The rooms are better proportioned and symmetrical. Hall space has been reduced. However, storage space is also considerably less but still as generous or better than that of the run of speculative houses in this class.

The third step in this evolution is plan No. 3, shown below, which will be built for the 1937 market. The plan very closely follows No. 2 and retains the good features of it, but has further changes which add much at a small extra cost. As shown by the dotted lines in the

perspective on the preceding page, the ridge will be carried straight across and the house squared out at the rear. Although this requires little more material for outside wall and roof, it adds useful cubage as indicated in the revised No. 3 plan.

On the first floor the extra space is used for a well lighted breakfast nook, a feature having considerable sales appeal. The wall cabinet is extended for more storage; refrigerator is placed conveniently but out of the way in a corner recess.

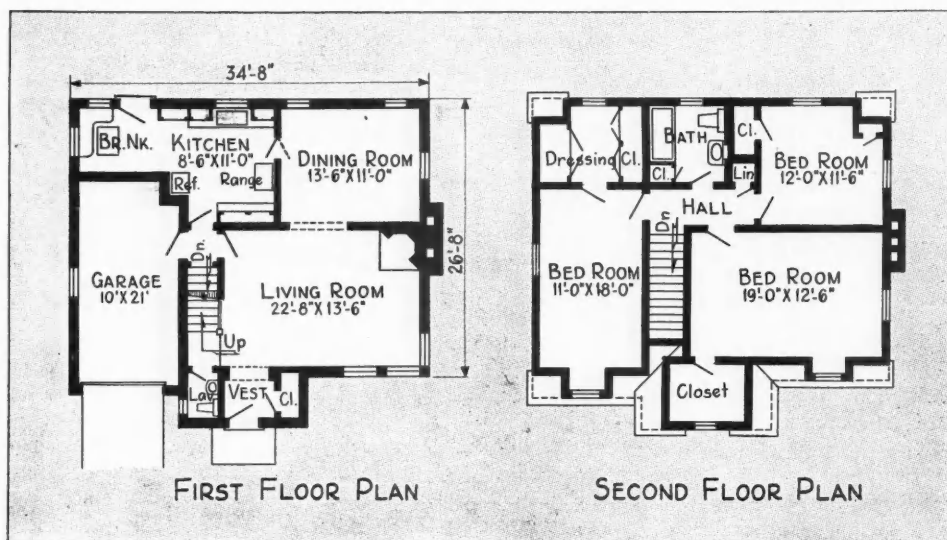
The archway between dining and living rooms is moved to approximately the center of living room wall to allow for better furniture grouping around corner fireplace.

The changes which the additional space allows on the second floor are of even greater value. The bedroom over the garage is three feet longer, and to the rear of this, the space within the extended rear dormer is used as a dressing room with built-in wardrobes. The door of this bedroom is moved back so that stairs work out better. Also the front bedroom wall is moved forward.

As shown on the perspective, the gable over front entrance is raised so that the eaves are on the same level at the right side of the house. This enlarges the front bedroom closet to dressing room size. Exterior design is at the same time improved, considering the roof area which will be added at the ridge. This revision was made on the English house built last year as seen in the illustrations below and will be added to the Colonial this year.

The changes made in No. 2 to arrive at No. 3 will add about \$150 to the construction cost of the house. Certainly the livability and, consequently, the salability

have been increased beyond this sum. This method of arriving at a good plan is typical of the practice employed by important operative builders. Like that of motor car manufacturers, the process is one of experimentation and improvement toward a better product.



PLAN NO. 3 shows the latest changes which will be included in the houses built this year. The increased floor area over Plan No. 2 will require exterior alterations indicated by dotted lines in the perspective on preceding page. BELOW: Two houses built in 1936 (Plan No. 2); designs for this year are similar in appearance except for the changes mentioned above.

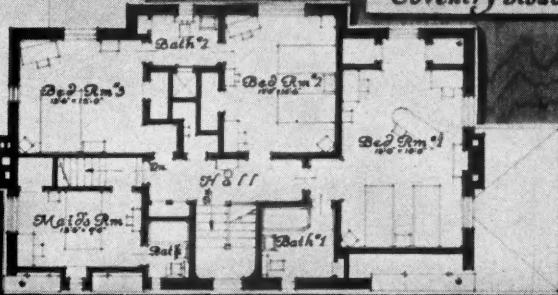
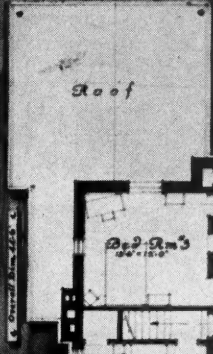


• LEGEND •

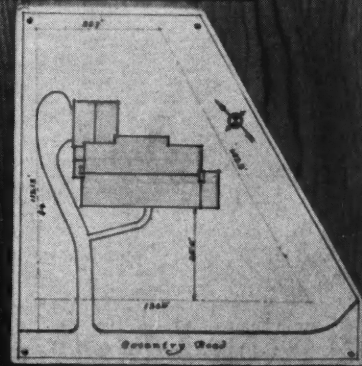
Foundation: Concrete Block.
 Outside Walls: Limestone, Redwood
 Stained Light Gray Brown.
 Sash: Casements Painted Red Blue
 Interior Doors: Sugar Pine, Painted
 Red Blue Green.
 Roof: 2 in. Random Width Sea
 Green & Purple Slate.
 Floor Construction: Joists 2" x 10", Sub
 Floor 1/2 in. Common Oak laid on
 Waterproof Building Paper.
 Water Pipe: Copper; Gas: Steel,
 Concealed; Copper.
 Heating: Forced Air.
 Insulation: Glass Wool.
 Bed Room: Kitchen: Oak Pine; Dining
 Room: Bath: Wall Paper; Others: Dark
 Wood.
 Wall Finishes: Paint & Paper
 on White Gypsum; Oak Plaster &
 Tile Baths.
 Dimension Lumber: 2" x 4" Stud
 1" x 6" Joist; 2" x 8" Joist.



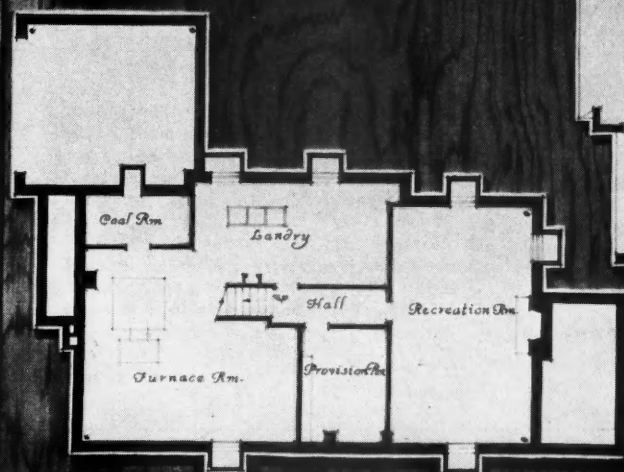
Residence of Dr. & Mrs. W. D. Barcroft.
 Coventry Road.
 Columbus, Ohio.



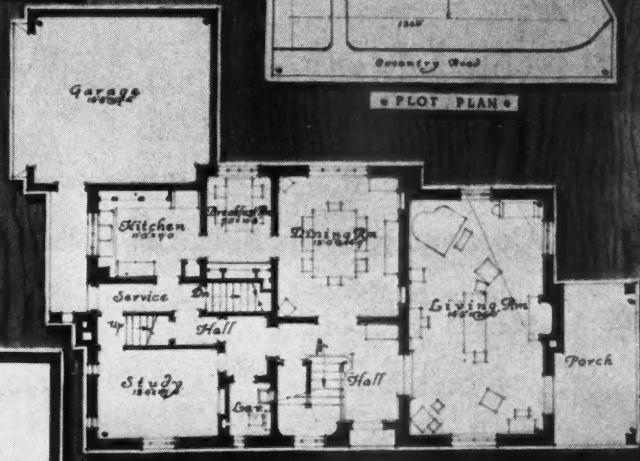
• SECOND FLOOR PLAN •



• PLOT PLAN •



• BASEMENT FLOOR PLAN •



• FIRST FLOOR PLAN •

1936 Ohio Association of Retail Lumber Dealers Contest

DESIGN SUBMITTED BY L. F. KARLSBERGER, COLUMBUS, O.

16 Best Ohio Homes

Competition Sponsored by Ohio Association
 of Retail Lumber Dealers Brings Together
 Best Examples of Current Home Building.



GOLD MEDAL AWARD

Architect, John J. Keil, Lima, O.

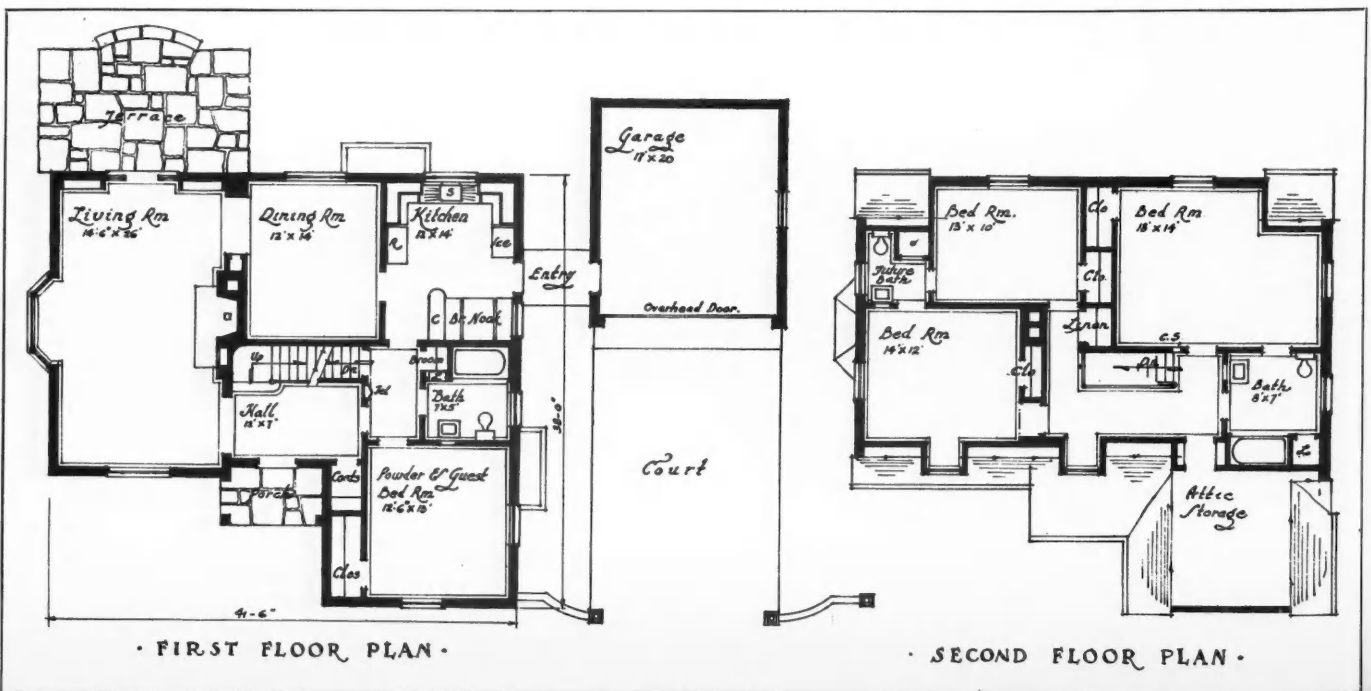
Contractors; Masonry, Bitler Bros.,

Carpentry, Lewis Bros. Co., both of Lima

Residence of Mrs. John J. Keil,
Merritt Ave., Lima, O.

Cost Key is 2.102—158—1344—56—25—22 (without garage)

Foundations, Double formed concrete.
Walls, Brick veneer painted white.
Doors, Interior 6 panel white pine.
Exterior, White pine painted white.
Exterior Trim, Cypress.
Lintels and Porches, Oak stained brown.
Shingles, Cedar stained white.
Windows, Steel casements, white.
Roof, Asbestos shingles mottled purple.
Floor Construction, Y.P. joists, sub-floor and $\frac{3}{8}$ " oak.
Water Pipe, Type "L" hard copper.
Heating, Gas fired forced air.
Insulation, Rock wool granulated, sidewalls and attic coiling.
Interior Trim, Select grade poplar, enameled. Recreation room knotty pine. Walls papered (except kitchen) plas. on metal lath.
Framing Lumber, No. 1 common Y.P., western frame.





SPECIAL MENTION

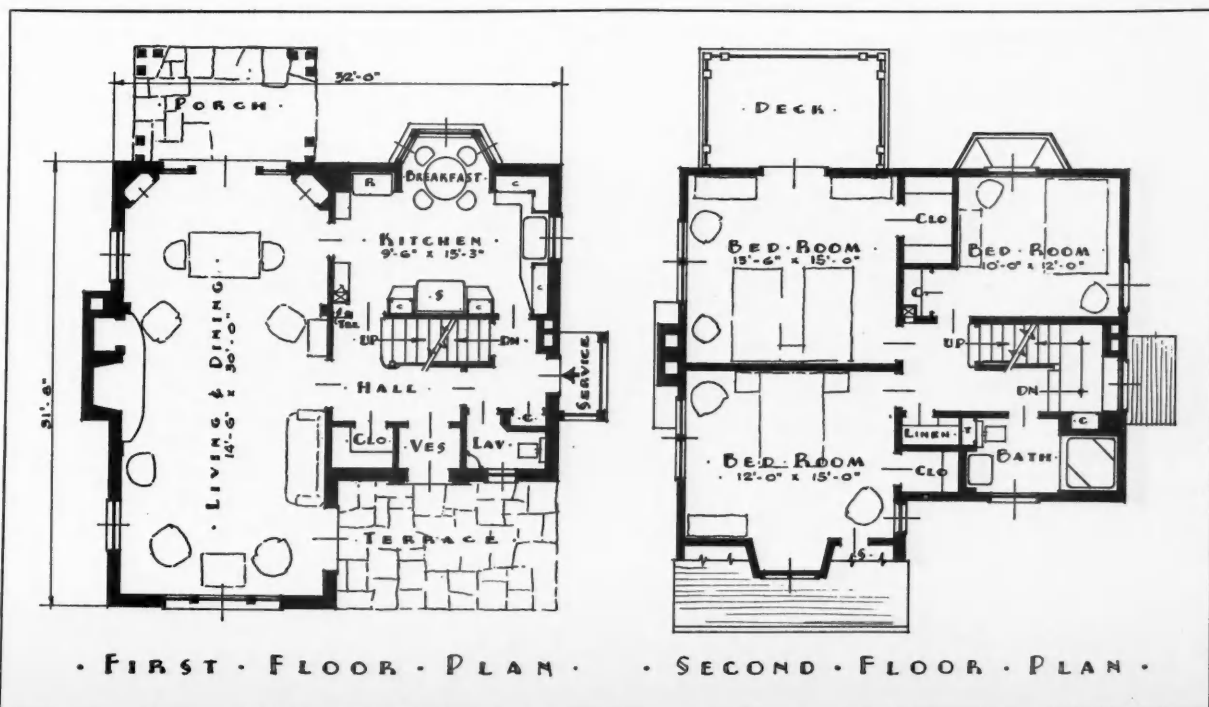
Architect, R. Franklin Outcalt,
Cleveland, O.

Builder, Geo. M. Oyer,
Cleveland, Heights O.

Residence of Mr. and Mrs. Wm. H. Haag,
University Heights, O.

Foundation Walls, Brick and tile.
Exterior Walls, Buff sandstone and brick; clapboard lt. ivory.
Exterior Doors, White pine, painted lt. ivory.
Exterior Trim, White pine, painted lt. ivory.
Windows, Cedar, painted lt. ivory.
Roof, Cedar shingles, stained green black.
Floors, Selected white oak, pine sub-floor on wood joists.
Pipe, All copper pipe throughout.
Heating, Gas fired, winter air conditioning.
Insulation, Rock wool, 2" sidewall, 4" at top.
Interior Trim, Selected gum.
Wall Finish, White finish plaster and papered.
Lumber, #1 yellow pine.

Cost Key is 1.814-127-880-37-25-16





OLD WORLD STYLE

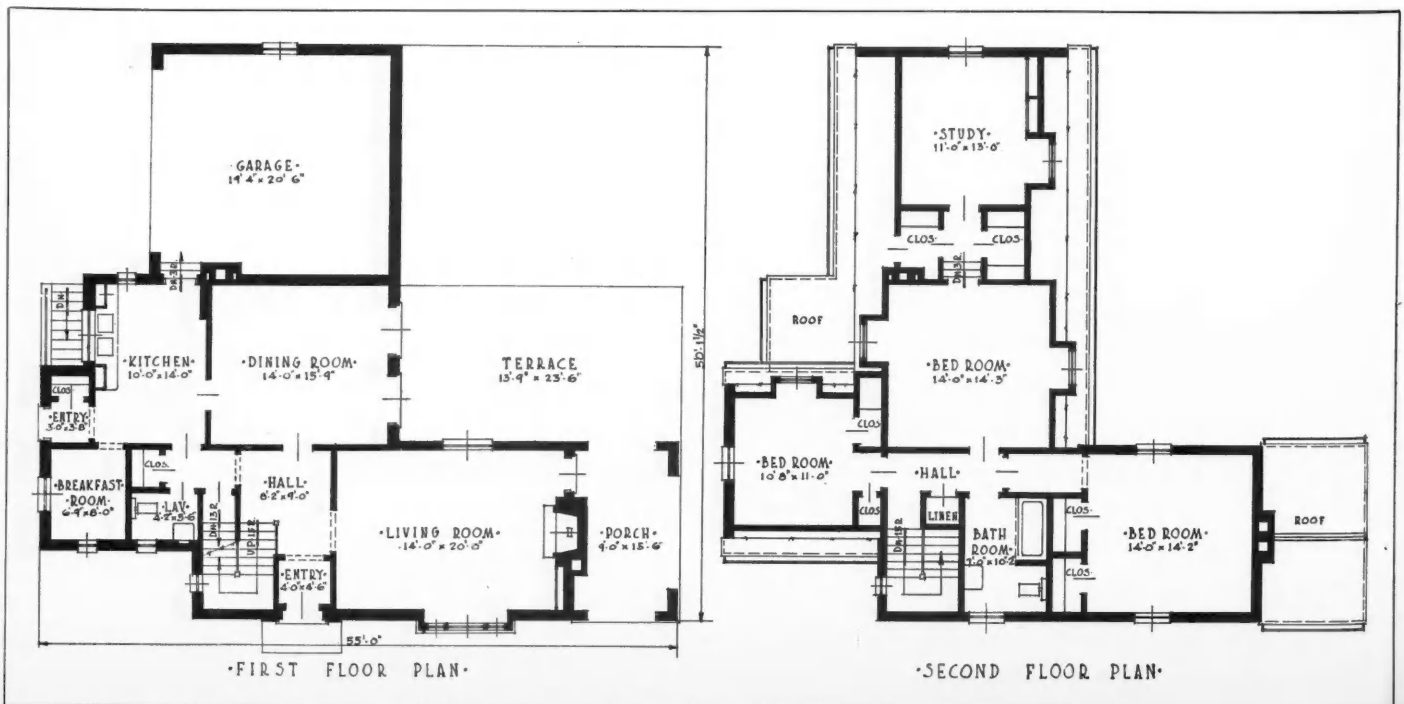
Architect, Edward J. Schulte, Cincinnati, O.

Builder, Cliff W. Springmeier, Cincinnati, O.

Residence of Dr. E. Gaenge, Eileen Drive, Cincinnati.

Cost Key is 2.598—190—1060—46—27—29

Foundation, Concrete.
Walls, Painted brick and cinder block.
Doors and Trim, Cypress.
Casements, Steel.
Roof, Green wood shingles.
Floors, Random width ash on wood joists.
Water Pipe, Copper tubing.
Heating, Gas fired air conditioned heating.
Insulation, 4" rock wool on ceiling.
Interiors, Gum trim and smooth plaster walls.
Framing, No. 1 common yellow pine.





PLANS COMMENDED

Architect, Pettit and Oman, Columbus, O.

Builder, C. R. Clouse, Columbus, O.

Residence of Mary H. Oman, Columbus, O.

Cost Key is 2.131-156-790-35-28-18

Foundation Walls, 8" concrete block, 4" solid cap block; water-proofed on exterior.

Exterior Walls, $\frac{3}{4}$ " x 8" rabbetted lap siding, redwood, painted light ivory.

Doors, White pine, ivory.

Trim, Redwood, ivory.

Windows, White pine, ivory. Shutters: moss green.

Roof, $\frac{3}{16}$ " x 11" x 22" sea green slate over felt.

Floor Construction, 2" x 10" joist 16" o.c. 1" x 6" diagonal sheathing; $\frac{13}{16}$ " x $2\frac{1}{4}$ " No. 1 com. oak floor over waterproof paper, first floor, and over sound deadening felt, second floor.

Water Pipe, Streamline hard copper tubing standard weight; one piece T's.

Heating, Mueller, 3 section, 105,000 B.T.U. gas fired; automatic control; winter air conditioning; trunk line system; complete returns.

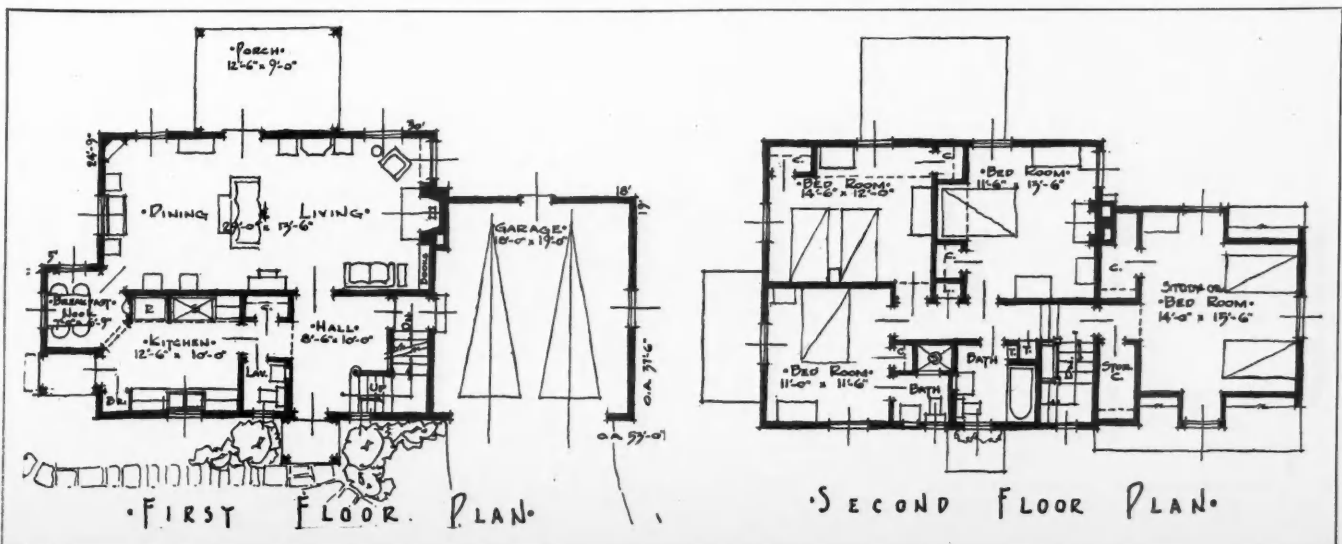
Insulation, $3\frac{1}{2}$ " glass wool all exterior areas.

Interior Trim, Living room, birch stained natural; kitchen, breakfast room and study, knotty pine stained natural; halls, bedrooms, baths and lavatory, white pine enameled ivory.

Wall Finish, Colonial wallpaper, except chromite bath walls and painted kitchen, breakfast and lavatory.

Dimension Lumber, No. 1 com. kiln dried Y.P.

Framing, Western framing 2" x 4's-16" o.c.—double all top plates, 1" x 8" diagonal wall sheathing.





EARLY AMERICAN

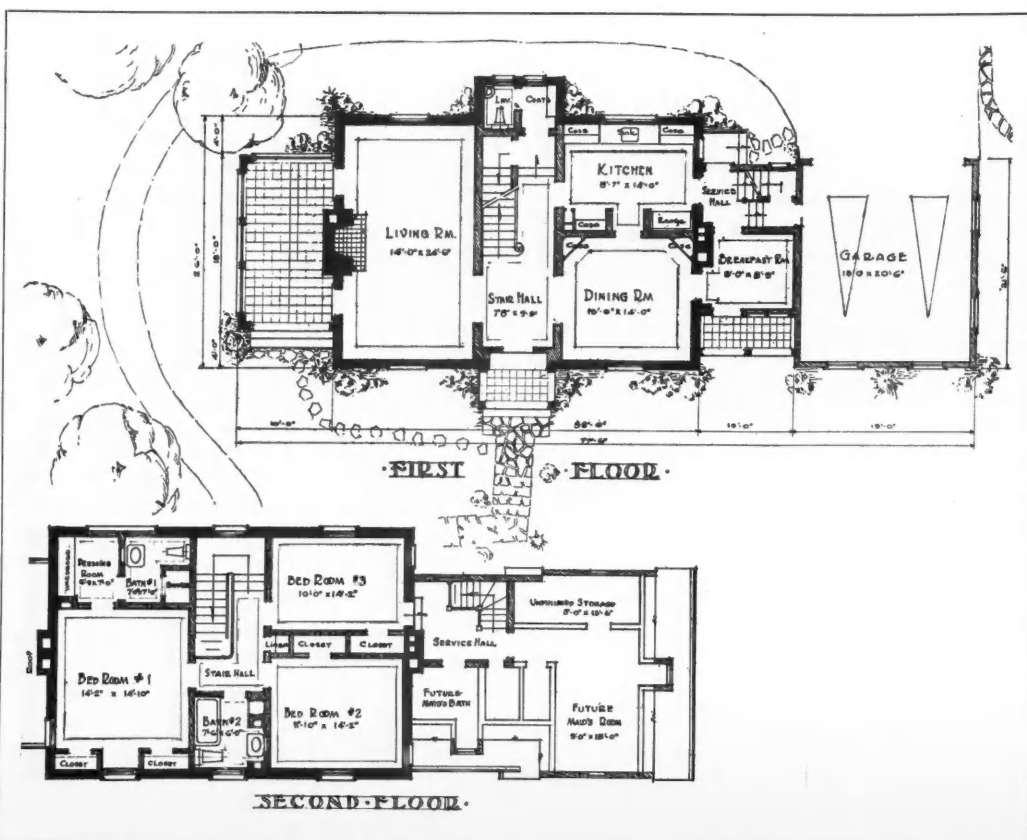
Architects, E. C. and G. T. Landberg,
Cincinnati, O.

Builder, Wm. Ammon & Co., Cincinnati, O.

Residence of Dr. W. Everwine, Reilly Road,
Wyoming, O.

Cost Key is 2.735—194—1160—50—33—26

Foundation, Reinforced concrete.
Exterior Walls, Brick, painted with w. stucco finish; wood, $\frac{5}{8}$ x 10 cypress siding, painted white.
Doors, $1\frac{3}{4}$ " clear white pine.
Trim, Smooth finish red cypress.
Windows, Frames Cypress, sash white pine.
Roof, 16" red cedar shingles on 1 x 4 Y.P.
Floors, 2 x 10 wood joists; Y.P. sub-floor; $13/16$ " random width w. oak plank, 1st floor; $2\frac{1}{2}$ x $13/16$ w. oak strip, 2nd floor.
Water Pipe, Galv. wrought iron pipe.
Heating, Coal fired, split system, air conditioned.
Insulation, 4" rock wool throughout ceiling 2nd floor.
Interior Trim, Sap gum and poplar, doors $1\frac{3}{8}$ " white pine.
Interior Walls, Plaster, painted.





COLONIAL HOME

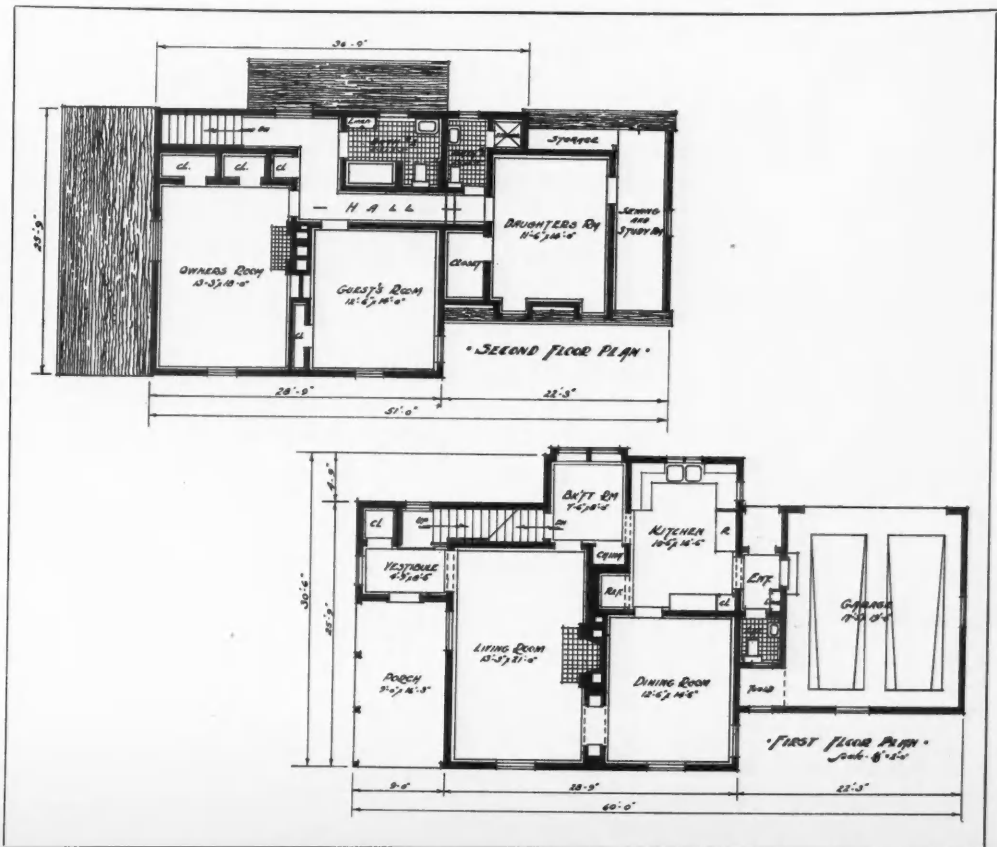
Architect, Lewis E. Warner, Jr.,
Columbus, O.

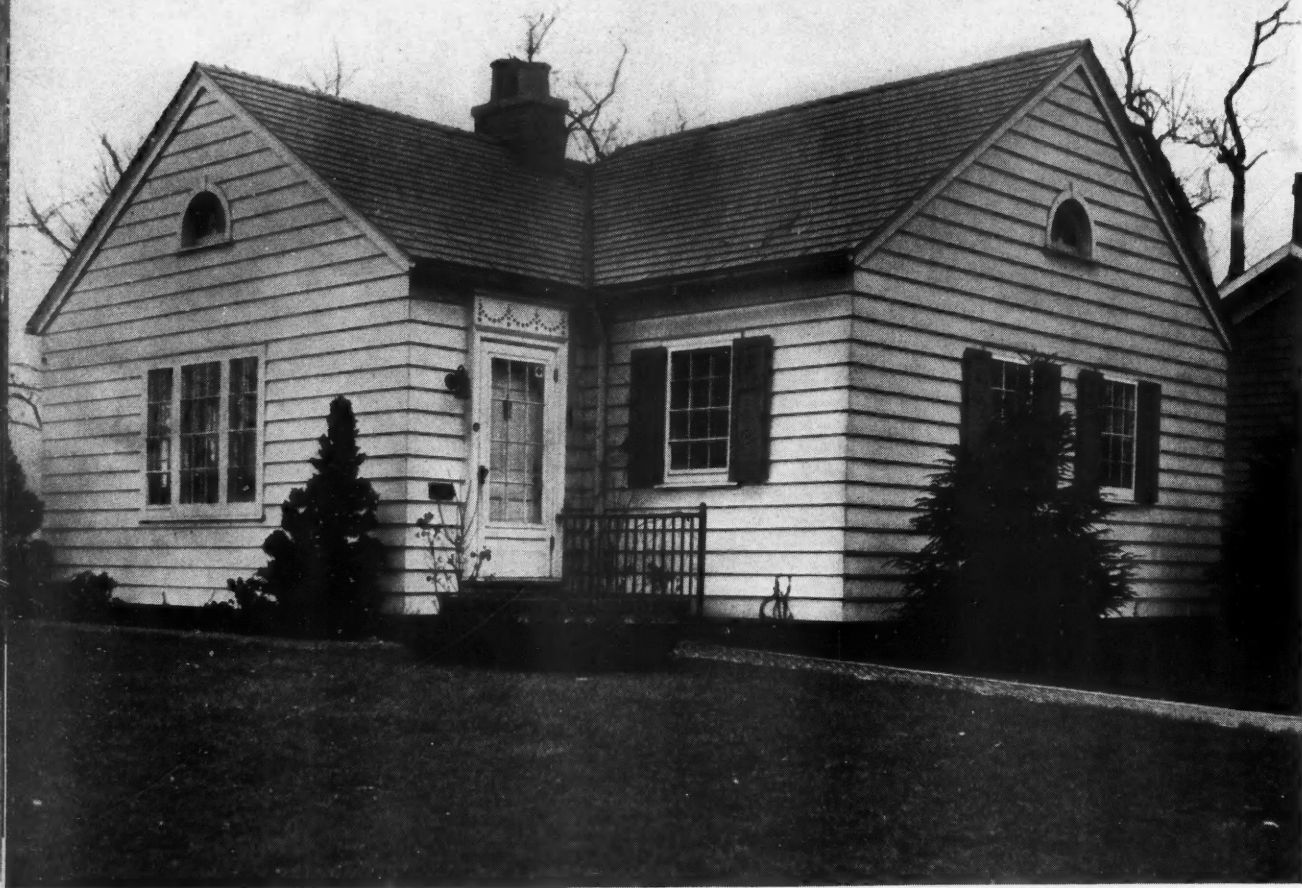
Builder, Ward & Wingo, Columbus, O.

Residence of Dr. & Mrs. C. O. Cramer,
S. Westmoor Ave., Columbus, O.

Cost Key is 2.273-181-925-41-31-20

Foundation, oscillated portland cement block.
 Outside Walls, 3/4"x10" beveled clear redwood siding.
 Outside Trim, clear redwood.
 Exterior Doors & Windows, clear white pine.
 Roofing, 16" clear vertical grain green stained wood shingles.
 Floor Construction, 2" x 10" No. 1 yellow pine joists; No. 2 yellow pine sub-floor; 13/16" x 2 1/2" select Appalachian oak finish floor.
 Water Pipe, standard 3/4" galvanized iron exposed; streamline copper tubing concealed.
 Heating, gas fired cast iron unit with winter air conditioning blower.
 Insulation, 4" glass wool; ceiling and roof rakes.
 Interior trim, Living room, dining room and hall, clear red gum with walnut finish; balance is white pine enameled ivory.
 Wall Finish, all paper, except baths, breakfast room and kitchen painted with stipple finish.
 All Framing, No. 2 yel. pine; sheathing and sub-floors No. 2 Y.P., 1" x 8"; roof boards No. 1 Y.P., 1" x 4".
 Type of Framing, Western.





LITTLE WHITE COTTAGE

Architect, Harsh and Davies, Columbus, O.

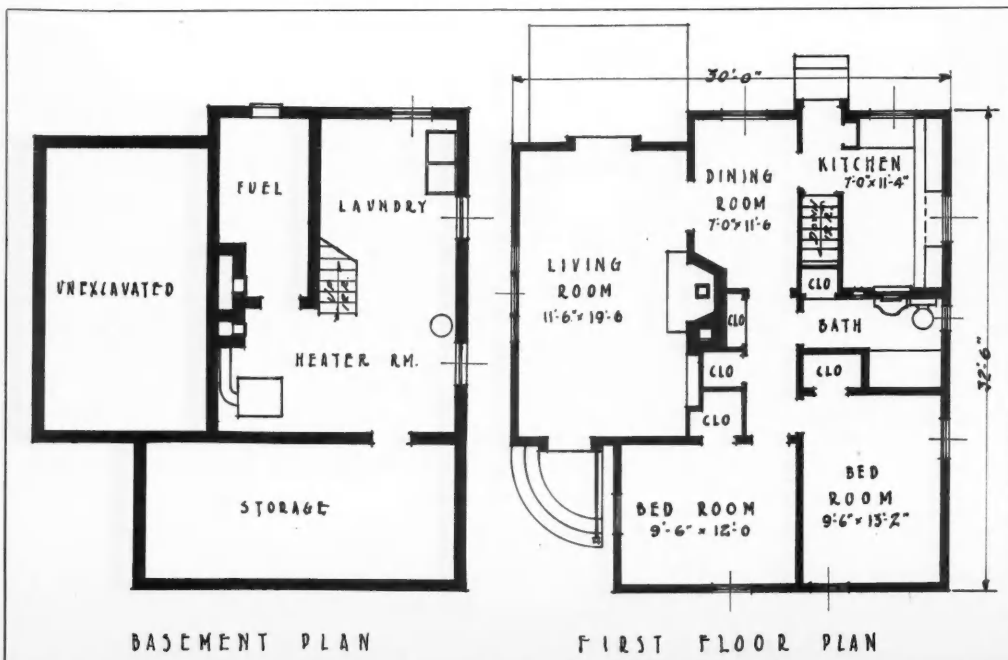
Builder, John E. O'Dell, Gallipolis, O.

Residence of Dr. F. W. Shane, Gallipolis, O.

Cost Key is 1.121—125—932—39—16—15

Foundation, Brick.
 Chimney, Brick, T. C. lining, ornamental pots.
 Pavements, Brick steps, walks, terraces.
 Basement Floor, Cement, liquid hardener.
 Basement Sash, Steel.
 Fireplace, Face brick; Covert throat and damper; tile hearth.
 Ornamental Iron, Entrance rail.
 Framing Lumber, Weyerhaeuser 4 Sq.
 Siding, $\frac{3}{4}$ "x10" white pine.
 Roofing, Careystone asbestos shingles, green.
 Insulation, Roof, Masonite board; walls, Masonite lath.
 Sub-Flooring, Throughout.
 Finished Floors, Edge grain Y. P.; linoleum kitchen, bath.
 Windows, Bath, kitchen, dining room, steel casements; all others
 "Curtis Silentite Prefit" D.H.
 Trim, All white pine "Curtis" stock designs.
 Medicine Cabinet, "Lawson" chromium plated.
 Walls, Living room and dining room, knotty pine; kitchen and bath,
 linoleum; balance plaster.

Ceilings, Kitchen and bath, linoleum;
 bal. plaster.
 Sheet Metal, Copper flashing, valleys,
 ridges; Toncan metal gutters and
 downspouts.
 Cupboards, "Napanee De Luxe" stain-
 less steel tops.
 Kitchen Equipment, "G.E." dishwasher,
 range, refrigerator.
 Painting, Ext. lead and oil Colonial
 white; int. knotty pine varnish; bal.
 enameled.
 Hot Water, Hoffman automatic storage;
 copper pipe.
 Heating, Vapor steam; concealed rads.
 Plumbing, Fixtures, Standard Sanitary.
 Electrical, bx.; fixtures "Chase Brass"





LOW COST HOME

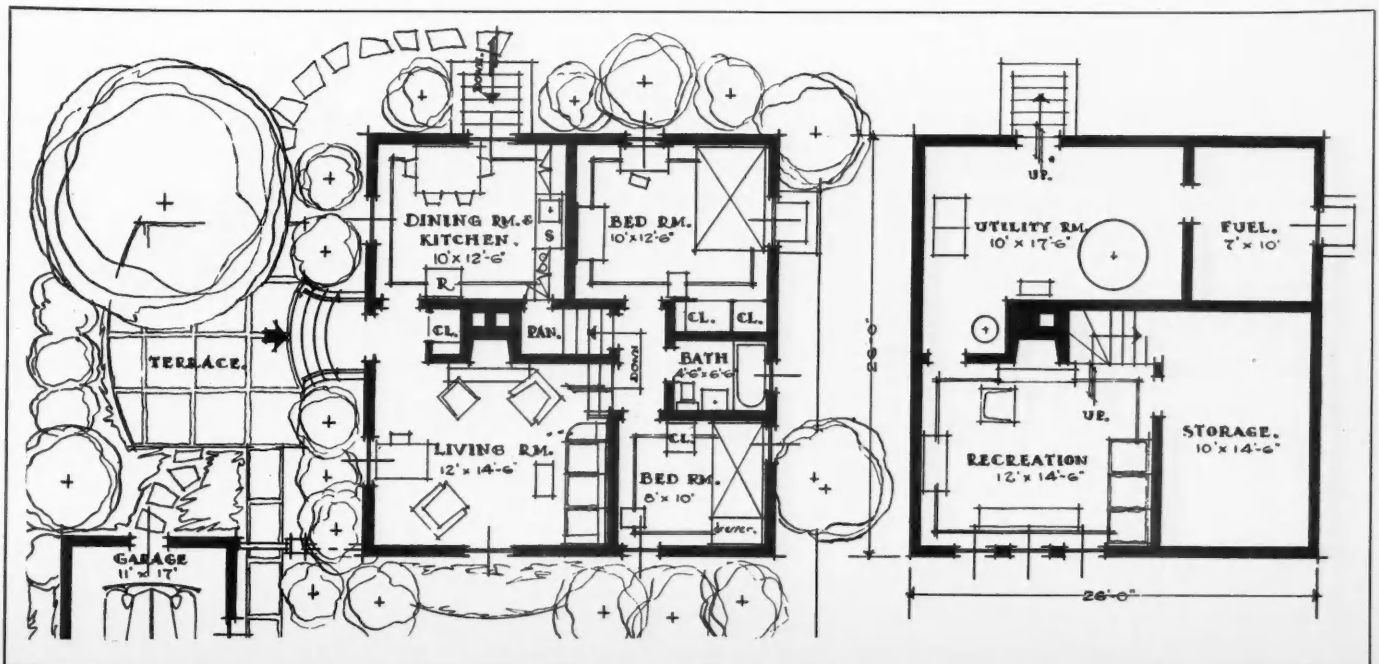
Architect, A. Carol Sanford, Canton, O.

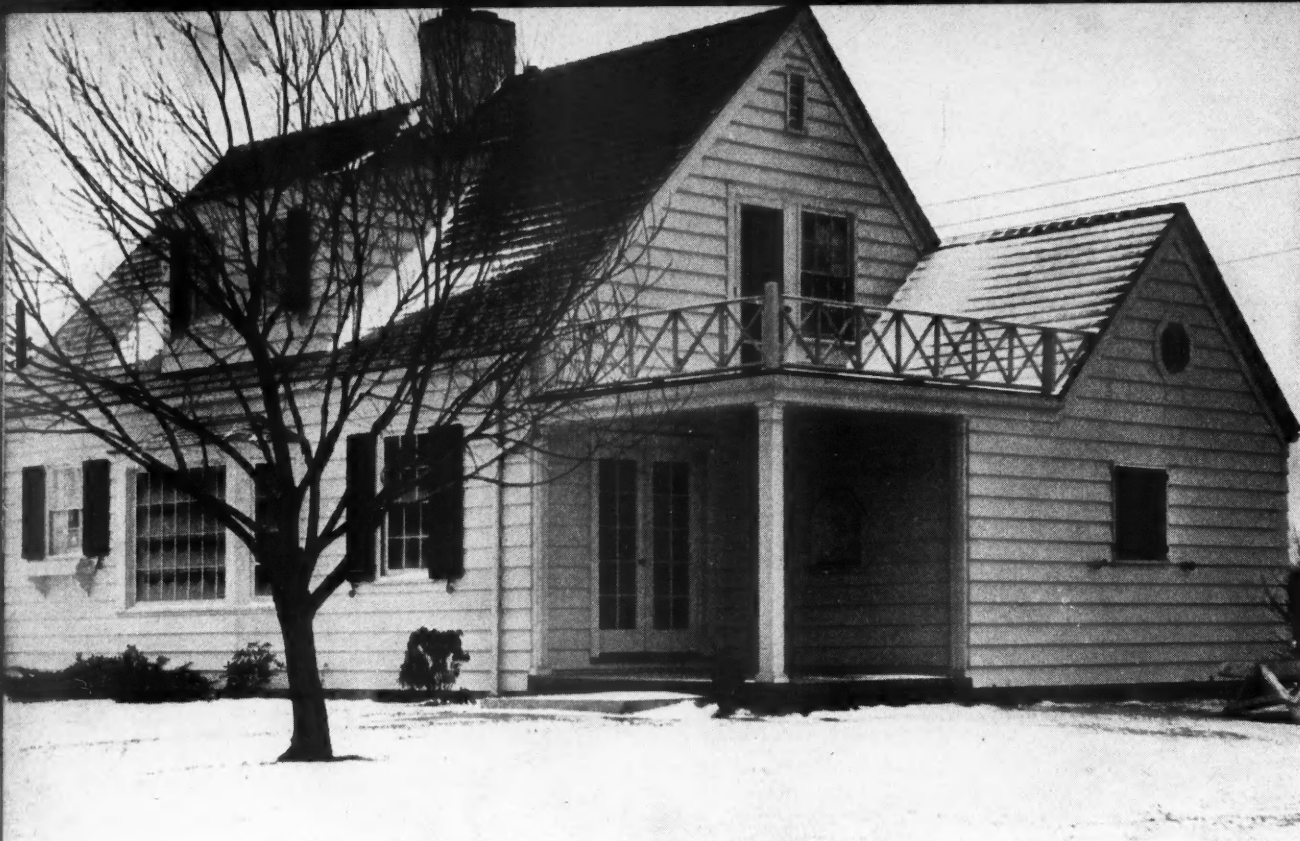
Builder, H. T. Hanson, Canton, O.

Residence of Mr. & Mrs. A. Carol Sanford,
26th St., N.E., Canton, O.

Foundation, 8" paving brick.
Exterior Walls, old whitewashed bricks and vertical 12" redwood.
Roof, 40 lb. tin standing seam.
Insulation, 4" of rock wool bats.
Painting, white house, cobalt blue frames, sash and doors.
Framing, 2" x 4" studs, 2" x 8" joist.
Recreation Room, wood floor, side wall knotty pine and open joist.
Dining and Kitchen, beamed studio ceiling, walls painted smooth finish.
Living Room, studio ceiling pecky cypress shiplap in antique off white; walls papered; woodwork, antique finish.
Bath, Tile floor and walls, colored fix.
Bedrooms, papered walls and ceiling.
Cedar Closet, in large bedroom.
Heating, hot air gravity job.
Garage Doors, Kinnear overhead.

Cost Key is .773-104-676-29-10-8





MODERN AMERICAN

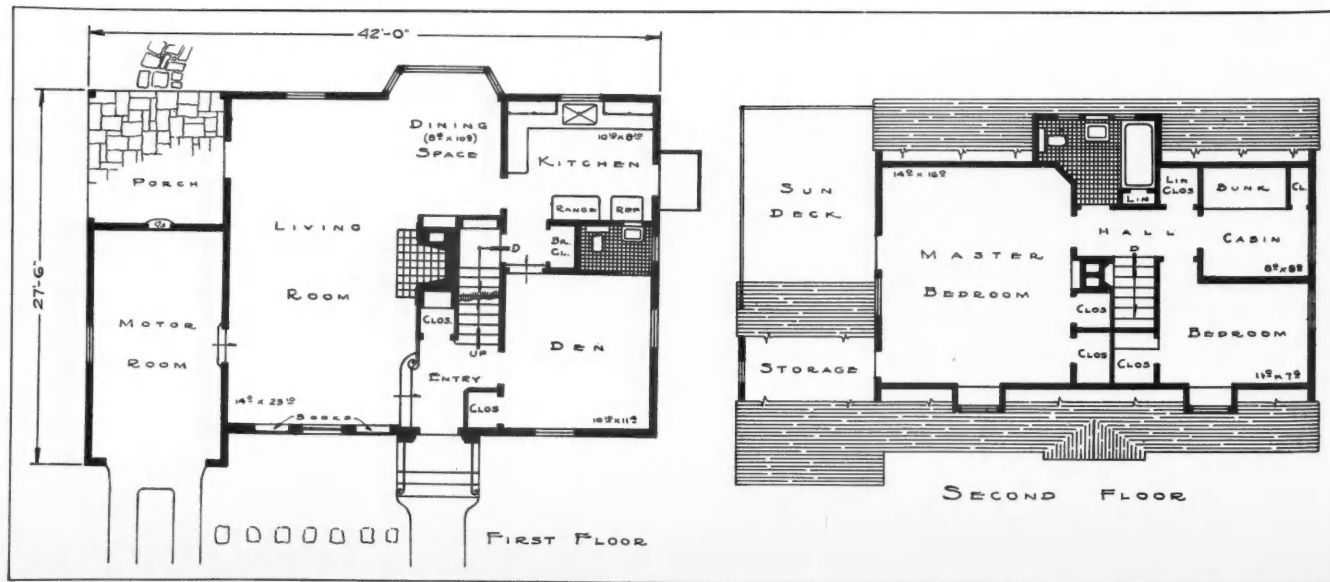
Architect, Aubrey W. Stoutenburg,
Norwalk, O.

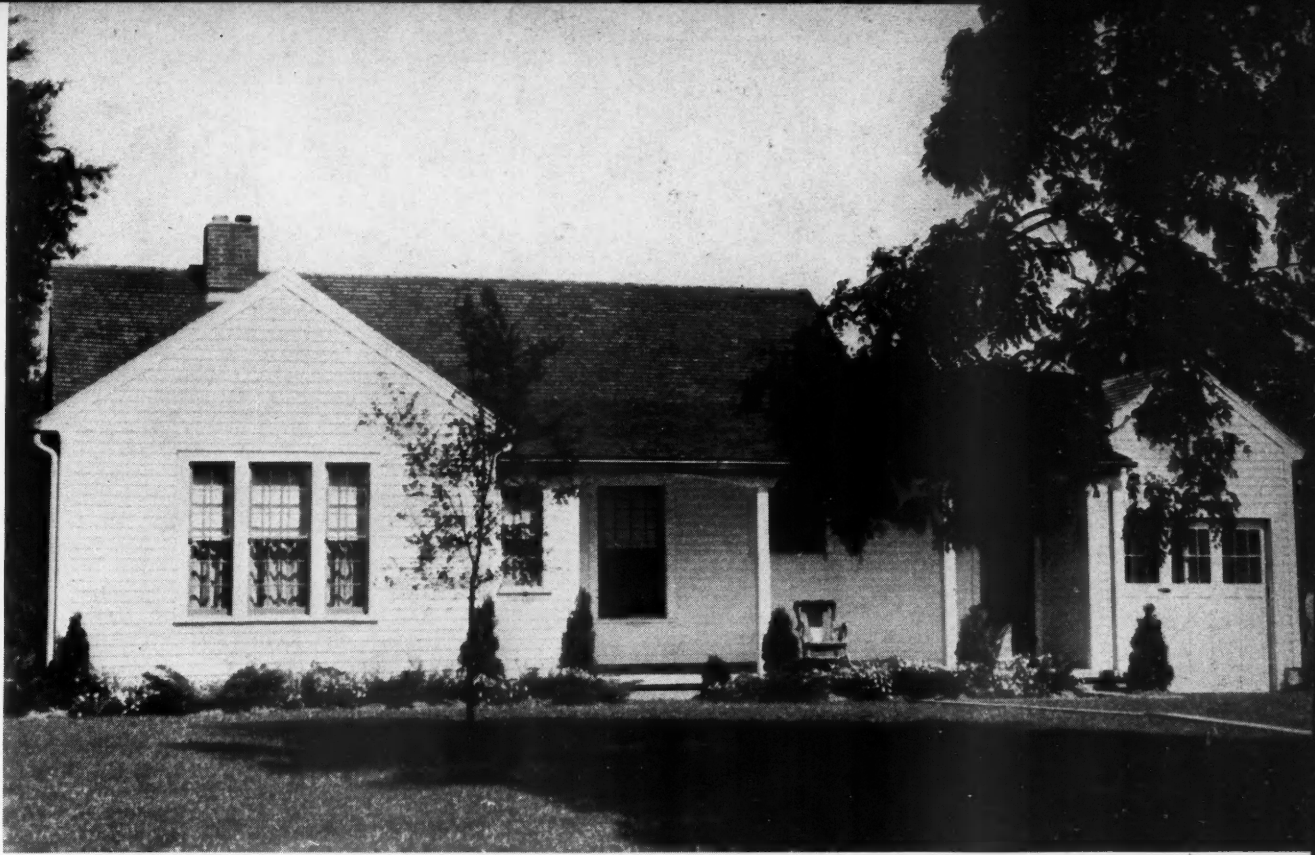
Builder, Dave Miller, Vermilion, O.

Summer Home of Dr. & Mrs. T. H. Smith,
Vermilion Lagoons, Vermilion, O.

Cost Key is 1.661-144-824-36-20-18

Foundations, reinforced concrete.
 Outside Walls, 2" x 4" studs, 3/4" Celotex sheathing, heavy sheathing paper, 8" redwood lap siding. All exterior trim clear cypress.
 Exterior doors 1 3/4" solid white pine. Double-hung, weather-stripped windows. Exterior painted white, trimmed in pine green.
 Roof, asbestos slate shingles, green, American method.
 Floors, 13/16" white oak finish flooring on Y.P. sub-floor laid diagonally over wood joists. Tile floor in bath and toilet. Cement floor in garage. Cemented inlaid linoleum in kitchen.
 Water Piping, streamline copper tubing.
 Heating, air conditioning (warm air system).
 Insulation, Mineral wool.
 Interior Trim, living room and entry paneled in knotty pine. Balance of house, gumwood, enameled.
 Wall Finish, plaster, "California stucco" texture. Tile wainscot in bath and toilet.
 Framing No. 1 yellow pine. Studs and joists 16" o.c.





BROAD BUNGALOW

Architect, Rollin L. Rosser, Arcanum, O.

Builder, Chester Wilson, Hollansburg, O.

Residence of George Stephens, Arcanum, O.

Cost Key is 1.611-189-1178-51-21-20

Foundation Material, poured concrete.

Basement Floor, concrete.

Outside Walls, plaster and R.C. siding on stud construction. No. 1 com. dimension.

Outside Trim, cypress.

Doors and Sash, Ponderosa pine. All exterior painted white.

Roof, R.C. Shingles.

Floors, wooden joist construction.

Heating, Humidified warm air, forced circulation.

Water Pipes, Gal. iron and copper.

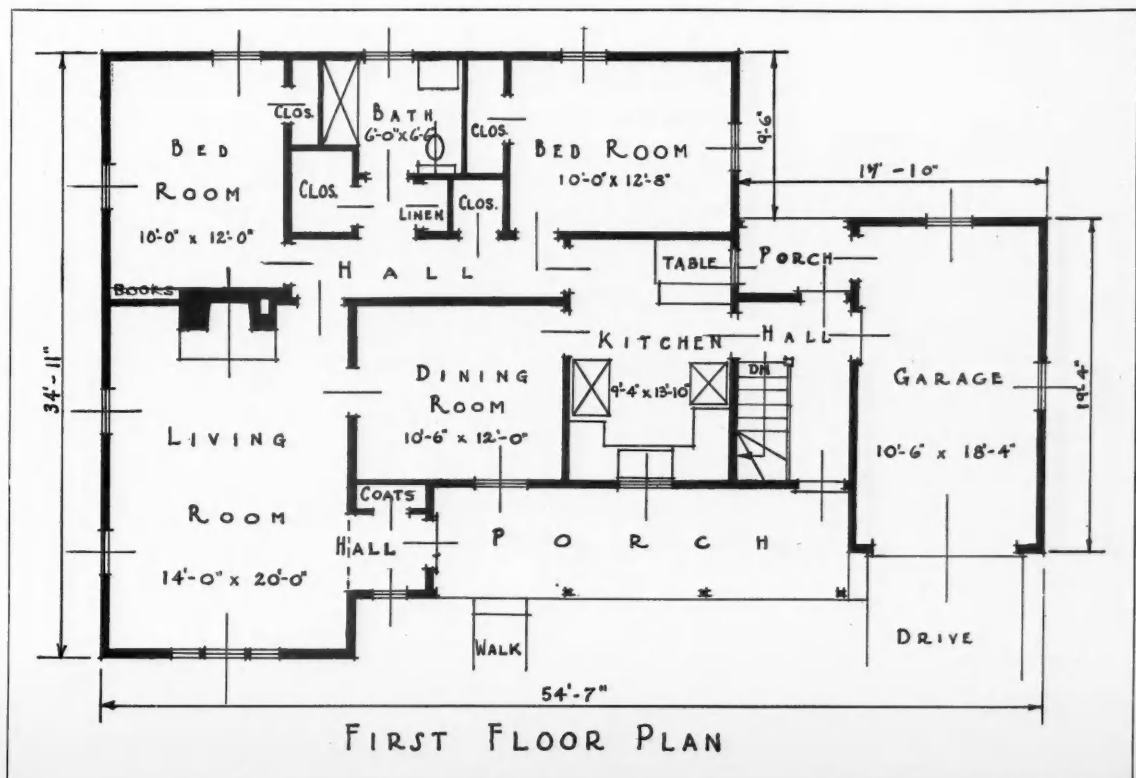
Insulation, Rock wool.

Interior Trim and Finish, Painted White Pine.

Wall Finish, Papered.

Ceilings, Painted.

Floors, Varnished.





6-ROOM COLONIAL

Architect, Myron T. Hill, Toledo, O.

Builder, John Pioch Co., Toledo, O.

Residence of Dr. & Mrs. Paul M. Holmes, Toledo, O.

Cost Key is 2.321-168-1344-57-25-21

Foundation, Walls, cinder concrete block; basement floor, concrete. Exterior Surfaces, Reclaimed brick painted white; cedar siding and white pine trim painted white.

Door and Window Frames and garage doors, white pine; steel sash in basement.

Roof, Variegated brown and black reclaimed slate.

Floor Construction, First floor, conc. slab over precast conc. joist; second floor, No. 1 common yellow pine; wood joist.

Water pipes, Copper tubing.

