THE

ARCHITECTURAL

FORUM

INCLUDING "BUILDING MONEY"

JUNE, 1934

PRODUCERS' PROGRESS REFERENCE NUMBER

A THREE-YEAR SCOVILL SERVICE RECORD

THE strongest arguments in favor of Scovill installations are the trouble-free service records that come to us year after year from all types of jobs. Here is what the Building Engineer of New York City's *Commerce Building* writes about the Scovill installation there:

"Having been in charge of maintenance of mechanical equipment on this building since it was completed in 1931, *I am pleased to report that the* 300 *Scovill Flush Valves have given perfect service; with no repairs or replacement of parts. Those responsible for the selection of Scovill Valves for this building have my sincere thanks for their wise choice in such an important part of the equipment."*

Edward Boshka

Commerce Building
155 East 44th Street, New York City

Architect: ELY JACQUES KAHN, New York City.
Plumbing Contractor: JARCHO BROS., New York City.

SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION
Waterville Connecticut
Scovill Flush Valves, Shower, Bath, and Lavatory Fittings; Miscellaneous Plumbers' Brass Goods

SCOVILL

GYPSTEEL PLANK NEWS
Published by STRUCTURAL GYPSUM CORPORATION
30 Rockefeller Plaza, New York, N. Y. June 1934

HANDLES LIKE LUMBER

ENDS DELAYS. Gypsteel PLANK floors have no joints to grout . . . no waiting for the slab to "set" . . . no forms to remove. You can work over them as soon as laid.

Gypsteel Gypsum Plank* can be cut, sawed, nailed or bored

Cuts costs 7 ways

SAVE TIME, SAVE MONEY on all fireproof construction. Gypsteel Gypsum Plank simplifies planning. Handles like lumber. Eliminates water. Requires no form work. Is light, strong, incombustible, vermin-proof, termite-proof.

What It Is **— Gypsteel Gypsum Plank is a solid slab of factory-cast dense gypsum, tongued and grooved on sides and ends with galvanized, copper-bearing steel. Always available in standard sizes for immediate delivery. Used successfully by architects everywhere—for floors, roofs, partitions, ceilings. Send for free bulletin giving full details and valuable facts about floor loads, installation, etc. Address Structural Gypsum Corporation, 30 Rockefeller Plaza, New York.**

EASY TO USE. No detailed specifications needed with Gypsteel PLANK. It's light, dry, clean. And can be cut, sawed, nailed or bored as readily as lumber.

ACOUSTICAL FEATURE AT HUGE SAVING

Special Acoustical Plank now available for combination roof-ceiling construction in drill halls, armories, gymnasiums, industrial buildings, etc. This Plank has an average efficiency of 48% sound absorption. Your choice of 8 colors. And the cost is amazingly low. Get the details today on Acoustical Plank.

FULL FIREPROOF RATING. Gypsteel PLANK gives flat ceiling construction with maximum fire protection to supporting steel. Especially recommended for ceilings in garages, auditoriums, theatres, etc. Saves heat loss, lowers insurance costs.

PRACTICALLY ELIMINATES WATER. Speeds construction. Note how easy Gypsteel PLANK handles. Always ready to use. Made to order to reach from floor to ceiling up to 9-foot heights.

THE ARCHITECTURAL FORUM
Published Monthly by Rogers and Manson Corporation, Howard Myers, President. Publication Office 10 Ferry Street, Concord, N. H. Yearly Subscription: U. S. A., Insular Possessions and Cuba, $7.00. Canada, $8.00. Canadian duty, 60c per year additional. Foreign Countries in the Postal Union, $9.00. Single issues, including Reference Numbers, $1.00. Entered as Second Class Matter at the Post Office at Concord, N. H. under the Act of March 3, 1879.

VOLUME LX
Number 6

REMARKABLE PAINT TEST MADE BY WHOLE COMMUNITY!

FAILURES had been so bad, they decided to find out what paint would wear best, give best economy. Findings contained in interesting folder with unretouched photos. Send for your copy.

● *Scene:* Indiana steel mill community of 100 frame duplex houses. Entire community surrounded by steel, cement and chemical plants. Lake district weather plus industrial environment, a brutal testing ground for paints.

Test: Previous paint failures almost universal and very bad. Supervising real estate managers decided to find, if possible, a paint film which could survive, giving long lasting protection and cutting yearly paint costs.

Three high grade paints were selected for test on houses in actual use. Entire community was divided into sections, each house painted with two coats of one of the paints under test. Same painters did entire job.

Results: After more than two years of exposure —not on test fences but on 100 houses in actual use—paint films were inspected and photographed. Remarkable differences between the three paints are noticeable. Only one was outstandingly successful. Eagle pure White Lead in oil. Results of test shown by unretouched photographs in a folder which is so interesting that it deserves a permanent place in your files. A copy of this folder, recording one of the most conclusive paint tests ever made will be sent to you on receipt of the coupon.

EAGLE

pure WHITE LEAD

USED FOR GOOD PAINTING SINCE 1843

White lead lasts!

● **PLEASE USE THIS COUPON, OR WRITE TO**

The Eagle-Picher Lead Company, Dept. 000, Cincinnati, Ohio. Please send folder describing paint tests in Indiana steel mill community.

Name _____

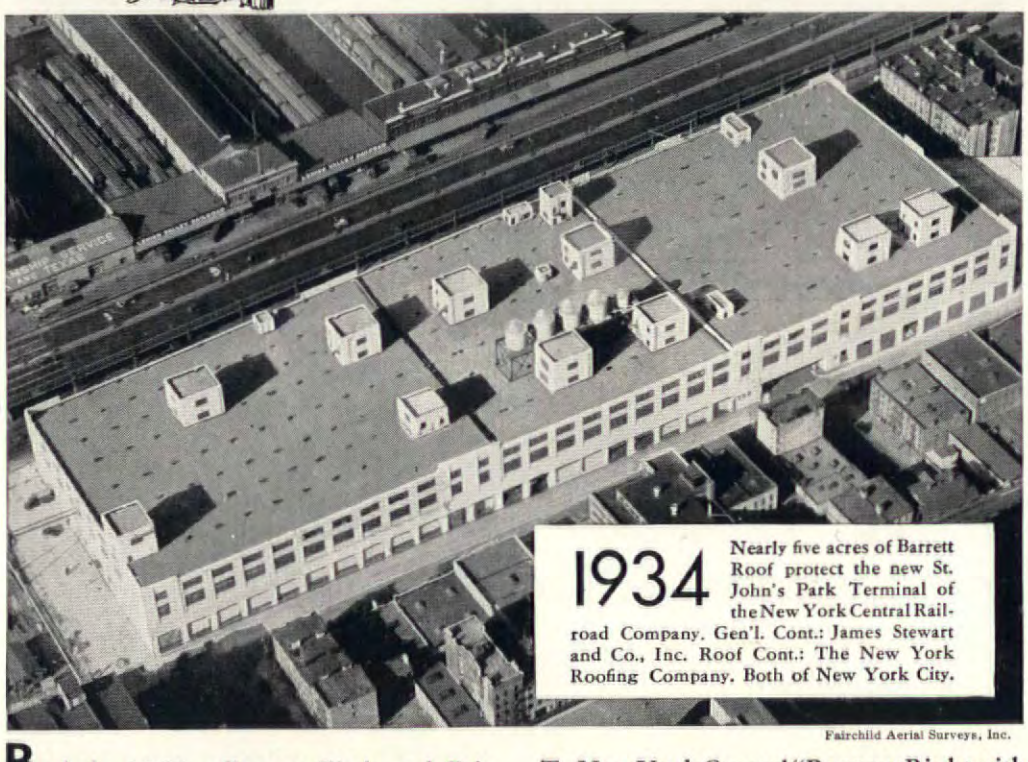
Address _____

City _____ *State* _____

1868 to 1934 shows New York Central what to expect of this roof from 1934 to 2000

1868

The 3½ acre Barrett Roof on the old New York Central Warehouse and Freight Depot, New York erected in 1868, is still in good condition after 66 years of service.



1934 Nearly five acres of Barrett Roof protect the new St. John's Park Terminal of the New York Central Railroad Company. Gen'l. Cont.: James Stewart and Co., Inc. Roof Cont.: The New York Roofing Company. Both of New York City.

Fairchild Aerial Surveys, Inc.

Back in 1868 a Barrett Pitch and Felt Roof was applied to the old New York Central Warehouse and Freight Depot on New York's west side waterfront. For 66 years this roof has given expense-free, trouble-free, fire-safe protection.

Naturally, a similar Barrett Roof was selected for the enormous St. John's Park Terminal which replaces the old structure. The new building, which can house and handle a train of 150 cars, will be New York's largest terminal.

To New York Central "Recover Right with Barrett" represents sound roofing policy.

Give your building the same long-lived Barrett Roof protection. Consult with your local Barrett Approved Roofer, or with us on any roofing or waterproofing problem.

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In Canada: THE BARRETT COMPANY, Limited

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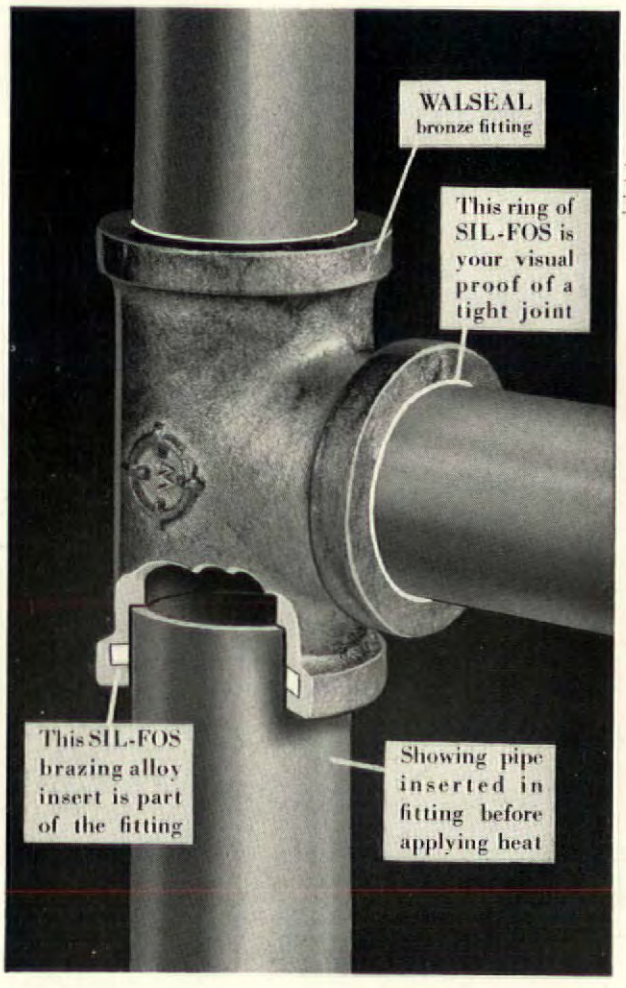
RECOVER RIGHT with Barrett ROOFS



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AIRCOBRAZE
Brass and Copper PIPE

. . . the NEW PROCESS that eliminates threading

Now, ***iron-pipe-size brass and copper pipe*** can be installed the time-and-labor-saving ***threadless*** way. The new AIRCOBRAZE Process (patent applied for) makes this a reality.

The illustrations show the extreme simplicity of the process. A brief application of the oxyacetylene flame produces a ***permanently leak-proof, rust-proof joint—a joint that is stronger than the parent pipe.*** And it is a joint that will remain unaffected by any temperature to which brass and copper pipe are subjected in plumbing or heating. This is assured by the nature of SIL–FOS, the well-known, non-ferrous metal brazing alloy.

The AIRCOBRAZE Process is thoroughly perfected and has already been successfully used on actual piping installations. The WALSEAL Fittings, with their SIL–FOS brazing alloy inserts, are available for brass and copper pipe in all iron-pipe-sizes and in extra heavy patterns for extra heavy pipe. However, if economy is of primary importance, thin wall copper tubing I.P.S.O.D. can be used.

WRITE FOR FULL DETAILS

We shall be glad to answer any questions about the AIRCOBRAZE Process and to supply full information and data on request. We are also ready to assist Architects, Engineers and Contractors in the practical application of the AIRCOBRAZE Process on any non-ferrous piping installation.

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A NATION-WIDE OXYACETYLENE WELDING and CUTTING SUPPLY SERVICE

THE FORUM OF EVENTS

OR CRAFTSMANSHIP
. . . in lighting fixtures rincipally, Walter W. antack received his award

Barnett

FOR ARCHITECTURE
. . . in general, and for the Stockholm City Hall in particular, Ragnar Östberg was honored by the Institute. Here, with his wife, he is pictured on his arrival in New York

FOR FINE ARTS
. . . contributions to historical literature, James H. Breasted was decorated

THE INSTITUTE AWARDS

MEDALS TO THREE

o a Swedish architect, a Connecticut ankee, and a Midwesterner the A.I.A. its 66th convention last month awarded much coveted gold medals. The Swedish chitect was Ragnar Östberg; the Yankee craftsman, Walter Kantack; the Illiisan, an archæologist, James Henry easted.

Swedish Architect. Most artists are tter known than their work. Not so in chitecture, and particularly not so in the se of Ragnar Östberg whose Stockholm ty Hall is one of the world's most celeated buildings. Last month he came to merica to make himself known to U. S. chitects, to receive the Institute's Gold edal in Architecture, and Yale's Howland emorial Prize.

It was Eliel Saarinen's second prize dein for the Chicago Tribune Tower in the ly twenties that first stimulated Ameri- interest in the modern architecture of rthern Europe, and prepared the way for ernational acclaim of the City Hall when was completed in 1923. The quality of tberg's designs became so well known that among other kudos tossed at the professor upon his arrival, Arthur Loomis Harmon said, "We have been copying his stuff for years."

Östberg's career began in 1885 as a student at the Royal Institute of Technology. It carried him through the Royal Academy of Art and finally to this country in 1893. Three years later he studied architecture in France, Italy, Greece, England and Spain. Just before the turn in the century he was appointed to the Stockholm Building Board. After over a quarter of century of practice in 1926 he became the first Swede to receive the Gold Medal of the Royal Institute of British Architects. Besides the City Hall, the medalist's less known buildings include Östermalm's High School; the Laurin villa, the Bonnier villa, both at Djurgården, Stockholm; the Pauli villa, Djursholm; Umeå Theater, Umeå; Geber's villa, Stockholm; Jonas Kjellberg's villa, Lidingön, Stockholm; the Odd Fellow Building, Nykoping; the August Blanche monument, and the Patent Office Building, Stockholm.

Yankee. The roster of residential, commercial, and public buildings in which light is shed on the occupants by Kantack fixtures would include many an architectural gem, modern and traditional. For the high place in illumination held by his company Walter Kantack is almost alone responsible.

Beginning his career in 1904 as an apprentice in the drafting room of Edward F. Caldwell & Co., Walter Kantack rose to become assistant to the designing head of the company, remaining with the firm until 1915. From 1915 to 1917 he was a designer for the Sterling Bronze Co. In 1917 he founded his own company.

A member of the Advisory Committee on Industrial Art of the Metropolitan Museum from its inception, Mr. Kantack is a vice-president of the Architectural League in New York and one of the founders of the American Institute of Decorators. In 1925 he was a delegate at large on the Hoover delegation to the Paris Exposition.

Midwesterner. Better known to Americans than either of his fellow prizewinners, James H. Breasted's contributions to fine arts were recorded in THE ARCHITECTURAL FORUM, May, 1934.

An account of the Sixty-sixth Convention of the American Institute of Architects follows on page 30.

CASS GILBERT

1859–1934

For seven years Cass Gilbert served as President of the National Academy of Design.

While the world will honor him for his achievements as an architect, as a man of vision and great imagination, and be indebted to him for his outstanding contributions to the world of great buildings, the National Academy will always remember him as the broad-minded friend who unselfishly devoted much of his time and energy to furthering the interests of the institution. Its fellow-members knew him as a careful planner, and a firm builder — energetic and efficient, commanding respect and admiration, with a vision beyond the horizon. It was one of his great disappointments that during his tenure of office, he was unable to carry through his plan for a National Academy building, to house the permanent collection, administration offices, and the free art schools of the Academy.

During these years of leadership he made substantial progress in laying a foundation to provide adequate funds for carrying on the educational work of the free schools of the Academy, in which the Carnegie Corporation has played a major part. He was largely responsible for the Edwin A. Abbey Funds being established which provide for professorships in mural painting, and for installation of mural paintings in public buildings throughout the country.

Mr. Gilbert was a staunch supporter of American art, and brought into closer connection with the National Academy other institutions, both native and foreign, and through his charming and commanding personality made new friends and contacts of inestimable benefit to the Academy.

Cass Gilbert was born under a glowing star. His was a rich life of service and accomplishment. The word of his passing came as a shock to the world and was felt deeply and sadly by his fellow-members of the National Academy, but the sting of death was eased by a sense of gratitude that he had lived.

Jonas Lie, President
National Academy of Design

Cass Gilbert was born in Zanesville, Ohio, November 24, 1859, the son of General Samuel Augustus Gilbert. Educated in the public schools of St. Paul, Minnesota, and at M. I. T., he, like a dozen other architects of distinction, entered the office of McKim, Mead & White for his early training. He returned to St. Paul to establish his own office in 1882.

After an active ten years in St. Paul, he gained national recognition through his winning design for the Minnesota State Capitol. In 1899 he won a competition for the U. S. Customs House in New York, and soon thereafter he moved East permanently.

A high place in the profession was already his when in 1913 the Woolworth Building was completed, which clearly marked him as a pioneer in a new field of design, the inaugurator of the skyscraper age.

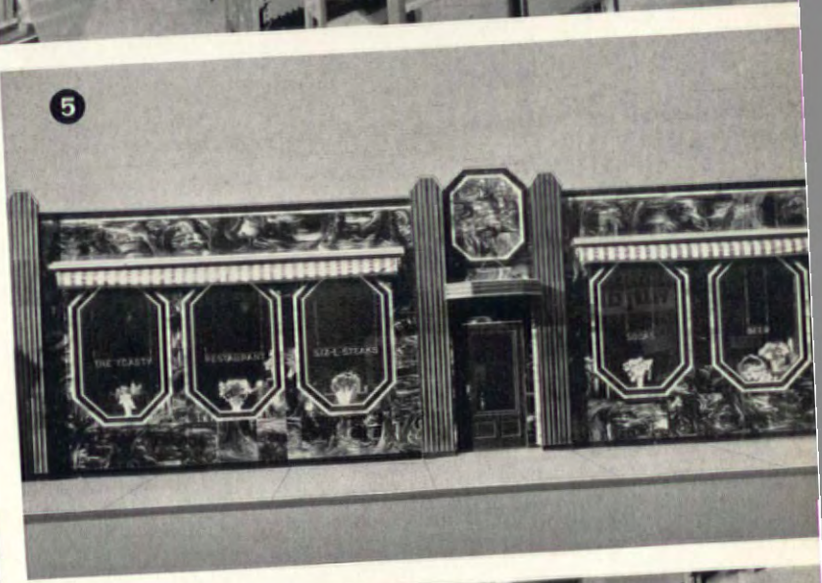
It may be that with his passing that age has reached its close. On January 16, 1931, when awarded the gold medal of the Society of Arts and Sciences, he said: "We have carried concentration too far now. We must begin to think of decentralization. The most beautiful skyscraper that is possible has not yet been built. It may never be built. Those of us living today may never see it, for the need may change, and these ephemeral structures will not last indefinitely."

Beneath his unbiased eclecticism lay a foundation of classic ideals. His faithfulness to these is seen in his last great building, still in process of erection, the Supreme Court building in Washington. In its restraint and dignity, said critic Royal Cortissoz, his characteristics as an architect are summed up.

His works are scattered throughout the country: the Brazer Building, Boston, the Essex County Court House, Newark, N. J.; the Central Public Library, St. Louis; the Detroit Public Library; the general plan of the universities of Minnesota and Texas; the Treasury Annex, Washington; the Army Supply Base, Brooklyn; the Federal Reserve Bank, Minneapolis; the United States Chamber of Commerce Building, Washington; the State Capitol of West Virginia; and the New York Life Insurance Company Building on the site of the old Madison Square Garden.

President Theodore Roosevelt appointed Mr. Gilbert chairman of the Council of Fine Arts. President Taft made him a member of the Commission of Fine Arts and President Wilson reappointed him. He was one of the founders of the Architectural League of New York and served as its president during 1913 and 1914, and during 1908 and 1909 he was president of the American Institute of Architects. He was a member of the American Academy of Arts and Letters, and the National Academy of Design elected him president in 1926 and thereafter each year for seven years.

ITROLITE *in Modern Architecture*



ROSTONE HOUSE, Century of Progress. VITROLITE walls and igs in emerald agate, golden agate, and ivory VITROLITE, make this oom an outstanding achievement in design and form a perfect back- id for the jade fixtures and mirrors.

GENERAL ELECTRIC DE LUXE KITCHEN, Nela Park, Cleveland. y agate VITROLITE walls to upper cabinets, gray VITROLITE each of windows, and black VITROLITE shelving, make this truly modern en distinctive.

GREENFIELD'S RESTAURANT, Detroit. Walls in black decorated OLITE followed successively by dark green, jade green, ivory, and VITROLITE, ceiling in silver blue, and black columns and pilasters a most attractive treatment.

4 GIMBEL BROTHERS DEPARTMENT STORE, Pittsburgh. Fountain, counter and back bar, in black and golden agate VITROLITE, the last word in modern appeal to critical patronage, are accented and protected by VITROLITE'S silvery stainless metal rim.

5 TOASTY SANDWICH SHOP, Rock Island, Ill. An impressive illustration of how VITROLITE supplies new fronts for old. This striking, up-to-date front is done in black, walnut agate, and golden agate VITRO- LITE, with pilasters in sandblast fluted effect.

6 VITROLITE FOR TOILETS. Universally used for lobbies, corridors, toilet partitions, and building facings. Its smooth, flint-like surfaces are cleaned easily with a damp cloth. Stainless, non-crazing, acid-proof. The utmost in sanitation.

THE VITROLITE COMPANY, 208 WEST WASHINGTON ST., ROOM 1826, CHICAGO, ILLINOIS

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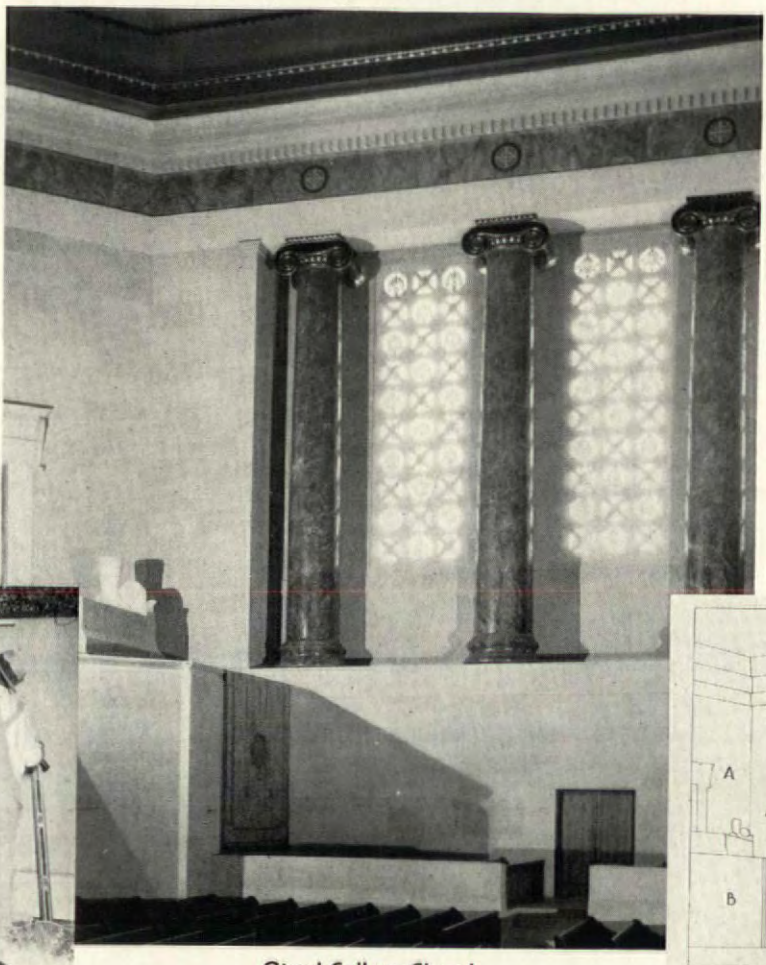
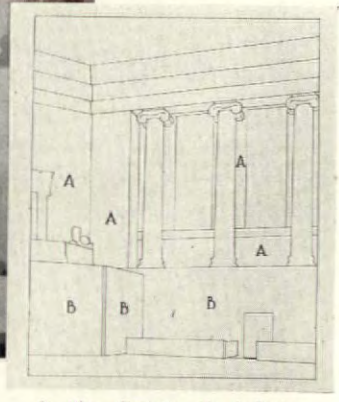
ACOUSTIC STONE

(AKOUSTOLITH)

Akoustolith is the only *masonry* material having a high coefficient of sound absorption



Girard College Chapel
Philadelphia
Thomas, Martin & Kirkpatrick, *Architects*



In the diagram, A indicates Akoustolith sound-absorbing stone *in sizes up to six feet in height,* while B indicates natural stone.

Wherever it is desired to carry out the effect of a stone ashlar, AKOUSTOLITH sound-absorbing artificial stone can be made to match very closely the color and texture of the natural stone. The above illustration shows clerestory walls of large AKOUSTOLITH blocks in perfect combination with the natural building stone.

R. GUASTAVINO COMPANY

500 FIFTH AVENUE, NEW YORK, N. Y. 40 COURT STREET, BOSTON, MASS.

R. GUASTAVINO CO. OF CANADA, Ltd., Architects Building, Montreal, P. Q.

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CHASE

. . . . THE FIRST COMPLETE ENSEMBLE OF AUTHENTICALLY DESIGNED LIGHTING FIXTURES IN THE FOLLOWING PERIODS OF ARCHITECTURE AND DECORATION

- **Early English**
- **Early American**
- **Georgian**
- **Federal**
- **Empire**
- **Classic Modern**

Evidence of the design authenticity and beauty of Chase Lighting Fixtures is illustrated on the following pages, which show six examples, one chosen from each period.

Architects interested in viewing a complete showing of Chase Lighting are cordially invited to visit Chase Tower, 10 East 40th Street, New York, where permanent displays are maintained.

Authorized Chase Lighting Dealers are now being appointed in all important cities. As rapidly as these local Chase Lighting displays are completed, showings of Chase Fixtures will be held for the architectural profession in each city.

The new Chase Lighting Catalog containing photographic illustrations of the entire Chase line (which is priced at from one-third to one-half what comparable fixtures have previously cost) is nearing completion. Architects desiring a copy will kindly address their request to our New York Showrooms, 10 East 40th Street, New York.

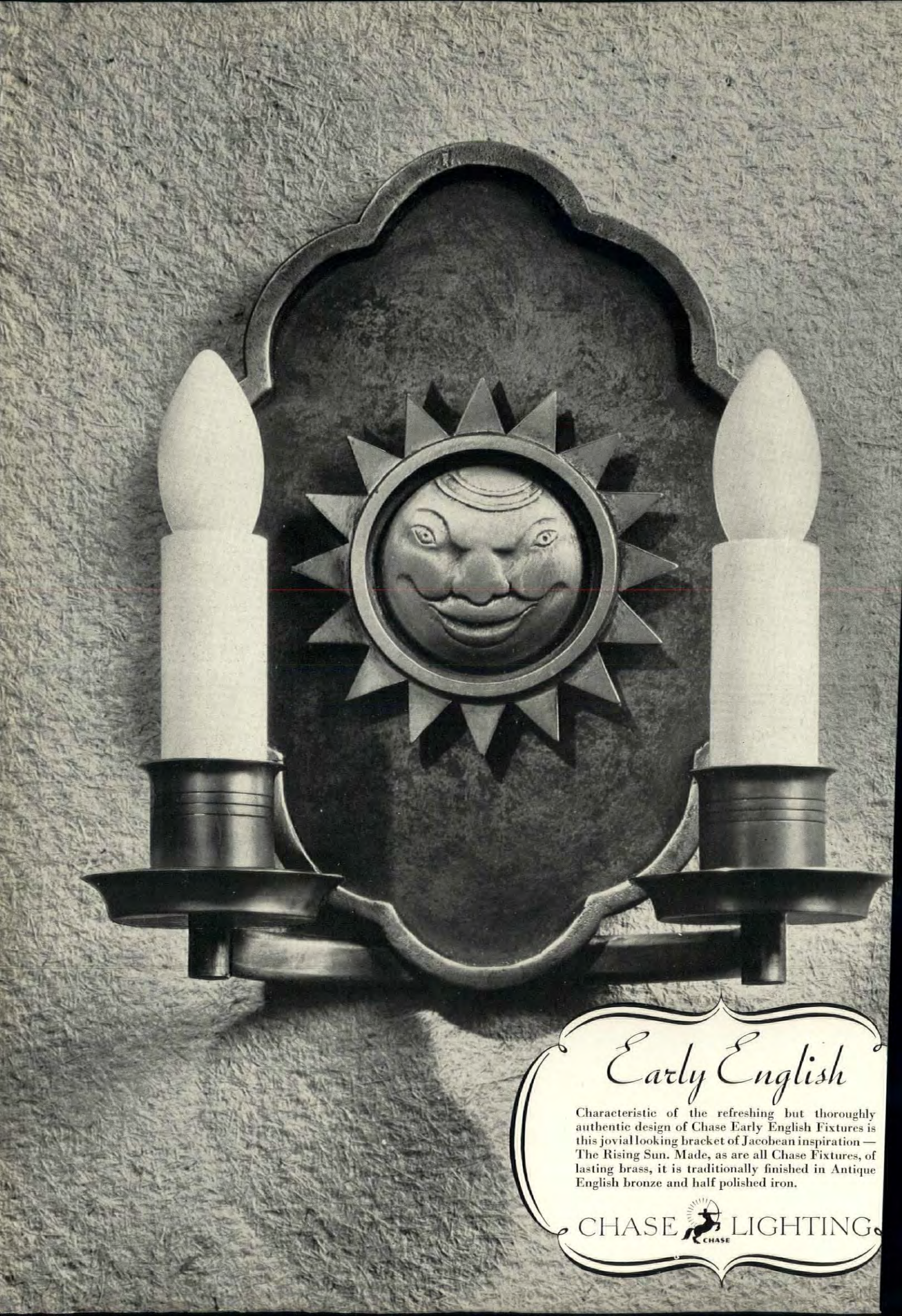
CHASE BRASS AND COPPER CO.

INCORPORATED

Lighting Fixture Division

Manufacturing Plants
Waterbury, Conn.

New York Showrooms
Chase Tower — 10 East 40th Street



Early English

Characteristic of the refreshing but thoroughly authentic design of Chase Early English Fixtures is this jovial looking bracket of Jacobean inspiration — The Rising Sun. Made, as are all Chase Fixtures, of lasting brass, it is traditionally finished in Antique English bronze and half polished iron.

CHASE LIGHTING

Early American

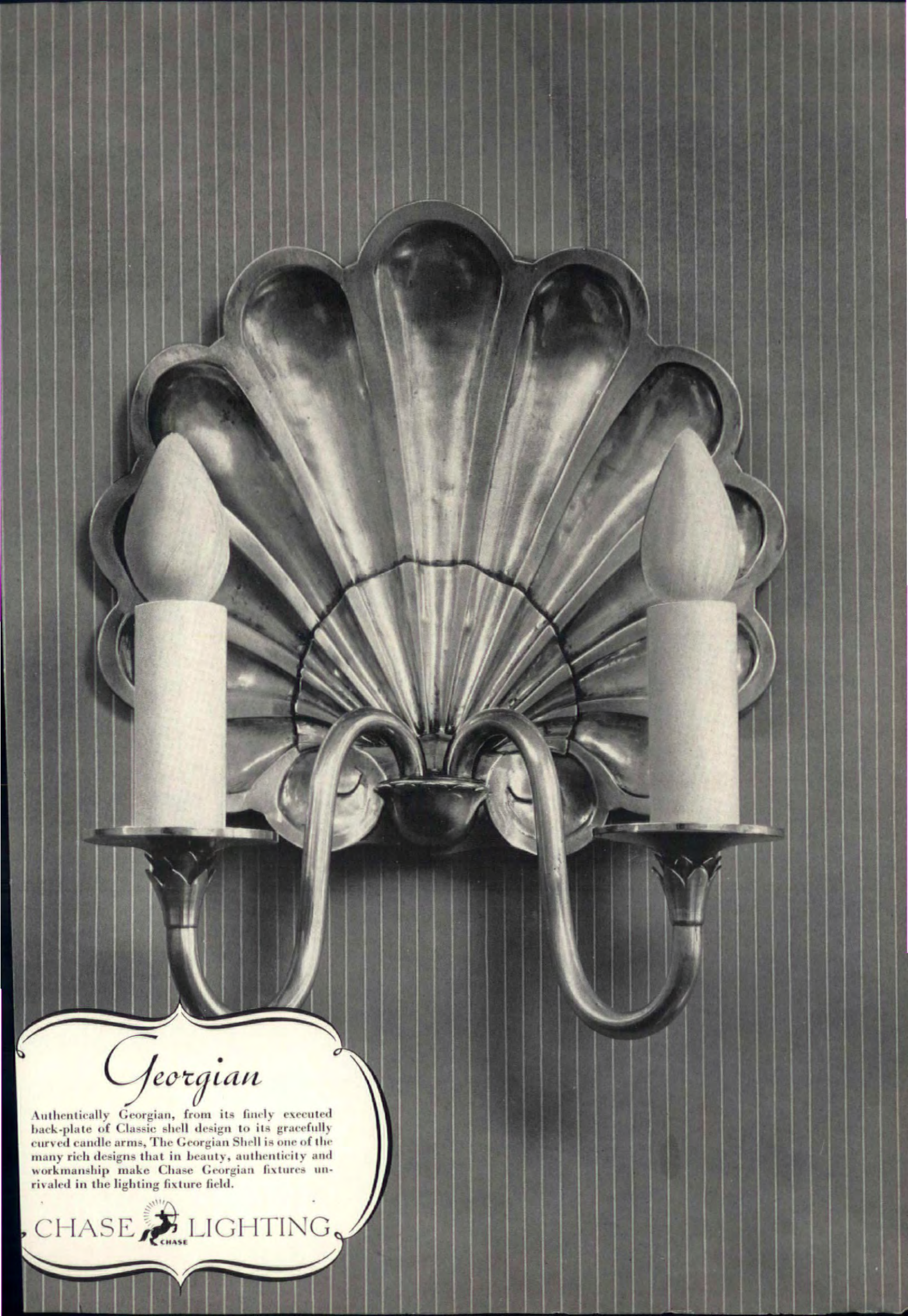
The crimped edges, pine tree decoration, from a Massachusetts coin of 1652, and antique tin finish of this sconce offer excellent evidence of the authentic beauty of Chase Early American Fixtures of which The Pine Tree Shilling Sconce is but one of many equally appealing designs.