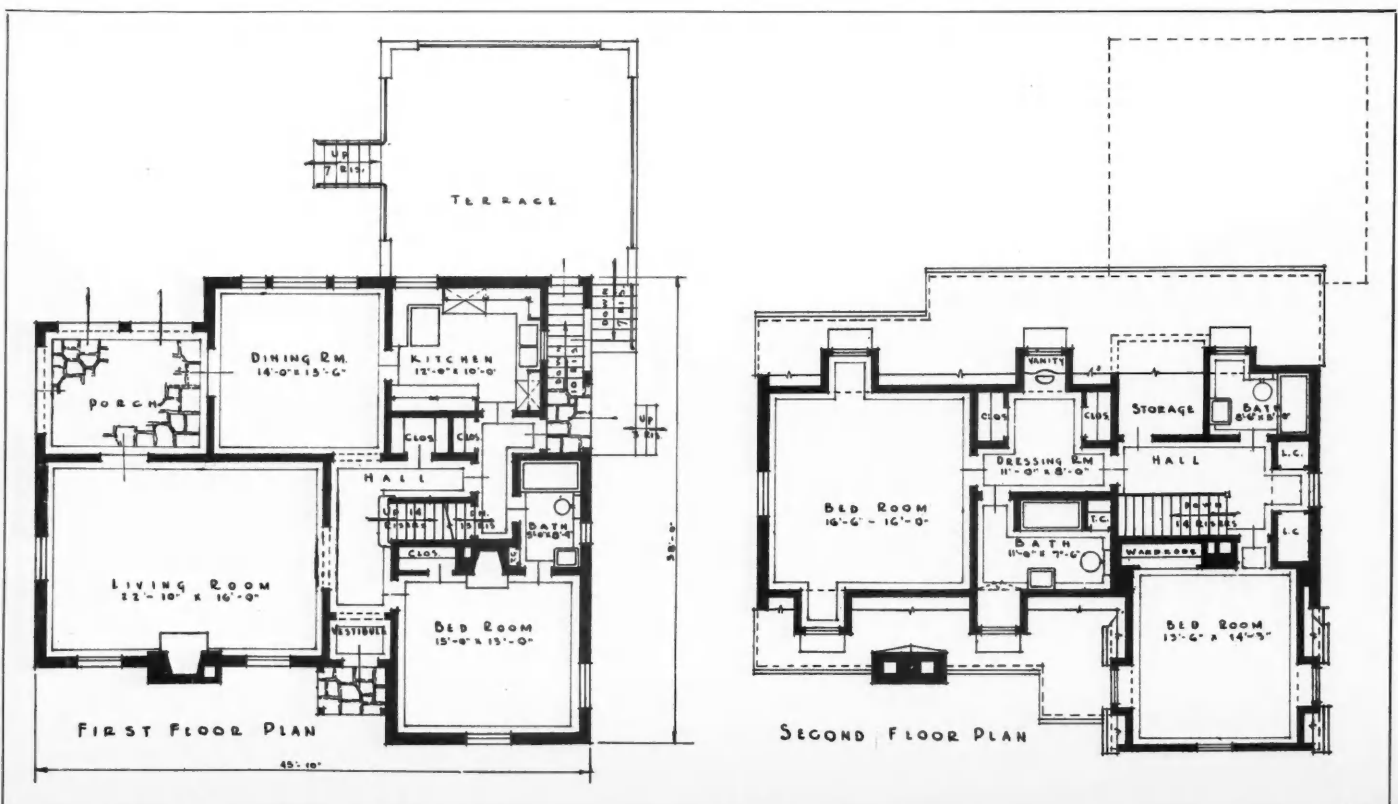
Heating, Air conditioning, winter only, oil fired, hot air heating unit.

Insulation, Outside walls and attic floor, rock wool bat type insulation; doors and windows weatherstripped.

Interior trim, Clear white pine, surfaces painted; floors white oak, stained, shellacked and waxed.

Wall finish, Wallpaper; Sanitas in kitchen and bathrooms.

No. 1 yellow pine, dimension lumber; platform type framing used.





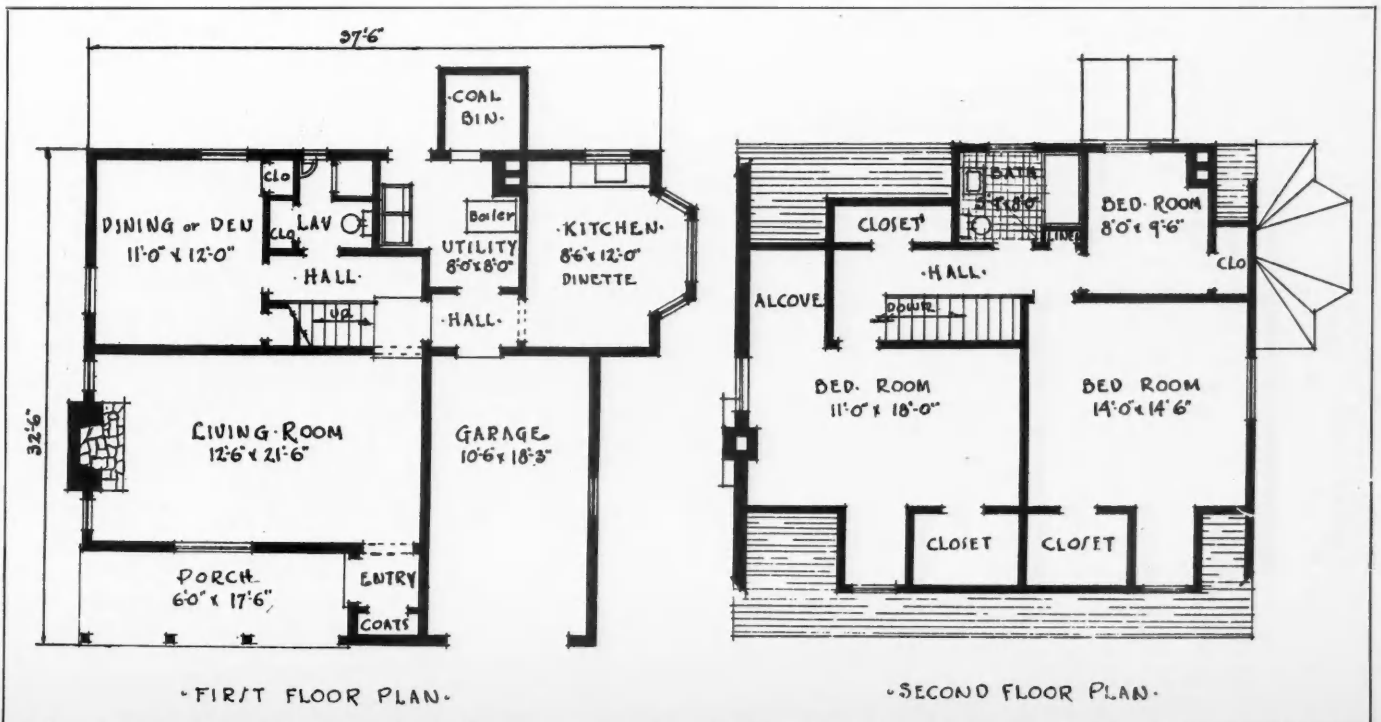
LONG ISLAND INFLUENCE

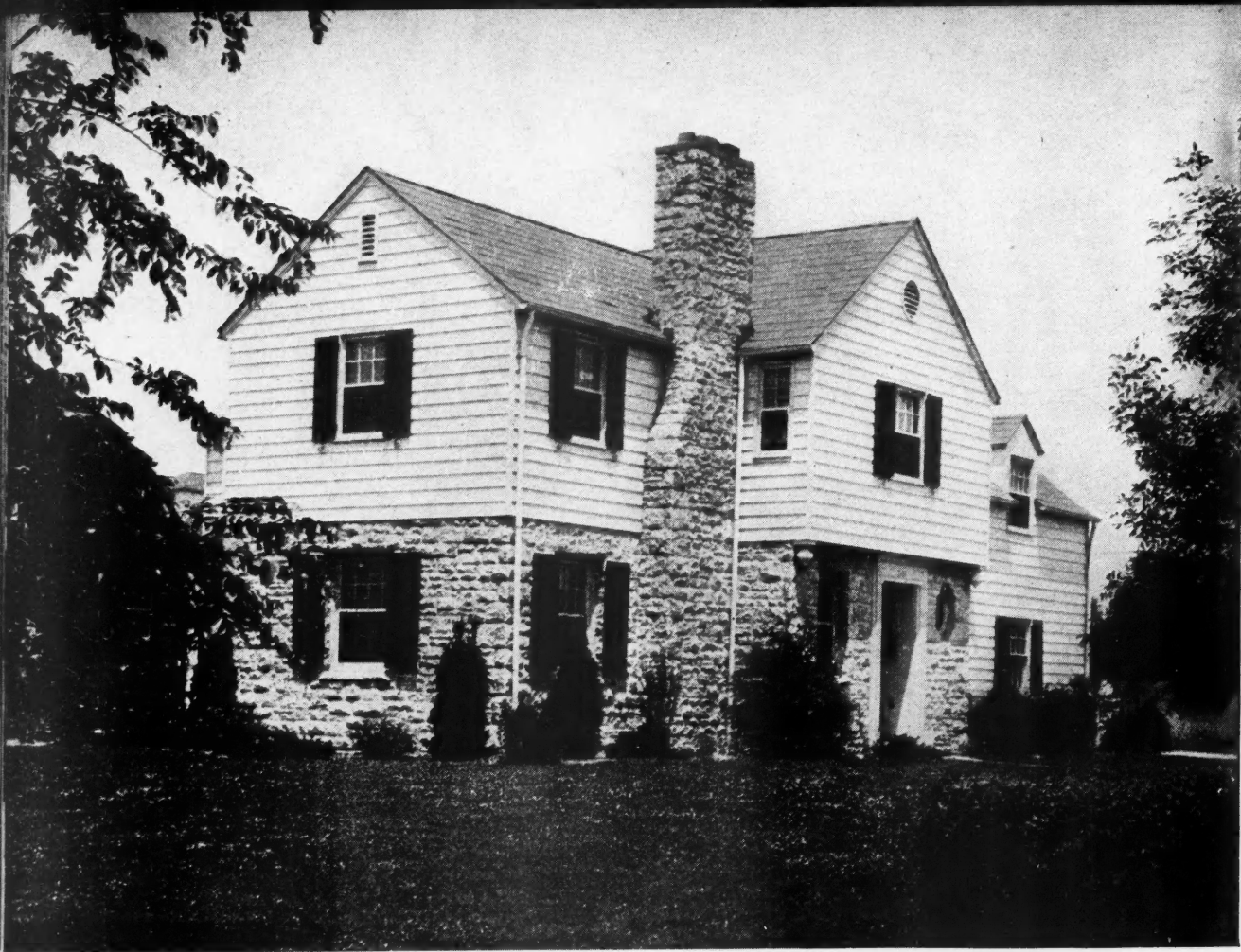
Architect, Lawrence B. Goldinger,
Cincinnati, O.

Residence of Mrs. I. Goldinger, Winton Road,
Cincinnati, O.

Cost Key is 1.850-145-(1269)-(52)-24-20

Footings, Concrete.
Exterior Walls, To footings cinder block laid random; Finished in grey waterproof cement paint.
Trim, White.
Sash, Bottle blue.
Roof, Wood shingle, brown.
Interior Walls, First floor, waterproof cement paint, buff, blue and green; second floor, plaster and papered.
Water Pipe, Galvanized iron.
Heating System, Hot water.
Insulation, Rock wool.
Interior Trim, Yellow pine painted doors, six panel.
Floor Construction, First floor monolithic concrete slab, parquet oak floor, laid in mastic; second floor, yellow pine floor, wood joists.
Lumber, Short leaf yellow pine, B and Better grade.





ROUGH STONE BASE

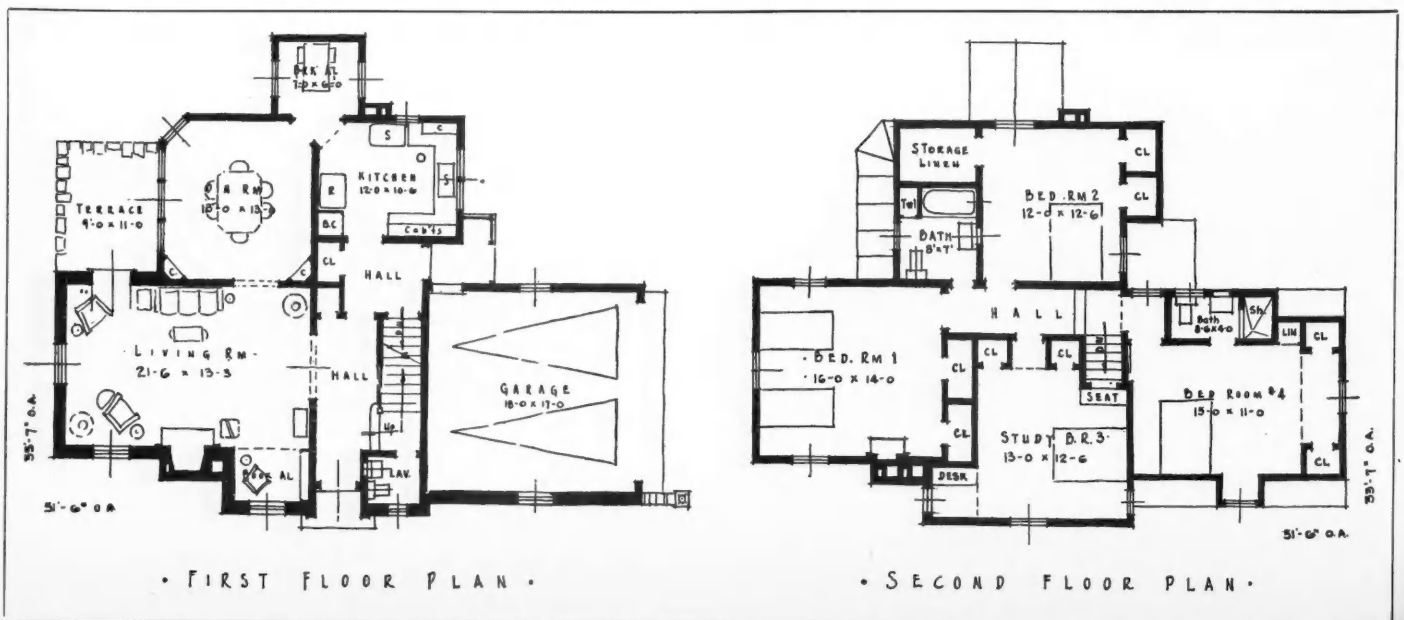
Architect, Pettit and Oman, Columbus, O.

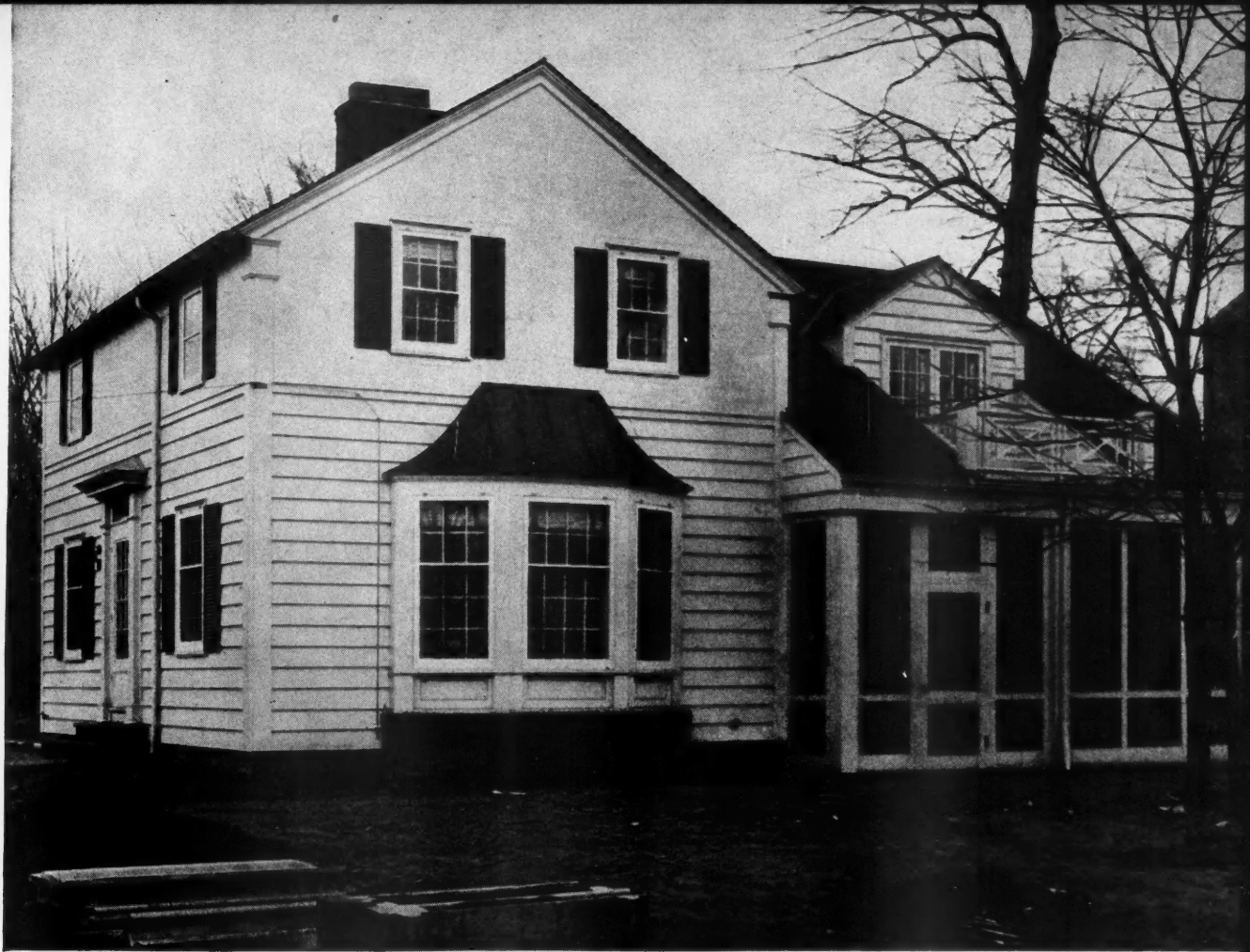
Builder, Borrer Bros., Grove City, O.

Residence of W. D. Sinkey, Andover Road,
Upper Arlington, O.

Cost Key is 2.338-190-983-44-34-19

Foundation Walls, 12" concrete block.
Exterior Walls, Rubble limestone, buff and grey, $\frac{3}{8}$ " x 8" siding, redwood, ivory.
Doors, White pine, painted ivory.
Trim, Redwood, ivory.
Windows, White pine painted ivory; wood divisions.
Roof, $\frac{3}{16}$ " x 11" x 22" sea green slate.
Floor Construction, 2" x 10" joist 16" o.c.; 1" x 6" diagonal sheathing; $\frac{13}{16}$ " x $\frac{2}{4}$ " oak floor over paper.
Water Pipe, Streamline hard copper tubing standard weight, with one piece T's.
Heating, Williamson coal fired, automatic winter air conditioning.
Insulation, $\frac{3}{2}$ " glass wool bats, entire walls.
Interior Trim, Birch, walnut stain, 1st floor; white pine enameled, 2nd floor, service and baths.
Wall Finish, Wallpaper; kitchen linoleum; baths, tile.
Dimension Lumber, No. 2 com. kiln dried.
Framing, 12" stone veneer wall over 2" x 4" studs; sheathing double paper; western framing.





SIDING AND STUCCO

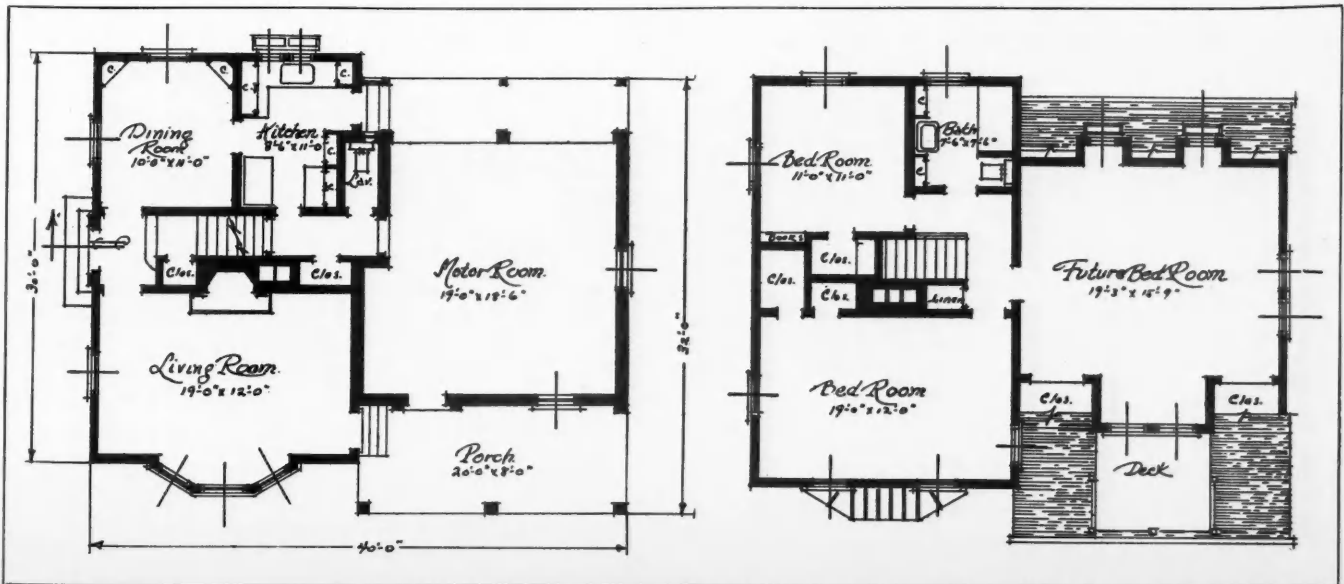
Architect, W. Norman Jeavons,
Cleveland Heights, O.

Builder, James Humel, Cleveland, O.

Residence of Mr. & Mrs. H. W. Luetkemeyer,
Edgecliff Road, Euclid, O.

Cost Key is 2.001-142-650-30-24-17

Footings, Concrete.
Foundation Walls, Brick and tile.
Exterior Walls, 10" bevel siding painted white.
Exterior Trim, Doors and windows, painted white.
Shutters, Painted dark green.
Roof, Red cedar shingles stained medium to dark greens.
Floor Construction, Y.P. joists.
Water Pipe, Galv. steel.
Heating, Coal fired furnace with complete air conditioning system.
Insulation, Rock wool, bat form.
Doors and Trim, Yellow pine painted white and ivory; dining room and hall, knotty pine paneling stained and waxed.
Windows, White pine painted white.
Wall Finish, Smooth plaster glazed; bedrooms papered.
Framing Lumber, No. 2 Long or Short leaf southern pine.





OVERHANGING 2nd FLOOR

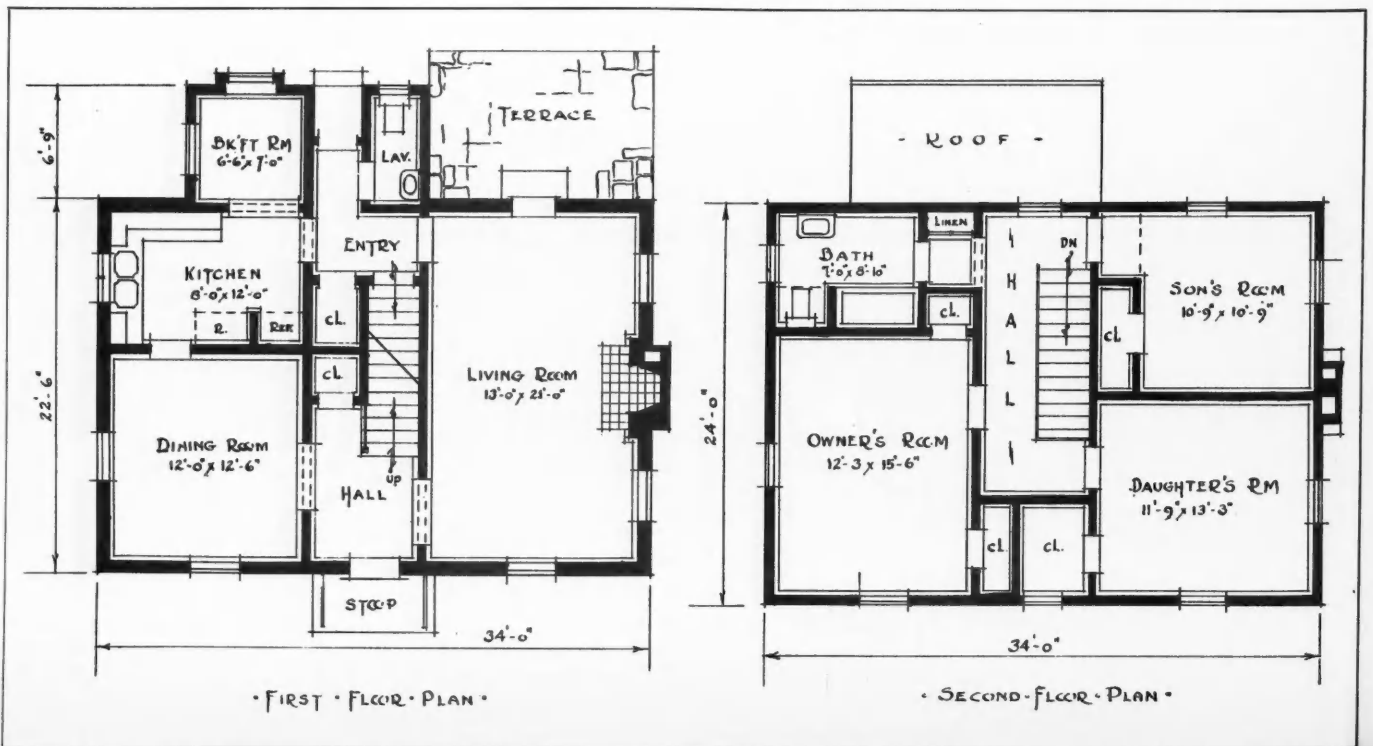
Architect, Lewis E. Warner, Jr., Columbus, O.

Builder, C. H. Christensen, Derby, O.

Residence of Mr. & Mrs. H. L. Calhoun,
E. Arden Rd, Columbus, O.

Cost Key is 1.596-127-860-36-24-12

Foundation, Oscillated portland cement block.
 Outside Walls, 1st floor, used brick, hollow tile back-up painted white; second floor and addition, $\frac{5}{8}$ " x 8" beveled "V" clear red-wood siding.
 Roofing, 16" clear vertical grain green stained wood shingles.
 Floor 2" x 10" No. 1 yellow pine joists; 1" x 8" No. 2 Y.P. sub-floor; 13/16" x 2 1/2" select Appalachian oak finish floor.
 Heating, Coal fired cast iron unit with winter air conditioning blower.
 Insulation, 4" glass wool, ceiling and roof rakes.
 Interior Trim, Living room and dining room clear red gum with walnut finish; balance, white pine enameled ivory.
 Wall Finish, All paper except bath, breakfast room and kitchen, painted with stipple finish.
 All Framing, 1" x 8" No. 2 Y.P. sheathing; roof boards 1" x 4" No. 2 Y.P.



New Studio Apartments Are Modern in Materials and Styling

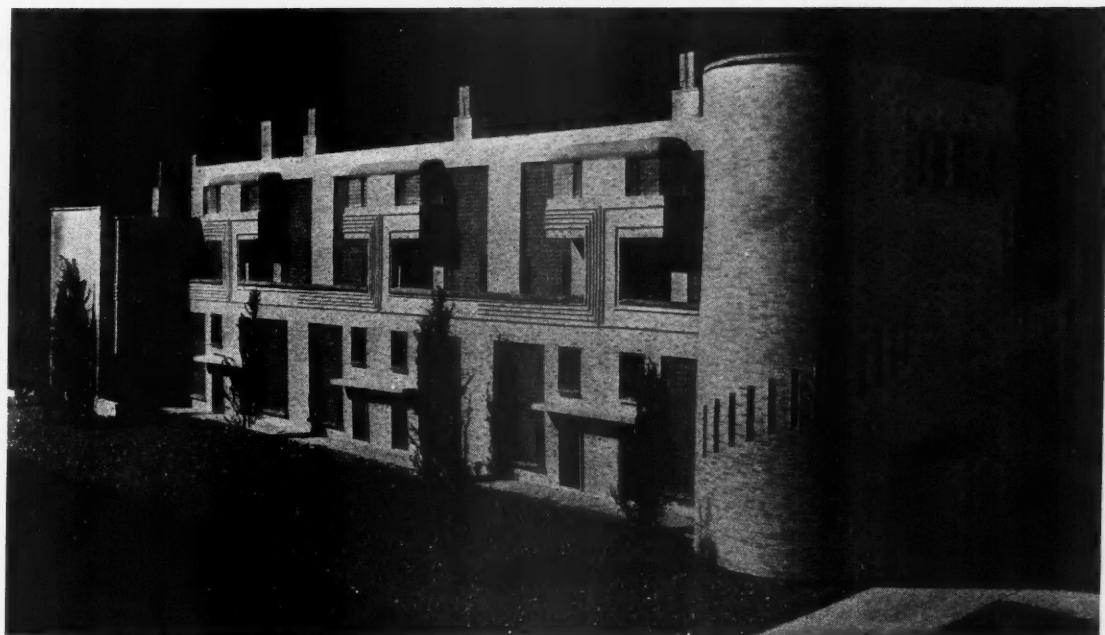
THERE has been very little apartment building activity in Metropolitan Chicago in recent years, and consequently the Fisher Studio Apartments, which are radically different in layout and styling and are now being completed on the Near North Side, have attracted considerable attention. The building has thirteen duplex suites arranged on four floor levels. It was designed by A. N. Rebori, architect, and Edgar Miller, artist, both of Chicago. Exterior and unit layouts are ultra-modern; materials, structural and decorative forms and equipment combine to make the project outstanding in new ideas.

Each apartment is designed as an individual home for modern living and is contained in two stories with front and rear entrances. Access to upper units is by a balcony around the third floor level which is reached from the side court by a circular reinforced brick stairway in the rounded façade (see plans on page 87). Large panels of structural glass block light an interior well two floors high in each unit as shown above; casement sash are built into these and other glass wall surfaces. The apartments are equipped with year 'round air conditioners and wood-burning fireplaces. Concealed recessed lighting, modern

wall decoration, built-in bars and compact electric kitchens are among the novel features which have been included in this unusual structure.

The building was planned for low maintenance and operating costs. High pressure hot water heating and domestic hot water supply system is oil-fired. A central thermostatic device is controlled by outside weather conditions and maintains room temperatures within a very close range. A three-change switch for high, low or off on the room units is the only regulation which is governed by the tenant. There are no elevators or basement. One incinerator serves the building.

Rentals range from \$120 up. Some of the units are already occupied and others leased before completion. The building contains 170,000 cubic feet erected at a cost of \$109,000; the 40 x 150 site was valued at \$17,000; Ralph Renwick, Chicago, was the general contractor.



ABOVE: Large glass block panels located in the two-story light wells provide adequate daylight for rooms on both floors. **LEFT:** Accurate model of apartment building shows front and court side elevations. Circular brick stairway (position indicated by the stepped glass block inserts in the foreground) leads to upper level balcony.

OUTLINE SPECIFICATIONS OF FISHER APARTMENTS

Designed by A. N. Rebori, Architect,
and Edgar Miller, Artist

WALLS & FLOORS: Brick and reinforced concrete slabs; brick dividing walls; Owens-Illinois Insulux structural glass block wall panels; membrane waterproofing.

ROOF: Barrett built-up 15-year type.

PLASTER: 3-coat on U.S.G. metal lath; Keene's cement in baths.

INSULATION: Kimberly-Clark Kimbatts.

WINDOWS: Campbell casements.


FLASHING: Lead coated copper.

PLUMBING: Standard fixtures including integral tank type silent water closets; copper water supply lines.

HEATING: Fairbanks-Morse complete air conditioning units and National Radiator convectors in apartments; wood-burning fireplaces equipped with Covert Dampers and smoke chambers; air exhaust through roof for each apartment. Boiler room equipment: Petro oil-fired National boiler and high pressure hot water system for conditioning units; Minneapolis-Honeywell boiler control system.

INCINERATOR: Ewing.

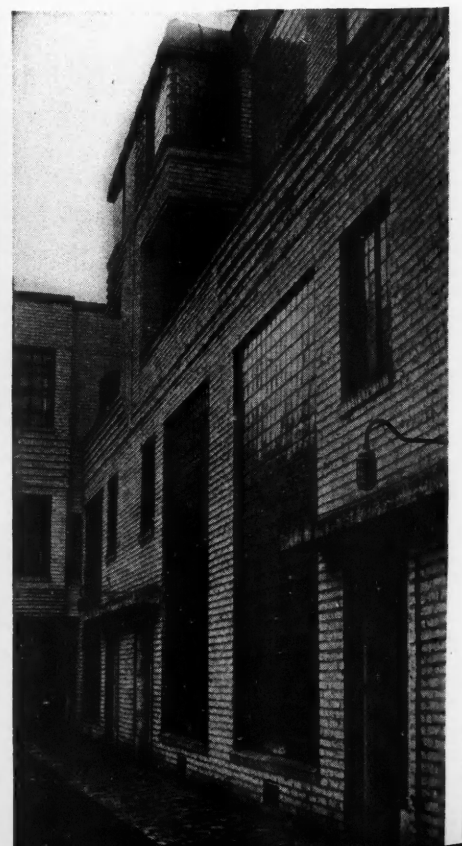
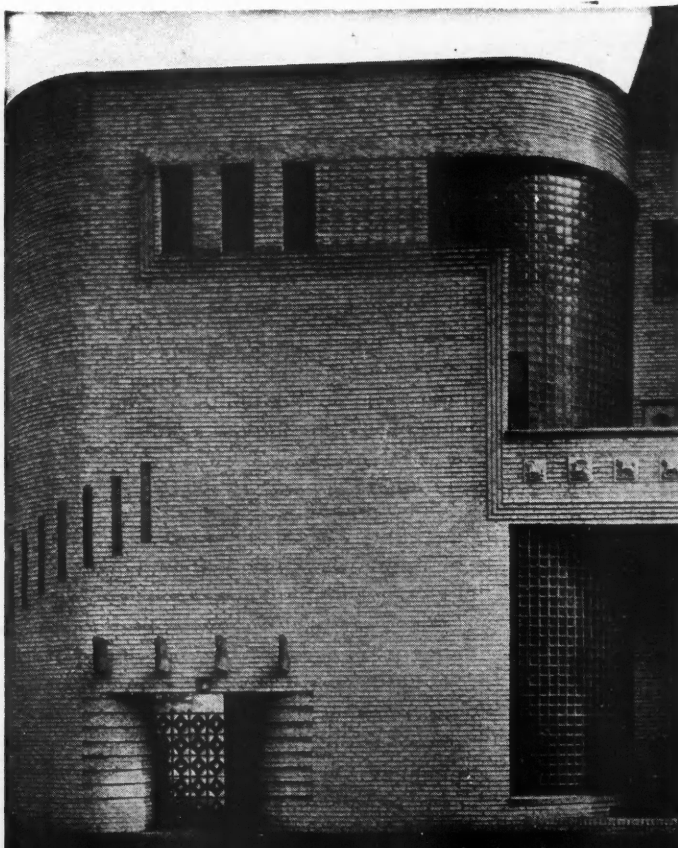
ELECTRICAL EQUIPMENT: Square D circuit breakers; General Electric refrigerators and ranges; Revere fixtures and Lumiline lighting.

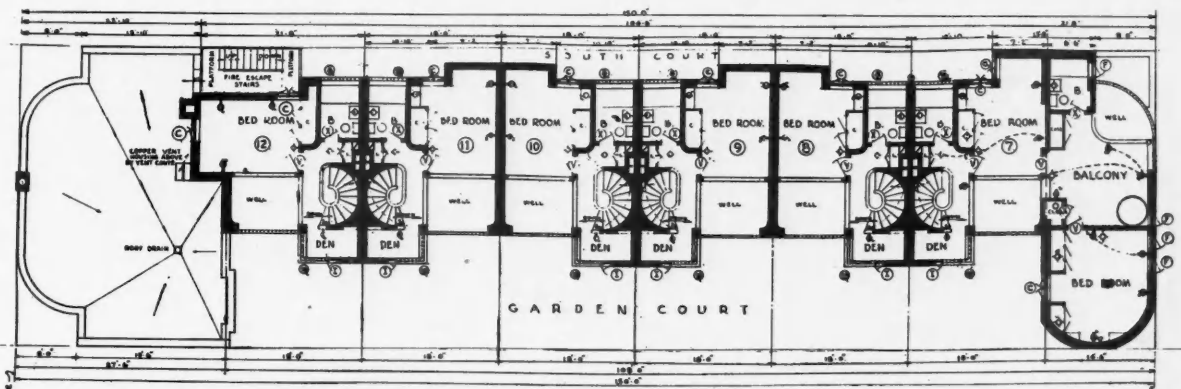


CIRCULAR reinforced brick stairway leading to balcony and upper level apartments as seen from garden court looking toward passageway to the street.

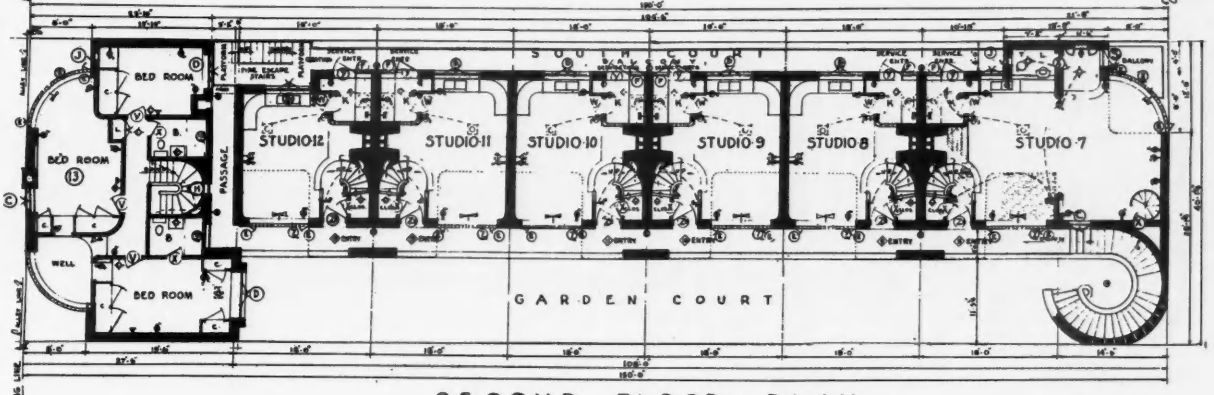
FISHER STUDIO APARTMENT BUILDING IN CHICAGO

FRONT view of building is severely modern; to reach suites it is necessary to pass into the court through iron-gated front entrance. At the right, another court view shows the far end of the structure; the overhangs on the fourth floor contain small dens in the upper apartment. Intake grilles under windows supply air conditioning units

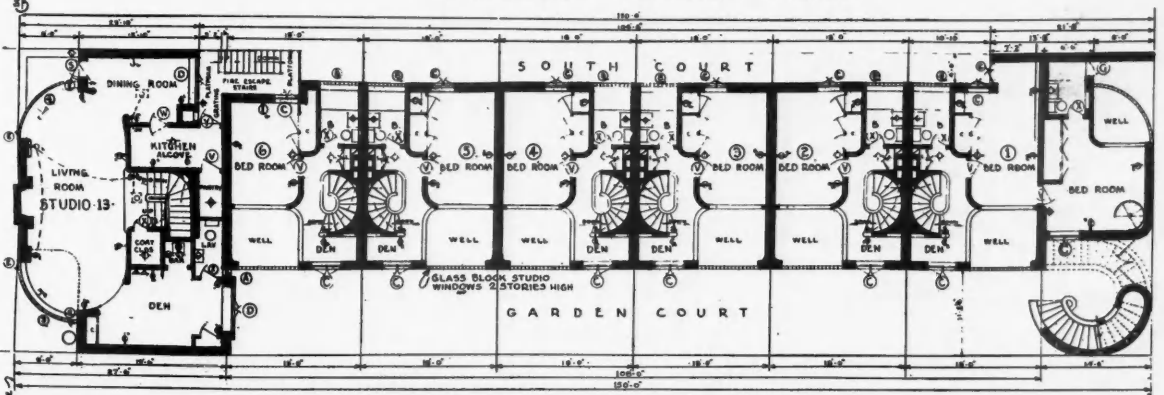




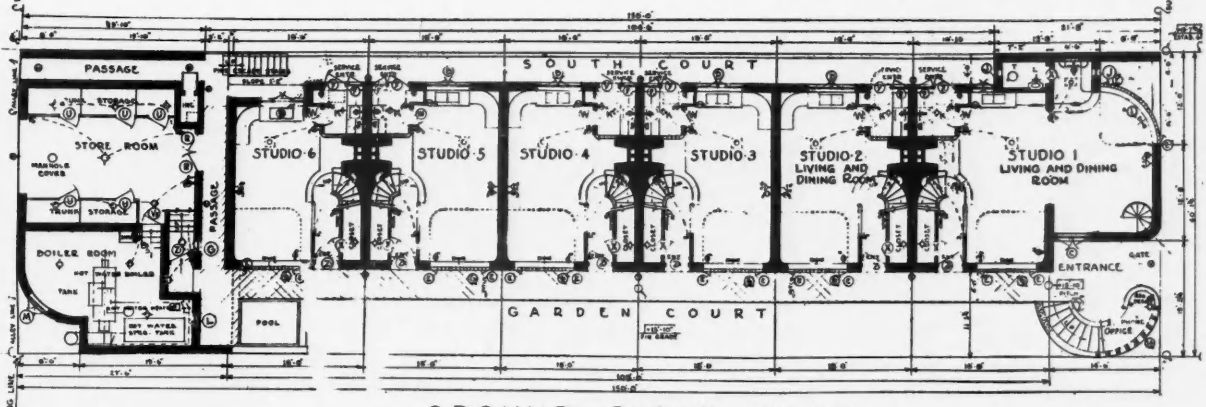
• SECOND FLOOR BALCONY PLAN •



SECOND FLOOR PLAN •



• GROUND FLOOR BALCONY PLAN •



• GROUND FLOOR PLAN •

FLOOR PLANS indicates arrangement of the Fisher Studio Apartment suites; thirteen apartments, each two stories high, occupy four floor levels. Rear apartment (No. 13) is on the second and third floors over the boiler and store rooms. The second floor in all apartments forms a balcony and overlooks a well which is two stories high and is lighted by a large glass block window.

Plan For a Modern Basement

Steady Gains of Oil Burners in Home Heating Field Due to Convenience and Comfort of Fully Automatic Operation

By DANA DODGE CORROUGH

Architect,

and LYMAN M. FORBES

THIS department was launched to acquaint "American Builder" readers with new opportunities in residential basement construction. Those who follow the articles from month to month will understand the proper installation of new mechanical conveniences, and will receive many ideas and suggestions for new uses of materials that will make houses more attractive, more comfortable, and more salable.

The introductory installment in January included architectural illustrations of attractive inside basement entrances and stairways. In February the subject of residential coal stokers was presented in detail, with diagrams showing proper construction of dust-tight coal bins. The March article showed some original outside basement entrances for houses built on sloping ground, and discussed the subject of basement drainage.

The current article presents domestic oil burners. In May this department will show new finishes and striking architectural effects that can be used on basement floors, walls, and ceilings, employing a variety of materials. The June installment will take up the subject of water systems for suburban and country homes, and allied mechanical equipment.

—The Editors.

SALES of oil burners for home heating have increased steadily in recent years. According to the Oil Burner Institute, every branch of the industry is at an all-time high. Domestic oil burner sales during 1936 totaled 197,621 units, a 41.7 per cent increase over 1935, when 139,451 burners were sold, and a 97.9 per cent increase over 1934 sales of 99,812 units. Popularity of oil burners in the home-heating field is largely due to the convenience of fully automatic heat, absence of residue, and the elimination of mechanical faults that were encountered in earlier installations.

Too many houses have been designed and built without regard for some of the basic mechanical requirements of an oil burner installation. An inside open oil storage tank, to comply with Underwriters' requirements, must be ten feet or more from the burner. Too often a house has been completed before the owner, contractor-builder, or architect, discovered to his sorrow that no place had been provided for an inside oil storage tank.

Oil burners have played an important part in making possible the development and popularity of residential basement recreation rooms. Present-day burners are compact, attractively finished in colors, and are fully automatic under all normal conditions.

The latest oil-burning, air conditioning units and boilers are a joy to behold. Colorful, beautifully finished jackets enclose burner, furnace, filters, and circulating fan, or burner and boiler. They are decorative in an attractively furnished recreation room. There is a decided trend toward complete burner-heater units, and several furnace and boiler manufacturers now make heaters for use with oil burners.

Burner-Heater Units Gaining

When a burner is placed in a heater that was designed for another fuel, or possibly designed for another type of burner, some flue adjustments or other compromises may be necessary. Even though the burner operates at maximum efficiency, the furnace or boiler, because of its design, may not retain as much heat as it should. Combined burner-heater units offer a number of special advantages, because the parts are designed to work together. Engineering research assures proper balance and efficient operation under all normal conditions. The fire boxes of both furnaces and boilers provide long heat travel, so as to keep down stack temperatures, and to assure maximum heat transfer. Air conditioning units are equipped with radiating manifolds that pre-heat returning cold air. A popular burner-boiler has a combustion chamber lined with refractory brick that radiates heat to water-backed surfaces. Hot gases then travel through secondary heat-transfer tubes before entering the flue at the bottom of the unit. An automatic heater provides a year-round supply of hot water for domestic use at low cost. Combination units are larger than furnaces or boilers alone, and proper allowance for additional size should be made in plans.

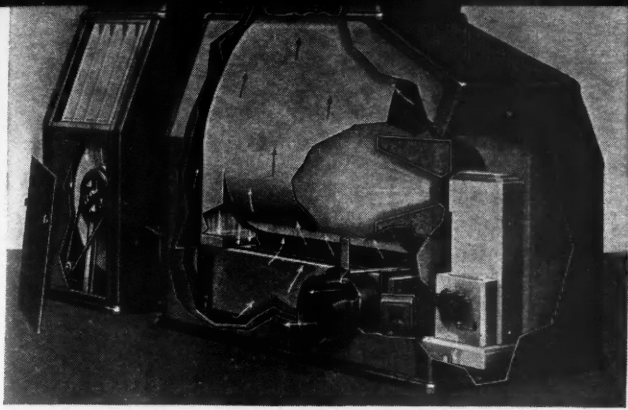
Circulating Pumps Cut Costs

Hot water heating has been greatly improved by introduction of motor-driven pumps in the circulating system. They assure quick heating of all radiators, and have made it possible to use smaller pipes. This has lowered cost of the original installation, and sometimes permits use of a one-pipe system in houses where a conventional two-pipe installation might otherwise be required.

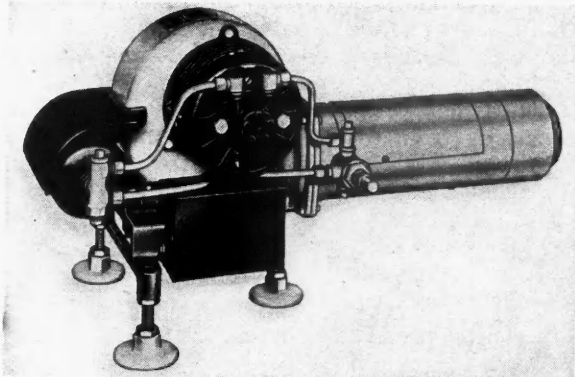
Unbiased experience reports of owners are an especially valuable guide to prospective oil-burner purchasers. A Detroit contract-builder, who erects houses ranging in price from \$6,500 to \$13,500, installs oil-burning winter air conditioning units exclusively. He makes arrangements with each owner for whom he builds to keep an exact record of fuel costs for several years. Some owners reported bills as low as \$65.00 and \$110.00 for a severe season. These reports from owners make a very favorable impression on prospects. They show the efficiency and economy of modern oil burners, and the builder's skillful use of calking and insulation.

OIL BURNER ROUND-UP

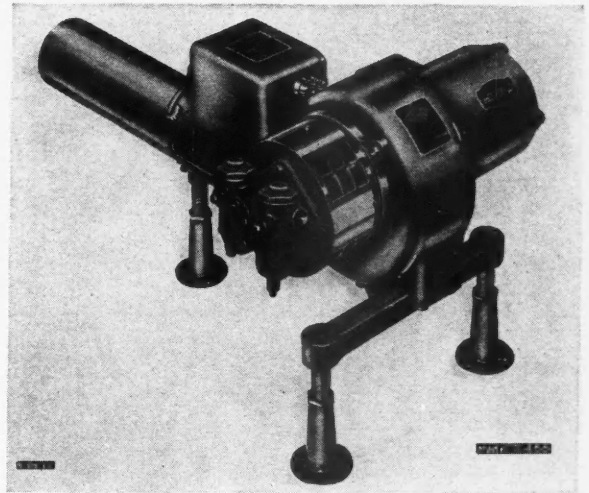
Presenting pictures, trade names, sources, and salient features of some leading domestic oil burners



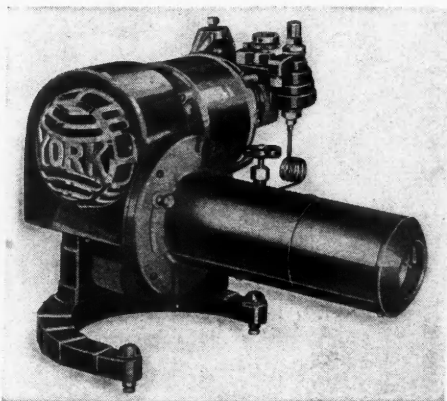
GAR-WOOD Model 102 Tempered-Aire automatic heating and air-conditioning unit, produced by Gar Wood Industries, Inc., Detroit, is made in five types and sizes. Total heating surface 90 square feet; filter area, 34 square feet.



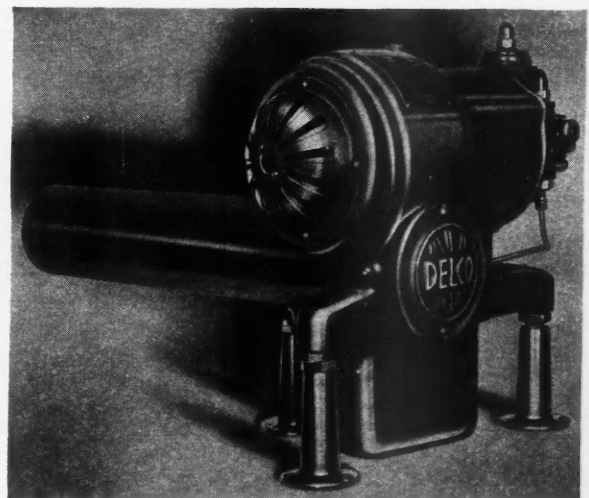
GILBARCO Model GB-2 burner, made by Gilbert & Barker Manufacturing Company, Springfield, Mass. Its flexible flame can be adjusted to fit any shape fire box, and all types of heating systems.



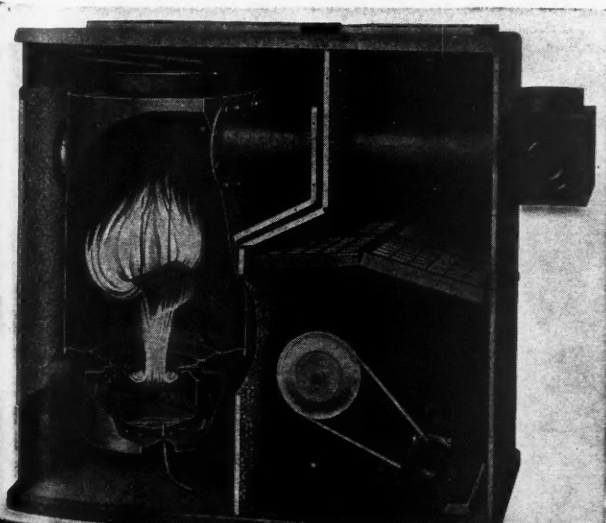
KELVINATOR conversion type burner, made by Kelvinator Division, Nash-Kelvinator Corporation, Detroit and New York City. Also available in a compact, attractively finished boiler-burner unit.



SIMPLICITY of design is featured in this compact York oil burner, made by the York Oil Burner Company, Inc., York, Pa.

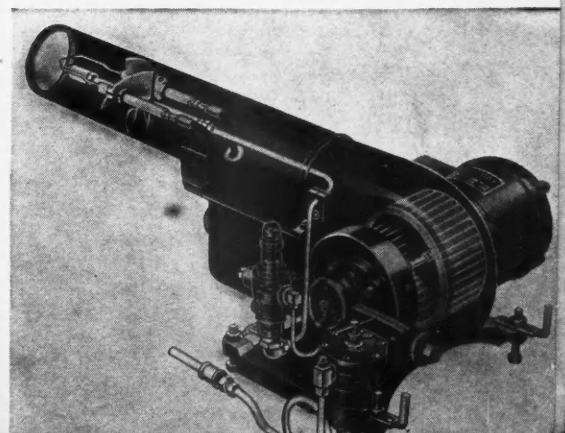


DELCO oil burner, made by the Delco-Frigidaire Division, General Motors Sales Corporation, Dayton, O., has a "thin-mix" fuel control and a "heat-warder" combustion chamber.



LEFT: SUPERFEX oil-burning air-conditioning unit, made by the Perfection Stove Company, Cleveland, Ohio. This high-low, gravity, gasifying burner operates with no mechanical parts, other than an automatic oil flow control.

RIGHT: Phantom view of Quiet May oil burner, made by the May Oil Burner Corporation, Baltimore, Md.



There are three classes of oil burners known as "gun," "rotary," and "gravity gasifying" types. The gun-type burner sprays oil into a whirling air column that carries it to the flame, where it is vaporized and burned in suspension. The atomized oil is ignited automatically when the burner starts, by a high-tension spark between two metallic "points." Approximately 95 per cent of present-day burners are of the gun type.

Rotary and Gravity Burners

Rotary burners are divided into two classes, known as "sunflower" and "wall" types, according to the type of flame. The former throws an oil spray from a rapidly revolving cup or disc. Oil is atomized and burned on a self-induced cushion of air, against a curved refractory bowl. The wall type burner also sprays oil from a revolving disc. Spray is carried on a cushion of air to a "fire ring" where it is atomized and burned. Projecting fins on the rotating discs of these burners set up a movement of air that "floats" the oil spray and helps combustion, but they are somewhat dependent on chimney draft.

Gravity gasifying burners, except for an automatic electric control that regulates the flow of oil, are non-mechanical. Heat of the flame vaporizes the fuel for combustion. Oil flows into an enclosed metal bowl at the base of the burner, and is vaporized by heat. This vapor enters the fire box through jets and burns against a baffle, in a large suspended flame that does not touch sides of the combustion chamber. When combined with a circulating fan and filters, a small blower supplies air for combustion.

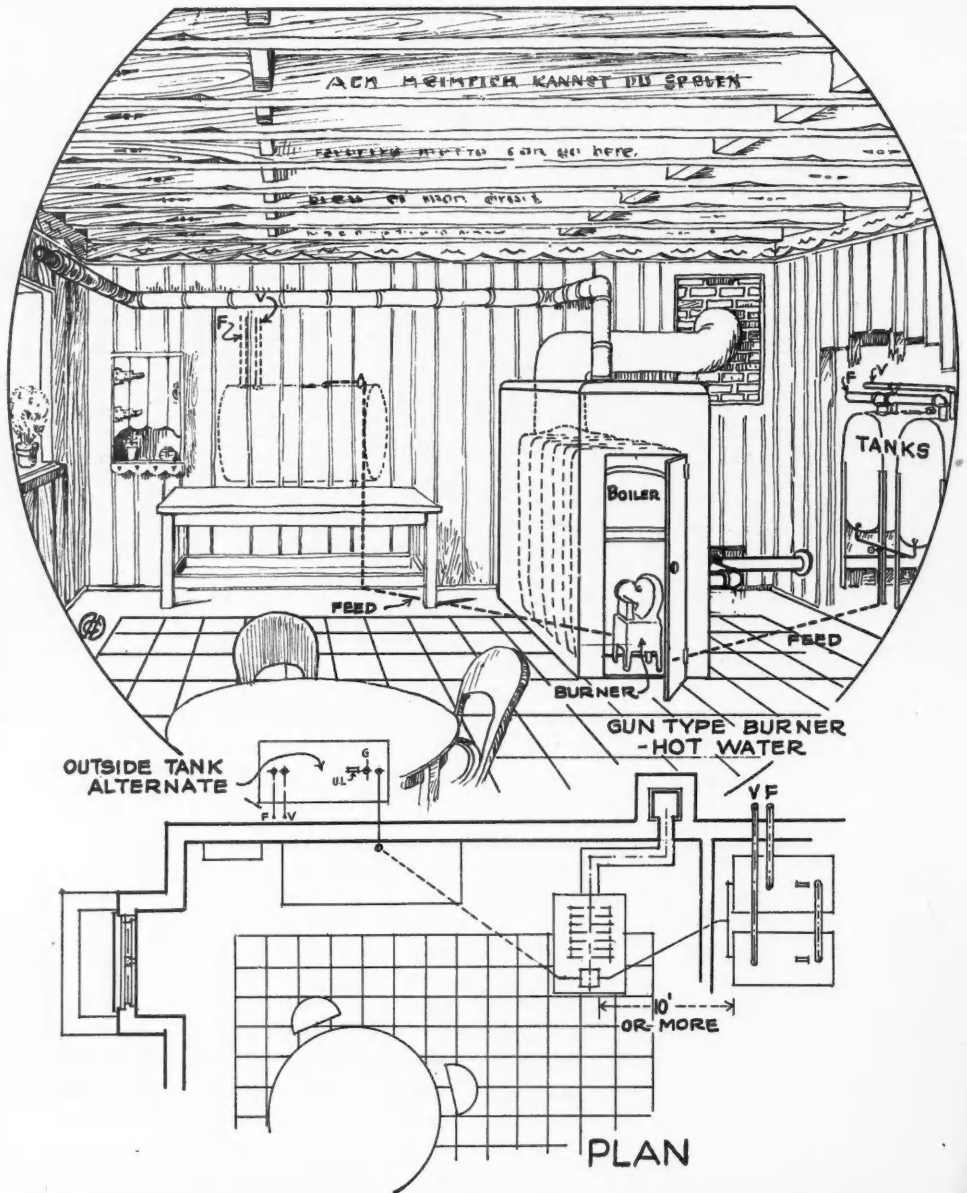
Burners that carry an Underwriters' label will be accepted by local building commissioners without safety tests. Underwriters pass on safety only, so the label does not necessarily mean a good or efficient burner. Owners should be cautioned to have their burners looked over each year by a reliable service man. The expense is small and annual servicing eliminates faulty performance of the burner.

The burner should be on an individual wiring circuit with a separate fuse. Overloading may result when it is added to a light circuit, and may cause occasional blown fuses. Wiring of the burner circuit

should be in flexible armor, or in pipe, according to local code requirements.

There is considerable variance in local ordinances governing oil storage tanks. Where there is no local code, builders could follow the model ordinance prepared by the National Fire Protection Association of Boston, Massachusetts. The following outline covers Underwriters' requirements, and is the general practice today where there is municipal regulation. Oil storage tanks may be placed inside or outside the basement. Earlier building codes permitted the installation of only one 275-gallon tank inside the basement. Many present codes permit the installation of two 275-gallon inside tanks, equipped with a three-way valve, so that only one tank can be emptied at a time. This prevents the contents of both tanks from flowing into the basement in the event a feed line breaks, and also permits an empty tank to be filled while the other is in use. An inside tank of 550-gallons or more capacity, (or two tanks exceeding 275 gallons each) should be enclosed by a masonry retaining wall, separated from the tank by about six inches, and imbedded in sand. This keeps oil from running over the basement floor from a tank leak. Both inside and outside tanks should carry an Underwriters' label. Tanks should be equipped with a gauge.

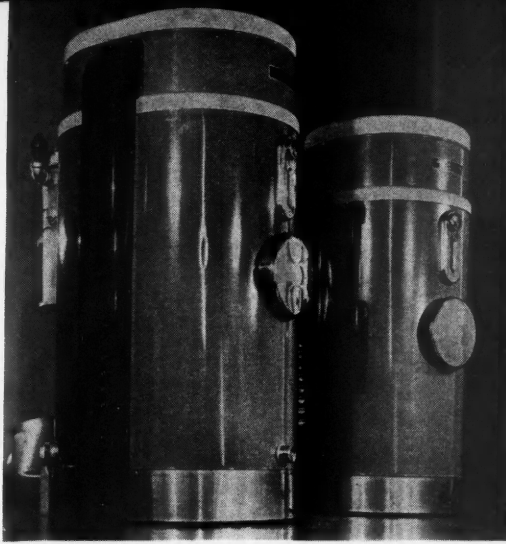
A vent pipe should extend through an outside wall and the exposed end should be screened. The open end of



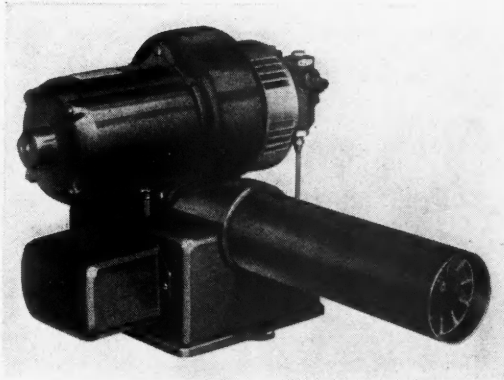
WOOD-PANELED walls of recreation room have been cut away at right to show location of inside oil-storage tanks. Dotted lines on the back wall indicate suitable location of an outside storage tank. Dotted lines on the floor show oil feed lines imbedded in poured concrete. Note decorative lettering on ceiling joist.

OIL BURNER ROUND-UP

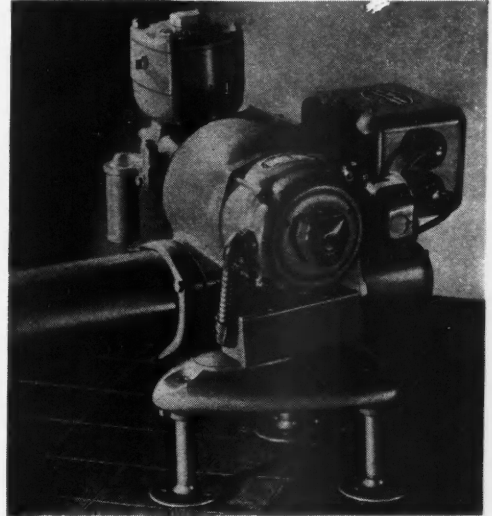
Presenting pictures, trade names, sources, and salient features of some leading domestic oil burners



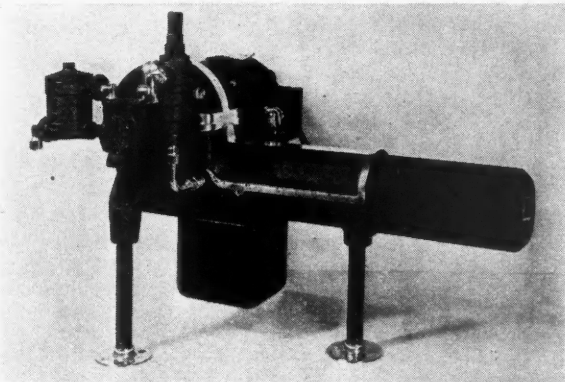
GENERAL ELECTRIC oil furnace, a down-draft burner in an insulated boiler. A secondary air duct is provided at bottom of the combustion chamber.



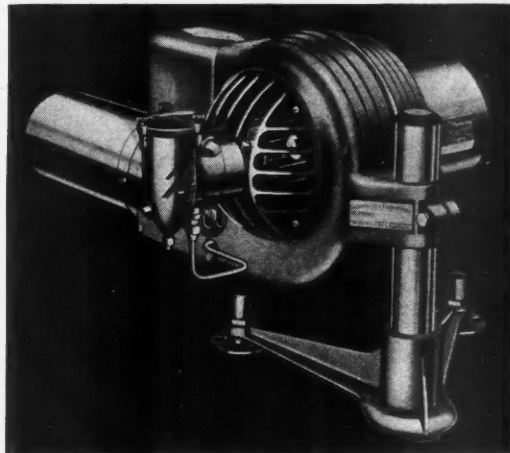
PETRO-NOKOL Model P pressure-type burner, made by Petroleum Heat and Power Company, Stamford, Conn., which also produces automatic boilers.



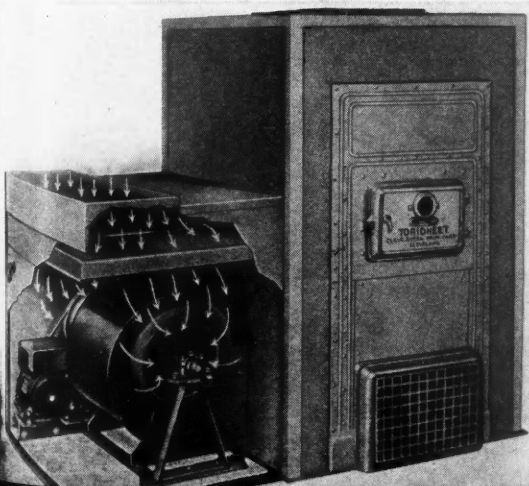
WILLIAMS OIL-O-MATIC burner, made by the Williams Oil-O-Matic Heating Corporation, Bloomington, Ill., one of the oil burner pioneers.



NORGE burner, made by the Norge Heating and Conditioning Division, Borg-Warner Corporation, Detroit; also available in a complete filtering, humidifying, air-circulating unit, with automatic domestic hot-water system.

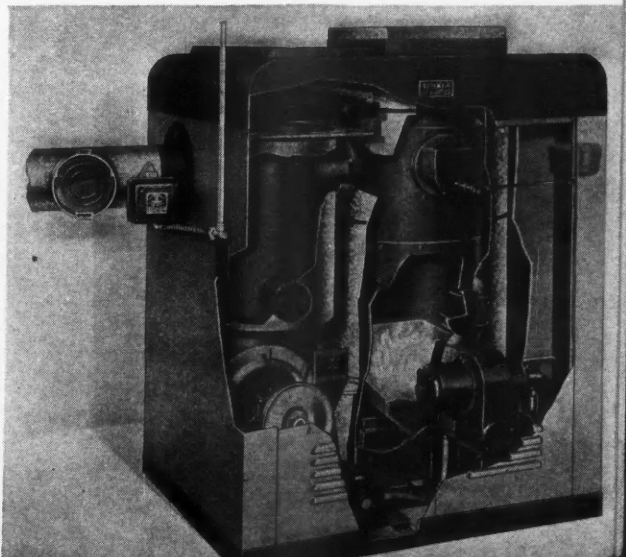


NU-WAY "Genii" Model LD-35 burner, made by the Nu-Way Corporation, Rock Island, Illinois; also used in the company's horizontal boiler-burner unit, known as the "Genii" automatic hot water generator.



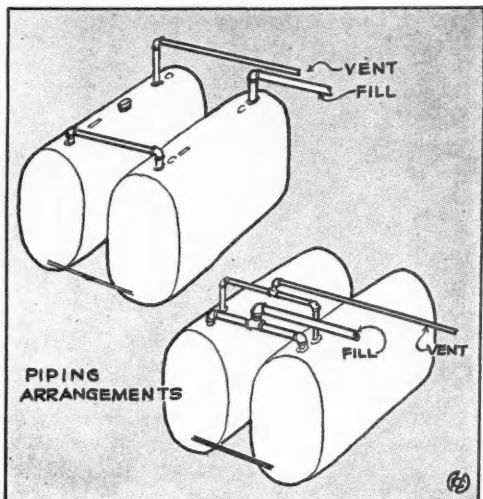
LEFT: TORIDHEET oil-burning air conditioner, made by Cleveland Steel Products Corporation, of Cleveland, Ohio. Rotary wall-flame burner is factory-assembled in a cast-iron frame.

RIGHT: TIMKEN air-conditioning oilfurnace, Model GC20-A, fired with pressure-type burner, made by the Timken-Detroit Axle Company, Detroit, Mich.



the vent should be at least three feet from an outside window or door. The supply line through which the tank is filled, should be equipped with a locked cap.

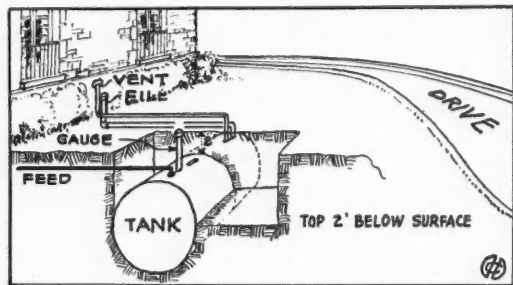
Outside tanks should be buried two feet below the surface. Do not place a cinder fill around oil storage tanks. Seepage of surface water forms sulphuric acid when it comes in contact with cinders, and will quickly eat holes in storage tanks. A newly installed storage tank should be filled the moment it has been placed in the ground. An empty tank will "float" when placed under loose dirt, and is very hard to get back in place. Underground tanks should be equipped with swing joints to take up slight natural movements.



THIS piping diagram shows two ways in which double tanks can be joined, with proper connections for vent and fill lines.

The feed line from an outside tank should be equipped with an anti-syphon valve where it comes through the foundation wall. It prevents contents of the tank from being syphoned out on to the basement floor, if the line breaks or leaks. A check valve is placed in the feed line close to the nozzle to keep oil from drawing back when the burner stops. Introduction of air near the burner tip might cause it to mis-fire when it starts up again.

Present oil tank trucks are equipped with 100 feet of hose so that, if necessary, they can stand at the front curb and fill a storage tank in back of a house. Trucks without an extension hose may have to stand on a driveway close to the house. A tank-truck loaded with oil may weigh anywhere from five to ten tons. A substantial driveway is particularly important where a fill line is close to a basement foundation wall. Unless weight of the truck is properly supported, it may set up enough pressure underground to crack the wall. End of the fill line should be far enough above ground to keep out water,

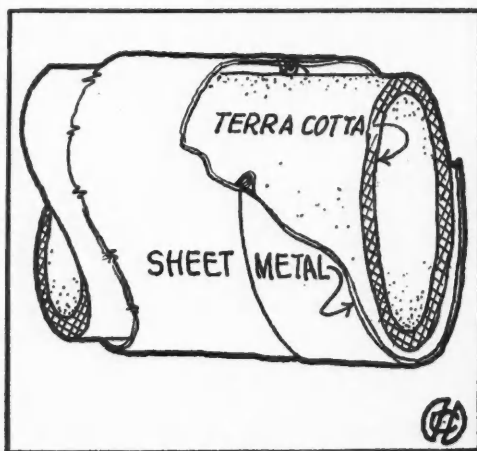


OUTSIDE storage tanks should be two feet below the surface and should be filled before soil is replaced.

and at least three feet from a door or window.

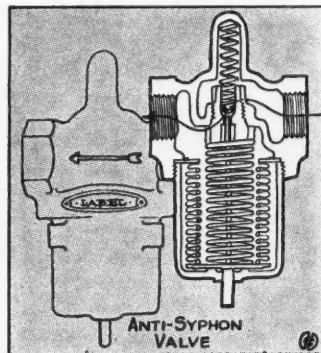
An oil burner starts or stops at the bidding of a thermostat and several very ingenious limit controls that protect against fuel-supply or ignition failures, and against excessive temperatures. Modern controls operate on the principle that an electrical circuit should be completed to start the burner, and the same circuit broken to stop it. If a burner is started and fails to ignite properly, it is immediately shut off, and the control must be set by hand before it will start again. If combustion stops while the burner is operating, it is stopped immediately. It starts again automatically, but if operation is faulty, it will stop until the failure is investigated.

Limit controls that operate on the same principle as a thermostat are available for warm air, hot water, steam, or vapor systems. A low water cut-off is available for boilers. It shuts off the burner when the water level is too low. Others are equipped with automatic refillers. One limit control, known as a "stackstat," is placed in



ABOVE: Terra-cotta liner prolongs life of flue pipes. Sheet metal shell is made with inside seams, and liner is cemented at each joint.

BELOW: Anti-syphon valve, placed in highest point of feed line between storage tanks and burner. In the event of a leak it prevents contents of tank being syphoned on to the basement floor.



the smoke-pipe or flue pipe, as close to the fire-box as possible. It shuts down the burner in the event the entire system is overheating.

Whereas the burner operates on a circuit of the same voltage as the house lighting system, the thermostat and protective controls usually operate on separate low-voltage circuits through a transformer. This greatly simplifies the wiring installation by making it unnecessary, though advisable, to use armored wire in these circuits.

Draft controls are placed in furnace or boiler smoke pipes when variable draft conditions are found. These controls are ingeniously suspended and counter-balanced so as to admit air and reduce size of the flue pipe opening to offset pressure changes at the chimney mouth.

Frequent starting and stopping of an oil burner may cause moisture to condense and collect in the breeching flue. This moisture combines with gases of combustion to form an acid that corrodes a sheet metal flue. One way of overcoming this deterioration is to use a terra-cotta interlining. The sheet metal casing is formed with inside seams to keep the metal from direct contact with the lining. (See illustration.)

Oil spots on a concrete floor can be absorbed by sprinkling ground asbestos on the surface. In a short time the asbestos will take up all of the oil and will remove the spot.

New Style for Old Apartments

THOUSANDS of apartment buildings in good neighborhoods, with the potentialities of drawing good rents, are falling to successively lower rent levels and attracting less desirable tenants because their owners ignore the necessity for keeping their buildings, exterior and interior, right up to 1937 standards. An apartment owner in Cleveland Heights, Ohio, last summer gave his building a casual renovizing on the exterior and was about to give the suites the usual perfunctory repapering and painting when Mr. and Mrs. Wilbur Henry Adams, well known commercial artists, who occupied one of the suites, offered to show what could be accomplished at surprisingly low cost by thorough modernizing. Their own suite was used for the experiment.

The old fashioned mouldings were torn off. Panels in the dining room were ripped out. Overhead lighting fixtures were removed. The radiators were covered. Venetian blinds were installed.

The fireplace was completely altered by squaring out the left hand wall jog with wallboard and building a glass brick corner at the other side. The wallboard used, Masonite Quatrboard, was nailed to studs on 16" centers right over one of the windows at the side of the fireplace, while a floor-length drape went over the other window. Joints between the 4' x 8' sheets were filled with Swedish putty, then buckram taped and the whole surface papered, giving a clean-cut modern appearance. Open bookshelves recessed at one corner



BEFORE: Typical old-style apartment interior with jutting fireplace and side windows; panelled dining room; bromidic ceiling fixtures.

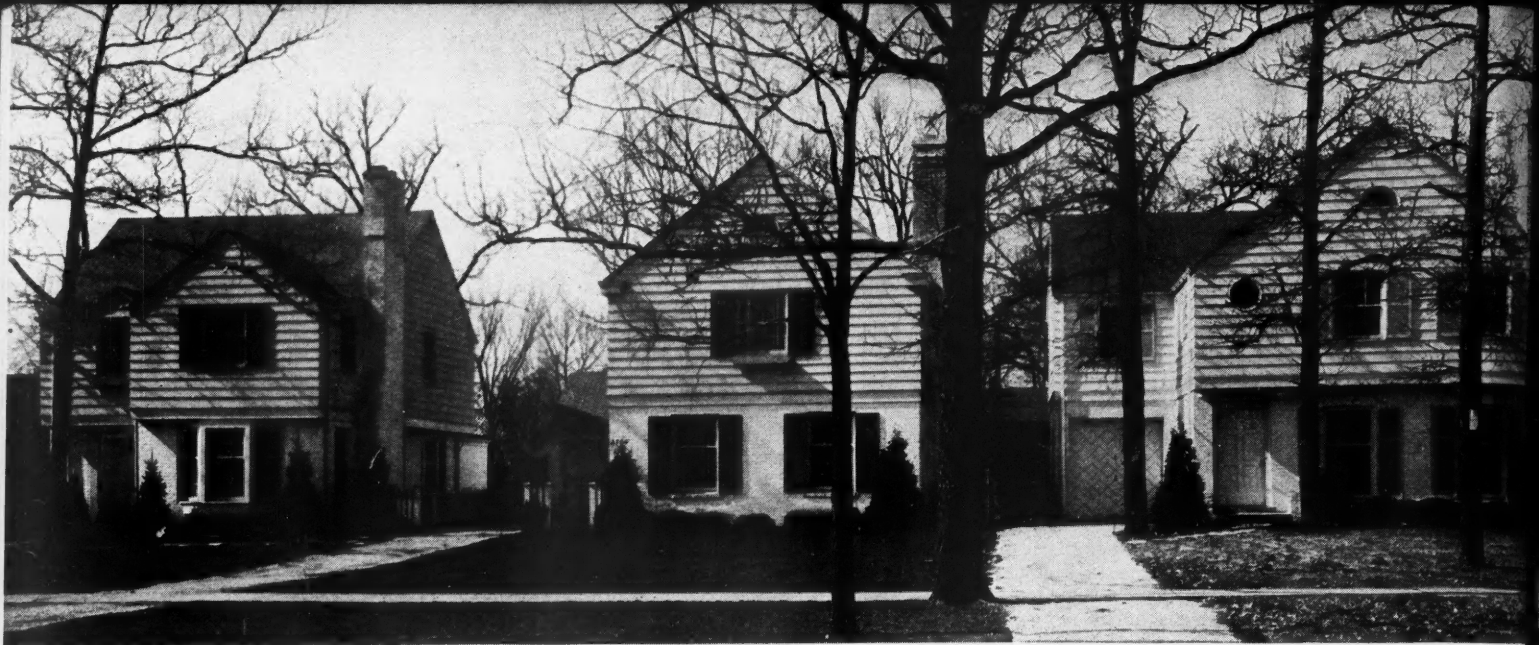
make an effective color spot. Indirect lighting fixtures were put in. The floors were carpeted, functional modern furniture put in, and the 1937 renaissance in the Adams apartment was pronounced complete.

The total cost of the entire modernization, including the work on the fireplace, the Owens-Illinois glass bricks, the Venetian blinds, radiator covers, painting and papering, new sanitary fixtures, and all necessary labor was approximately \$500.

Impressed by the almost miraculous change, and even more impressed by the low cost figures and short time the job took, the building owner had every suite modernized in corresponding fashion.

AFTER:
Cleveland
Apartment
Re-styled.





Group Home Planning Cuts Cost and Increases Values

Irvin A. Blietz, Chicago, Demonstrates Advantages of Related Planning Used in Six Houses He Recently Completed

LARGE scale community planning projects which have been successfully developed over a period of years have established the benefits of group building where the units are co-ordinated. On the other hand, many streets of homes individually built show no thought as to the proper relation of each house to the neighboring property. All too frequently a house is erected between two present structures which not only clashes in exterior design but also cuts off light and air from its neighbors and thereby decreases the value of all three.

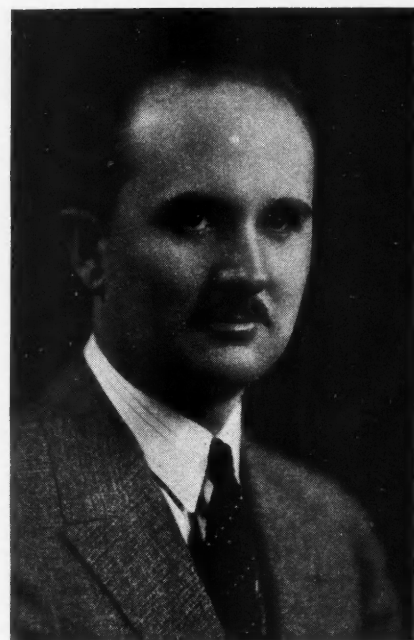
The group of six modern homes illustrated above and recently completed in Evanston, Ill., by the firm of Irvin A. Blietz, Chicago builders and designers, demonstrates the advantages of related planning on a small scale to produce greater and more stable housing values.

The property on which they were erected is in a built-up section of this North Shore suburb and consisted of a plot about 265 feet front by 180 feet deep which had been divided into five 53-foot lots. A central location, together with numerous oak trees, made the site very desirable but likewise increased the individual lot cost to a figure out of proper proportion to the value of the type of house for this site which the surrounding property would warrant.

To overcome this, the plot was redivided into six 44-foot sites. Then the problem, as Mr. Blietz has expressed it, was one of "planning so that each house would have as much light and air as has the average house on a fifty-to sixty-foot lot, and trying to get the biggest house value in living area that each dollar would buy without sacrificing quality."

How the houses were designed and placed on the lots is illustrated in the plans on the opposite page. The builder formerly did extensive work in the apartment building

IRVIN A. BLIETZ, Chicago, builder of the attractive group of houses above.



field and consequently has a background of experience in assembling living units. The houses are planned so that, although only 5 feet from the side lot lines, the attached garages are staggered to give an open area between and practically all main rooms have one open exposure to the front or rear. Mid-winter photos above show that sunlight reaches southern side elevations:

Building line is 50 feet from the sidewalk which in turn is 40 feet inside the curb and the distance to the rear lot line from the back of the houses averages about 100 feet, so there is a broad expanse of yard in either direction. A further point of interest is the way in which advantage was taken of the fine oaks in placing the houses.

Mr. Blietz believes that houses should be of similar type in such a development, but that each should be different in character. The Early American and Colonial styles have provided plenty of variety in the exterior design of these houses, which are related by such characteristics as trim picket fenced dooryards, wall and roof treatment, windows and overhanging second floors, the latter also allowing for larger room sizes without increasing basement area. For example, house No. 1 (see construction details and plans on next two pages) has approximately 450 cu. ft. of space added to second floor by the three overhangs; the bedrooms and closets would



GROUP of houses on 44-foot lots carefully planned for maximum light and air; below, plot plan indicates placing of houses.

not be nearly as generous in size without this increase in cubage.

Mr. Blietz offers a complete building service—designing, building and financing. These six houses carry FHA 20-year amortized mortgages. He points out that in developing houses as a group there are certain resulting economies from planning, building and selling standpoints. This project offers values in attractive, well designed homes for comfortable living which compare very favorably with other houses of their price class in the vicinity, a high cost section of the country; further, it adequately shows that proper planning can reduce land cost through narrower lots without crowding.

Typical materials and equipment used in this group are listed in the following outline specifications:

FOUNDATION—12" poured concrete, asphalted, placed on 24" footings; basement floor, 4" concrete over 6" cinders.

FRAMING—Kiln dried precision lumber; 2" x 10" Y.P. 1st and 2nd fl. joists; 2" x 6" ceiling joists and rafters.

EXTERIOR WALLS—Common brick painted with Tamtex white below, wide clapboard above, over 1" x 6" D&M Y.P. sheathing and paper.

ROOF—Heavy 3-in-1 asphalt shingles over 15 lb. felt.

FLOORS—13/16" x 2 3/4" face clear red oak throughout except Armstrong linoleum in kitchen and bath.

INSULATION—Sidewalls, 1" Balsam-Wool; 2nd fl. ceiling 4" U.S.G. Rockwool.

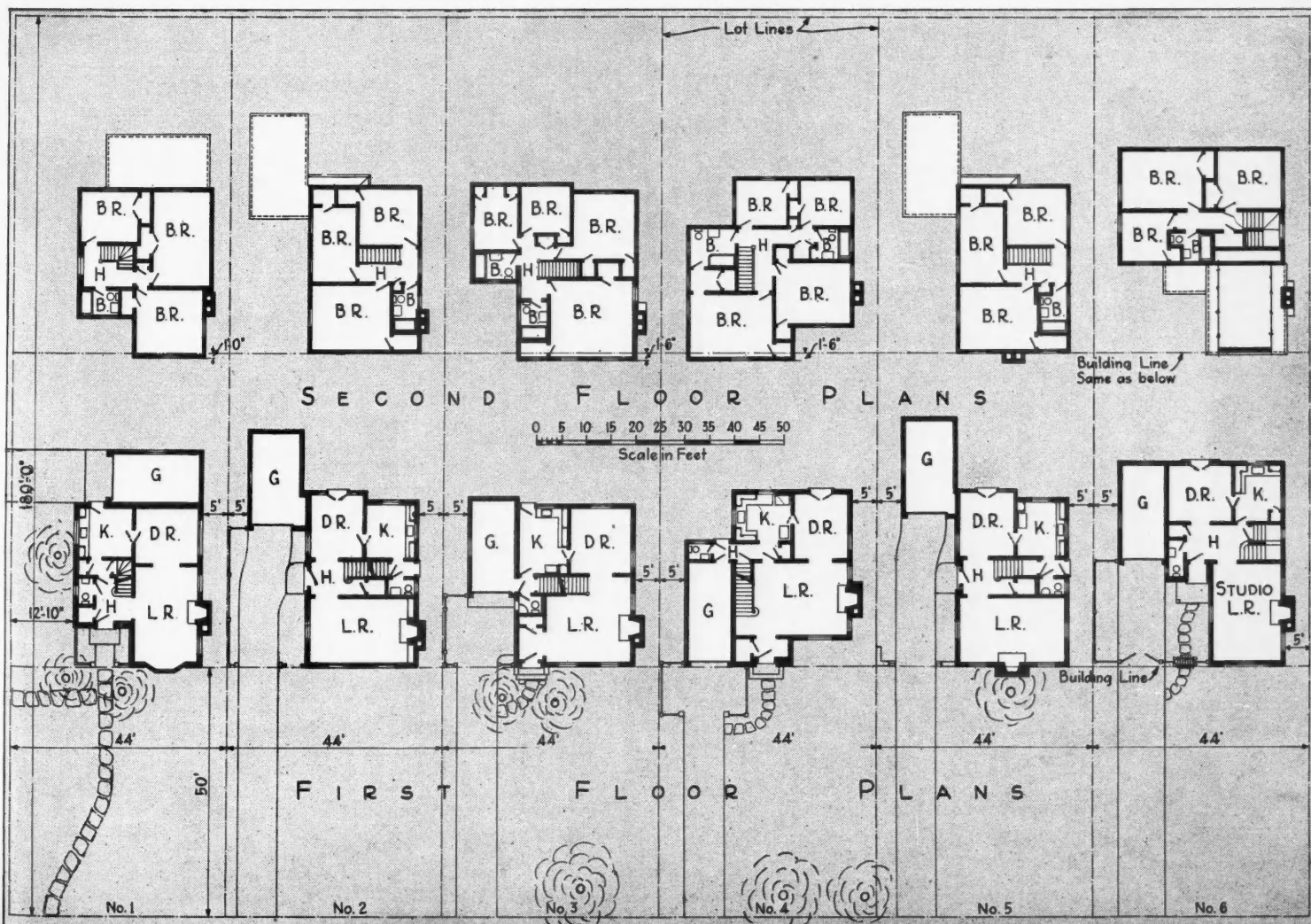
PLASTER—3-coat on U.S.G. Rocklath.

PLUMBING—Standard fixtures.

HEATING—Rudy gas-fired winter conditioning.

GLAZING—American Lustraglass.

GARAGE DOORS—Barber-Colman upward-acting type.

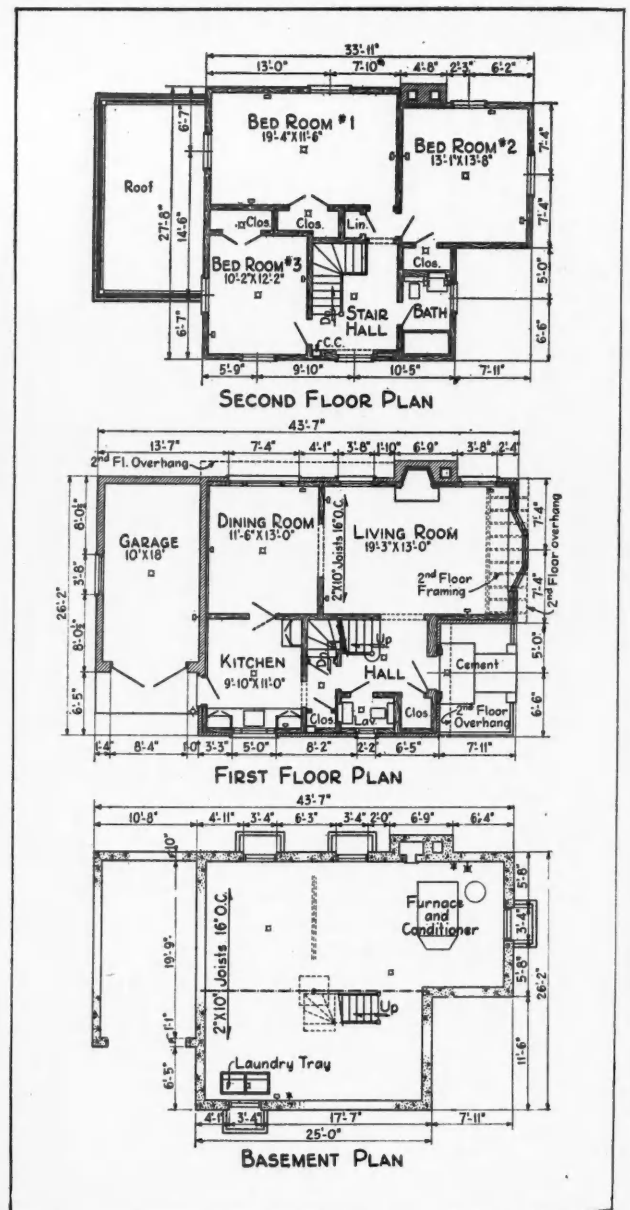


LEFT: Side view of house No. 1 of a group of six homes which were recently completed for sale in Evanston, Ill., by Irvin A. Blietz, Chicago builder.



BELOW: At left, attractive front entrance is well detailed; white picket fence encloses trim dooryard. Good interior arrangement is shown in the floor plans.

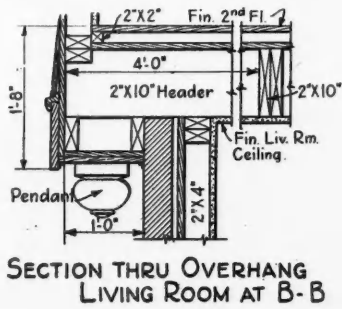
Details of House No. 1
in Group Project Described
on Pages 94 and 95
Irvin A. Blietz, Designer & Builder



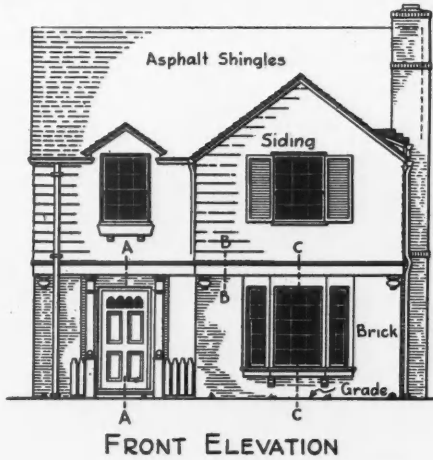
RIGHT: Three second floor overhangs add considerable floor area where it is useful, and give interest to the design. Building line at first floor is broken by projecting living room bay and similar features on the other houses.



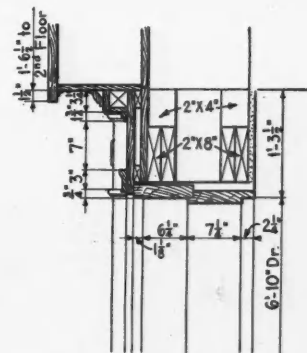
BELOW: Construction details of house No. 1 indicate framing at cross sections through main entrance, living room overhang and bay as noted on front elevation. The joist framing of the latter detail appears on the first floor plan.



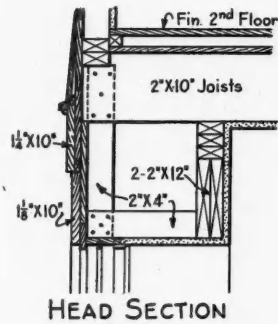
SECTION THRU OVERHANG LIVING ROOM AT B-B



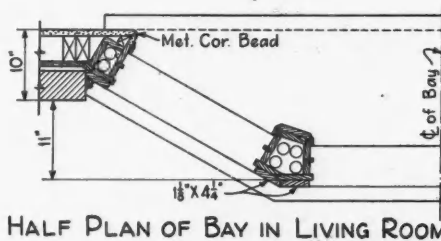
FRONT ELEVATION



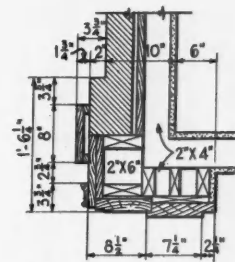
HEAD SECTION



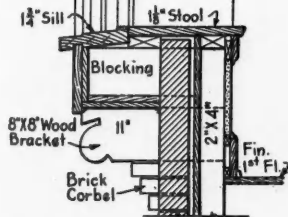
HEAD SECTION



HALF PLAN OF BAY IN LIVING ROOM

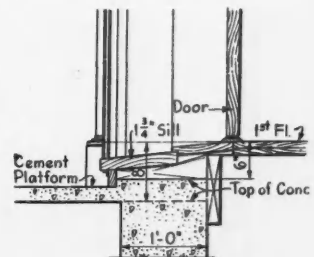


JAMB SECTION



SILL SECTION THRU LIVING ROOM BAY AT C-C

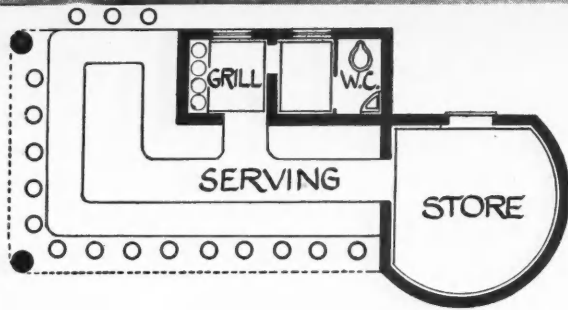
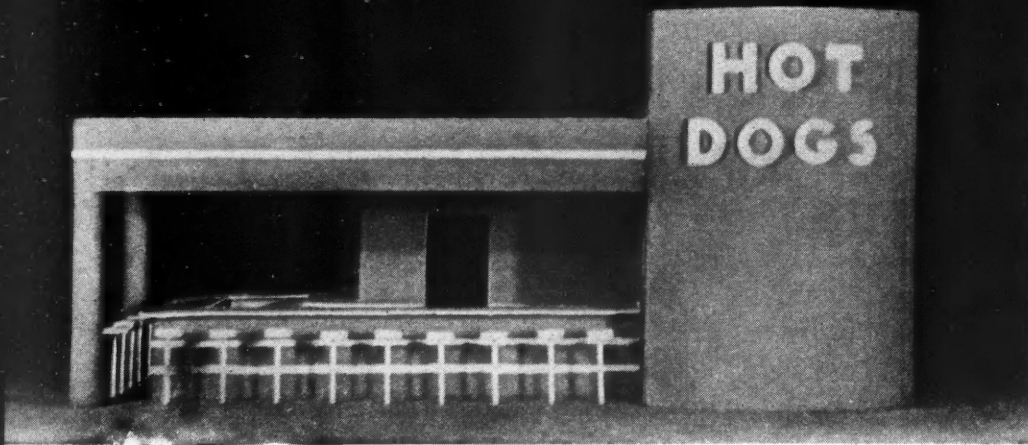
SILL SECTION AT C-C SHOWS BAY SUPPORTED ON THREE-COURSE BRICK CORBELS AND WOODEN BRACKETS; TWO 2x12's CARRY LOAD ACROSS INSIDE FACE AT THE HEAD SECTION. 2x10 HEADERS ARE 4 FEET LONG AS SHOWN IN SECTION AT B-B. FRONT ENTRANCE SILL, JAMB AND HEAD SECTIONS THROUGH A-A INDICATE FRAMING FOR RECESSED DOORWAY AND PROTECTING OVERHANG.



SILL SECTION A-A MAIN ENTRANCE DOOR

1939 World's Fair

Hot Dog



PLAN 'A'.

SCALE IN FEET
0 1 2 3 4 5 6 7 8

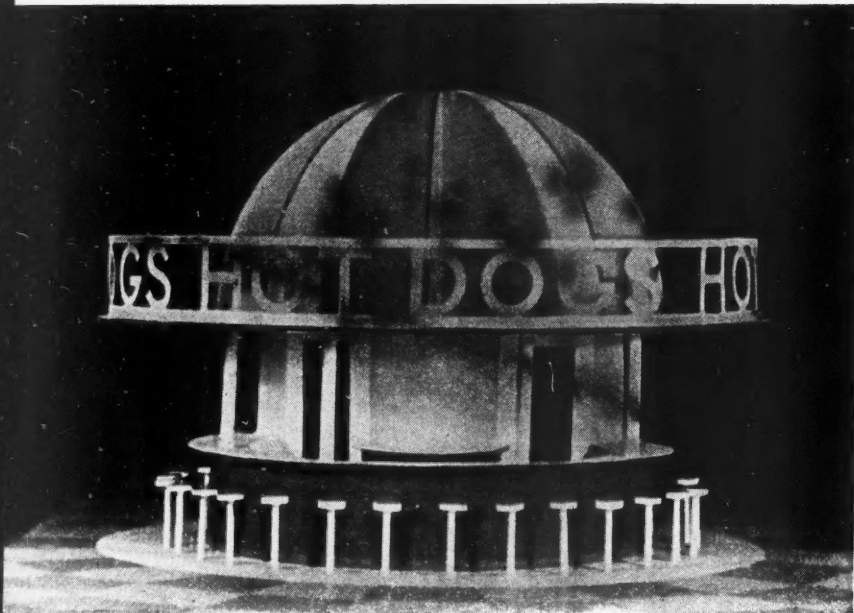
L.R.

TYPE A is compact, efficient, with good storage in the rounded tower at right.

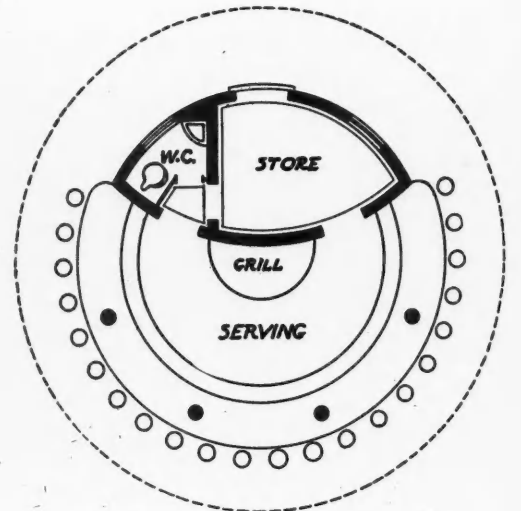
THESE interesting "100 percent American" model hot dog stands were designed by students of New York's Cooper Union for New York

City's 1939 World's Fair. The models were designed and built under the direction of Esmond Shaw, associate director of the Union's School of Art, who is an experienced architect.

Shaw describes the models as "100 percent American" because they are built from actual study of American hot dog stands. They are practical in design, being laid out to serve the greatest number of customers with the fewest possible attendants. The designs are modern and colorful and are done in white, yellow, red, green, silver and black. The models were built carefully to scale, complete with fittings and equipment as can be seen in the illustrations.



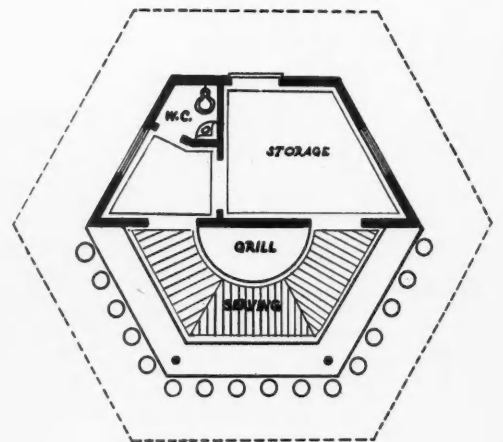
TYPE B, above, uses circular plan with grill in center. TYPE C, below, features the hexagonal plan with good storage.



PLAN 'B'

SCALE IN FEET
1 2 3 4 5 6 7 8 9 0

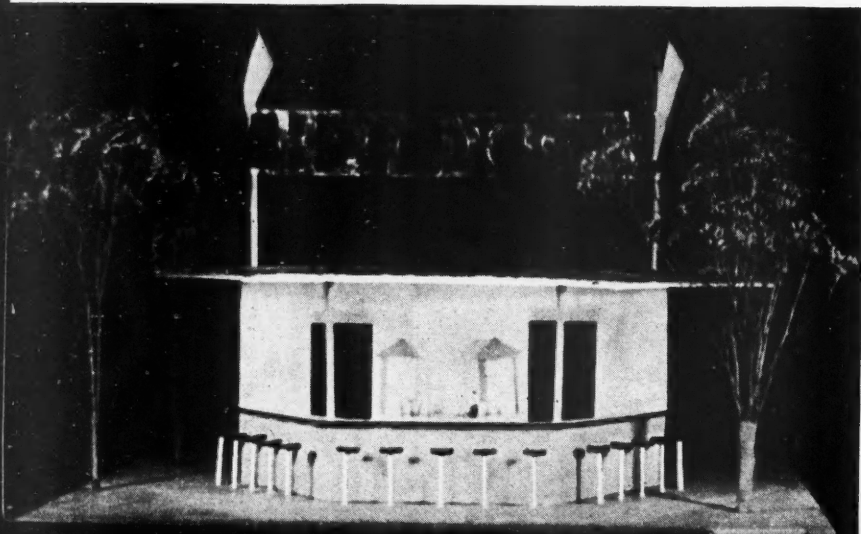
M.T.



PLAN 'C'.

SCALE IN FEET

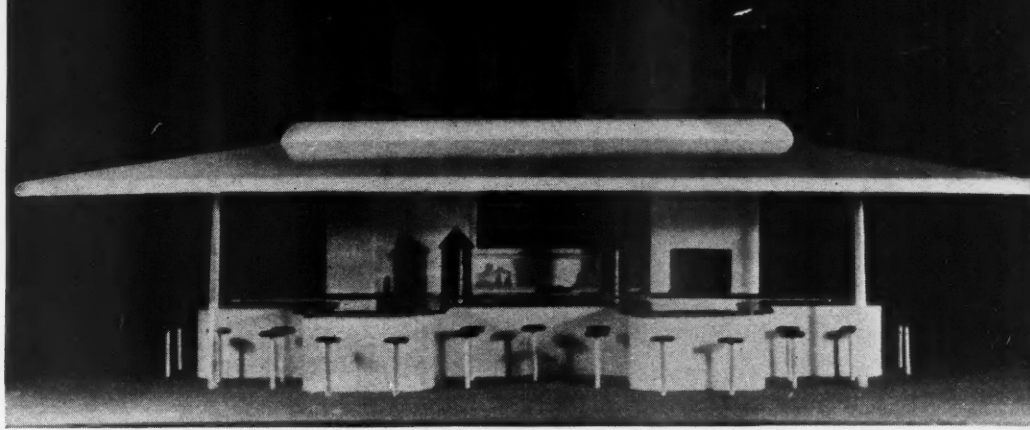
L.S.



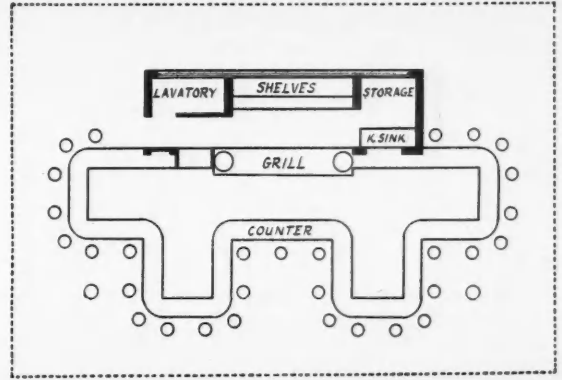
Stands

This is just one illustration of the excellent work being done by Cooper Union when training students for practical work in the industry. The four-year course also includes comprehensive training in building construction, architectural and related subjects.

The small concession stands at Chicago's Century of Progress Exposition, sounding a fresh new note in sales pavilion design, quickly caught on with wayside stand proprietors from coast to coast and a new era in roadside building was under way. These Cooper Union designs, created for the 1939 New York City's World's Fair, carry the Century of Progress trend a step further. They doubtless will be widely imitated. By using plywood and sheet metal, the smoothly curved surfaces suggested in these designs can be easily achieved wherever up-to-date building materials are sold.



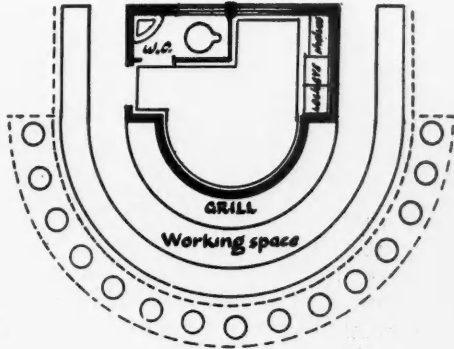
TYPE D serves maximum number, has a good modern design and layout.



PLAN 'D'

SCALE IN FEET

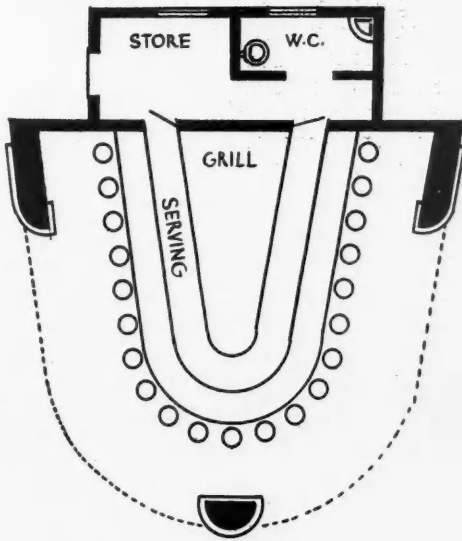
R.K.M



Plan E



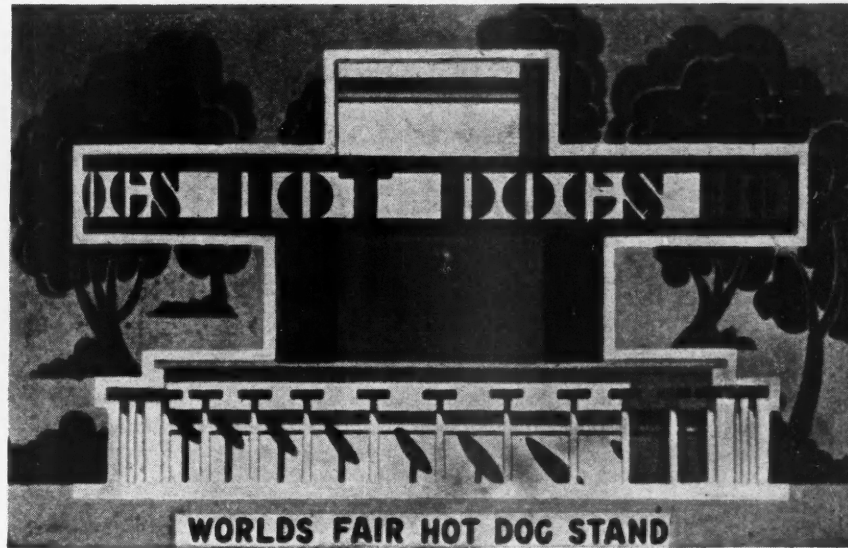
R.D.



PLAN 'F'

SCALE IN FEET

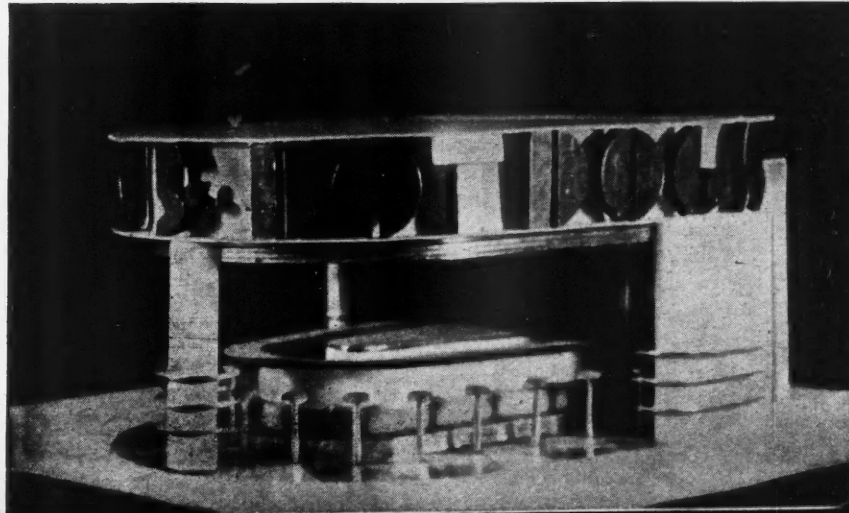
A.66.



WORLD'S FAIR HOT DOG STAND

TYPE E is built in semicircle in compact fashion and is striking in its design.

TYPE F has a practical horseshoe plan.





SLANT CUTS and compound mitres are done easily, quickly and accurately with the power saw saving time and money.

Cutting Costs With Power Saws

Some Further Practical Pointers on Methods that Save Time and Money. Sawing Jack Rafters, Studing, Flooring, Dadoing

MUCH time and money can be saved in cutting rafters with a power saw, using a guide for the slant cuts as illustrated in Figure 1. This guide is made from a block of 2" x 8" or 2" x 10" which is cut to the exact required pitch on one end. A piece of 1" x 3" is nailed on one side of it as indicated in the drawing, so that it is parallel to the cut and the distance of the width of the base of the power saw from it. A number of the rafters to be cut are piled evenly upon each other, and the guide is tacked lightly to the top piece, keeping the edge even with the cut to be made. It then acts as a support for the saw base while starting the cut and a guide for the saw. Set the saw a little deeper than the thickness of the first rafter so that it marks the rafter below as the top one is cut.

In previous articles on power saws (note particularly March, 1936, AMERICAN BUILDER, pp. 46-47) the multiple method of cutting joists was described. The same system applies to rafters, and a large number can be cut with greater speed using this system. A recommended work-bench and suggested planning details were also set forth in this March article.

The compound mitre cuts required in jack rafters can be done on a power saw with great ease, and where there are a number of such cuts to be made the saving in time and labor is very great because only the first pair need be laid out. When the proper angles for the jack rafters have been figured, a guide piece is made by nailing two pieces of 1" x 2" together, as shown in Figure 2. Make the piece that is held against the near edge long enough so that on the first cut the saw cuts right through it. The point left then acts as a mark for the succeeding cuts

without any further pencil work. Power saws with tilting-angle adjustments are especially useful and fast in making compound mitre cuts. The average number of rafters in a house has been estimated at 128, and they can be cut with a power saw in less than one-third the time required by hand—a considerable item in time saving.

Many builders find that they are once more in a "rush market" where time saved by power equipment is increasingly important. Higher wage scales also have a large bearing on the subject.

A paramount principle of power saw economy, which has been often stressed in previous articles, is advanced planning, or it might be called "head work." The smart builder figures as closely as possible the exact number of each framing members required and cuts them all at once. For example, a very large number of studs may

(Continued to page 104)

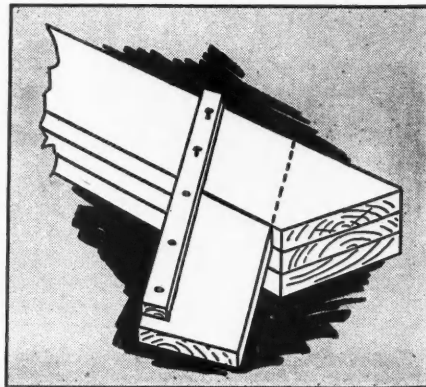
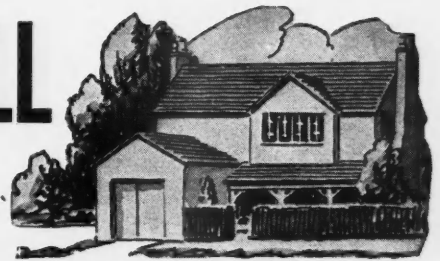


FIGURE 1—Cutting rafters is made more easy by using a guide made from a short block of 2x8 and a piece of 1x3, as illustrated above.

MAKE HOMES EASY TO SELL

Ruberoid National Advertising guides prospective builders in choosing contractors



FOR more than 50 years, The Ruberoid Co. has been developing new ways to give prospective home builders more for their building dollars—by manufacturing products of greater beauty and longer life — with special emphasis on greater fire-safety and reduced up-keep costs.

An important part of this same program has been the perfecting of time-saving application features — which would still further reduce the ultimate cost to the public and thus enable contractors to meet the threat of pre-fabricated homes.

In this spirit, we invite you to acquaint yourself with and give full consideration to the present extensive Ruberoid-Eternit line of roofing and building products. These products provide features which make homes easier to sell.

Nine strategically located Ruberoid factories are manufacturing these products for you. Thousands of leading lumber and building supply dealers stock them . . . This combination means that you will be well served and that the products themselves will safeguard your reputation for quality workmanship.

The Ruberoid national advertising program is steadily building business for you. Let us show you how you can cash in, through an association with Ruberoid dealers in your vicinity. We urge you to send in the coupon for complete details. You should have the full data at your finger-tips for the coming building season.



THICK BUTT SHINGLES
Increased thickness for shadow lines and extra wear



SAFE-N-DRY SHEATHING PAPER
Asphalt-lined, jute-reinforced — almost impossible to tear

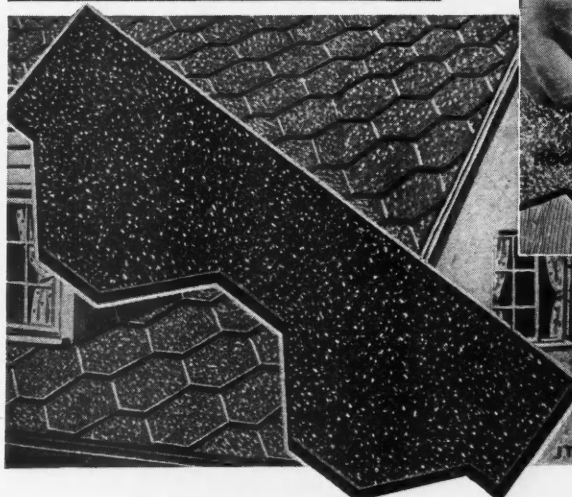
ASPHALT

Roofing and Building Products impregnated with Ruberoid Asphalt offer ideal weather protection, and at a cost to fit any purse. They are water-proof, rot-proof, termite-defying, and remarkably long-lived.

Many Ruberoid Roofs have been in service more than 30 years and are still giving excellent service. Ruberoid Asphalt Shingles combine beauty of texture and color with amazing freedom from upkeep costs.



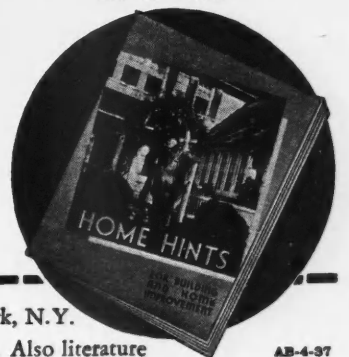
ROLL ROOFING
Smooth or mineralized—weights and thicknesses to fit every job



HEXAGONAL SHINGLES
Attractive roof lines and quick application



EASON FLAPS
7-layer seams—New application method for roll roofing prevents wind ripping and seam leaks



Check the Ruberoid Building and Modernization Products which interest you:

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The RUBEROID Co., 500 Fifth Ave., New York, N.Y.

Please send us a sample copy of Home Hints. Also literature covering the Ruberoid-Eternit Building Products checked.

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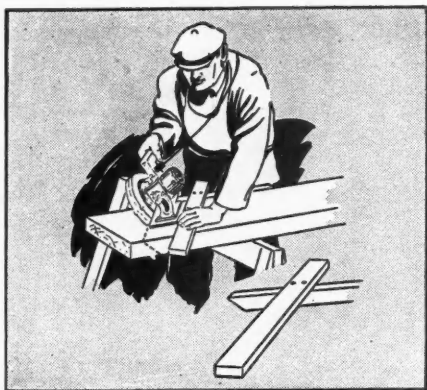


FIGURE 2—Compound mitres are cut quickly and accurately with a guide made from two pieces of 1"x2".

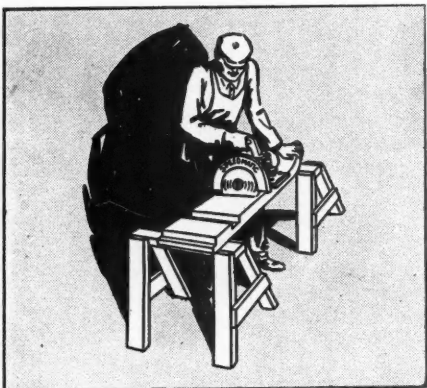


FIGURE 3—Chisel work is eliminated in dadoing, grooving, ploughing.



FIGURE 4—Swift work in trimming openings.

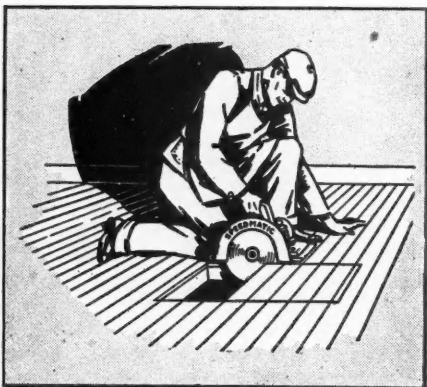


FIGURE 5—Floor openings are cut quickly without use of bit or keyhole saw.

be piled on the workbench and the whole batch cut at one time. The studs are shoved up tight against end and back stops on the bench and a strip is tacked across the top as a guide. The 176 exterior studding and 240 partition studding required for an average house can be cut in a very short space of time using this method.

Efficiency is increased by training a young man in the use of a saw—either a hand power saw or a bench or portable type—and having him do all the cutting. The size and extent of the jobs being done, of course, determine the type of equipment involved. It is obvious, however, that an experienced man who has become proficient can save a great deal. It is better to have him do all the cutting and have the members passed up to another carpenter who can spend his time nailing them in place without stopping to measure and cut each piece.

Notches for ribbons—which take up a considerable amount of time in balloon framing—can be cut by setting a number of members together edgewise on the bench and cutting across the whole number at once. Guide strips are tacked across the tops and the saw is set for the required depth of the notch. A cut is made at each edge of the notch and perhaps one or two additional cuts through the middle. The notch is then quickly cleaned out with a chisel. By using a dado-cutter attachment the notches may be cut even more quickly and cleanly and without the use of a chisel. Here again, cutting a quantity of members at once is desirable and is made possible by proper planning and by providing a good substantial workbench with proper end and side stops and a level top.

The new models of power saws are designed to handle every conceivable type of cut and operation. For dadoing, grooving, ploughing and tenoning, a dado head may be used with the power saw, which saves much time. The saw is adjusted for the proper depth, and from then on every cut is of uniform depth and the cut is clean and smooth at side and bottom. Dado cuts may be made at a wide variety of angles. Grooving out for wires, pipes and other items is done very quickly in this way. An enormous amount of laborious hand saw and chisel work is eliminated by this operation. Additional time is saved in fitting the members, as the cuts made with the power equipment are clean and exact so that the members will go together without loss of time.

Substantial Savings Reported

Experienced builders report remarkable savings in cutting sheathing and wall openings—particularly where diagonal sheathing is used. The economical way is to nail the sheathing boards right across window and door openings and to let the boards project at the sides of the wall. When the nailing is completed the entire side of the wall is trimmed off in one quick sweep of the saw. The window and door openings are cut out with equal speed and without any trouble getting the cut started—frequently a difficult operation with a hand saw.

Builders also report great economy in studding up the wall solidly first and then cutting and framing the window and door openings afterwards. The hand power saw is efficient and quick in cutting out the studs and in cutting the necessary headers, trimmers and double studs—all of which are mean operations with the hand saw.