CHASE LIGHTING

Federal

Rich in its color tones of black and gold, and distinguished by its reproduction of Thomas Jefferson's famous tobacco leaf decoration, The Monticello well illustrates the unusual beauty of the many authentic and decorative fixtures Chase has fashioned for homes of the Federal period.

CHASE LIGHTING



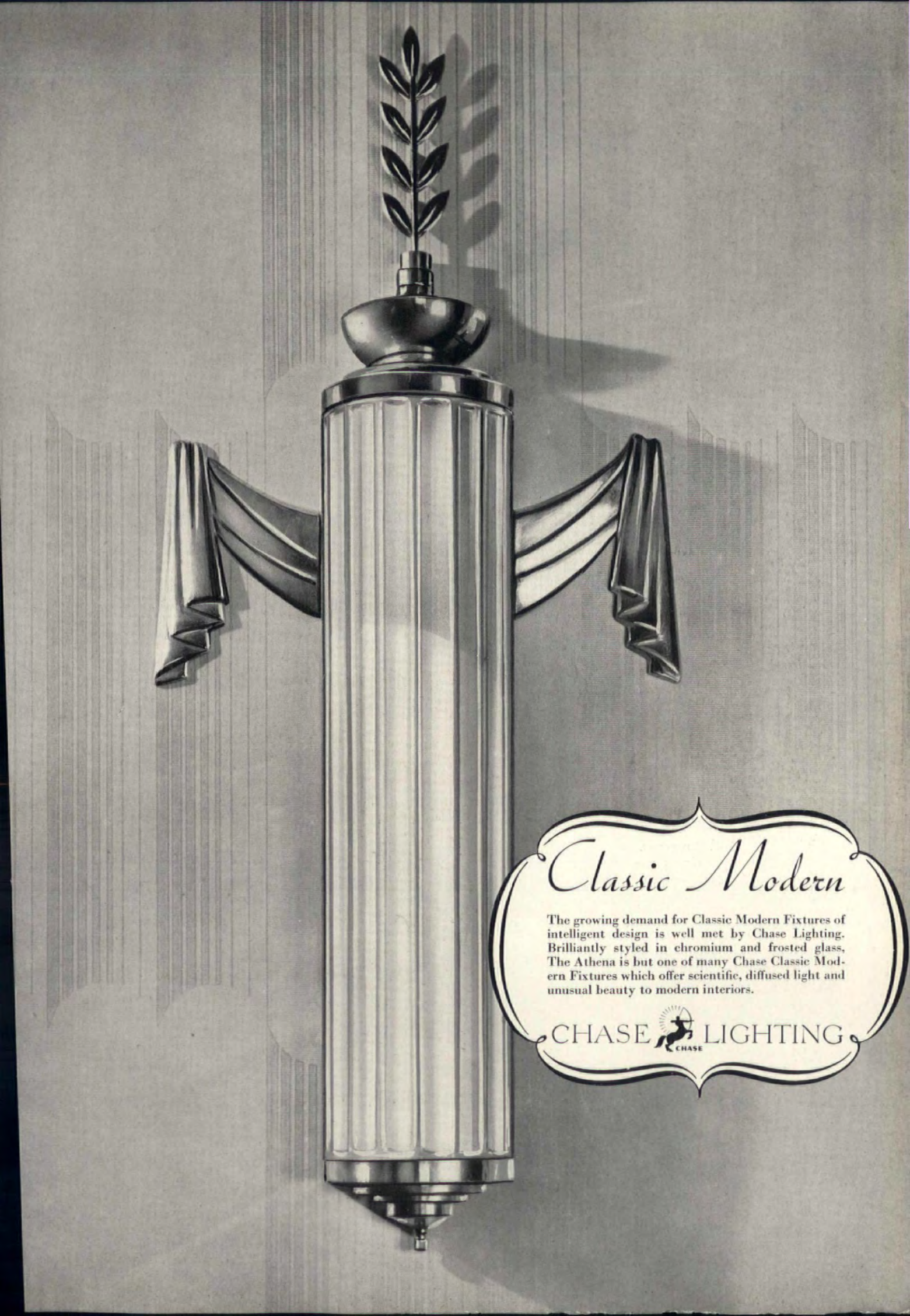
Georgian

Authentically Georgian, from its finely executed back-plate of Classic shell design to its gracefully curved candle arms, The Georgian Shell is one of the many rich designs that in beauty, authenticity and workmanship make Chase Georgian fixtures unrivaled in the lighting fixture field.

CHASE LIGHTING

CHASE


Empire
Based on authentic designs that breathe the spirit of the French Empire, the graceful Fontainebleau is representative of the smartness and classic purity of the many brilliant fixtures created by Chase to make its Empire group as distinctive in design and beauty as it is varied in styles.
CHASE LIGHTING
CHASE


Classic Modern
The growing demand for Classic Modern Fixtures of intelligent design is well met by Chase Lighting. Brilliantly styled in chromium and frosted glass, The Athena is but one of many Chase Classic Modern Fixtures which offer scientific, diffused light and unusual beauty to modern interiors.
CHASE LIGHTING
CHASE

E. K. Abberley

Pach Bros.

Henry F. Richardson

James B. Newman

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H. R. Dowswell
Chairman

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REFERENCE NUMBER JUNE 1934

For publication in the Producers Progress Reference Number of The Architectural Forum, we have endeavored to select new building products, construction techniques, and items of mechanical and electrical equipment that are representative of the latest developments. Obviously, not all the material shown is of equal significance or equally new. Some of the items are new in appearance only, while others are new in principle or functionally different from their predecessors.

From the mass of material submitted, it was necessary to eliminate much, and in all cases to condense the presentation of each product into a brief summary of basic information.

Although the board has exercised its best collective judgment in choosing material that would be of the greatest interest to those who create, construct or control buildings it must not be construed that we recommend any or all of the products here presented. Judgment as to the specific value of any product is left to the critical analysis of the reader who must relate it to the individual project under consideration.

We have found it stimulating to review the great mass of evidence that those who manufacture materials and equipment for buildings are continuing their efforts to produce new and different or more efficient and more economical products.

H. R. DOWSWELL, *Chairman*

The Editors of The Architectural Forum *take this opportunity to acknowledge their indebtedness to the members of the Board of Review for their effective cooperation in preparing this* Producers Progress *Reference Number. Thanks are due to each member, not only for his work at the regular meetings of the Board which were held for the selection of material, but for giving unstintingly of his time in reviewing individually the products which fell within his specialized field, and for preparing the articles which summarize recent progress. To these leaders in architecture, engineering and construction* The Architectural Forum *expresses its deep appreciation.*

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Spokane and Easton Trust Bldg., Spokane, Wash.
Thermax fireproof partitions.
Absorbex acoustical treatment.

The THERMAX

FARMERS BANK BUILDING

See Our Complete Catalogue in 1934

Junior-Senior High School, Washington, Pa. Edward B. Lee, Architect, Pittsburgh, Pa. Thermax roof insulation and acoustical treatment in gymnasium auditorium.

Residence, Los Angeles, California.
Gordon B. Kaufmann, Architect, Los Angeles.
Thermax walls and ceilings for insulation, fireproofing and plaster base.

THERMAX

INSULATION *PLUS* FIREPROOFING

Thermax is available in slabs 48" or 64" long x 1", 2" or thick x 20" wide.

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Absorbex provide (1) High insulating efficiency (2) High sound absorption (3) Incombustibility (4) Inertness to temperature and humidity changes (5) Structural strength (6) Uniform thickness (7) High light reflection (8) Low cost (9) Adaptability (10) Decorative texture (11) Sterility (12) Durability (13) Low maintenance cost (14) Re-decoration without loss of efficiency. • Details, engineering service and installation estimates gladly furnished.

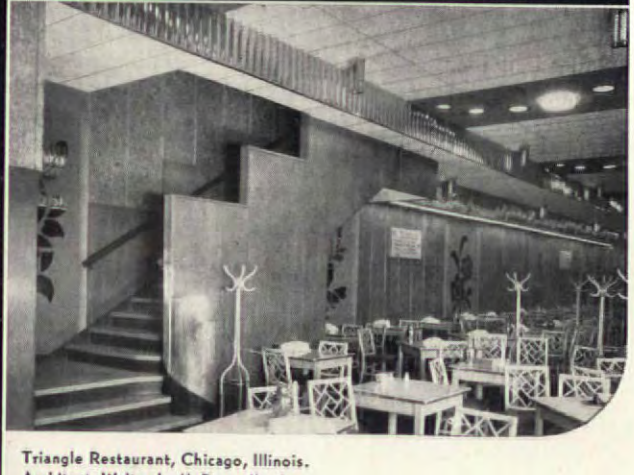
East Liberty Presbyterian Church, Pittsburgh, Pa.
Architects: Cram and Ferguson, Boston, Mass.
Construction Engineer: James L. Stuart, Pittsburgh, Pa.
Acoustical Consultant: Clifford M. Swan, New York, N.Y.

CORPORATION

PITTSBURGH, PENNSYLVANIA

Edition Sweet's Architectural Catalogue

RKO Theatre, Portland, Oregon.
Engineers: Electrical Research Products Inc.
Absorbex for acoustical treatment in side and rear walls.



Triangle Restaurant, Chicago, Illinois. Architect: Walter L. McDougall. Joseph G. Ludgin, Chicago, Ill., Decorator. Absorbex walls and ceilings.

bsorbex is available in tiles
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or multiples thereof.

ABSORBEX

ACOUSTICAL CORRECTIVE

LETTERS

The Small House Football

Last month THE ARCHITECTURAL FORUM explained H. Vandervoort Walsh's small house business methods. The letter below is one of several which he received. — ED.

Dear Mr. Walsh:

I have just read an account in the May FORUM [page 390] of your solution to the small house building problem. I congratulate you upon having more intelligence than most architects that I know. I am only out of M.I.T. one year and have but a little practical experience, but if I never had a degree in architecture or any practical experience, I could still see that something was radically wrong, both with the profession and the building industry. Nobody has been able to tell me how we may lead the way in giving the public good design and substantial buildings at a reasonable cost and a profit to ourselves. All about us we see evidence of good design and substantial quality in everything but small house work. I have always felt that there must be an answer to the problem but, because of lack of experience and those members of the profession who are so bound by tradition and ethics that they dare not attempt anything new, I could not find it. I believe that you have it.

Since we cannot eat ethics or traditions I am heartily in favor of a new set of ethics — not that we may eat them but, eat by them. Thank Heavens there is a man with the courage of his convictions in the profession! . . .

The public gets less for its money in small house building than in any other investment, chiefly because most of it is done by speculation builders. . . . Although you may be frowned upon by certain members of the profession, you are rendering a genuine service to the public. If I had your experience and the necessary backing I would try the same thing here in staid old Boston. . . .

JOHN D. SWEENEY
The Municipal Art Society
Boston, Mass.

Forum:

I would like to protest against the article regarding Professor Walsh and also against his ethics and intrusion into the field of the legitimate contractor. Mr. Walsh's statements that his efforts will eliminate the jerry-builder and speculative builder are incorrect. There will always be people who will be controlled by the efforts of this type of builder and nothing, I, Mr. Walsh or the combined efforts of all architects and builders in this country can do . . . [will] stop it.

The other day I had a call from a woman regarding some work on her house. I called and found one of the poorest attempts at construction of a house that I have ever seen (taking in all speculative homes and homes built by the jerry-builder). I asked her who was her builder and she mentioned some organization who not only furnished plans, but also did the supervision of the building. . . .

It is apparent from your article that Mr. Walsh and his associates are not willing to accept the responsibility of the general contractor — only to receive an exorbitant fee for architectural services and incompetent building service. When a general contractor takes a job he not only guarantees his own work but also the work of his subcontractors (and he calls them subcontractors). In doing so he exercises care in the selection of those who work under him and in the event something does go wrong it will be rectified.

In 1931 I constructed a small home ($12,000). Last week in passing the home I noticed that the leaders and gutters had suffered greatly due to the extreme winter. Within twenty-four hours I had my mechanics on the job to rectify this work (my subcontractor on the roof went out of business in 1933). An architect-builder such as Mr. Walsh's outfit would probably tell Mr. House Owner that his special contractor had failed and therefore Mr. Walsh and associates are not responsible.

With regard to small homes: There is a big field for the architect of today. No matter who the architect might be or how elaborate his offices might be. At the present time I am working with Mr. Electus D. Litchfield (he has just completed my own house) on the small home idea — houses from $6,000 upwards. We are getting many interested calls and it has been definitely proven that any client working along the lines such as I am will get a better home — better architecturally and better built at a cost well within his budget.

In this case the architect works separately and charges his fee of 10 per cent (or with the smaller architect or not so well known, 6 per cent). Here the client gets the full benefit of the ability, knowledge and experience of the architect and has a direct representative on the job who will operate solely for his benefit. The builder (if responsible and there are many) will be responsible for the construction not only during but after the job is complete.

A set up would be as follows:

Actual building costs		$6,000
Builder's profits & overhead		900
		6,900
Architects fees		690
Total cost		$7,590

According to Mr. Walsh's plan of attack the set-up would be as follows:

N.B. I am talking of good construction	
Actual building costs	$6,000
(Mr. Walsh could not get any better prices than a reputable builder.)	
Profit of Subs who do the work. The general would hire labor and buy materials	500
	$6,500
Fees 15 per cent	975
Total cost	$7,475
Difference	$ 115

But, Mr. Client would be lacking the skill and ability of the General Contractor and he would have his job delivered to him burdened with the responsibility of any errors that might develop.

If Mr. Walsh wants to do the architectural profession good and wants to make a living — let him concentrate on the small homes as an architect and render to his client the services that every client should expect from an architect.

The builder who is his own architect never has been a success and never will. Nor will the architect-builder succeed.

ANTHONY CONRAD EISER, *Contractor*
Bronxville, N. Y.

NRA Prices?

Forum:

After having read the current ARCHITECTURAL FORUM [April, 1934] especially going over the plate section containing "Six Small Houses and Their Costs," I thought it opportune to write you with reference to a matter that has just arisen within the last two or three days in this locality.

In 1927, I was fortunate enough to secure a commission to prepare plans and specifications for a residence, which when constructed, cost in the neighborhood of $15,000. Yesterday bids were received on a residence in the same locality, approximately the same size but less elaborate in construction, and the lowest bid amounted to $16,400. I believe I am correct in stating that in 1927 costs generally in the building lines were fairly high.

In going into the above situation with the material men, subcontractors and the general contractor, I found that the general effect of the NRA regulations ha been to raise the costs of building to a point where they now exceed the so-called "boom-times" prices, with the result that potential builders are cancelling all building programs, thus directly affecting the building industry, or what may be left of it, adversely.

The above is written because it occurred to me that you might wish to correct the impression that might be left in the minds o persons seeing the plates and accompanying prices published in your last issue. It has also occurred to me that it might assis somewhat to give publicity to the genera effect of the present method of price-fixin and competition elimination on building i general.

R. W. STEVENS
Citizens Bank Bldg.
Huntington, Ind.

At the time the costs were computed, th effects of NRA price-fixing were only b ginning to be felt. Furthermore, the cuba costs were adjusted to a base for a sing locality. Labor was figured at prevailing wa scales of the years indicated. NRA code pr visions have upped labor costs as well material prices. — ED.

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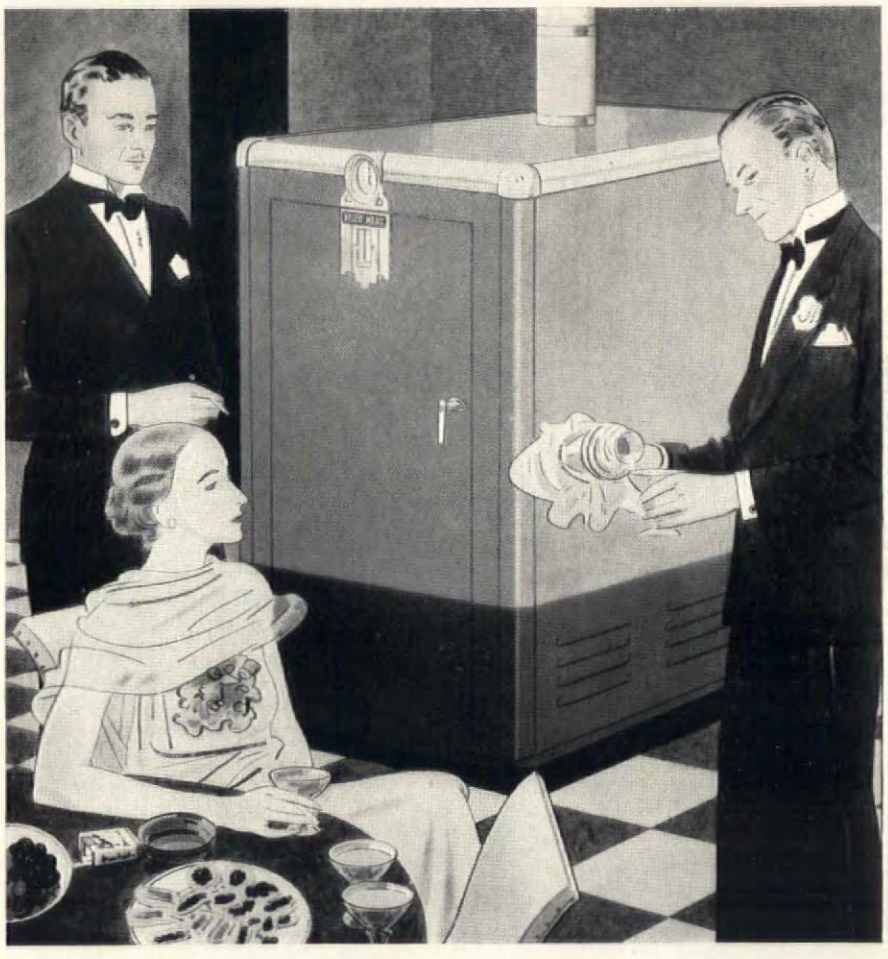

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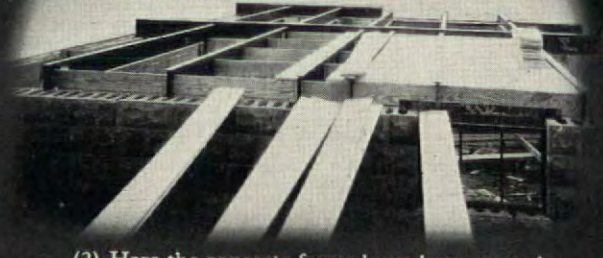
The photographs below were taken during the construction of the first floor of a six-room, two-story brick veneered house. Note the simplicity.

(1) This picture shows the entire layout of steel in position on foundation walls.



(2) Here the concrete forms have been started. Ordinary wood sheathing boards are used.

(3) The finished concrete form with wooden sleepers and ¼" steel reinforcing rods in place.

(4) The steel and concrete floor complete. Finished flooring will be nailed to the sleepers.

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THE
ARCHITECTURAL
FORUM

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Frontispiece: The House of the Future

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ANNOUNCEMENT

In the belief that the interests of the public and the building industry, will be served best by securing as wide an application as possible of the scientific principles involved in Modern Heating Methods, the following cooperative agreement has been entered into for that purpose.

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C. A. DUNHAM COMPANY
(SIGNED) C. A. DUNHAM
PRESIDENT

WARREN WEBSTER & COMPANY
(SIGNED) WARREN WEBSTER
PRESIDENT

April 27, 1934

THE EDITOR'S FORUM

THE NATIONAL HOUSING ACT

QUIETLY, the committees of the Senate and of the House are listening to pros and cons propounded by men who have a stake in, or an idea about the National Housing Act. Realtors, builders, landlords, architects, building-and-loaners, mortgagors, manufacturers, insurers, experts on this and that are being heard. It is a consultation to determine what effect the proposed legal medicine will have on each member of the emaciated giant building industry — Will there be a quickened blood stream? Can he regain his feet or must he be propped up? Will his brain be allowed to function to direct his course?

Two previous attempts to stimulate the sleeping industry have failed — the Public Works Administration made a negligible, diffused attempt to revive building; and its Housing Division program has been practically abandoned except for the hundred million or so which the Housing Corporation will spend on a few demonstration projects. The government has not injected enough money into the industry to cause a flutter, and has announced recently that little more Public Works will be forthcoming. It cannot afford that medicine and balance its budget.

The ideas incorporated in the Public Works sections of the NRA have been relegated to the background or to the limbo of impractical idealism. The new bill takes no account of a national plan for the construction of needed buildings which was mandatory in the Act but which the PWA has not yet developed or presented. It discards the theories of government cooperation in large scale planning, of community planning, of slum clearance and housing, and devotes itself to the system of financing of individual enterprises, trusting, evidently, that private initiative is sufficiently enlightened to take care of these things through cooperation with local planning boards and architects using the Real Property Inventory.

The Administration thus shifts its diagnosis and will try a new treatment. Reasoning that the building of homes amounted to over 60 per cent of the total amount of building construction in "normal" years, and that there is a shortage of houses due to the five years of non-building, it will seek to stimulate private capital to modernize and build. The loans made by private agencies will be partially insured by government funds, but under the National Housing Act the government itself will not lend. Some confusion on this point arises from the fact that at present the Home Owners Loan Corporation has $200,000,000 which it can and will lend to distressed home owners for repairs and remodeling, providing said owners have already come to it for mortgage relief.

The new medicine, the National Housing Act (which is still the Fletcher Bill or S. 3603) has been endorsed by the American Institute of Architects and by most of the major factors of the building industry, with the exception of certain lending agencies. The Bill provides for new lending agencies and for new regulations which will fundamentally alter present mortgage practice and the profits arising therefrom. In this sense the bill is a reform measure rather than a recovery bill.

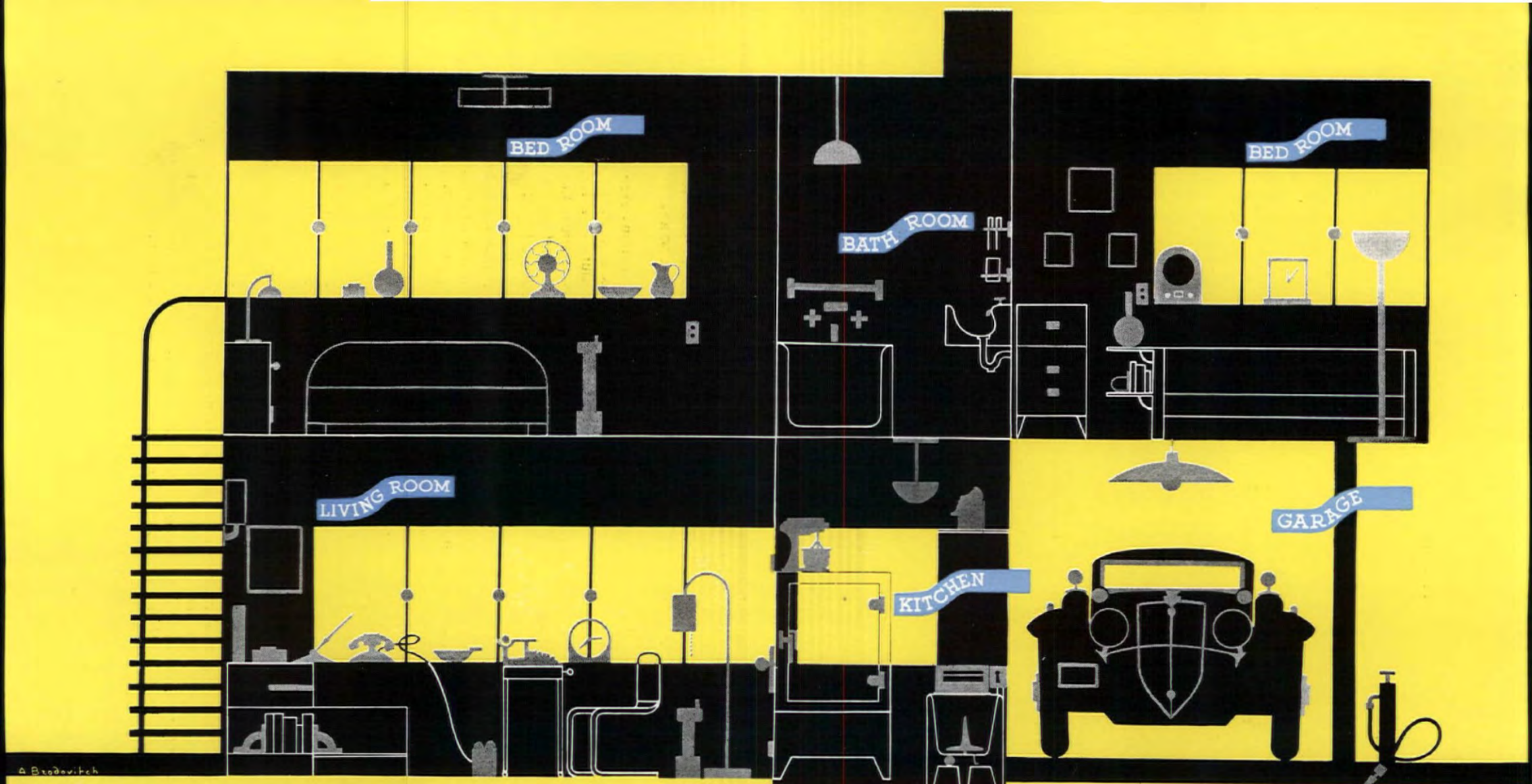
The strength of the bill lies in its clarification of a way to put the home mortgage business on a sounder basis through amortized loans, lower interest rates and a system of government guarantees. Inauguration of such a mortgaging program should restore the lost confidence in home-mortgages, increase their liquidity and encourage both lenders and borrowers to enter the home building field again.

Another part of the bill is intended to stimulate repair and modernizing of homes immediately as a recovery measure by partial government guarantee of the unsecured short term loans made by private agencies for that purpose. It is difficult to estimate the number of home owners who can be persuaded to go more heavily into debt to improve homes with so many already a burden of interest and increasing taxes, as well as deflated in sales value, and with so little assurance of either assured or increasing income. Yet the success of this section of the bill depends on the number who will see the wisdom of borrowing up to $2,000 for modernizing.

We believe that the bill has great potentialities of good for the architect. The more careful scrutiny of loans should mean the necessity for architecturally designed and superintended houses. The architect can assume a position of leadership in the small home field under this stimulus only if he can (1) demonstrate the economic and social value of his service in this field; (2) increase his efficiency or change his method of operation to compete with other types of service, the speculative builder or the free-design-service or stock plan contractor. It can hardly be made mandatory in the administration of the proposed National Housing Act that an architect shall be retained (as a condition of the guarantee of a loan) until these two things are accomplished. We may as well face the fact that the promise of the proposed new law will mean no more to architects than they individually and collectively can contribute to the solution of those two problems of their own practice.

Kenneth K. Stowell

Editor



THE HOUSE OF THE FUTURE

Along no one path is the trend of future design clearly outlined; but of the several probabilities, none seems now more inevitable than an increasing use of metals — metals for walls, floors, roofs, windows, doors; metal for furniture, trim, equipment. In diagram here are indicated in white outline and gray,

THE

ARCHITECTURAL

FORUM

VOLUME LX JUNE, 1934 NUMBER SIX

KEEPING STEP WITH PROGRESS

BY R. H. DOWSWELL

of the Office of Shreve, Lamb and Harmon, Architects

Architecture is made up of a succession of choices, good or bad, reasoned or intuitive. There is probably no phase of the architect's work which requires more painstaking study and analysis than the selection of the materials and equipment. Here guesses never do. Selection is just one continuous process starting with the first concept of the design and ending only when the structure is complete, or rather when it is demolished.

Selection can be made a logical process from the general to the particular. First the broad choice of materials — governed to a large extent by the design, with cost limiting the field in many cases.

Having selected a material which will express the design, the choice must be judged from the standpoint of practicability, and a host of questions then spring up. Is it the best for the proposed use? What is its life under the conditions to which it will be subjected? Will it comply with building code requirements? Can it be obtained in sufficient quantities and within the time limits imposed by the Construction Program? Are there any labor conditions which will affect its use? And finally, will the appropriation stand it?

Only after all these questions, and others, have been answered may a final selection be made and the contract requirements set up. As the construction work proceeds, the material as delivered must be judged for compliance with these requirements, and, since responsibility usually extends beyond the completion of the building, a final judgment must be rendered before the expiration of the guarantee.

It is obvious that if the architect is to make an intelligent choice, he must know both the new and the old materials and equipment, and not only technical matters but market conditions as well.

A quarter of a century ago it was a comparatively simple matter for him to acquire such knowledge since the field of choice was limited to comparatively few materials. Today he has an almost unlimited choice, and within each group many similar products made by different processes and of varying standards are offered by progressive manufacturers. This constant change and ever widening field has imposed a greatly increased responsibility upon the architect, a responsibility which can be met only by constant study and research.

It is not sufficient for the architect to determine that his design requires the use of stone, marble, or this or that kind of metal; that his structural materials meet the requirements of building codes or engineering demands; he must also know how the materials chosen will act under conditions of use and how they will react, each on the other, when assembled in the building. And reactions will vary with similar materials when produced by different processes.

If the architect takes this responsibility seriously, and he must if he is to be truly successful, it will be necessary to set up a definite plan of procedure to keep informed. Data regarding materials and equipment must be collected and classified, these data studied, the physical aspects of similar materials compared, the technical processes involved in their production investigated and the integrity of the producers established.

Even after the material has been selected and incorporated in a building, the research must continue. Frequent inspection should be made, over a period of years, to determine if the choice has been wisely made. These inspections should not be confined to the work of his own office alone, but extended to include every structure he can worm into.

There is probably no more fruitful source of information on building materials and equipment than the advertising and literature, the catalogues and circulars, issued by the producers, provided the data and claims set forth are analyzed and verified. Nor is it sufficient to do this once. There is no period in an architect's life, prior to retirement, when he may rest from this search for knowledge if he is to achieve and maintain a reputation for sound judgment in the selection of materials and equipment. Wise choices are made, not born.

BEFORE YOU CHOOSE

BY E. K. ABBERLEY

Engineer, Turner Construction Company

BECAUSE of the many new materials available, it is important in planning a structure today to give intensive study to the factors affecting the choice of materials and equipment involved in its design and construction. This is an attempt to cover the more important factors affecting choice and to provide a "yardstick" to assist in sizing up a new material, method or item of equipment. The factors are not listed in order of importance for all should be investigated with equal thoroughness in making a definite choice for a particular project.

THE FACTORS AFFECTING CHOICE

Use. Obviously, the use to which any structure is to be put is one of the principal factors to be considered in choosing the materials and equipment for each particular purpose so that the whole will coordinate efficiently and economically.

Closely related to this, and determined more or less by "use" together with "location," are those factors bearing on the "appearance" of the structure and its parts.

Availability. Can the manufacturer guarantee sufficient and timely deliveries?

Many new materials and ideas of merit may be still in their infancy in so far as actual production is concerned, and the possibility of securing them in sufficient quantities and in time for any given project must be carefully looked into. The materials in question may be the pacesetters for the entire project, and any delay in their delivery would cause added expense and lost time.

This factor applies not only to the original requirements for the work, but also to the matter of securing replacement of units damaged in transit or in construction.

Another phase of this matter is that of obtaining "replacements" or "service" after a structure has been in use for some time.

Sponsorship. Who makes the material? What is his reputation for character and integrity, financial strength, resources, knowledge and capacity to produce and stand by and render service over the years?

Legal Requirements. Will federal, State and municipal laws and ordinances permit of using the material being considered? This involves conformance to the requirements of Building Codes, Labor Laws, etc.

Insurance Requirements. Will the underwriters approve of its use, and if not what is the premium penalty?

Labor's Reaction. What will Labor's attitude be with respect to its use?

Will Labor cooperate or hamper?

Are there any jurisdictional disputes involving the question of which trade shall handle or install the item?

Are there available sufficient workers skilled in its installation?

Is any special technique required?

The question of *who installs* the material is rather important. In the case of a new material it is desirable to have it installed by those who are vitally interested in seeing it done properly.

Banker's Reaction. Those who finance a project generally have an interest in the materials used in it. Will the financial backers interpose objection to the article being considered?

Adaptability. Is it adaptable to many purposes or uses, or can it easily be made so?

This question is especially important when applied to a major element in a structure, such as its frame and also in connection with several important design elements, such as plan layout, arrangement of columns, story heights, floor loads, etc.

Details of Fabrication and Installation. Have the details of its use been thoroughly worked out, and do they seem practical?

For instance, in using wall boards and finish coverings, the edge or joint details are important, as are also the details of concealed or blind fastenings. Do joint details provide for weather protection, and for expansion and contraction?

Does the material under consideration tie in well with the other parts of the structure?

Have proper provisions been made for working *tolerance* or *clearance?* This is an important factor and affects greatly the workability and cost of installing a material. The results obtained experimentally in the laboratory frequently give erroneous impressions of what may be expected in field installations.

What *protection* does the material require during transportation, handling on the job, during and after erection until accepted? Can it be *repaired* on the job if damaged during construction, or must new units be secured? The difficulty of protecting such items as bath tubs and tile work during construction is well known, in addition to the delays caused in securing replacements of damaged units, particularly where such materials are colored.

In the case of failure in service after completion of the project, how difficult will it be to repair? How much interference with the use of the building will repairs be likely to cause?

The size of units in which the material is furnished may be one of the controlling items in the detailed design. The stock sizes of many of the materials used today affect greatly all the detailed dimensions of the layout. In a study recently made, the maximum size of rolled steel sheets was of particular importance controlling one of the main features of the exterior of a rather large project.

Are there any hazards encountered in its installation or use? Recently in considering a material which appeared to have possibilities and to satisfy all functional requirements, it had to be rejected because of the fire hazard involved in its use. On one particular job where it was used

a severe fire broke out in the later stages of construction and caused considerable damage, not only to the material itself, but to the adjacent work.

Demolition. Can it be demolished readily and without undue expense after it has served its usefulness?

Life. What is its probable length of useful life?

Has it a salvage value? It is necessary to know this in order to evaluate depreciation.

How costly will be its maintenance?

If the material or equipment is in the development stage the architect and engineer must weigh carefully the possibility of the current product being made obsolete in a short time by rapid improvement.

Experience. If a new material or item of equipment is being considered, what may reasonably be expected of it when compared with other things of like nature with which the industry has had experience? After all, this is the broadest base from which to operate in making an intelligent choice.

Cost. The factors cited herein all affect cost. The establishment of cost requires knowledge and experience.

When considering the cost of a material, it is necessary not only to consider the direct cost of the material in question, but also the effect its use may have on the cost of all other materials entering into the structure.

Another cost factor of importance that should be kept in mind in planning a structure is the effect on operating cost. Many times a relatively small increase in capital expenditure will result in appreciable savings in operating costs, and these accrue during the useful life of the structure.

The architect and engineer must differentiate carefully between "Estimated" and "Actual Costs." The former may be a prejudiced guess, the latter must be a proved fact.

Guarantee. If the choice of one of two materials has been reduced to the consideration of the protection offered by the guarantees given with them, look carefully into the sponsorship; for a guarantee is no better than the concern giving it, and while it may be comforting reading it does not improve the quality or operation of the product.

One of the most troublesome things encountered in connection with guarantees is the tendency for the specification writer to specify and cover in detail methods, materials and processes and then to require manufacturers and contractors to guarantee the results as to the sufficiency and successful performance.

In connection with this item, tentative code, Chapter II-A of the Building Contractors' Subdivision of the General Contractors' Division of the Construction Industry covers this point in Article VI, Trade Practices, Section 3, as follows:

"A building contractor shall not assume the responsibility of guaranteeing the sufficient of/or the results to be obtained by the methods, or materials, or processes which are specified by others than the contractor. This provision, however, shall not relieve the building contractor from complying with the requirements of the specifications, as to methods, materials, or processes to be."

SOURCES OF INFORMATION

In using this yardstick, the architect has available the following sources of information:

The User. In connection with use requirements, the user is, generally speaking, the most dependable and well-informed source of information, and particularly so where structures to serve industry or a special field are involved. The more complicated the industry or field of activity and the more involved its structures, the more necessarily complete and controlling is the user's knowledge. This is particularly true of structures built for the steel, automotive, chemical and textile industries, and also in the case of such structures as hospitals, schools and the like. Where the user is the owner, his knowledge and general attitude toward the structure and the effect he is trying to create will determine the "use requirements." Due weight should be given to the user's desires but the user's judgment may be warped by certain prejudices.

The Manufacturer. Obviously, the manufacturers of the many materials available will be consulted as to their properties and characteristics, and will furnish a great many answers to the questions or factors cited herein. In the final analysis, an honest manufacturer is likely to be the harshest critic of his own product, and in addition many manufacturers also use their own materials and have knowledge of their behavior.

Architectural and Technical Press, Professional Societies, Trade Associations and Research Organizations. It is a prime function of these sources to keep up to date on materials, equipment and method of construction. They report on the results of research and experience and make this information available in usable form to architects and engineers.

The Building Manager. In connection with certain structures, such as office buildings, large apartment houses and the like, a building manager is generally in charge of service and maintenance. His information is generally dependable, being based on actual experience.

The Builder. In connection with all structures, the builder can and wants to be helpful. His knowledge of what can be done as a practical matter, what has been done, and what it will cost to do it, are all available.

The Real Estate Broker. In the matter of location of the site and other related factors and for certain buildings in consideration of their marketability, the real estate broker's knowledge is authoritative. Through his constant contact with the building market, he is in a preferred position to know how the demand for a building will be affected by the use of certain materials and treatments.

■ ■ ■

THE ARCHITECT AND NEW MATERIALS

BY JAMES B. NEWMAN

of the Firm of Ely Jacques Kahn, Architects

THE full study of materials and their effective use would amount to an investigation of the entire building industry and its collateral industries. It would become a study of modern life and social progress. Social and industrial demands have radically influenced the development of given or needed materials and the materials available have naturally tremendously influenced the final product, the architecture.

We have already seen the architect, whose basic work has always been that of planning and designing, assimilate sufficient general knowledge of varied professions to enable him to work in common with the banker, the realtor, the builder, civil and mechanical engineers. And now, in this rapidly expanding field, he must enter upon common ground with the research engineer, the metallurgist and the chemist.

In addition to all our old familiar materials, with their respective developments, we now have a whole new world of synthetic and prefabricated materials — an ever-increasing group of ferrous and non-ferrous metals and their alloys, new products in the age-old field of ceramics and glass. We have new finishes — paints, varnishes, and nitrocellulose lacquers. Then there are the endless applications of new and old engineering ideas in structural products and in sanitation, heating, ventilation, air conditioning, refrigeration and illumination. Little wonder that in the practice of architecture it is beyond the power of any one individual to follow all its branches. Such a wealth of products leads almost invariably to a specialized practice in small offices, and to specialized function in large offices.

While the demands of contemporary problems determine many of our structural types it is clear that these in turn largely influence the development of materials which contribute to the efficient development of such types. The economies which are earnestly desired, and urgently needed in the finally completed building, may be effected in a number of ways. There will be a continuing tendency to further basic simplification of the structure. Savings will be effected through a decrease in the use of costly field services, and through a relatively greater use of prefabricated items in which the economies of mass production can be more fully realized.

We should remember that the complete development of the skeleton framed structure has been accomplished in only fifty years. In Chicago Burnham & Root's sixteen-story wallbearing Monadnock Building, with basement walls some 15 ft. thick, was replaced as a center of interest by Jenney's ten-story Home Insurance Building. In this the walls carried their own weight, but iron columns built into them carried the floor loads, and interior beams were of iron and of steel. This was in turn superseded in 1887 by the Tacoma Building of Holabird & Roche with skeleton walls on structural framing, the beginnings of the Big Parade.

The successive skyscrapers brought about the rapid developments in structural steel, reenforced concrete, foundation advances (including sheet piling, steel tubes, concrete piles, pneumatic caissons) high-speed elevators, electric power and illumination. Logic and economics dictated a continuous lightening of the dead load through revisions in framing, materials, and their uses, leading through simplification to the clean cut efficient product of today.

In Europe where there was no such vertical building there was no great steel or elevator development. On the other hand, Europeans interested in lateral construction went into the field of reenforced concrete earlier and more thoroughly than we. Following small scale efforts of Lambot, Coignet, and others, and some feeble examples in the Paris Exposition of 1867, concrete was widely developed by continental engineers. The engineering of Melan, and more recently of Freyssinet afford examples of the great advances made. In America we have developed in reenforced concrete a type of industrial architecture famous the world over. New requirements create new materials and new uses for the old.

In his use of newer materials the architect largely carries the final responsibility, and he will accordingly be conservative to the point where he can be reasonably assured through proper research and study that the product will serve the purpose intended. Some of the considerations involved in the selection of particular materials are discussed elsewhere in this issue, and while the architect will carry on his own investigations, he must also rely upon an enlightened industry itself. Engineering principles fortunately are becoming better understood, and more widely appreciated.

Industry, so far as it is financially able to do so, carries on a consistent policy of research, studying existing products and developing new ones. It looks upon this policy not only as sound economics, but as its own salvation. While information of this research has generally been available, much of it has been hard to find through lack of a central source. Possibly a centralized agency can be made available in the general reorganization of the building industry. If not it may be that the various trade associations, which have found new importance in the industrial realignment, can be made to serve as the clearing houses for their respective members.

■ ■ ■

STRUCTURAL PROGRESS

BY H. V. SPURR

of Purdy and Henderson, Engineers

THE extensive lull in building has provided both the time for research and the incentive to develop new materials and methods that might bring new life to the construction industry. It has been a quest for true economy, for greater efficiency and for new and logical solutions to structural and equipment problems.

The structural parts of modern building, the foundations, the superstructure, the floors and walls, have all been scrutinized and studied for possible sound arrangements of new materials or improved uses and arrangement of old materials. Leaders in the architectural and engineering professions have collaborated in efforts to modernize the building codes of our cities, based on a complete review of present day construction data. Manufacturers and builders have given time and thought to improved products and to better methods of construction.

The modern tendency in structural design is towards maximum economy by a reduction in the live and dead loads, and by an increase in working stresses. Such a development is proper within the limits of safety, but necessarily demands careful design methods and that reliable materials be used in sound arrangements.

Rigid Frames. Considerable thought among structural engineers is being directed to the analysis of rigid frames. Conditions incident to full continuity are being carefully considered. The effect of negative moments from dead and live loads on wind bracing and other types of construction (as well as in reenforced concrete construction and design) are being more carefully analyzed. In many cases these effects are being provided for in the design of the members and their connections. These developments are bound to influence construction methods in the future, and the development of the art of welding will no doubt have a material influence in this direction.

Tower Windbracing. We have new conceptions in the art of bracing high towers to resist the effects of wind forces. It is no longer a question of strength alone. Strength and stability to withstand the wind pressures must be studied in connection with the elastic behavior of the frame. It is realized that vibrations unpleasant to tenants must be guarded against in the structural design, as well as that degree of distortion which will cause damage to partitions and exterior walls.

Resistance to earthquakes has taken on a new significance in structural design, especially in certain localities. Intelligent research is revealing many essential principles of construction to provide reasonable security.

Walls of Glass. "Ultra-modern" architecture has employed cantilevered exterior walls, with continuous sash extending across the entire face of a building. In such cases, the stiffening effect of exterior walls is largely lost by the elimination of vertical piers. We have in effect a parapet wall at every floor, which requires a continuous sill angle support rigidly braced against horizontal movement. Similarly, continuous lintel angles are required, with horizontal and vertical field adjustment provided to secure proper alignment of masonry openings. Furthermore, the modern tendency is to use thinner exterior walls of masonry, or of thin prefabricated panels, with metal or glass exterior surface. Where stone is used, the tendency is to employ a facing only 3 or 4 in. thick with horizontal joints widely separated and the usual bond courses are greatly reduced or largely eliminated. This introduces important problems in the design of the structural supports as thin walls are difficult to balance on the structural supports, and may require extensive provision for tying back, especially where continuous sash is used. The whole tendency is to lose rigidity in the structure as a whole, through the reduction in the masonry envelope, a condition which needs to be recognized.

Floors. Perhaps no structural feature has been given more study than this. The questions of finish, general flexibility to framing arrangement, ceiling treatment, adaptability to receive and conceal underfloor duct systems and conduits must be satisfactorily answered, together with the need for adequate strength, rigidity, durability, and fire-resisting qualities. The weight and depth of construction are factors to be considered in connection with the cost of a floor which is also affected by the simplicity of the field operations used in its installation.

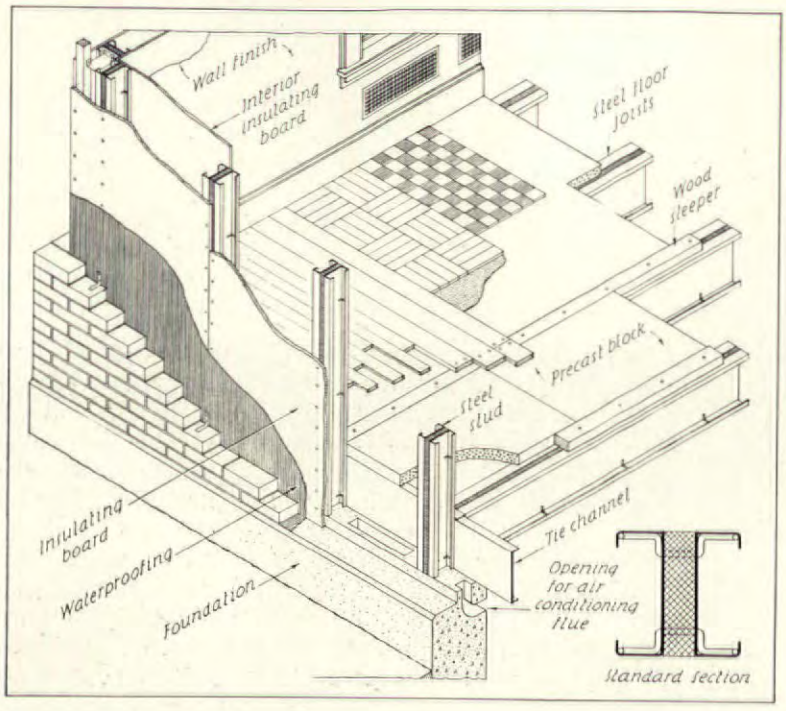
Recently several types of light-weight floors have been developed. They are of two general classes: the "poured-in-place" and the "pre-cast." In the poured-in-place type, lightness is obtained either by expanding the concrete by chemical action, producing a porous structure, or by the use of light-weight aggregates. Where the mix is expanded in the setting, it is necessary to maintain a careful control of the mixture to insure a proper strength, weight and thickness. Concrete made of light-weight aggregates is subject to control through preliminary tests which determine the proper mix.

Light-weight floors of the "pre-cast" type have been developed, using units of gypsum, porete or other light-weight material. The plank type recently perfected is particularly notable for its ease and speed of installation. Several types of long-span floor construction are available, such as ribbed slabs, with and without filler blocks, and the various types of bar joists.

More frequent use is now being made of "two-way" concrete slabs. This type of construction has been used with marked success and it has wide possibilities. Such slabs, properly designed, have ample strength and toughness, and provide a rigid horizontal plate when poured monolithically with the beam haunches.

There has been the constant building up of a background of modern research into structural design procedure, and it is by means of this background that the industry will be able to proceed wisely in the use of new materials and the adoption of new methods.

STRUCTURE

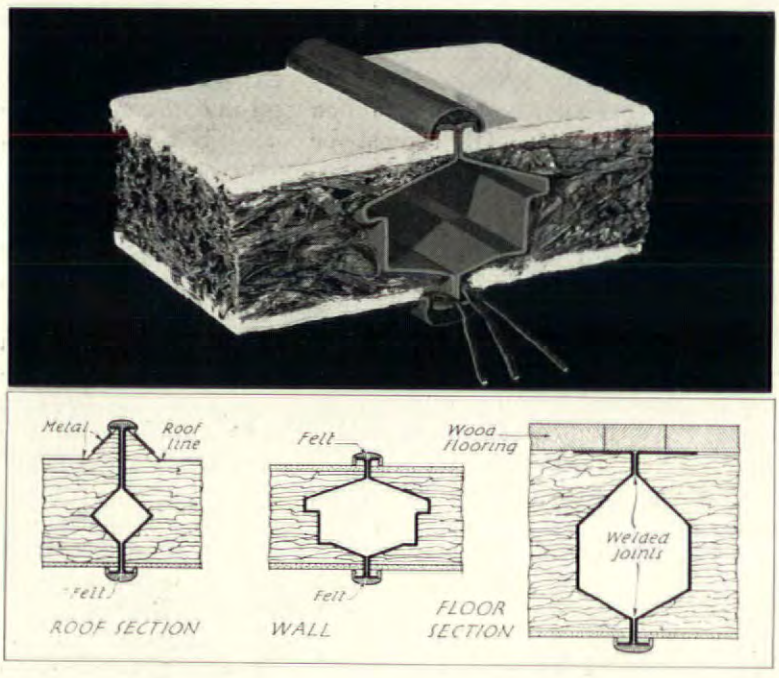


1

1. INSULATED STEEL FRAMES

Designed for residence and other light structural work, consists of light steel channels anchored in pairs by steel pins. Their backs face each other and are 1 in. apart, space being filled with a fireproof nailing compound. For walls and partitions, these members are 4 in., 16-gauge, while for floors, deeper sections are provided according to the spans and loads. Standard spacing of all studs, joists and rafters is 24 in. Rafter connection at the plate, tie beam and ridge are of the hinge type, permitting any desired roof slope without change in the connection. Horizontal cut offs in the walls have been eliminated to facilitate installation of air conditioning equipment. Erection, by iron workers.

Insulated Steelbilt Structures, Inc.
Amsterdam, N. Y.



2

2. PREFABRICATED BUILDINGS

System of prefabricated units to be assembled at site. Panels are to be furnished in a variety of types, to reduce work on the job. Panels framed in light structural steel are made up of hardened insulating material, such as Thermax, coated on both sides with cement-plaster finish. Shape of steel is such that members may be used as door and window jambs where desired. Joints are welded and covered by protective metal clip strips which contain felt and space for wiring for the house. Roof and floor panels are already covered by their finishing, requiring work on the job only at joints.

Developed by Dr. K. Erdmann
Radenthein, Carinthia, Austria

3. LIGHT STEEL BEAMS

New series of light-weight steel joists, beams and stanchions designed to be used at spacings which afford maximum efficiency, economy and simplicity for this type of floor construction. Particularly suitable for light occupancy structures, such as apartments, schools, office buildings and fireproof residences.

Carnegie Steel Co.
Pittsburgh, Pa.

4

4. SECTIONAL METAL BUILDINGS

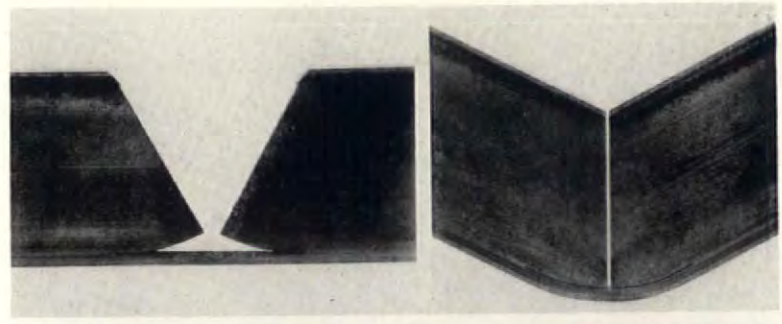
Standardized buildings of Lyonore (a nickel-copper alloy) for which the manufacturer claims great life. Alterations, such as additional doors, windows, skylights and extensions, may be made at any time by means of standard units. System also permits buildings to be taken down and re-erected with minimum loss of material. Installation by the manufacturers.

Maryland Metal Building Co.
Race & McComas Sts., Baltimore, Md.

5. CONTINUOUS I-BEAM

In place of the usual monitor trusses this system permits use of continuous I-beams, cut, bent and welded into shape. Beams are cut with triangular notch and desired radius for bottom flange; then bent into position and welded with struts on either side of the cut web. This technique is intended for use where a higher ceiling without exposed trusses is desired.

The R. C. Mahon Co.
Detroit, Mich.



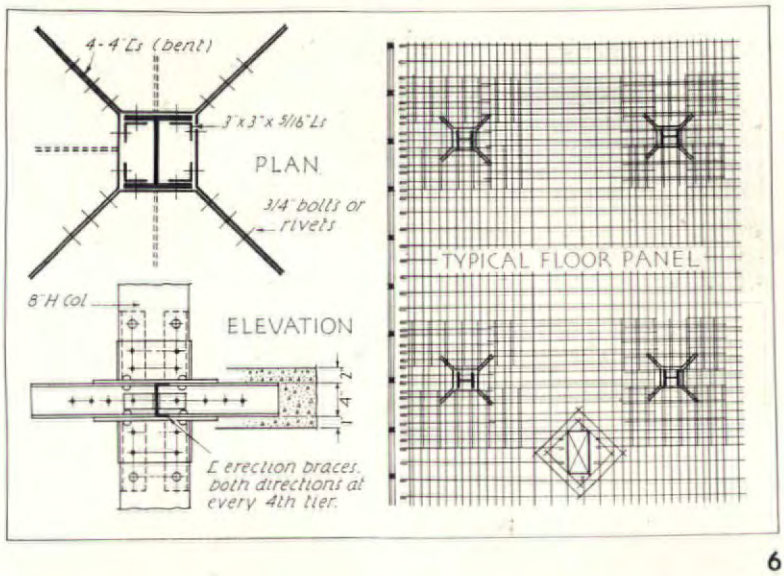
5

6. EQUI-DEPTH SYSTEM

Designed to obtain a reenforced concrete floor of uniform thickness combined with columns of reenforced concrete or structural steel. Floor slab is supported by special column heads consisting of heavy rolled structural steel channels which radiate from column shafts, four to each column, entirely contained within the floor depth. For purposes of design, the floor plate is divided into four main column bands symmetrical in plan, about the column center lines. These bands are one-half as wide as the distance between column lines, and enclose and support a central area of floor slab equal to one-quarter of panel area.

Since the method of analysis is based upon the action of a rigid frame, the column heads, which become an integral part of the slab, are rigidly connected to the column shafts. For this reason it is important to consider unequal loading of adjacent panels as well as to guard particularly against unequal settlement of foundations.

Developed by George E. Strehan, Consulting Engineer
33 West 42nd St., New York, N. Y.

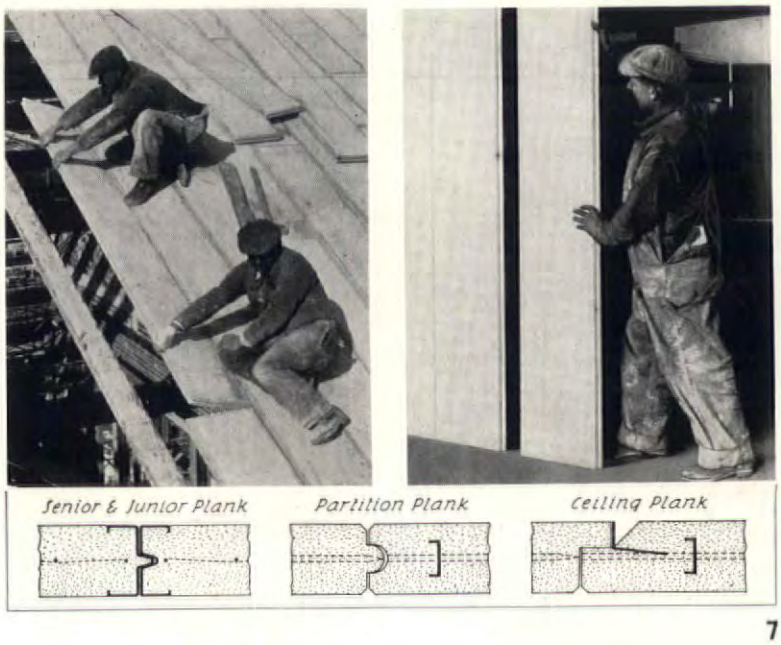


6

7. GYPSUM PLANK

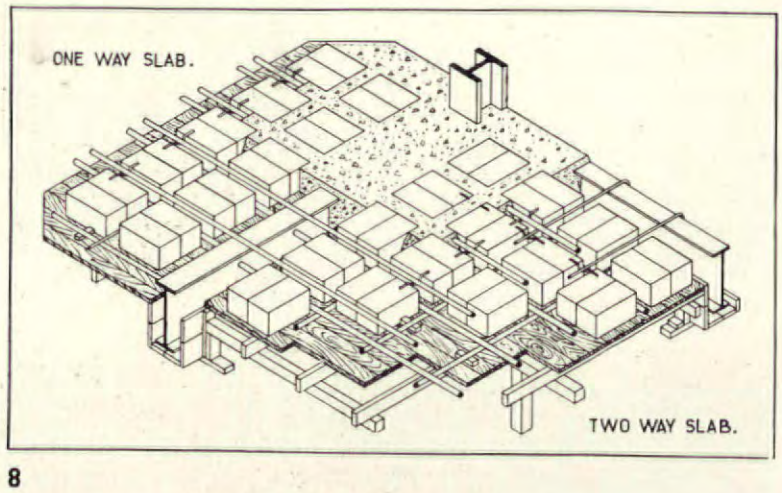
Precast slabs of extra dense gypsum. Available in five types, suitable for a wide variety of uses. Similar to wood lumber in form, use and adaptability, but having high fire-resistance and durability. All types are manufactured in standard sizes, 2 in. thick. Senior and Junior Plank for floors on spans up to 5 ft., and roofs on spans up to 7 ft., are bound with steel, tongued and grooved like wood lumber. Acoustical Plank for roofs is the same, but is filled on the underside with 1 in. of a sound-absorptive medium. Partition and Ceiling Plank are similar, except that no metal is exposed, and the units are provided with steel dowels which integrally lock them together. See adv. page 1.

Structural Gypsum Corporation
30 Rockefeller Plaza, New York, N. Y.



7

FLOORS

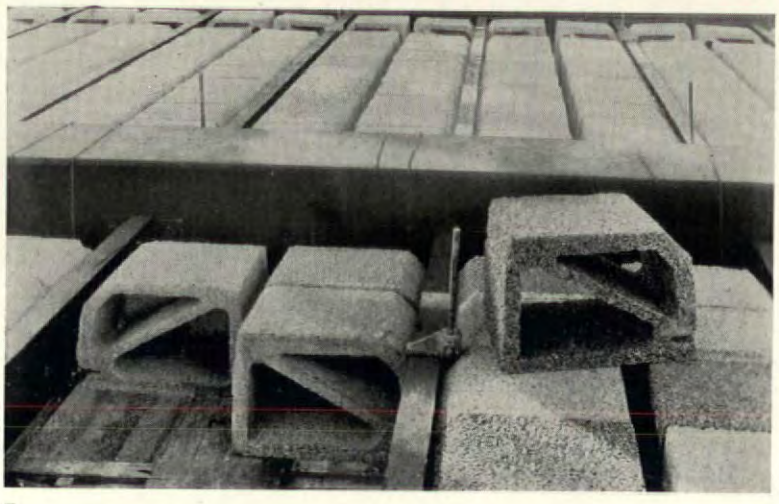


8

8. HOLLOW BLOCK

May be applied in two forms, "One-way Slab" or "Two-way Slab." Cement, sand and slag blocks made under pressure, tested for 2,000 lbs. per sq. in. compression. Laid in pairs with parallel joints in the case of the "One-way Slab," or with alternate pairs at right angles in the "Two-way" system. Each pair measures 16 x 16 in., surrounded by 4 in. wide concrete ribs, 20 in. o.c. in both directions, obtaining symmetrical sections. Reenforcing bars are placed in the ribs, and the blocks may be used as plastering surface without lath or other treatment. Units also permit flexibility of panel shapes and installation of mechanical work. Erection by masonry and concrete workers. Trade name, "Slagblok."

Republic Fireproofing Co., Inc.
31 Union Sq., New York, N. Y.

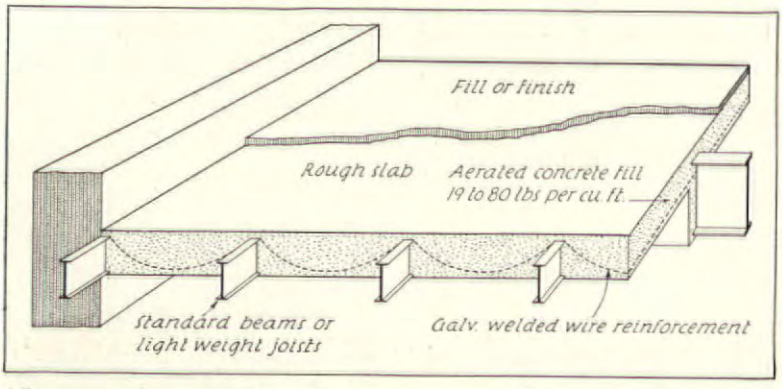


9

9. PRECAST CONCRETE FLOOR

Light-weight cinder concrete arch blocks supported by light beams 30 in. o.c., to provide a light fireproof floor with a flat ceiling. Standard span 30 in., but for larger spans there are various key blocks which may be placed between the arch blocks.

Porete Manufacturing Co.
North Arlington, N. J.



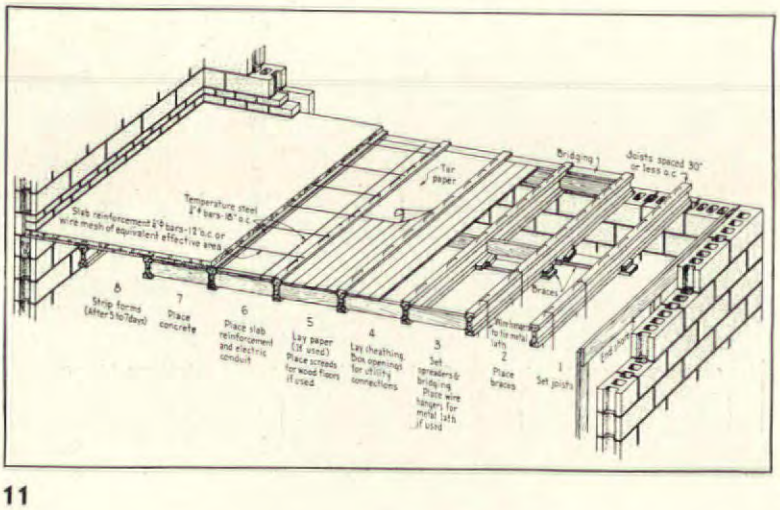
10

10. AERATED CONCRETE FLOORS

Floor system of standard light-weight beams or joists encased in concrete made with aerating foam which introduces small air bubbles into the concrete, reducing its weight. May be mixed to any desired weight for other purposes, such as insulation, roof- and floor-fill. Cast on the job and said to be uniform. This light-weight fill is not intended to hold nails. A special mixture is provided for that purpose.

Porete Manufacturing Co.
North Arlington, N. J.

The Aerocrete Corp. of America
Rockefeller Center, New York, N. Y.



11

11. PRECAST CONCRETE JOIST

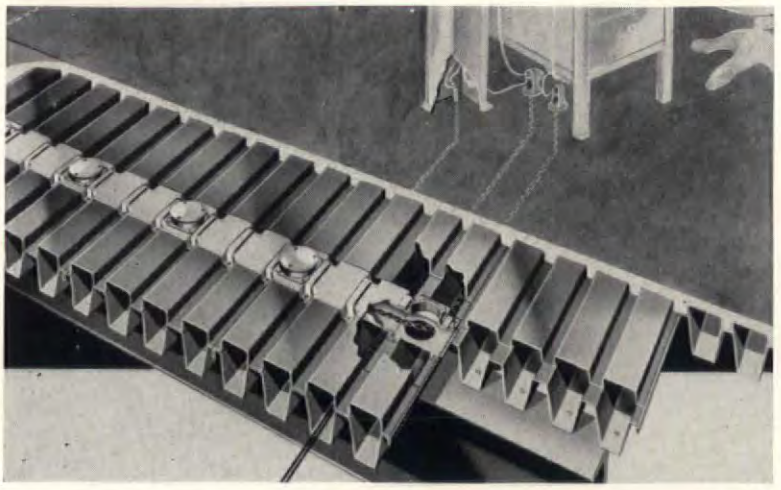
Designed to provide low cost concrete floor construction for light loads, with maximum fire safety. Maximum unsupported span may vary from 18 to 25 ft. depending upon size of joists used and their spacing, which is 24 to 36 in. o.c.

Portland Cement Ass
33 West Grand Ave., Chicago, I

12. CELLULAR STEEL BEAM FLOOR

Prefabricated units of four cells each, 24 in. wide and up to 24 ft. in length. Designed to provide a light-weight, fire-safe floor that will also act as a self-contained electrical duct system. Protected against corrosion by baked-on asphaltic finish, and acts as a working floor for other trades as soon as laid. Trades involved in its installation are structural iron workers and electricians.

H. H. Robertson Co.
Grant Building, Pittsburgh, Pa.

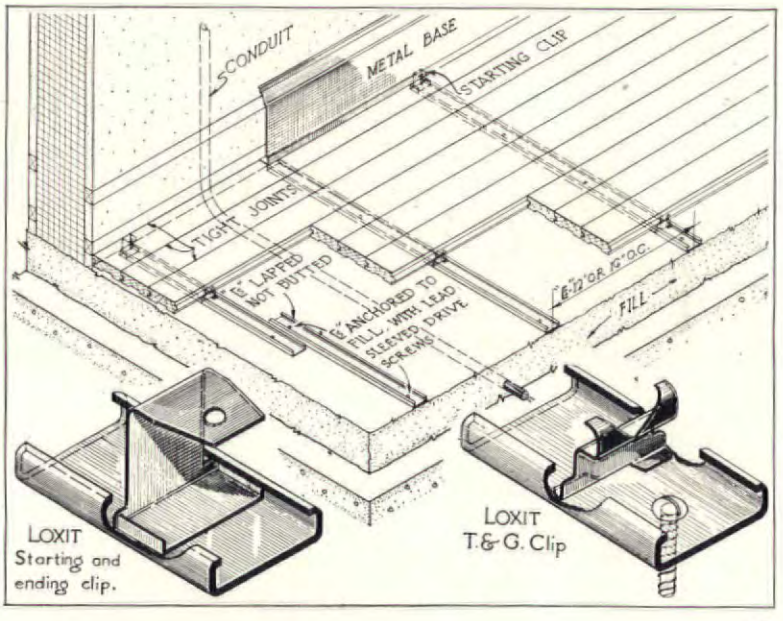


12

13. NAILLESS WOOD FLOOR

Finish floor system designed to eliminate nailing, wood sleepers, mastic and gaping due to shrinkage or expansion. It consists of metal sleeper channels fastened to the sub-floor and metal clips seated in the channels to draw the floor boards together. Known as "Loxit" and applicable over any type of sub-floor or insulation.

Knapp Bros. Mfg. Co.
605 West Washington Blvd., Chicago, Ill.



13

14. ABATTOIR FLOOR BRICK

Non-skid floor brick, designed for abattoirs, dairies and other food product plants. Highly vitreous, and is claimed by the makers to prevent bacterial growth, as it will not absorb acids or impurities. Manufacturer's tests show absorption uniformly under ½ per cent. Available smooth, or with diamond pattern tread, in the standard size of 8 x 4 x 1⅜ in., brick-red in color. Laid with as small a joint as possible, usually about ⅛ in., by tile setters and bricklayers.

Hanley Co., Inc.
101 Park Ave., New York, N. Y.

15. CONCRETE FLOOR TOPPING

Specially manufactured graded aggregate and cement. Said to produce a finished floor harder than corundum, which will outwear concrete, tile or paving brick. The makers report that it can be laid over large areas without joints and that it is slip-, water-, oil-, grease- and alkali-proof. Known as "Duromit," it is installed under the direction of the distributor, usually laid ¼ in. thick.

The American Fluresit Co.
27 East Water St., Cincinnati, Ohio

16. TERRAZZO LINOLEUM

An inlaid linoleum floor covering which resembles terrazzo and is intended for use where a more resilient, less costly floor finish is desired. Available in several colors and contains inlays simulating the brass strips usually found in real terrazzo.

Sloane Blabon Corp.
577 7th Ave., New York, N. Y.

16

17

17. SYNTHETIC STONE

"Rostone" offers a range of permanent colors with characteristics of natural building stone. Made of pulverized shale, a small amount of alkaline earth and a large percentage of quarry waste, to which are added the mineral colors. These materials then are molded in steel forms under 2,500 lbs. per sq. in. pressure and "cooked." Small, even grain, but no lamination, and crushing strength 8,000 lbs. sq. in. Moisture absorption about 8 per cent, while weight is 130 lbs. per cu. ft. May be applied in accordance with the "Rostone and Steel" system of construction (light steel channels braced in pairs and covered with "Rostone" against insulating boards).

Rostone, Inc.
Lafayette, Ind.

19

18. COLORED LIMESTONE

Dense, durable limestone with natural colors in mottled effects ranging from siennas through yellows and grays to purples. Intended for use wherever an informal, colorful effect is wanted without sacrificing natural stone textures. Has low porosity and absorption, and the same characteristics in regard to strength as ordinary limestone. Known as "Sunset Stone," available for veneer work in random lengths and desired height with thicknesses of 4 in., 6 in., 8 in. and 10 in. Installed by masons and marble setters.