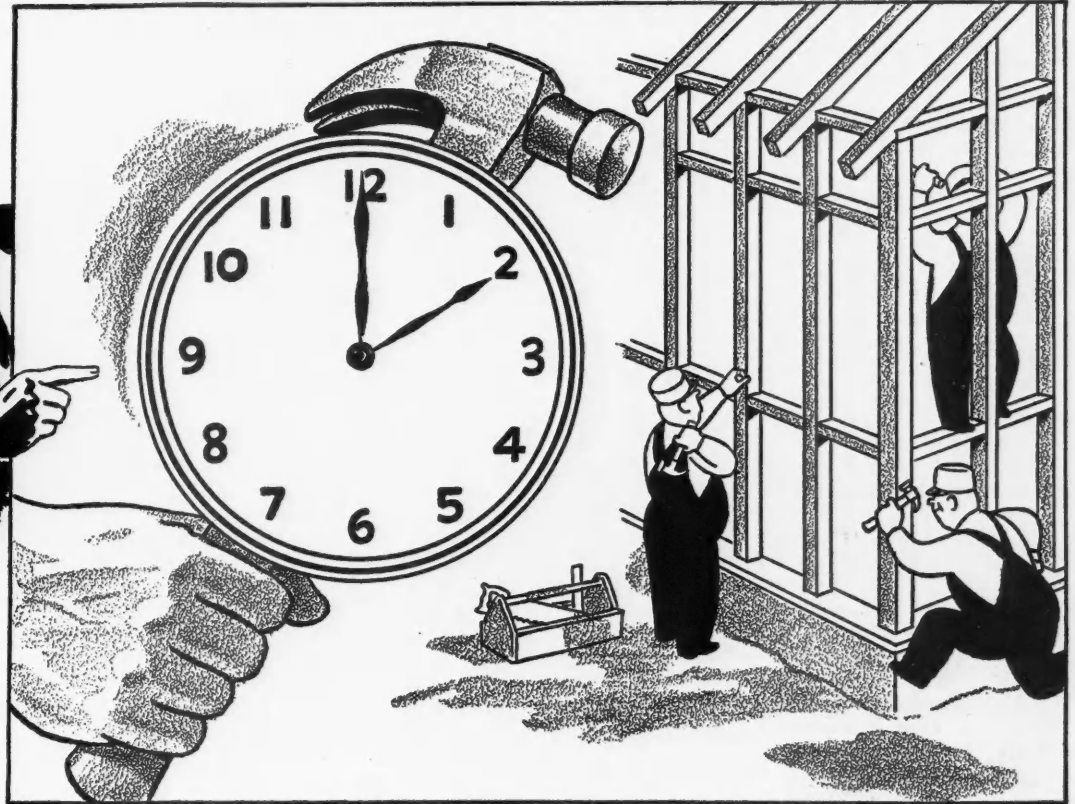
Cutting openings in floors, such as chimney openings, stair wells, etc., is a job that can be done with great economy by the power hand saw. Instead of boring a hole and making a start with a keyhole saw, the electric saw starts right in anywhere. The saw quickly works down through the board and on along the line parallel to the bearing member, right to the end of the desired opening (see Figure 5). The last board or "closer" is also quickly ripped out in contrast to the chopping or chiseling usually involved when this is done by hand.

The growing popularity of diagonal flooring makes the power saw additionally desirable. The economical way is to lay the flooring rapidly over the whole floor area, over all openings, allowing boards to project as they happen to come at the sides. When the nailing is completed, strike a line along the edge and saw off the whole side at once.

The 1937 spring building season is finding many contractors short-handed as regards experienced men. It takes time to train new men. One way to cut costs, increase efficiency and reduce overtime payrolls is to provide proper modern power equipment. In previous articles the ease of installing power and making necessary arrangements have been pointed out. In the past few months, leading manufacturers have brought out effective new models of power equipment, hand, table and multiple types that set new standards in speed and economy.

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I'll Take More Hammer Hours!"



"4-Square lets hammers work more hours per day. On 4-Square jobs we spend more time nailing! That's why we build faster with 4-Square!"

● 4-Square Lumber has made construction more efficient. It has shown builders how to save needless waste—in time, materials and labor.

4-Square is ready-to-use. Its ends are squared and smoothed at the mill—not on the job. Made in exact lengths, 4-Square saves the hours of trimming and fitting

needed to work old-fashioned lumber. In addition, 4-Square provides full bearing for framing members, tighter joints and greater rigidity for the house frame.

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For Faster, Better Building

**WEYERHAEUSER
4-SQUARE
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Member—Western Pine Association

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WEYERHAEUSER SALES COMPANY
ST. PAUL, MINNESOTA

AB 4-37

Yes—I'd like to know more about 4-Square Lumber.

Name

Address

City.....State.....

Cost of Reinforced Concrete House*

Purdue Housing Research Project, House Number 3; Burnham Bros. & Hammond, Inc., Architect; Charles Gambsky Co., Builder; Portland Cement Association, Sponsor.

By C. PAUL ULMER

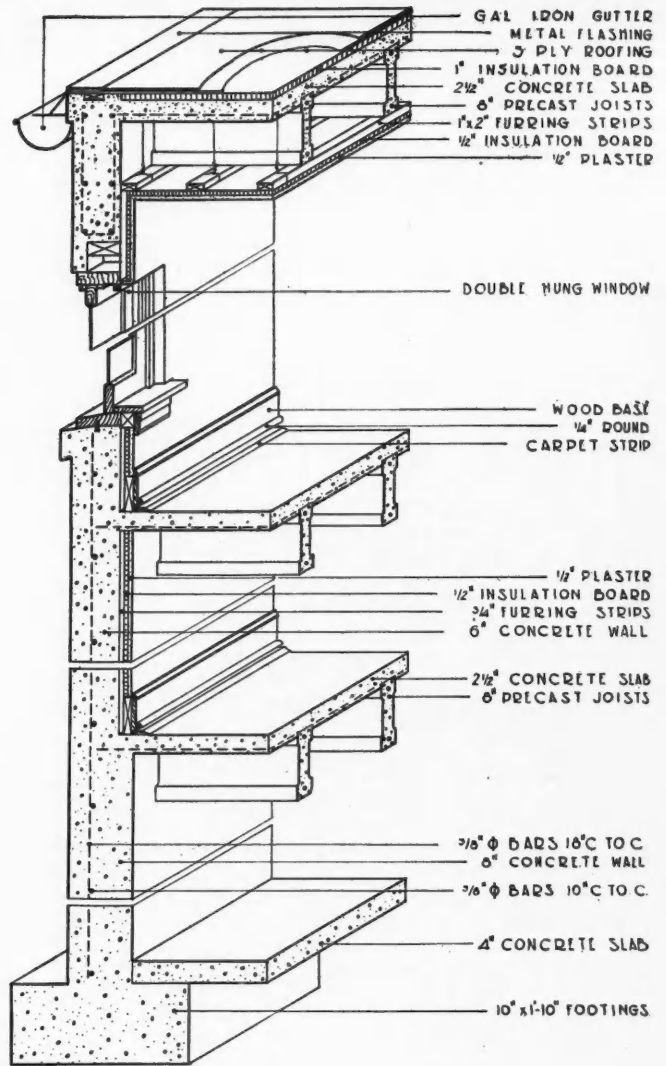
Technical Assistant Purdue Housing Research Project

WITHIN the past few years reusable forms made of steel have been developed which reduce the cost of form work required for poured concrete construction. These forms are readily adapted to a variety of conditions permitting extensive and economical use. They are easily erected, removed and cleaned. They can be used over and over again. Their first cost distributed over many jobs results in a relatively small proportionate cost to any one job. The major cost of the form work chargeable to an individual house is that of transportation of the forms and the labor required for their erection, removal and cleaning.

Reusable steel forms were used in the construction of House No. 3 on the Purdue Housing Research Campus. The contract cost of this house was \$4,997.50. This cost is exclusive of the cost of land, grading, and architects' and other fees.

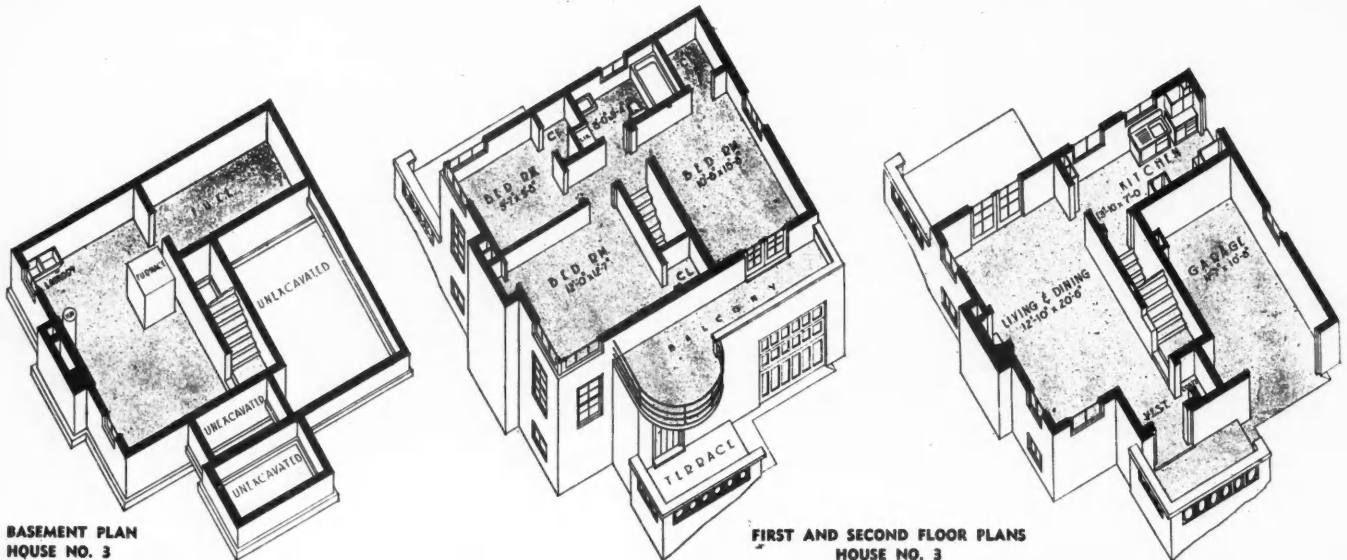
Construction work on House No. 3 was begun on February 6, 1936, under extremely adverse weather conditions. The house was substantially complete in 122 working days. The total elapsed time for construction was 156 days. The house was substantially completed

*Reproduced by permission from "Home Information," Bulletin Better Homes in America, Purdue Univ., Lafayette, Ind.



TYPICAL WALL AND FLOOR SECTION

on July 10, 1936, five months after work was started. The site selected for House No. 3 (on the Purdue Housing Research Campus) was approximately level and on the north side of the street. No unusual conditions were encountered in excavating or grading that would
(Continued to page 112)



**BASEMENT PLAN
HOUSE NO. 3**

**FIRST AND SECOND FLOOR PLANS
HOUSE NO. 3**



MODERN ALL-GAS KITCHENS

invite your prospects to move in for good



Model planned kitchen from an advertisement in the gas industry's "Modernize Your Home With Gas" campaign in national magazines of 14,000,000 circulation.

There's Nothing Like Gas for
**COOKING
REFRIGERATION
WATER-HEATING
HOUSE-HEATING**

GAS equipment in the kitchen is a welcome sight to prospective householders. They understand this friendly fuel because they've grown up with it. As for the gas ranges and refrigerators of today, they are modern—and built to *stay* modern. Automatic lighting and dependable oven heat control mean up-to-date convenience—and improved burners and insulation bring definite advantages in economy. Gas refrigerators are as modern in appearance as today's ranges. They pro-

vide the kind of food protection householders demand. They do their job in lasting silence and freedom from petty service troubles.

But the ways in which gas makes possible really *modern* living do not stop with the kitchen. This clean, perfect fuel is ideal for house-heating and water-heating. Up-to-date gas appliances for these important needs reflect constant improvement in efficiency, convenience, and *economy*. Their installation enables householders to take

full advantage of still another benefit of modern gas service—substantial economies are available to homes equipped to use gas for every heating need. Consult your local gas company for full information regarding the selection of modern gas appliances to meet your problem and your clients' needs.



Be sure the gas appliances you specify carry the approval seal of the American Gas Association Testing Laboratories.

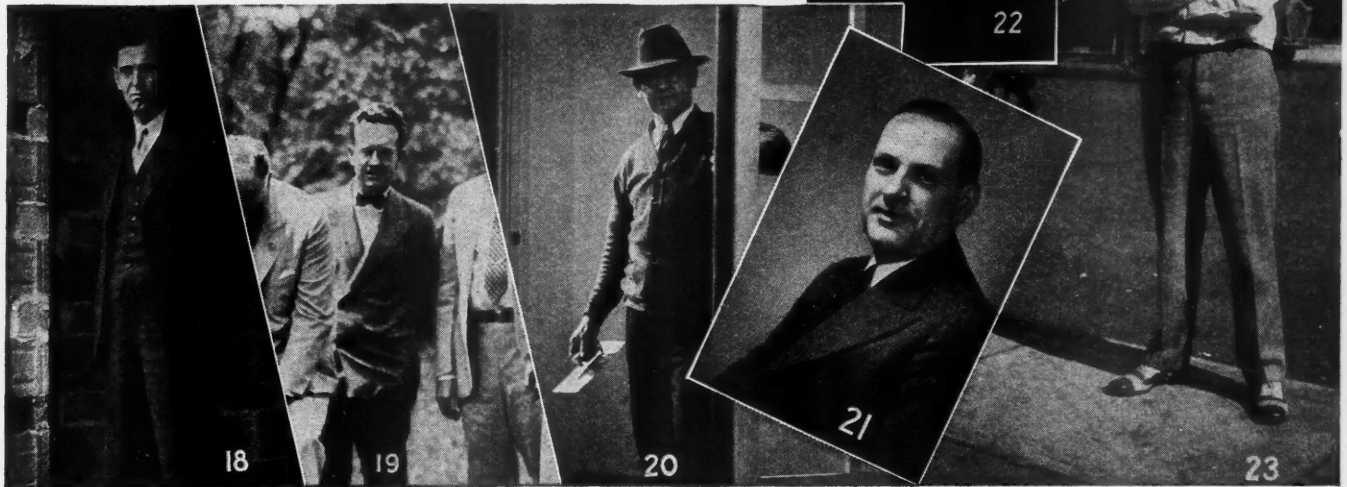
A M E R I C A N G A S A S S O C I A T I O N

THESE MEN



1. H. S. Littlefield, San Bernardino, Calif.; 2. John Purdy, East Aurora, N. Y.; 3. Albert E. Bill, builder, Detroit, Mich.; 4. R. L. Webb, builder, Kansas City, Mo.; 5. Lester F. Preu, Miami Beach, Fla.; 6. Wm. J. Noggle, concrete house builder, Bismarck, N. D.; 7. Paul T. Cahill, Toledo Modern Homes, Toledo, Ohio; 8. C. M. Davis, builder, Ft. Worth, Tex.; 9. Geo. H. Beckmann, 21st Century Homes Corp., Teaneck, N. J.; 10. Chas. Joern, of Wm. Joern & Sons, Chicago, Ill.; 11. Chas. Gamsky, Menasha, Wis.; 12. Samuel Glaser, architect, Boston, Mass.; 13. J. E. Hines, builder, Kensington, Md.; 14. W. C. Austin, concrete house contractor, Lawton, Okla.; 15. R. M. Jackson, builder, Kansas City, Mo.; 16. Harry Lorin Binsse, builder, Glen Cove, (L. I.), N. Y.; 17. J. D. Monk, contractor, Austin, Tex.; 18. Ray Wason, builder, Brookline, Mass.; 19. R. E. Ratliff, builder, Indianapolis, Ind.; 20. W. H. Buffett, Buffett Holding Co., Inc., W. Englewood, N. J.; 21. Harry E. Pople, The B. P. B. Co., Inc., (Swan Acres), Pittsburgh, Pa. 22. H. W. Chutter, Fresno, Calif.; 23. Charles Christian, Colonial Const. Co., Baldwin, (L. I.), N. Y.

ARE SMART!



THEY ARE ON THE BAND-WAGON WITH THE FASTEST GROWING TYPE OF HOME CONSTRUCTION

firesafe concrete

These men aren't just home builders. They're *concrete* home builders. And look how their ranks are growing!

They've tied in with a type of construction that zoomed *three times as fast* as other established types last year—and has only begun to climb.

Leads? They can pick and choose from a flood of 'em. Nearly 3,000 inquiries a week being relayed to such men as these from Portland Cement Association advertising, and as many more folks are knocking at their doors.

It will pay you to put concrete walls and floors in your homes. *It gives your buyers more for their money.* Why build 1915-model homes when you can give buyers the firesafety, permanence,

greater comfort, and easier housekeeping advantages of a concrete home at attractive prices.

Build a concrete demonstration house this spring—or better still, tell your community that you are specializing in firesafe concrete. Write us about our builder cooperation in your locality.

PORTLAND CEMENT ASSOCIATION

Dept. 4-3, 33 West Grand Avenue, Chicago, Ill.

Yes, I am interested in building firesafe concrete homes. Please send how-to-build booklets on subjects checked.

Concrete masonry; Precast joists, floors; Concrete ashlar; Monolithic concrete homes; Portland cement stucco; Concrete house design suggestions.

Send me proofs of newspaper ads for which printing "mats" are available for advertising concrete homes locally.

Name _____

Address _____

City _____ State _____

class the site as other than average in most localities.

A compact plan was developed by the architects which provides a combination living-dining room, kitchen, three bedrooms, bathroom, garage and basement. The kitchen was given a northeast exposure; living room, south, west and north; and the bedrooms, southeast, southwest and northwest exposures. The simple arrangement of the plan resulted in economical framing and construction of the floors and walls.

A vestibule avoids direct entrance to the living room and provides access to the coat closet. While the stairway to the second floor starts directly from the living room the partition arrangement is such that the effect of a stairway in the room is minimized. A fireplace in the living room adds to the homelike character of this room.

The kitchen is narrow and the location of the doors in this room are such that a thoroughfare is established between the outdoors, living room and basement. Since the house is heated by a hand fired coal heater it is necessary to bring ashes from the basement through the kitchen.

The coal chute for winter heating fuel supply is located at the far end of the garage and empties

directly into the coal bin placed below the kitchen. A recess in the wall near the garage entrance doors provides storage space for lawn tools or other items which commonly find their way into a garage.

The second story conforms to the requirement of the Purdue Housing Research Project that the house be designed to accommodate a family consisting of parents and two or more children of opposite sex. This resulted in a plan arrangement of three bedrooms and bath. The bedrooms vary in size and shape and afford average wall

(Continued to page 116)

CONSTRUCTION COST SUMMARY
HOUSE NO 3 PURDUE HOUSING RESEARCH PROJECT

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Labor	Material	Labor & Material	Profit & Overhead	Sub-Total	Total Cost	Percent of Cost	
EXCAVATION			\$ 220.70	\$ 15.75	\$ 236.45			\$ 236.45	4.7	
FOUNDATIONS	FOOTINGS		25.05	80.35	105.40		105.40			
	BASEMENT	FORMING & REINFOR'G	85.29	59.10	144.30		144.30			
		CONCRETE WORK	44.25	185.05	229.30		229.30			
		FINISH	12.25	2.35	14.60		14.60	503.60	10.1	
CONCRETE WALLS	CONCRETE WORK	FORMING & REINFOR'G	174.50	111.50	286.00		286.00			
		CONCRETE	74.35	249.40	323.75		323.75			
		FINISH	90.85	30.75	121.60		121.60			
	FURRING		11.00	9.50	20.50		20.50			
	INSULATION		21.45	75.30	96.75		96.75			
	PLASTERING		86.80	57.50	144.30	*	144.30			
	EXTERIOR FINISH	SPRAY COAT	39.55	23.25	62.80		62.80	1064.70	21.4	
PARTITION WALLS	FRAMING		22.85	20.45	43.30		43.30			
	LATH		11.25	25.85	37.10		37.10			
	PLASTERING		34.90	23.15	58.05	*	58.05	138.45	2.8	
BASEMENT & GARAGE FLOOR	BACKFILL		7.00		7.00		7.00			
	CONCRETE SLABS	FORMING & REINFOR'G	2.05	4.50	6.55		6.55			
		CONCRETE	23.05	34.65	57.70		57.70			
		FINISH	5.53	3.75	9.28		9.28	82.55	1.6	
1ST FLOOR	JOIST		4.75	15.70	20.45		20.45			
	CONCRETE SLAB	FORMING & REINFOR'G	16.10	8.30	24.30		24.30			
		CONCRETE	16.20	37.45	53.65		53.65			
		FINISH	6.50	1.45	7.95		7.95			
	FLOORING	LINOLEUM	4.30	22.00	26.30	†	26.30	133.25	2.7	
2ND FLOOR	JOIST		4.00	25.20	29.20		29.20			
	BEAMS & SLAB	FORMING & REINFOR'G	27.30	25.10	52.40		52.40			
		CONCRETE	22.35	47.55	69.90		69.90			
		FINISH	4.85	2.00	6.85		6.85			
		FLOORING	LINOLEUM	3.00	29.40	32.40	†	32.40		
	FURRING		2.00	3.95	5.95		5.95			
	INSULATION		2.25	17.00	19.25		19.25			
PLASTERING		5.65	3.75	9.40	*	9.40	226.55	4.5		
ROOF	JOIST		10.75	27.20	37.95		37.95			
	CONCRETE WORK	FORMING & REINFOR'G	28.65	6.00	34.65		34.65			
		CONCRETE	17.50	36.95	54.45		54.45			
	FURRING		13.50	6.50	19.00		19.00			
	INSULATION		21.30	55.05	76.35		76.35			
	ROOFING		8.65	32.70	41.35	5.60	46.95			
PLASTERING		21.45	14.25	35.70	*	35.70	305.05	6.1		
METAL WORK	FL'SH'G, GUTTER, S D'W'SPT		22.80	21.20	44.00	10.70		54.70	1.1	
MILLWORK			213.35	736.15	949.50			949.50	19.0	
STAIRS	BASEMENT		15.40	8.45	23.85		23.85			
	MAIN STAIRS		35.90	10.00	45.90		45.90	70.25	1.4	
ACCESSORIES	FIREPLACE & CHIMNEY		14.75	29.80	44.55		44.55			
	BALCONY & PARAPET		26.55	43.75	70.30		70.30			
	PORCH & TERRACE WALLS		34.70	22.00	56.70		56.70	172.15	3.4	
HEATING	DUCTS		57.15	87.10	144.25	24.30		168.45		
	FURNACE		3.30	106.40	109.70	21.75		131.45		
	MISCELLANEOUS		4.00	14.90	18.90		18.90	318.80	6.4	
PLUMBING	ROUGH		74.70	86.55	161.25	16.95		178.20		
	FINISH		11.10	153.30	164.40	17.10		181.50	369.70	7.2
ELECTRICAL	ROUGH		30.40	40.40	70.80	28.45		99.25		
	FINISH		19.50	55.95	75.45	30.30		105.75	205.00	4.1
PAINTING	EXTERIOR TRIM		17.70	7.80	25.50	*		25.50		
	INTERIOR TRIM		49.40	12.35	61.75	*		61.75		
	CEILING—L. R.		6.75	6.00	12.75	*		12.75		
	PAPERING		4.30	8.00	12.30	3.30		15.60	115.30	2.3
TOTALS			\$1886.00	\$2201.35	\$4087.35	\$ 158.25		\$4245.60		
General Contractor's Overhead and/or Profit								61.00	1.2	
GRAND TOTAL AND CONTRACT PRICE								\$4306.60	\$4907.80	

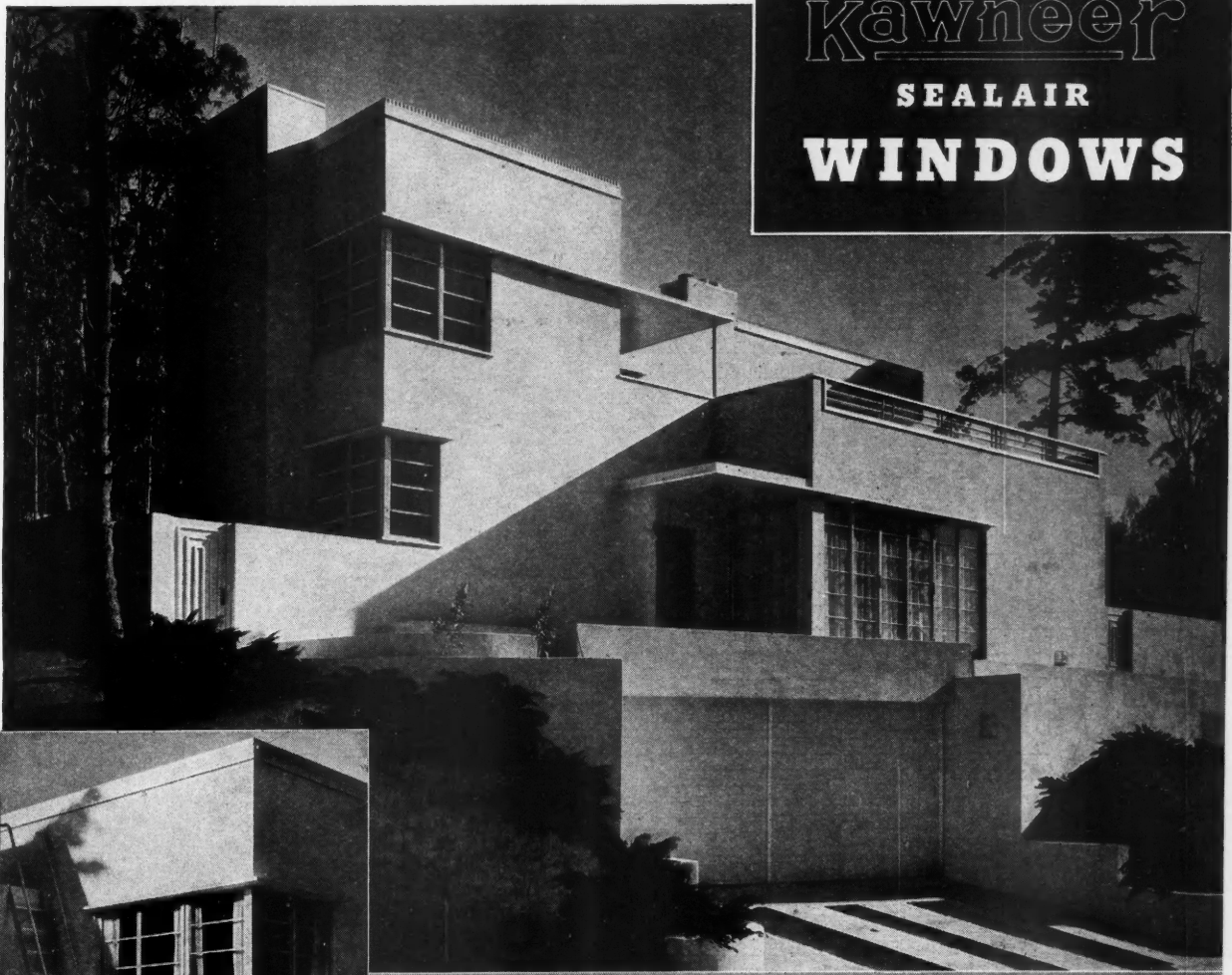
* Sub contractor sustained loss. See page 34.

† Profit and overhead included in material cost

ANY information as to Plans and Specifications for this house may be obtained by addressing Burnham Brothers & Hammond, Inc., Architects, Chicago, Ill.

THE ORIGINAL LIGHT ALUMINUM OR BRONZE WINDOW...

Kawneer
SELAIR
WINDOWS



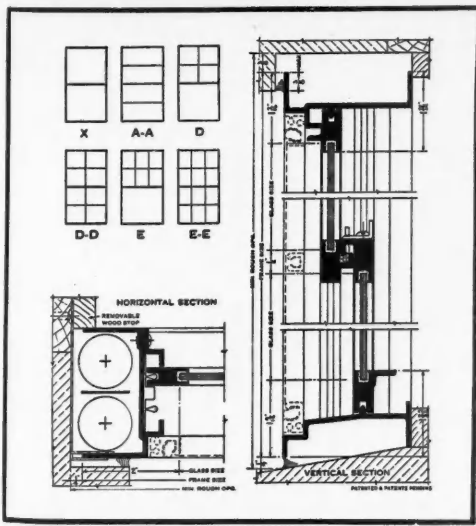
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MANY years of experience in building fine rustless metal SELAIR Windows for public and private buildings, large residences, post offices, monumental structures and other important projects, preceded the development and introduction of the Kawneer LIGHT SELAIR WINDOW . . . the first light aluminum or bronze window for the average home!

WRITE FOR COMPLETE DATA

That's why LIGHT SELAIR WINDOWS are so simple in design and construction, so easy to install and reglaze, so smooth in action at all times, so exceptionally weathertight. Sturdily and accurately fabricated of solid aluminum or bronze, these practical, modern, double-hung windows offer common-sense advantages no architect, builder, or home-owner can afford to overlook.

FOR INFORMATION WRITE THE KAWNEER COMPANY, NILES, MICHIGAN, BERKELEY, CAL., NEW YORK CITY. OTHER PRODUCTS: STORE FRONTS, DOORS, ARCHITECTURAL METAL WORK.



BREAKDOWN OF LABOR COST
HOUSE NO 3 PURDUE HOUSING RESEARCH PROJECT

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Labor Classification	Total Hours	Wage /hr.	Cost	Job Cost	Sub-Total	Total		
EXCAVATION		PICK & SHOVEL WORK	Common	462	\$.34*	\$ 156.05			220.70		
		BLASTING	Skilled			20.50	176.55				
		NON-PRODUCTIVE TIME	Common	31½	.35		11.00				
		BACK FILL	SHOVEL WORK	Common	94½	.35		33.15			
FOUNDATIONS	FOOTINGS	CONC. PREPARING TO POUR	Unskilled	40	.34*	13.20			166.75		
		MIXING & POURING	Unskilled	31½	.33*	10.35					
		CLEAN UP	Unskilled	4½	.33*	1.50	25.05				
	BASEMENT WALLS	FORMS, F'RM'G & REINFORC'G	Unskilled	145½	.35	50.95					
		REMOVING FORMS	Unskilled	89¼	.41*	34.25	85.20				
		CONC. PREPARING TO POUR	Unskilled	21½	.35	7.50					
		MIXING & POURING	Unskilled	107½	.34*	36.75	44.25				
		FINISH	Unskilled	30½	.35	10.70					
		NON-PRODUCTIVE TIME	Unskilled	4½	.35		1.55	441.70			
CONCRETE WALLS 1ST & 2ND STORY	CONCRETE WORK	FORMING & REINFORCING	Unskilled	227½	.35	79.65			507.80		
			Skilled	66½	.63*	42.00					
		FORMS, REMOVAL & CLEAN'G	Unskilled	150%	.35	52.65	174.50				
		PREPARING TO POUR	Unskilled	35	.35	12.25					
		MIXING & POURING	Unskilled	140¼	.35	51.30					
		CLEAN UP	Unskilled	29%	.39*	10.80	74.35				
		FINISH	Unskilled	224	.36*	80.45					
			Skilled	14	1.00	14.00	94.45				
		NON-PRODUCTIVE TIME	Unskilled	15½	.35		5.40	348.70			
		FURRING	Carpenter	22	.50			11.00			
	INSULATION	APPLYING RIGID BOARD	Carpenter	34½	.62*			21.45			
	PLASTERING	REINFORCING	Unskilled				15.20†			66.80	
		PLASTER	Plasterer				71.60†				
		EXTERIOR FINISH	SPRAY COAT	Skilled	21	.90	18.90				
	PARTITION WALLS	FRAMING	STUDS, PLATES, ETC.	Carpenter	34%	.65				22.85	69.00
LATH			Carpenter	11	.87*		9.60				
PLASTERING		REINFORCING	Unskilled				6.10†				
		PLASTER	Plasterer				28.90†	34.90			
CONCRETE FLOORS	BACK FILL	SHOVEL	Common	30	.35			7.00	39.65		
		CONCRETE SLAB	FORMING & REINFORCING	Unskilled	4%	.43*	2.05				
		MIXING & POURING	Unskilled	35%	.36*	12.80					
		FINISH	Skilled	8½	.65	5.55	32.05				
1ST FLOOR	JOIST	SETTING	Unskilled	13%	.35			4.70	47.85		
		CONCRETE SLAB	FORMING & REINFORCING	Unskilled	35	.49*	16.10				
		PREPARING TO POUR	Unskilled	7½	.35	2.65					
		MIXING & POURING	Unskilled	13%	.35	4.70					
		PATCH WORK	Skilled	14%	.60	7.25					
		CLEAN UP	Unskilled	4½	.35	1.60	16.20				
		FINISH	Unskilled	18%	.35	6.50	38.80				
	FLOORING	LINOLEUM	Skilled	5%	.75			4.20			
2ND FLOOR	JOIST	SETTING	Unskilled	11	.42*			4.60	72.00		
		BEAMS & SLAB	FORMING & REINFORCING	Unskilled	56	.30*	22.10				
		REMOVING FORMS	Unskilled	12	.43*	5.20	27.30				
		MIXING & POURING	Unskilled	30%	.37*	13.35					
		NON-PRODUCTIVE TIME	Unskilled	20	.30*	7.25					
		CLEAN UP	Unskilled	5	.35	1.75	22.32				
		FINISH	Skilled	7	.60*		4.85	54.50			
	FLOORING	LINOLEUM	Skilled	4	.75			3.00			
	FURRING	Carpenter	4	.50			2.00				
	INSULATION	APPLYING RIGID BOARD	Carpenter	4%	.50			2.25			
PLASTERING	REINFORCING	Carpenter				1.00†		4.65†			
	PLASTER	Plasterer				4.65†	5.65				
ROOF	JOIST	SETTING	Unskilled	13½	.35	4.75			121.80		
			Skilled	6	1.00	6.00		10.75			
	CONCRETE WORK	FORMING & REINFORCING	Unskilled	44½	.30*	17.30				46.15	
			Skilled	4%	1.00	4.60					
		REMOVING FORMS	Unskilled	19%	.35	6.85	28.65				
		MIXING & POURING	Unskilled	36	.38*	13.60					
	FURRING	Carpenter	16	.91*			18.50				
	INSULATION	CEILING-RIGID BOARD	Carpenter	14	.97*	13.50				21.30	
		ROOF-RIGID BOARD	Skilled	17	.46*	7.80					
	ROOFING		Skilled	17%	.60			8.65			
PLASTERING	REINFORCING	Carpenter				3.75†		17.70†			
	PLASTER	Plasterer				17.70†	21.45				
METAL WORK	FLASHING, GUTTERS & DOWNSPOUTS	Skilled	10%	1.25	13.15			32.80			
		Unskilled	20	.48*	9.65						

* Average wage for hours given.
† Figured proportionately from total cost.

space for furniture. Closets are provided for each bedroom. A linen closet is built-in and opens on the bathroom. A feature of the second story is the deck, with access from the southeast bedroom.

The following analysis combines both the specifications and the costs of the various items which entered into the construction of House No. 3. The total cost and unit cost of each item is stated. Unless otherwise noted these costs include labor, materials and contractor's overhead and profit. Accompanying this analysis will be found an itemized and detailed breakdown of all construction costs as well as a construction cost summary and percentages which each division bears to the total cost.

Unless otherwise indicated areas, lineal feet and similar units where given are those actually obtained. They are, therefore, net figures and do not include the excess or waste materials required for the finished work. Waste has, however, been included in the costs given and these represent the cost of all items in place.

The unit costs of various sections such as walls, partitions, floor and roof are the cost of labor and materials required to produce the section described. In arriving at these costs openings have been deducted from walls and partitions, and such items as drain boxes, gutters and flashings are not included in the unit cost of the roof. In other words the net cost of the section

(Continued to page 120)

ARC
A new, wide, hinged air water hangers
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RADIANT
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No. 2

3 MORE NEW PRODUCTS

JUST ANNOUNCED FOR YOUR PARADE OF PROFITS



ARCO AIR CONDITIONER 301-B

A new, larger Conditioning Unit . . . provides heat as well as fresh, filtered, humidified air in conjunction with steam or hot water boiler. Floor type model needs no hangers or pipe stand. Attractive green jacket.

Now your line is complete — with equipment for every comfort need . . . every type of home . . . every pocketbook. Plan the kind of installations you want to sell — people want to buy — with complete assurance of quality and satisfaction.



ARCO COOLING UNIT

Used with the Arco Air Conditioner, it brings summer cooling in reach of the average home. This model operates on cold water and is recommended where summer water temperature does not exceed 50° F.



ARCO AIR CONDITIONER 1101-B

THREE IN ONE — Contains No. 11 Oil Burning Boiler, Arco Air Conditioner, and Taco Heater for year-round hot water supply . . . in one attractive jacket.



SIX TUBE ARCO RADIATOR—Small, trim and efficient — only 7 1/2" deep! Completes the line of small tube, space saving Arco Radiators. You get 58 sq. ft. of radiation from an Arco Six Tube Radiator 25" high by 30" long!



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HOUSE NO. 3 BREAKDOWN OF LABOR COST CONTINUED

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Labor Classification	Total Hours	Wage /hr.	Cost	Job Cost	Sub-Total	Total	
MILLWORK	FRAMES	DOOR & WINDOW	Carpenter	7½	.50			3.75	213.35	
		DOORS	HANGING & HARDWARE	Carpenter	61½	.96		58.35		
	HANGING SCREEN DOORS		Carpenter	6½	1.00		6.50	64.85		
	SASH	FITTING SASH	Carpenter	30	.60	17.95				
		HANGING SCREENS	Carpenter	3½	1.00	3.50	21.45			
	TRIM	CLEAN GLASS	Unskilled	28	.32		9.00	30.45		
		INSTALLATION	Carpenter	108	.68		91.20			
	CABINETS	CLEAN UP	Unskilled	3	.40		1.20	92.40		
		INSTALL CABINETS	Carpenter	20½	.95		19.65			
	STAIRS	BASEMENT	HARDWARE	Carpenter	2½	.90		2.25		21.90
			CONCRETE WORK	Unskilled	27½	.95				15.40
	ACCESSORIES	FIREPLACE	CONCRETE WORK	Skilled	23½	1.00	23.75			
FINISH			Unskilled	27	.45	12.06		35.80		
ACCESSORIES	BALC'NY & PARAPET	CONCRETE WORK	Unskilled	17	.87			14.75		
		IRON RAILING	Skilled	51½	.44		22.55			
ACCESSORIES	PORCH & TERRACE WALLS	BACK FILL	Unskilled	4	1.00		4.00	26.55		
		CONCRETE WORK	Unskilled	8½	.35		2.85			
HEATING	DUCTS	CUTTING CONCRETE	Unskilled	40	.40	10.00				
		INSTALLATION	Skilled	12½	3.00	12.25	31.85	34.70		
HEATING	FURNACE	SHOP LABOR	Unskilled	20½	.40		9.90			
		ASSEMBLY	Skilled	20½	.60	15.90				
HEATING	MISCELLANEOUS	CHIMNEY, ETC.	Unskilled	27½	.50	13.75	29.65			
		CONCRETE WORK	Skilled	22	.55		17.00	57.15		
PLUMBING	ROUGH	EXCAVATION	Common	6	.55		3.30	3.30		
		SOIL LINE	Skilled	4	1.00		4.00	4.00		
PLUMBING	FINISH	WATER LINES	Common	17½	.40	7.10				
		CONCEALING PIPE	Plumber	23	1.05	23.80				
ELECTRICAL	ROUGH	SET FIXTURES	Plumber's helper	20½	.60	6.45				
		SET FIXTURES	Common	26	.40	10.40				
ELECTRICAL	FINISH	CUTTING CONCRETE	Carpenter	6½	.68	4.45	41.54			
		INSTALL CONDUIT	Plumber	2	1.00	2.00	74.70			
ELECTRICAL	FINISH	INSTALL BX CABLE	Plumber's helper	2	1.00	2.00				
		INSTALL FUSE PANEL	Common	9½	.40	3.40		11.10		
ELECTRICAL	FINISH	SWITCHES & PLATES	Common	9½	.40	3.40				
		SET FIXTURES	Electrician	4	.35	1.40				
PAINTING	EXTERIOR TRIM	INSTALL CONDUIT	Electrician	4	1.00	4.00				
		INSTALL BX CABLE	Electrician	22	1.00	22.00				
PAINTING	INTERIOR TRIM	INSTALL FUSE PANEL	Electrician	3	1.00	3.00	30.40			
		SWITCHES & PLATES	Electrician	11½	1.00	11.50				
PAINTING	CEILING-LIV. RM.	SET FIXTURES	Electrician	8	1.00	8.00	19.50	49.90		
		SET FIXTURES	Painter	40	.45		17.70			
PAINTING	PAPERING	3 COATS	Painter	90	.45	44.30				
		2 COATS	Painter	11½	.45	5.10	49.40			
PAINTING	PAPERING	3 COATS	Painter	15	.45	6.75				
		2 COATS	Painter	6½	.65	4.30	78.15			
TOTAL LABOR COST									\$1888.90	

° Average wage for hours given.
† Figured proportionately from total cost.

BREAKDOWN OF MATERIAL COST
HOUSE NO 3 PURDUE HOUSING RESEARCH PROJECT

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Material Used	Quantity	Cost	Job Cost	Sub-Total	Total
EXCAVATION			Hoist rental	45 hrs.	\$ 11.25	\$	\$	\$
			Weather shelter		4.50			15.75
FOUNDATIONS	FOOTINGS	CONCRETE	Cement	61 sacks	41.60			
			No. 15 gravel	50609 lb.	20.75	62.35		
			Heating equipment	13 hrs.	10.00			
			Mixer rental	5 hrs.	2.50			
			Weather shelter		5.50	18.00	80.35	
			Spreaders	450 lb.	24.10	30.10		
	BASEMENT WALLS	FORMS—REINFORCING	CONCRETE	% & % bars	1105 lb.	35.00		
				Spreaders	450 lb.	24.10	30.10	
				Cement	178½ sacks	118.85		
		FINISH	CONCRETE	Gravel	98770 lb.	46.10		
				No. 4 sand	52230 lb.	19.00		
				Mixer rental	9 hrs.	4.50		
CONCRETE WALLS 1ST & 2ND STORY	CONCRETE WORK	REINFORCING	Weather shelter		6.50	106.05		
			Cement	2½ sacks	1.70			
			No. 4 sand	1000 lb.	.65	2.25	256.50	
			Spreaders	740 lb.	40.50	111.50		
			Cement	240 sacks	156.00			
			No. 15 gravel	151060 bl.	67.95			
CONCRETE WALLS 1ST & 2ND STORY	CONCRETE WORK	CONCRETE	Sand	3000 lb.	1.80			
			Mixer rental	13½ hrs.	6.75			
			Hoist rental	12¼ hrs.	16.90	249.40		

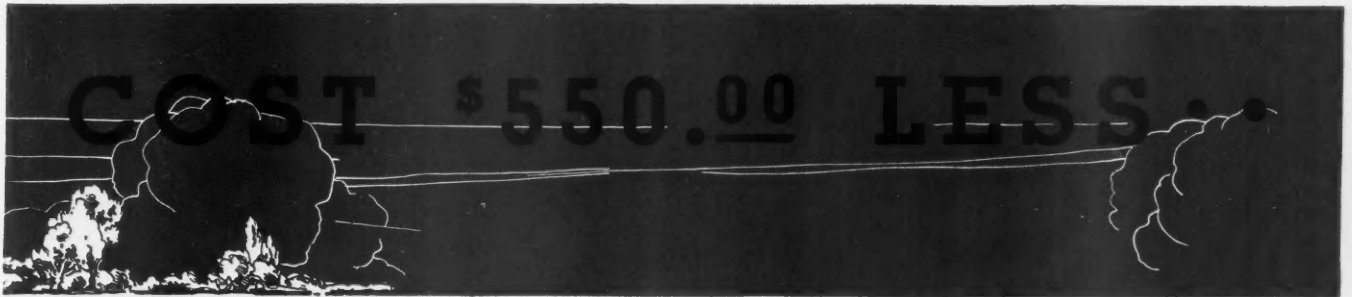
is stated. To obtain the superficial unit cost, for instance, of exterior walls one must add to the net cost of the walls the cost of doors, windows and other items used in conjunction with the walls.

Construction was started on House No. 3 early in February. The earth was frozen to a maximum depth of about 30 inches which considerably hampered excavation. Pick and shovel work was impossible and blasting was necessary to break up the frozen ground. Large chunks of frozen earth were dragged out of the excavation by means of a slip scoop powered by the engine on the concrete mixer.

To improve working conditions for the laborers and to protect the work, a tent was constructed over the excavation. The canvas covering, supported on a wooden frame braced by heavy wire, completely enclosed the work and was sufficiently high to provide protection until the first floor was in place. Oil burning salamanders provided heat which maintained temperatures well above

(Continued to page 124)

NEXT MONTH the moderne style wood frame and stucco house (Purdue No. 1) designed by J. Andre Foulhoux, Architect, and built by Edward Schroyer, contractor, will be presented in a similar cost analysis.



Here's the one all-purpose tool that every builder needs. Flexible—accurate—rugged—safe. DE WALT is all these things and more. It is a means to greater profits in building as the letter quoted on the opposite page definitely proves.

In our correspondence files there are scores of such communications equally enthusiastic because once a builder takes a DE WALT Woodworker to his job, he'll never again be without it. The pictures show only a few of the limitless cuts this tool can make.

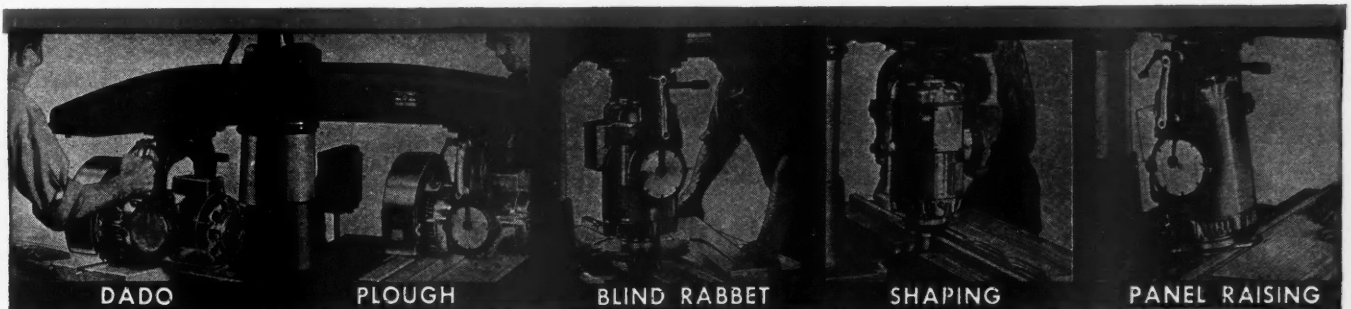
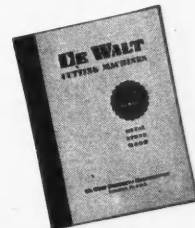
They can not show you how accurately it does these things and how the human element of costly error is practically eliminated. They can not show you the speed with which it operates nor the man power saved or released for other important tasks.

A quick demonstration will prove its amazing flexibility. You'll marvel how quickly the operator can set up the DE WALT for dozens of special cuts, bevels, mouldings. We challenge you to stump this machine on any type of cut at any angle. And the rapid change from one job to another means lower costs—extra profits.

- 1** FLEXIBILITY is the outstanding value of DE WALT in all building operations. Its ease of adjustment enables the operator to run the gamut of all woodworking cuts and do the work of many men.
- 2** ACCURACY of cut is another outstanding DE WALT feature. Quickly set in any position, it can be locked rigidly, eliminating distortion, and producing uniform work. Thus, you can duplicate the same job indefinitely without re-laying it out—an enormous time-saver.
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DADO

PLOUGH

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SHAPING

PANEL RAISING

Woodworker

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freezing during excavation and while work on the footings, basement wall and the first floor was underway. The cost of this protection and other equipment overhead has been proportioned

to the parts of the work where used as shown in the breakdown charts.

Excavation for the basement was about 8 feet deep. The area

under the garage was not excavated but foundations were carried down 3 feet below grade. Total excavation included 170 cubic yards of earth and cost \$1.10 per cubic yard.

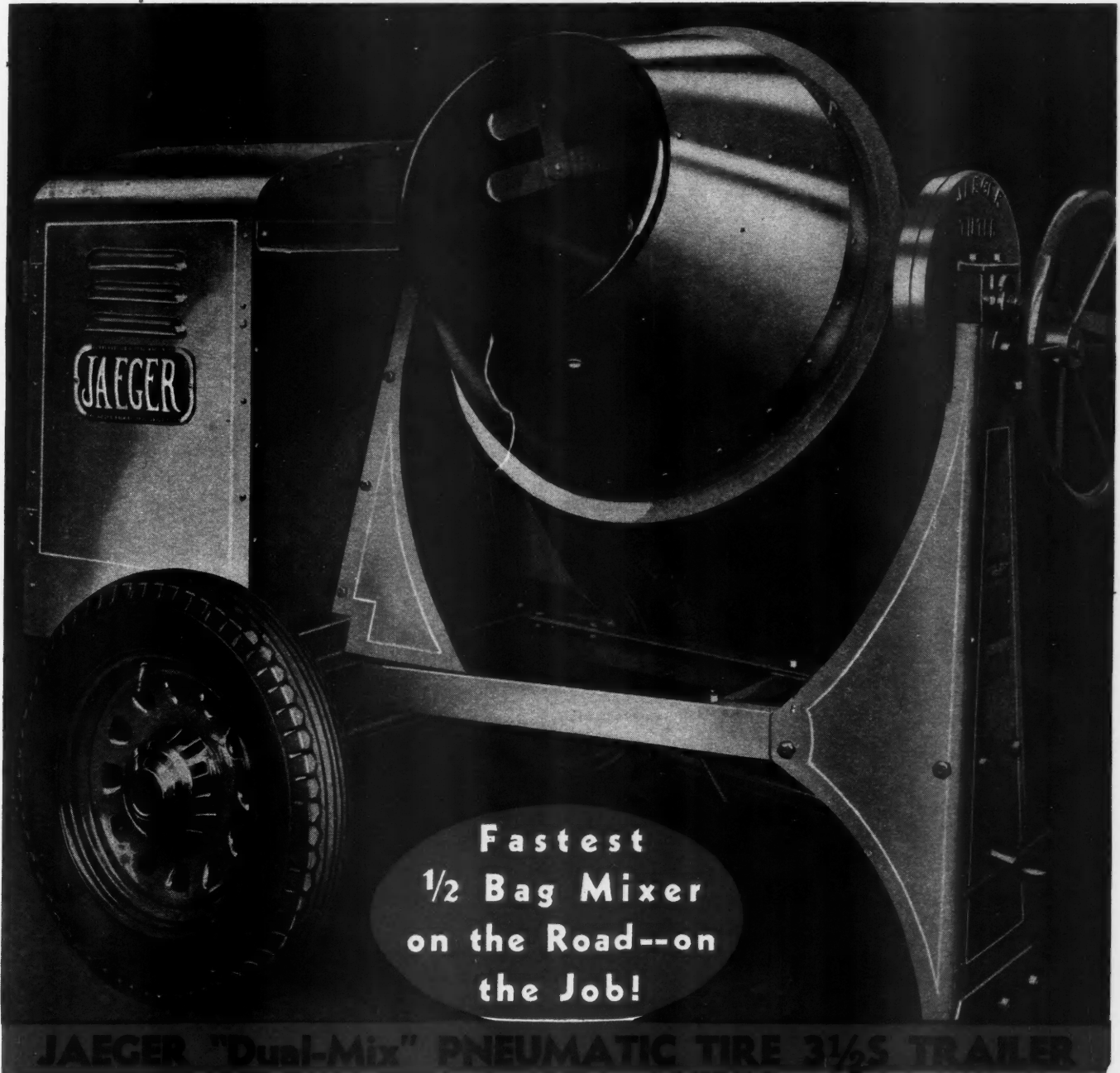
Footings were poured in a trench 22" wide and 10" deep without the use of forms of reinforcing steel. Concrete was mixed in a rotary batch mixer. Gravel and water were heated before using. Steam for heating the materials was supplied from a stationary boiler furnished by the contractor. The mix specified for the footings was, 1 part cement, 2 3/4 parts sand, and 4 parts 1/4" to 1 1/2" gravel or stone. No. 15 concrete gravel was used instead of the sand and gravel. The quantities of materials used indicates the mix obtained was about 1:7. Twenty-eight day tests, made by the Laboratory for Testing Materials, Purdue University, of concrete samples from this pour showed an average comprehensive strength of 3,160 lbs. per sq. in.

Footings required the pouring of eleven cubic yards of concrete costing \$9.60 per cubic yard.

The basement walls, as well as all concrete walls in this house, were of reinforced concrete poured between manufactured steel forms. Most of the form plates were 24" x 24" in size. Smaller filler plates were used where necessary. The forms are made with a 1" flange on all edges to which clamps (Continued to page 128)

HOUSE NO. 3 BREAKDOWN OF MATERIAL COST CONTINUED

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Material Used	Quantity	Cost	Job Cost	Sub-Total	Total		
CONCRETE WALLS 1ST & 2ND STORY Continued	FINISH		Cement	22 1/2 sacks	15.25					
			No. 4 sand	3800 lb.	2.00					
			Scarifiers, etc.			13.50	30.75	301.65		
	FURRING		1"x2" Y. P.	230 bd. ft.				9.50		
	INSULATION	RIGID BOARD		1/2"x15"x48"	1474 sq. ft.	73.70				
				Nails	20 lb.	1.00			75.80	
	PLASTERING	REINFORCING		Mesh & beads			21.00			
		PLASTER		All materials			36.50		57.50	
	EXTERIOR FINISH	SPRAY COAT		White cement	6 sacks	30.00				
				No. 4 sand	5000 lb.	3.25			23.25	
								557.20		
PARTITION WALLS	FRAMING		2"x4" Y. P.	482 bd. ft.	19.80					
			8d & 10d. nails	25 lb.	1.15			20.45		
	LATH	PLASTER BOARD		1/2"x10"x48"	806 sq. ft.	24.05				
				Nails	15 lb.	1.20			25.85	
	PLASTERING	REINFORCING		Mesh & beads			8.45			
	PLASTER		All materials			14.70		23.15		
								69.45		
CONCRETE FLOORS (Basement, garage & porch)	CONCRETE SLAB	REINFORCING		1/2" rods	150 lb.		4.50			
		CONCRETE		Cement	35 sacks	22.75				
				No. 15 gravel	30800 lb.	9.85				
				Sand	600 lb.	.40				
				Mixer rental	4 1/4 hrs.	2.15	34.05			
	FINISH		Cement	5 sacks	3.25					
			Sand	750 lb.	.50	3.75			42.90	
	1ST FLOOR	JOIST		Precast	132 lin. ft.			15.70		
		CONCRETE SLAB	REINFORCING		6"x3" mesh	145 lb.	6.70			
					1/2" rods	50 lb.	1.50	6.20		
CONCRETE			Cement	33 sacks	21.55					
			No. 15 gravel	16740 lb.	7.55					
			Mixer rental	2 1/4 hrs.	1.40					
			Hoist	2 1/4 hrs	3.45					
	Weather shelter					37.45				
FINISH		Cement & sand	2 sacks		1.45	47.10				
FLOORING	LINOLEUM			10 sq. yds.			22.60	85.40		
2ND FLOOR	JOIST		Precast	200 lin. ft.			25.30			
	BEAMS & SLAB	REINFORCING		6"x3" mesh	107 lb.	4.85				
				1/2" & 3/4" rods	675 lb.	20.25	25.10			
		CONCRETE		Cement	49 sacks	31.85				
				No. 15 gravel	23200 lb.	10.45				
				Mixer rental	3 hrs.	1.50				
				Hoist	3 hrs.	8.75	47.65			
		FINISH		Cement & sand	2 1/2 sacks		2.00	74.65		
	FLOORING	LINOLEUM			13 sq. yds.			29.40		
	FURRING		2"x4" Y. P.	99 bd. ft.				3.95		
INSULATION		1" rigid board	294 sq. ft.				17.90			
PLASTERING	REINFORCING		Mesh & beads			1.35				
	PLASTER		All materials			2.40	3.75	154.95		
ROOF	JOIST		Precast	220 lin. ft.			27.20			
	CONCRETE WORK	REINFORCING		1/4", 3/8" & 1/2" rods	200 lb.		6.00			
		CONCRETE		Cement	31 sacks	20.15				
				No. 15 gravel	18300 lb.	8.25				
				Sand	300 lb.	.20				
				Mixer rental	4 1/4 hrs.	2.40				
				Hoist	4 1/4 hrs.	5.95	36.95	42.95		
	FURRING		1"x2" Y. P.	112 bd. ft.	4.50					
			No. 9 wire	25 lb.	1.00			5.50		
	INSULATION	CEILING		1/2" rigid board	505 sq. ft.		25.05			
	ROOF		1" rigid board	600 sq. ft.		30.00	55.05			
ROOFING			15 lb. Felt.	6 rolls	9.90					
			Asphalt	2 bbl.	22.80			32.70		
PLASTERING	REINFORCING		Mesh & beads			5.20				
	PLASTER		All material			9.05	14.25	177.65		
METAL WORK	FLASHING		24 gauge G. I.	200 lin. ft.		8.20				
	GUTTERS		5" 26 gauge G. I.	111 lin. ft.		7.50				
	DOWNSPOUTS		4" G. I.	55 lin. ft.		5.50		21.20		
MILL WORK	FRAMES, DOORS, WINDOWS & SCREENS			75						
		TRIM		1800 lin. ft.						
		CABINETS		6		644.40				
		BASEMENT SASH		2		7.50				
		GARAGE DOORS		1		38.35				
		MEDICINE CABINET		1		7.10	605.35			
	HARDWARE		High-lighted bronze				40.80	736.15		



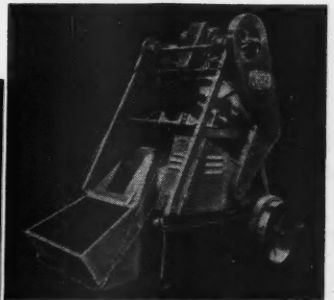
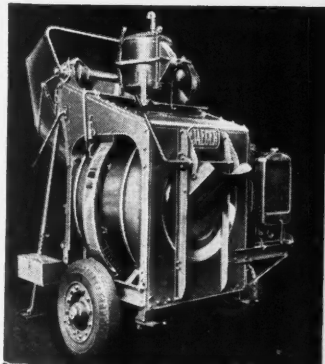
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13. HEATING	290.00	5.8
14. PLUMBING	355.05	7.1
15. ELECTRICAL	205.00	4.1
16. PROFIT AND OVERHEAD		
GENERAL CONTRACTOR ONLY	61.00	1.2
TOTAL	\$4,997.50	100.0%

sides. Forming two sides and the steel reinforcement cost \$0.122 per square foot of the gross area of the wall.

Concrete was poured into the forms at various dumping points around the top. At no time was any part of the pour more than 2 feet higher than the rest. All concrete was spaded as the pour proceeded. The mix specified was the same as for the footings. The quantity of material used however indicates that a mix of about 1:8 was obtained. Tests on samples of this pour showed in 28 days an average compressive strength of 2,500 pounds per square inch.

The cost of the basement walls was \$8.50 per cubic yard for the 30 cubic yards of concrete poured. This is a cost per square foot of 8" wall of \$0.215 for the net area of the wall. Including the forming and reinforcing the cost was \$13.30 per cubic yard or \$0.337 per square foot of wall.

(Continued to page 168)

are attached to pull the forms together tightly. Pins through holes in the flanges keep all plates in alignment. The forms were braced with 2" x 4" horizontal and vertical whalers. Basement walls were 8" thick. This dimension was maintained by metal spreaders placed between the form plates.

Reinforcing steel was placed as forming proceeded. Vertical rods were set 18" and horizontal rods 10" center to center. All reinforcement was 3/8" diameter standard deformed rods, set in the center of walls and wired to each other and to the spreaders. Horizontal bars were bent to extend 12" around corners. Vertical rods extended above each story pour to form dowels in the next pour above. Window and door frames were set inside the forms. Extra reinforcement, using 5/8" bars, was placed around all door and window frames. Wall corners were diagonally reinforced with 3/8" bars hooked at both ends. Forming, reinforcing and pouring of concrete was done one full story at a time including inside concrete walls.