Burlington Quarries Corp.
Burlington, Wis.

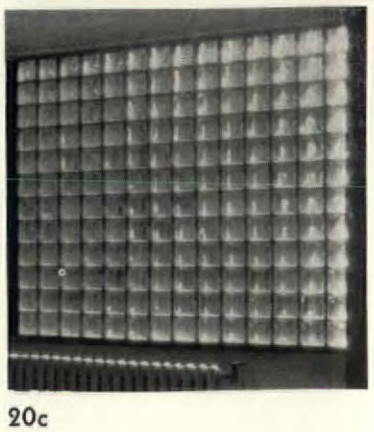
19. ASHLAR CONCRETE MASONRY

Intended to provide a form of wall construction and finish whose consistency may be predetermined. May be used for both exterior and interior walls and is available in many sizes for random effects. Compressive strength is 700 lbs. per sq. in. and it weighs about 90 lbs. per cu. ft. in the heavy weight, and about 55 lbs. per cu. ft. in the light weight. Available in 4 in. as well as the usual 8 in. thickness. Installed by the masonry trade. See adv. page 59.

Portland Cement Association
33 West Grand Ave., Chicago, Ill.

20a

20b



20c

20. GLASS BRICK

Two general types: solid and vacuum, clear or colored. Many patterns and lighting effects may be obtained by using glass bricks as translucent curtain walls, by painting them on one or more sides, or by using them as a wall finish against a colored surface. Laid up in mortar as ordinary masonry. The vacuum type is claimed to have a high degree of insulating value. See adv. page 7.

20a. Owens Illinois Glass Co.
Toledo, Ohio

20b. Corning Glass Company
Corning, N. Y.

20c. Structural Glass Corp.
101 Park Ave., New York, N. Y.

The Vitrolite Company
208 W. Wash. St., Chicago, Ill.

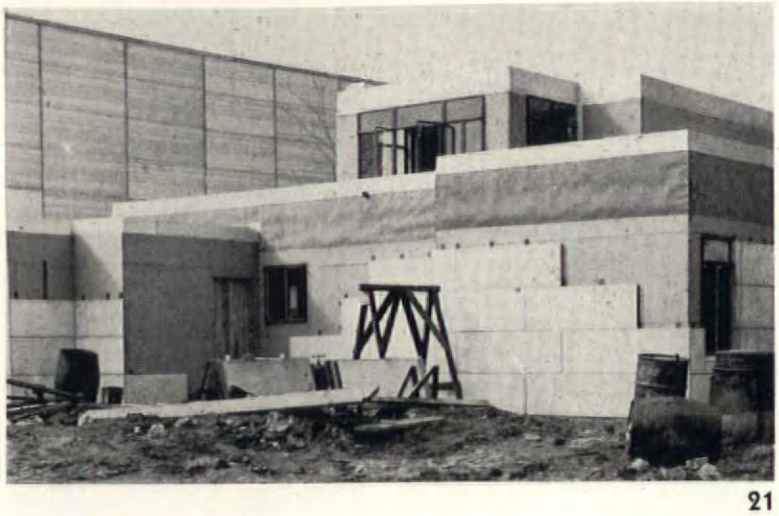
21. METALLIZED MASONRY

A light-weight metallized masonry unit available in three forms, "Glasiron Macotta," "Metallized Macotta," and "Sheet Metal Macotta," for use as an exterior or interior wall finish of high durability. "Glasiron Macotta" is porcelain enamel fused on steel with a backing of Haydite, a light-weight concrete, and can be obtained in a large range of colors and sizes. "Metallized Macotta" is Haydite with a spray coating of any commercial metal or metal alloy. The "Metallized Macotta" unit is protected against shrinkage by drying before the metal is applied and by a waterproofing compound on the unmetallized surfaces. "Sheet Metal Macotta" is Haydite covered on the exposed surface with any sheet metal anchored at the edges. This type is used particularly for wall copings and spandrels.

Weight of the units is approximately 100 lbs. per cu. ft. and they are usually set with a 3/16 in. joint, raked back 3/4 in., and pointed with a mastic cement.

Made by Maul Macotta Corp.
1640 East Hancock Ave., Detroit, Mich.

Sold by Fredenburg & Lounsbury
101 Park Ave., New York, N. Y.

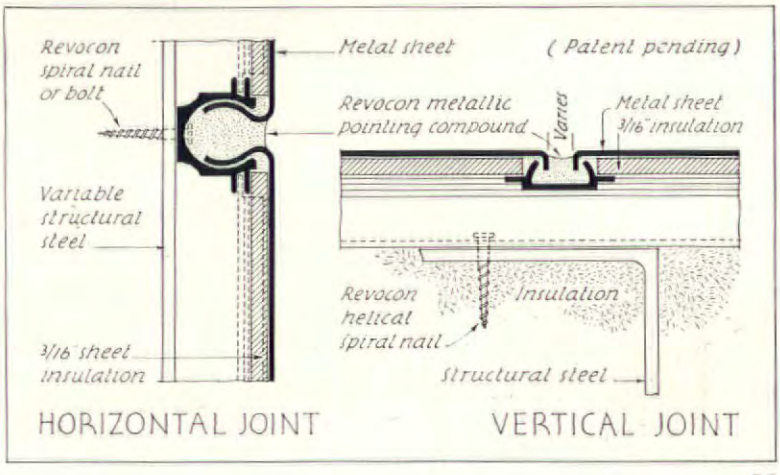


21

22. METAL PANEL

Designed to provide a fabricated roof and exterior wall covering. Extruded aluminum alloy sections secured to the structural frame, and preformed sheet-metal panels with provision for glass substitution. Can be used with porcelain enamel, copper, aluminum or stainless steel panels.

Architectural Metals Corp.
Cleveland, Ohio



22

23. TERRA COTTA

Additions to terra cotta products include an ashlar lining for swimming pools which may also be used as an ordinary veneer. Available in 1 ft. 4¼ in. x 8 in. sizes and a range of over 100 colors. The makers claim that warping is prevented by their process of furring the block and splitting it along prescored grooves, then grinding for narrow joints. There is also a device to prevent the seepage of water through the vertical joints of protruding courses. 23abc

Federal Seaboard Terra Cotta Corp.
10 East 40th St., New York, N. Y.

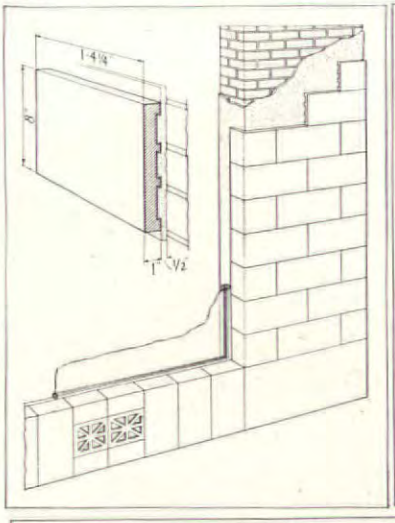
A line of large wall units, up to 18 x 36 in. a wide range of colors and finishes. 23b

Atlantic Terra Cotta Co.
19 West 44th St., New York, N. Y.

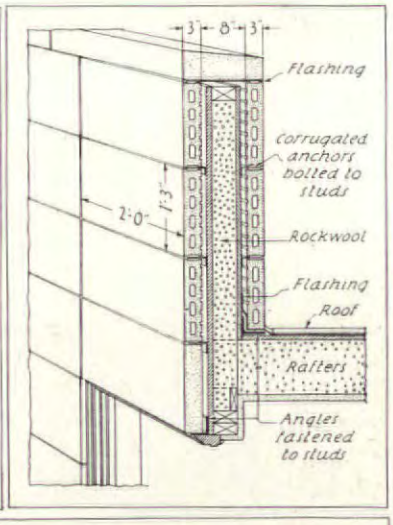
A line of wall units made by being forced through dies. Applicable to walls and corriors of public buildings.

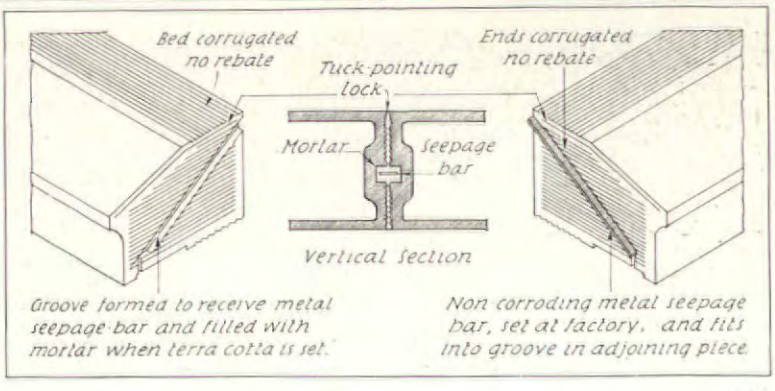
Northwestern Terra Cotta Co.
Chicago, Ill.

23a



23b





23c

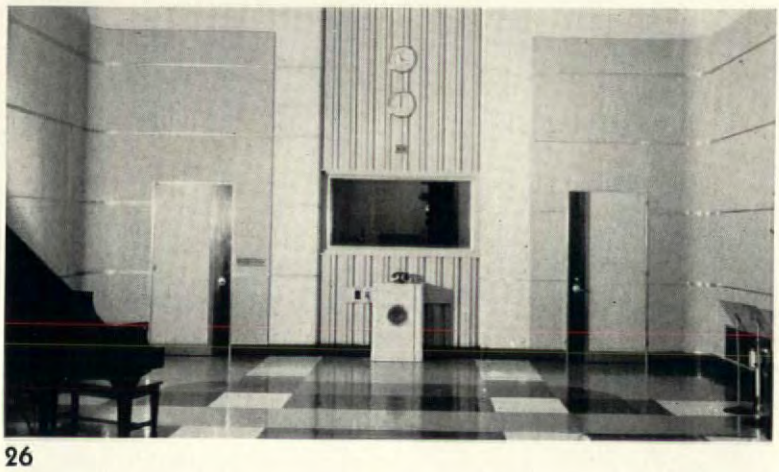
25

25

24. SYNTHETIC RESIN PLASTICS

Bakelite. Phenol resinoid plastic material, familiar in many applications and continuing to find new architectural uses. Available in a large range of colors, in molded or laminated form for wall finish, and other decorative and utilitarian purposes. It is fire-resisting, waterproof, antiseptic, and according to the makers, does not warp, shrink or swell.

Bakelite Corp.
247 Park Ave., New York, N. Y.

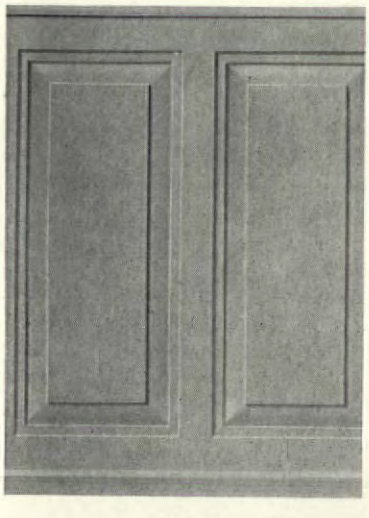


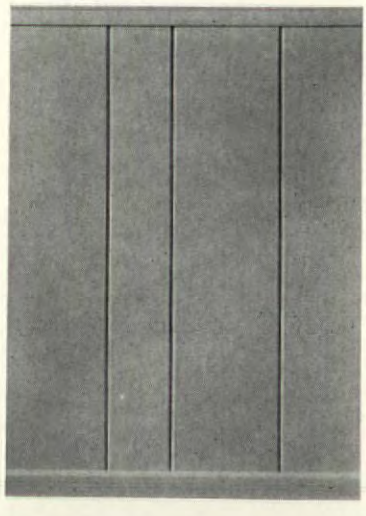
26

25. MICARTA

A wall covering for interior and exterior use, this phenol resinoid, laminated material is adaptable to many other uses, especially where smoothness of finish and easy washability are desired. Available in large sheets for ease of application and in wide range of colors and patterns. Further decorative effects may be obtained by the used of dyed aluminum inlays.

Westinghouse Electric & Mfg. Co. (Micarta Division)
East Pittsburgh, Pa.

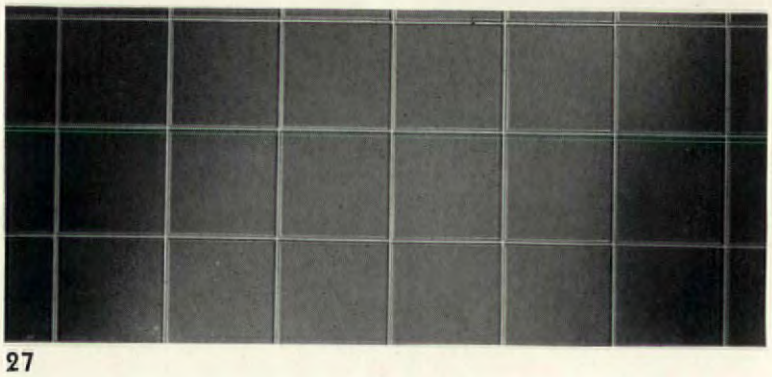




26. FORMICA

Phenol resinoid finish material which is available in a variety of sizes and thicknesses and a range of colors. It may be obtained in several patterns, marble effects and plain tones for interior and exterior uses. See adv. page 62.

Formica Insulation Co
4614 Spring Grove Ave., Cincinnati, Ohi



27

27. WALL BOARDS

Decorative insulating boards, includin bevel plank, ashlar strips, wainscotin panels, decorative board tile and boar moldings. Natural color, buff. Also asbesto wainscoting sheets in tile, marble and plai patterns with special "baked on" finish Another asbestos board, "Flexboard," fo outdoor and indoor use is furnished i several thicknesses, 48 x 96 in. A hard boar for paneling, partitions, etc., which need little or no surface treatment, and an extr hard board are also available.

Johns-Manville, I
22 East 40th St., New York, N.

28. PARTITIONS

Office partitions of steel studs on both sides of which are secured transite sections. Designed for simplicity of erection, adaptability, and ease of relocation. They are fireproof, and are designed by the makers to reduce inter-office noise. For greater insulation the space between the studs may be filled with rock wool. A full descriptive article in THE ARCHITECTURAL FORUM, October, 1933.

Johns-Manville, Inc.
22 East 40th St., New York, N. Y.

29. FOLDING PARTITIONS

Designed for application where flexibility of space is desired. Constructed without the use of bolts, hinges or visible hardware. When folded, the last section acts as a closure for the recess, which may be locked with one key shuttle or communicating doors may be placed anywhere in the wall. A spring jamb is used to keep the joints in alignment and present the appearance of a permanent wall. Available also as wardrobe-blackboards for schools.

American Car & Foundry Co.
30 Church St., New York, N. Y.

30. MOVABLE STEEL PARTITIONS

Three inches thick, flush type, insulated. Designed for subdivision of offices with movable partitions having soundproofing powers of permanent construction. Available in required heights and desired finish.

Snead & Co.
Jersey City, N. J.

31. DISPLAY METAL

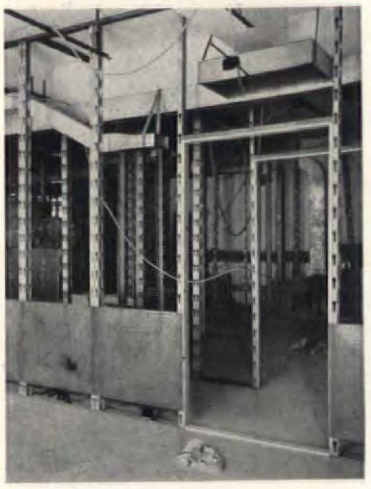
"Chromflex," a sheet metal offered as an aid for brighter displays, in 36 x 84 in. sheets, with thicknesses ranging from .01 in. to .032 in. The patterns may be flat, fluted, crimped or striped, in polished or satin finishes. It may be mounted on plywood, angles and moldings, and is claimed by the makers not to tarnish under varying atmospheric conditions. Not recommended for exterior use. Another material, known as "Chrom Copper," is available from the same makers, for exterior finish.

Apollo Metal Works
La Salle, Ill.

32. WALL BOARDS

Insulating boards now available treated by the "Ferox Process" (treating the fibers before formation with a chemical compound), rendering the products resistant to termites and other cellulose-destroying organisms. Also furnished encased in moisture- and vaporproof membrane for severe conditions of humidity. New line includes boards for roof insulation, for low temperature insulation and for protection of membrane bituminous waterproofing.

The Celotex Company
919 North Michigan Ave., Chicago, Ill.



28

33. WALL BOARDS

Available in several forms as bevel-lap, tile, plank, moldings and wainscoting. Also boards for roof insulation and insulating lath. Furnished in a range of standard colors, sizes and patterns for various uses. In the ½ in. thickness weight averages .75 lb. per sq. ft., tensile strength is 200 lbs. per sq. in., test thermal conductivity is .324 b.t.u.'s per sq. ft. per hour per degree. Special treatment for fire-resistance may be obtained if desired. "Nu-Wood."

Wood Conversion Co.
808 First National Bank Bldg., St. Paul, Minn.

34. WALL BOARDS

An all wood board, known as "Temwood," available in a range of sizes and intended for interior paneling and general utility purposes. Where a specially hard board is required, as for concrete forms, "Tempered Temwood" is provided. "Temwood Tile," another type, is indented in 4 x 4 in. squares to imitate tile for bathrooms and kitchens. There is also "Temboard," a finishing board of the same material, and "Temboard De Luxe" with a special smooth finish. These will take any finish except plaster and plastic paint, but cannot be toe-nailed or sprung into place. The same company also manufactures "Temlok," an acoustical fiberboard. See adv. page 28.

Armstrong Cork & Insulation Co.
Lancaster, Pa.

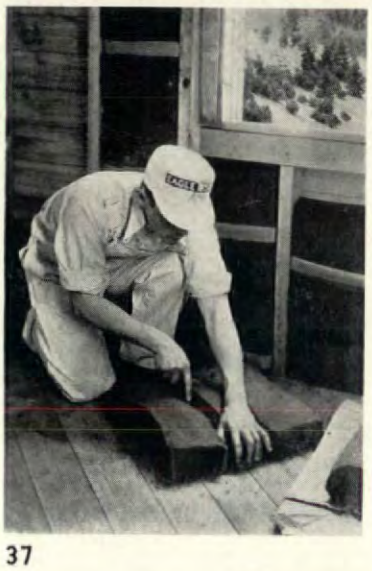
35. STEEL AND GLASS

Designed for office partitions, show windows, etc., 16-gauge steel grounds, 1⅛ x ⅜ in. with integral brackets to which the tubular purlins ¾ x ½ in. are attached. Glass wall units in three standard sizes, pebble finish and grooved on all four edges to receive mastic or steel sash putty. Available translucent or opaque in white, ivory and green, while the grounds and purlins may be obtained in a range of metal alloys.

Sealed Joint Products Co., Inc.
30 Rockefeller Plaza, New York, N. Y.

INSULATION

36



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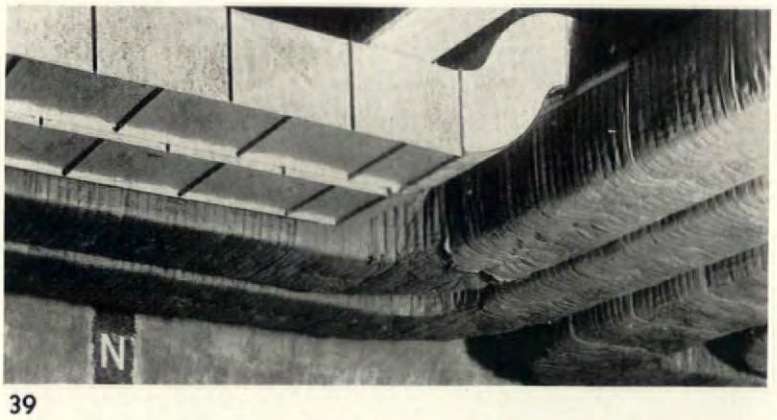

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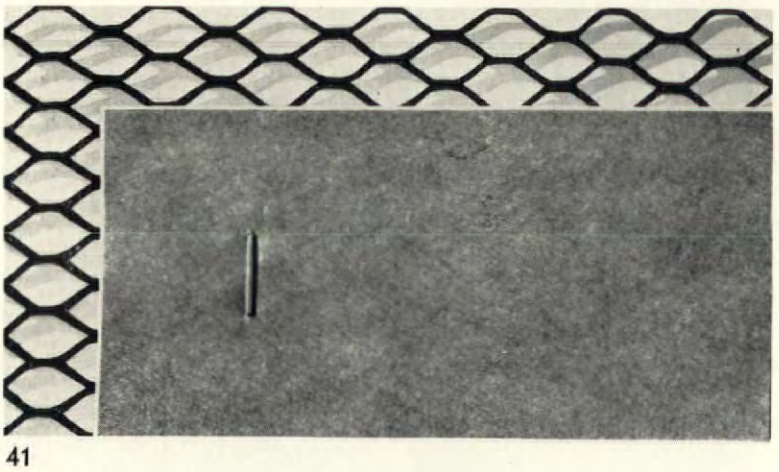


41

36. SHEET INSULATION

Kapok in sheet form, intended for use as insulation. Available in corrugated form for acoustical purposes, as well as in flat, aluminum-coated sheets. "Flameproof," it has been used extensively in automotive and aircraft sound correction.

Seaman Paper Co.
410 North Michigan Ave., Chicago, Ill.

37. MINERAL WOOL INSULATION

Mineral material (blast furnace slag) said to be fire-, vermin-, and rotproof as well as effective for insulation. It is produced in "bat" (pad) form, installed by hand in new construction, or, for existing structures, may be shredded and blown into wall. See adv. page 2.

The Eagle-Picher Lead Co.
Cincinnati, Ohio

Johns-Manville, Inc.
New York, N. Y.

38. ROCK WOOL INSULATION

Made from meta-silicate stone fibers, felted and bound to produce semirigid, spongy bat form. Tests show its conductivity to be .243 b.t.u's; fire-, water-, and verminproof. Trade name, "Sealal Bat."

General Insulating & Mfg. Co.
Alexandria, Ind.

39. QUILT INSULATION

Specially treated, non-inflammable pape combined with non-combustible "Zostera Marina" to form flexible insulation, "Ca bot's Quilt." Designed for the insulation o buildings against sound, heat and cold, and for insulation of ventilating ducts against sound and heat.

Samuel Cabot, In
141 Milk St., Boston, Mas

40. FIBERBOARD LATH

Insulating lath of wood fiberboard with burlap textured surface for plaster bond and ship-lapped joints. Each unit provide with three heavy gauge galvanized wir "loks" spaced between the studding t provide more rigid joint. Units measure 1 x 48 in., available in thicknesses of ½ in ¾ in. and 1 in.

The Insulite C
Builder's Exchange Bldg., Minneapolis, Min

41. METAL LATH AND INSULATION

System of wall and ceiling constructio combining the familiar metal lath with a insulating board, to which it is loose attached by means of clips, permitting th effect of back-plastering to be combine with that of a reenforced slab. Trade nam "Lathtex." May be used for suspende ceilings, ordinary ceilings or partitions, ar as sheathing in stucco work. Installed b plasterers and metal lathers. See ad page 42.

Penn Metal
Parkersburg, W.

42. ALUMINUM FOIL INSULATION

"Alfol," an aluminum foil developed for use as radiant heat insulation. Available in "crumpled" form or applied flat with air spacing between strips. Installed by carpenters.

Alfol Insulation Co., Inc.
Chrysler Building, New York, N. Y.

43. INSULATING PAPER & LATH

Designed to furnish radiant heat insulation for buildings; a polished metal foil cemented to Kraft paper. It is .0095 in. thick, and is found by the makers to be equal in insulating power to 20 in. of concrete, 12 in. of brick or ¾ in. of fiber board, and to be water-, corrosion-, and vermin-proof; installed by carpenters or roofers.

Aluminum foil mounted on "Ecod" fabric pierced with reenforcing metal lath for plaster and stucco. Reported by the makers to reflect 95 per cent radiated heat, applied with overlapping joints for wind and weatherproofing. See adv. page 39.

Reynolds Metals Co. Inc.
19 Rector St., New York, N. Y.

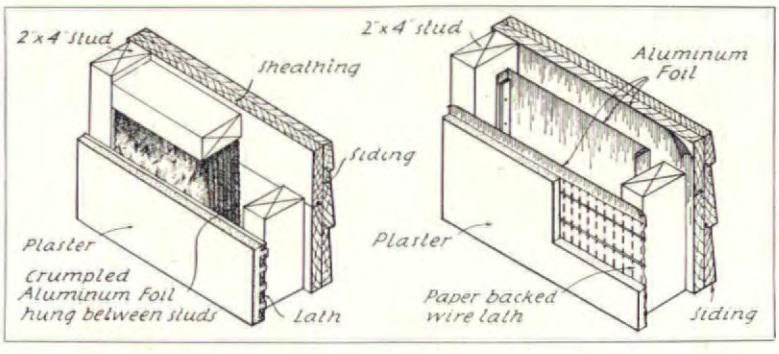
42

43

44. FOIL BUILDING PAPER

Reflecting insulation, of aluminum foil mounted on both sides of a reenforced building sheet. Makers claim that it is moisture proof also. Nailed in place to provide air spaces. Trade name, "Bri-Tex."

Creo-Dipt Co., Inc.
North Tonawanda, N. Y.



42, 43

45. SOUND AND HEAT INSULATION

Made of shredded timber and a binding emulsion of high temperature cement, to produce incombustible boards with sound absorption ranging from 50 to 85 per cent. The makers state that it may be cleaned and redecorated without impairing its efficiency, and that it offers high light reflection. Available in tile form, in a range of sizes for application to concrete, plaster, insulation or furring strips. Trade name, "Absorbex." See adv. page 19.

Thermax Corporation
Farmers Bank Building, Pittsburgh, Pa.

45a. FIBER INSULATION

A fireproof insulation made in boards or slabs, 48 to 64 in. long, in 1, 2 and 3 in. thicknesses. Heat conductivity ranges from .15 to .45 b.t.u.'s per hour, and the makers state that its use for partitions reduces sound transmission 49 per cent. Trade name, "Thermax." See adv. page 18.

Thermax Corporation
Farmers Bank Building, Pittsburgh, Pa.

BECAUSE of the constantly growing importance of air conditioning, the attention of architects has been directed more than ever to the consideration of the various types of insulation, their application and relative efficiencies. Heating and air conditioning equipment is designed to create desirable "weather" conditions within a building, while insulation is installed to maintain such conditions. By reducing the need for continually replacing heat and cold lost through the walls and roof, insulation effects savings in the fuel cost and the size of equipment.

Insulating materials fall into two general groups: those which are non-conductors of heat, and those which reflect radiant heat. The first group includes mineral or rock wools, in shredded, roll and "bat" form; quilts; wood fiber blankets and boards; cork and cork boards; and treated hair felt. In choosing from these, it is wise to consider their relative non-conductivity of heat, their fire-, vermin-, and moisture-resistance, their ease of application, durability and cost. While these types have been in common use for some time, they are constantly being perfected, and are provided in new forms adapted to special uses.

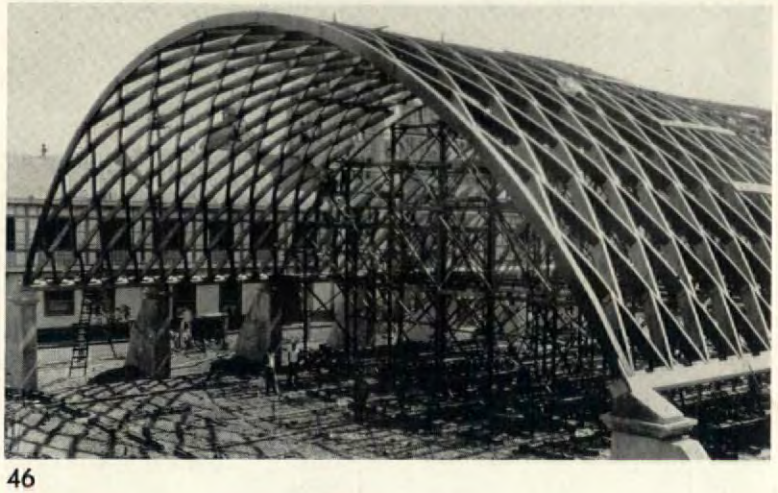
The second group, that which reflects heat, consists chiefly of aluminum foils, flat, crumpled, or mounted on building papers. An article discussing aluminum foil insulation may be found in THE ARCHITECTURAL FORUM, January, 1934.

46

46. ROOF FRAMING

A system of roof framing combining strength with the ability to span large areas. It consists of comparatively short steel members framed in a diamond pattern, and can be adapted to a variety of forms, such as groin vaults and segmental arches. The units come to the site ready for assembly from a movable scaffolding. The system may also be applied for timber members. Installation may be made by the manufacturers, or by local contractors under their direction.

Lamella Roof Syndicate, Inc.
45 West 45th St., New York, N. Y.



46

47. LAMINATED ARCHES

Glued-up laminations to permit the building up of large timbers in any curve desired, making it possible to span great areas with odd-shaped wooden arches, without the necessity of using curved segments. These arches take decorative moldings and carvings without difficulty, as well as decreasing the number of splices required.

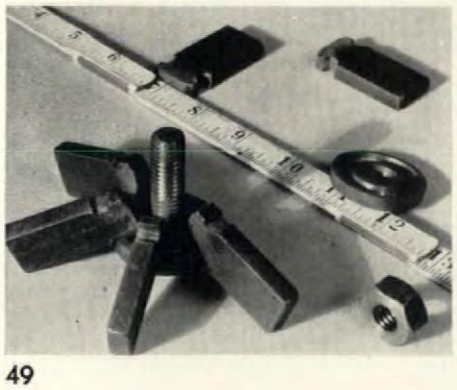
Roof Structures, Inc.
45 West 45th St., New York, N. Y.

48. NAILABLE ROOF SLABS

Precast roof slabs of "Nailcrete," an all-mineral nailable material, for slate, tile or metal roofing. Made to specified sizes in thicknesses of 2 in., 3 in. or 4 in. for various spans, and set in a special nailing concrete mixture.

Heat conductivity per 1 in. thickness is 3.25 b.t.u.'s; weight, 90 lbs. per cu. ft.

The Nailcrete Corporation
105 West 40th St., New York, N. Y.



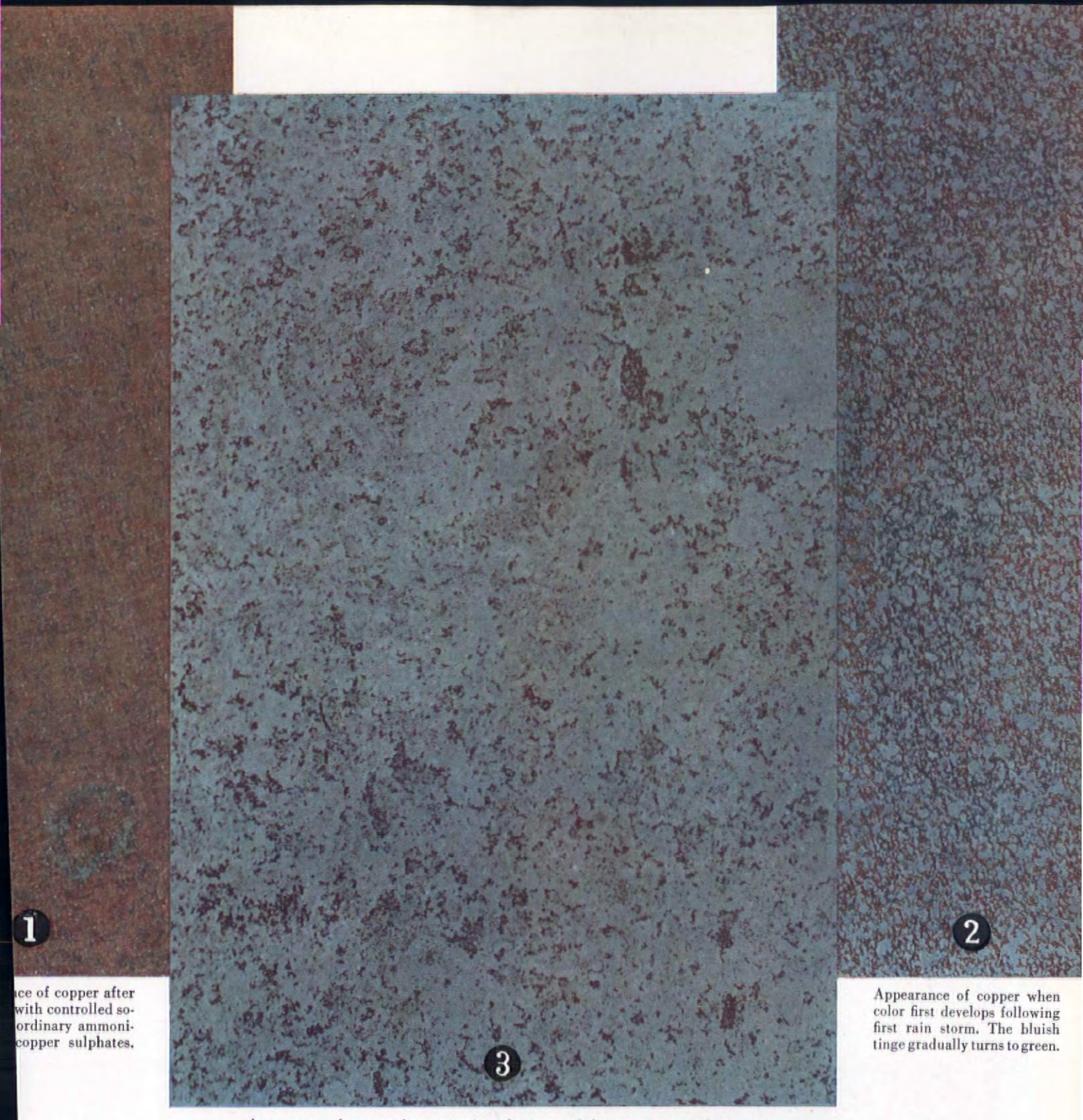
49

49. CONCRETE ROOF SYSTEM

This system of dome or vault construction permits the spanning of large areas with thin concrete shells. It consists of a self-supporting network of reenforcing bars about 3½ ft. long set up to form triangles, and connected at their intersections with a bolt and a special cup-shaped washer. This network is then covered with wire mesh and sprayed through a cement gun to the desired thickness, which may be as low as 2½ in. Joint details shown in cuts at left.

Insulation and roofing materials are then applied over the shell. Movable concrete forms are set up from the moving scaffolding used for erecting the network. Known as Dywidag System.

Roberts & Schaefer Co
Wrigley Building, Chicago, Il



ce of copper after with controlled so- ordinary ammoni- copper sulphates.

Appearance of copper when color first develops following first rain storm. The bluish tinge gradually turns to green.

Appearance of copper after approximately six months' exposure to weathering.

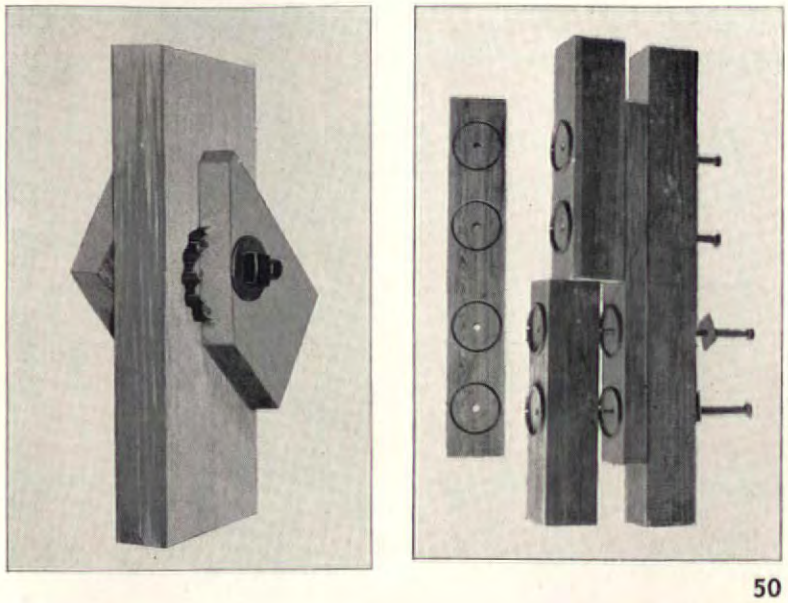
A PROCESS FOR THE CONTROL AND ACCELERATION OF THE PATINA ON COPPER

The Copper & Brass Research Association, New York, N. Y., has made available for architects a method of rapidly developing patina on copper. This process involves a simple liquid-spray technique and is available for all types of exposed copper surfaces, including roofs, spandrels and cornices. It may be, and usually is, applied after installation.

50. TIMBER CONNECTORS

Metal rings to avoid cutting and fitting in timber framing, and to develop greater shear resistance than is possible with bolts alone. Two types, known as "Split Ring" and "Alligator." The latter is provided with teeth which grip the timber. Both types are sunk halfway into the adjacent faces of the timbers which are then drawn together by bolts through the centers of the rings. Full description in the bulletin on Timber Construction issued by the U. S. Department of Commerce.

Timber Engineering Co.
1337 Connecticut Ave., Washington, D. C.



50

51. SHEET COPPER ROOFING

Made by electro-deposition, weighing 2 oz. per ft., furnished in rolls 30 in. wide. Designed for use with alternate layers of asphalt for durable, low-cost, built-up roofing.

The American Brass Co.
Waterbury, Conn.

51

52. INTERLOCKING WALL FLASHING

For flashing through masonry walls without breaking the bond, the makers of "Thru-Wall" flashing offer this pleated sheet copper whose form permits the strength of the bond to be retained.

The Cheney Co.
Winchester, Mass.

53. BUILDING PAPER

Reenforced with non-elastic sisal fibers embedded in asphalt and combined with two heavy Kraft covers to form an air- and moisture-proof sheet. Also available with a treatment to resist dry rot, fungus and mildew. The same makers also offer a creped Kraft, asphalt and sisal paper coated with an electro-deposit copper sheet for use as flashing and spandrel waterproofing.

The Sisalkraft Co.
205 West Wacker Drive, Chicago, Ill.

54. REENFORCED BRICK

For roofs, terraces, structural walls and floors. Illustration shows brick and reinforcing being installed.

Brick Manufacturers Assn. of America
Guarantee Title Bldg., Cleveland, Ohio

54

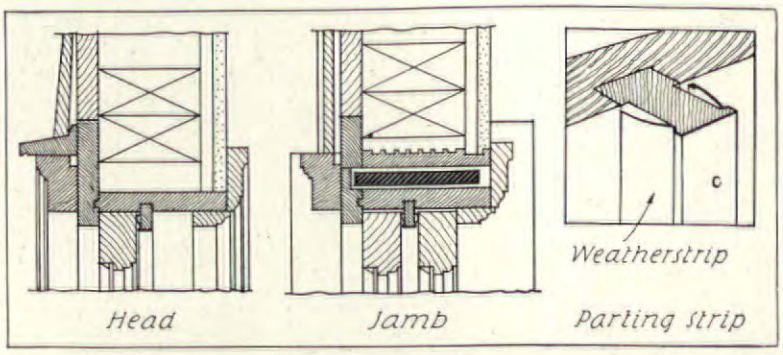
55. SHEET METAL ROOFING

Interlocking seams designed not to pull out in high winds. Known as "Loxseam," the sheets are re-squared before forming for accurate fitting. Special fixtures for ridges, gables, walls, etc., are available.

Standing capped seamed corrugated roofing of painted or galvanized steel, 16- to 28-gauge, in lengths of 5 to 12 ft. to be used on same spacing as standard corrugated, and require no riveting.

Edwards Manufacturing Co.
Cincinnati, Ohio

WINDOWS



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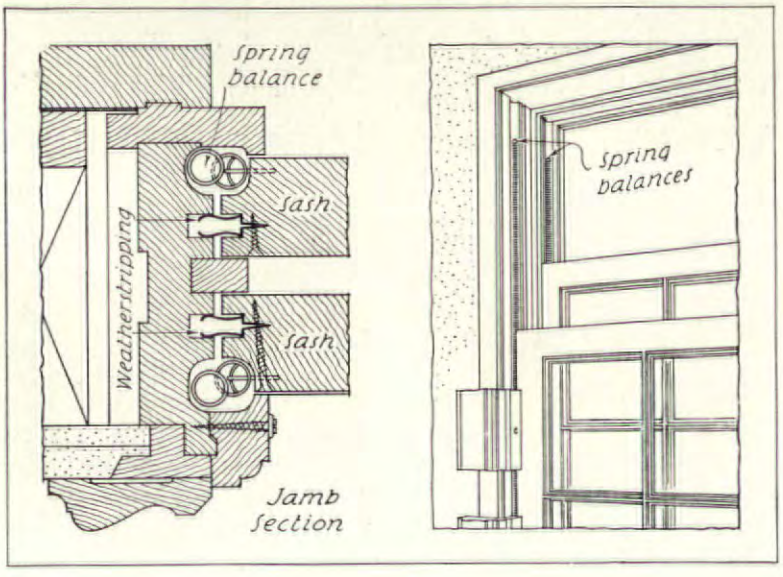

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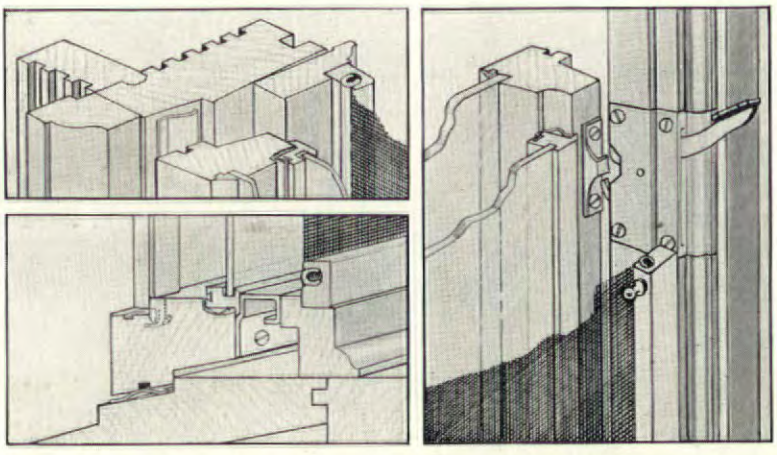

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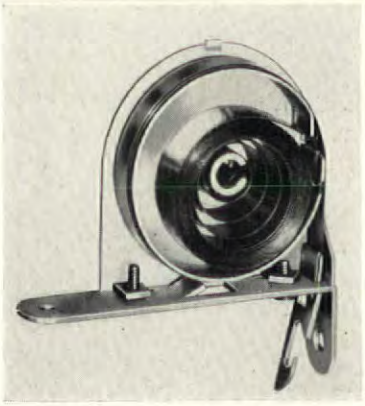

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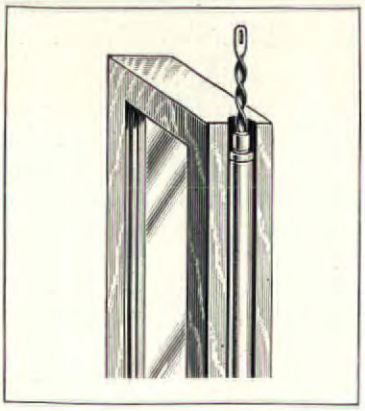

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56. DOUBLE HUNG WINDOW

Furnished as a complete unit with mullions as narrow as 2¾ in. in width and with inside casing 2¼ in. Weatherstripped at sides, head, check and bottom rail, and counter-balanced with weights operating on pulleys designed to permit the use of only one weight for both upper and lower sash on each side. Screens and storm sash are fitted and ready to install. Trade name "Narroline."

Andersen Frame Corp.
Bayport, Minn.

57. WINDOW UNIT

Known as "Silentite," designed to reduce frame and window air leakage by metal-to-metal type weatherstrip. The frame is built of 1$\frac{1}{16}$ in. jamb material, and spring suspension replaces pulleys and weights. Sash, screen and storm-sash are prefitted at factory and mullions may be as narrow as 2⅛ in.

Curtis Companies, Inc.
Clinton, Iowa

58. PREFIT WINDOWS

Furnished in two parts, an outer frame for installation while superstructure is being erected, and factory-fitted inner frame complete with sash and spring balances, to be installed after plastering. Trade name, "Unipak."

Farley & Loetscher Mfg. Co.
Dubuque, Iowa

59. CASEMENT UNIT

Combines wood construction with narrow metal lines. Has bronze weatherstrips, removable double glazing and inside aluminum screen. Unit comes ready to install with all parts completely prefitted. Frame primed with aluminum paint.

Andersen Frame Corp
Bayport, Minn

60. SASH BALANCE

Hardware designed to eliminate frame boxes, sash weights, cord and pulleys. Operates by spring action, and four standard mortise cuts cover the range of double hung sash weighing from 5 to 100 lbs. Unit may be placed in head or jamb without interfering with the weatherstripping. Occupies a mortise ¾ x 3½ x 3 in., and is quickly and easily installed.

Caldwell Manufacturing C
Rochester, N.

61. SASH BALANCE

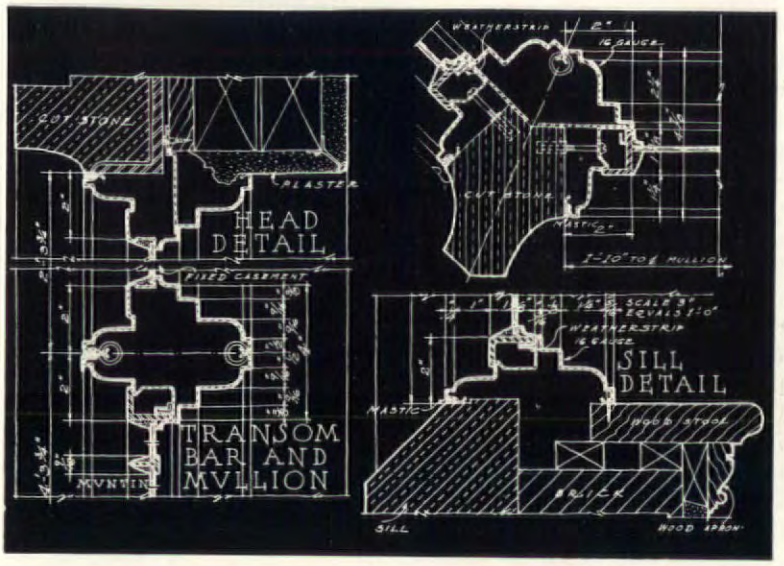
Eliminates weight boxes, pulleys and weights. Operates in a groove cut along side rails of the sash and permits the use of narrow mullions and trim.

Unique Window Balance Co
296 East 134th St., New York, N.

62. STEEL CASEMENT

The frame is constructed to act as trim for the opening, while molded steel mullions eliminate the necessity for wood frames where relief is desired. There is also provision for a screen or insulating sash as well as a groove for metal bound weatherstripping.

Imperial Steel Products Corp.
1647 Fulton St., Chicago, Ill.



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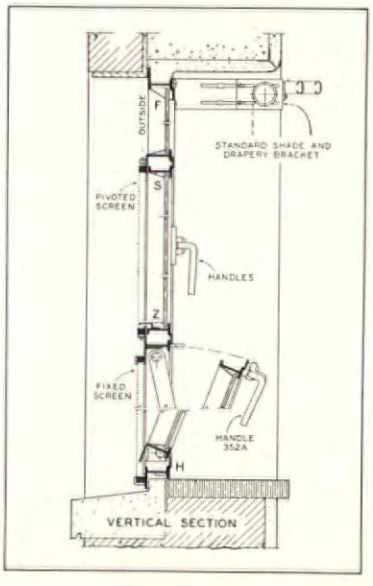
63. INSWINGING CASEMENT

Designed to reduce the possibility of persons accidentally falling out of windows, by providing a sill higher than a window sill and outside screen or storm sash. May be completely washed from the inside. Weatherstripping consists of spring bronze attached in the factory.

The William Bayley Co.
Springfield, Ohio



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63

64. REVOLVING DOOR

An improved revolving door with independently supported wings which eliminate braces or chains. It is equipped with a safety release allowing the wings to collapse in case of panic or blocking. There is also a speed governor which can be adjusted to control spinning.

Van Kannel Revolving Door Co.
101 Park Ave., New York, N. Y.

65. WEATHERPROOF SADDLE

Designed for out-swinging doors and French windows, this all-metal saddle is furnished in varying widths up to 6 in., adaptable for screen doors, and allowing a snug clearance of ½ in.

Accurate Metal Weather Strip Co.
216 East 26th St., New York, N. Y.

66. BALANCED DOOR

An entrance door which is designed to open easily against wind pressure or suction. This door is pivoted at the top and bottom several inches away from the jamb, so that its edges swing in opposite directions, balancing the air pressure. It is made to fit any specified dimensions. The makers claim that its easy operation facilitates the handling of pedestrian traffic.

The Ellison Bronze Co., Inc.
Jamestown, N. Y.

66

PAINT AND FINISH

67. WALL BOARD PAINT

Non-aqueous, and containing no casein. May be thinned with turpentine or benzine, but is not a conventional oil paint. Oil or driers should not be added. Can be mixed with any colors "ground in oil," especially for insulating boards. When applied to the latter, it dries slowly. Preliminary shellac or sizing are not considered necessary by the manufacturer. Average coverage, 200 sq. ft. per gallon for one coat on insulating boards. Two types are available, one for brush application, the other for spraying. Claimed not to soak into fibers of insulating board and not to destroy sound absorption qualities.

Mitchell-Rand Mfg. Co.
51 Murray St., New York, N. Y.

68. CASEIN PAINT

Casein paste paint made in eight colors and white, and intended particularly for use on newly plastered walls. According to the maker, the paint combines solidly with lime, quick drying, and requires only one coat ordinarily. Average coverage, 600 to 800 sq. ft. per gallon.

Paint Products Division, United States Gypsum Co.
300 West Adams St., Chicago, Ill.

69. WATER-OIL PAINT

Flat casein paint claimed by the makers to be the only type which adjusts itself to "hot spots," "dry-outs" and "damp spots." Made by combining water and oil or glycerine in emulsified form and may be applied to the usual range of surfaces. Known as "Plascote" and described as washable cold water paint.

Made-Rite Products Co.
5223 McKissock Ave., St. Louis, Mo.

70. INTERIOR PAINT

Lithopone casein paint for general interior use. Mixed with cold water as preparation for use, can be applied with a large calcimine brush and is claimed to dry within an hour. Usually no sizing and only one coat are necessary. To clean a wall surface covered with this paint, water and neutral soap are sufficient. The white has light reflective value averaging over 90 per cent. Mural-tone is not recommended by the manufacturer for use on surfaces where excessive contraction and expansion occur, such as rubberized or latexed surfaces, and those treated with asphaltum compounds.

The Muralo Co., Inc.
570 Richmond Terrace, Staten Island, N. Y.

71. PAINT FOR METAL

Intended for protection of metal surfaces. It is mined ore processed for use with linseed oil or spar varnish and is designed to form a coating resistant to alkalis, acids and abrasion. The manufacturer claims a high degree of elasticity under extreme temperature changes, and that only one coat is usually necessary. Average coverage, 600 sq. ft. per gallon.

L. Sonneborn Sons, Inc.
88 Lexington Ave., New York, N. Y.

72. LINOLEUM FOR WALLS

Reproductions of marble and walnut wood grains in a cheap, easily applied form, washable and sanitary. Also available as a tile, in the same range of colors and patterns. Produced in two weights, the lighter of which can be rounded at corners of 5/8 in. or greater radii.

Congoleum-Nairn, Inc.
Kearny, N. J.

73. PAINTING ON CONCRETE

This method consists of coating the surface of concrete with a solution of zinc sulphate to protect the oil colors from the cement lime. Colors are mixed in boiled oil and turpentine, applied through stencils, and when completely dry, glazed with raw umber and sienna in thinned oil. Final application is a spray coat of clear lacquer.

Portland Cement Assn.
33 West Grand Ave., Chicago, Ill.

74. PREFINISHED FLOOR

Prepared by heating wax to 250° and forcing it into the pores of the wood under high pressure. The makers claim that the resulting finish is permanent, needing only an occasional coat of wax. The flooring can be used over old floors as well as in new construction and is installed by carpenters. A special joint is provided to overcome variation due to uneven sub-floors.

Cromar Co.
Williamsport, Pa.

75. RUSTPROOFING PROCESS

Known as "Bonderizing," and intended to stop the spread of rust and alkali beneath paint or finish on metal products. Applied before the finish and acts as insulator, preventing the flow of small electrical currents, so that the alkali of corrosion does not migrate to electro-positive areas when the paint is pricked. Consists of a phosphate coating developed on the metal by chemical action as a minute crystalline structure to which fluid finish is more securely anchored than ordinarily. Applied by the makers.

Parker Rust-Proof Co.
Detroit, Mich.

76

76. FLEXIBLE WOOD VENEER

Designed for direct application to plastered walls. The makers claim that it will not warp, check, crack or buckle, and that it is flexible both with and against the grain. Applied with a special waterproof adhesive, by the manufacturers, or by paper hangers under their supervision.

Wallwood Corporation
1 Park Ave., New York, N. Y.

77. LINOLEUM WALL COVERING

Thin gauge for application directly on plaster walls. Will go around corners, and according to the makers, will not expand contract or crack while on walls. Washable and available in patterns to simulate pine tile and other materials. See adv. page 29

Armstrong Cork C
Lancaster, P

78. ALUMINUM WALL FINISH

"Alumilited" (a process of coloring which gives a durable finish to the surface of the metal) and applied to the wall so that no welds are visible and screws show only in the glazing strips. Available in a range of colors and sizes for various decorative and utilitarian uses.

Aluminum Co. of America
Pittsburgh, Pa.

78

79. PORCELAIN ENAMELS

Acid-resisting, stainless, and intended to be applied on steel for exteriors and interiors of homes and other types of buildings. It is fireproof, lightning- and verminproof and requires no maintenance. Available in a large range of colors and in sheet sizes up to 4 x 10 ft. Installation is made by sheet metal workers.

Ferro Enamel Corp.
4150 East 56th St., Cleveland, Ohio

80. PORCELAIN ON STEEL

A porcelain with large color range fused onto Armco steel at a temperature of 1,800° F. and guaranteed for ten years. The maximum size sheet that may be treated is 4 x 10 ft. Intended for interior or exterior facia, spandrels, friezes, copings, etc. May be attached to wood or angle iron furring by screws.

Porcelain Metal, Inc.
58 Sedgwick St., Brooklyn, N. Y.

81. STAINLESS STEEL

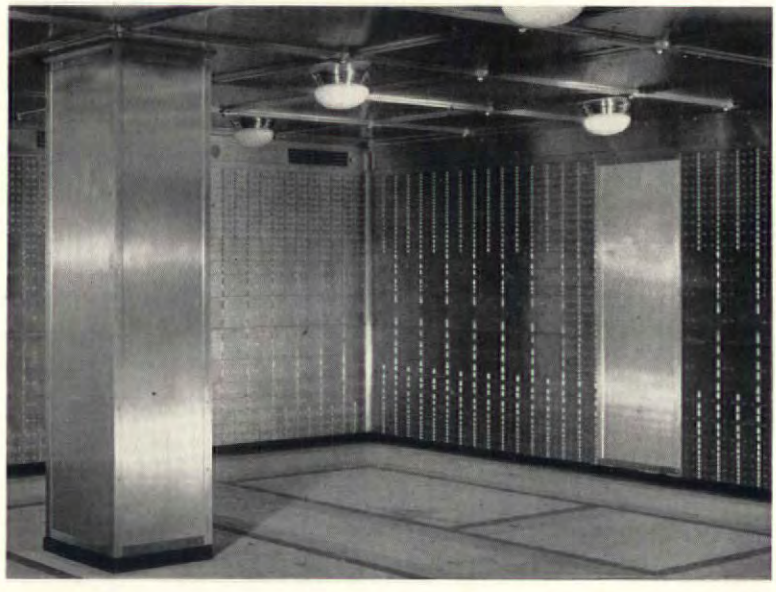
A material which is constantly finding new architectural uses, including application as a finish for walls and ceiling. It is corrosionproof, and does not require constant polishing to remain free from tarnish.

American Stainless Steel Co.
Commonwealth Building, Pittsburgh, Pa.

Allegheny Steel Co.
Brackenridge, Pa.

Republic Steel Co.
Youngstown, Ohio

United States Steel Corp.
Pittsburgh, Pa.



81

82. FLEXIBLE WOOD WALL COVERING

Known as "Flexwood," and designed to achieve the effect of cabinet woodwork at moderate cost. It consists of very thin wood veneer mounted on cloth and is applied in a manner similar to the hanging of wall paper. Bond is created by a special Flexwood cement to any smooth, dry, hard surface.

U. S. Plywood Co., Inc.
103 Park Ave., New York, N. Y.

83. GLASIRON WALL AND ROOF TILE

Designed to provide wall and metal roofing tiles with porcelain enamel finishes. Similar to Glasiron Macotta, but is without the Haydite backing. A large range of colors is available, and the tile is particularly intended for store fronts, gasoline stations, fair pavilions, and the like. It is installed by sheet metal roofers, tile setters and masons.

Wolverine Porcelain Enameling Co.
3350 Scotten Ave., Detroit, Mich.

82

84. LATH AND TILE SYSTEM

Designed for quick, simple tiling, especially in remodeling work. The makers state it can be applied without disturbing existing plaster, trim or plumbing. Can be used over any smooth nailing surface, and is provided with metal fingers into which the tiles are snapped after buttering. Tiles are 4¼ inches square, in a range of colors, either glaze or matt finish.

Transcontinental Tile Corp.
2107 Adams St., Indianapolis, Minn.

85. STEEL WALL TILE

Plywood board with machine-set galvanized clips over which the enameled steel tiles are pressed, being held in place by their converged edges. The joints are then filled with a special waterproof cement. Available in a range of 36 colors and in stainless steel.

Columbian Enameling & Stamping Co.
Terre Haute, Ind.

86. FIREPROOF PANELING

Standard thickness wood veneer applied with a special adhesive to an incombustible, inorganic, mineral composition backing. After curing and drying, the back of the board is sprayed with waterproofing solution to prevent twisting and warping. Designed for installation in residences, clubs, offices, libraries, etc., where the effect of cabinet wood is desired in combination with fireproof construction. Lath and plaster are not necessary, but may be used as a base in remodeling work. Metal moldings and fastenings are supplied for installation by the "snap-in" method. Known as "Venduro," and available in a range of foreign and domestic wood veneers.

The Williamson Veneer Co.
4020 E. Baltimore St., Baltimore, Md.

87. ACOUSTICAL PLASTER

Applied over a gypsum base coat in two ¼ in. coats, and finished with a trowel or cork float. Furnished in natural gray-white or various shades of ivory and buff.

Atlantic Gypsum Products Co., Inc.
60 East 42nd St., New York, N. Y.

88. READY-MIXED PLASTER

Ready for addition of sand and water. The makers state that the amount required for a whole floor may be mixed at once as it will not set on the boards over night. Trade name "Banner Base Coat Lime-Fibered."

National Mortar and Supply Co.
212 Ninth St., Pittsburgh, Pa.

89. PLASTISIZED PLASTER

A plaster manufactured to retain its quality when aged and not become "short working." Available in a new form of moisture resisting package.

Certain-Teed Products Corp.
100 East 42nd St., New York, N. Y.

WATERPROOFING

WALLS above grade leak because the materials composing them permit the entry of wind-driven water. This may be due to the porosity of the stone, brick or stucco forming the facing, but more generally because of cracks in these materials, and more commonly still to cracks and voids in the setting mortar and defects in the pointing of the joints. All of these defects must be eliminated, and before any decision is reached regarding waterproofing materials or the method to be employed the cause or causes of the leaks should be determined and the choice made to meet the conditions.

Waterproofing designed to protect walls and floors below grade against ground water, to make roofs watertight or to render floors and walls proof against leakage of water from within, such as swimming pools, tank rooms and the like, depends more upon the skill of the workman than upon the materials employed. With colorless waterproofings the reverse is the case. It is true that the result desired is the same, but this result has to be obtained by applying the waterproofing to exposed surfaces, without materially changing either the color or texture of the wall. A material must be chosen which, when applied with intelligence, will not only plug the holes and keep them plugged, but which will continue to perform its function.

90. MASONRY WATERPROOFING

Designed to protect masonry joints against water absorption, disintegration and shrinkage. Also it is stated that adhesion between brick and mortar is improved. Trade name "Omicron Mortarproofing."

Master Builders Co.
Cleveland, Ohio

91. WATERPROOFED CEMENT

Particularly intended for setting, pointing and backing limestone, but may be used with other stones as well. The makers state that because of its freedom from soluble alkali salts, it will not cause staining. Trade name, "Stonemason's Brixment."

Louisville Cement Co.
Speed Building, Louisville, Ky.

92. SURFACE WATERPROOFING

For masonry protection. Available colorless or in a range of colors, to be sprayed or brushed onto the surface, one coat being usually sufficient. On brick, coverage is up to 400 sq. ft. per gal., and it may be applied to wet walls. Trade name, "Masterseal."

Master Builders Co.
Cleveland, Ohio

93. MASONRY WATERPROOFING

In liquid form, trade name "Protone," for application to masonry walls; and "Tuck-A-Point," sealing mortar for cracks, joints and caulkings. The makers state that the liquid penetrates at least ¼ in. into the masonry, and that it may be applied in sub-zero weather.

The Con-Tex Corp.
405 Lexington Ave., New York, N. Y.

94. TRANSPARENT WATERPROOFING

For protection of steel and other metals, also wood, especially when subjected to severe weather conditions, high temperatures and injurious gases; also for waterproofing concrete, brick and stone structures. May be added to paints for ordinary applications or made to any desired color by the introduction of pigment. Can be brushed, sprayed or dipped.

Waterlox, Inc.
Barlum Tower, Detroit, Mich.

95. DAMPPROOFING

Four grades of dampproofing and plaster bond compounds. No. 10 Liquid applied by brush or air spray; No. 20 Semi-Mastic, applied by heavy brush, mop or squeegee; No. 30 Plastic, applied by trowel to an average thickness of 1/16 in.; No. 40 Stone Backing, applied by brush or air spray.

The Barrett Co.
40 Rector St., New York, N. Y.

CONSTRUCTION SYSTEMS ANALYZED

A graphic presentation of a portion of a study of floors, wall and partitions for low-income group housing, together with square foot costs as compiled by the Housing Study Guild. It should be realized that first costs alone do not determine the economic validity of the selection of structural systems and higher-first-cost materials may prove to be the most economical in final analysis. The effect which any particular system might have on the costs of installation of the mechanical trades, or on maintenance, must be considered, as well as the size, type and location of the building. Therefore costs as here published must not be taken as general conclusions as to comparative costs of systems. They apply only to a specific project and place, as described in this article.—Ed.

BY

WILLIAM B. COBB, HERBERT LIPPMANN, and CHESTER ROOT

A PART of the information gathered in the course of a study made at the Housing Study Guild, beginning in January of this year, is here presented graphically. The purpose of the Guild's study was to "examine and evaluate building materials and methods of construction not commonly in use . . . in order to determine their desirability and comparative cost as substitutes for established practices on large scale construction of low-income-group housing."

The study was directed first "at materials and methods that might be applicable to multi-family walk-up dwellings — *i.e.*, those planned for two or more families per floor per stairway — erected within twenty miles radius of the center of Manhattan." The program further stated that "because many proposed materials and methods of construction may not yet have been considered by existing building codes and trade-union regulations, these codes and regulations will be considered only if they appear to be technologic criteria in individual instances."

The criteria thus far established for the evaluation of information are, in order of importance, Functional, Economic and Technologic. The functional criteria — those of a building occupied and in use — were considered as first requisites; they were defined as follows:

1. Safety: fire, slipping, other dangers
2. Convenience: cleaning, accessibility, simplicity of operation
3. Physical Comfort: reaction to noise, grating sounds, etc.
4. Flexibility: of alteration, decoration, etc.

The economic criteria were to be applied next and are to culminate in cost analysis; they are thus far defined as follows:

1. Efficiency in use of strength of materials
2. Length of life of materials
3. Maintenance or operation
4. Modules or standard units
5. Comparative time of erection
6. Facility of handling and erecting
7. Safety in handling and erecting
8. Legal or other regulatory problems

As basic source material leading architectural and engineering magazines were used and these sources were expanded by contact with manufacturers, inventors, and research and testing laboratories. The Architects Samples Corporation in New York City rendered able assistance. Materials were analyzed on specially prepared criteria sheets which were arranged so that functional, economic and technical characteristics could be intelligently recorded and compared.

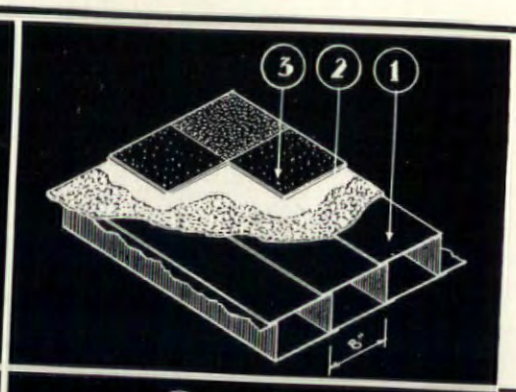
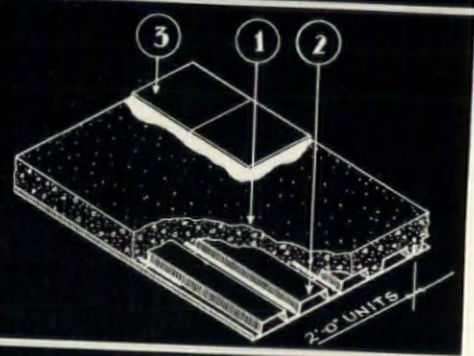
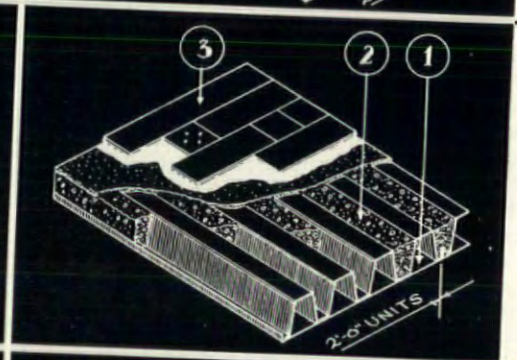
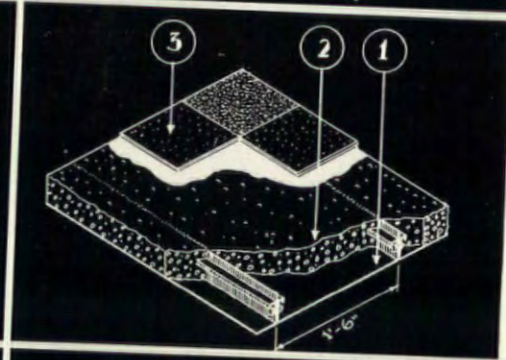
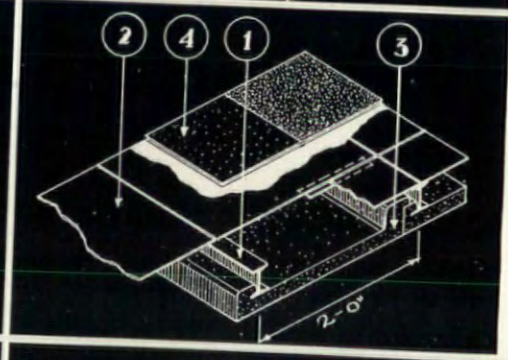
The gathering of such explicit technical information is extremely difficult due to the absence of impartial expert testing agencies which are free both to examine materials and construction methods with scientific accuracy and to make their findings public. There is the further complication that basic criteria are not yet agreed on. Also the manufacturing point of view is not always consistent with the objectives of disinterested science, and existent municipal and insurance codes are frequently obstructions.

The greatest problems of the study occur in obtaining definite comparative cost. It is obvious, broadly viewed, that the costs of materials or construction are subject to the complicated and variable phenomena of the large social art of building and that real prices in common practice are the results of considerable trial and error interlaced with the ways of supply and demand. There is no pure science of estimating any construction costs. Estimating materials and methods not commonly used is very largely in the field of conjecture. It is their common use which will establish their economy.

In order to make the conditions of this cost-finding as realistic as possible exact conditions were established for the study of housing construction. All the general definitions of the first paragraph of this article were explained. The building type was further defined as a four-story steel frame structure with floor panels of 12 ft. 6 in. span in 16 ft. bays; the live load assumed 40 lbs. per sq. ft.; walls were established as 9 ft. from floor to floor with a single window-opening per bay; 33 per cent of the wall area per bay; partitions were assumed to be 8 ft. high and 12 ft. 6 in. long on the average.

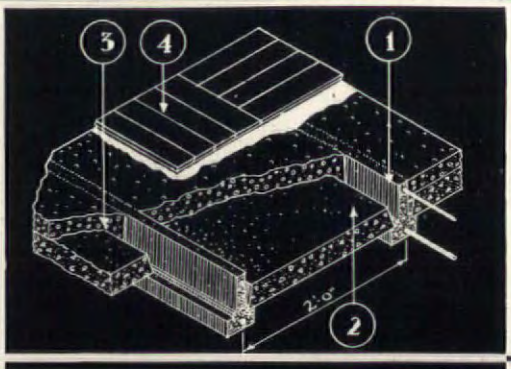
It is impossible here to name the numerous manufacturers and contractors whose representatives courteously gave of their time and experience in supplying cost information. Among these some requested the use of the names of their products and some requested the opposite. The authors of this study have drawn no conclusions and are not advocating anything. These findings are submitted solely as being a portion of the study as made and with estimated costs as quoted to the Guild's investigators just previous to May 1, 1934.