Basement walls formed included 1,180 square feet of wall which was formed on two

HOUSE NO. 3 BREAKDOWN OF MATERIAL COST CONTINUED

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Material Used	Quantity	Cost	Job Cost	Sub-Total	Total	
STAIRS	BASEMENT	REINFORCING	1/2" rods	85 lb.		2.55			
		CONCRETE WORK	Cement	4 1/2 sacks	2.05				
			Sand & gravel	4180 lb.	1.95				
			Mixer rental	2 hrs.	1.00	5.90	8.45		
	MAIN STAIRS	REINFORCING	1/2" rods	100 lb.		3.00			
		CONCRETE WORK	Cement	7 sacks	4.55				
			Sand & gravel	4200 lb.	2.05				
			Mixer rental	2 hrs.	1.00	7.00	10.00	10.00	
	ACCESSORIES	FIREPLACE & CHIMNEY		Cement & sand	1 sack	.95			
				White cement	1 1/2 sacks	3.75			
			Fire brick & clay		3.85				
			10"x20" C. I. damper	1	7.50				
			8"x12" flue tile	8	5.00				
			Ash dump & C. O.		1.40				
			Form boards	96 sq. ft.	6.75		29.80		
BALCY & PARAPET			CONCRETE WORK	Forming & reinforcing	50 lb.	2.00			
				Cement	11 1/2 sacks	7.70			
				Sand & gravel	8380 lb.	3.95	14.25		
PORCH & TERRACE WALLS		RAILING	Wrought iron			29.50	43.75		
		CONCRETE WORK	Reinforcing	85 lb.	2.55				
			Cement	17 sacks	11.15				
			Sand & gravel	10890 lb.	5.00				
			Chimney blocks	13 pcs.	3.90		22.00	98.15	
HEATING	DUCTS	FITTINGS	26 gauge G. I.		70.00				
		REGISTERS	Wafer type		16.50		87.10		
	FURNACE	WARM AIR—COAL FIRED	Complete				106.40		
	MISCELLANEOUS	CHIMNEY, ETC.	12"x12" flue tile	14 pcs.	12.00				
PLUMBING	ROUGH	SOIL LINES				55.80			
		WATER LINES				27.95			
		GAS LINES				2.80	86.55		
	FIXTURES & FINISH	TUB, LAVATORY	5 ft., enameled iron						
		SINK AND CABINET	17"x19", enameled iron						
		WATER CLOSET	Vitreous china						
		ACCESSORIES		4					
		LAUNDRY TRAY	Cement						
		WATER HEATER	Auto.-Gas, 26 gal.				153.30	239.85	
		ELECTRICAL	ROUGH	CABLE, CONDUIT, ETC.	No. 14 wire	150 ft.	1.50		
	BX-2 wire			420 ft.	10.10				
	BX-3 wire			180 ft.	5.75				
	1/2" conduit			60 ft.	3.90				
	Connectors & nuts				4.50	25.75			
OUTLETS	Bar hangers				1.80				
	Boxes			60	5.85	7.65			
	SERVICE CONNECTION			Panel box		3.75			
	Switch				2.25				
	Transformer				1.00	7.00	40.40		
FINISH	MISCELLANEOUS		Bell & buzzer		1.20				
			Switches		8.10				
			Plates		1.65	5.95			
	FIXTURES			15		60.00	65.95	96.35	
	PAINTING		EXTERIOR TRIM	3 COATS	Lead & oil	3 gal.			7.80
INTERIOR TRIM		3 COATS	Lead & oil	5 1/2 gal.			28.35		
CEILING-LIV. ROOM		2 COATS	Plastic paint	35 lb.			6.00		
PAPERING		BATHROOM	Washable paper, etc.				8.00		
TOTAL MATERIAL COST								\$2891.25	

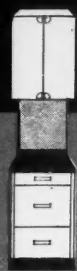
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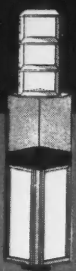
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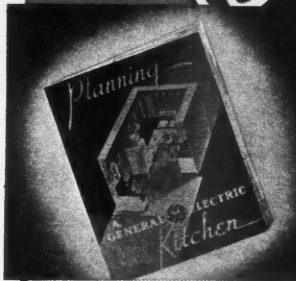
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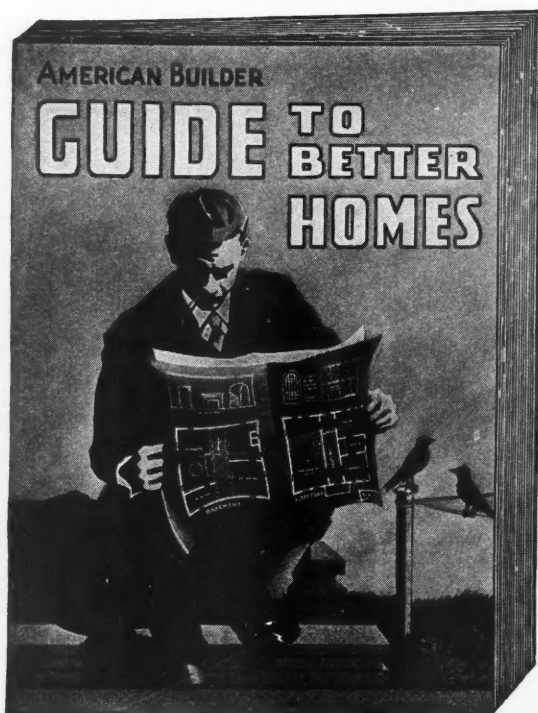
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By V. L. SHERMAN

Department of Mechanical Engineering
Lewis Institute of Technology, Chicago

RETURNING some books to my friend, the real estate editor, I could see a bright new handle at the left of each pair of the garage doors. He said he had been having some minor changes made and while the contractor was at it was able to ease his mind of two pairs of refractory doors. Going back to the garage he grasped one of the handles, lifted a bit, and then shoved the old pair of doors back under the attic joists. When we stepped inside it was easy to see why the whole operation had been so easy. The manufacturer had done a neat job of designing and manufacturing, and the contractor had done a first class job of mounting the old pair of doors on the hardware as a unit.

We might suppose that a manufacturer selling an extensive line of hardware at higher figures would hardly stress such equipment for "make-shift" purposes. But the manufacturers of the better grades of equipment built their business on common sense and know that minor improvements or changes can be made substantially and to good advantage. The hardware required to change the old heavy garage swing-doors to the single lifting type is real equipment. It is just as important as any other type of hardware, and it is not "makeshift."

Just as every piece of equipment is of importance to the manufacturer so must it be to the contractor. He does not relish the thought of installing fine bathroom equipment only to see the cabinet latches pull apart. My acquaintance with contractors has been pleasing. In no case can I recall any slighting of the so-called minor factors. Minor equipment must match the greatest. It is no great exception for the contractor to go beyond the specifications to satisfy himself, and without telling his client. It puts me in mind of Ray Stannard Baker's cabinet-maker who insisted on finishing the under side. No one would ever see it, perhaps, but he would know it was finished. There are a good many "Baxters" in the contracting business.

Well, I went down to return the books to the real

estate editor and I stayed to talk. The village library job had been finished. There were some extensive alterations to the heating plant and some to the building. Now, library boards are not expected to be lavish in expenditures, and the members of this board I knew to be individually set against chucking money away. The same contractor had had this library job. The results were really surprising. A new large basement room for the children, a shifting of the stair-case, a new split system for heating, winter air conditioning with the possibility of summer cooling later.

Perhaps there were a lot of little items, some rather pesky conditions to be encountered, but when everything involved is regarded as important and given deserved consideration the results are as they should be, and as they were in this case.

There are times with all of us when we thoughtlessly carp at the attention to small matters. We do not want to be reminded of them. Whenever one hears "for the want of a nail a shoe was lost" the tendency is to heave something at the speaker. That happened to be the opening line of an advertisers' letter to me last week, and that was as far as I read. In boyhood the same effect was produced by "don't scuff so." But it seems to me, from my acquaintance with contractors, that the successful contractors were those who never were irked by close attention to details or by constant reminders of the necessity for that attention.

As evidence of this let me point to X in Figure 3. The lumber dealer had told me where I could find this same contractor and another job fairly well along so I took the kodak. To the left of the door from the living room into the dining room are the air controls, well built instruments. The contractor must have thought just what I did when he remarked that both instruments would have to be sunk into a wall pocket or they would be forever in the way. "Do you remember the old-time electric-light switches with the single turn-button on a metal cylinder

(Continued to page 134)

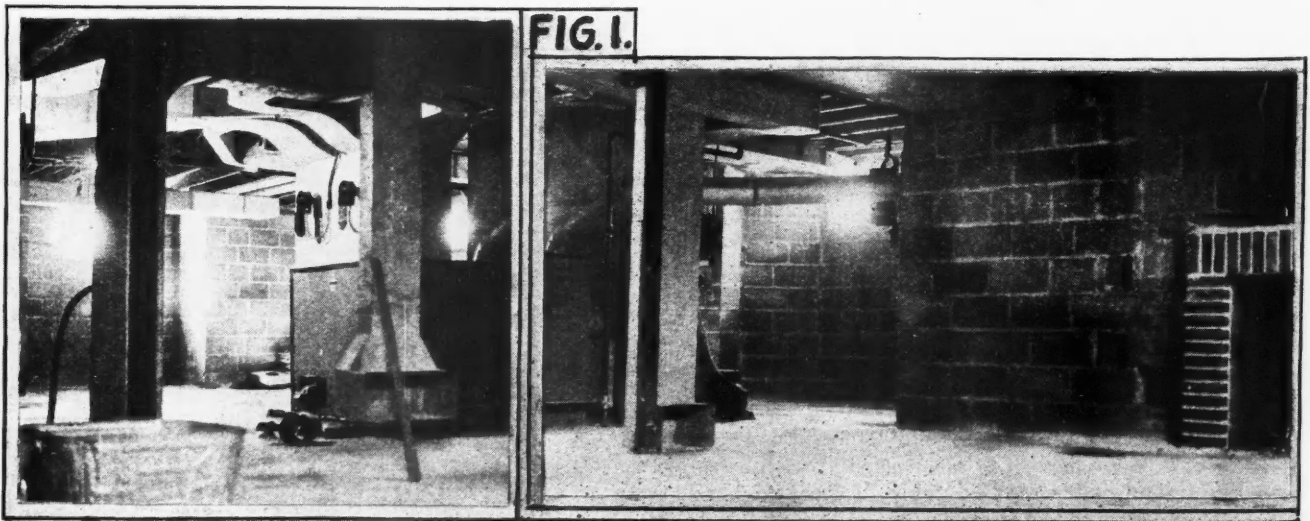
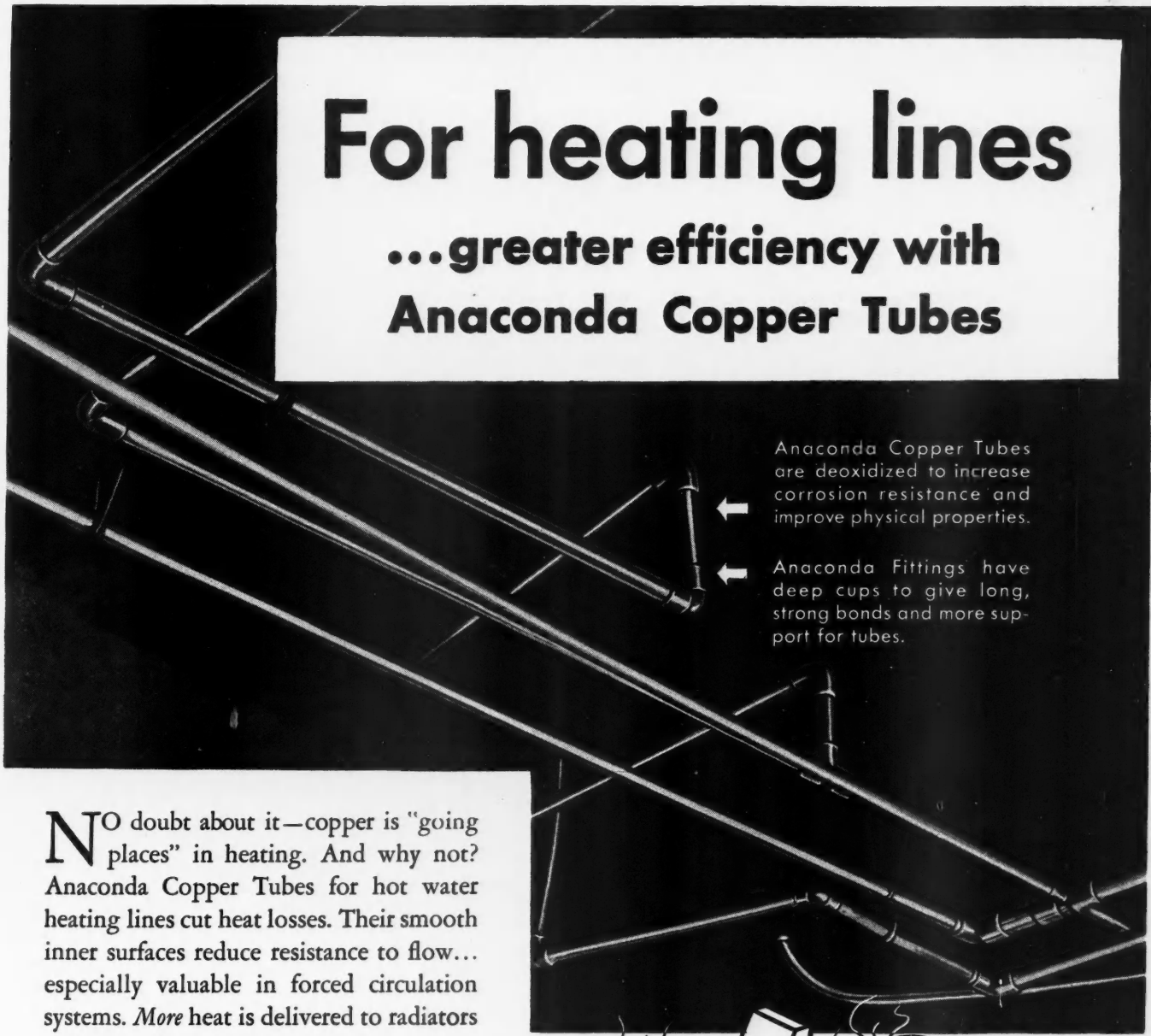


FIG. 1.
A VIEW OF THE BASEMENT LAYOUT FROM THE PLAYROOM SIDE. IMPROVED DUCT WORK IS CHARACTERISTIC. BETTER RETURNS.

For heating lines

...greater efficiency with Anaconda Copper Tubes



Anaconda Copper Tubes are deoxidized to increase corrosion resistance and improve physical properties.

Anaconda Fittings have deep cups to give long, strong bonds and more support for tubes.

NO doubt about it—copper is “going places” in heating. And why not? Anaconda Copper Tubes for hot water heating lines cut heat losses. Their smooth inner surfaces reduce resistance to flow... especially valuable in forced circulation systems. *More* heat is delivered to radiators—faster! Cost installed is only a little more than that of rustable pipe.

Many contractors are enthusiastic about the convenience of making soldered connections in tight corners, the ease with which radiators are hooked up, and the wide variety of fittings—including reduction tees. The complete Anaconda line is stocked by leading supply houses throughout the country.

97227



**Heat losses cut down!
Circulation speeded up!
More heat—faster!**



Anaconda

DEOXIDIZED

Copper Tubes

THE AMERICAN BRASS COMPANY • GENERAL OFFICES: WATERBURY, CONNECTICUT
Offices and Agencies in Principal Cities • In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ontario

HEATING-AIR CONDITIONING-PLUMBING AND WIRING

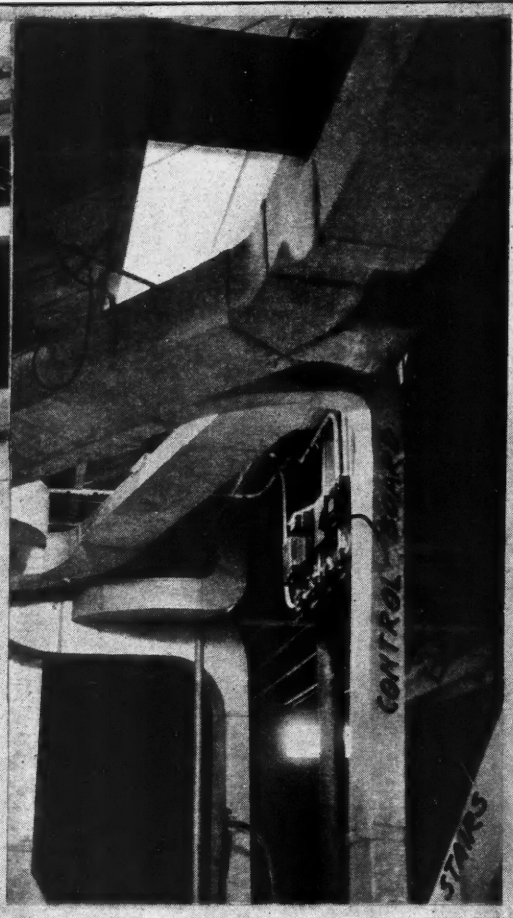


FIG. 2 MORE AND MORE ARE THE INSTALLATIONS OF EFFICIENT, RELIABLE, WELL CONTROLLED AIR CONDITIONING SYSTEMS. WITH THE ADDITION OF COOLING THIS PLANT WILL HANDLE BOTH WINTER AND SUMMER LOADS. (TAKEN LOOKING TOWARD PLAYROOM.)

that stuck out from the wall? And how you were forever bumping them? It was as bad as tripping over a drum-trap in the bathroom floor."

When we speak of mechanical equipment it may be that we simply furnish our imagination with a large conception of a perfectly equipped house. But the real contractor knows that no house is perfectly equipped if there is a screw loose. He wants equipment which is reliable. And he wants equipment which is not just being tried out. He does not want to buy merely on someone's say so.

Going down to the basement of this house, or back to Figure 1, I found the same type and make of winter air conditioning unit which this contractor had installed in a new house a year and a half ago. He pointed this out and stated that satisfaction in the first case was reason enough for this installation. I did not tell him that I had the figures for the previous winter on the first job and that it made me reconsider my own fuel costs. Both houses were thoroughly insulated, the new one as can be seen from Figure 3, on the north wall where the paneling is to be along with the large fireplace. Both houses were so designed as to take full advantage of warm-air heat. Both houses had duct work carefully laid out with capacities for easy air circulation.

As a detail of greatest importance it should be pointed out again and again that in warm air heat the best results are obtained only when the circulation of air is uniform and ample. Without regard to the quantity of fresh air taken in from outside for ventilation purposes any hindrance of circulation means a greater difference in the temperatures of the air entering and leaving the room. And that when air leaves the heating plant for delivery to a room at a high temperature it means that the differ-

ence of temperatures between the air in the heater casing and the heat supply is not enough. The heat is transferred from the combustion chamber, whatever it may be, to the circulating air in the casing at a much greater rate if these temperature differences are great. A transfer of heat from the burning fuel should take place where it is of most use, or it will take place above the chimney top. When an engineer can prove a low flue-gas temperature with proper consumption of fuel he has something worth money. We buy heat but we pay for fuel.

Figures 1 and 2 were taken because inquiries have come in from the inexperienced prospective home builders regarding this "new-fangled" duct-work. There is really nothing particularly new about it. Duct design is really an "old thing" in industrial work, but perhaps only a dozen years old in residential work of the smaller type. Years ago, whenever heating costs were sizable in large residences, the design of the warm air ducts was given careful consideration. The study of air-flow is not new. Some of those old jobs, remembering what they had to do with, are just as good as our latest. To go a little further in the matter of duct layout, especially in commercial work, it might be pointed out that very often in rebuilding or redesigning rental space a whole system of ducts may be discarded and an entire new one put in its place. Ducts are designed to perform in the most efficient manner. In residential work, even with small houses, there is just the same reason to get the best results obtainable, and these can be secured if the ducts are properly laid out.

To go still further in the matter of ducts, it will be noticed that when individual ducts begin to group themselves and finally enter the furnace casing they conserved

(Continued to page 136)

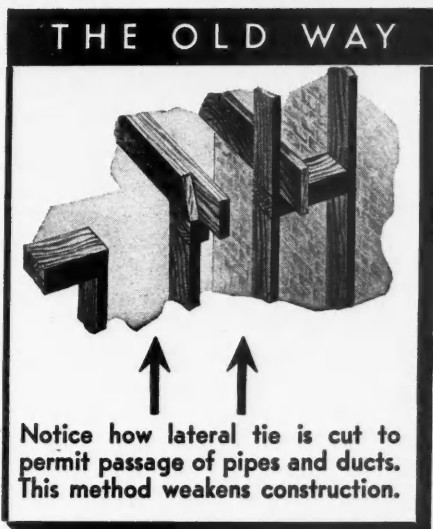
HERE is . . .

An Accepted Improvement in Frame Construction

ADJUSTABLE BEARING PLATE and STUD-TIES

A revolutionary improvement in the construction of homes and all buildings using wood framing . . . A low-cost method to avoid shrinkage and sway.

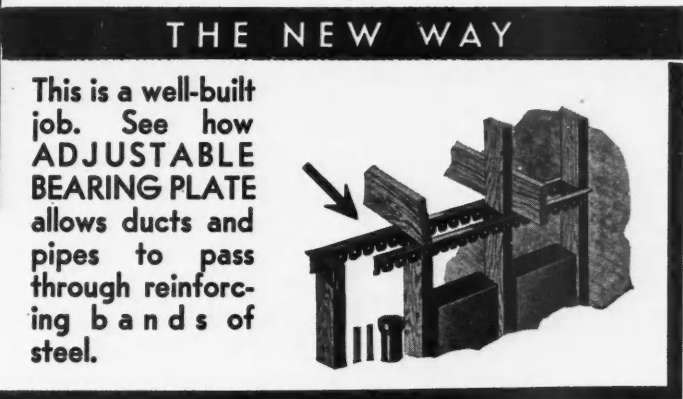
Correct the Serious Flaw of Cutting Bearing Plates to Allow for Air Ducts and Plumbing Pipes



Architects and builders now consider it "Jerry" construction to weaken a building by cutting bearing plates. They specify and use ADJUSTABLE BEARING PLATE or STUD-TIES which allow ducts and plumbing pipes to pass through bands of reinforcing steel.

Specify and install these products on your jobs. Assure sound construction at **NO EXTRA COST**—or just a slight increase, depending on layout.

Write or wire today for full information including installation details, prices, etc.



STUD-TIES

- Serve same construction purpose as Adjustable Bearing Plate, except they are designed for SINGLE DUCT or plumbing between two studs.
-

ADJUSTABLE BEARING PLATE CO.

11 Rutger St.
ST. LOUIS, MO.

**DISTRIBUTORS!
LUMBER DEALERS!
HARDWARE DEALERS! ETC.**

Good territories are open to live-wire distributors to handle ADJUSTABLE BEARING PLATE . . . STUD-TIES and ADJUSTABLE BATH TUB HANGERS. Get the franchise for your territory. **ACT AT ONCE.** Write or wire today for liberal money-making proposition.

A.I.A. FILE NO. 14-J

MECHANICAL EQUIPMENT FOR 20-YEAR FINANCED HOUSES

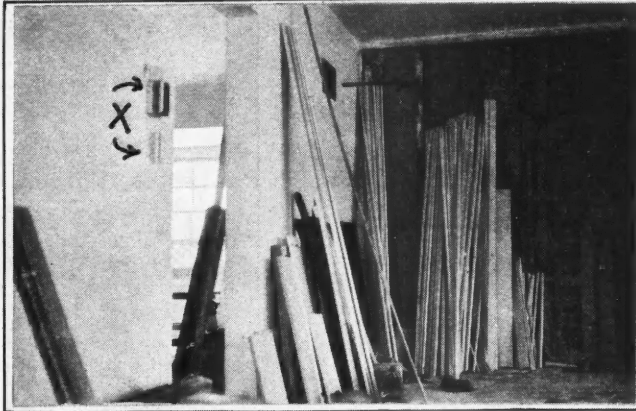


FIG. 3 THE WELL LIGHTED LIVINGROOM WITH THE CHIMNEYED AND INSULATED WALL AGAINST THE NORTH. PANELING THERE. AN "OUTLET" ON WEST, "RETURN" ON EAST WALL

the volume or capacity of the original ducts but at the same time have reduced the amount of duct surface exposed. If, after this grouping or nesting, as it might be called, the ducts are insulated the heat losses are minimized in the basement, and as the lessening of temperature drop in the ducts leading from the heater to the grille increases the efficiency of the plant so have we added another point to our advantage.

It will be noticed in Figure 1 that the smoke-pipe, or connection between the furnace and the chimney, is rather long. Unless the flue gases are low in temperature on leaving the heater there would be enough heat lost along this pipe to heat the entire basement. But the up-to-date heating plant is not a waster. Every means possible is used to pay out the heat of the fuel where it can best be used. The draft of the chimney is to provide enough air for as complete combustion as possible but not for the unnecessary escape of heat.

At the right in Figure 2 we are looking up from alongside the basement stairs. The control board shows here on the column. No basement partitions are up, but it may be noticed that the return ducts are lined up and leveled to suit the space for most headroom. Too small for the photographs are the damper handles. These would show that the air flow can be shifted if so desired. There is always a strong feeling of satisfaction whenever I come upon such a house under construction although it must be admitted it is tinged with envy. It must be even more of a satisfaction to the contractor and to those concerns furnishing the equipment. A feeling that nothing has been overlooked and that, little and big, every point has had its deserved consideration.

Getting over to Figure 3 again we have a good place to discuss air currents. It is fairly easy to size this room. On the west wall one of the two outlets is marked. On the east wall beneath the bay may be seen a part of one of the two return-air grilles. Delivering and diffusing from these

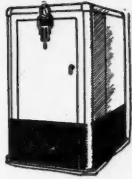
outlet grilles at the velocities called for is somewhat mystifying to one familiar only with the gravity feed type of warm air heat. But if the air is delivered through the duct and actually leaves the grille face at a velocity which you might at first term risky it can be seen that the warm air quickly mixes with the lower temperature room air, and that with a constant and positive withdrawal of air through the return-air grilles there is a "drift" of air sufficient to maintain even temperatures but not drafts.

In such cases, where the design of duct-work has been careful and the delivery temperatures and velocities are not just guess-work, there is a comfortable atmosphere in the winter time and a very satisfactory condition in the warm and hot weather when the cooling systems have been added. With such systems as this the amount of fresh air added per minute to the make-up may not be greater or even as great as in the older systems in order to maintain comfort. This is because in stepping up the circulation of air by means of a fan there may be a distinct lowering of the temperature of the delivered air and an increase in the temperature of the air returned to the heater. The variations in temperatures of room air are what cause discomfort. The tendency then is to raise the temperature of the delivered air, and a little of this tempts one to open the windows.

One of the photographs turned out badly. But its subject is worth space I am sure. A small but slightly cove, with grilles at intervals, crossed the north end of the kitchen and led part way along the side walls. A housed fan on the north wall discharged air drawn into the cove. Such an arrangement is a real addition. It ensures against any possibility of recirculation of air from the kitchen and can be operated in conjunction with the controlled air discharge from the main trunk.

It is not to be supposed that all well built heating and cooling systems work on the same principle. They do not. Each has its advantages. Conditions are similar at times, but are rather likely to vary. This long dissertation on one particular house does not attempt to suggest that some other system would not work to better advantage on another type of house. The point is merely this. With the opportunity under the Federal Housing Administration rules for including home equipment there is now a choice never before available. So, select the best system for each type.

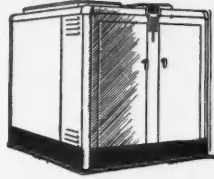
These Air Conditioning "Products of General Motors" have proved they can sell houses!



DELCO AUTOMATIC FURNACE

For steam, vapor,
and hot water systems

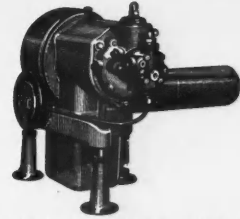
Here's the automatic furnace that's an economy even in the small house. Powerful, dominating advertisements constantly tell the public about its money-saving "Im-pak-tor" principle of construction that keeps the heat in the house, cuts chimney losses. This year, new small models at attractively lower prices.



DELCO CONDITIONAIR

For warm air systems
"It air conditions as it heats"

Here is true winter air conditioning—heating, filtering, and circulating of air—at the cost of automatic heating alone. The Delco Conditionair can be equipped for summer air conditioning, too . . . at the time of installation or later. New, small models at attractive prices for the 5- and 6-room house.



FASTEST SELLING OIL BURNER IN THE WORLD

The Delco Oil Burner is the fastest selling burner in the world—proof that your prospects want this Delco-Frigidaire product. It's equipped with the sensational Thin-Mix Fuel Control—that cuts heating costs by producing a *thin* mixture of oil and air. New "Factory-fitted" burners fit any size house without waste of fuel.

FRIGIDAIRE

Controlled-Cost

AIR CONDITIONING

For the larger house Delco-Frigidaire offers complete year 'round air conditioning—heating in winter, cooling in summer and conditioning throughout the year. Backed with the powerful name of General Motors—pioneers in electric refrigeration from the beginning. If you want *all* the facts about air conditioning, you'll get them from *Controlled-Cost* Air Conditioning.

THE two most powerful selling arguments you can add to your own building skill today are . . . automatic heating and air conditioning.

And *with the public* one name stands out above all others in this field—"Products of General Motors."

Delco-Frigidaire, the Air Conditioning Division of General Motors, offers

a *complete* line of heating, cooling and conditioning equipment for houses of any size—from those of five rooms to those of ten rooms or more. And these products have proved their ability to sell houses for builders everywhere.

Powerful, dominant, national advertising continues to drive home to your prospects the fact that these "Products

of General Motors" will save them money—give them dependable and economical service.

In fairness to yourself—before you invest *any money*—get *all* the facts.

When your Selling Season is over, you'll be glad you mailed this coupon today.

—————Your prospects know—————

DELCO-FRIGIDAIRE

The Air Conditioning Division of General Motors

AUTOMATIC COOLING, HEATING AND CONDITIONING OF AIR

Delco-Frigidaire Conditioning Division
General Motors Sales Corporation
Dayton, Ohio—Dept. AB-4

Please send me all the facts about Delco-Frigidaire heating, cooling and conditioning equipment for builders.

Name _____

Address _____

City and State _____

Small Homes for Small Investors

By J. DAVID CATHCART

LIKE thousands of other young folks with spare change and financial itchings, we have, from time to time, dabbled and undabbled bewilderedly in the stock market—buying and selling microscopic pieces of this and that with the attendant high hopes, wild theories, chewed finger nails and sighs of relief as we congratulated ourselves on sliding out with minimum blows-in-the-teeth.

But, for the present, at least, we are not “playing the market”—if you’ll excuse the misuse of that high-sounding phrase. We have decided that we can gain more cash and operate more intelligently by investing what little extra money we accumulate in a small home or two.

Don’t think that we’ve been talked into this—it is our own unprompted idea. No real estate man solicited us. In fact, most of them seemed surprised that we would think of buying a home without intending to live in it.

We “rode” the neighborhood and finally chose a house on Jackson Avenue. It is a neat, little, detached, seven-room semi-bungalow, in fairly good shape, with a garage, on a lot 40’ x 125’ about three blocks from a good railroad station. In 1929, it would have sold for about \$4500. We got it in December, 1935, for \$2700.

That wasn’t the listed price. The building and loan association owning it held it at \$3000 and talked pretty tough during our first negotiations. But, when we affected indifference, they hurriedly said O.K. and let us have it for \$2700—\$700 cash and \$2000 retained mortgage.

Three of the rooms needed papering and a little carpentry was in order. Mentally, we appropriated about \$50 for this work. We felt sure that the work would hit at least this high.

But, instead, we were billed only \$30. The agent had arranged for a “real estate” job with “real estate” laborers which, as nearly as we can figure out, simply means a “good-enough-to-get-by” job and is the usual thing on rented properties.

By the time settlement was completed, we had given up \$800 cash and assumed a mortgage for \$2000. The taxes on the property run about \$60 per year and mortgage interest is \$120 giving us a total annual expense of \$180.

Along with the house, we received a tenant paying \$25 per month rent. He wasn’t a particularly good tenant, one of these careless families that means slow pay and possible property damage. However, we allowed him to stay there through the freezing months just to keep the place occupied.

Then, when March rolled around, we listed the place with every real estate agent within five miles. It wasn’t long until we had a dozen good prospective tenants offering better than \$25 per month.

Incidentally, we were very careful to keep secret our identity. Only our agents know who owned the house and they were sworn not to reveal us. In this way, we were assured that no tenant would become a nuisance with petty requests about faucet washers and electrical outlets.

The tenant to whom we decided finally to rent the place, and you’d be surprised at the wide choice which we had, was a German family consisting of Papa and

How To Make Money in the Present Real Estate Market

Mamma (ages 50 and 45) and Junior (age 25). They were the solid, substantial type of family that means no trouble, good treatment of the property, good credit and all of the other factors that insure a worry-free investment.

They’re paying \$28.50 per month which seems to be all that they can afford. We considered holding out for \$30 but didn’t on the theory that \$28.50 shows us an ample return and that we now have an A-1 tenant and a trouble-free investment.

So, here are our mathematics. We shall reveal all. Our annual income totals \$325 which is \$28.50 for twelve months less the 5% fee of the agent. Out of that \$325, we spend \$180 for taxes and interest, giving us an annual net of \$145 on an investment of \$800 or about 18% interest.

Next Spring, we’ll up the rent again. It should then bring about \$32 or \$35 per month and the 18% figure will hop to 25% or more. Do you know of anything with comparable safety in the bond or stock market that will yield as well?

“Suppose your house stands empty for six months?” you ask.

And we reply, “It won’t!”

When picking the place, we carefully kept in mind commuter appeal. It has nothing that would make it an undesirable place in which to live.

By the simple process of chatting with five or six real estate men, we learned that homes renting between \$25 and \$35 per month are seldom empty. Higher-priced homes sometimes stand idle because prospective tenants are fewer. And lower-priced homes frequently are in such poor shape that the tenants with worth-while credit won’t consider them. But being in the \$25 to \$35 range, we can be pretty certain that our property will stay rented better than 80% of the time.

Of course, those prices apply to our immediate suburban community. They may differ elsewhere. But our premise is that the grade “C” house, the working man’s home, represents the best investment risk.

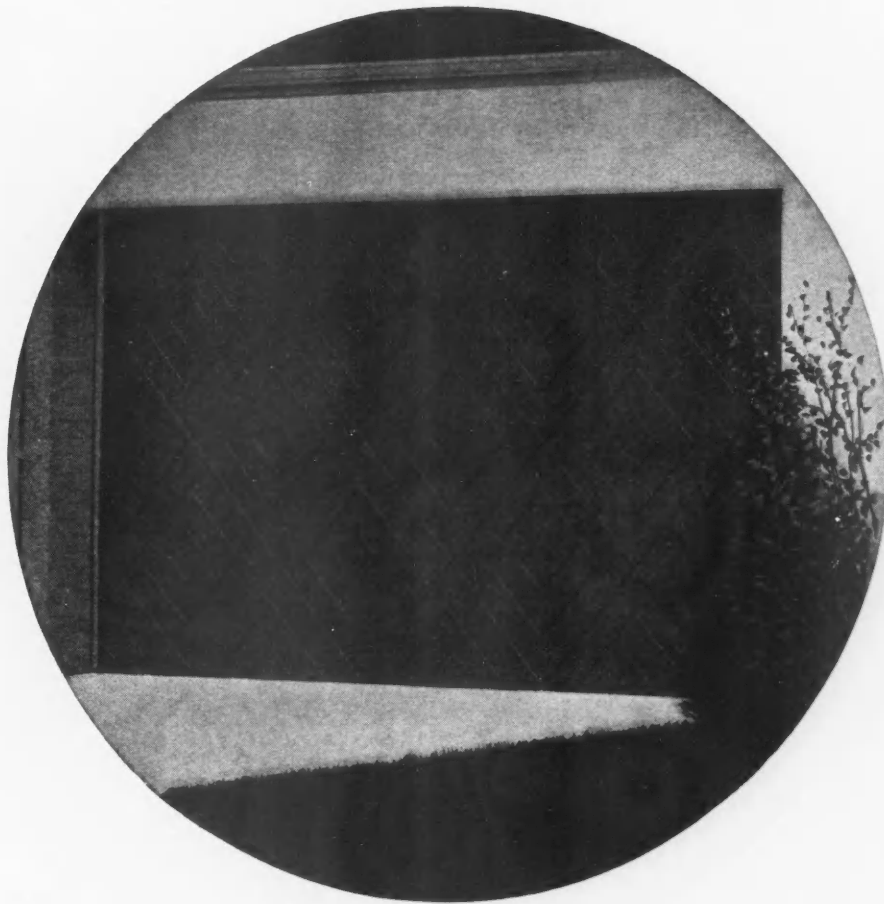
Then, of course, there is the angle of marketability. Our house, we think, would sell within two weeks if we tossed it on the market at a bargain price. Already, we’ve been offered and refused \$3500 for it. We’re waiting for \$4000 and indications are that someone will come across with that amount about March, 1938.

In the meantime, we shouldn’t have any trouble getting \$3200 or more for it on a quick sale. We’d just insert a couple of newspaper advertisements, splitting the cost with our brokers. In fact, some of our friends have asked for it at \$3200 just as an investment. It’s still a good buy at that figure and would yield about 15% on \$1200.

Good, little buys of this sort, we realize, are not available every day. They must be sought out. And not every small house would turn out to be a good investment. But, to those kindred souls who find the stock market a confusing raffle-wheel, a few hours with a real estate man might be time well spent.

CRAWFORD REZO-DOORS

*The New and Outstanding Development
in Upward-Acting Garage Doors*



For Beauty and Variety of Architectural Design, Ease and Quietness of Operation, and Durability—In Fact, Lasting Appeal—Crawford Doors Surpass All Others.

The new Crawford Rezo Flush Type Door represents a structural advancement with many marked advantages. Its patented interlocking CELLIZED core, with laminated waterproof faces, is designed especially for outside purposes, and is an assurance against warping, sagging or swelling. This construction, in combination with the advanced engineering features of Crawford equipment, also greatly reduces the weight, which, while maintaining strength, makes the Crawford Rezo-Door the easiest and quietest operating door on the market. Surpassing beauty is reflected in the present-day architectural trends that are carried out in Herringbone, Diamond, Vertical or Hor-



izontal and many other effects. Velvet smooth surfaces lend themselves to the various finishes and to many decorative treatments. Crawford Rezo-Doors are available in both Sectional and One-Piece Upward-Acting Doors.

Crawford Door Company,
5300 St. Jean Ave.,
Detroit, Mich.

A.B. 4-37

Please send literature and further information regarding the Crawford complete line.

NAME

ADDRESS

Contractor

Dealer

The Crawford Door Company offers a complete line: Sectional doors for residential and commercial purposes; High-lift and special doors for service stations, boat wells, factories, warehouses, etc. Also One-Piece type Hardware for converting swinging or sliding doors into the upward-acting type.

ASK YOUR DEALER, OR MAIL COUPON.

CRAWFORD DOOR COMPANY
5300 ST. JEAN AVE. — DETROIT, MICHIGAN

SHOPCRAFTER'S Corner

Things To Build for Profit or Pleasure

ALMOST every home can use an extra end table, particularly when it is as attractive in appearance and as useful as the one with a combined book rack shown on this page. The gracefully curved legs and inlaid top give the Shopcrafter added interest from a construction standpoint, and make the finished project one that any builder can show with pride.

Cabinet plywood stock of half-inch thickness is best used for the two stretchers; this gives extra strength but must be carefully finished because of the end grain. A mortise and tenon joint horizontally into the legs is recommended.

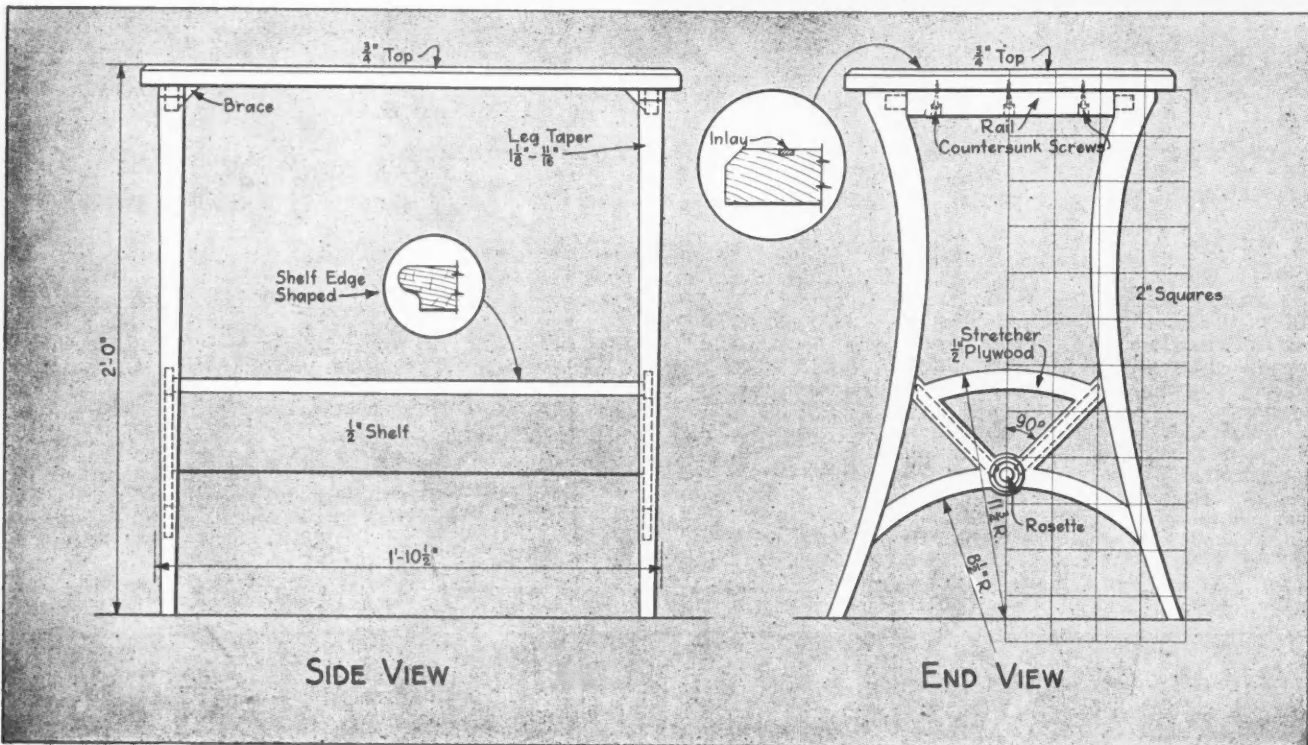
Regular stain, fill and varnish finish are used. The Bill of Material below lists required stock; working drawings show construction; leg curvature can be followed from the end view detail.



BILL OF MATERIAL

- Top, 1 pc., $\frac{3}{4} \times 14\frac{1}{8} \times 24$ " finished size
- Shelves, 2 pcs., $\frac{1}{2} \times 5\frac{1}{8} \times 20\frac{7}{8}$ " finished size
- Rails, 2 pcs., $\frac{3}{4} \times 1\frac{1}{8} \times 8\frac{7}{8}$ " finished size
- Legs, 4 pcs., $1\frac{1}{8} \times 3\frac{1}{2} \times 23\frac{1}{2}$ "
- Stchs., 2 pcs., $\frac{1}{2} \times 7\frac{1}{2} \times 12$ "
- Rosettes, 2 req., $1\frac{5}{8}$ d.

CONSTRUCTION drawings below give details for building the end table pictured at the right. Design from The Deltagram.



Barrett

ROOFINGS



Barrett's Farm Plan Service establishes you as building headquarters for farmers — gives you a chance to sell hundreds of profitable items.

A new IMPROVED service that helps you sell hundreds of items

BARRETT'S unique 1936 Farm Building Plan Service helped hundreds of dealers cash in on the boom in farm and rural business. They called it "the most practical help ever offered in selling to the farmer."

This year Barrett offers a new and better direct mail campaign to make the service even more effective—personalized mailings that bring prospects into *your* store to build or remodel direct from the plan books and material lists Barrett furnishes.

It's a sure-fire opportunity not only to boost sales of Barrett Roofings but also hundreds of other items you carry. Ask the Barrett salesman to tell you how you can take advantage of this unusual service.

THE BARRETT COMPANY

40 Rector Street, New York, N. Y.

2800 So. Sacramento Avenue
Chicago, Illinois

Birmingham
Alabama



Three personalized mail pieces like this — each addressed with the prospect's own name — are furnished free to send to your own prospects. The humorous approach has real punch!

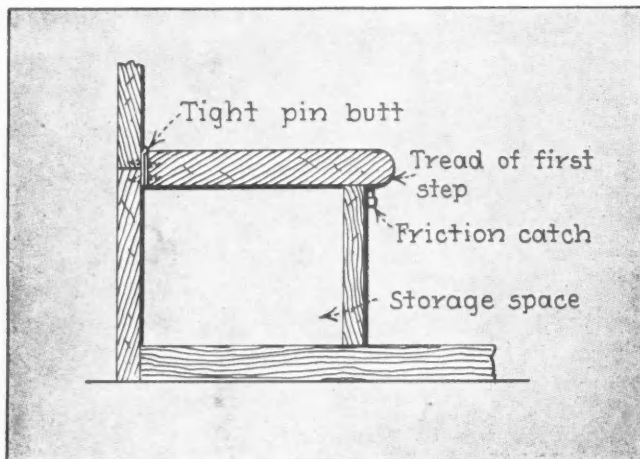
PRACTICAL JOB POINTERS

A READERS' EXCHANGE of tested ideas and methods, taken from their own building experience. Two dollars or a year's subscription to *American Builder* is paid for each item when published. State business connection or trade.

Handy Storage Space in Step

I AM enclosing a drawing of a handy kink that my father and I have built into many houses.

The first step on the basement stairs is made into a box-like storage place by extending the second riser down between the platform on floor and first tread so that it meets the platform step extended back as shown in the drawing, with the top formed by the tread of the first step and the first riser as the other side. The top is hinged to the riser with two or three (depending on the size, 3 if 1½ inches or smaller) narrow tight pin butts. The top, or tread, is held down with a friction catch.—JAMES LYKE, Black Falls, Wis.



TREAD hinged for storage in stair.

First Aid to Water-Logged Electric Tools

THE following suggestions will be helpful to all users of electric tools whose equipment may have been under water during the recent floods in many areas of the Middle West.

Submersion has probably ruined the insulation in the tools as well as rendering the fibre parts unfit for use. Grease has become diluted and dirty, and all parts covered with silt and mud. Do not operate electric tools, motors or switch mechanisms until they have been taken down, cleaned and baked out.

For best results, send the tools to the nearest factory service branch for overhaul by trained men. Where owner desires to service the tool himself, the following procedure is suggested:

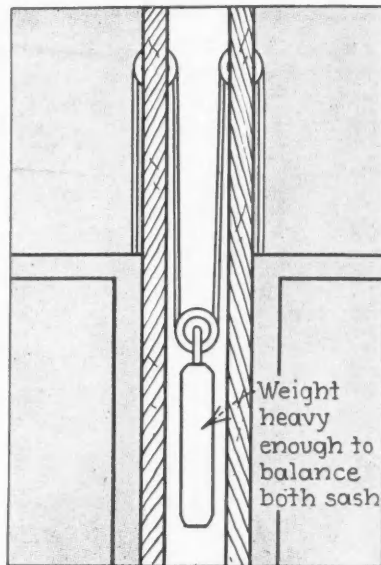
Completely disassemble the tool, to get to all parts. The armature and field should be put into an electric oven and baked for 24 hours at a temperature of 275 degrees Fahrenheit. They should then be checked for shorts and grounds. If O.K., apply a coat of insulating compound and bake again for 12 hours at 275 degrees F.

All fibre switch and brush riggings should be replaced. Most switches will have to be replaced and all taped wire connections should be cleaned and retaped. Clean all ventilating holes in the case of the tool. Wash all grease from all gears, housings and bearings, using a suitable fluid. Repack with new lubricant, using a good grade of medium cup grease, such as "Non-Fluid Oil A-No. 3" or equal. Clean rust and dirt from all parts.—JOHN S. HAND, Service Manager, The Black & Decker Mfg. Co., Towson, Md.

Single Weight Balances Two Sashes

IN THAT the work this year will be chiefly residential and a large portion of that work will be remodeling and renovating, I would like to present to the readers of the *American Builder* the following method of hanging sash and weights in a double-hung window that heretofore used the pin method of suspension. The houses that I have remodeled lately have one and a quarter inch window jambs. Ordinarily you will find that a window with this size jamb does not have room for the passage of four weights in the mullion.

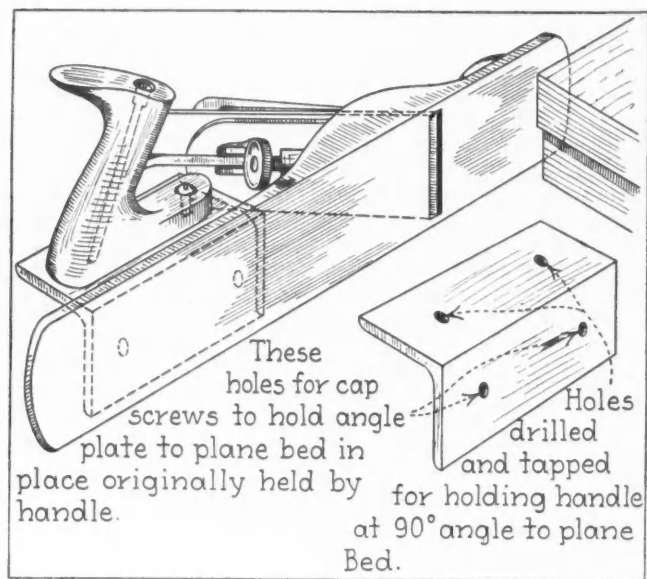
To save the cost of buying new jambs and change the old method of suspension to the weight type, I do the following: Plough sash and place window pulley in usual manner, run sash cord from sash through window pulley down to and through single stiff swivel hook pulley (hook of this pulley hooked through eye of weight) up and through opposite window pulley and down to opposite sash. Place weight usual distance from window pulley. This method is successful in every respect. I often use this method in new residential work where the mullion must be very narrow so as to give the desired results.—C. R. HIGGINS, Higgins Construction Co., Joplin, Mo.



METHOD of using pulleys for single weight on narrow mullion windows.

Plane Handle Shifted for Shooting Board

THE carpenter or cabinet worker who uses a shooting board a good deal will find that by changing the angle of the plane handle, much less fatigue will be experienced and better and more accurate results can be attained. This change can be effected by inserting a short piece of angle iron between the plane and the handle, this piece having holes drilled and tapped in the proper locations for the two screws needed in each side. It takes but a few seconds to adapt the bench plane for use in the shooting board and an equally short time to change the handle back to normal.—W. C. WILHITE, Carlinville, Ill.



ANGLE iron bracket simplifies vertical surface planing.

Here's Certigrade's 1937 advertising working for you again!

STRONG consumer advertising in a powerful list of national magazines—aimed at prospective home-builders; a direct tie-up with the FHA and its potent force in home building—that's what Certigrade Red Cedar Shingles are doing this year to help you make more money.

Last minute flash! Watch for four-color full page advertisements scheduled to appear shortly in Good Housekeeping, The American Home and Better Homes and Gardens! These advertisements emphasize the beauty, durability, long life and high insulation value of Certigrade Shingles; strong selling points for prospective home-builders.

Certigrade advertising is stressing home building—it will bring new prospects to you. Talk Certigrade

Red Cedar Shingles for *both roof and side walls*. Get your share of the new building business Certigrade advertising is creating. ••• Red Cedar Shingle Bureau: *Headquarters, Seattle, Washington; Canadian office, Vancouver, B. C.*

"Rent Money" bought this lovely home through FHA!



The owners wisely chose a Certigrade Exterior for—

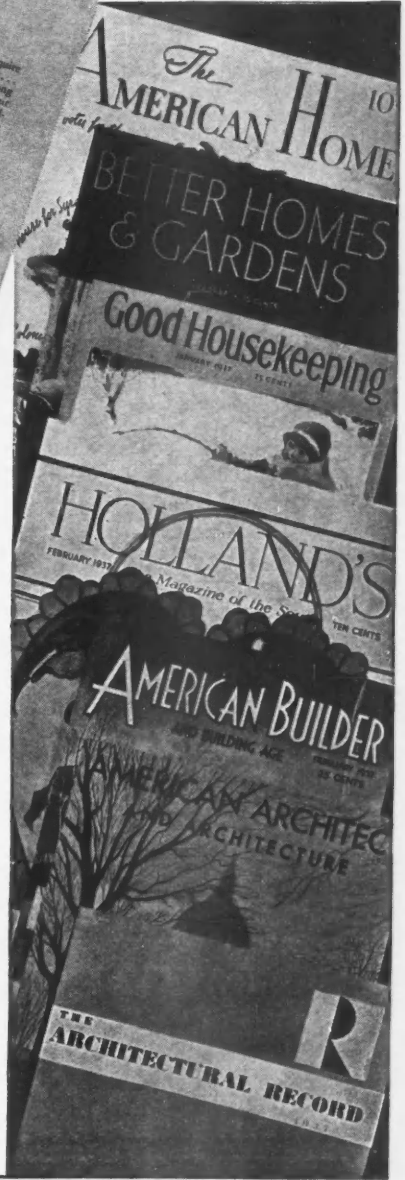
- Smart beauty
- Snug comfort
- Long life

Your \$475 MONEY 100, can buy a home under the FHA plan... pay 10% down and 10% a month... over a period as long as 20 years. And Certigrade Red Cedar Shingles will make the charming, livable home you have always dreamed of. The rich natural beauty and even texture of red cedar expresses a warmth of friendliness found in no other material. Certigrade's creosote-treated ends which allow horizontal lines and their random white aluminum siding.

But beyond beauty, Certigrade Shingles give the long-lasting durability so desirable for homes insured with an FHA interest loan. No wood is more durable than red cedar. Certigrade Shingles require no upkeep expense for decades... they'll still be around and lovely long after your FHA loan is paid. Their high insulation value—due to their long of stay air cells in the wood—insure cool comfort in the woodshed in the winter.

Build now through an FHA insured loan and build for beauty, the Red Cedar Shingle you wish Certigrade. Write today for your free copy of "A Portfolio of Certigrade Homes" illustrating charming Certigrade exteriors. ••• Red Cedar Shingle Bureau, Department B-517, White Building, Seattle, Washington, Canadian office, Vancouver, B. C.

Certigrade
RED CEDAR SHINGLES
INSULATE AS YOU DECORATE



Certigrade



RED CEDAR SHINGLES

ACCESSORIES That Sell Homes

Sales Appeal in the Kitchen

SOME of the home equipment features which help put over the sale of new homes have been greatly improved since the last time that extensive home buying was the vogue and an "Open for Inspection" sign meant a deluge of interested prospects. On these pages many such items, along with the latest in contractors' labor saving and cost reducing equipment, are presented.

The kitchen is a bright spot in which to introduce sales appeal, as can be judged by watching housewives dash to this room of a new house to see "What's New" and to compare it with their present workshop. Illustrated in this column are some new ideas which the Kitchen Maid Corporation, Andrews, Ind., has introduced into its extensive line of kitchen cabinets to give them the latest construction, convenience and trend of styling.



LEFT: Recipe books and pottery can be easily found on new open base shelves.



ABOVE: A compact and ventilated towel-drier keeps towels out of sight in handy location.

RIGHT: Rounded open corner unit allows variety of treatment with Kitchen Maid Cabinets for modern effect.



BELOW: Divided tray and platter compartment solves an awkward storage problem.

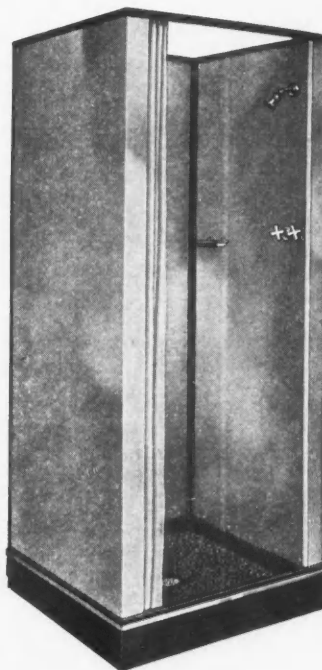


These built-in cabinet units have Temperprest counter tops which can easily be kept clean and orderly, are made for long, trouble-free service without warping, cracking, chipping, staining or marring. A ventilated towel-drier is located beneath the sink; the tray compartment divided into sections solves awkward storage problem. New rounded open corner cabinets are useful and modern in design. A wide choice of bright colors and modern chromium, plastic hardware add to their attractiveness.

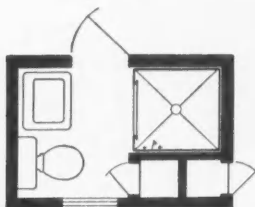
Bathroom Highlights

TODAY'S bathrooms divide honors with kitchens as the major points of interest which have received much in the way of new developments. Showers come under this classification, and the quintuple-purpose cabinet type developed by Henry Weis Mfg. Co., Elkhart, Ind., illustrated here, has numerous innovations. For family use from the baby to the octogenarian, the new cabinet is equipped with accessories that completely revolutionize the popular concept of shower bathing.

In addition to the conventional shower for the adult, there is a special shower for the growing child, a gentle spray for the baby, a shower for the elderly person, and a special foot shower. The dis-



RIGHT: Weisway Standard Cabinet Shower. Below, Compact bath layout with shower and linen cabinet.

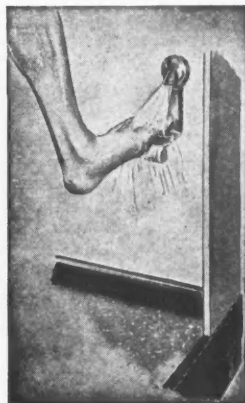


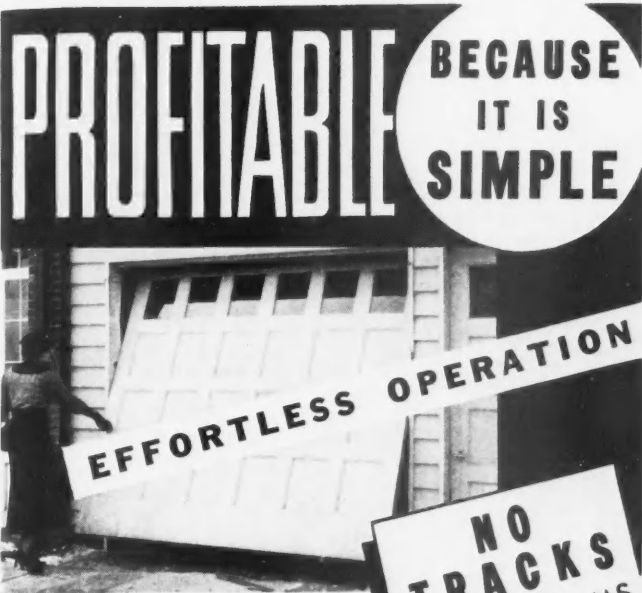
tinctive feature of the cabinet is the fact that it has two shower heads. The upper head is placed at the normal height of six feet above the receptor. The lower is placed four feet above the receptor. A diverter valve with indicator permits the bather to direct the water at will either to the upper head, to the lower head, or to the foot shower which is placed 23 inches above the receptor. A hose spray may be attached to the lower shower head fitting and may be utilized by anyone who wishes to be showered while comfortably seated in the cabinet.

The hose spray is also utilized in bathing an infant in the cabinet. For this purpose, the cabinet is equipped with a special lightweight canvas shower hammock which continually drains, thus giving the baby the stimulating effect of a gentle spray without immersion in soapy water. The hammock top may be turned down after the bath for drying, powdering and dressing the baby.