FLOOR SYSTEMS

SYSTEMS		CRITERIA	COMPONENTS	APPROX COST of ERECTED
CELLULAR STEEL		Weight, sq. ft. 8.1 lbs. Fire Test Incombustible Thickness 6.5 inches General Dry; welded to support	1. Frameless Steel, 20 ga. .37 2. ½" Troweled mastic .03 .40 3. Cushioned Masonite .28 Total .68	
REINFORCED CONCRETE ON CELLULAR STEEL FLOORING		Weight, sq. ft. 72.5 lbs. Fire Test 4 hours Thickness 5.25 inches General Wet; bracing forms only; welded to support	1. .33 cu. ft. concrete, float finish .14 Bracing .05 1.4# reenforcing .025 2. Robertson U.K.X. flooring 18 ga. .24 .455 3. Asphalt tile .15 Total .605	
FILLED CELLULAR STEEL FLOORING		Weight, sq. ft. 35 lbs. Fire Test Incombustible Thickness 5.75 inches General Wet fill; no forms; welded to support	1. Robertson F.K.X. flooring 18 ga. .305 2. Light-weight concrete fill .05 .355 3. Ventilated oak floor — Fairfax .18 Total .535	
LIGHT WEIGHT CONCRETE ON PANS		Weight, sq. ft. 21.18 lbs. Fire Test Incombustible Thickness 4.5 inches General Wet; bracing forms only; welded to support	1. Schick I-Pan, type C, 14 ga. .25 2. 3¾" Aerocrete fill .10 .35 3. Cushioned Masonite .28 Total .63	
FIREPROOFED BATTLE-DECK		Weight, sq. ft. 27 lbs. Fire Test 4 hours Thickness 5.75 inches General Dry; all welded	1. 3" I's 5.7#, 24" o.c. 2. 24" x 3/16" plates welded and painted .43 3. Rockwood gypsum ceiling unit .16 .59 4. Cushioned Masonite .28 Total .87	

Costs as here reported by the Housing Study Guild represent only its findings to date, as explained fully on page 423, and are subject to local correction and verification.

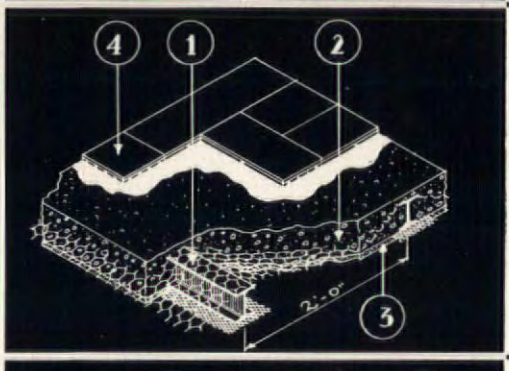
PRECAST CONCRETE JOISTS AND BLOCKS



CRITERIA	
Weight, sq. ft.	44 lbs.
Fire Test	4 hours
Thickness	8 inches
General	Wet; no forms

COMPONENTS		APPROX COST of ERECTED
1. 7" precast reenf. conc. joists 24" o.c. (Floroform)		.30
2. 3" precast cinder blocks 21½" square (Floroform)		
3. 1½" Aerocrete fill screeded	.06	
	.36	
4. Oak floor	.18	
Total	.54	

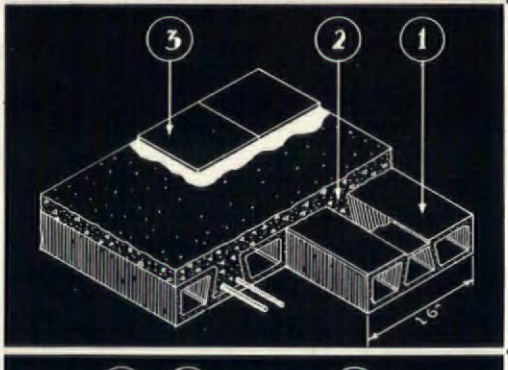
STEEL ENCASED IN LIGHTCONCRETE SLAB



CRITERIA	
Weight, sq. ft.	39 lbs.
Fire Test	Incombustible
Thickness	6 inches
General	Wet; required forms hung from steel

COMPONENTS		APPROX COST of ERECTED
1. 4" I's 7.7#, 24" o.c.		.20
2. 4½" light-weight concrete screeded		.14
Chicken wire reenforcement		.01
Forms		.08
3. Two coat plaster	.06	
	.49	
4. Ventilated oak floor — Fairfax	.18	
Total	.67	

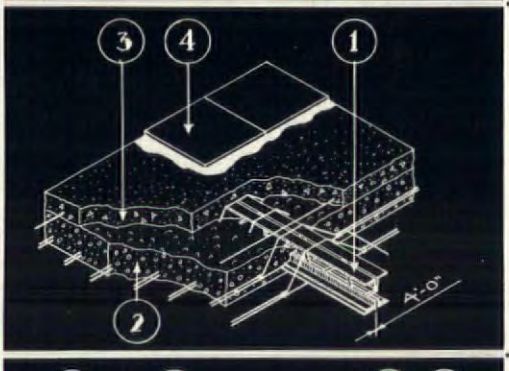
REINFORCED CONCRETE IN GYPSUM FORMS



CRITERIA	
Weight, sq. ft.	61.5 lbs.
Fire Test	4 hours
Thickness	7.25 inches
General	Wet; bracing forms only

COMPONENTS		APPROX COST of ERECTED
1. 5 x" 16" Rockwood		
2. 2" concrete and reenforced T-Beam		.42
Float finish	.03	
	.45	
3. Asphalt tile	.15	
Total	.60	

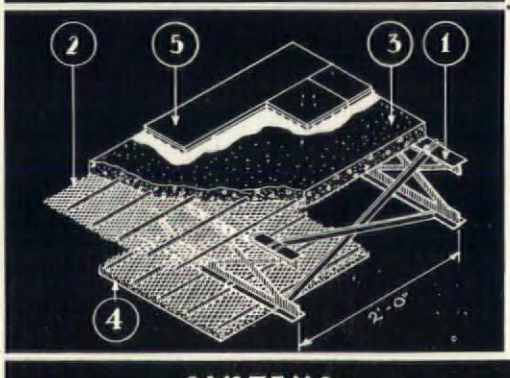
TRUSSES ENCASED IN LIGHTWEIGHT CONCRETE



CRITERIA	
Weight, sq. ft.	52.5 lbs.
Fire Test	4 hours
Thickness	6.75 inches
General	Wet; smooth forms hung from steel

COMPONENTS		APPROX COST of ERECTED
1. Steel joists		.085
2. 4½" Aerocrete		.11
Forms and reenforcement		.095
3. 2" stone concrete 1:2:4		.05
Float finish	.03	
	.37	
4. Asphalt tile	.15	
Total	.52	

THIN CONCRETE SLAB ON TRUSSED JOISTS



CRITERIA	
Weight, sq. ft.	44 lbs.
Fire Test	1½ hours
Thickness	11.75 inches
General	Wet; no forms

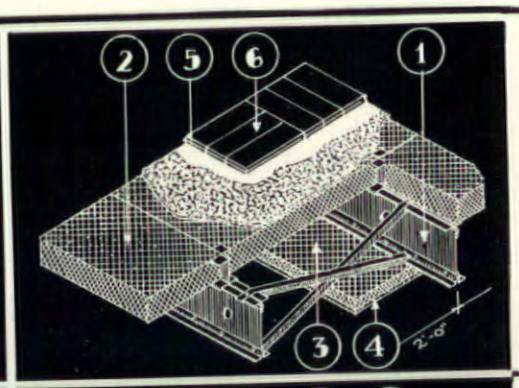
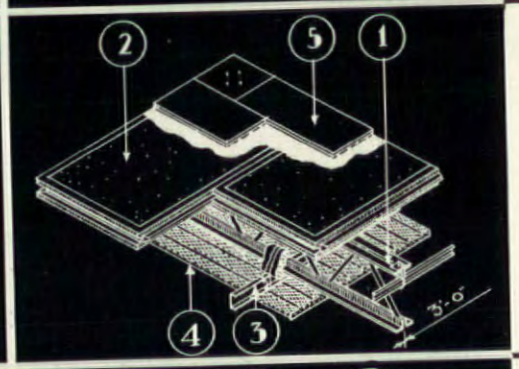
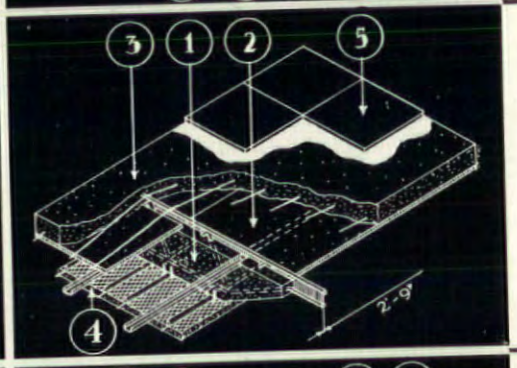
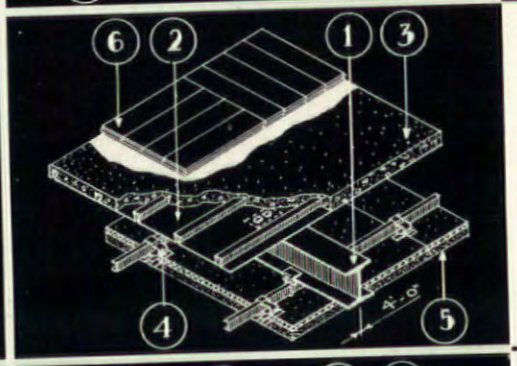
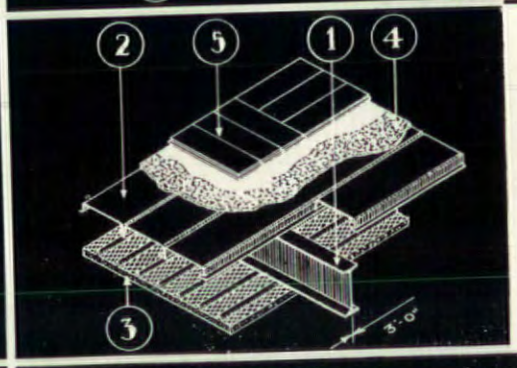
COMPONENTS		APPROX COST of ERECTED
1. 8" Kalman joists 24" o.c.		.087
2. ⅜" 4# metal lath		.04
3. 2" concrete 1:2:4 screeded		.075
4. Lath and plaster	.14	
	.34	
5. Ventilated oak floor—Fairfax	.18	
Total	.52	

SYSTEMS CRITERIA COMPONENTS

FLOOR SYSTEMS

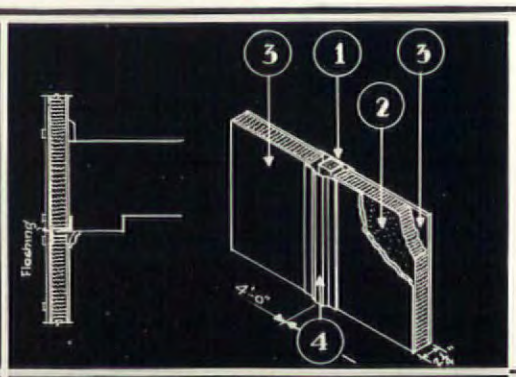
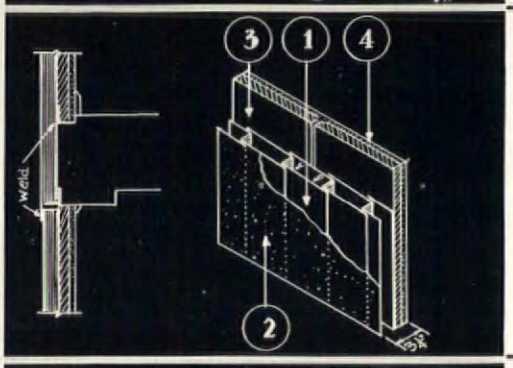
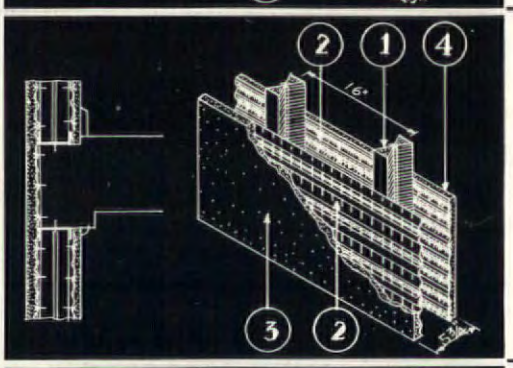
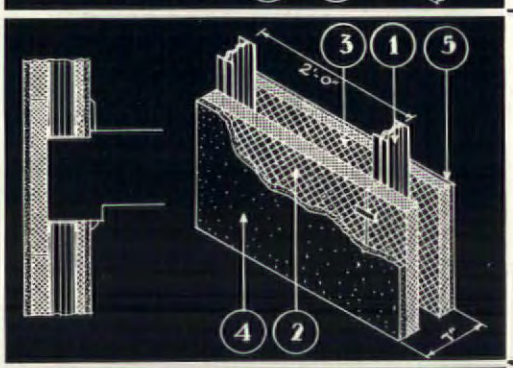
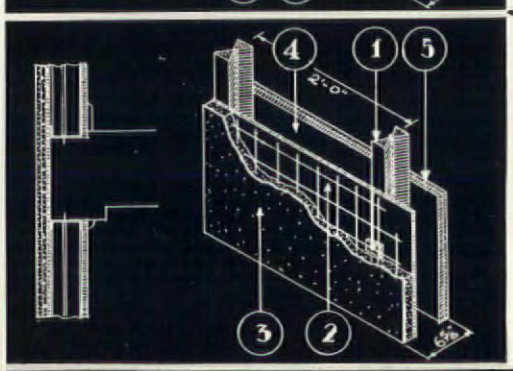
Costs as here reported by the Housing Study Guild represent only its findings to date, as explained fully on page 423, and are subject to local correction and verification.

FLOOR SYSTEMS

SYSTEMS	CRITERIA	COMPONENTS	APPROX COST ℔ ERECTED
FIREPROOF INSULATING BD. ON STEEL JOISTS 	Weight, sq. ft. 21 lbs. Fire Test 1½ hours Thickness 13.25 inches General Wet; no forms	1. 8" Stran-Steel joists, 24" o.c. .16 2. 3" x 20" x 48" Thermax .15 3. 1" Thermax .085 4. Two coat plaster .16 .555 5. ½" Troweled mastic .02 6. Oak floor .18 Total .755	
GYPSUM PLANK ON TRUSSED JOISTS 	Weight, sq. ft. 30 lbs. Fire Test 1½ hours Thickness 13.5 inches General Wet (plaster only); no forms	1. MacMar joists #82, 36" o.c. .06 2. T and G gypsum plank 2" x 15" x 10' .20 3. Furring channels and Holmes Insulator clips .10 4. Metal lath and plaster .14 .50 5. Ventilated oak floor—Fairfax .18 Total .68	
GYPSUM SLAB AND ENCASED TRUSSES 	Weight, sq. ft. 31.5 lbs. Fire Test 4 hours Thickness 11.5 inches General Wet; no forms	1. U. S. G. Red Top Ribs G 6 2. Gypsum board on channels 3. 2½" reenforced gypsum fill, float finish .36 4. Metal lath and plaster .14 .50 5. Asphalt tile .15 Total .65	
CONCRETE ON CRIMPED SHEETS ON STEEL 	Weight, sq. ft. 35. lbs. Fire Test Incombustible Thickness 9.75 inches General Wet; no forms	1. 5" I's, 10#, 48" o.c. .12 2. Truscon Inverted Holorib 24 ga. .14 3. 1½" concrete fill .05 4. U. S. G. Resilient clips and ⅜" plaster bd. .25 5. Two coat plaster .06 .62 6. Oak floor .18 Total .80	
STEEL DECK ON STEEL JOISTS 	Weight, sq. ft. 24 lbs. Fire Test Incombustible Thickness 9½ inches General Wet (plaster only); no forms	1. 6" junior beams, 3' o.c. .09 2. Truscon Ferrobord .175 3. Metal lath and plaster .14 .405 4. ½" Troweled mastic .02 5. Wood floor .18 Total .605	

Costs as here reported by the Housing Study Guild represent only its findings to date, as explained fully on page 423, and are subject to local correction and verification.

WALL SYSTEMS

SYSTEMS	CRITERIA	COMPONENTS	APPROX COST ℄ ERECTED
INSULATED ASBESTOS-CEMENT BOARD 	Weight, sq. ft. 7 lbs. Fire Test Incombustible Therm. Condt. .16 B.T.U. General Dry; curtain wall only; accurate information difficult to obtain	1. 2" sq. tube, 3" plate, 18 ga. Nailcrete fill 2. 2" insulating board laminated 3. 1/8" asbestos board — 2 sides, laminated to #2 4. 1/8" x 3" extruded aluminum battens Total	.10 .35 .11 .56
STUCCO ON CELLULAR STEEL 	Weight, sq. ft. 10 lbs. Fire Test Incombustible Therm. Condt. .33 B.T.U. (for insulating board only) General Wet (plaster only); curtain wall only; welded joints and connections	1. 1½" Frameless Steel — 20 ga. webs 8" o.c. 2. Cement coating 3. 1" insulating board 4. Two coat plaster Total	.35 .02 .10 .06 .53
STUCCO ON LATH ON STEEL STUDS 	Weight, sq. ft. 17.5 lbs. Fire Test Incombustible Therm. Condt. .135 B.T.U. General Wet; curtain wall only; aluminum foil facing air space reflects radiant heat	1. 4" Reynolds metal studs, Nailcrete fill 2. Reynolds Metallated Ecod fabric — 2 sides 3. Stucco 4. Three coat plaster Total	.12 .10 .15 .08 .45
FIREPROOF INSULATION BOARD ON STEEL STUDS 	Weight, sq. ft. 19 lbs. Fire Test 2¼ hours Therm. Condt. .13 B.T.U. General Wet; curtain wall only; sound reduction said to be excellent	1. 2½" Stran-Steel studs 2. 2" x 20" x 48" Thermax 3. 1" Thermax 4. Stucco 5. Two coat plaster Total	.115 .125 .08 .15 .06 .53
REINFORCED GUNITE ON STEEL STUDS 	Weight, sq. ft. 18 lbs. Fire Test 4 hours Therm. Condt. .22 B.T.U. General Wet; curtain wall only; cost of gunite includes finish	1. 4" Reynolds metal studs, Nailcrete fill 2. ½" insulating board 3. 1¼" Gunite, 3" x 3", 10# reenforcement 4. ¾" insulating board 5. Two coat plaster Total	.11 .07 .35 .09 .06 .68

Costs as here reported by the Housing Study Guild represent only its findings to date, as explained fully on page 423, and are subject to local correction and verification.

WALL SYSTEMS

SYSTEMS	CRITERIA	COMPONENTS	APPROX COST OF ERECTED
GYPSUM LUMBER AND STUCCO	Weight, sq. ft. 25 lbs. Fire Test 4 hours Therm. Condt. .30 B.T.U. General Wet; curtain wall; bearing wall if some cells filled and reenforced	1. 6" x 6" Rockwood .265 2. Paper-backed lath .055 3. Stucco .15 Total .47	
HAYDITE SLABS AND STUDS	Weight, sq. ft. 32 lbs. Fire Test 3 hours Therm. Condt. .136 B.T.U. General Wet (grout only); curtain wall; bearing wall if some studs doubled, filled and reenforced	1. 3" x 5" x 32" Haydite studs, rods and clips (Rackle System) 2. 1½" x 16" x 48" Haydite slabs — 2 sides .35 3. Cement coating .02 4. Two coat plaster .06 Total .43	
HOLLOW BRICK	Weight, sq. ft. 78 lbs. Fire Test 4 hours Therm. Condt. .30 B.T.U. General Wet; bearing or curtain wall; avoid through joints, flash spandrels	1. 2⅝" x 8" x 8" Du-Brik .45 2. Two coat plaster .06 Total .51	
HAYDITE BLOCK	Weight, sq. ft. 46 lbs. Fire Test 3 hours Therm. Condt. .257 B.T.U. General Wet; bearing or curtain wall	1. 8" x 8" x 16" Haydite blocks .25 2. Stucco .15 3. Two coat plaster .06 Total .46	
DOUBLE CONCRETE WALL	Weight, sq. ft. 100 lbs. Fire Test 4 hours Therm. Condt. .28 B.T.U. General Wet; bearing wall only; horizontal shuttle forms used	1. Two 4" concrete walls 1:2:4 (Van Guilder system) 2. ¼" wire reenforcing .45 3. Two coat plaster .07 Total .52	

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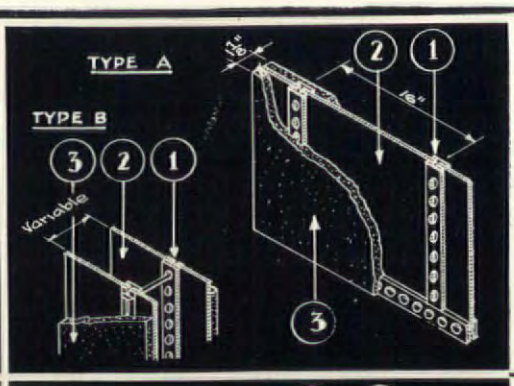
PLASTER BD. & PLASTER ON METAL STUDS



Type A

Weight, sq. ft. 16 lbs.

General — Conduits in base; simple erection; no plaster needed if plain studs exposed

Type B

Weight, sq. ft. 18 lbs.

General — Conduits between studs

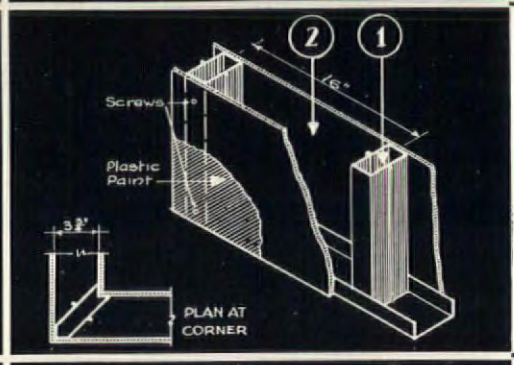
Type A

1. Metal studs, fl. & ceil. shoes (Ambler-Olsen system)	.15
2. 3/8" plaster board	
3. Two coat plaster — 2 sides	.12
Total	.27

Type B

Total .32

WALL BD. ON HOLLOW STEEL STUDS



Weight, sq. ft. 5 lbs.

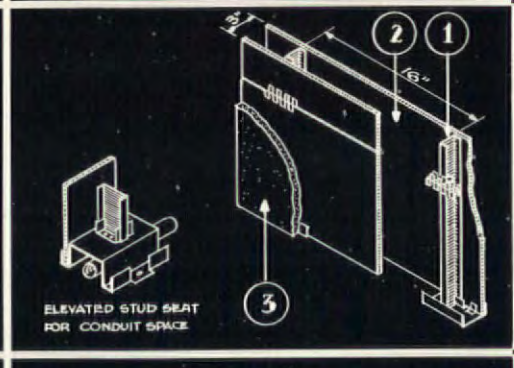
Fire Test — Incombustible

Sound Reduc. — decibels

General — Conduits in base; simple erection; 80% salvageable; boards screwed; dry construction if finished with plastic paint

1. Hollow metal studs, fl. & ceil. chan. (Pronto partitions)	.26
2. Two 3/8" plaster boards	
Total	.26

PLASTER BD. & PLASTER ON STEEL STUDS



Weight, sq. ft. 11 lbs.

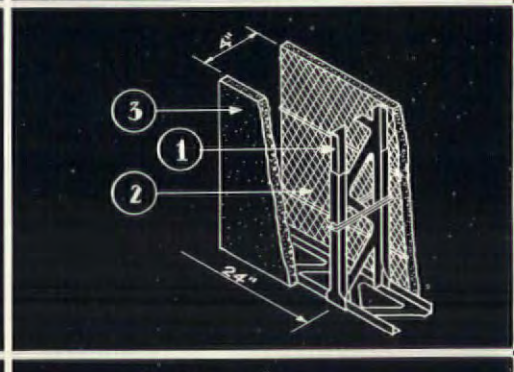
Fire Test — Incombustible

Sound Reduc. — 42 decibels (Bldg. Mat'l. Research Lab., Chicago)

General — Conduits in base; good between apartments

1. 1½" channels, U. S. G. Resilient clips	.20
2. Two 3/8" plaster boards	
3. Two coat plaster — 2 sides	.12
Total	.32

METAL LATH ON STEEL STUDS



Weight, sq. ft. 16 lbs.

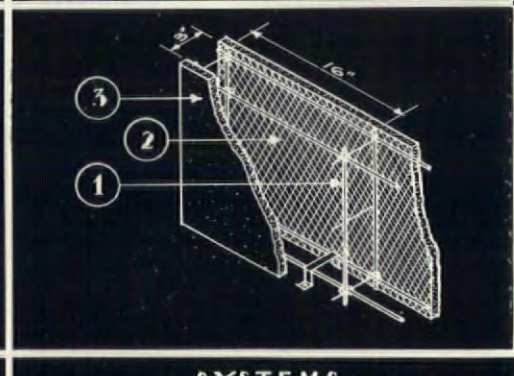
Fire Test — 1 hour

Sound Reduc. — 31.8 decibels (Sabine)

General — Conduits thru studs; frame salvageable

1. Bar-Z studs, floor and ceiling track	.04
2. Bar-X lath — 2 sides	.12
3. Three coat plaster — 2 sides	.16
Total	.32

METAL LATH ON WIRE STUDS



Weight, sq. ft. 14.5 lbs.

Fire Test — 1 hour

Sound Reduc. — decibels

General — Conduits thru studs

1. Ladder Studs, horizontal tie rods, 30" o.c.	.17
2. Metal Lath	
3. Three coat plaster — 2 sides	.16
Total	.33

SYSTEMS CRITERIA COMPONENTS

PARTITIONS

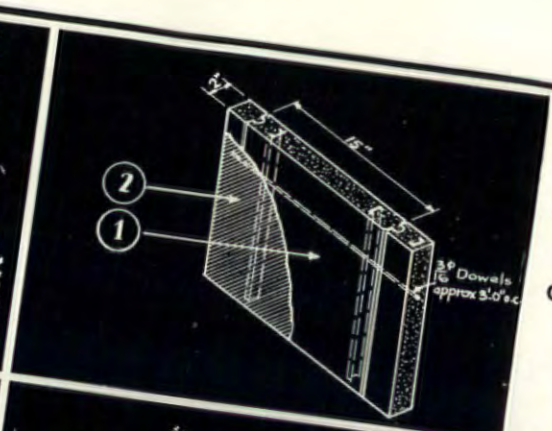
APPROX COST ℔ ERECTED

Costs as here reported by the Housing Study Guild represent only its findings to date, as explained fully on page 423, and are subject to local correction and verification.

PARTITIONS

SYSTEMS | CRITERIA | COMPONENTS | APPROX COST OF ERECTED

REINFORCED GYSPUM PLANK



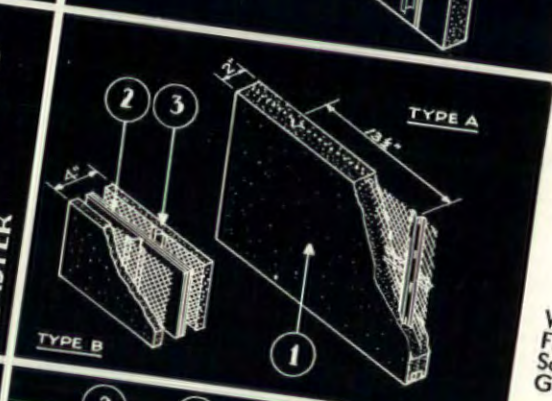
Criteria

Weight, sq. ft. 11 lbs.
Fire Test 1 hour
Sound Reduc. 24.2 decibels (=3" gypsum block—Sabine)
General Conduits in base; dry construction; largely salvageable; plastic finish without plaster

Components

1. Gypsteel plank 2" x 15" x 8' .18
2. Kanite surfaced — 2 sides .04
Total .22

REINFORCED SOLID PLASTER



Criteria

Type A
Weight, sq. ft. 18.5 lbs.
Fire Test 1 hour
Sound Reduc. 30 decibels (Sabine)
General Conduits placed before plastering

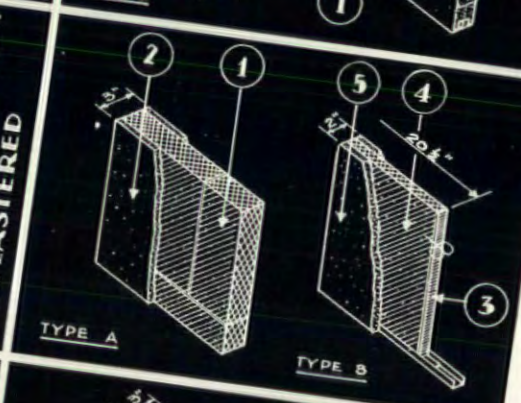
Type B
Weight, sq. ft. 19.5 lbs.
Fire Test 1 hour
Sound Reduc. — decibels
General For use between apartments

Components

Type A
1. Fairfax partition, 5/8" V-ribs with 1/4" V-ties, 24" o.c.; fl. & ceil. shoes; metal lath sheets 2' 3" x 8'; plaster both sides .20
Total .20

Type B
2. Three coat gypsum plaster — 2 sides (on lath as above)
3. 3/4" Insulation quilt (wired to lath) .30
Total .30

FIREPROOF INSULATION BD. PLASTERED



Criteria

Type A
Weight, sq. ft. 13.4 lbs.
Fire Test 1 hour
Sound Reduc. 29 decibels (M.I.T.)
General Conduits cut in block

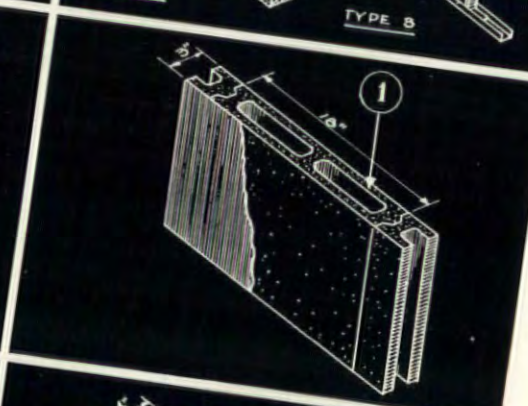
Type B
Weight, sq. ft. 11.2 lbs.
Fire Test Incombustible
Sound Reduc. — decibels
General Conduits in base

Components

Type A
1. 2" x 20" x 32" Thermax blocks in mortar .14
2. Two coat plaster — 2 sides .12
Total .26

Type B
3. 1/8" flat metal stud, clips, fl. & ceil. chan. .115
4. 1" x 20" x 64" Thermax .12
5. Two coat plaster — 2 sides .235
Total .235

GYPSUM LUMBER



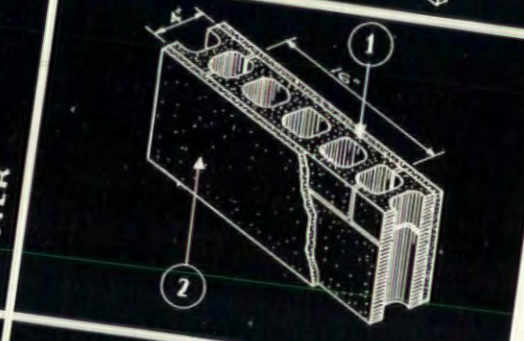
Criteria

Weight, sq. ft. 9 lbs.
Fire Test 1 hour
Sound Reduc. 24.2 decibels (=3" gypsum block—Sabine)
General Conduit cut in block; plastic finish without plaster

Components

1. 3" x 18" x 8' Rockwood Puttying .15
.03
Total .18

HAYDITE BLOCKS & PLASTER



Criteria

Weight, sq. ft. 23.2 lbs.
Fire Test 1 hour
Sound Reduc. 38 decibels (Sabine)
General Conduit cut in block

Components

1. 4" x 8" x 16" Haydite blocks in mortar .19
2. Two coat plaster — 2 sides .12
Total .31

Costs as here reported by the Housing Study Guild represent only its findings to date, as explained fully on page 423, and are subject to local correction and verification.

AIR CONDITIONING AND HEATING

BY W. L. DURAND

of Clark, MacMullen & Riley, Engineers

Progress in heating, ventilating and air conditioning has largely run toward the goals of greater range of air control, greater precision in such control, and greater efficiency of operation. Until a few years ago it was considered enough to provide direct radiation (which was, of course, largely convection) in winter, and in summer to provide fans for air movement as the only cooling necessary. The public, however, has become familiar with more direct control of interior weather through the conditioning of the movie palaces, theaters and auditoriums. Heat and air movement are not enough. The public is beginning to demand that temperature be rigidly controlled, that cool air be provided and the humidity be such as to create the greatest possible comfort. Thus a whole new field of development has been opened up and numerous manufacturers have been conducting research to develop the products to bring about these conditions, not only for auditoriums, public buildings and industrial use, but for homes as well.

Unfortunately, there are various stages of air conditioning and the term is used in a loose and general way, rather than specifically for *complete* air conditioning. Most of the manufacturers, however, are working toward apparatus designed to give complete control of all the factors of air comfort. These factors are: (1) temperature — both heating the air and cooling it; (2) humidity — either adding moisture (in winter) or dehumidifying (in sultry summer); (3) cleanliness — filtering the air to remove dust, dirt and irritating pollens; (4) distribution and air movement, insuring quantities of fresh air at comfortable velocities.

The apparatus thus far designed and placed on the market usually affects one or more of these factors. It is important to realize, in choosing equipment, just what functions it performs. Air conditioning equipment at present may be divided roughly into two classes: (1) winter air conditioning, which heats, humidifies and distributes air; and (2) summer air conditioning, which cools, dehumidifies and circulates the air rapidly. Physically also the apparatus may be divided into two types — central types and unit types, depending on whether the air is treated locally in the rooms (by unit air conditioners) or whether it is treated centrally and distributed through a duct system.