Another distinguishing feature of the new cabinet shower is
(Continued to page 152)

RIGHT: Baby shower hammock fits into stall. Below, foot bath attachment adds an extra convenience to the shower.





GOOD PROFIT ON LABOR

Only a few hours are required to make the average installation of "Over-the-Top" Door Equipment. This allows good profit on labor—especially where a flat price is charged for the complete job.

STILL FURTHER PROFITS

Comes from additional sales made through recommendations from pleased customers—and from other repairs or remodeling which often accompany "Over-the-Top" installations.

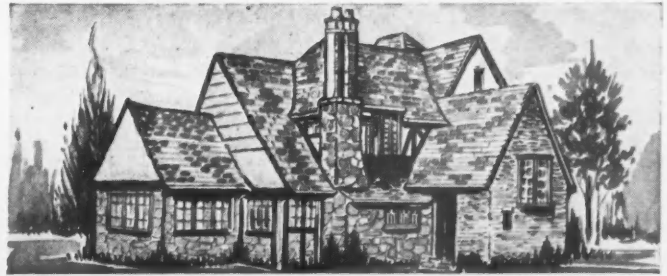
THE PUBLIC IS "SOLD"

On over head doors—especially "Over-the-Top"—because of its moderate cost and extremely easy operation. Many builders made good money on this work right through the "depression." Think it over. See your dealer regarding "Over-the-Top" equipment—or write.

FRANTZ MFG. CO.
Sterling, Illinois

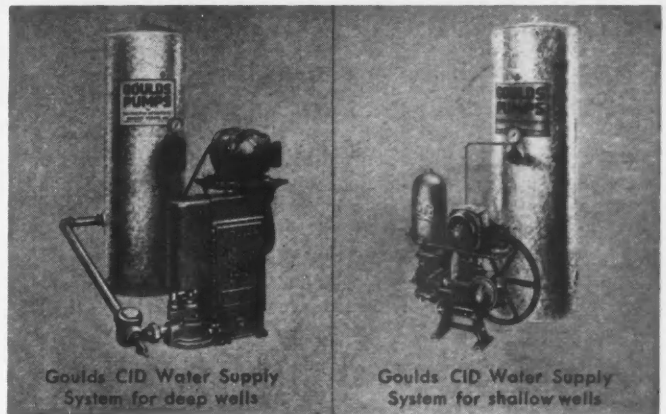


- NO TRACKS ON SIDE JAMS
- NO WEIGHTS
- NO PULLEYS
- NO CABLES
- ONLY 3 1/4" HEAD ROOM REQUIRED
- NO COMPLICATED CUTTING
- NO DIFFICULT FITTING
- NO INVENTORY DEALER CARRIES STOCK
- NO SPECIAL DOORS



4 GOOD REASONS FOR INSTALLING GOULDS WATER SYSTEMS

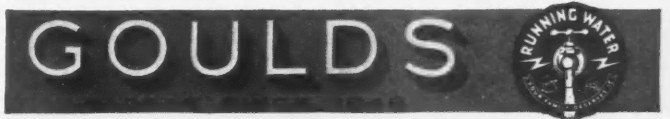
1. Goulds CID Water Systems help builders sell homes. Customers know the many conveniences of fresh hot and cold running water under pressure.
2. Customers know and prefer Goulds.
3. Goulds CID Water Systems are easy to install and require practically no servicing—they are dependable.
4. Goulds CID Water Systems supply clean water, hot and cold, under pressure to every room in the home—for only a few cents a day.



Buyer confidence in Goulds CID Water Systems is the result of over half a century of dependable, low-cost service wherever pumps are used.

Builders have found Goulds CID Water Systems, for deep and shallow well pumping service, outstandingly successful in performance, low in maintenance costs—inexpensively priced, and popular.

The Goulds line of Water Supply Systems is complete. A wide range of capacities and sizes is available to meet practically any requirements in new or remodeled homes. Get the facts on Goulds CID Water Systems. If your regular jobber does not handle the Goulds line, write for name of nearest Goulds Distributor.



GOULDS PUMPS, Inc., 230 Fall St., Seneca Falls, N. Y.

Please send me the name of the nearest Goulds Distributor. I am interested in a pump for deep well shallow well service.

Name
Street or R.F.D.
Place State

(Continued from page 148)

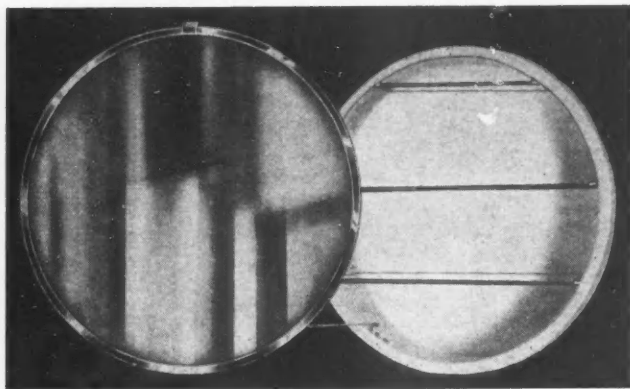
the non-skid receptor of vitreous porcelain enamel. A special method of applying the porcelain gives positive assurance against slipping when the floor is either wet or dry.

Cabinets may be obtained in a variety of models, finishes and colors. They are light in weight, yet staunchly built and permanently leak-proof, and are shipped completely fabricated and finished—all ready for quick, fool-proof assembly and installation. The floor plan shows a compact bath arrangement.

* * *

THE new circular mirror medicine cabinet manufactured by the Columbia Metal Box Co., of New York, and developed to meet the growing demand for modern-looking cabinets, has proved especially appealing to the housewife.

This cabinet is stamped from one piece of heavy steel, the interior of which is finished in white enamel. The heavy plate



MIRROR has adjustable hinge for swinging forward or sideward.

glass mirror is 20 inches in diameter and is enclosed in a one-piece brass chromium plated frame.

An interesting detail of the operation is the hinge arrangement which enables the mirror door to swing forward and sideward at one time, revealing the interior of the cabinet and at the same time providing an adjustable mirror to suit the exact need of the individual, who is able to turn it at just the right angle to catch the proper light or desired reflection.

Installation is made simple by use of a steel buck 21-inches square which is nailed directly to the studs.

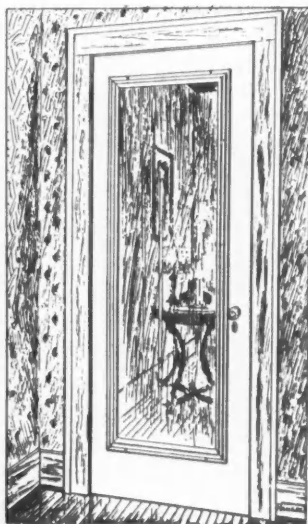
Doors Are Important

THE manufacturers of door and door accessories have been improving their products to give more efficiency and better appearance to these items. Mirrors on one or more doors throughout the house add appreciated convenience.

A regular door can now be converted into a real full-length mirror door by simply installing a Pittsburgh framed door mirror, manufactured by Pittsburgh Plate Glass Co., Pittsburgh, Pa. This requires only a few minutes as frame is attached to door with 4 screws.

The mirrors are made of genuine polished plate glass. Frame is of poplar, well constructed and finished in two-tone ivory. The mirror is held in frame with concealed metal clips at corners, and sides; the back is protected with heavy cardboard covering. The mirrors are made in numerous stock sizes.

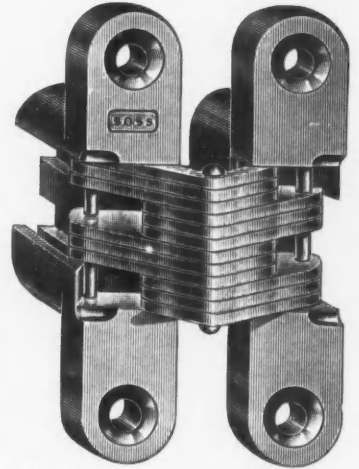
PITTSBURGH framed door mirrors are very easily installed.



HINGES are mechanically important in door operation, and the Soss Manufacturing Co., Inc., Roselle, N.J., is making a type which can do its full duty, yet be invisible when the door is closed.

With it a single door or a battery of folding partitions can be opened and closed as though working on ball bearings, with no possibility of sagging, and not marred by a single visible hinge or piece of metal; the entire surface of both sides of the doors is free to be decorated as may be desired. When the door is closed, it cannot be tampered with.

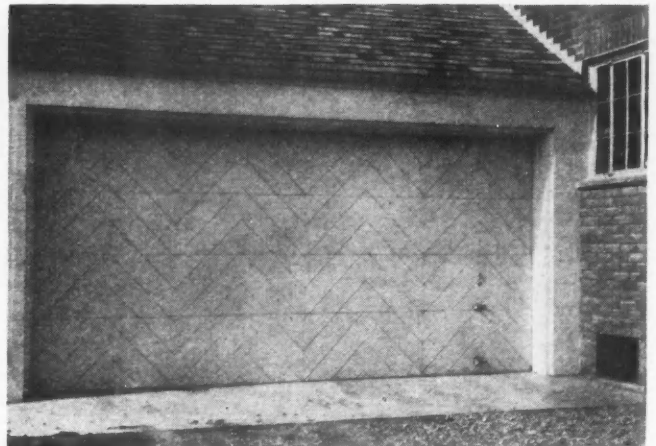
The Soss improved invisible hinge is a very simple yet strong device. It consists of a series of special heat treated plates and pins operating in a track which, irrespective in what position the door may be, is a rigid, non-sagging, firm truss construction. All sizes for doors on furniture up to the heaviest of interior doors and multi-doors like folding partitions are available.



INVISIBLE hinge which does not show when door is closed.

* * *

GARAGE doors have probably received more attention than any other type. Most of this has concerned the ease of operation and outside appearance. For example, the new Crawford Rezo flush type door made by the Crawford Door Co., Detroit, Mich., has patented interlocking Cellized core, with laminated waterproof faces, designed especially for outside pur-



LIGHTWEIGHT cellular garage door maintains perfect operation.

poses, against warping, sagging or swelling. The construction also greatly reduces the weight.

Herringbone, diamond, vertical, horizontal and other effects can be had to harmonize with the architectural style of the house. The doors are available in both sectional and one-piece upward-acting doors.

Latest in Efficiency Equipment

MANY items are now being marketed which add to the comfort and reduce upkeep of the home by the special job they perform. One of these, used to seal the joints between bathroom and wall finish, is a new extruded aluminum alloy moulding being made by the Metal-Units Co., 103 Park Avenue, New York. The metal unit is designed to be especially effective in recessed tubs where linoleum walls are used. It is also effective with tile or other materials.

The new molding is of an unusual design which permits it to be set in a special non-hardening, waterproof bonding compound, which seals the joint and holds the metal in place. The molding

(Continued to page 156)

HERE'S WHY ARCHITECTS
AND BUILDERS *select*
Medusa-Lite



Discriminating architects and builders judge paints on the basis of beauty, permanence and economy. These men select Medusa-Lite, the super flat wall finish, because it satisfies all three requirements.

Medusa-Lite, in seven attractive pastel colors and white, harmonizes with any decorative scheme. One coat generally covers, drying to the touch in 30 to 40 minutes. Economical because it is thinned with water instead of expensive thinners, Medusa-Lite is brushed or sprayed on any interior surface or another paint. It is a tremendous time-saver—apply it to fresh plaster or concrete. Here is a paint that leaves no brush marks and cannot powder, peel or crack. Medusa-Lite is unaffected by fumes or chemicals and is non-inflammable. White has 90% reflective value and does not turn yellow.

SEND FOR THIS BOOK

"How To Paint Concrete, Stucco, Masonry and Other Surfaces" tells more about Medusa-Lite, the super flat wall finish. It also tells how to give concrete floors a permanent, beautiful, abrasion-resisting finish in black, white or any of six colors—and gives the best method of painting exteriors of concrete, stucco or masonry. It describes Medusa-Lite, Medusa Floor Coating and Medusa Portland Cement Paint, and shows you the sound economies to be gained by using these products. Send the coupon below for complimentary copy.



Medusa-Lite

MEDUSA PRODUCTS COMPANY
Division of Medusa Portland Cement Co.
1002 Midland Building, Cleveland, Ohio

Gentlemen:
Please send me a complimentary copy of the book, "How To Paint Concrete, Stucco, Masonry and Other Surfaces."

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

THE HEATILATOR FIREPLACE IS EASIER TO BUILD

- *Circulates Heat*
- **Will not Smoke**

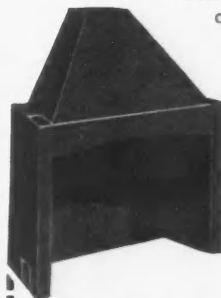
Give your clients the extra comfort and economy of this better fireplace that warms the entire room, and even adjoining rooms. Give yourself the assurance of a perfectly operating fireplace on every job—a fireplace that *will not smoke*.

The Heatilator Fireplace saves heat—takes the heat ordinarily wasted up the chimney and circulates it to far corners. It cuts weeks off the furnace heating season, dollars off the fuel bill—warms the house comfortably on chilly spring and fall days. In camps or in mild climates it is the only heating equipment needed. Solves the heating problem for basement recreation rooms.

A Form for the Masonry

The Heatilator is a correctly designed metal form around which the masonry is easily laid. Complete from floor to flue, it includes the firebox, damper, smoke-dome and down-draft shelf. Saves labor, saves materials, to cover much of its own cost. Puts no limit on mantel design.

Thousands in successful use throughout the country. Owners are enthusiastic about the new comfort and economy. Get complete Heatilator details—and **NEW LOW PRICES**—before you build a fireplace.



SEND THIS COUPON TODAY

HEATILATOR COMPANY,
754 E. Brighton Ave.
Syracuse, N. Y.

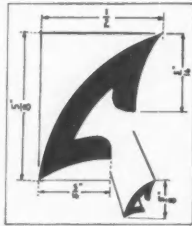
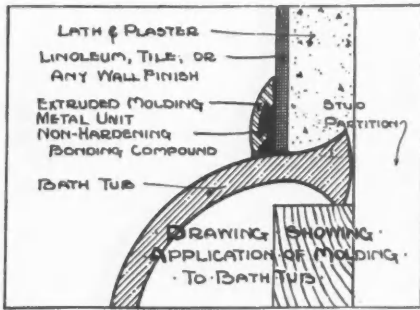
Please send me complete Heatilator information and new low prices.

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

Heatilator Fireplace

(Continued from page 152)

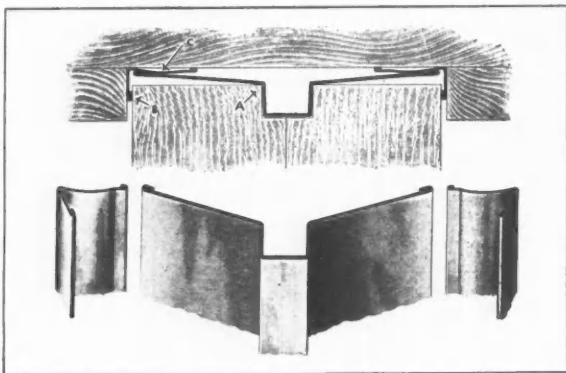
has a satin aluminum finish which is non-tarnishing and non-staining. Corner and finial pieces are provided. The same type of molding is also adaptable for use around kitchen sinks and in many other places where watertight joints are required.



ALUMINUM moulding effectively seals tub and wall joint.

* * *

A NEW style weatherstrip was recently introduced by W. J. Dennis & Co., Chicago, designed primarily for window sash manufacturers and assemblers. It consists of three spring bronze members, a center H type piece which extends the width of both sash on the jamb and forms the parting stop; two L type members fit under the wings of the H type member, tension of the wings holding them in place. As shown in the cross section, a triple seal is obtained.

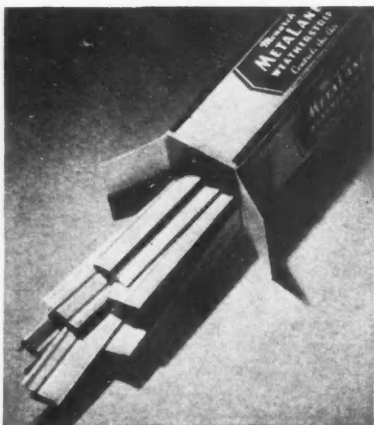


SECTION through meeting rail and strip members separated.

The weatherstrip is installed at time sash are assembled and since no nailing is needed, practically all labor is eliminated. One 1/4" hole 1/2" from sill end and the insertion of one No. 10 x 1 1/2" round head screw holds the lower part in place; upper end is held in place by the cross piece of parting stop.

* * *

ANOTHER type of weatherstrip which can be applied to most jobs is made and packaged by the Monarch Metal Weatherstrip Corp., St. Louis, Mo., for sale by lumber dealers as Meta-



Lane weatherstrip. Of a special alloy, it is exceptionally strong, flexible and durable. This material has a pleasing, silver-like finish, which does not tarnish, oxidize or corrode in any climate. The strips are of simple design, and by tests show a high degree of efficiency in reducing inleakage. It can be quickly installed by any mechanic.

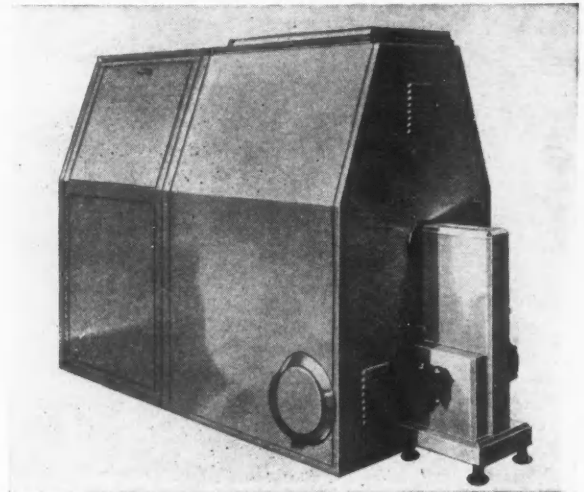
RETAIL dealer carton.

New Models in Heating Plants

IN THE basement of new houses one can see a dramatic change in the products being marketed by heating equipment manufacturers. More efficient, economical and better looking plants are now available. For instance, Gar Wood Industries, Inc., Detroit, is manufacturing a new, automatic oil heating and air conditioning unit which sells for a lower price than any previous model in the company's history. This new unit called 102-A and designed for the average home, contains the features and mechanism found in the standard, but higher priced 102 model.

In the new unit the oil burner is not enclosed but remains in the same operating position. This slight change, so far as the homeowner is concerned, has nothing to do in any way with the efficiency and performance.

The new Gar Wood Tempered-Aire model 102-A provides humidifying, air filtering and forced warm air circulation in addition to automatic heating in the winter and blower cooling and air filtering in the summer.

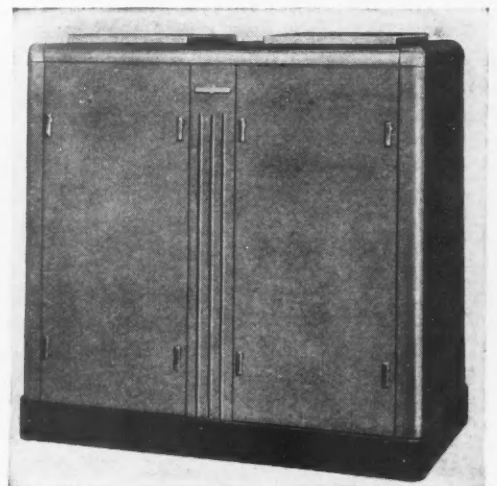


GAR WOOD oil-fired conditioning unit for average home.

* * *

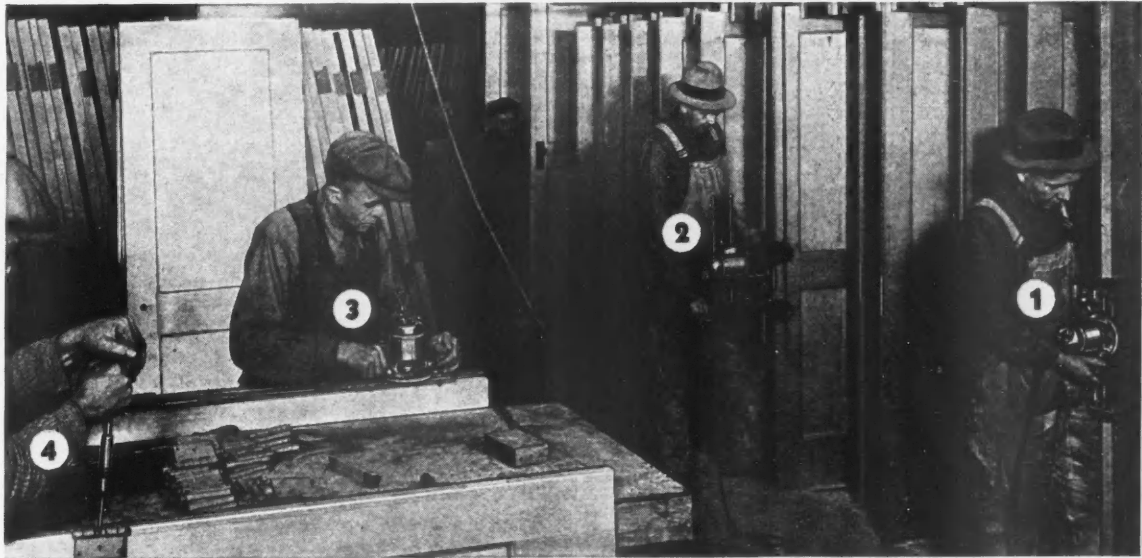
ANOTHER addition in this field is a new oil-fired warm air conditioner, differing radically from any existing heating or air conditioning equipment, developed by the General Electric Company, New York City. Small in size compared with any ordinary systems designed only for heating, the new equipment will supply automatic oil heat and winter air conditioning in a single compact unit. It will clean all incoming air, remove dust, add moisture and heat, and circulate this conditioned air throughout a home. It was designed as a companion piece to the gas-fired conditioner recently announced. Its fundamental principle is the forcing downward of atomized oil to meet an upward secondary air stream, producing a floating white-heat flame fire

(Continued on page 158)



NEW small size G-E heating and winter conditioning unit.

FITTING 7000 DOORS—THE CARTER WAY



This is part of a large Cleveland job on which 7000 doors are to be fitted and hung with Carter Tools.

Doors were first fitted, including a bevel on the closing side, with a Carter Power Plane.

1 Carter Router cutting lock face parallel with the bevel on the door.

2 Carter Lock Mortiser cutting lock mortises.

3 Carter Router with Hinge Butt Templet cutting mortises for the butts.

4 Attaching butts to the door.

RESULTS: Better work with less effort. Butts fitting tightly in the mortises

carry the load. The screws merely hold the butts in place. Send for the folder giving full details on these Carter Tools. R. L. Carter Division, The Stanley Works, 133 Elm Street, New Britain, Conn.

CARTER TOOLS

A KENMAR Copper Shingle Roof broadcasts:

this house is a better buy!



Most features of your houses are "hidden" until pointed out. Not so with Kenmar Copper Shingles. This modern roof does its own advertising. Out where everyone admires it, it attracts good buyers, sells houses quicker, at better prices. Other builders have proved this to their lasting profit. Better investigate. Write for information.

The New Haven Copper Co.
MANUFACTURERS OF SHEET COPPER SINCE 1840
 Seymour, Conn.



Where Traffic is Heaviest . . .

Azrock stands up sturdily under the hardest punishment and gives a long life of service on even the most over-worked of floors. This resilient mastic tile floor covering is as beautiful as it is practical, too, and is enhancing the attractive appearance of thousands of offices, stores, theaters, homes, public buildings, hospitals, restaurants, etc., all over the nation.

Azrock is moisture proof, fire-resistant, sanitary, inexpensive in first cost, inexpensive to maintain; resilient for quiet, strong for hard wear. Available in different sizes and a wide variety of beautiful colors, whose pigments go "clear through" for permanence.

Write to Uvalde Rock Asphalt Co., San Antonio, Tex., for name of your nearest Azrock dealer and a detailed record of actual installations.

"Better Floors Week, April 19-26"



Other Azrock Products:

AZROCK INDUSTRIAL TILE AZROCK PLANKTILE

(Continued from page 156)

feet long that turns upward on itself. Combustion is so complete with this method that furnace and chimney flues are seldom in need of cleaning, and considerable economy in the consumption of low-grade fuel oils is possible.

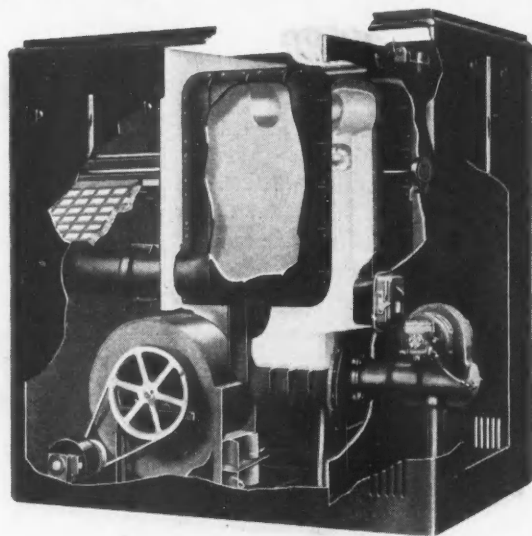
A humidistat automatically controls the supply of moisture to living quarters during the heating season. Air filtering and circulation in summer are available through the installation of a summer switch. A thermal control, or snap action thermostat, maintains the desired temperature.

Quiet operation has been assured through the use of the newly-developed aphonetic radial flow fan. For a given air flow and a given pressure drop, this fan produces less noise and uses less power than any other fan of similar type and size.

* * *

THE Rudy Furnace Company of Dowagiac, Mich., is now offering a completely new 1937 line of coal, oil and gas heat air conditioning furnaces backed by a new twenty-five year guarantee.

New Rudy exteriors carry out the modern trend toward simplicity and are finished in "Satin-krack," a black, baked enamel process that produces an attractive, semi-lustrous effect. Trim



CUTAWAY view of new Rudy oil-fired conditioner.

is stainless steel. Special colors are available at slightly extra cost.

The oil heat air conditioners are designed in two distinctive types. The Rudy "200" with a BTU output capacity of 160,000 per hour consists of two units—the heating and humidifying unit, and the ventilating and air filtering unit—both attractively enclosed in heavy gauge sheet steel in the new Rudy finish. The other oil heat air conditioner—the "125" with a BTU output capacity of 100,000 per hour—is complete, compact single unit system. The ventilating and filtering elements are located directly behind the heating and humidifying elements, separated from them by a well-insulated sheet of metal.

* * *

AN AIR conditioning Toridheet furnace for low cost homes that uses the rotary wall-flame burner is being made by Cleveland Steel Products Corporation, Cleveland, O.

The function of the furnace during the heating season is to make indoor hours more comfortable by thoroughly filtering the air, maintaining any desired temperature at uniform level, supplying necessary humidification, and preventing stagnant air and drafts, by controlled air motion.

In summer months this installation adds to the enjoyment of indoor activities by cleansing the air of dust and irritating pollens and accomplishes effective cooling by adequate circulation of night air throughout the home and recirculation of air during the day.

The 720-R burner and parts, that require accurate installation

(Continued to page 160)

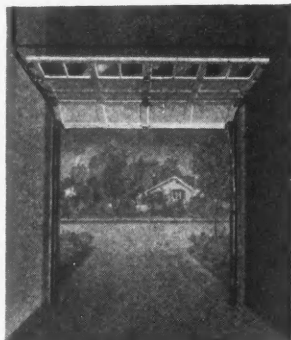
WAGNER

OVERHEAD DOORS!

EASIEST OPENING—
EASIEST CLOSING—
WEATHER-TITE—



First choice of builders everywhere. Take *less time* to install because hardware is assembled at the factory. Users appreciate the neat, compact installation and praise the smooth, easy performance of the Wagner equipped doors. Write for information and estimates.



WAGNER CANOPY

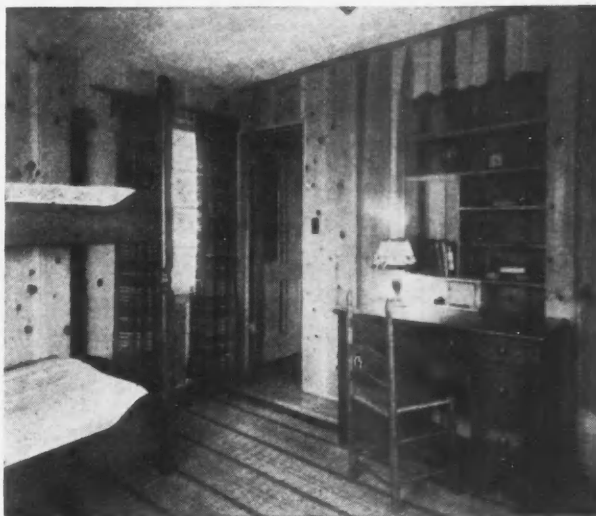
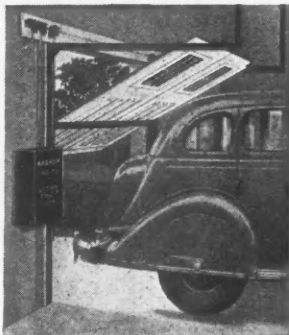
The leader in economical overhead door construction. Converts old doors (one, two or more sections) into modern overheads. Also provides a satisfactory one-piece overhead door for new structures.

Get the facts on Wagner Overhead Door Hardware for homes and commercial installations. Write for circulars.

WAGNER MFG. COMPANY
DEPT. AB, CEDAR FALLS, IOWA

WAGNER "GLIDEOVER"

Furnished complete with doors and hardware. Hand or electric operated. The "Glideover" represents perfection in overhead door performance and appearance.



Pictures Like This Mean More Work For You . . . They're Making People Want

the WESTERN PINES*!

Look in the popular home magazines**, and see how the Western Pines help you get more jobs—and better jobs!

Month after month, you'll find Western Pine advertising with pictures of installations like the one above.

Those pictures are getting attention. They're making people want Western Pines. THEY'RE MAKING WORK FOR YOU!

Thousands of requests for "Western Pine Camera Views"—the picture portfolio offered in those advertisements—prove that statement!

Make the most of this growing interest in the Western Pines. Suggest knotty paneling, linen-closets, and bookshelves every chance you get. You'll find your home-owner easy to sell. FOR WESTERN PINE ADVERTISING ALREADY HAS HIM MORE THAN HALF SOLD!

There's a grade of a Western Pine for every job, indoors and out . . . exterior trim and siding, doors, sash, and screens . . . cupboards, shelves, paneling, mantels, and staircases . . . AND YOU NEVER HAD NICER WOOD TO WORK WITH! Western Pine Association, Yeon Bldg., Portland, Oregon.

**Better Homes and Gardens, American Home, House Beautiful, Sunset, American Magazine, Saturday Evening Post, Time, Popular Homecraft and HOME OWNERS' CATALOG.

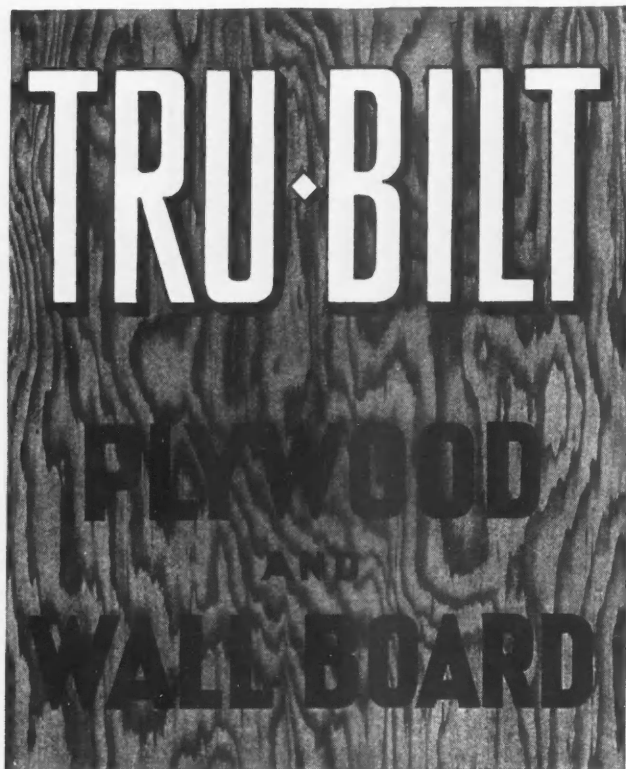
*IDAHO WHITE PINE

*PONDEROSA PINE

*SUGAR PINE



THESE ARE THE WESTERN PINES



Top Quality

In naming our Plywood products TRU-BILT, we convey to you in one word the keynote of our manufacturing policy.

TO PROVIDE YOU WITH PLYWOOD PRODUCTS THAT ARE STRONG, RIGID, CRACK-PROOF, BEAUTIFUL AND T-SQUARE.

UNBREAKABLE—STRONGER PER POUND THAN STEEL

Articles made of TRU-BILT Douglas Fir Plywood last longer. The wood won't split, the joints won't spread or warp, and nails and screws hold fast throughout the life of every article.

SPECIFICATIONS

Furnished in widths from 12" to 72" inclusive, and lengths from 48" to 144" inclusive.

Thicknesses are $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{9}{16}$ ", $\frac{5}{8}$ ", $\frac{11}{16}$ ", $\frac{3}{4}$ ", $\frac{13}{16}$ ", $\frac{7}{8}$ ", 1" and $1\frac{1}{8}$ ".

Your Lumber Dealer Sells TRU-BILT

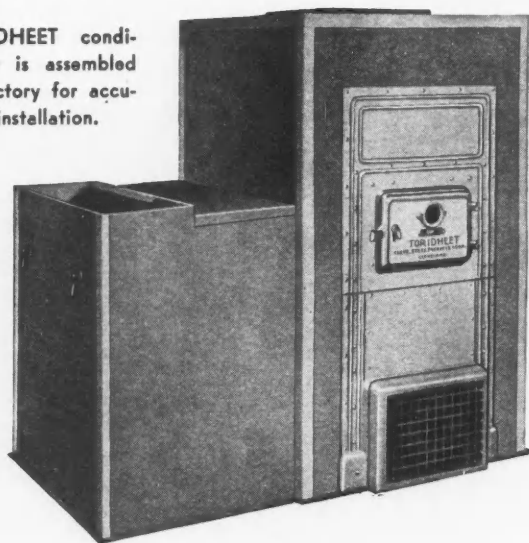
WEST COAST
PLYWOOD CO. ABERDEEN,
WASH.

(Continued from page 158)

to function properly, are completely assembled at factory. The ready-built unit is shoved into place through the front of heating element, making installation in the home extremely simple.

Heavy gauge steel cabinet has baked wrinkle finish in light

TORIDHEET conditioner is assembled at factory for accurate installation.



plum color and corner trim of attractive aluminum finish. Galvanized sheet metal casing encircles heating element and prevents radiation of heat to outer cabinet. The exterior cannot become uncomfortably warm.

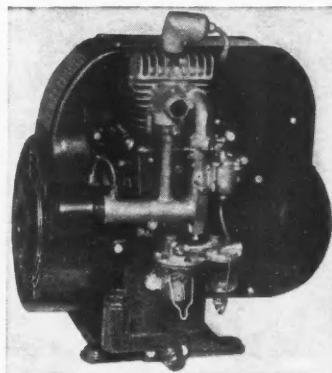
For Special Jobs

MANY products which have specialized uses in the residential, farm and commercial fields have been improved to do a better job. Along this line, D. W. Onan and Sons, 43 Royalston Ave., Minneapolis, Minn., have announced a complete new styling on Onan alternating current generating plants in sizes 350 to 1,000 watts to reduce weights and dimensions.

These models are of streamline, fully enclosed, symmetrical design; they are small, compact and operate on gasoline, generating alternating current. New features include: arrangements for servicing the plant entirely from the exhaust side enabling installation in close quarters; welded all steel generator with special cooling; ball type outboard bearings; vacuum crank case ventilation; wide range temperature.

The plants can be used to operate portable radio transmitters, X-ray, clinic and public address equipment, etc. as well as for domestic lighting purposes.

ONAN electric plant.



* * *

A NEW waterproofing and preserving material, Rok-Hesive, has just recently been compounded by Rok-Hesive Distributing Company, Los Angeles, Calif. It does not have any volume change in hot or cold temperatures, and will not peel or crack from any surface to which it is applied, by reason of any change in temperature or weather conditions. Various uses in the building industry and in the building of homes include waterproofing, weatherproofing, dampproofing of all surfaces, roofs, walls or basements.

Rok-Hesive is an entirely different kind of coating and protection for surfaces. Instead of merely adhering to a surface it forms a chemical union with the surface to which it is applied and turns

(Continued to page 162)

THE INSULATION PICTURE HAS CHANGED



Be Sure the Insulation YOU Specify Can Meet Every New Condition

● Back in 1922, when Balsam-Wool was first introduced, Wood Conversion Company engineers realized the need for *moisture protection*. That's why even the first Balsam-Wool had a waterproof covering.

Today, the insulation picture has changed. Air conditioning has dramatically pointed out the weaknesses of insulation that is not completely moisture protected. And today, Balsam-Wool is **DOUBLE-SEALED** in waterproof liners asphalted on both sides. Still—and again—Balsam-Wool leads the field!

DOUBLE-SEALED Balsam-Wool is also fire resistant—termite treated. It has a positive method of application that will not permit settling, and that assures continuity of insulation. It provides permanent efficiency—as thousands upon thousands of applications have proved.

For every type of building—air conditioned or otherwise—specify **DOUBLE-SEALED** Balsam-Wool. In its three thicknesses, it meets every insulation need in every climate.

EVERY BUILDER SHOULD HAVE THIS NEW INSULATION HANDBOOK



This book is "just off the press." It contains valuable information on insulation and its association with air conditioning, in addition to charts and data on the proper application of insulation. It also gives a detailed analysis of the heating and cooling requirements for an average size home. Write for a copy of this useful book today.

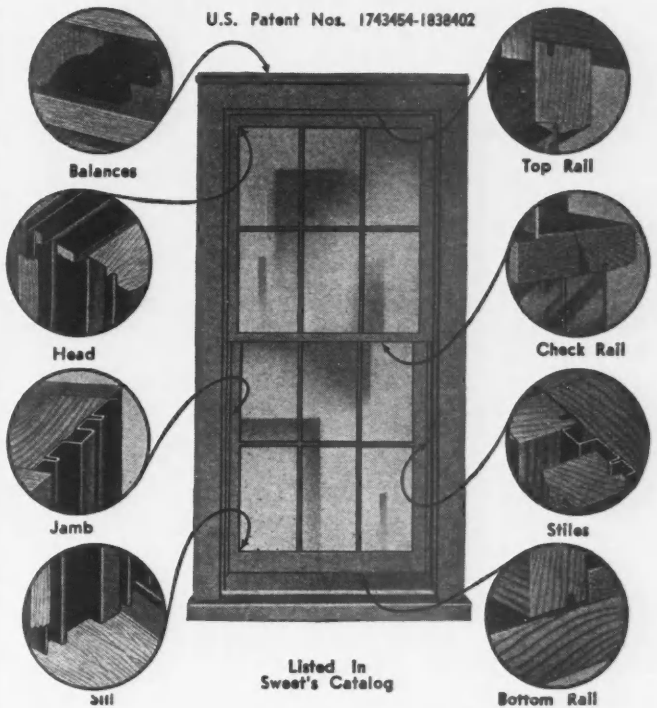
BALSAM-WOOL



WOOD CONVERSION COMPANY
 Room 119, First National Bank Building
 St. Paul, Minn.
 Gentlemen: Please send me, without obligation, your new insulation handbook.

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

N.S.W. Non-Stick WINDOW Will Sell Houses



BETTER CONSTRUCTION AT NO INCREASE IN COST

No Weight Pockets
 2x4 Jamb
 Pullman Sash Balance
 Full Length, One-Piece Pure Zinc Metal Jambs Including Weather Stripping

Complete window from one source. Freedom from paint and weather stick. Narrow trim. Narrow mullions. Tighter construction. All sizes.

See the N. S. W. Window at Your Dealer or Write Us.

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

CLIP COUPON - MAIL TODAY

N.S.W. Company
 2137 Gratiot
 Detroit, Mich.
 Please send us Free Literature.

Name

Address

City State



H. E. KOEHLER'S
Johns-Manville Model Home
Cincinnati, Ohio
ARCHITECT. Earl Henn
WALL. Pressed Asbestos
FLOOR. Hardwood
ROOF. Asbestos Shingle
FOUNDATION. Stone
INSULATION. Insulite Rock
Wool

HEATING. Janitrol CA
Winter Air Conditioner

ROOMS. Eight
APPROXIMATE COST. \$13,500

Specified

FOR H. E. KOEHLER'S
MODEL HOME

JANITROL

WINTER AIR CONDITIONER

● With a background of years of concentrated experience in the gas-heat field, Surface Combustion engineers have designed into *Janitrol* WINTER AIR CONDITIONERS advantages so outstanding that architects, contractors and builders find the selection of the heating unit an immensely simplified problem. The demand is every day more universal for a completely automatic heating system that supplies filtered and amply humidified warm air and mechanically circulates it in every room at a uniform temperature. Architects find that either the

Janitrol CF or the Janitrol CA Conditioner perfectly meets this requirement for any type of house that may be under consideration.

BEAUTIFUL. Cabinet of furniture steel finished in tapestry blue crinkle. Chrome trim and fixtures.

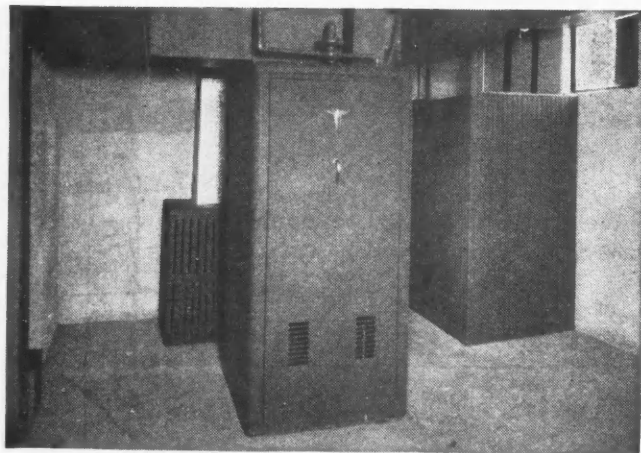
COMPACT. Ingenious new arrangement of internal mechanism.

CLEAN. Gas-fired.

QUIET. Janitrol Multi-Inspirator Burner.

EASILY SERVICED. Complete accessibility of parts.

SURFACE COMBUSTION CORPORATION • TOLEDO, OHIO



JANITROL

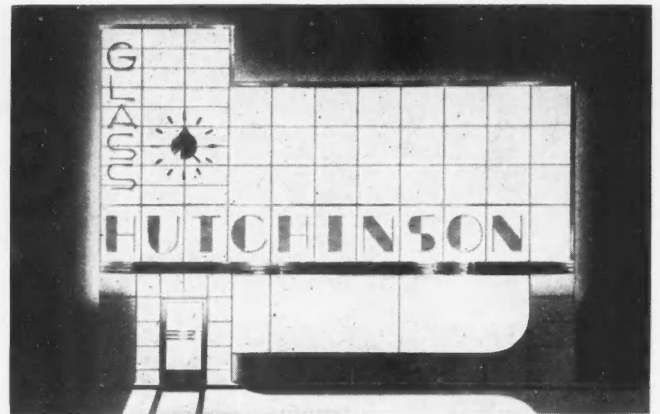


**WINTER AIR
CONDITIONERS**

(Continued from page 160)

to solid rock, thus completely sealing and permanently preserving the surface and making the structure lastingly attractive. Rok-Hesive cannot be removed without removing a part of the surface to which it is attached. When Rok-Hesive is applied to concrete, brick, stone, stucco, plastered surfaces, shaled, etc., it prevents seepage and weathercracking, which usually cause such surfaces to deteriorate with time.

A FORM of luminous architecture has been made possible by enameled tempered or tuf-flex glass manufactured by Libbey-Owens-Ford Glass Company, Toledo, O. The architectural rendering of a proposed store front, below, shows plate glass



LUMINOUS tuf-flex glass front on proposed store.

windows, a base trim of vitrolite colored structural glass, and above the windows a brick wall covered by a jutting wall of enameled tuf-flex in panes four feet square. This wall of glass, with illumination between it and the regular brick wall, is possible now because of the unusual strength of tempered plate glass. The large squares of luminous glass are also used around the entrance door. At night the building becomes a glowing front, strikingly unusual. Any color can be used to provide a "luminous building" that has fascinating merchandising possibilities.

**Labor-Saving Tools,
Equipment and Machines**

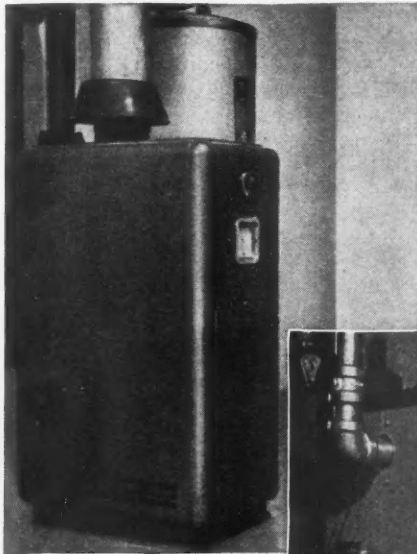
LABOR shortages, rising costs and demand for more construction efficiency increase the importance of new builders' equipment being added by manufacturers. Two additions to the line of Skilsaw ball bearing electric drills have been announced by Skilsaw, Inc., of Chicago.

The ¼ in. and ½ in. slow-speed, high torque Skilsaw drills have been developed particularly for drilling in steels of high nickel content—such as Monel and Allegheny metals, stainless steel, etc. The slow speed of these new tools lengthens materially the life of twist drills, eliminating the need for frequent sharpening. Drilling speed, however, is not sacrificed because the high torque feature makes it impossible to stall the drills at maximum drilling capacities. On the ½ in. model, its one-hand grip feature makes

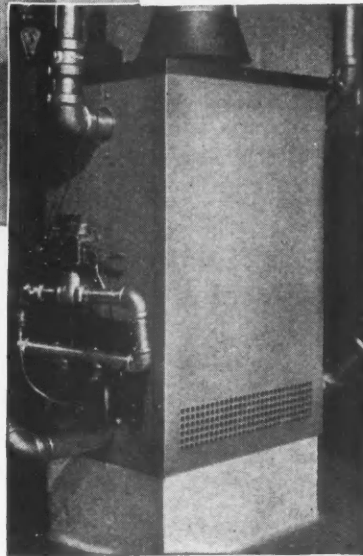
(Continued to page 164)



SPECIAL slow speed drill useful for metal work.



One of the eleven compact "Empire" Ideal Gas-fired Boilers.



This is one of the twelve Ideal Gas-fired Boilers.

IDEAL GAS BOILERS

SAVE SPACE IN SMALL HOMES



WHEN it is important to save space without sacrificing heating efficiency, AGP Heating with gas can solve the problem.

Ideal Gas-fired Boilers by AGP are small, compact and so clean that it isn't even necessary to provide a separate heater room. In the smaller homes, the Ideal Gas-fired Boiler can be installed in an out-of-the-way corner of the kitchen.

The "Empire" Ideal has no exposed piping to take up space in the basement so this room can be fully utilized as an extra room in the small house. And there's no need to provide fuel storage space for heating with gas.

Take advantage of the space-saving features of AGP Equipment in planning small homes, row houses and apartments. Let us show you how others have successfully solved the space problem. Write today for details.



● One of the 1-GA-6 Ideal Gas-fired Boilers.



AMERICAN GAS PRODUCTS CORPORATION

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

40 WEST 40TH STREET - NEW YORK, N.Y.

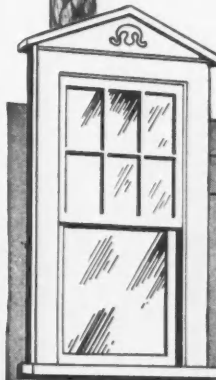


SAMSON SPOT SASH CORD

When an architect wants to be sure that the most durable and economical material will be used for hanging windows, he specifies Samson Spot Sash Cord. He knows from long experience that it is the one cord he can always depend upon to be of the same high, uniform quality. He knows that it is made in only one grade positively protected against substitution by the Colored Spots—our trade-mark.

Architects everywhere hold Samson Spot Sash Cord in high esteem, because it merits their confidence with its longer service—often extending to more than twenty-five years. It has greater toughness than ordinary cord due to the great number of fine three-ply yarns in each strand—no cheap roving is used—no loaded center—it is all yarn. It resists wear longer over pulleys because its surface is firmer, smoother. It does not stretch. It is noiseless.

Specification data showing sizes and actual wear tests gladly sent upon request.



**SAMSON
CORDAGE
WORKS
BOSTON**

durability · efficiency
· · · economy · · ·



These WONDER WALLS OF Marlite



MEAN MORE PROFITS TO YOU

When the walls of bathrooms, kitchens, stores and offices sparkle with this new Marsh Wonder Wall material, they are silently promoting more business for the builder and dealer who made the installation. The 52 colors and patterns of Marlite provide unlimited decorative schemes.

Marlite IS AVAILABLE IN LARGE SHEETS
All colors and patterns are shipped flat in sheets 4' wide and ranging in lengths from 4' to 12'.

Marlite IS EASY-TO-CLEAN
A few minutes spent in wiping the glossy surface with a damp cloth will keep it spick and span.

Marlite IS QUICKLY INSTALLED
The large flat sheets are easily cut and fitted into place by any carpenter with his regular tools.

Marlite IS SOLD THROUGH DEALERS
MARSH WALL PRODUCTS CO.

**MAIL
COUPON
FOR
CATALOG**

SEE MARSH *Wonder Walls*
CATALOGUE IN SWEETS OR MAIL COUPON

MARSH WALL PRODUCTS COMPANY
43 Marsh Place, Dover, Ohio

Gentlemen:
Please send me a catalogue of Marsh
"Wonder Walls for beautiful interiors."

Name _____

Firm _____

Address _____

City _____ State _____

CHECK

HERE IF YOU DESIRE DON GRAF DATA SHEETS

(Continued from page 162)

it ideal for close quarter work and for use with hole saws in places impossible to reach with side-handle drills.

Both models are available in speeds of 350, 450, 600 and 750 R.P.M. Their slow speed makes them especially adaptable to wood boring. Smoothness of operation is assured by ball bearings on armature and spindle. Aluminum alloy bodies give strength, durability, and light weight. The 1/4-inch drill is 14 inches long, weight 6 1/2 pounds; 1/2-inch drill is 14 1/2 inches long, weight, 8 pounds.

GLAZED tile or brick must frequently be cut down from standard sizes, and to avoid breakage in making these special sizes it is necessary to first score the glazed surface of the tile. This work can be done very effectively with silicon-carbide cut-off wheels, 3/32" in thickness by 10" in diameter, mounted like a saw blade on the arbor of the Wallace No. 1 radial saw which is made by J. D. Wallace & Co., Chicago. The great amount of abrasive dust liberated by the operations cannot cause excessive wear and replacements as the commutator is totally enclosed, prohibiting the entrance of the dust.

Free hand cutting of tile gives best results and lowest cost.



With this method the tile is marked first on the line where it is to be cut. Standing in line with the wheel and holding the tile in the two hands with the arms well braced against the body as shown in the illustration, the operator then feeds the tile into the wheel, first scoring it lightly and then digging in.

SCORING tile with abrasive wheel mounted on radial saw.

AS a time saver, a perfect mortise in four minutes can be made with an improved mortising machine which is manufactured

by Wappat Incorporated, Division of Simonds Saw and Steel Company, Pittsburgh, Pa. It automatically centers the mortise on the door. The height and depth of the mortise are also taken care of automatically.

A special cutter, similar to a router cutter, is driven by hand through a fly wheel and gear reduction. It does not bore a series of holes, but cuts the complete mortise including a full sized face plate recess.

WORKMAN using improved mortising machine on door.



A BALANCED, portable sander using a 4" x 27" abrasive belt has been placed on the market by the Porter-Cable Machine Company of Syracuse, N.Y.

This Take-About sander, type T-4, has a frame of polished

(Continued to page 178)

KITCHEN CABINETS OF WOOD

Best for Architect—Builder—Home-Owner—and Housewife



● Modern, Kitchen Maid units are sturdily built of seasoned hardwood because Kitchen Maid designers are honestly convinced that this construction is best for the purpose. Steel is used for non-stick drawers that slide easily on hardwood guides . . . bright metal and plastic for colorful hardware . . . temperprest, linoleum or metal for work tops as specified. But for frames, shelves, flush-panel doors, and drawer fronts, Kitchen Maid Cabinetry in wood produces the flexibility, dependable strength, modern beauty, moderate cost, and efficiency that mean greater freedom in design, easier installation, larger savings, and more convenience and satisfaction when the colorful new kitchen is complete.



MODERN FEATURES
Rounded open shelf unit, shown at left, is just one of many new additions and improvements, which include similar bases, towel dryer racks, utility, soiled linen and vegetable bins, tray compartments, linen drawers, special beverage and various other units. Write for details.

THE KITCHEN MAID CORPORATION, ANDREWS, INDIANA

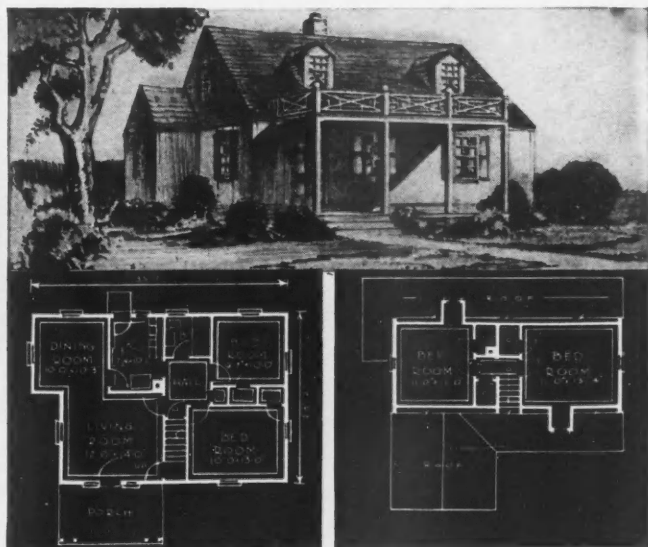


The Kitchen Maid Corp., 704 Snowden Street, Andrews, Ind.
Send new catalog and details.

NAME _____

ADDRESS _____

Architect Builder Owner Dealer



Now you can build a **7-ROOM HOUSE WITH FULL BASEMENT** for **\$3500**
(Varying with local conditions)

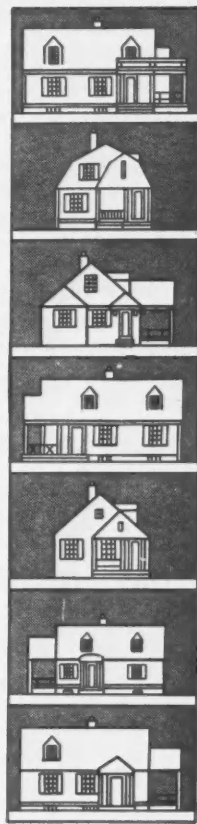
Qualified for FHA 20-year Mortgage

HERE is the answer for low-cost house construction! Undoubtedly the lowest cost construction per cubic foot yet devised!

This type of house can be built within 30 days. It can be sold at a price which opens up a wide, new market for you. Yet it is doubly insulated—built of the highest quality materials all the way through—an attractive, livable home, economical to own.

The Homasote Precision-Built Home Plans do not sacrifice quality. This is not jerry-building. The big savings in time, labor and money are due to a revolutionary, new method of construction.

Use the coupon below to secure free folder illustrating 11 different houses and listing 24 outstanding sales features you have never before been able to offer at such prices. Act today, if you are interested in a franchise. A set of 27 elaborate blueprints covering all details may be had for \$5.



WEATHERPROOF
HOMASOTE
INSULATION
BUILDING



Simplicity

In Air Conditioning (meaning also low cost)

Why all these headaches about the simple air conditioning of a simple home?

Why all the room-taking mechanism in the basement?

Why the room-taking ducts?

Why the disfiguring of floors and walls with grille cut-outs?

Why all the high cost of it all, when all these whys are totally unnecessary?

The Burnham Air Conditioner takes the place of a radiator and takes up practically the same space. Can be used free-standing or recessed. Works with old radiator system as well as new. Costs less than any other, and still does all they do.

To give you an idea, two Conditioners are ample for the average 7-room house. Ideal for offices. Used in many hospitals.

Cabinet is an attractive burl walnut and velvet black enamel finish, with just a touch of chromium. The Conditioner double filter-cleans, heats, humidifies and circulates the air. Fits under any window. Is entirely automatic. Has both individual thermostatic and hand controls.

Send for Catalog. See for yourself how simple an air conditioning system can be.

News of the Month

Building Activities and Meetings

CONSTRUCTION work started during February in the 37 eastern states, according to F. W. Dodge figures, totalled \$188,590,800, as compared with \$140,419,100 for February 1936, and \$242,844,000 for January of this year. Residential building in February 1937, totalled \$63,011,700, more than twice the \$31,175,500 figure for February 1936, but fell below the January 1937 total of \$78,423,700. Residential building during first two months of this year showed a 105 per cent gain over same period last year.

* * *

A \$200,000 Industrial Prize Contest has been announced by The James F. Lincoln Arc Welding Foundation, Box 5728, Cleveland, Ohio. Twenty-four prizes will be awarded for papers in four structural sub-classifications. Rules and conditions will be sent on request.

HAROLD F. LANE, for many years Washington, D. C., correspondent for "American Builder and Building Age," died at his home in that city from a heart ailment, on February 27, aged 54. Mr. Lane, for the past 21 years, has been a familiar figure wherever news was breaking on the Washington front. He was a graduate of Dartmouth College in 1905; a member of the National Press Club; the White House Correspondents' Association, both of Washington, and of the Dartmouth College Club, of New York City.



HAROLD F. LANE

ON March 8, the Reconstruction Finance Corporation put into effect a new ruling designed to curb speculative building. The RFC Mortgage Company now confines purchases of FHA insured mortgages to owner-occupied homes. Lending institutions must hold their paper on speculative dwellings until owners execute new mortgages.

* * *

L. E. LUMPKIN has been appointed Southern Service Manager for the Marquette Cement Manufacturing Co., and will make his headquarters in Memphis. Mr. Lumpkin was formerly with the State Highway Departments of Arkansas and Missouri, and with the Utah Power and Light Company.



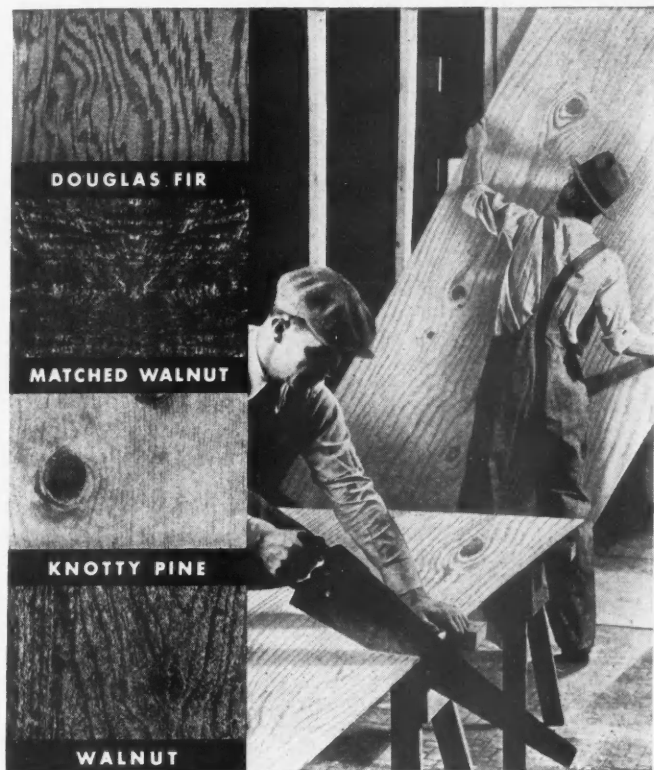
THIS educational display of E. L. Bruce Company products attracted a steady stream of visitors at recent lumber dealer convention.

Build Yourself Bigger Profits!

Tie Into the Vogue for

WOOD GRAINED SHEETROCK

THE FIREPROOF WALLBOARD



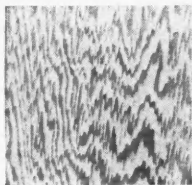
PRE-DECORATED SURFACE SAVES ON COST OF INTERIORS

Home owners throughout the country are enthusiastic about the rich beauty, the distinction, the economy of Wood Grained Sheetrock*. And no wonder! It gives them all the charm of real wood paneling at wall board prices—and it requires no further decorating.

HAS MANY BIG ADVANTAGES

Wood Grained Sheetrock is fireproof—will not burn nor support combustion. It is ideal for easy remodeling, as well as new construction. It is quickly, easily installed. Does not warp or buckle.

Remember, Sheetrock comes in plain finishes also. The 1/4-inch board is ideal for covering old surfaces, as well as for new construction. Plain Sheetrock has all the features of Wood Grained Sheetrock, except that its surface is undecorated. Every Sheetrock board is clearly trade-marked for your protection.



*Reg. Trade-Mark

SEND FOR FREE SAMPLE

UNITED STATES GYPSUM COMPANY
300 West Adams Street, Chicago, Illinois
Please send me, free of charge, sample of Wood Grained Sheetrock. AB-4

Name
Address..... State.....

UNITED STATES GYPSUM COMPANY



Dust in the Air is Destructive

Dust in the Home is Expensive

Practical Builders Make Homes DUST PROOF With METALANE WEATHERSTRIP!

Builders are making additional profits and winning new customers by keeping out dust from the homes they build with MetaLane Weatherstrip. More and more builders are cutting corners and saving time by doing their own weatherstripping when the windows are ready—no waiting on specialists. No trained mechanics or special tools are needed to install MetaLane Weatherstrip.

The photo on the right, showing MetaLane Weatherstrip being applied to the parting bead with a pair of pliers, is an example of its quick and easy installation. No routing or grooving is necessary. No paint is removed, and it is unnecessary to take out the top sash. Any fairly skilled carpenter, using ordinary tools, can equip two double hung windows an hour with MetaLane Weatherstrip.



Monarch Metal Weatherstrip Corp.

Please send me literature and sample of MetaLane Weatherstrip.

Name
Address
City
My Dealer

METALANE WEATHERSTRIP

MONARCH METAL WEATHERSTRIP CORP.
6332 Etzel Avenue, St. Louis, Mo.

CONTRACTORS *Want Them*

Because
**THEY are the
BIGGEST PROFIT
MAKERS MONEY
CAN BUY**

CHOICE of CONTRACTORS ★ BIGGEST PROFIT MAKERS for 40 YEARS

**CONTRACTORS and
PROFESSIONAL
FLOOR SANDERS,**

who have tried all makes of light weight sanders enthusiastically endorse the SPEED-O-LITE, because it cuts time, labor and material costs and does a more thorough and efficient job.

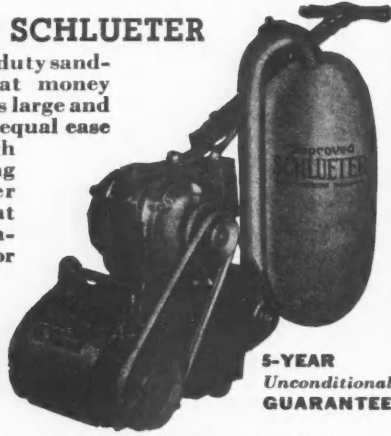
- ★ The Speed-O-Lite is light in weight (80 lbs.)
- ★ It is easily carried by one man, upstairs and down.
- ★ Operates from any convenient light socket.
- ★ So simple that anyone can use it successfully.
- ★ Sands right up to the baseboard.
- ★ Fastest Cutting. Picks up all Dirt and Dust.
- ★ Leaves a Ball-room Finish on Old and New Floors. Guaranteed 1 year including Burn-Out Proof Ball-Bearing Motor.



**NO DIRT
NO DUST
NO MUSS**

IMPROVED SCHLUETER

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Cost Analysis of Concrete Home

(Continued from page 128)

Forming and reinforcing for the first and second story walls proceeded, after the first floor had been placed. The first row of forms was clamped to a row of plates around the upper portion of the basement walls which had been left in place for that purpose. Forming was continued to within 1/2" of the top of the second floor slab. The first story walls were poured with the first floor joists in place. After the second floor slab was poured the second story wall forming and reinforcing were continued to the roof line. The cost of forming and reinforcing the first and second story walls was \$0.13 per sq. ft. for 2,167 square feet of gross wall area.

In order to facilitate handling of concrete to the heights required by the walls and floors an elevator was constructed to lift wheelbarrows of concrete to the proper levels. The cost of its construction and operation is proportioned to its usage in the cost breakdown.

Concrete specified for the walls was 1 part cement, 2 1/4 parts sand, and 3 parts 1/4" to 3/4" gravel or stone. In the first story walls sand and gravel aggregate was used but for the second story walls No. 15 concrete gravel was used. The mix obtained was about 1:6. Twenty-eight day tests from samples of both pours showed an average compressive strength of 2,400 pounds per square inch. Outside walls were 6" thick.

Thirty-nine cubic yards of concrete were poured and cost \$8.30 per cu. yd. This is a cost of \$0.15 per sq. ft. for a gross area of 2,167 sq. ft. or \$0.166 for a net area of 1,950 sq. ft. Forming and reinforcing the concrete cost \$15.60 per cu. yd. or \$0.296 per sq. ft.

As soon as the forms were stripped from the walls all surfaces to receive the finish spray coat on the exterior, or direct plaster on the interior, were scarified. A trowelled coat of cement, sand and water was applied over the rough surfaces to form a base to which the finish spray coat would bond. A total net area of 2,300 square feet was finished in the above manner and cost \$0.057 per square foot.

Furring strips were nailed to the inside of all exterior walls to be insulated. Three-quarter by two inch wood strips spaced 16 inches on centers were nailed directly to the concrete immediately after the forms were stripped and while the concrete was green. Furring covered 1,475 square feet of wall and cost \$0.014 per square foot.

Walls were insulated by using 1/2" x 18" x 48" rigid insulation board nailed to the furring strips. The insulation of 1,475 square feet of wall cost \$0.066 per square foot or \$0.594 per square yard.

Strips of metal lath were used to reinforce all interior angles before application of the plaster. Corner beads were used at window reveals and on all outside corners where no trim was to be applied. The cost of corner and angle reinforcing added \$0.018 per square foot to the cost of the wall.

The walls of all rooms were plastered. Plaster was applied in 2 coats on the insulation board. On interior concrete partitions, plaster was applied directly on the concrete in three coats. Wood pulp was added to the first coat to secure a bond for the finish work. Kitchen and bath rooms were finished smooth with plaster of Paris to receive paint or wallpaper. Sand finish was used for all other walls. The plastering cost was \$0.053 per sq. ft. or \$0.477 per sq. yd.

The cost of the insulation board, corner and angle reinforcing and plaster finish was \$0.137 per square foot or \$1.233 per square yard.

The exterior wall finish coat consisted of a rich mixture of cement, sand and water which was sprayed on the surface. White cement was used which made the white exterior possible without the use of additional coloring. The exterior finish covered an area of 2,480 square feet and cost \$0.025 per square foot.

The cost of the completed wall section was: forming and reinforcing, \$0.13; concrete poured, \$0.166; surface finishing, \$0.057; furring, \$0.014; insulation, \$0.066; lath reinforcement, \$0.018; and plastering, \$0.053; exterior finish, \$0.025, or a total cost of \$0.529 per square foot.

Wood frame partitions were used only in the second story. Studs were 2" x 4" Y.P. spaced 16" center to center and set with top and bottom plates. Plates and studs where necessary were secured to the concrete by nailing into wood plugs placed in the concrete. Framing cost was \$0.09 per square foot of gross wall area.

Plaster board lath 1/2" x 16" x 48" were nailed to the studding

(Continued to page 170)



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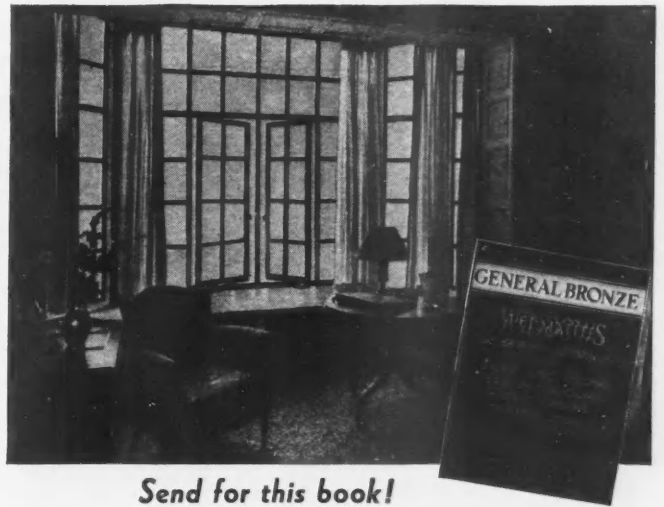
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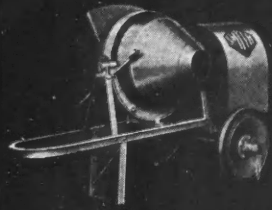
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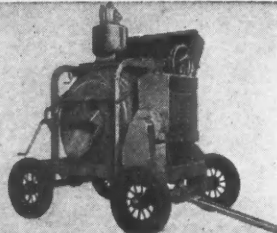
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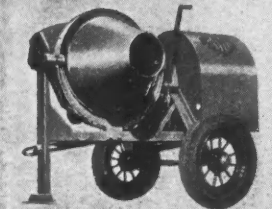
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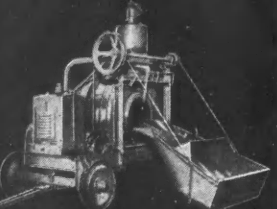
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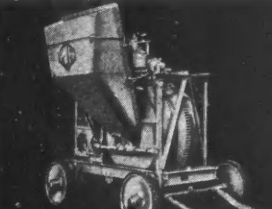
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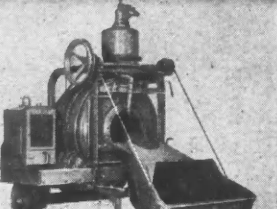
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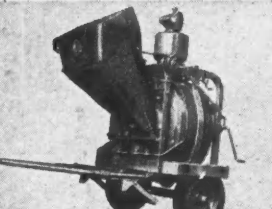
10-S NON-TILT — 4-wheel,
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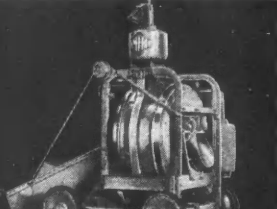
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SMITH MIXERS

THE BOULDER DAM MIXERS

(Continued from page 168)

as a plaster base. This lathing cost \$0.045 per square foot or \$0.405 per square yard.

Plastering and lath reinforcement has already been described. The total cost of the partition walls per square foot was: framing, \$0.09; lath (two sides), \$0.09; lath reinforcement (two sides), \$0.036; plastering (two sides), \$0.106, a total of \$0.322.

The basement and the garage concrete floor slabs each 4" thick were poured on solid, tamped earth after all necessary plumbing was in place below the slab. Both floors were sloped to deep seal trap drains. No reinforcing was used in the slabs. The front porch slab is 5" thick and was reinforced with ½" rods spaced 6" center to center running in two directions. The mix specified for these slabs was 1:2¼:3 and the mix obtained was about 1:6. A finish was applied integrally with the slab by using a dry-shake coating of 1:1 mix trowelled to a smooth finish.

The basement and the garage floor required 8 cubic yards of concrete and cost \$10.30 per cubic yard. Back-filling cost \$0.011 per square foot and the concrete work \$0.122, making a total cost of \$0.133 per square foot.

First and second floors and roof are supported on shop, precast concrete joists. Joists were cast to exact lengths as called for by the plans and cured in a heated room. The joists were a standard 8" flange section reinforced longitudinally with ¾" deformed bars in the top flange and ⅝" bars in the lower flange. Vertical reinforcement consisted of ¼" stirrups, 6 feet on centers with a projecting top loop provided to bond with the floor slab. There were 561 lineal feet of joists cast which cost \$0.121 per lineal foot. Tests from samples of the mix used in making the joists showed an average compressive strength after 28 days of 4,780 pounds per square inch.

The first floor required 132 lineal feet of joists to support a floor area of 360 square feet. The total cost of the joists in place was \$0.157 per lineal foot or \$0.057 per square foot of floor area.

Forming was simplified for floor slabs since the joists were spaced 24" in the clear, exactly the size of the wall plate forms which were used. The plates were held in place by supports resting on the lower flange of the joists. Consequently no form shoring was necessary. The joists projected one-half inch above the steel form so that each joist is held in place laterally by the slab.

Slab reinforcement consisted of No. 8 gauge 6" x 3" welded fabric. The vestibule slab was reinforced with ⅝" rods.

Forming and reinforcing cost \$0.062 per square foot for 390 square feet of floor area.

A depth of 2½" was maintained for the slab thickness by the use of 2" wood screeds set on top of the joists. The pour included the floor area and into the wall forms to the slab elevation. The mix specified was 1:2¼:3 but the quantities of material used indicates a mix of 1:4½ was obtained. Tests on samples of this concrete showed an average 28 day compressive strength of 5,240 pounds per square inch. The slab was finished by trowelling the dry-shake coat.

The cost of pouring 3.6 cubic yards of concrete for floor slabs was \$17.20 per cubic yard. Including the forming and reinforcing the cost was \$23.80 per cubic yard. The slab cost \$0.152 per square foot. Adding to this the cost of joists, \$0.057, and the cost of forming and reinforcing, \$0.062, the total cost was \$0.271 per square foot.

Linoleum laid as the finish floor in the kitchen cost \$0.29 per square foot or \$2.61 per square yard. The total cost of the kitchen floor section was \$0.561 per square foot.

Second floor construction required 209 lineal feet of concrete joists over which was poured a 2½" concrete slab. Concrete joists were used over the living room and the garage. The slab over the garage was the same as that described under first floor except that rigid insulation board one inch thick was placed between the form plates and the slab to insulate the bedroom floor above the unheated garage.

Over the kitchen area a 4" slab was poured on forms supported by shoring. The slab was reinforced with ½" rods set in two directions and spaced 6" on centers. The 2½" slab over the garage was reinforced with ¼" rods set in two directions and 12" on centers. Reinforcement in the slab over the living room was No. 8 gauge fabric 6" x 3". All slabs were finished with a dry-shake coat trowelled to a smooth level surface.

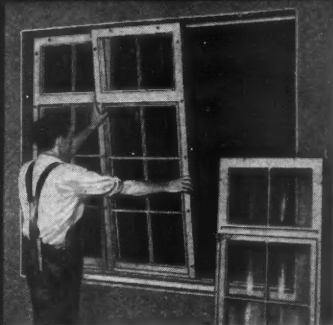
The structural slab of the balcony was included in the second floor pour. This slab was 4" thick and reinforced with 1" rods

(Continued to page 172)

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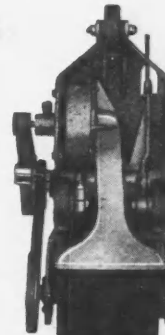
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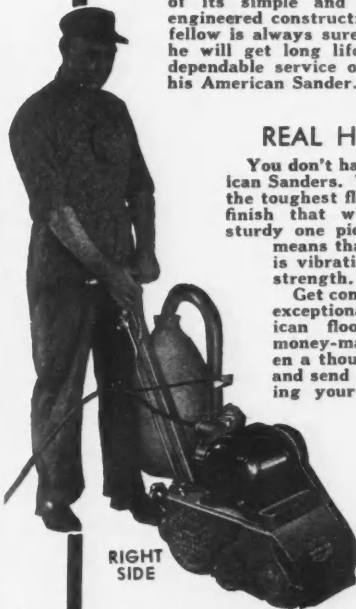


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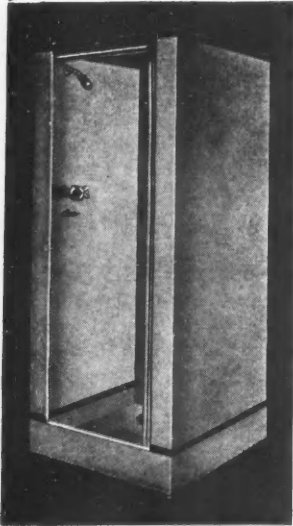
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BATHE-RITE SHOWER CABINETS

(Continued from page 170)

set in two directions and spaced 6" center to center.

Quantities of materials used for the second floor slab indicate that a richer mix was used than required. Tests of samples at an age of 28 days showed an average compressive strength of 4,480 lbs. per sq. in.

Six cubic yards of concrete poured in the second floor cost \$21.00. This includes the cost of forming and reinforcing but not the cost of the joists. For 610 square feet of finish floor the cost including the joists was \$0.26 per square foot. This is an average cost for the two types of construction used.

The 4" slab was used over the kitchen to permit bathroom plumbing to be placed under the floor construction. This required furring. Rigid insulation board was nailed on the furring and plastered.

Joists and slab of the second floor construction were left exposed in the living room. They were honed to a smooth finish and painted with plastic paint. This painting cost \$0.05 per square foot of horizontal area or about \$0.028 per square foot of total area painted.

Floors of the bathroom and bedroom closets were covered with standard gauge, plain color linoleum. The linoleum cost was the same as that of the kitchen floor or \$0.29 per square foot.

Roof

The roof construction consisted of precast joists and a 2½" slab over the entire area. A total of 220 lineal feet of joists were used and cost \$0.067 per square foot of roof area. Reinforcing rods, ¼" and ½", were spaced 12" center to center in two directions. Test samples of the slab pour showed a compressive strength of 1,500 pounds per square inch. Forming and reinforcing cost \$0.061 per square foot. The cost of 5.7 cubic yards of concrete poured was \$9.60 per cubic yard. Including forming and reinforcing the cost was \$15.70. The slab cost per square foot was \$0.088. Including joists, forming and reinforcing this is a total cost of \$0.216 per square foot for the concrete roof construction.

A coat of hot asphalt was applied over the roof slab and followed by a layer of 15 pound roofing felt. Rigid insulation board 1 inch thick was then laid in an asphalt mopping. Three layers of felt each mopped on with hot asphalt was laid on top of the insulation board. Each successive layer of felt was laid at right angles to the preceding one and lapped 2 inches.

The insulation cost \$0.07 per square foot installed and the roofing \$0.073, or a total cost of \$0.143 per square foot.

The entire ceiling of the second story was furred, insulated and plastered. The furring consisted of 1" x 2" strips secured to the bottom of the concrete joists by wires cast in the roof slab and left hanging for this purpose. The furring cost was \$0.038 per square foot.

Insulation board ½ inch thick was nailed to the furring strips as insulation as well as a plaster base. The plaster base cost was \$0.076 per square foot. Reinforcing plaster corners and angles with wire mesh added \$0.018. The plastering cost \$0.053 per square foot or \$0.477 per square yard. The total cost for the suspended ceiling construction was \$0.185 per square foot.

The total cost of the roof construction from plaster to roofing inclusive was: suspended ceiling, \$0.185; concrete work, \$0.216, and roofing, \$0.143, or a total of \$0.544 per square foot.

No. 24 gauge galvanized iron was used to flash the built-up roof and edge of the concrete wall and the chimney and roof. The walls around the balcony were flashed to the membrane waterproofing laid between the main slab and finish slab of the balcony floor.

Gutters and downspouts were No. 28 gauge galvanized iron. Gutters were hung around the entire roof area and the open portion of the balcony. Downspouts drain the gutters at three points. The total cost of the sheet metal work was \$54.70.

Interior doors were 1¾" stock white pine. Exterior doors were 1¾" thick. Glass where used in doors was double strength. One and one-half pairs of 3½" butts were used on exterior doors and one pair on interior doors. Hardware was highlighted bronze. A white pine overhead type door was used at the entrance to the garage. Screen doors were 1½" stock with 16 mesh bronze wire.

Windows were complete manufactured units consisting of upper and lower sash counter-balanced with pullman type balances set in aluminum primed frames with zinc lined jambs and weather stripped head and sill. Sash were glazed with single strength "B" quality glass. The window openings were covered with frameless bronze wire mesh screens.

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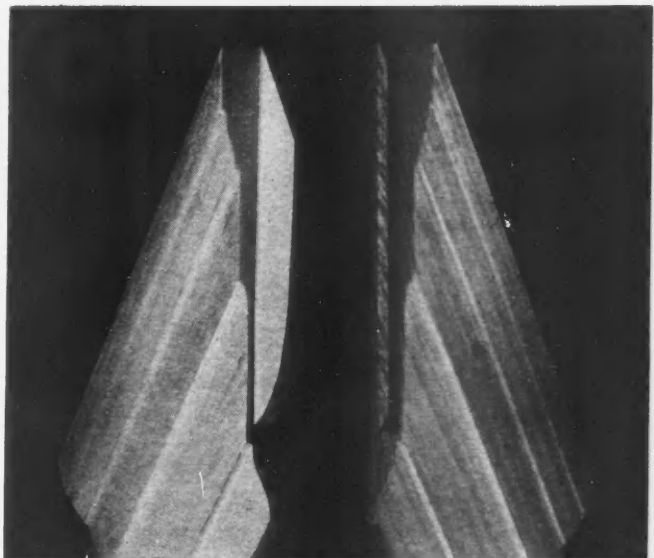
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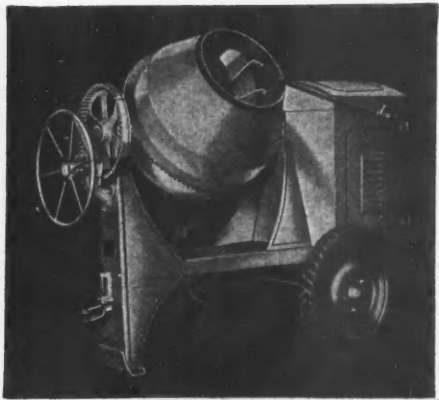
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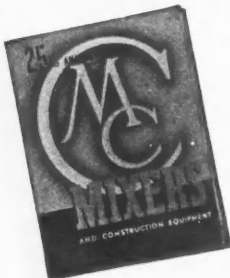
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CONSTRUCTION MACHINERY CO.

Waterloo, Iowa

(Continued from page 172)

casings, 3 $\frac{5}{8}$ " baseboard, 2 $\frac{1}{2}$ " carpet strip, 3 $\frac{1}{4}$ " shoe mold, 3 $\frac{5}{8}$ " window stool, 2 $\frac{3}{4}$ " apron and 1 $\frac{3}{4}$ " picture mold. Hook strips and wooden hanger rods were used in all closets. No casing was used around windows. No exterior wood trim was used.

Kitchen cabinets included two top and two bottom cupboards with linoleum covered counter tops, and a broom cabinet. These were of white pine with poplar trim and were shipped to the job knocked down and unfinished. A linen cabinet consisting of shelves and drawers placed in a recess in the bathroom is included in the cost of the cabinets. A medicine cabinet was provided over the bathroom lavatory.

The total cost of material and installation of all millwork was \$949.50.

Basement and main stairs were of concrete reinforced with rods, $\frac{1}{2}$ " round spaced 6" on center with spacers 18" on centers. Treads and risers were finished with a trowelled coat of 1 part cement to 1 part sand. A finished cement base was applied to the walls on either side for the full length of the main stairs. No base was used on the wall enclosing the basement stairs.

The basement stairs cost \$23.85 and the main stairs \$46.40 or a total of \$70.25.

Heating

The house is heated by a gravity warm air system. Warm air is supplied to the first story through floor registers. Sheet metal ducts to the second story were recessed in the walls. Two cold air return ducts with registers located in the living room floor recirculate the air to the heater. All duct work is No. 26 gauge galvanized iron. In a few cases extra work was entailed in cutting concrete because provision had not been made for openings for ducts in the concrete forms. Wall and floor registers are of the wafer type.

The warm air furnace is a gravity type, coal fired by hand. It is equipped with an evaporator pan type humidifier. Manual operated draft controls are installed in the living room. The grate area is 328 square inches and the pipe area capacity, 690 sq. in.

Certain miscellaneous items should be charged to the heating system. At least one-half of the chimney cost (the other half charged to the fireplace) should be included. Construction of the chimney integral with the walls made a separation of its cost impossible. However, a few items totaling \$18.90 for the lining, cleanouts, etc., are noted in the cost break down tables. Five cubic yards of concrete were poured in the chimney. Based on a cost of \$15.60 per cubic yard for wall concrete, the chimney cost \$78.00, with one-half or \$39.00 to be charged to the heating. Inasmuch as the fuel bin was an extra cost directly due to heating, it also should be included in the cost of the heating plant. This cost is estimated as \$85.00. These miscellaneous items included in the heating cost total \$142.90.

Exclusive of these items the heating cost was \$299.90, or 6% of total cost of the house. Including all items the cost was \$442.80 or 8.8% of the total. It should be noted that the percentages shown in the Cost Construction Summary are different from those in the cost percentage chart. The former are correct for the cost shown in the Summary and the latter are correct percentages for that part of the construction indicated on the chart as adjusted.

Soil lines were 4", 3" and 2" standard weight cast iron. Deep seal traps and drains were used for the garage and basement floors. A 4" vent stack extends from the basement through the roof. Water lines were $\frac{3}{4}$ " galvanized steel and gas lines $\frac{3}{4}$ " black pipe.

Plumbing fixtures were installed with chromium plated exposed traps, fittings and trim. Fixtures consisted of one 17" x 19" enameled iron lavatory, one five-foot porcelain enameled iron recessed tub and one enameled iron cabinet type sink and drain board. The bathroom water closet is vitreous china with reverse trap bowl. A 24-inch porcelain towel bar, soap dish, and paper holder were supplied in the bathroom. Other fixtures were a two part cement laundry tray, 24" x 48", automatic control gas fired hot water heater and a 20 gallon storage tank. Plumbing total cost was \$359.70.

All wiring was installed in 2 and 3 conductor BX cable, except the garage and basement which was in $\frac{1}{2}$ " rigid iron conduit. BX cable was run in the $\frac{3}{4}$ " space provided by the furring on exterior walls and in the spaces between joists and between studs. Some extra labor was involved in cutting interior concrete walls to receive the electrical cable where recesses had not been formed previous to the pouring of the wall.

Fixtures included were 15 finished wall and ceiling fixtures, bell and buzzer, switches and plates, fuse and switch box. Electrical

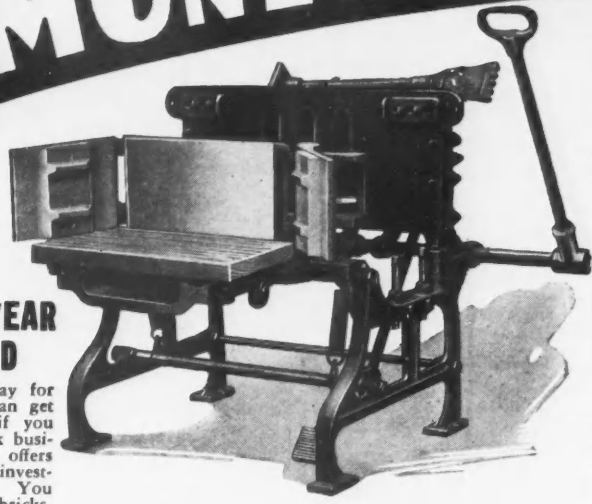
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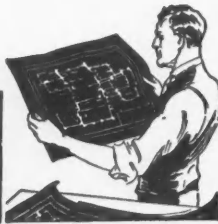
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(Continued from page 174)

outlets include 17 ceiling, 6 wall, 14 switches, 12 duplex convenience outlets and 2 sets of bells and push buttons; a total of 51 outlets.

The total electrical cost was \$205.00. The average cost per outlet complete, including fixtures, was \$4.02.

Interior and exterior wood work was painted three coats of lead and oil. The exposed concrete ceiling of the living room was covered with two coats of plastic paint, the final coat being stippled. Kitchen walls and ceilings were painted three coats of flat lead and oil. Bathroom walls were covered with waterproof wall paper. The total cost of painting and papering was \$115.50.

Square Foot and Cubic Foot Costs

Square foot and cubic foot costs of houses offer only a quick rule of thumb or rough approximation of the cost of a structure. Their usefulness is limited to an approximate comparative cost of houses of similar construction and equipment to that from which the figures were obtained. When conditions vary in any particular, due allowances must be made if the figures are used to arrive at the approximate cost of other new construction.

Based upon the total area of the basement, first floor and second floor the cost per square foot of House No. 3 was \$2.66. This figure is based upon the contract cost of the house, \$4,997.50, and a gross area of 1,882 square feet. The gross area was taken as the space enclosed within the lines of the outside face of the walls of the basement, first story, second story and garage. Since basement construction is less than that for living spaces above, it can, if desired, be assumed to cost about one-half as much. The basement area is 533 sq. ft. Upon the basis of the total area of the first and second floors and garage and one-half the area of the basement the cost per sq. ft. was \$3.09.

The cubic content is the space enclosed within the outer surfaces of the outside walls, a plane six inches below the basement floor, and the outer surfaces of the roof. In arriving at the cost per cubic foot the basement may be included at either its full or one-half of its full cubage. Using the full cubage of the basement, the total cube is 16,186 cubic feet, and the cost, \$0.309 per cubic foot. If the cubic content of the basement is assumed to be one-half of the actual, the total cube is 13,965 cubic feet and the cost \$0.358 per cubic foot.

Comments

The construction cost summary shows a total labor cost of \$1,886.90. This is 37.8 per cent of the contract price. The material cost of \$2,891.35 represents 57.8 per cent of the total cost. The balance of the cost, \$219.25, or 4.4 per cent, was profits and/or overhead of the general and sub-contractors.

Sub-contracts totaled \$1,267.85. Of this amount \$158.25 or 12.4 per cent was profits and/or overhead. The largest profit, 40 per cent, was shown by the figures of the electrical contractor. Two sub-contractors sustained theoretical losses, the painter and plasterer. Neither loss was a cash loss inasmuch as both contractors worked full time themselves, which meant a reduction in the amount they received. This is indicated in the charts. In the case of the painter the 50 cents per hour wages paid to his labor is shown as 45 cents thus making the total cost equal to the sub-contract price.

The summary also shows that only 1.2 per cent of the contract price was left for the overhead and profit of the general contractor. This, obviously, was insufficient to cover the normal overhead expenses of supervision, insurance and taxes. It should, however, be noticed that the material breakdown includes charges for such equipment as concrete mixer, hoist, boiler, etc. No charge has been made for use or depreciation of metal forms. The general contractor, therefore, sustained an actual loss.

It is interesting to note what effect on the cost of a house the elimination of the basement will have. Using the unit costs for excavation, basement walls and floors recorded in the cost analysis, and measuring the areas which would therefore be eliminated, the omission of the basement shows the following cost reductions: excavation, \$103.95; walls, \$183; floor, \$36; and basement stairs, \$23.85; a total of \$346.80. While this may be assumed as the approximate cost of having a basement in this house, it does not take into consideration the effect that would be produced by placing the heating plant on the first floor. This location of the heating equipment would require either a reduction in the area of first story living areas or an increase in the size of the house itself. This fact must be given consideration in arriving at the net cost of the basement.



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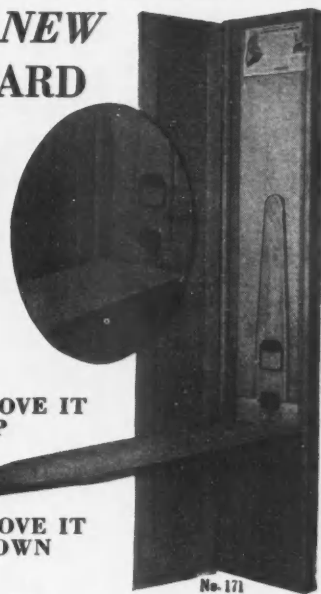
Short women or tall women standing, or sitting in an ordinary chair, may use this board with absolute comfort. No complicated maneuvers are necessary to raise or lower the ironing table. The adjustment is done as easily and quickly as opening or closing a door.

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No. 171 Recess or built-in type; cabinet 3x14x71" rough opening 14 1/4 x 72"; beginning 10" above floor and cabinet cased in all around. Complete ready to install, including 3/4" one panel O. G. door, square face jambs. Ironing board 12x52" —sleeve board 5x24".

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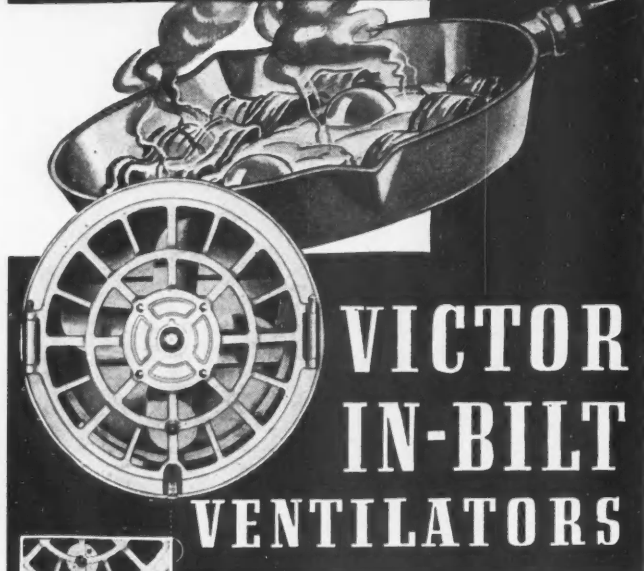


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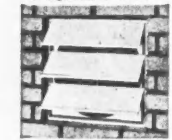
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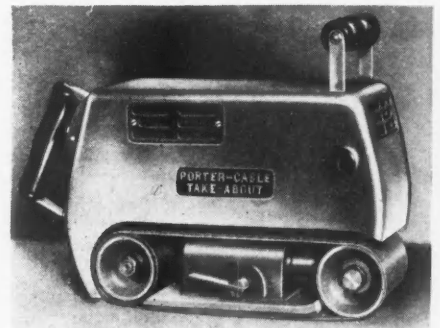
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(Continued from page 164)

aluminum, with molded bakelite intake and exhaust air grids. Both rear and front handles are non-metallic. The front and rear pulleys are each 4" wide by 2 3/4" in diameter; rear, driving pulley is operated through a silent transmission powered by a 1 1/4 H.P. universal motor of any voltage required. The motor is placed in a horizontal position, parallel to the sanding shoe.

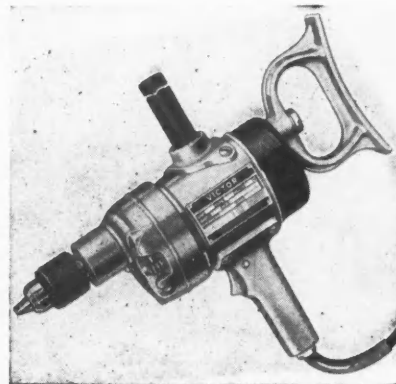
With a belt speed of 1650 R.P.M., this Porter-Cable sander surfaces either new or old wood, removes paint, varnish or other finish materials down to the grain. It is also useful for light metal grinding operations, honing down marble and stone, and the edging of glass and other materials such as composition and plastic type substances now extensively used.



PORTABLE abrasive belt type sander.

A NEW 1/2" capacity electric drill, No. 124 "Victor," has been added to their line by Stanley Electric Tool Division, New Britain, Conn. It has been designed to meet the requirements of contractors, automotive mechanics, plumbers, oil burner installers and other service mechanics for wood and metal drilling.

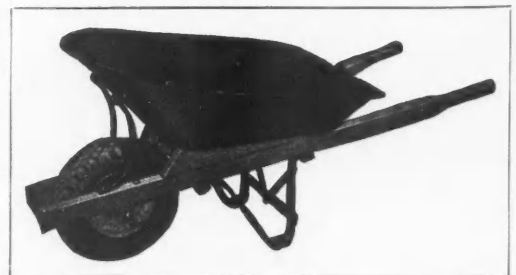
Features include specially heat treated nickel steel gears and a universal motor mounted on seal type ball bearings; strong aluminum alloy housing and a three-jaw chuck; built-in pocket on the housing holds the chuck key for ready use; combination spade and breast plate handle and a pipe handle that may be detached for working in close quarters. It has a no load chuck speed of 500 R.P.M.



VICTOR electric drill.

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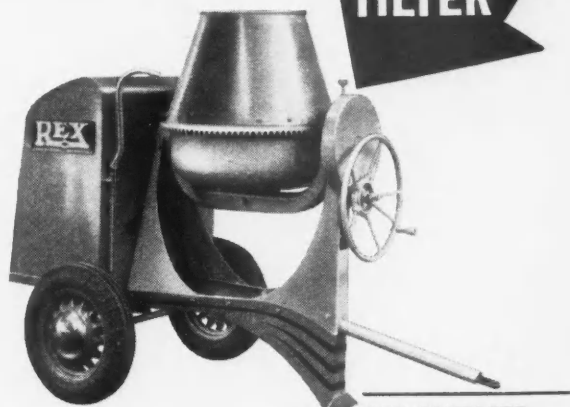
(Continued to page 180)



BARROW with pneumatic tire for handling wet mix concrete.

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3 1/2-S
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REX COMPLETE MIXER LINE

A modern tilter, designed and built for speed to get you to the job faster—spot it easier—mix more yards per day and bring you more jobs per year. It's as rugged as a 1937 "Streamliner"—and as dependable—it never lets you down.

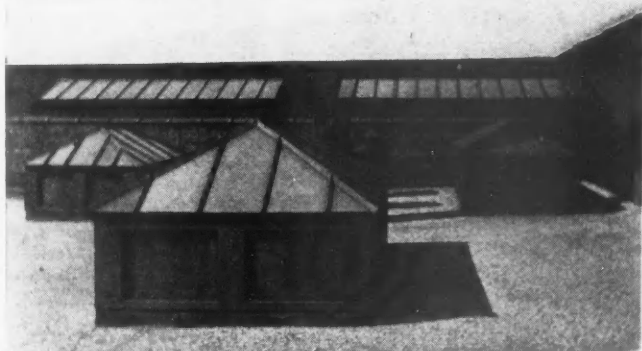
3 1/2-S Tilter . . . 5-S two-wheel trailer or 4-wheel side discharge . . . 7-S two-wheel trailer or 4-wheel side discharge . . . 10-S two-wheel trailer, 4-wheel end or side discharge . . . 14-S four-wheel end or side discharge . . .

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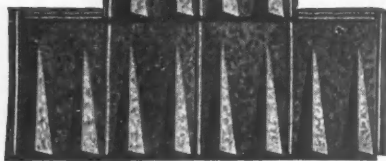
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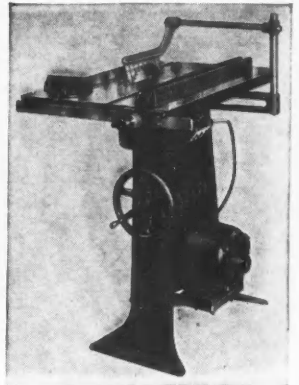
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(Continued from page 178)

ft. The wheel hub is equipped with ball bearings, and the axle is of the never-slip type, being screwed into the wheel bearings. Legs are of channel iron, guaranteed not to bend, being of one unit; frame is reinforced and tied together by crossbars, having a dumping guard at the end of the handle for reinforcement. Tray brace in front is of channel iron, reinforced to prevent bending.

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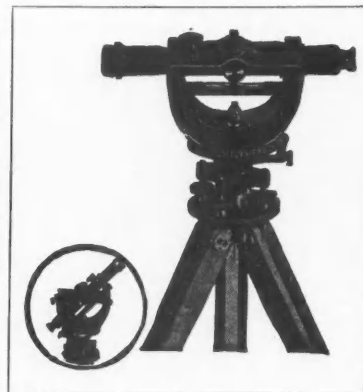
QUICK action in raising and lowering of saw as well as tilting of table are features of the new universal saw introduced by the State Mfg. & Eng. Co., Chicago. It will cut right to the line, through wood, fiber, asbestos, carbon, soft metal, etc. The saw is portable and economical, and has a ½ H.P. motor equipped with S.K.F. ball bearings, and triple V belt drive.



UNIVERSAL saw with quick tilting and raising action as feature.

* * *

THE "Universal," level-transit, manufactured by the David White Company, 315 W. Court St., Milwaukee, Wis., has a number of important improvements. The telescope has a greater magnifying power, and at the same time it is possible to read the figures on a rod as close as 4½ feet from the center of the telescope. The leveling piece has a ⅞-inch shifting plate or center, offering a decided advantage. The instrument has a new durable weatherproof lasting finish, a feature of high priced engineers' transits.



LEVEL-TRANSIT features a ⅞-inch shifting plate among improvements.

* * *

A COMPLETE new line of International motor trucks consisting of 26 models, 77 wheelbases, and sizes ranging from the ½-ton to the big 10- to 15-ton six wheeler, has been developed by International Harvester Company, Chicago. Many engineering improvements have been incorporated in the design of these new motor trucks to make them sturdier and more economical to operate. Every feature has been fully tested and proved and all contribute greatly to performance, greater power, and economy.



MODEL D-2 with all-steel cab and pick-up body is one in the new line of trucks manufactured by International Harvester Co.

1937 BUYERS' GUIDE

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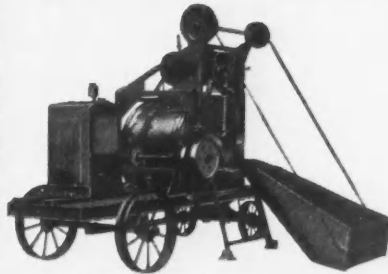
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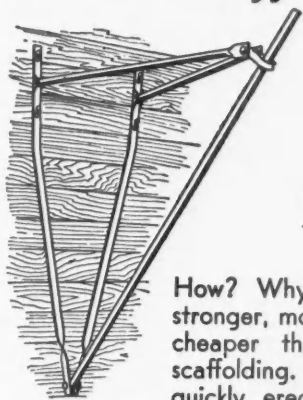
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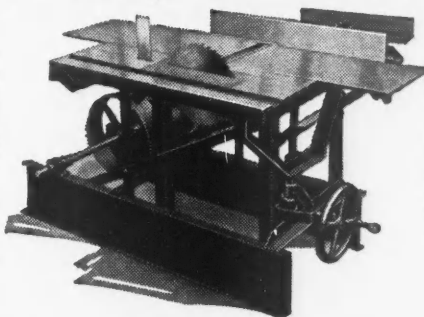
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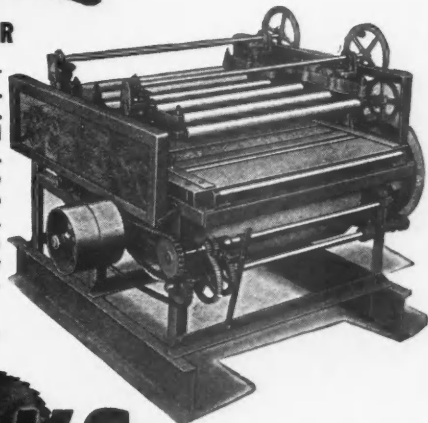
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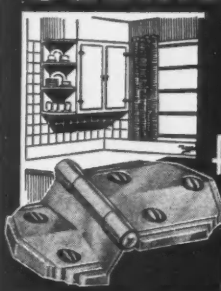
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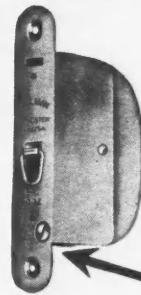
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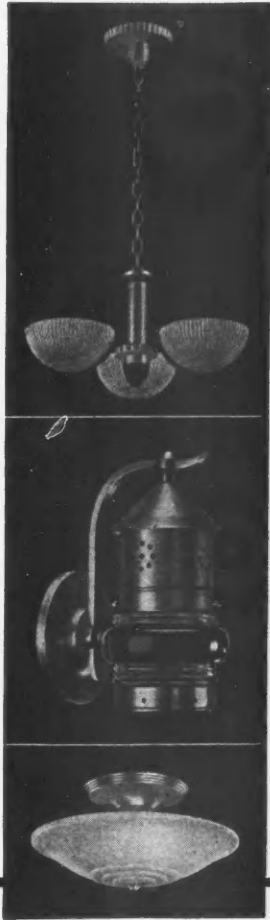
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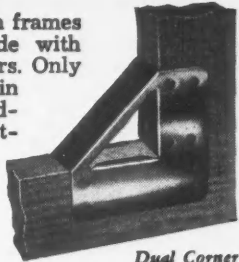
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Reinforced sagproof window screen frames and screen doors are easily made with self-squaring Micklin Metal Corners. Only a hammer and saw needed. Micklin Metal Corners are made of lead-coated steel, which is rust resisting and takes paint without priming. The position of the nails is indicated and the nails are driven through the metal. This countersinks the nails flush with the metal. The nails supplied will never loosen or split the wood.



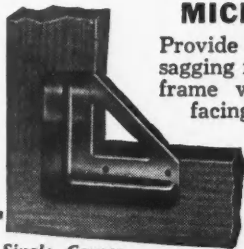
Dual Corner

MICKLIN DUAL CORNERS

Reinforce both sides of the wood. The diagonal channel base permanently prevents sagging.

MICKLIN SINGLE CORNERS

Provide a quick and easy repair for loose, sagging frames. Applied to the back of the frame without removing wire or other facing. Order a supply at once—to save labor and lumber on new construction and remodeling jobs.



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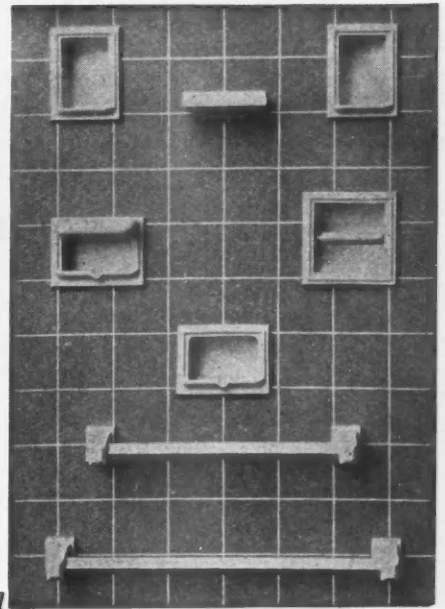
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8 PIECE BATH ROOM SET

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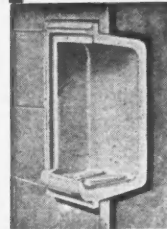
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NEW CATALOGS AND HAND BOOKS FOR BUILDERS AND RETAILERS

LUMBER AND MILLWORK

WEYERHAEUSER SALES CO., St. Paul, Minn.

1-4-Square Guide Line Framing Lumber—"Standard Specifications for House Framing," a 24-page book containing 36 detail drawings and complete specifications, with engineering data for house framing.

A valuable companion piece, "Weyerhaeuser Standards for Small House Construction," is a 20-page book of specific non-technical recommendations for better house construction; dependable rules for each phase of construction are clearly outlined.

CURTIS COMPANIES, Inc., Clinton, Ia.

2-Silentite Windows—"Curtis Insulated Windows," an attractive new book of 32 pages in color, fully illustrated, covering Silentite double-hung and casement wood windows.

ANDERSEN FRAME CORP., Bayport, Minn.

3-Window Units—"Andersen Complete Window Units," a 20-page catalog of details, illustrations and full information on Andersen casement, Narroline double-hung and basement windows.

N.S.W. CO., Detroit, Mich.

4-Non-Stick Windows—"N.S.W. Non-Stick Windows," an 8-page construction detail data sheet giving large, clearly drawn details of this improved non-stick, double-hung wood window, a completely factory assembled unit.

MALTA MFG. CO., Malta, Ohio.

5-Malta "Supreme" Frames—Full information regarding these improved and patented knock-down window and door frames sold through retail lumber dealers.

HUTTIG MFG. CO., Muscatine, Iowa.

6-Red-E-Fit Rot-Proof Windows—Full information regarding this improved stock window which saves time and money for contractors and builders. Also information regarding Duplex doors which are "waterproof glued."

FARLEY & LOETSCHER MFG. CO., Dubuque, Iowa.

7-Unipak Wood Casements—Catalog No. 36 is a 16-page brochure with large size details, specification and size data of the Unipak out-swinging wood casements, complete with frame. A companion piece, "De Luxe Kitchen Units," devotes 16 pages to modern kitchens and "Quality-bilt" woodwork cabinets.

THE KITCHEN MAID CORP., Andrews, Ind.

8-Kitchen Cabinets and Cases—"Kitchen Cabinetry by Kitchen Maid," a big 16-page portfolio, attractively presented showing the entire line of Kitchen Maid standard unit cases and cabinets with exact dimensions. A handbook for architects and builders.

Two small consumer leaflets are also available, "Complete Kitchen Planning" and "Color Suggestions for the Beautiful Kitchen."

MAPLE FLOORING MFRS. ASSN., Chicago.

9-Hard Maple Flooring—"Northern Hard Maple, Beech and Birch Floorings," a 12-page file-pocket booklet, containing grading rules, standard specifications and other data on hard maple flooring. A companion booklet discusses flooring grade requirements.

E. L. BRUCE CO., Memphis, Tenn.

10-Bruce Block Flooring—Full information regarding Bruce finished hardwood blocks offered in 22 grades of oak, maple, beech and walnut, sanded, filled, sealed, polished and waxed.

BRADLEY LUMBER SALES CO., Warren, Ark.

11-Bradley Nail-Seated Flooring—"Nail-Seated Flooring" is an interesting folder showing how standard "nail-seated" strip flooring with special nailing place on 8" centers saves on labor costs and makes a better floor. A companion piece, "Lending Grace to Hospitality" is written and illustrated to appeal to the home owner.

FORDYCE-CROSSETT SALES CO., Fordyce, Ark., and Crossett, Ark.

12-Wolmanized Lumber—Full information regarding pressure-treated southern pine and Arkansas pine lumber sold through retail lumber dealers. "Handles, works and paints just like untreated stock." Certified protection against decay and termites.

CALIFORNIA REDWOOD ASSN., 405 Montgomery St., San Francisco.

13-California Redwood Siding—"Beautiful Homes of Durable California Redwood," 24 pages profusely illustrated in color including large photographs of modern home exteriors with floor plans showing adaptability of redwood to quaint and charming home effects. Regular price 25c; however, one copy is offered free to builders, architects, contractors. A companion piece, "Extend Your Home to All You Own," is a book of 36 pages of illustrations of fences, garden enclosures and planting backgrounds.

FLORIDA LOUISIANA RED CYPRESS CO., Jacksonville, Fla.

14-Tidewater Red Cypress Lumber—"Build with Arrow Brand Tidewater Red Cypress," a 16-page handbook stimulating interest in the use of Tidewater red cypress for building purposes, both industrial and residential. A companion piece, "The Inside Story of Tidewater Red Cypress for Interiors of Beauty and Stability" is a consumer booklet of unusual beauty and sumptuousness. Printed in red and brown, it brings out very effectively the characteristic cypress grain; 28 pages.

WESTERN PINE ASSN., Yeon Bldg., Portland, Ore.

15-Western Pine—Full information regarding Idaho white pine, Ponderosa pine and Sugar pine, and their uses for exterior trim and siding, doors, sash, screens, cupboards, shelving, paneling, mantels and staircases.

HARBOR PLYWOOD CORP., Hoquiam, Wash.

16-Super-Harbor, the Outdoor Plywood—Full information regarding this new type of plywood which is guaranteed against weather, opening new methods for building summer cabins and cottages, besides truck bodies, trailers, boats, greenhouses, etc.

TRIMPAK CORP., New York City.

17-Trimpak—"Inside Information on Trim," a 14-page data book presenting 11 photographs and complete detailed description of the manufacture and preparation of window and door trim. Bundled, wrapped and delivered through retail lumber dealers with 8% moisture content.

WASHINGTON MANUFACTURING CO., Tacoma, Wash.

18-Samson Columns and Porch Work—"Construction of Our Columns," a data sheet illustrating the finished products, with table of dimensions. "A home without a porch is not complete" is the timely slogan offered by this firm to architects, contractors and dealers.

A companion piece presents the "Samson" fir gutter, giving recommended details of cornice and gutter construction.

LONG FIR GUTTER CO., Cadiz, Ohio.

19-Aluminized Fir Gutters—A 4-page data sheet presents the Long "Shadowline" fir gutters equipped with leak-proof brass fittings; 5 sizes being offered, namely, 3x5, 4x5, 4x6, 5x7 and 6x8; service through retail lumber dealers.

VANCOUVER PLYWOOD & VENEER CO., Vancouver, Wash.

20-Plywood Walls and Ceilings—"Art-Ply for Modern Interiors," a beautiful 20-page brochure in full color showing various rooms finished with Art-Ply, illustrating living rooms, bedrooms, kitchens, children's playrooms, recreation rooms, etc., with details showing how the moulding is inlaid to make different patterns and to completely cover the structural joints.

WEST COAST PLYWOOD CO., Aberdeen, Wash.

21-Tru-Bilt Plywood and Wallboard—Full information regarding Tru-Bilt Douglas Fir plywood furnished in widths from 12" to 72", and lengths from 48" to 144", thicknesses ranging from 3/16" to 1 1/8".

RESINOUS PRODUCTS & CHEMICAL CO., Philadelphia, Pa.

22-Tego-Film Bonded Plywood—"Tego Plywood in Construction," a 24-page book covering use of waterproof Tego bonded plywood in home construction and furnishings.

WHEELER OSGOOD SALES CORP., 122 S. Michigan Ave., Chicago.

23-Woco and Laminex Guaranteed Doors—Catalog No. 37 tells construction advantages and illustrates the Wheeler Osgood complete line of doors for interior and exterior use. Companion pieces also cover Laminex Plyform and Laminex Plywood, illustrating numerous uses.

SHEVLIN PINE SALES CO., Minneapolis, Minn.

24-Northern White Pine—"Pine Homes and Pine Interiors" and "Log Cabins Up to Date" are two very helpful booklets, well illustrated and full of suggestions. Much used by architects, builders and dealers.

FOR PROMPT SERVICE USE COUPON ON PAGE 208

Contractors and Floor Men Are
Switching To
REID-WAY PROFESSIONAL

Here's the floor surfacing machine you have been looking for. It does superior work without excessive weight, bulky design or unnecessary mechanical gadgets. The Reid-Way Professional "8" has ONLY TWO MOVING PARTS (sanding drum and separate vacuum motor)—an exclusive feature. There are NO GEARS, BELTS, CHAINS or PULLEYS. In fact, there is practically nothing in this outstanding sander to go wrong and cause maintenance expense. And only Reid-Way is so designed that it will work directly up to the quarter-round on EITHER SIDE of the machine. The Reid-Way excels in every respect.



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The Reid-Way Professional "8" has the combined speed and power to do thorough, extra fine work. Perfectly balanced sanding drum eliminates waves and chatter marks. Its rugged construction will stand years of hard usage. It's the sander contractors and floor men are choosing.

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a Good Kitchen Ventilating*
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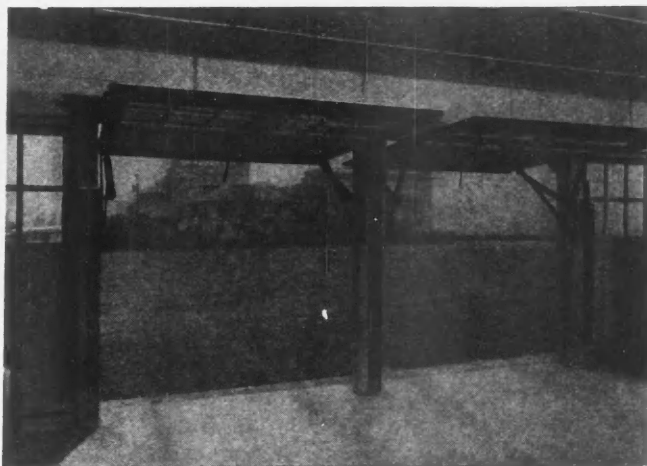


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GARAGE DOOR HARDWARE

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CONCRETE, MASONRY AND PLASTERING MATERIALS

PORTLAND CEMENT ASSN., Chicago, Ill.

25—**Concrete Homes**—"Designs for Concrete," booklet featured in P.C.A. advertising gives home buyers 55 suggested designs by leading architects; also details of construction.

"Facts About Concrete Masonry" (new edition), prepared by The National Concrete Masonry Assn., is a 64-page manual of working data on properties, details of good construction practice.

"Precast Joist Floor Construction Details" is a guide to the builder and architect on this fire-safe, rigid type of floors.

UNIVERSAL ATLAS CEMENT CO., 208 S. La Salle St., Chicago.

26—**Universal Atlas Cement**—Full information regarding Atlas White, Atlas Gray cement and their many uses.

MARQUETTE CEMENT MFG. CO., Chicago.

27—**High Early Strength Portland Cement**—"User's Manual" is a 72-page booklet with 75 actual photographs; describes use of Marquette High Early Strength Portland Cement to secure dense, durable concrete in 24 hours.

LEHIGH PORTLAND CEMENT CO., Allentown, Pa.

28—**Lehigh Portland Cement**—"Lehigh Early Strength Cement, What It Is, What It Does, What It Can Be Used For," a 32-page book containing essential information on the advantages of Lehigh Early Strength Portland Cement.

LOUISVILLE CEMENT CO., Louisville, Ky.

29—**Brixment**—"How to Mix Brixment," directions for mixing to obtain the best results. Companion pieces, "Better Masonry at Less Cost" and "Brixment for Stucco" tell how to use Brixment mortar to decrease the cost of brick work and how to get superior results by using Brixment for stucco work.

OHIO HYDRATE & SUPPLY CO., Woodville, O.

30—**Ohio White Finishing Hydrated Lime**—"Ohio Hydrate Lime for Plaster and Stucco," a 16-page booklet with 18 illustrations, presenting a brief history of the Ohio hydrate rock deposit, manufacturing process and specifications. Companion booklet, "Colorful Lime Stucco," presents Ohio Sanlime and Ohio outside stucco, and shows the different textures in which it can be applied. Masons Hydrated Lime and Ohio Mastite Masonry Mortar are covered in a 10-page booklet entitled "Ohio Hydrate Lime for Masonry Mortar and Concrete."

UNITED STATES GYPSUM CO., Chicago, Ill.

31—**Perforated Rocklath**—A new 6-page folder describes perforated Rocklath, emphasizing its fireproof qualities; presents data on fire tests.

Wood Grained Sheetrock is presented in a new series of true color reproductions, including knotty pine, walnut and Douglas fir finishes.

"Lime in Building Construction" is a new handbook presenting the lime products in the USG line.

OWENS-ILLINOIS GLASS CO., Toledo, O.

32—**Insulux Glass Block**—Complete details about Insulux glass block with design suggestions and detailed specifications for mortar preparation and laying the block.

NATIONAL MORTAR & SUPPLY CO., 1520 Grant Bldg., Pittsburgh, Pa.

33—**Banner Lime**—Complete information regarding this material manufactured from the famous Ohio dolomites.

ROOFING MATERIALS

STAINED SHINGLE DIV., WEYERHAEUSER SALES CO., St. Paul, Minn.