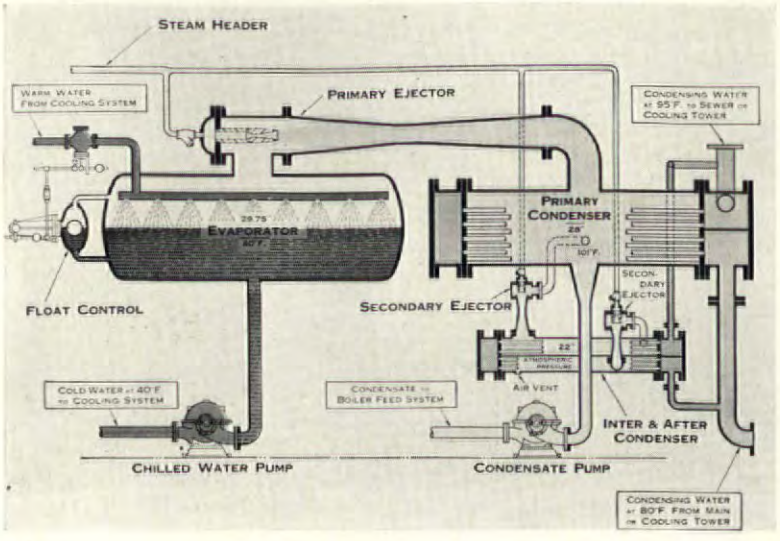
Due to the fact that most buildings heretofore have been erected without provision for the ductwork for central air conditioning, the greatest stress has recently been put on the development of the unit type air conditioners, intended for immediate application in existing buildings, usually without any major alteration in the existing heating equipment. However, it is necessary to provide water supply and waste connections to many of the air conditioning units for summer cooling purposes.

Unit air conditioners are usually basically similar to the familiar unit ventilators used in modern schools. However, in addition to the heating and filtering of the air provided for in such standard unit ventilators, the provision is also made to control humidity, both in summer and winter. There are two types of units available, one containing all required provisions for cooling (as well as heating), but requiring connection to a refrigerating compressor located at a convenient point removed from the cooling unit. The other type has the compressor unit housed in the same enclosing cabinet as the fan unit, thus making a single self-contained unit.

Conditioning units are furnished in attractive cabinets with practically any type of finish desired. In size they range from about 48 x 12 x 36 in. for the fan units without compressors to 56 x 24 x 42 in. for the complete self-contained units. Naturally, most of these air conditioners are equipped with automatic control so that constant temperatures and humidities may be maintained without any thought on the part of the occupant of the room. For new residences, central systems are being rapidly developed and there are many variations, both in type of equipment and principle of operation. There is probably no field of building in which there will be more rapid development within the next decade than in air conditioning equipment and practice.

Aside from air conditioning, there have been improvements in the heating apparatus itself and in the mechanism of temperature control. The oil burner has been perfected and its design incorporated with that of the boiler, thus making a complete unit rather than the burner being an attachment. This removes the divided responsibility as now one manufacturer is responsible for both boiler and burner. A higher efficiency is also obtained as both members are designed as a unit for maximum economy, and installation problems are simplified. Usually an integral hot water heater is provided as part of the equipment. In radiation there has been constant improvement in both the appearance and the efficiency of the radiators themselves, and their valves and fittings are now developed to a point where positive results are assured under the most trying circumstances.

Manufacturers of warm air furnaces have redesigned their equipment and developed new units for central air conditioning. The former water-pan has become a real humidifying device and air filters of various types have been introduced. Motors and fans increase the efficiency of distribution and overcome the difficulties of heating distant rooms or those with windy exposures.



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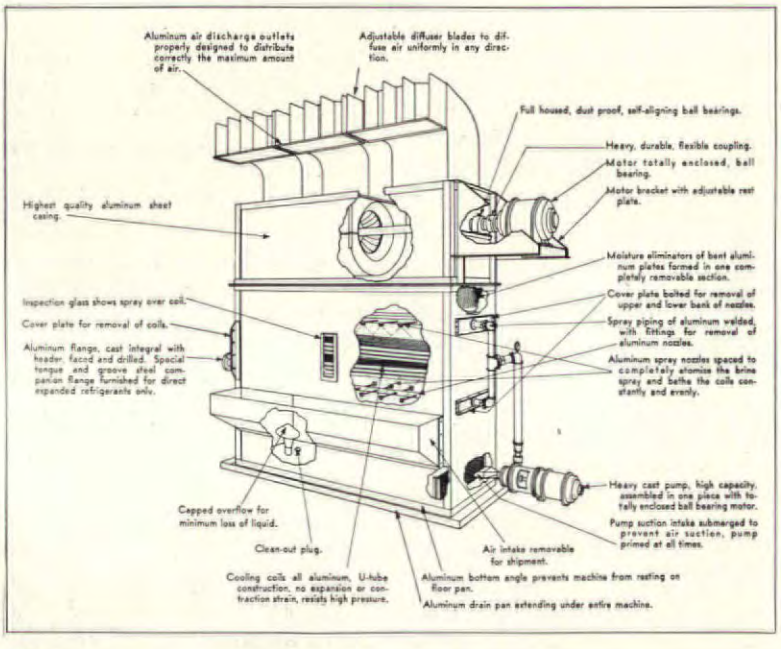

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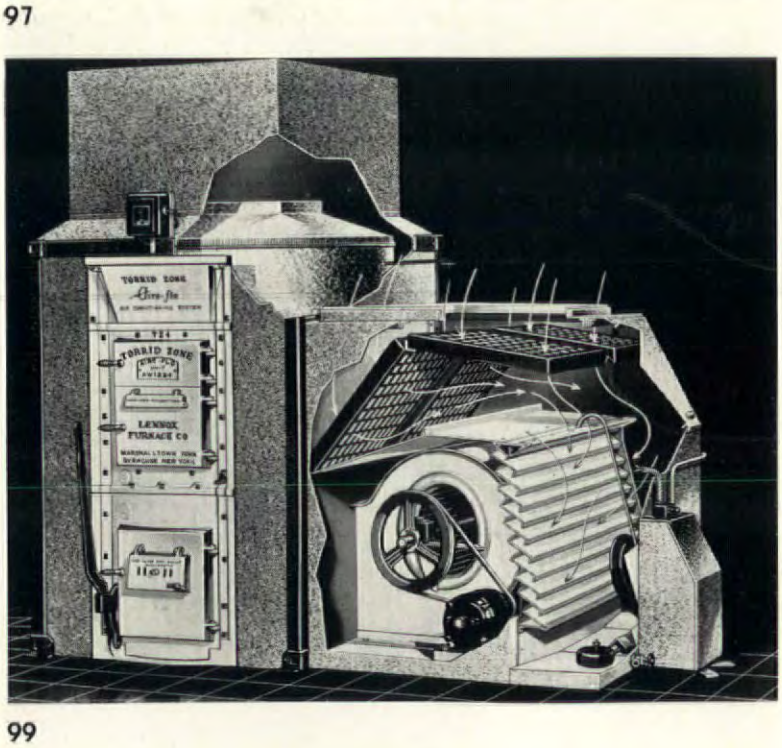

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96. STEAM VACUUM REFRIGERATION

Steam jet creates a high vacuum permitting water to vaporize at low temperatures, producing chilled water as low as 33° F. Trade name "Ross Decalorator." Used in connection with the makers' air conditioning equipment, for domestic, industrial and commercial purposes. The domestic type includes a 9 x 6 in. portable device to give dial control of the system. Cooling capacities of the "Decalorators," 24,000 to 48,000,000 b.t.u.'s per hour. There are also dehumidifiers and air washers having capacities from 1,000 cu. ft. per minute to 200,000 c.f.m.

American Blower Corp.
Detroit, Mich.

97. INDUSTRIAL AIR COOLER

A cooler for food and products in process or storage. Made in a range of sizes adaptable to a set of capacities for various uses. Aluminum casing to resist corrosion and for ease of installation and portability. Trade name "Niagara Brine Spray Cooler."

Niagara Blower Co.
6 East 45th St., New York, N. Y.

98. MARKET REFRIGERATION

Designed to provide "Flowing Cold" for preserving food in meat markets and groceries. Offers the advantages of low temperature, reduced shrinkage of meats due to excessive dehydration, less sweating, and washed, conditioned air. Available in many models for a range of market and grocery needs. Operation is based upon the action of refrigerant through coils and fins, and a washing process requiring connections to the water supply system.

Frigidaire Sales Corp.
Dayton, Ohio

99. FORCED AIR HEATING

Designed to filter, wash, humidify, heat and circulate air for residences. In the summer the speed of the blower is increased while dehumidification takes place in the washer for cooling. It can also be equipped with a copper fin coil and refrigeration unit for greater cooling. The product is known as the "Torrid Zone Aire-Flo" and can be added to a steam or hot water system, in which case the makers claim a fuel saving of as much as 30 per cent. Installation is made by furnace dealers, sheet metal contractors and plumbing contractors.

Lennox Furnace Co
Marshalltown, Iow

100. STEAM JET REFRIGERATION

A system employing steam to create a vacuum and evaporate part of the water to be cooled. Pumps remove the condensation of the vapor, the working steam, the air and the condensate from the condenser. Accelerated evaporation cools the main body of water, which is then circulated through the cooling system as a refrigerant. See ad page 51.

Westinghouse Electric & Manufacturing C
East Pittsburgh, P

101. AIR CONDITIONING EQUIPMENT

Designed to control volume of air delivered to each branch duct. Heats, filters, washes and circulates air, and in summer additional pulleys permit greater air change. Also adaptable to the installation of a refrigerating unit.

Gar Wood Industries
Detroit, Mich.

102. REFRIGERATION

Appliances for refrigerating and air conditioning. The line includes, in part, several models of refrigerators for both domestic and commercial use, including coolers for show cases and markets. The refrigeration is invariably electrically operated, and installation is made by the distributors and dealers.

Kelvinator Corp.
Detroit, Mich.

103. AIR CONDITIONER

Equipment designed to filter, wash and humidify air. Used in combination with blower, also functions as air circulator.

The Bishop and Babcock Mfg. Co.
4901 Hamilton Ave., Cleveland, Ohio

104. AIR CONDITIONING

A line including commercial and domestic conditioning equipment and refrigeration. One model in particular is available for winter or summer use, or for both. Circulating capacities from 1,200 to 24,000 cu. ft. per minute, and particularly designed for restaurants and shops.

Servel Sales, Inc.
Evansville, Ind.

105. CONDITIONED WARM AIR

For heating and humidifying air. Radiator is of 14-gauge, welded-steel construction, while combustion chamber is one-piece, vertical fin type. Burner consumes 1¾ gals. per hour, producing 150,000 b.t.u.'s net. Trade name, "Gilbarco." See adv. page 41.

Gilbert & Barker Mfg. Co.
Springfield, Mass.

106. WINTER AIR CONDITIONING

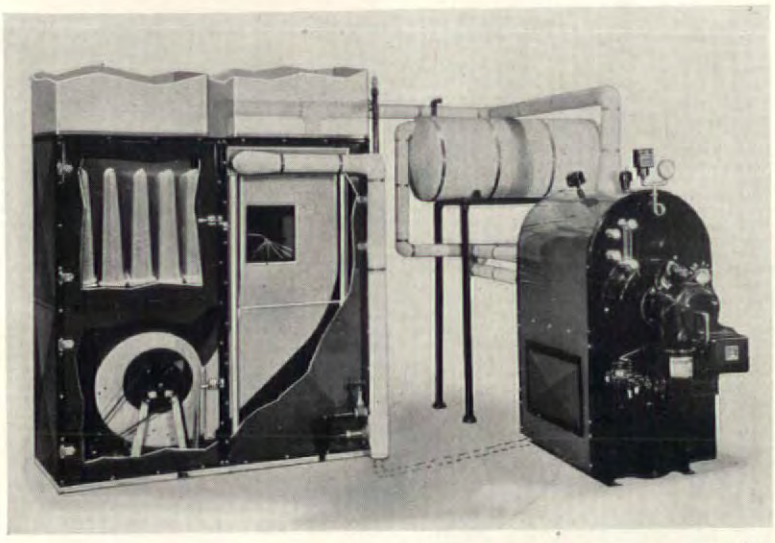
Designed to clean, humidify, warm and circulate air for homes. Heat exchanger operates on the counterflow principle; air delivery takes place above the breathing line. Largest model is approximately 55 x 40 x 56 in. high.

The Edwards Manufacturing Co.
328 Eggleston Ave., Cincinnati, Ohio

107. WINTER AIR CONDITIONING

Designed to heat, humidify, clean and circulate air during the winter. For individual requirements, the motor can be fitted with three different sizes of pulleys. A switch may be installed for filtering and circulation without heat in the summer. Capacity of model illustrated is 1,200 to 1,600 c.f.m. at 140° F. Forms unit with G. E. Oil Furnace. See adv. page 56.

General Electric Mfg. Co.
570 Lexington Ave., New York, N. Y.



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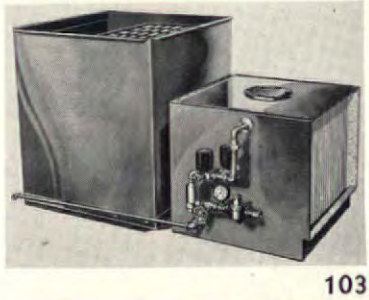

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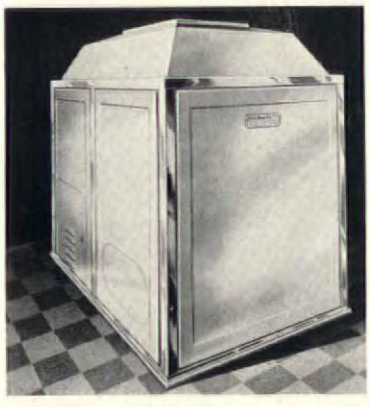

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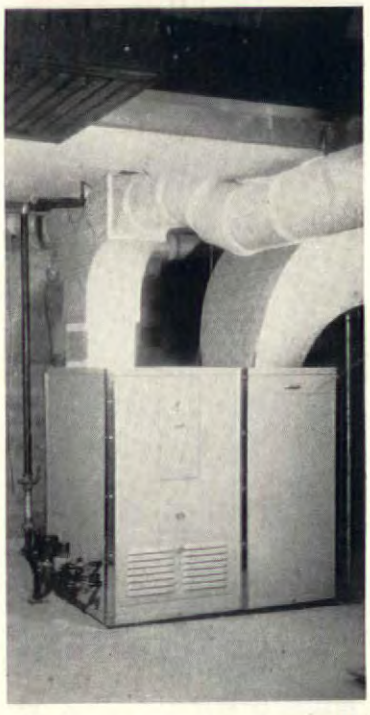

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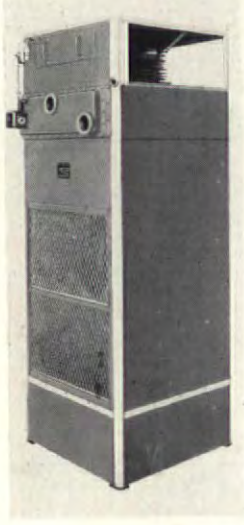

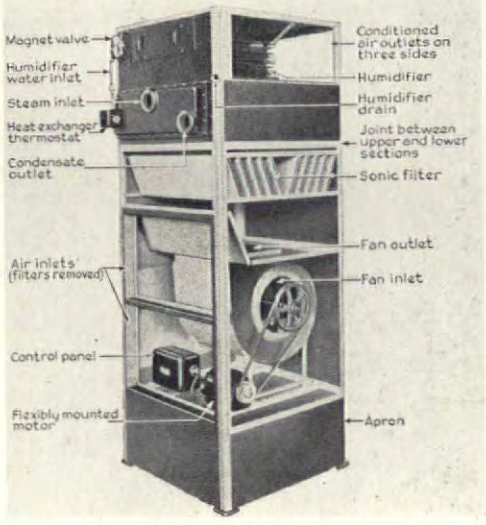

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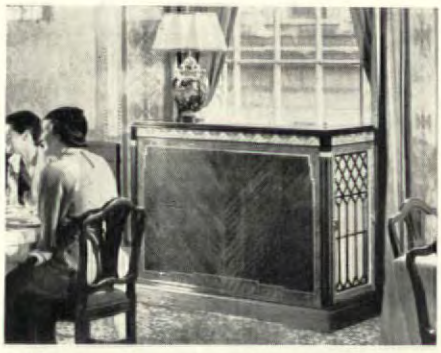
UNIT AIR CONDITIONERS



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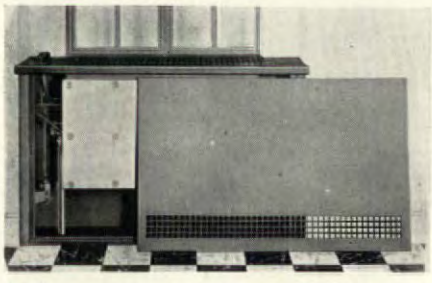

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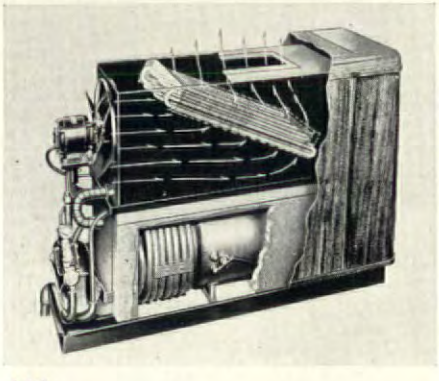

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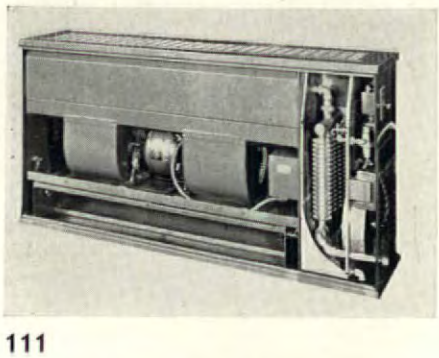

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108. UNIT AIR CONDITIONER

Designed to require no water connection, drains or refrigerant piping. Installation consists of air duct passing over window-sill and a wire to an electric outlet. Functions in summer as a cooler and dehumidifier, while in winter may be connected to heating system for heating and humidifying.

De La Vergne Engine Co.
Philadelphia, Pa.

109. AIR MIXER

Diffusion nozzles designed to introduce a minimum amount of cold air to mix with room air for desired temperature. For winter use the unit also heats and humidifies when used with a radiator.

American Radiator Co.
40 West 40th St., New York, N. Y.

110. MOVABLE UNIT

Designed for summer use, as a cooler, dehumidifier and air circulator. The unit may be moved on casters. Trade name, "Mobilaire." See adv. page 51.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

111. VENTILATOR-HUMIDIFIER

Heating and ventilating unit equipped with air humidifying attachment. Adaptable to schoolroom or office installation.

B. F. Sturtevant Co.
Hyde Park, Boston, Mass.

112. ROOM COOLER

Self-contained, except for the compressor. Designed for office or shop installation. See adv. page 56.

General Electric Co.
570 Lexington Ave., New York, N. Y.

113. SCHOOL UNIT

Cabinets of finished steel with rounded corners and polished moldings. Available in many models for various uses and for operation in connection with vapor, vacuum, gravity and hot water heating systems. See adv. page 54.

The Herman Nelson Corp.
Moline, Ill.

114. AIR CONDITIONER

Unit type designed particularly for installations in offices, shops, restaurants, etc.

American Blower Corp.
Detroit, Mich.

115. ALL-YEAR CONDITIONER

Unit designed for cooling in summer, heating in winter, filtering, washing and circulating air in homes, offices and shops where central systems are not suitable.

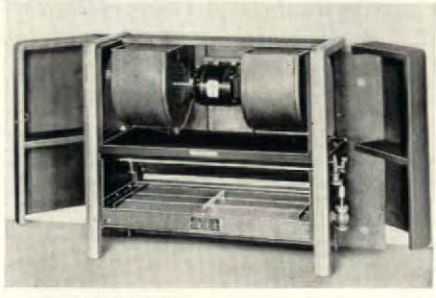
York Ice Machinery Corp.
York, Pa.

116. AIR CONDITIONER

Available in unit form with adjustable control for installation in offices, homes, shops and restaurants.

Servel Sales, Inc.
Evansville, Ind.

113



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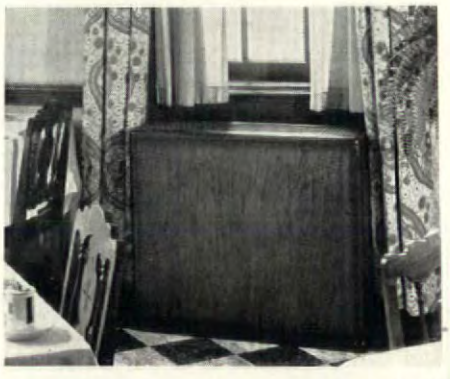

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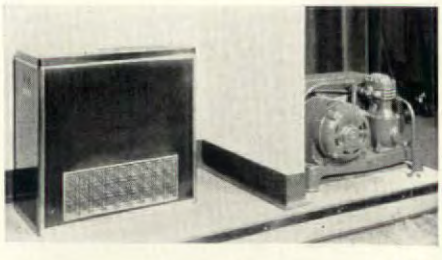

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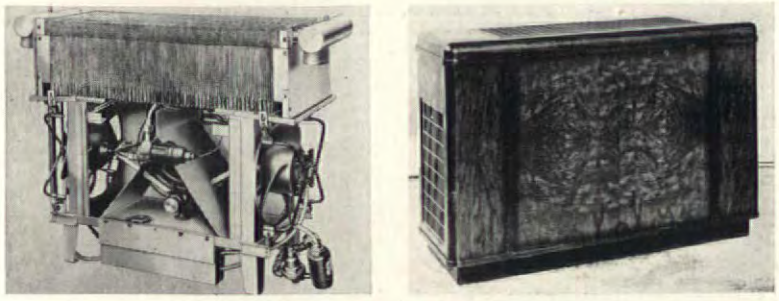
117. FLOOR TYPE UNIT

Air conditioning unit designed for installation in offices, shops, etc., against the wall or under a window where relocation is not often desired. See adv. page 51.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

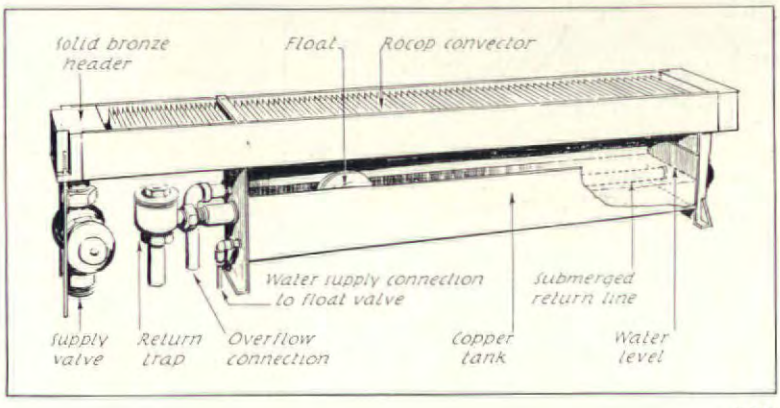


117

118. HUMIDIFIER

Copper water pan to be fastened beneath the convector radiators made by the same manufacturers. The steam return pipe from the radiator is passed through the pan, heating the water and causing it to vaporize. The amount of vaporization which takes place is determined by the condition of the air and its absorption powers. The device is completely non-ferrous, and is installed by heating contractors. Known as the "Revere Rocop Humidifier."

Revere Copper & Brass, Inc.
Rome, N. Y.

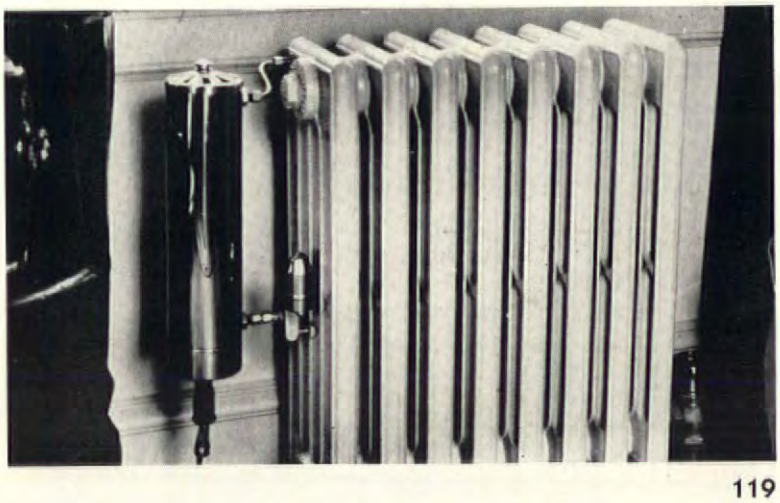


118

119. HUMIDIFIER

Designed for attachment to any free standing steam or hot water radiator without change in the heating system. Contains a heating element to be plugged into an electric outlet for additional power when desired. The heat flows through coils immersed in water, causing vaporization. Water is supplied by hand pouring. Known as the "Arco Humidifier," made of brass with nickel finish, and installed by heating contractors.

American Radiator Co.
40 West 40th St., New York, N. Y.



119

120. RADIATORS

For steam or hot water, designed to use an extended surface steel structure in contact with an internal copper tube containing the heating medium. Heat is given off by convection to the air circulating through the radiator and also by radiation from the exterior surfaces. Furnished with either front or top air outlet, and installed fully exposed upon legs or wall brackets.

Shaw-Perkins Manufacturing Co.
Oliver Building, Pittsburgh, Pa.

RADIATORS

121. CONVECTOR RADIATOR

Designed to provide a space-saving radiator that can be concealed without losing the heat-retaining qualities of cast iron. May be installed in a free standing enclosure or concealed in the wall with a removable front either of metal or of a special construction allowing plaster finish or wall paper. Heating element consists of cast iron fins in several models for use with steam and hot water systems. Installed by the heating contractors.

American Radiator Co.
40 West 40th St., New York, N. Y.

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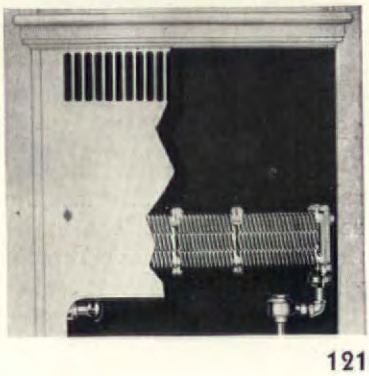


121

RADIATION AND CONTROL

122. SILENCING CONDITIONER

Designed to ventilate, clean, heat and humidify air in winter. In summer, also dehumidifies and cools. Available in many models, requiring connection to an electric outlet and to the water supply system, as well as a small fresh air duct over the window-sill and contact with the heating system. The refrigerant is Freon.

Campbell Metal Window Corp.
1 Pershing Sq., New York, N. Y.

123. MODERNIZING UNITS

Replacement units for existing steam heating systems, including radiator traps, inlet valves, air eliminators, thermostatic traps and strainers. Especially designed for use with vapor and vacuum, to lower pressures.

Sarco Company, Inc.
183 Madison Ave., New York, N. Y.

124. NON-FERROUS RADIATOR

Convector type, with copper tubes and fins, designed to withstand hydrostatic pressures up to 500 lbs. per sq. in., and steam pressures up to 150 lbs.

Wolverine Tube Co.
Detroit, Mich.

125. CONCEALED RADIATOR

Convector type, tubes and fins of copper, adaptable to hot water, steam or vapor heating systems. Installed in enclosure built into the wall for space-saving. See adv. page 27.

Chase Brass & Copper Co.
Waterbury, Conn.

126. RADIATOR THERMOSTATS

Designed for automatic heat control at the point of heat usage. When the temperature reaches the desired level, a thermostatic member closes a switch, allowing the mechanism to shut off the steam. Applicable to one or two pipe heating systems, to overcome variation due to radiant heat. See adv. page 34.

Fulton Sylphon Co.
Knoxville, Tenn.

127. TEMPERATURE REGULATOR

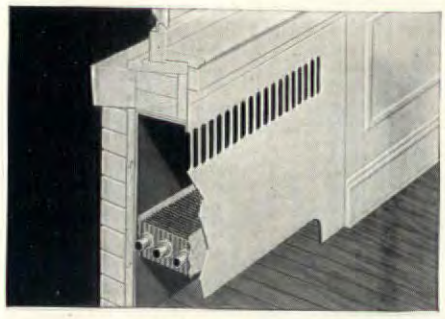
For coal-fired heating systems. Designed to operate noiselessly on lighting current, and to provide accurate control and fuel economy.

American Radiator Co.
40 West 40th St., New York, N. Y.

128. INVISIBLE SHIELDS

Slipped between sections of Crane radiators to direct heat into the living zone of the room. The makers find that the use of these accessories prevents soiling of curtains and drapes.

Crane Company
836 South Michigan Ave., Chicago, Ill.



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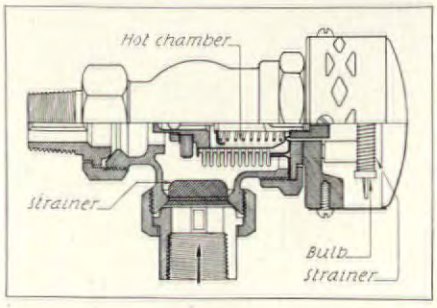

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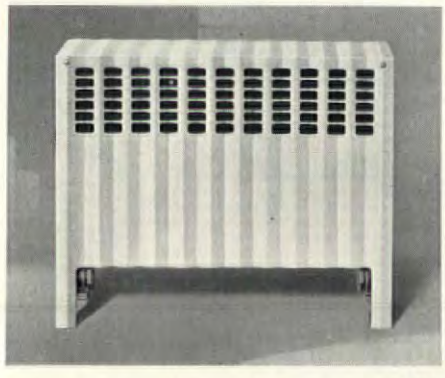


130

130. CONVECTOR RADIATOR

Cast-iron, designed to heat rapidly, cool slowly, and take up less space. Appears to be enclosed in a cabinet, eliminating the cost of such covering. Operating principle shown in section. Can be used for steam, hot water, vapor or vacuum heating systems.

Richmond Radiator Co.
1480 Broadway, New York, N. Y.

129. THERMOSTAT

Housed in modern style casing for improved appearance. Trade name "Temtrol."

Penn Electric Switch Co.
2000 Walnut St., Des Moines, Iowa

131. UNIT COOLERS

Electrically operated, designed to provide quiet refrigeration with compact unit equipment. Approximately 4 ft. x 30 in. x 20 in.; requires one electrical connection, one water supply line, and one water outlet. The refrigerant is Methyl Chloride.

Ilg Electric Ventilating Co.
Chicago, Ill.

132. TEMPERATURE CONTROL

"Modutrol System," designed to provide accurate control for all types of heating and air conditioning systems. The line includes a human hair humidity control, a modulating type thermostat, an electric modulating motor to establish the position of valves and dampers as indicated by the controllers, and an automatic, self-contained temperature control valve for individual radiators, known as the "Modustat."

Minneapolis-Honeywell Regulator Co.
Minneapolis, Minn.

133. VALVES

Designed to provide low-priced vacuum valves containing patented double air lock. Also packless valves, using hydraulically formed bellows.

Hoffman Specialty Co., Inc.
Waterbury, Conn.

134. RADIATION AND CONTROL

Appliances to improve the efficiency and accuracy of steam heating systems. The line includes three-point supply valves, electric moderator controls, unit heating elements, manual controls, etc. See adv. page 24.

Warren Webster & Co.
Camden, N. J.

135. CONTROL DEVICES

"Wet-bulb" thermostats as well as "humidostats," "humidifiers" and other devices to control the supply of moisture delivered to the air by a humidifier or air washer. Available in both room and insertion models and are adjustable for year-round service and remote operation. See adv. page 61.

Johnson Service Co.
Milwaukee, Wis.

136. "DUSTOP" AIR FILTER

Replacement type, with viscous coated glass wool as a filter medium. Placed two in tandem within "L" and "V" type frames. When dirty outside filter is removed, the others plus a replacement are moved up progressively. See adv. page 53.

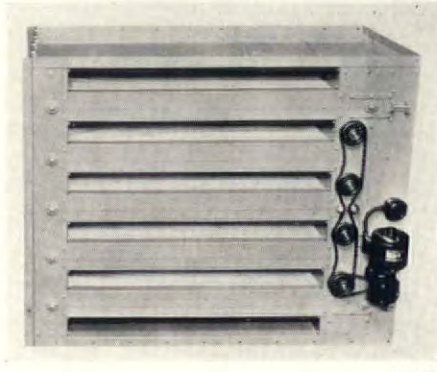
Owens-Illinois Glass Co.
Toledo, Ohio

136

137. AUTOMATIC AIR FILTER

Designed to be used in conjunction with ventilating systems. The medium is an endless filter curtain of all-wool felt, and the device is self-cleaning, requiring only an occasional emptying of the vacuum bag. Available in models with capacities up to 21,000 cu. ft. of air. Known as the "Coppus Self-Cleaning Filter."

Coppus Engineering Corp.
Worcester, Mass.



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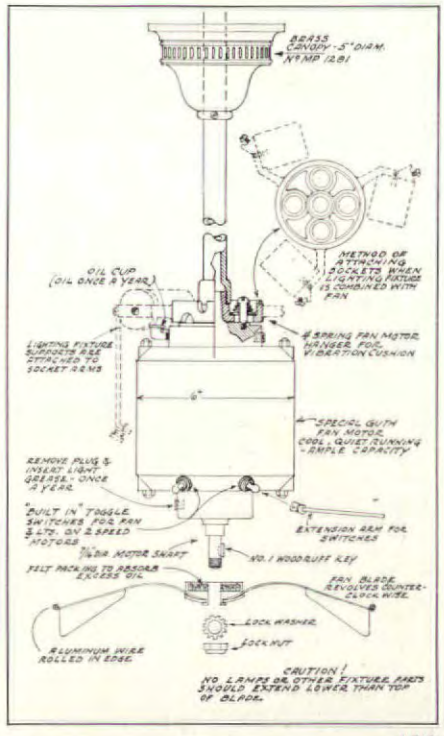
138. TWO-SPEED FAN

Suspended from ceiling in center of room, available in models which include lighting fixtures. Circulates 5,134 cu. ft. of air per minute on 125 watts of electricity. Claimed by the makers to produce temperatures 7° lower than possible with other types.

The Edwin F. Guth Co.
St. Louis, Mo.



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139. WINTER AIR CONDITIONER

For winter use, humidifies, cleans and circulates air for homes. The cabinet is made of furniture steel in grained walnut finish and connection to the water supply and electric current are required. Capacity, 8,400 cu. ft. of air per hour and evaporation range, 3 to 20 gallons of water per day.

Norge Corporation
Detroit, Mich.

140. UNIT HEATER

Trade name "Modine." Designed to overcome structural weaknesses due to unequal expansion of condenser tubes. Brass tubes are cylindrical and provided with expansion bends for "flexion." Equipped with velocity generator, motor, fan, and copper condenser tanks. Available in many models for various capacities.

Modine Manufacturing Co.
Racine, Wis.

139

141. AIR FILTERS

A device to filter out dirt and noise from incoming air at windows. It consists of a felt composition filtering material and an electrically driven fan. There is also a deflector plate which allows the flow of air to be directed upward or downward. Known as "Protecto-vent" and is available in a range of models to fit various window sizes.