34—**Edham Stained Shingles**—"Hand Splits," architectural book of 12 pages with illustrations, specifications and technical sketches. A companion piece is an architect folder showing the use of shingles and shakes for house exteriors, and an architect specification folder containing sketches and specifications for laying shingles and shakes.

WEATHERBEST CORP., No. Tonawanda, N.Y.

35—**Weatherbest Stained Shingles**—"Homes of Enduring Beauty by Weatherbest," a 16-page booklet in attractive colors describing manufacture and uses of Weatherbest stained shingles. Color charts show examples of proper stained shingle homes.

RED CEDAR SHINGLE BUREAU, Seattle, Wash.

36—**Certigrade Red Cedar Shingles**—Full information regarding the certified products of Bureau members under the label, "Certigrade." How these shingles insulate as well as decorate. Handbook of recommended shingling practice.

KEASBEY & MATTISON CO., Ambler, Pa.

37—**Asbestos Roofing Shingles**—"Your Home Can Be a Thing of Beauty and a Joy Forever," 4 pages in full colors to enable prospects to see several popular asbestos roofing shingles in various price classes. Companion pieces, "It Will Pay You Well" and "Beauty in the Bathroom" present, respectively, asbestos siding shingles and asbestos Watile.

JOHNS-MANVILLE CORP., 22 E. 40th St., New York City.

38—**J-M Asbestos Roofing and Siding Shingles**—Complete information regarding J-M roofings, both asbestos and asphalt, with color plates showing colors and patterns obtainable. How to re-roof over old shingles and how to modernize with J-M Cedargrain asbestos siding shingles.

PHILIP CAREY CO., Lockland, O.

39—**Philip Carey Roofings**—New circulars on the complete line of Philip Carey asbestos and asphalt shingles and roofings with color plates showing patterns, recommended specifications and suggestions for modernizing old buildings and for new work, both roofs and side walls.

THE LEHON CO., Chicago.

40—**Corduoy Asphalt Shingles**—Information regarding this unique and characterful ridged asphalt shingle with color plates showing patterns and results of tests both on the job and in the laboratory. Also information regarding the complete Mulehide line sold through Mulehide dealers everywhere.

THE BARRETT CO., New York City.

41—**Asphalt Siding**—"Sidings by Barrett," a new folder prepared to show the possibilities of asphalt siding as a sidewall material for new and old construction. Presents 6 before and after pictures, together with color swatches. "1937 Architects & Engineers Reference Manual" is a 70-page revised manual containing specifications and detailed drawings treating the following subjects: built-up roofing for flat roofs and for steep roofs; roof flashing; roof drainage; waterproofing and damp-proofing. A companion folder treats also of Barrett roofings.

THE RUBEROID CO., 500 Fifth Ave., New York City.

42—**Built-up Roofing Materials**—"Genuine Ruberoid Bonded Built-up Roofs," an 86-page book containing complete specifications of the various kinds of built-up roofings—*asbestos, felt and asphalt and coal tar pitch and tarred felt*—comprising the Ruberoid line. A companion piece devoted to "Thatch Siding" illustrates and describes the many advantages of re-siding with this popular asbestos cement "wood textured" siding.

THE TEXAS CO., 332 S. Michigan Ave., Chicago.

43—**Texaco Roofings**—Full information regarding Texaco roofings, shingles and felts, fire-resisting, waterproof, weather-proof.

THE LOGAN-LONG CO., 37 W. Van Buren St., Chicago.

44—**Asphalt Roof Paints & Cements**—"From Deep Underground to the Surface of Your Roof," an 8-page folder consisting of 14 drawings illustrating in detail the uses and applications of asphalt paints and roof cements.

"Yes Sir! Here's the Roof Your Home Should Have," a 12-page folder featuring the advantages of tapered, shingle ridged Individuals, and three-tab unit Mica-Asphalt shingles. A companion piece, "Weather-Top Siding" features asphalt siding shingles for modernizing old frame homes.

THE AMERICAN BRASS CO., Waterbury, Conn.

45—**Anaconda Economy Copper Roofing**—New booklet under this title is 12 pages, profusely illustrated, including 4-color reproduction of architectural renderings.

THE NEW HAVEN COPPER CO., Seymour, Conn.

46—**Kenmar Copper Shingles**—Complete data and facts about quick sales and better prices home building operators are getting with Kenmar roofed homes. Data sheets give specifications and details of application.

THE EDWARDS MFG. CO., 542 Eggleston Ave., Cincinnati, O.

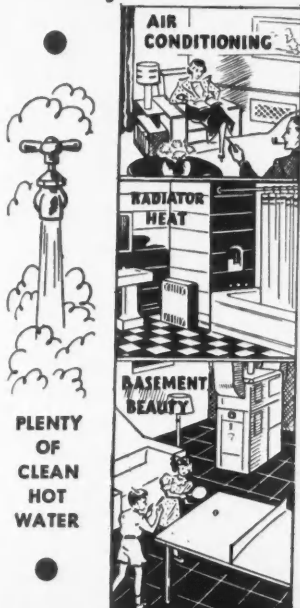
47—**Metal Roofings**—"Handy Catalog No. 92" is a 48-page and cover handbook showing all styles of standard and patented sheet and unit roofings; weight and thickness data of iron and steel sheets; practical suggestions and estimating data.

NORTH BANGOR SLATE CO., Bangor, Pa.

48—**Roofing Slate**—"Consider the Roof Over Your Head," a 12-page booklet describing slate roofing and showing several methods of laying. A companion piece, "Roofs of Enduring Beauty," presents several good design ideas.

FOR PROMPT SERVICE USE COUPON ON PAGE 208

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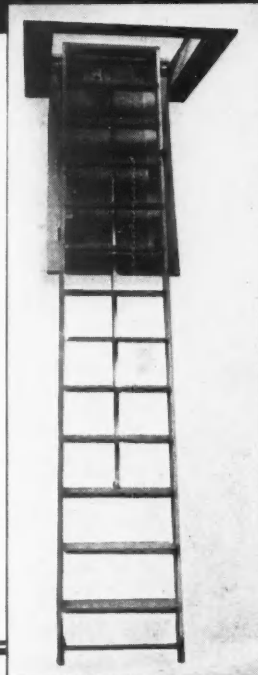
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Deliver a complete home or garage by installing these Strong—Simple—Reliable disappearing attic stairs which afford instant access to valuable storage space. Highest grade materials—All clear lumber of size and strength to assure a permanent job. Hard-ware thoroughly engineered. EXCLUSIVELY manufactured under U. S. Pat. 1,883,777. These stairs are guaranteed for 10 years and cost less than any other when installed.

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THE INSULITE CO., Minneapolis, Minn.
49—Insulite Interior Finish—"Modern Interiors by Insulite," a 16-page book in color showing how beautiful interiors are created with Insulite interior finish products in homes, stores, offices and public buildings. A companion piece, the Insulite "Self-Insulating Wall of Protection" features Bildrite sheathing for outside construction and Lok-Joint lath for inside plaster base use.

THE CELOTEX CORP., Chicago.
50—Celotex Insulation Board—"Planning Modern Interiors," a 24-page booklet containing many drawings and photographs showing designs and application of Celotex for interior finish. A companion piece covering Celotex building board is entitled, "Celotex for Cottages, Cabins and Camps." It contains 2 pages of instructions and drawings, with several practical pointers on cabin construction. "Celotex for Sound Insulation" presents a satisfactory discussion of this subject.

FIR-TEX INSULATING BOARD CO., Dant & Russell, Inc., Gen. Distributors, Portland, Ore.

51—Fir-Tex Super Insulating Board—Complete catalog and samples of Fir-Tex for four principal uses: (1) Insulation, (2) Plaster base, (3) Sheathing, (4) Interior finish.

MASONITE CORP., Chicago.

52—Masonite Insulation Sheathing Board—Full information regarding this new Masonite product, 25/32" thick, smooth surface on both sides.

Masonite Canec insulation, another new Masonite product, is a cane insulation board. Complete information and samples available.

WOOD CONVERSION CO., St. Paul, Minn.

53—Nu-Wood—"Nu-Wood Interiors for Every Wall and Ceiling," a 32-page booklet showing in pictures the use of Nu-Wood in homes, churches, theatres, stores, offices, taverns, etc.

"Balsam-Wool Sealed House Insulation," a 16-page booklet explaining important features of Balsam-Wool insulation, application pictures and description of material.

ARMSTRONG CORK PRODUCTS CO., Lancaster, Pa.

54—Temlok Insulating Board—"Armstrong's Temlok De Luxe Interior Finishes," a liberally illustrated folder printed in full color showing the 6 factory-finished colors in which Temlok De Luxe is available. Brief illustrated description of methods of installation for Temlok De Luxe boards, planks, panels and tiles.

THE AGASOTE MILLBOARD CO., Trenton, N.J.

55—Homasote Panelized Insulation—A new folder in color shows the 4 standard colors for this material—Pine-Tone, Old English Light, Old English Dark and Silver Gray. A companion piece demonstrates Homasote as a weatherproof insulating board for exteriors and interiors of homes, summer camps, cabanas, garages, poultry houses and farm buildings.

JOHNS-MANVILLE CORP., 22 E. 40th St., New York City.

56—J-M Rock Wool—"The Book of Triple Insulated Homes," a new edition book of 32 pages, a gold mine of house

plan ideas and a technical handbook of good construction featuring the J-M products which enter into triple insulation.

THE RUBEROID CO., 500 Fifth Ave., New York City.

57—Ruberoid Rock Wool—"When Winter Winds Begin to Blow," a folder which describes and illustrates the many advantages and money-saving features of Ruberoid Rock Wool.

THE EAGLE-PICHER LEAD CO., Cincinnati, O.

58—Rock Wool Insulation—Complete information regarding the Eagle-Picher line of Rock Wool, what it will do, how to apply it.

STEEL & IRON- STRUCTURAL SHEETS. SPECIALTIES

ADJUSTABLE BEARING PLATE CO., 11 Rutger St., St. Louis, Mo.

59—Adjustable Bearing Plates—A new 4-page circular shows wall sections braced with steel bearing plates and providing for duct work and piping; detailed instructions for design and construction of this better wall.

Clark Stud-Ties are covered in a companion circular showing how to provide extra strength where structural members are cut for air ducts and piping. A new low priced bath tub hanger, adjustable, is also described.

STEEL JOIST INSTITUTE, 201 N. Wells St., Chicago.

60—Open Web Steel Joists—"Fire Resistance of Open Web Steel Joist Construction," a 4-page pamphlet giving results of standard fire test and also showing how this construction withstood actual fire.

TRUSCON STEEL CO., Youngstown, O.

61—Truscon Steel Building Products—"Truscon Products for the Home Builder," a complete non-technical catalog illustrating and describing the application of Truscon products in residence construction; 28 pages, thoroughly illustrated, including much design and construction data.

MILCOR STEEL CO., Milwaukee, Wis.

62—Steel Roof Decks—"Milcor Steel Roof Decks" describes Milcor deck and accessories, with safe load tables, estimating instructions and suggested architects' specifications. Companion pieces, "Catalog No. 40" covering Milcor eaves trough and conductor pipe, finials, flashings, furnace pipe and accessories, and "Milcor and Richsto Metal Trim," a 40-page handbook, Catalog No. 100-B, on all forms of metal trim for homes and commercial buildings, are now available.

THE BERGER MFG. CO., Canton O.

63—Sheet Metal Building Products—"Berloy Blue Label Line Steel Building Products," a new catalog on rust and corrosion resisting sheet metal building products produced by this subsidiary of the Republic Steel Corp. A companion piece, "Berloy Metal Lath and Accessories," presents the general line of metal lath and accessories, with technical description, detailed drawings and uses, clearly presented.

REPUBLIC STEEL CORP., Dept. AB, Republic Bldg., Cleveland, O.

64—Toncan Copper Molybdenum Iron Sheets—"The Path to Sheet Metal Per-

manence," a 20-page booklet in two colors, profusely illustrated, describing the properties and applications of rust-resisting Toncan iron sheets.

Enduro stainless steel is featured in a companion booklet, No. 182, reprinted from Sweet's Architectural File, a 16-page booklet describing and illustrating architectural applications of Enduro stainless steel.

UNITED STATES STEEL CORP., Carnegie Bldg., Pittsburgh, Pa.

65—USS Stainless Steels—A new catalog on stainless steel in architecture in unusually attractive format presents facts, photographs and drawings especially prepared for the architect and his fabricators; 16 pages showing the use of stainless steel in a variety of applications. The title, "USS Stainless Steels in Architecture."

JOSEPH T. RYERSON & SON, Inc., Lock Box "U", Chicago.

66—Steel for Construction Purposes—"Ryerson Stock List"; this steel buyers' guide gives detailed information on large and complete stocks of steel and allied lines. A companion piece, "Ryerson 'Estate' Road and Garden Curbing," gives complete information on these lines, and shows illustrations of interesting installations.

INTERNATIONAL STEEL CO., Evansville, Ind.

67—Steel & Iron—Full information regarding the products and services of the International Steel Co.

WILLIS MANUFACTURING CO., Inc., Galesburg, Ill.

68—Willis Skylights—New skylight catalog gives complete information, with specifications, dimensions, etc., of many models, designed both for light and ventilation.

CINCINNATI IRON FENCE CO., Inc., 3411 Spring Grove Ave., Cincinnati, O.

69—Iron Railings for Interior and Exterior Use—"Wrought Iron for Beauty and Protection" is a new folder illustrating 20 designs of iron railings for interior and exterior; also iron and wire fence, swinging and folding gates, iron window guards, gratings, etc.

MID-STATES STEEL & WIRE CO., Dept. S., Crawfordsville, Ind.

70—Sheet Metal Products—New special section of general catalog is devoted entirely to sheet metal products, including elbows, troughs, roofings, etc. A companion piece of 40 pages covers nail and wire products, presenting over 60 detail drawings.

METAL DOORS & WINDOWS

KAWNEER CO., Niles, Mich.

72—Aluminum Double-Hung Windows—"The Light Sealair Aluminum or Bronze Double-Hung Window" is an 8-page illustrated data sheet on this improved line of windows, showing details of installation and photographs of actual installations.

"Kawneer Rustless Metal Doors" for use with Kawneer store fronts and in all types of buildings where heavy duty is expected is a new 8-page data sheet giving full details and specifications.

GENERAL BRONZE CORP., Long Island City, N.Y.

73—Windows of Bronze or Aluminum—"Windows, Permatite" are presented in a 36-page handbook with 22 detail drawings. These windows, both double-hung and casement, are offered in bronze or alu-

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minum. A companion catalog, "Revolving Doors," is a 12-page booklet showing photographs, construction details and dimensions.

DETROIT STEEL PRODUCTS Co., 2252 East Grand Blvd., Detroit, Mich.

74—Fenestra Windows—Complete information regarding Fenestra casement windows of steel, including the new "air conditioning" windows that prevent condensation. Handbooks and data sheets well illustrated and complete with sizes and design data.

TRUSCON STEEL CO., Youngstown, O.
75—Truscon Steel Windows—New Handbooks and data sheets present the extensive line of Truscon steel casements, giving full information.

KINNEAR MFG. CO., Columbus, O.
76—Kinnear Rolling Doors—New catalog, Bulletin No. 16, presents steel rolling doors, labeled fire doors, labeled fire shutters, metal rolling grilles, Rol-Top doors, bifolding doors and door operating equipment; 32 pages, fully illustrated.

FLOOR & WALL TILE, LINOLEUM, RUBBER, CARPETS

W. & J. SLOANE, Selling Agents Div., 295 Fifth Ave., New York City.

77—Rugs and Carpets—"Floor-Plan Rug Sales Manual," a 36-page pocket size booklet, a manual for retail salesmen presenting the essential facts about Alexander Smith rugs, including reference list of 300 most common room sizes, and the proper floor plan rug size for each room. Supplementary design books picture and explain the Alexander Smith rugs and carpets, showing color, quality and style, with beautiful color plates showing patterns. A 30-page book is devoted to the two-tone broadloom carpets, and a consumer booklet of 16 pages "Floors Beautiful—a Guide to Rug Buying" shows photos and sketches of rooms.

CONGOLEUM-NAIRN INC., Kearny, N. J.

78—Sealex Linoleum—Full information regarding Sealex linoleum for walls and floors to give your houses "eye appeal" with many suggestions for modern decorative schemes now available.

ARMSTRONG CORK PRODUCTS CO., Lancaster, Pa.

79—Armstrong's Linowall—"Transform That Old Room with Armstrong's Linowall," a color illustrated folder offering the latest ideas in wall design with linoleum-type wall covering. Companion pieces present Armstrong Accotile, Corkoustic and linoleum. Corkoustic and Temcoustic are materials for noise quieting and acoustical correction in stores, offices, schools, hospitals, swimming pools, gymnasiums, etc. Accotile is a moisture-resistant asphaltic tile for basement recreation rooms.

UVALDE ROCK ASPHALT CO., San Antonio, Tex.

80—Azrock Asphalt & Mastic Tile Floor Coverings—New bulletin briefly describes product and uses, with pictures of typical installations. Color chart also available. A companion piece, "Azrock Carpet Tile," presents the line including 16 plain colors and 21 marbled colors ranging from black to white. Tile is available in $\frac{1}{8}$ ", $\frac{3}{16}$ " and $\frac{1}{4}$ " thicknesses, and many sizes for custom designs.

THE TILE-TEX CO., Chicago Heights, Ill.

81—Flexible Wall Tile—Full information regarding Tile-Tex decorative wall tile and resilient floor tile, coming in a wide range of colors; a unit-laid wall tile to be laid right over plaster or wallboard.

WRIGHT RUBBER PRODUCTS CO., Racine, Wis.

82—Rubber Floor Tiling—"Prefelt-Set Wrightex" is a folder illustrating in full color the rubber tile patterns available, with clear directions of how to lay the Wrightex rubber floors.

MARSH WALL PRODUCTS CO., Dover, O.

83—Marlite—"Marsh Wonder Walls for Beautiful Interiors," a new 12-page comprehensive catalog of decorative wall materials showing many new photographs, and illustrations in color; also showing a complete line of wallboard mouldings. A supplemental piece, "Marsh Mouldings," presents Marsh extruded white alloy and stainless steel mouldings of the snap-on type. Also Presdwood mouldings.

PAINTING & FINISHING

ALUMINUM CO. OF AMERICA, Pittsburgh, Pa.

84—Albron Aluminum Paste and Powder—"Aluminum Paint, Its Uses and Application," a 64-page booklet illustrating uses for aluminum paint and giving information for its mixture and application.

PITTSBURGH PLATE GLASS CO., Pittsburgh, Pa.

85—Paint and Glass—"Practical Suggestions for Interesting Use of Glass and Paint in Your Home," a 28-page 4-color booklet giving hints on the combined use of paint and glass in the home; illustrated with color photographs, color sketches, etc.

THE SHERWIN-WILLIAMS CO., Cleveland, O.

86—Paints, Varnishes, Enamels, Stains, Roof Coatings—"The Home Decorator," a 36-page booklet in full color giving suggestions for color schemes, for exterior, and every room inside the home. Illustrations, and suggestions from all leading decorators.

EAGLE-PICHER LEAD CO., Cincinnati, O.

87—Eagle Pure White Lead—Information regarding the elastic paint film produced by Eagle pure white lead with linseed oil. How to secure satisfactory paint jobs.

NATIONAL LEAD CO., 111 Broadway, New York City.

88—Dutch Boy White Lead—Information regarding Dutch Boy white lead, "Good Paint's Other Name."

ALABASTINE CO., Grand Rapids, Mich.

89—Alabastine House Paint—Full information regarding the complete line of oil paints, enamels, varnishes and water paint products now produced by this company.

REARDON CO., 2200 N. Second St., St. Louis, Mo.

89A—Bondex and Modex—Full information regarding Bondex waterproof cement paint for finishing leaky basement walls, and regarding Modex powdered casein paint for walls and ceilings.

MEDUSA PRODUCTS CO., Div. of Medusa Portland Cement Co., Midland Bldg., Cleveland, O.

90—Medusa-Lite—"How to Paint Concrete, Stucco, Masonry and Other Surfaces" is a new book for architects and builders telling how to use Medusa floor coating in black, white and 6 colors, also Medusa portland cement paint.

THE FOY PAINT CO. Inc., Cincinnati, O.

91—B-B Enamelized House Paint—"Facts About House Paint," 16 pages, illustrated, giving authentic data on house paint protection and beauty. Companion pieces cover also Velve-Gloss wall paint, and Velvatone flat wall paint.

I. F. LAUCKS, Inc., Maritime Bldg., Seattle, Wash.

92—Plywood Paint—"Laux Rezite Sealer," an 8-page booklet telling what Laux Rezite sealer is, what it does, how it works; Rezited (at mill) plywood described, how grain-raise is prevented, how to paint enamel, oil or water stain Rezited firplywood. Information also available on "Vello" casein paint and Laux waterproof casein glue.

GLASS, GLAZING & STORE FRONTS

PITTSBURGH PLATE GLASS CO., Pittsburgh, Pa.

93—Carrara Structural Glass—"Personality Bathrooms and Character Kitchens," a 4-color folder to convey the practical beauty of Carrara structural glass for bathroom and kitchen walls; gives colors, sizes, etc.

Pittco Store Fronts—"Producing Bigger Profits with Pittco Store Fronts," a 30-page booklet containing reproductions of photos taken before and after installation of Pittco store fronts. Color combinations and costs given as well as description of the adaptability of Carrara structural glass and Pittco metal.

LIBBEY-OWENS-FORD GLASS CO., Toledo, O.

94—Quality Glass—"Finest of the Family," a color booklet describing how L-O-F plate glass is manufactured, and gives variety of effective uses for clear and colored plate glass in the home.

KAWNEER CO., Niles, Mich.

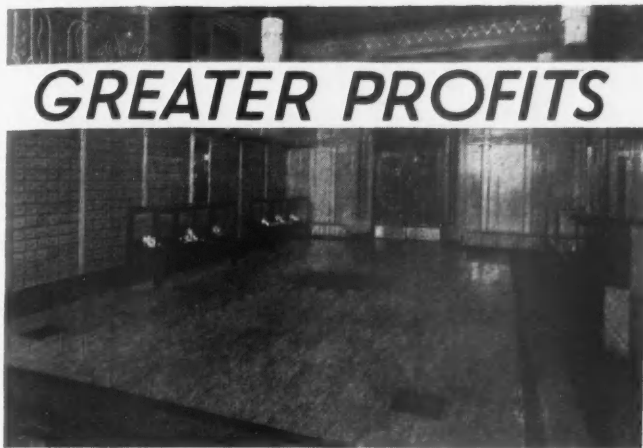
95—Store Fronts—"The Kawneer Book of Store Fronts," a valuable 56-page handbook full of photographs of new style stores and shops, with details of sash, awning and transom bars; also color section devoted to Kawneer rustless metal store fronts.

ZOURI STORE FRONTS, Niles, Mich.

96—Zouri Store Fronts—"Portfolio of Zouri Store Fronts," a portfolio containing 15 designs illustrating the use of Zouri members; 5 different types of retail business covered in design sketches.

FOURCO GLASS CO., Clarksburg, W. Va.

97—Flat Glass—"Nation Wide Business of Fourco Glass," a booklet showing location of plants and distribution facilities of this organization. Also materials used in making Clearlite glass. Information also available in regard to heavy sheet glass and Clearlite window glass for storm sash and storm doors.



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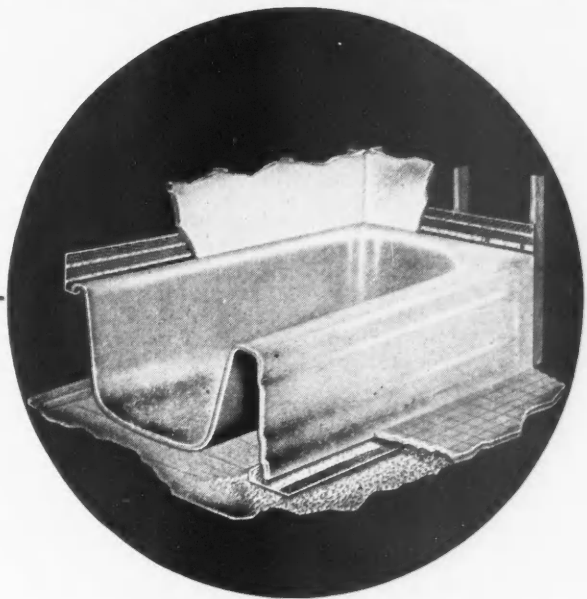
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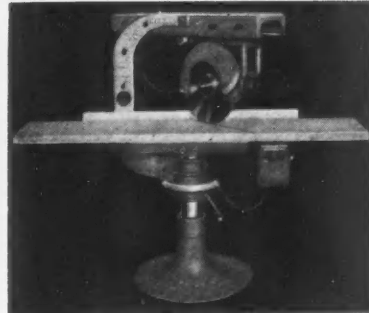
This simple installation gives a complete leakproof seal along the edges of the tub. No cracks—No leaks—Tub stays built-in. Cannot separate from the wall. Write for full details and prices on

The Lucke Leak Proof Bath Tub Hanger

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Fig. 2110
Fig. 2110

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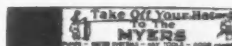
AIR CONDITIONING—cool well water offers economical refrigerant for summer air conditioning. Excellent opportunity. Ask for data.

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Send free information on items marked.
Water Systems . . . Sump Pump . . .
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CALBAR PAINT & VARNISH CO., 2620 N. Martha St., Philadelphia, Pa.

98—**Caulking Compound**—"Caulk-O-Seal Plastic Compound," an informative 4-page folder on this non-staining plastic compound in cartridges, for caulking, glazing and filling cracks.

PECORA PAINT CO., 4th St. & Reading R.R., Philadelphia, Pa.

99—**Pecora Caulking Compound**—"Famous American Buildings Protected by Pecora," an illustrated circular of considerable architectural interest, and giving details for caulking openings between frame and masonry around doors and windows. Companion piece presents Pecora suction mastics and Pecora high pressure cartridge caulking gun.

HARDWARE, BUILDING PAPER, WEATHERSTRIPS

THE STANLEY WORKS, New Britain, Conn.

100—**Stanley Hardware**—"For Carefree Doors," a 32-page book, complete with illustrations and text, to help with the selection of the right hardware for new homes. Other new circular matter covers modern kitchen hardware, screen hardware and sash pulleys.

NATIONAL BRASS CO., Grand Rapids, Mich.

101—**Kitchen Hardware**—Cabinet hardware styled for modern kitchens; hardware to match modern kitchen appliances. Complete information available.

SOSS MFG. CO., Roselle, N.J.

102—**Invisible Hinges**—Full information regarding the new design Soss improved invisible hinge.

PULLMAN MFG. CO., 1171 University Ave., Rochester, N. Y.

103—**Pullman Adjustable Sash Balances**—Catalog showing complete specifications and architectural details of the new adjustable Pullman sash balance.

THE CALDWELL MFG. CO., 56 Industrial St., Rochester, N.Y.

104—**Caldwell Spring Sash Balances**—"For More Artistic Weather Tight Windows," a folder showing working drawings and size data with price list.

HONEYCUTT MFG. CO., 2715 Oak St., Kansas City, Mo.

105—**Honeycutt Sash Cord Saddles**—Illustrated literature and free sample of this hardwood saddle for sash cord.

THE SISALKRAFT CO., 203-B N. Wells St., Chicago.

106—**Sisalkraft Building Paper**—"The Importance of Building Paper," a new 12-page booklet showing why, how and where to use Sisalkraft.

SAMSON CORDAGE WORKS, 91 Broad St., Boston, Mass.

107—**Sash Cord**—"How to Sell Sash Cord," a booklet containing information valuable to anyone using sash cord, with particular reference to Samson Spot sash cord.

F. D. KEES MFG. CO., Beatrice, Nebr.

108—**Builders Hardware**—New Catalog H-14, 32 pages, covers window screen and screen door hardware, screen hangers, screen corner braces, hinges, bars, metal

siding corners, etc. A companion piece covers Kees metal ties and concrete form braces for economical construction of concrete forms.

RITSCHER SPECIALTY MFG. CO., St. Cloud, Minn.

109—**"Slidewell" Bin Swing**—"The Law of Gravity in the Kitchen," a 4-page folder describing bin hardware, 10 reasons why you should use Slidewell, directions for installation, and detail drawings of bin and cabinet.

ACCURATE METAL WEATHER-STRIP CO., 218 E. 26th St., New York City.

110—**Metal Weatherstrips**—Full information regarding the sales and profit opportunities using Accurate metal weatherstrips.

ALLMETAL WEATHERSTRIP CO., 231 W. Illinois St., Chicago.

111—**Metal Weatherstrips**—Display charts showing mounted samples of metal weatherstrips for standard installation and indicating their proper use; price list and literature included. Also information on Allmetal mouldings for decorative trim, carpet and linoleum hardware. Snap-on stainless steel mouldings.

CECO WEATHERSTRIP & SCREEN PRODUCTS (Div. of Concrete Engineering Co.), 1926 S. 52nd Ave., Chicago.

112—**Ceco Screens and Weatherstrips**—Full information regarding the Ceco metal frame screens and Ceco metal weatherstripping; also information on Ceco steel casements.

W. J. DENNIS & CO., 2110 W. Lake St., Chicago.

113—**Micklin Metal Corners**—New 1937 catalog gives particulars of the Micklin metal corners for reinforced sagproof construction, for sagging or loose frames, sash, screens, etc. Also information regarding the complete Dennis line.

MONARCH METAL WEATHER-STRIP CORP., 6332 Etzel Ave., St. Louis, Mo.

114—**MetaLane Weatherstrip**—"Five Reasons Why Builders Everywhere Are Installing MetaLane Weatherstrip," a new folder illustrating application of MetaLane weatherstrip and describing its efficiency, durability and ease of application.

GARAGE DOORS AND EQUIPMENT

OVERHEAD DOOR CORP., Hartford City, Ind.

115—**Overhead Doors**—General catalog giving full description and technical information on the "Overhead door" with salt spray steel tracks and hardware. The doors of both wood or steel sections, hand or electric operation. For residence garages, factories, warehouses and public garages.

RICHARDS-WILCOX MFG. CO., Aurora, Ill.

116—**Garage Doors and Hardware**—"Distinctive Garage Door Hardware," a handbook of 160 pages, full of valuable diagrams, illustrations and information concerning garage door-Ways.

NATIONAL MFG. CO., Sterling, Ill.

117—**Garage Doors and Hardware**—Complete information regarding National No. 900 upward-acting doors for private ga-

rages, service stations, factories, warehouses, etc.

CRAWFORD DOOR CO., 5300 St. Jean, Detroit, Mich.

118—**Crawford Rezo Doors**—New information regarding the Rezo-constructed Crawford upward-acting doors in numerous attractive designs. Also information on the well known Crawford door hardware.

ROWE MFG. CO., Galesburg, Ill.

119—**Ro-Way Garage Doors**—New catalog folder of Ro-Way overhead-type doors and Ro-Way electric door operators.

BARBER-COLMAN CO., Rockford, Ill.

120—**Radio Doors for Garages**—"Model C Radio Control," a 4-page circular describing this new simplified radio control for controlling garage doors and lights from the car instrument board.

THE STANLEY WORKS, New Britain, Conn.

121—**Stanley "Swing-Up" Hardware for Garage Doors**—Full information regarding the Stanley garage door hardware including swing-up, roll-up, folding-sliding and hinged.

ALLITH PROUTY, Inc., Danville, Ill.

122—**Garage Door Sets**—"50-50 Push-Over," a new folder showing the possibilities of obtaining upward door action with ordinary garage doors.

THE EMPIRE PLOW CO., Cleveland, O.

123—**Empire Automatic Hinge**—A new circular, completely illustrated, showing the low cost simplified hardware for upward-acting garage doors.

FRANTZ MFG. CO., Sterling, Ill.

124—**"Over-the-Top" Door Equipment**—"Garage Door Magic," a 16-page fully illustrated catalog showing details of application.

KINNEAR MFG. CO., Columbus, O.

125—**Rol-Top Garage Doors**—New 8-page illustrated circular presents the Kinnear all-steel Rol-Top garage door, with specifications and installation diagrams.

WAGNER MFG. CO., Cedar Falls, Ia.

126—**Garage Door Hardware**—A series of bulletins cover Wagner hardware for garage doors, upward-acting, corner curve, sliding, and slide and fold types.

HALL MFG. CO., Cedar Rapids, Ia.

127—**"Overall" Garage Door Equipment**—"Modernize Your Garage Doors," a folder showing the average garage door improved with "Overall" remodeling.

PLUMBING GOODS

BRIGGS MFG. CO., Plumbing Ware Div., Detroit, Mich.

128—**Briggs Beautyware**—New specification data sheets feature the shelf back lavatory with and without cabinet, 60" flat rim double drainboard sink, and 42" flat rim sink with single drainboard, all new items in the Briggs line.

CRANE CO., 836 S. Michigan Ave., Chicago.

129—**Sinks, Cabinets and Accessories for Modern Kitchens**—"Crane Kitchen Guide," a complete planning guide containing full information, plans and ideas for arranging the modern kitchen; 30 pages, superbly illustrated.

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You Need This



MONARCH Portable Combination SAW BENCH

which is as indispensable to the builder as a good watch—and just as necessary. Goes with you to the job and stays "on the job" day in and day out for all cross cutting and ripping. Not only portable but strong, compact and economical. Boring attachment gives additional usefulness. The new MONARCH Saw Guard, eliminating "kick-back," increases the safety factor. Sawdust chute as a moderate-priced extra. Electric motor or gasoline engine drive.

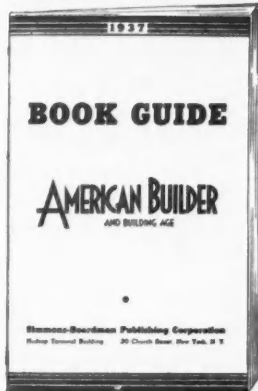
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HALL OVERALL DOOR SET
AB-4
HALL MFG. COMPANY, Cedar Rapids, Ia.
Please send me information about Hall Overall Garage Door Hardware.

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ADDRESS.....
CITY..... STATE.....

THE HALL

STANDARD SANITARY MFG. CO., Pittsburgh, Pa.

130—"Standard" Plumbing Fixtures—"Planning Your Plumbing Wisely," a catalog of Neo-Angle bath, china lavatory, one-piece closets and other residence plumbing fixtures. Companion pieces also present information regarding kitchen sinks with cabinets, and Standard Neo-Angle bath.

HENRY WEIS MFG. Co., Inc., Elkhart, Ind.

131—Weisway Cabinet Showers—Catalog and price list No. 337 effective March 1, 1937, is a 12-page illustrated catalog giving detailed information, complete specifications, suggestive layouts and prices on 7 cabinet shower models featuring foot-grip, no-slip vitreous porcelain receptors. A companion piece presents Weisteel metal compartments for office and industrial building toilets and dressing rooms.

MILWAUKEE STAMPING CO., 832 S. 72nd St., Milwaukee, Wis.

132—Bathe-Rite Shower Cabinets—Catalog No. 836 is an 8-page data sheet giving detailed description of shower cabinets for use in homes of all kinds, summer camps, cottages, garages, hotels, apartments, public buildings and industrial plants. Dimensions and roughing in details are included.

THE AMERICAN BRASS CO., Waterbury, Conn.

133—Brass Pipe and Copper Tubes—"Anaconda Pipe, Anaconda Copper Tubes and Fittings," 32 pages containing complete information on residential and industrial uses, together with suggested specifications and installation procedure. A companion piece, "Everdur Metal for Tanks," illustrates in color a wide range of water heating equipment made of non-rust Everdur metal.

REPUBLIC STEEL CORP., Cleveland, O.

134—Toncan Iron Pipe—A new 68-page handbook in two parts, the first giving technical tests and data, and the second installations and service records of Toncan iron pipe in numerous types of buildings and services.

NEW JERSEY PORCELAIN CO., Trenton, N.J.

135—Bathroom Accessories—"Monarch Fully Recess Flanged Accessories," a 4-page booklet with instructions for installation in any kind of wall construction or finish.

GENERAL PORCELAIN ENAMELING & MFG. CO., 4137 W. Parker Ave., Chicago.

136—Porcelain Enameled Cabinet Sinks—"Veribrite Sinks in Color," a 10-page descriptive circular showing Veribrite sinks in "America's Finest Kitchen." A companion circular shows Veribrite porcelain enameled store fronts.

WILLIAM B. LUCKE, Wilmette, Ill.
137—Bath Tub Hanger—Full information regarding the Lucke leak proof bath tub hanger, with directions for installation.

HEATING, VENTILATING, AIR CONDITIONING

IRON FIREMAN MFG. CO., 3170 W. 106th St., Cleveland, O.

138—Coal Stokers—"Welcoming Warmth in the Home," an 18-page booklet in full color describing the "Coal Flow" bin feed and "De Luxe" hopper type stokers with

specifications, details and directions for installation in various types of furnaces.

PEERLESS MFG. CORP., Louisville, Ky.
139—Coal Stokers—"Peerless Auto-Fyre" is a 4-page data sheet giving comparative fuel costs of coal, hand and stoker-fired oil and natural gas. Illustrations and specifications make clear the installation and mechanical features of the Peerless Auto-Fyre stoker.

AMERICAN RADIATOR CO., 40 W. 40th St., New York City.

140—Arco Convectors—Complete details of these concealed radiators with enclosures for the average new home. Also full information regarding the complete line of American Radiator boilers, radiators and heating accessories.

CARRIER CORP., 850 Frelinghuysen Ave., Newark, N.J.

141—Carrier Air Conditioning—"Air Conditioning and Automatic Heating for the Home," a new handbook covering air conditioning in large and small houses.

DELCO-FRIGIDAIRE CONDITIONING DIV., Dayton, O.

142—Delco-Frigidaire Heating & Air Conditioning—Complete information regarding this automatic heating and air conditioning equipment, with brief summaries, ratings and dimensions; equipment for residential, commercial and industrial application.

THE FOX FURNACE CO., Elyria, O.

143—Gas Fired Air Conditioner—Catalog A. C. 19 is a 4-page data sheet giving complete details of construction and operation. A companion folder covers the Fox oil-fired air conditioner.

GAR WOOD INDUSTRIES, Inc., 409 Connecticut Ave., Detroit, Mich.

144—Gar Wood Automatic Air Conditioner—"Gar Wood Automatic Heating and Air Conditioning" presents the complete line of Gar Wood equipment, with mechanical data on Gar Wood oil burners, air conditioning systems and boiler-burners, oil-fired water heaters and gas-fired air conditioning systems. Data on the Gar Wood Air-Dux system for air conditioning ducts is covered in new data sheet.

GENERAL ELECTRIC CO., Air Conditioning Dept., Bloomfield, N.J.

145—G-E Oil Furnace—Full information regarding the General Electric heating and air conditioning equipment, including the G-E oil furnace, is now available.

HOLLAND FURNACE CO., Holland, Mich.

146—Oil Furnace Air Conditioner—Complete information regarding new Holland product, the oil furnace air conditioner.

KELVINATOR DIV., Nash-Kelvinator Corp., Detroit, Mich.

147—Air Conditioning Equipment—"The Kelvin Home, form 2238" presents facts about Kelvin Home and year-round air conditioning and electrical convenience assured by Kelvinator equipment. Other catalogs cover Kelvinator equipment for commercial air conditioning, and Kelvinator automatic heating.

L. J. MUELLER FURNACE CO., Milwaukee, Wis.

148—Mueller Heating and Air Conditioning Equipment—Condensed catalog of 20 pages covers the complete line of Mueller

heating and air conditioning units, with sizes, ratings, specifications and mechanical details.

NORGE DIV., Borg-Warner Corp., 670 E. Woodbridge St., Detroit, Mich.

149—Norge Fine-Air Conditioning Unit—New 6-page catalog in color explains the Norge Standard and Deluxe line of air conditioning units with Norge oil or gas burners.

TIMKEN SILENT AUTOMATIC DIV., Timken-Detroit Axle Co., 308 Clark Ave., Detroit, Mich.

150—Timken Silent Automatic Oil Burners—"Timken Silent Automatic Equipment," a new booklet giving description and specifications of all Timken oil burners, oil burning boilers, water heaters and air conditioning units. Information also available on the Timken air conditioning oil furnace.

CLEVELAND STEEL PRODUCTS CORP., Cleveland, O.

151—Toridheet Aid Conditioning Furnace—"Oil Heating and Air Conditioning for the Small Home," a 6-page folder in three colors illustrating by means of cut-away views the construction and operation of this new unit that brings automatic oil heat, humidification and air circulation to the homes of modest income.

SURFACE COMBUSTION CORP., Toledo, O.

152—Gas-Fired Air Conditioners—The Janitrol Model CA conditioner is described in a 6-page folder in full color, giving all mechanical details and specifications. Gas-fired conversion burners are also adequately presented in a 6-page folder.

AMERICAN GAS PRODUCTS CORP., 40 W. 40th St., New York City.

153—Gas-Burning Boilers—"Ideal Gas Boilers," a new catalog presenting 41 different sizes and types of gas-fired boilers and water heaters.

BURNHAM BOILER CORP., Irvington, N. Y.

154—Boilers—Catalog No. 74-A presents complete information regarding the Burnham boiler line.

FITZGIBBONS BOILER CO., Inc., 101 Park Ave., New York City.

155—Split System Air Conditioning—Full information regarding the Fitzgibbons boiler with air conditioner in selected rooms; radiator heat in kitchen, bath and garage.

HOFFMAN SPECIALTY CO., Inc., Waterbury, Conn.

156—Controlled Heat & Air Conditioner—"Hoffman Controlled Heat with Air Conditioning," booklet shows advantages of combining radiator heat with a separate air conditioner.

BUFFALO FORGE CO., Buffalo, N. Y.

157—Ventilating Fans—"Enjoy Cool Comfort in Hot Weather" presents the "Breez-Air" fans for hot weather comfort. Other data sheets cover method of installing ventilating fans in attics for summer cooling.

RUSSELL ELECTRIC CO., 332 W. Huron St., Chicago.

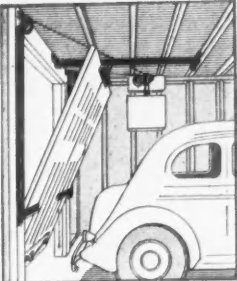
157A—Hold-Heat Summer Cooling and Winter Air Conditioner—Complete information regarding this equipment for warm air furnace heated homes.

FOR PROMPT SERVICE USE COUPON ON PAGE 208

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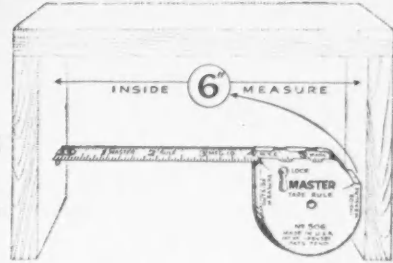
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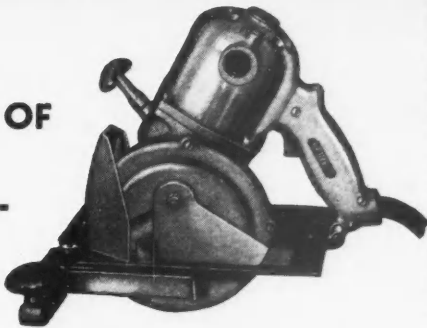
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GENERAL ELECTRIC CO., Appliance & Merchandise Dept., Bridgeport, Conn.
158—G-E Wiring Materials—"General Electric Wiring Materials," a compilation of 3 catalogs embracing wiring devices, 66 pages, conduit products, 101 pages, and wires and cables, 28 pages. A separate handbook, "The Farm Wiring Problem," 26 pages, shows how to plan adequate layouts for use of electricity on the farm, explaining losses if wire sizes are not adequate; 19 illustrations of design and layout.

GENERAL ELECTRIC CO., Nela Park, Cleveland, O.

158A—G-E Unit Kitchen—New information on the General Electric unit kitchen which includes G-E refrigerator, dishwasher, "Disposall," and G-E electric range.

WESTINGHOUSE ELECTRIC & MFG. CO., Mansfield, O.

159—Westinghouse Electric Kitchens—"You'll Sing at Your Work," a booklet showing 6 full color plates of various complete electric kitchen installations—how present kitchens are adapted to modern design; also complete laundry and electric kitchen planning details. Other catalogs and data sheets cover Westinghouse electric ranges, washers, ironers, and household refrigerators. Also air conditioning equipment and electric water heater.

NATIONAL ELECTRIC PRODUCTS CORP., Pittsburgh, Pa.

160—"Plug-In" Strips—Full information regarding the brand new electric "Plug-Ins" which can now be provided every 6" to 18" all around the room. Other valuable literature includes "1937 Handbook for the Man on the Job," 84 pages of practical, illustrated information. Extensive data sheets on National cables, Ovalflex and Flexsteel armored cable also available.

GENERAL CABLE CORP., 420 Lexington Ave., New York City.

161—Building Wires and Cables—Bulletin BW-3 contains 48 pages of comprehensive information on practically all items used in the building industry, together with helpful and useful tables. CNX covered neutral cable is fully covered.

THE ARROW-HART & HEGEMAN ELECTRIC CO., Hartford, Conn.

162—Wiring Devices and Control Apparatus—Wiring Devices Catalog No. 25 shows complete line of electrical wiring devices with wiring diagram. Catalog No. 7 on safety starting switches presents complete line of enclosed entrance switches, service entrance equipment and pull-out sequence switches; also motor control.

"The Multicoupler System for Multiple Radio Connections in Residences and Other Buildings" describes a wired-in system from outside aerial for convenient plugging in of from 2 to 20 all-wave radio sets.

LIGHTOLIER CO., 346 Claremont Ave., Jersey City, N.J.

163—Lighting Fixtures—"Charm of a Well Lighted Home," a 22-page booklet illustrating and describing the correct fixture for every location in the home. A companion piece, "Secret of Entrancing Light," is a 24-page booklet illustrating

correct lamp for every type of decorative setting.

ILG ELECTRIC VENTILATING CO., Chicago.

164—Kitchen Ventilators—Catalog No. 503 is an 8-page booklet outlining uses, features, capacities, specifications and dimensions of Ilgette and Ilgair electric ventilators for large and small kitchens.

VICTOR ELECTRIC PRODUCTS, Inc., 700 Reading Road, Cincinnati, O.

165—Victor In-Bilt Ventilators—"Say Good-bye to Cooking Odors," a 6-page folder outlining health benefits of domestic ventilation. A companion piece presents specifications and installation instructions.

ADAMS BROS. MFG. CO., Inc., 1504 W. North Ave., Pittsburgh, Pa.

166—Adams Cheerfulator—"Face Winter with a Smile—Install Cheerfulator Heating," a 20-page illustrated booklet showing this form of low cost direct heating with gas and electricity. Other information available on gas and electric wall heaters, fireplace grates and radiant heaters.

ELECTROVENT CORP., 5240 Western Ave., Detroit, Mich.

167—Electric Ventilators—Full information regarding the low priced Electrovent, easy to install.

F. W. SHEPLER STOVE CO., 1302 Sheffield St., Pittsburgh, Pa.

168—Wall-Insert Electric Heaters—"Comforting and Economical Heat," a folder explaining and illustrating how these appealingly modern heaters help make a "house" a home and effect definite savings in heating costs. Information also available on the Shepler built-in wall style kitchen ventilator.

SIGNAL ELECTRIC MFG. CO., Menominee, Mich.

169—Vent Fans—Information regarding this built-in kitchen vent fan for old or new houses.

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ELKAY MFG. CO., 4700 Arthington St., Chicago.

171—Stainless Steel Kitchens—Full information regarding modern kitchens by Elkay, including Elkay stainless steel kitchen sinks and counter tops.

HEATILATOR CO., Syracuse, N.Y.

172—Heatilator Fireplace—"Heatilator, the Fireplace That Circulates Heat," a 6-page folder that describes the Heatilator and includes complete specifications, as well as actual and suggested fireplace designs.

PEERLESS MANUFACTURING CORP., Louisville, Ky.

173—Fireplace Dampers and Fixtures—Data sheets containing information on dome dampers with rotary, poker and chain control; also flat dampers, ash pit doors, coal chutes, ash dumps, bell floor traps, flue thimbles, electric and gas wall heaters. Also fireplace fixtures, including andirons, firesets, screens, grates, etc.

COLONIAL FIREPLACE CO., 4604 Roosevelt Road, Chicago.

174—Colonial Fireplace Fixtures—General catalog with construction blueprints illustrates the Colonial Fireplace damper and construction, and shows fireplace furnishings. Information also available on portable electric fireplaces and Superior "heat circulator" fireplace unit.

MIAMI CABINET DIV., The Philip Carey Co., Middletown, O.

175—Bathroom Cabinets and Accessories—"Catalog of Bathroom Cabinets and Accessories," a 28-page catalog of new designs, drawings and installations showing cabinets and accessories. Dressing room mirrors with concealed lighting are featured.

THE F. E. MYERS & BRO. CO., Ashland, O.

176—Water Systems, Pumps—"Myers Power Pump and Water System Catalog PW 37" giving complete mechanical specifications.

GOULDS PUMPS, Inc., Seneca Falls, N.Y.

177—Water Systems—Complete information regarding shallow well "Cid" water system, as well as deep well system, furnished in illustrated data sheet. A companion piece also presents information regarding the "Cid" cellar drainer.

FRAZIER, Inc., Pittsburgh, Pa.

178—Disappearing Attic Stairs—Complete information regarding the Frazier balanced disappearing attic stairs available now in numerous sizes and models.

THE MARSCHKE CO., 551-A University Ave., St. Paul, Minn.

179—Marco Folding Stairways—"Use Your Attic," 6 pages of illustrated description on four models of Marco stairways; specifications, prices, general information, etc.

THE MAJESTIC CO., Huntington, Ind.

180—Majestic Building Products—Full information regarding coal chutes, fireplace dampers, garbage receivers, package receivers, incinerators, circulator fireplace, garage doors, etc.

MASTER MAIL BOX MFG. CO., 6629 Lyndale Ave. So., Minneapolis, Minn.

181—Mail Boxes and Electric House Numbers, Built in—New circulars give full information regarding these products.

KNAPE & VOGT MFG. CO., Grand Rapids, Mich.

182—"K-Venience" Clothes Closet Fixtures—"System Goes Into the Clothes Closet," catalog No. 419, 12 pages illustrating 26 fixtures, including shoe racks, extension closet rods, clothing carriers, hat holders, tie racks, etc.

CHINOOK MFG. CO., Seattle, Wash.

183—Howard Ironing Board—Illustrated data sheet, "An Achievement in Practical Home Modernization," covers three different models of Howard ironing boards, showing detailed construction.

KIMBALL BROS. CO., Council Bluffs, Ia.

184—Passenger and Freight Elevators—Full information regarding the hand power and electric power elevators and dumb waiters in the Kimball line.

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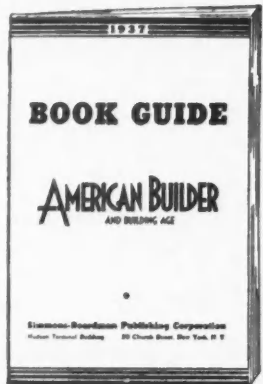
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SKILSAW, Inc., 3314 Elston Ave., Chicago.

185—Electric Saws and Floor Sanders—General Catalog No. 36 illustrating and describing the Skilsaw electric hand saw, with directions for its use in numerous constructive operations. A special folder presents the Skilsaw floor sander, an addition to the Skilsaw line.

R. L. CARTER DIV., New Britain, Conn.
186—Carter Door Sets—"Cut Costs with Carter Door Sets," a 6-page folder describing Carter electric tools for door mortising and fitting. Carter electric weatherstrip equipment also illustrated and described.

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

187—Speedmatic Electric Hand Saws—"Manual on the Uses of Electric Hand Saws in House Building," a 24-page booklet giving facts, figures and illustrations of actual time and money savings made possible through the use of an electric hand saw on the job. Information also available on Speedmatic floor sanding machines, Porter-Cable rotary disc edger, and Take-About sanders.

POWER KING TOOL CORP., Warsaw, Ind.

188—Electric Hand Saws and Drills—New catalogs cover the Power King electric portable hand saws and electric drills, and the Power King woodworking machinery.

SPEEDWAY MFG. CO., 1823 S. 52nd Ave., Cicero, Ill.

189—Groover for Weatherstripping—Full information regarding this important labor-saving tool.

WAPPAT, Inc., 7537 Meade St., Pittsburgh, Pa.

191—Door Mortising Tools—"A Quick Way to Reduce Your Building Cost," a 12-page folder illustrating tools for use on door work; shows how quickly they pay for themselves. The Wappat electric door plane and electric drills also covered.

WODACK ELECTRIC TOOL CORP., 4630 W. Huron St., Chicago, Ill.

192—Portable Electric Tools—"Electric Tool Facts," 4 pages of useful information on portable electric hammers, drills, grinders, buffers and groovers, including the "Do-All" combination hammer and drill.

DE WALT PRODUCTS CORP., Lancaster, Pa.

193—DeWalt Woodworking Machine—"Flexibility by DeWalt"; this is a profusely illustrated broadside portraying a few of the multiplicity of operations for which this machine is designed. A companion piece, "How Much Money Are You Losing?" is a helpful broadside showing how the great variety of operations are performed on the DeWalt machine.

AMERICAN SAW MILL MACHINERY CO., Hackettstown, N.J.

194—Monarch Variety Woodworker—Full information regarding this useful combination power woodworker which "does 4 jobs at same time" is available in a new catalog.

HESTON & ANDERSON, Fairfield, Ia.
195—H. & A. Saw Table—New catalog on Heston & Anderson's complete line of heavy-duty woodworking equipment, including band saws, rip saws, cutoff saws, wood lathes, jointers, shapers, etc., as well as on the portable electric bench saw.

MANCO MFG. CO., Bradley, Ill.

196—American Sash Trimmer—"Make Your Own Sash" is the theme of the new descriptive literature on the American sash trimmer. Profit possibilities pointed out.

MASTER WOODWORKER MFG. CO., Brush & Congress Sts., Detroit, Mich.

197—Master Universal Woodworker—New catalog of 24 pages illustrates every operation, gives size of machines. A companion circular features the Sawmaster.

THE PARKS WOODWORKING MACHINE CO., 1524 Knowlton St., Cincinnati, O.

198—Parks Woodworkers—"Accept These Helping Hands," a new catalog presenting the complete line of woodworking machines for the contractor and builder.

STATE MFG. & ENGINEERING CO., 2756 W. Fulton St., Chicago.

199—Universal Saw—New circular presents the "State" low price universal saw with Triple V belt drive.

STETSON-ROSS MACHINE CO., Seattle, Wash.

200—TX-24A Handy Precision Tool—A new catalog consisting of 7 pages gives detailed description of various uses to which this saw may be put, and shows 27 different operations which may be made with it.

WALKER-TURNER CO., Inc., Plainfield, N.J.

201—10" Tilting Arbor Saw—A new 4-page bulletin in colors presents 7 photos of this machine in use, and gives complete specifications and prices. Other bulletins cover the 16" band saw and the 10" bevel saw.

J. D. WALLACE & CO., 136 S. California Ave., Chicago.

202—Wallace No. 1 Radial Saw—A new folder illustrates this straight line, cut-off saw and its uses on the construction job; 4 pages, photographs and information on setting up equipment for profitable operation. Information also available on the Wallace No. 18 shaper and other Wallace bench woodworkers.

THE AMERICAN FLOOR SURFACING MACHINE CO., Toledo, O.

203—American Floor Sanders—"Little American Floor Sander," a descriptive circular explaining in detail the many exclusive features of this new floor sander. New information also available on the American spinner disc edger and the American Sanderplane, a portable belt sander sometimes known as a bench sander. A general catalog covering the entire line of American floor sanders, floor sanding paper, Pentra Seal floor seal and other floor finishing supplies also available.

CLARKE SANDING MACHINE CO., Muskegon, Mich.

204—Dreadnaught Combination Bench and Floor Sander—New Catalog describing uses of machine for all types of bench and floor sanding. Information also available on the Dreadnaught dustless 8" sander and a new machine, the Dreadnaught V-belt 8" sander.

LINCOLN-SCHLUETER FLOOR MACHINERY CO., 222 W. Grand Ave., Chicago.

205—Improved Schlueter Floor Sanding Machines—"The New 'V' Belt Drive Improved Schlueter," a new circular giving sizes and specifications of all models made

in 4 sizes. Information also available on the "Speed-O-Lite" sanding machines and the "Lincoln Twin Disc" floor polishing and scrubbing machines, of which a single disc model is also offered.

REID-WAY CORP., 2917 1st Ave. N.E., Cedar Rapids, Ia.

206—Reid-Way Professional Floor Sander—"Out of Yesterday Comes Today," a 4-page circular showing 5 photographs and specifications of the Reid-Way Professional floor sander.

THE AMERICAN CEMENT MACHINE CO., Inc., Keokuk, Ia.

207—A.G.C. Approved Concrete Mixers—"25th Anniversary Edition Boss Catalog No. 25," a new 20-page catalog with illustrations and complete information including "Direct from Factory Prices," covering Boss mixers, hoists, concrete carts and dump bodies.

CHAIN BELT CO., 1621 W. Bruce St., Milwaukee, Wis.

208—Rex Mixers—"Two Little Big Shots—Bulletin No. 394" describes with pictures and drawings the Rex 3½S mixer and the new 5S mixer. Interesting information also available on Rex Pumpcrete equipment, "Concrete by Pipeline," a 60-page handbook for big concrete jobs. The Rex speed prime pumps are also featured.

COLORCRETE INDUSTRIES, Inc., 505 Ottawa Ave., Holland, Mich.

209—Stucco Spraying Machine and Coloring Material—"Brochure No. 36," a 4-color book illustrating many actual examples of all kinds of new and old masonry and stucco buildings surfaced with Colorcrete, a waterproof material available in 40 colors and shades. "Confidential Book No. 6" describes the process and equipment used in the application of Colorcrete. "Catalog No. 24" covers the ornamental molds for making concrete pottery, flower boxes, garden furniture, etc., offered by this pioneer organization.

CONSTRUCTION MACHINERY CO., Waterloo, Ia.

210—Mixers and Construction Equipment—"25th Anniversary Catalog," 26 colorful pages picturing and describing CMC's complete line of mixers, hoists, wheelbarrows, carts, and miscellaneous items of interest to contractors and builders.

THE JAEGER MACHINE CO., 521 Dublin Ave., Columbus, O.

211—Concrete Mixers—"Catalog M-36" illustrates and describes not only the Jaeger tilter, said to be the world's largest selling mixer, but also the heavy duty non-tilting drum type mixers as well. Other catalogs present the Jaeger line of pumps, hoists and truck mixers.

KOEHRING CO., 3026 W. Concordia Ave., Milwaukee, Wis.

212—Kwik-Mix Mixers—A new catalog presents photographs and specifications on the complete line of Kwik-Mix mixers, plaster, mortar and bituminous mixers.

LANSING CO., Lansing, Mich.

213—Trailer Mixers—Complete data on the Lansing No. 3½-T trailer mixer powered with a 2 H.P. gasoline engine, or furnished without power if desired. Complete information also available on the Lansing No. 10-S mixer with 12 H.P. LeRoi 4 cylinder gas engine. The well known line of Lansing wheelbarrows and concrete carts, pneumatic tired and Timken roller bearings, also available.

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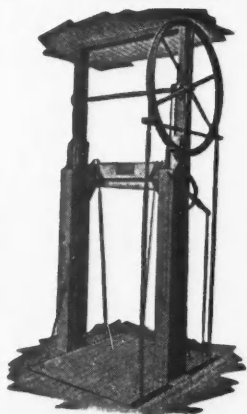


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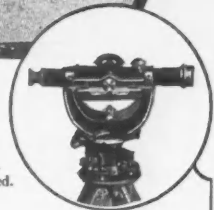
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(April, 1937)

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