Staynew Filter Corp.
Rochester, N. Y.

142. FORCED AIR DIFFUSER

Frame is installed flush with plaster line. Claimed by the makers to be noiseless at high velocities of air delivery. The angle of the louvers conceals the duct opening, and diffusion may be up, down, right or left.

Waterloo Register Co.
Waterloo, Iowa

143. CONTROLS

Designed to provide effective temperature control and recording. Electrically operated and actuated by human hair elements. Several models for various applications.

Julien P. Friez & Sons
Baltimore, Md.

144. AIR CONDITIONING

Line includes air conditioners for offices, stores, factories, restaurants and theaters. Also refrigeration machines and cold drinking water systems.

Audiffren Refrigerating Sales Co.
Providence, R. I.

145. HAIR GLASS FILTER

Hot galvanized frame holding galvanized hardware wire cloth packed with hair glass. Cleaning is effected by cold water for ordinary dust, and hot water for greasy dust. The use of glass is intended to make renewal of the filtering media unnecessary. Maximum size filter is 38 x 42 x 3¼ in.

Somers Air Filter Sales Co.
7310 Woodward Ave., Detroit, Mich.

146. VACUUM RETURN PUMP

Designed to handle the air and water returns of a vacuum steam heating system without the use of electric current. Operates on steam from the heating mains and may be run above or below atmospheric pressure.

Nash Engineering Co.
South Norwalk, Conn.

OIL BURNERS AND BOILERS

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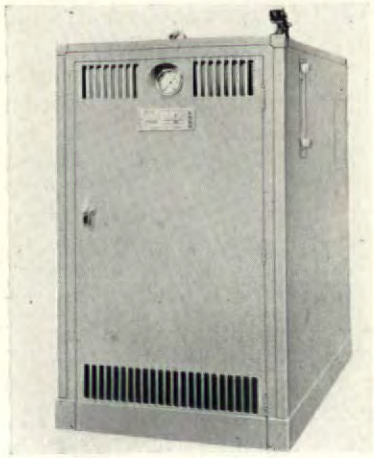

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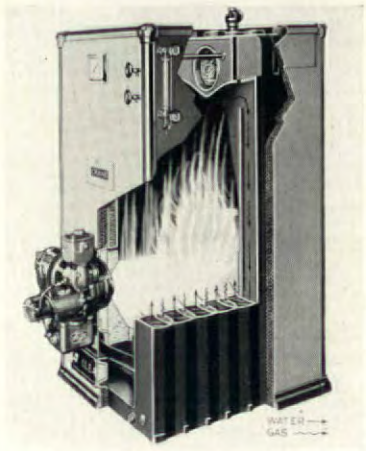

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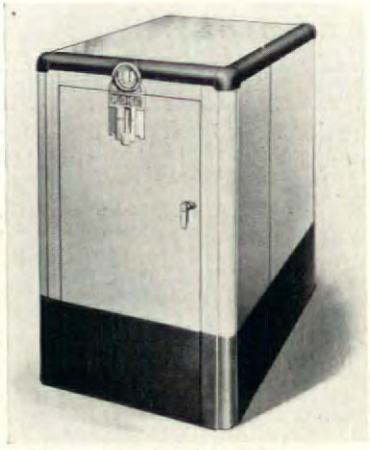

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147. BOILER AND BURNER

A vertical boiler with the burner mounted on top. Designed for low pressure atomization of heavy fuel oils by "impact-expansion." A system of progressive combustion is included for fuel economy. See adv. page 57.

General Electric Co.
570 Lexington Ave., New York, N. Y.

148. GAS FURNACE

No moving parts, pilot light for safety. Adaptable to use in conjunction with the air conditioning system offered by the same makers. See adv. page 56.

General Electric Co.
570 Lexington Ave., New York, N. Y.

149. OIL BURNING BOILER

Provision for either a built-in or external water heater. May be used with gun or rotary type burner, flue areas proportioned to reduce gas friction.

American Radiator Co.
40 West 40th St., New York, N. Y.

150. COAL BURNER AND BOILER

Encased in enameled steel cabinet to eliminate need of separate boiler room. Draft firing door as well as gauges concealed. See adv. page 70.

American Radiator Co.
40 West 40th St., New York, N. Y.

151. HEATING PLANT

Oil firing boiler with down draft construction to minimize stand-by losses. Boiler completely water jacketed to floor.

Crane Company
836 South Michigan Ave., Chicago, Ill.

152. BURNER, BOILER AND HEATER

Single unit, equipped with several new devices including the "Thermochron" an electrical appliance to lower temperature variation range. See adv. page 21.

Delco Appliance Corp.
Rochester, N. Y.

153. OIL BURNING BOILER

Designed for heating residences and small apartments. Cone-shaped firebox for maximum combustion.

Titusville Iron Works Co.
Titusville, Pa.

154. AUTOMATIC HEATER

Oil-fired heater and boiler unit, encased in heavy steel cabinet, in several models for various capacities. Trade name "Bethlehem Doe."

Bethlehem Foundry & Machine Co.
Bethlehem, Pa.

155. OIL BURNING BOILER

Designed for use with standard makes of pressure-type oil burners. For residences, in conjunction with steam or hot water heating systems. See adv. page 35.

Burnham Boiler Corp.
Irvington, N. Y.

156. OIL BURNING BOILER

Designed for more rapid delivery of steam and reduction of flue heat loss. Capacity 60 to 800 ft. of steam, 960 to 1,280 ft. of hot water. Finished in sage green with chromium trim. See adv. page 41.

Gilbert & Barker Mfg. Co.
Springfield, Mass.

157. OIL BURNING BOILER

A residence type copper bearing steel boiler which includes an integral hot water heater with submerged copper coil. Trade name, "Oil-Eighty Automatic."

Fitzgibbons Boiler Co., Inc.
570 Seventh Ave., New York, N. Y.

158. RESIDENCE BOILERS

Available in stoker-fired, oil-fired and hand-fired models. Adaptable to steam and hot water heating systems. Trade name "Premier Steel Boilers."

National Radiator Corp.
Johnstown, Pa.

159. BOILER BURNER UNIT

Designed for oil, with vertical spinner type burner and electric ignition. Boiler is of copper bearing steel with 40 sq. ft. of heating surface.

S. T. Johnson Co.
940 Arlington Ave., Oakland, Calif.

160. OIL BURNER

Designed for improved appearance, efficiency, compactness and accessibility of parts. Split phase type motor, operating on ⅛ h.p., drives pump through a shaft at three separate points. Atomizer orifice is made from a sapphire, to resist wear and corrosion.

May Oil Burner Corp.
Baltimore, Md.

161. PRESSURE OIL BURNER

Oil burner for homes. Fan housing is designed to create whirlpool motion of the air before it is delivered to the combustion chamber for increased efficiency. Operated by a ⅛ h.p. motor on 110 volt a.c. with continuous electric spark and has a fuel capacity of 1 to 3 gals. per hour. Model G Torridheat.

Cleveland Steel Products Corp.
7306 Madison Ave., Cleveland, Ohio

162. HEAVY OIL BURNER

Equipped with a metering device designed to compensate automatically for the variations in viscosity of heavy fuel oil due to temperature change. Maximum variation is reported by the makers as .07 gals. per hour.

Ray Burner Co.
401 Bernal Ave., San Francisco, Calif.

157

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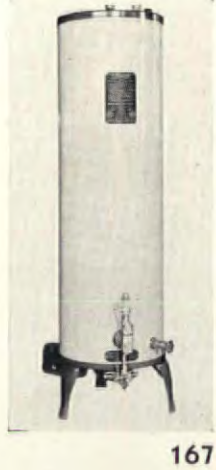

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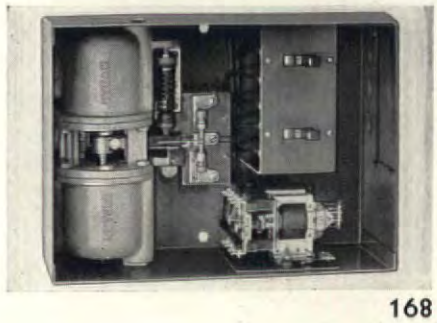

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163. AUTOMATIC COAL BURNER

Motor mounted above gear box to be free from coal, dust and water. Available range, 20 h.p. to 300 h.p. Installed by the makers.

Whitty Manufacturing Co., Inc.
216 High St., Boston, Mass.

164. STOKER-BOILER UNIT

Built of welded steel in two sections for ease of handling and installation. Water tubes are inclined above fire for more rapid circulation. Requires no masonry work other than floor on which it rests.

Spencer Heater Co.
Williamsport, Pa.

165. FORCED DRAFT STOKER

For burning low-priced screenings where boilers of 80 to 300 h.p. are used. Designed especially for schools, office buildings and small industries. Known as "Chain Grate" stoker.

Illinois Stoker Co.
Alton, Ill.

166. MONEL BOILERS

Monel metal range boilers and storage water heaters. Units available either in insulated or non-insulated models. The boilers will take 250 lb. and 400 lb. pressures; capacities up to 100 gals.

Whitehead Metal Products Co. of New York
304 Hudson St., New York, N. Y.

167. GAS WATER HEATER

For automatic hot water service. Equipped with three speed burner adjustable to desired volume of gas consumption.

Ruud Manufacturing Co.
Pittsburgh, Pa.

168. DIFFERENTIAL SYSTEM

Designed to deliver steam uninterruptedly to the radiation at pressures, temperatures and volumes called for by the controls. Distribution pressures range from 2 lbs. above atmosphere to 25 inches of vacuum, while temperatures may vary from 218° F. to 133° F. The appliances include a control valve operated by an electric motor; a differential controller (illustrated at left) actuated by pressure differences between supply and return piping; a heat balancer; a switch panel to change the system from automatic to remote control; and a pump. See adv. page 24.

C. A. Dunham Co.
Dunham Building, Chicago, Ill.

PLUMBING AND SANITATION

PLUMBING and sanitary conveniences continue to be improved and redesigned both for efficiency and for visual effect, and there is still the opportunity for clearly indicated further development. It has long been recognized that simplification and the elimination of the excess labor and multiplicity of parts were in order.

Two elements, however, have prevented a more rapid progress to this end. The men whose livelihood depends upon the semi-handicraft of plumbing practice naturally fear the "technological unemployment" which such progress would cause. Allied with them are the dealers in supplies for such work, as they have large investments in present stocks of materials, to say nothing of the manufacturers' vested interest in plants to produce present types.

The second obstruction is in the municipal plumbing codes and those who administer them. The codes enforce by law the continuation of present plumbing practice through defined requirements which do not allow installations according to recently developed methods which have resulted from analysis and research. Codes must be revised to define performance or results required and to leave methods, materials and ways and means to the ingenuity of the designers before many seemingly practical ideas can be adopted as commercial practice.

The oft-suggested unit prefabricated bathroom is rapidly being evolved. While it has not yet reached the stage of being a factory assembled room to be delivered and installed as such, it has been ingeniously designed for the easy assembly of prefabricated parts reduced to simplest terms. Bathroom fixtures themselves have been restyled in more attractive modes and have been redesigned for greater convenience and pleasure of use.

In pipe itself improvements have been made for greater durability, accuracy and ease of installation. The elimination of the necessity for pipe threading is probably the greatest recent advance, a tight and permanent joint being assured through the new materials and techniques employing heat. Resistance to corrosion is essential in plumbing and, with this in mind, pipes of all materials are being studied in relation to the chemical reactions of the water or liquids they conduct.

The scientific study of the plumbing system as a whole is progressing and should in the future modify the present rule-of-thumb legal regulations in regard to pipe sizes and venting design. Although recognized by all sanitary engineers and by architects, this chaotic state of inconsistency in codes and regulations without scientific foundation cannot be rectified without the expenditure of much time and effort to bring about a rational situation.

169. PREFABRICATED BATHROOM

Prefabricated units for assembly, including lavatory and cabinets, wall panels, tub and accessories.

The Accessories Co., Inc., Division of America Radiator Co.
40 West 40th St., New York, N. Y.

170. CONSISTENT BATHROOM

Fixtures and accessories of harmonious design, including tub, lavatory, unit water closet and accessories. See adv. page 36.

Kohler Co
Kohler, Wi

171

171. ANGLE BATHTUB

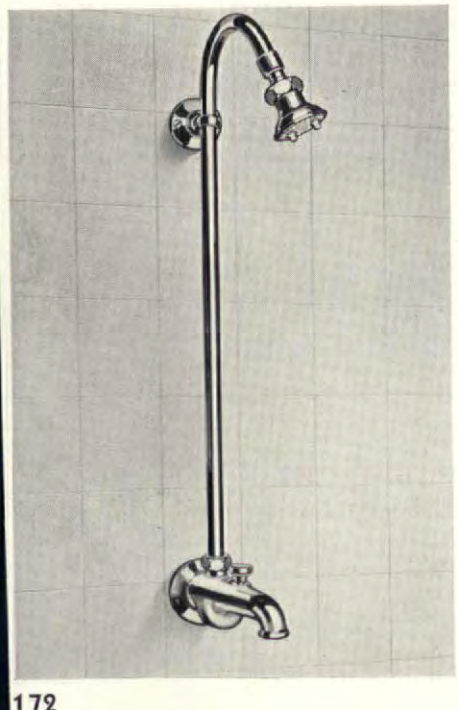
Four feet square, with bathing recess diagonally set to be the same length as conventional 5½ ft. tub, and 5 in. wider, as the bottom roll is eliminated. Available in white and ten colors, complete with shower and fittings. See adv. page 65.

Standard Sanitary Corp.
Pittsburgh, Pa.

172. NON-INTEGRAL SHOWER

Designed for use in connection with bathrooms in which no shower has been built. Consists of a tub faucet with an outlet leading up to a shower head screwed to the wall.

Crane Company
836 South Michigan Ave., Chicago, Ill.



172

173. TABLE LAVATORY

Combines the functions of a bathroom lavatory with those of a dressing table complete with drawers, cabinets and mirror. Known as the "Vanadoir," and available in a range of designs and colors. Requires only the plumbing connections ordinarily made for a lavatory, and may be installed either in the bathroom or dressing room.

Excelso Products Corp.
1807 Elmwood Ave., Buffalo, N. Y.

174. DENTAL LAVATORY

Made of vitreous china. Includes integral strainer, and hot and cold water supply fixture. Measures 12 x 12 in.

Crane Company
836 South Michigan Ave., Chicago, Ill.

175. BATHROOM HEATER

Wall-inset type, designed to harmonize with other fixtures. Electrically operated, fits between studs while grilled frame overlaps tile or other wall facing.

Anderson-Pitt Corp.
209 Goodrich Pl., Kansas City, Mo.

176. SHOWER CURTAIN

Known as the "Foldspray," and designed to solve the problem of a shower curtain for built-in corner tubs, at the same time eliminating the old-style shower curtain rod. See adv. inside first cover.

Scovill Manufacturing Co.
Waterville, Conn.

177. WATER MIXER

Thermostatic device to mix hot and cold water and maintain it at the desired temperature even though the pressure and temperature of the water used vary. Three models for various purposes, designed to shut off when the hot or cold water supply fails. See adv. page 34.

Fulton Sylphon Co.
Knoxville, Tenn.

178. WATER CLOSET

Designed to provide the correct posture and hygienic height as recommended by the medical profession.

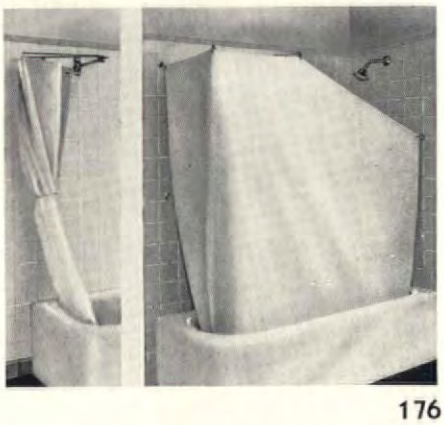
Crane Company
836 South Michigan Ave., Chicago, Ill.

179. ONE PIECE WATER CLOSET

Twenty-three inches high, designed to permit placing under sloping roof or under a cupboard. Flushes on 4 gals. of water.

Standard Sanitary Mfg. Co.
Pittsburgh, Pa.

173



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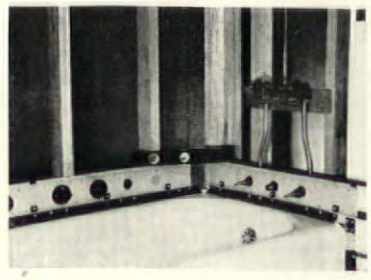
179

UNIT BATHROOM

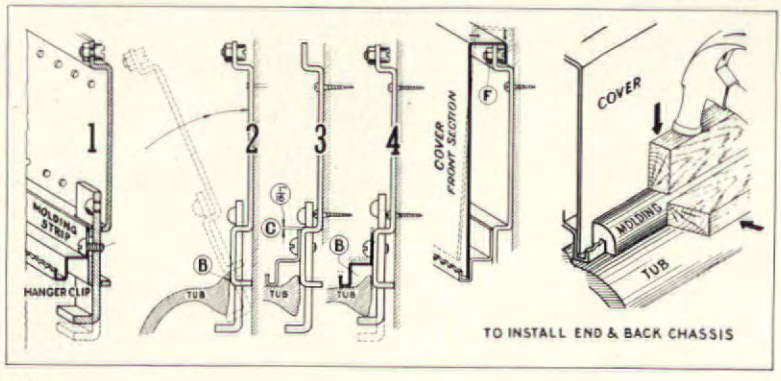
180



181

180. UNIT BATHROOM

"Arco Unit Panel System" consisting of prefabricated elements designed to permit a bathroom to be installed without extensive cutting, fitting, or labor on the job. All parts are prefinished and prefitted, requiring merely assembly. Photo at upper left shows chassis about to be interlocked with tub before fastening to studs.



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181. STUD SUPPORT

Back and end chassis leveled and fastened to studs so that the floor is relieved of the tub's weight.

182. APPLICATION

Diagram shows tub edge, supporting chassis, chassis cover plate, and method of applying molding.

183

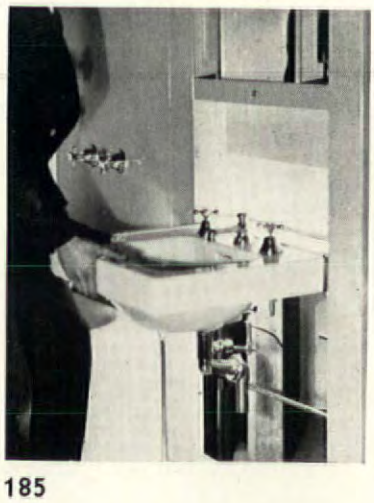
184

183. PANELS

Eighteen-gauge steel panels, rust resisting lacquer finish, which interlock over cover plate and conceal studding. Available in a range of colors. Panels may be removed for access to piping.

184. MOLDING

Flexible metal molding applied over joint between tub and panels.



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185. LAVATORY UNIT

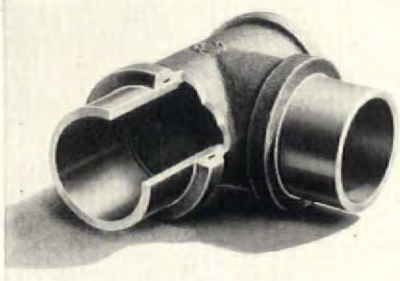
Hooked into panel section containing medicine chest, mirror, and concealing piping.

186. ACCESSORIES

Unit complete with shower curtain rail, shower head, faucets and rack. The system is adaptable to various room shapes and types of construction.

Accessories Company, Inc.
Division of American Radiator Co.
40 West 40th St., New York, N. Y.

187



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192. WELDING TECHNIQUE

Trade name "Aircowelding," designed to make puddling unnecessary and to permit the use of smaller welds. Claimed by the sponsors to reduce gas and rod consumption 30 to 50 per cent.

Air Reduction Sales Co.
60 East 42nd St., New York, N. Y.

187. FLUSH VALVE

Requires no conscious operation by the user, since it is attached to the seat cover. Depression of the cover causes the valve to set, and the flushing action takes place upon release.

Crane Company
836 South Michigan Ave., Chicago, Ill.

188. THREADLESS BRASS FITTINGS

Brazing alloy, trade name "Sil-Fos," which has a low melting point and will flow at 1,300° F., provided in conjunction with a threadless fitting known as "Walseal" for bronze or other non-ferrous pipe. The pipe is slipped into the fitting and an oxyacetylene flame is applied until a white ring appears between pipe and fitting. According to the manufacturers' tests this joint is stronger than the pipe itself. Made for standard iron-pipe-size and extra heavy brass and copper pipe, but where economy is important, thin wall copper tubing, iron-pipe-size diameter may be used. See adv. page 4.

Patents and Gas by Air Reduction Sales Co.
60 East 42nd St., New York, N. Y.
Fitting made by Walworth Co.
60 East 42nd Street, New York, N. Y.
Silfos made by Handy & Harmon
82 Fulton St., New York, N. Y.

189. PIPE FITTINGS

Copper integral tee and wrought copper threaded elbow, designed to eliminate cast alloy metal in copper piping installations. Sizes up to one inch.

American Radiator Co.
40 West 40th St., New York, N. Y.

190. CAST BRONZE FITTINGS

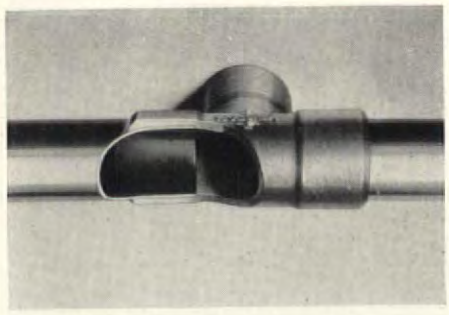
"Flared tube" and "solder" type threadless connections for copper tubes in order to permit tubes to be lighter than standard size pipe.

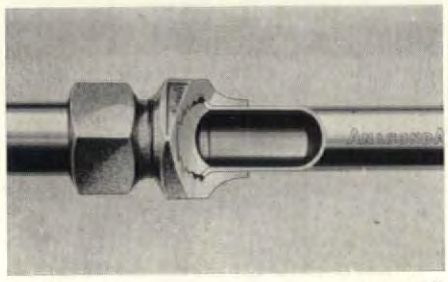
American Brass Co.
Waterbury, Conn.

191. PIPE WELDING FITTINGS

Produced with the purpose of providing welded intersections having full pipe strength and unrestricted flow conditions. Known as "Bonney Weldolets" and "Thredolets," designed with funnel shaped outlets and heavy external ribs. "Weldolets" are Vee welded for branch connections such as Tees, Crosses, Side-outlets, etc., while "Thredolets" have their outlets tapped to standard taper I.P. sizes. Both types are made of drop-forged steel, except in the very large sizes, which are of cast steel.

Bonney Forge and Tool Works
Allentown, Pa.





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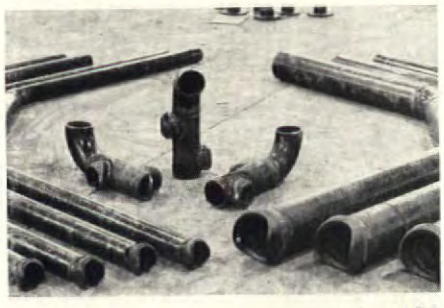

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191

193. ACIDPROOF SINKS AND PIPE

Chemical stoneware, "vacuumized" for durable laboratory equipment. Special fittings may be made in one piece, light in weight and easily cleaned. Trade name, "Knight-Ware."

Maurice A. Knight
Kelly Ave., Akron, Ohio

SANITATION

194

194. WATER SOFTENER

Designed to soften water with automatic regeneration control. The softening agent is zeolite, a tasteless, odorless, insoluble, granular substance which abstracts the hardening elements (calcium and magnesium) from water. The amount of water that may be treated between regenerations varies with the model and the hardness of the water, from 240 to 36,000 gallons. The largest model is 56 in. high and occupies 23 x 47 in. of floor space.

The Permutit Co.
330 West 42nd St., New York, N. Y.

195. POP-UP WASTE

Designed to operate by flexible rod of bronze wire, to eliminate complexity of rigid rod type. Knob is swiveled to turn independently of the wire. Trade name "Flexrod."

The Chicago Faucet Co.
2700 North Crawford Ave., Chicago, Ill.

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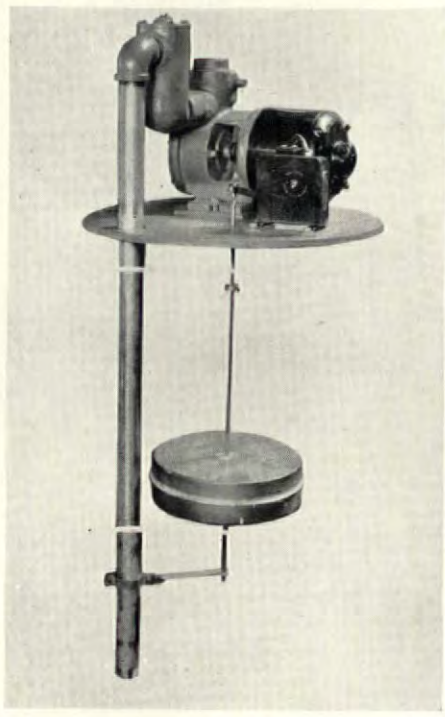


200

200. CELLAR DRAINER

Entire pump may be mounted above the area to be drained for easy inspection and elimination of damage by moisture. The various models operate on a ¼ h.p. motor with capacities from 5 to 25 gals. per minute, and will lift water up to 25 ft.

Westco Pump Corp.
Davenport, Iowa

196. SEAMLESS STEEL FITTINGS

Forged steel elbows for welding. Outside wall full thickness, tangents to facilitate alignment, machine tool beveled joint edge and full size inside diameter.

Taylor Forge & Pipe Works
P. O. Box 485, Chicago, Ill.

197. AUTOMATIC SHOWER

Thermally operating shower head, designed to shut when temperature of the water delivered to it approaches the scalding point. After proper regulation has been made, the head automatically opens again. Made of solid brass, chromium plated.

Peck Bros. & Co.
127 Chestnut St., New Haven, Conn.

198. SEPTIC TANK

Horizontal type, for homes and camps. Long flow of sewage designed to insure thorough digestion and settling-out of solid matter. Provides trap and ventilation to house stack.

San-Equip, Inc.
East Brighton & Glen Ave., Syracuse, N. Y.

199. CLAY SEPTIC TANKS

Made of salt glazed vitrified clay, designed for use in connection with homes, schools, gas stations, and other isolated buildings. Burned-in baffles and no loose parts to get out of alignment, to insure proper air space and bacterial action. Adaptable to serve from 6 to 45 persons.

Robinson Clay Products Co.
Empire State Building, New York, N. Y.

201. SANITARY OVERFLOW

Water closet equipped with a built-in sanitary overflow to prevent back syphonage from fixtures having cross connections by assuring air access under the bowl rim at all times. Non-mechanical to eliminate the possibility of getting out of order, and visible for easy cleaning.

The John Douglas Co.
Cincinnati, Ohio

202. QUIET FLUSH VALVE

Designed to be inaudible outside the bathroom. Used in conjunction with special bowl 14 inches high. Has one moving part claimed by the makers to be easily replaceable.

Speakman Co.
Wilmington, Del.

203. SELF-CLEANING SHOWER

Handle controls volume of shower, from flood to needle bath on ordinary house pressure. Tapered slots instead of holes to prevent clogging.

Speakman Co
Wilmington, Del

ELECTRICAL PROGRESS

BY HENRY F. RICHARDSON

of Meyer, Strong & Jones, Engineers

WHILE practically every type of electrical device has been improved, if not entirely redesigned, developments in four fields are perhaps most noteworthy.

Wiring. During the past year or so, a radical development in wiring methods in this country has been crystallizing. This new method applies principally to non-fireproof construction and involves the use of "concentric" or "bare neutral" conductors. The BX cable generally used consists of two or more rubber insulated wires, wrapped with paper and then covered by a steel armor. The conductors of the "concentric" method have one of the conductors, an uninsulated stranded conductor, wrapped around the other insulated conductors and the armor then applied. The uninsulated conductor is used as the neutral or grounded conductor. A new line of outlet boxes, etc., is required so that this uninsulated conductor can be connected to each box.

The usual two-wire 14-gauge BX armored conductor is .538 in. in diameter. A two-wire 14-gauge concentric conductor is .280 in. in diameter consisting of a single rubber-insulated conductor, a stranded bare conductor wrapped around it, and an armor covering. The area of the concentric conductor is a little more than a quarter of the area of the BX cable. The concentric conductor is much more flexible and has certain other advantages. It seems probable that its use will result in a cheaper and better installation.

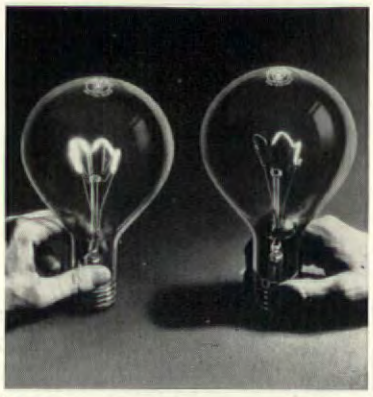
However, this system has not completely emerged from the development stage. A group of public utility companies looking for a means of encouraging increased wiring of buildings, particularly residences, has had a large quantity of the necessary materials made up to their special order by a manufacturer. This group of companies has sponsored the installation of wiring of this type in some 700 houses in five or six cities and report very satisfactory experience. These installations have been made under special permission of the authorities having jurisdiction as the system is not as yet approved by the National Electric Code except for service connections. The materials are not yet on the market for general use.

Elevator Equalizers. Modern elevators are almost exclusively of the traction type — i.e., the hoisting ropes are attached at one end to the car and at the other end to the counterweight, being driven by the rotation of a sheave around which these ropes pass, by the friction or traction between the cables and the sheave. The driving sheave may be either overhead or in the basement. Obviously it is desirable that the load be equally divided between the cables. Several sections of cable, even when cut from the same reel of cable, will stretch differently in service. Even though the length of the cables be carefully adjusted when initially installed, after a year or more of service, they will, generally speaking, continue to stretch differently so that the load will not be equally distributed. Among other objections, this unequal loading causes unequal wear on the hoisting cables due to the unequal loading at the driving sheave — i.e., some cables do more than their share of the work and others less. Since it is general practice to replace all cables if any require replacement, this unequal loading shortens the life of the group of cables.

There is no device on the market which even theoretically will completely equalize the load on the several cables over a period of time. To equalize perfectly, the device would have to be without friction and would have to be adaptable to both car and counterweight ends of the cables. However, it is now generally accepted that the use of a properly designed equalizing device at the point of attachment of the hoisting cables at the car will more than pay for itself in lengthening cable life and also in other ways improve the operation of the elevator.

Circuit Breaker Type Distribution Centers. Fuses have always been recognized as a nuisance to be tolerated only because of the greater cost of automatic circuit breakers. With the latter service can be restored after it opens simply by closing the circuit breaker again. It has been general practice to use circuit breakers rather than fuses and knife switches for circuits where the importance of quickly and conveniently restoring service warranted the additional cost. However, until recently, there has been no circuit breaker of reasonable size or price available for use in ordinary lighting panels or distribution centers, so that the use of fuses in branch lighting services has been unavoidable. Recently, however, several manufacturers have developed small, inexpensive and reliable circuit breakers which have come into widespread use for this purpose. It is now possible at a reasonable cost to install distribution centers equipped with automatic circuit breakers even in small homes.

Quiet Operating Motors. For some years the tendency of public utilities throughout the United States has been to push the use of alternating current over direct current. The alternating current has many advantages but has several inherent disadvantages, principally in speed control and noise of apparatus. The general use of variable voltage control for high-class elevator installations, either d.c. or a.c., eliminated the last real stumbling block in control, but the inherently greater noise of alternating current motors has been a decided objection to their use in high-class work, particularly in theaters or similar buildings, hospitals, churches, banks, etc., in fact in almost any but industrial buildings. In spite of this, the use of alternating current has become practically universal and as a result several manufacturers, after considerable research, have been developing and placing on the market special lines of motors designed to reduce noise to a minimum. The use of these motors, particularly when mounted on properly designed noise and vibration insulating bases, results in an installation as quiet as was formerly obtainable with direct current motors. These quiet motors cost somewhat more than the standard type.



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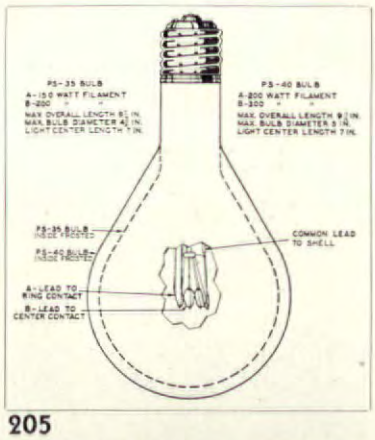

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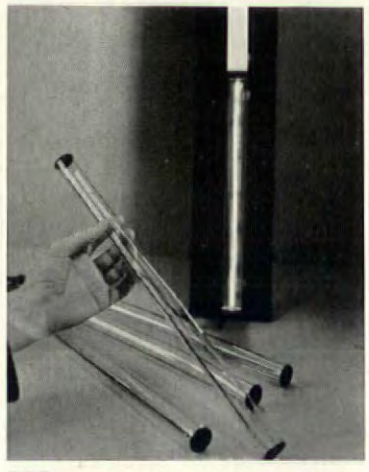

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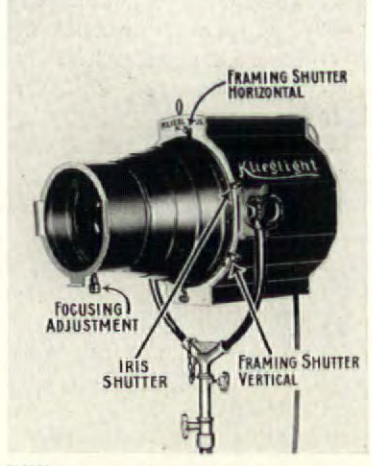

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210

204. THREE LIGHT LAMP

The two filaments, bright and dim, can be operated separately or together. Constructed in two sizes, with mogul screw base. Installation for these lamps requires a third wire in layout.

Westinghouse Lamp Company
30 Rockefeller Plaza, New York, N. Y.

205. THREE LIGHT LAMP

Two filaments, which may be 200 and 300 watts, or 150 and 200 watts, to be used separately or together. Special socket and base are required; also three wire layout.

General Electric Co.
Nela Park, Cleveland, Ohio

206. INDICATOR LAMP

Designed for signal, exit and other indicator use. Must be operated with a separate resistance in series. Intended for stroboscopic work, with a life of 3,000 hours.

Westinghouse Lamp Co.
30 Rockefeller Plaza, New York, N. Y.

207. TUBULAR LAMP

Continuous line of light, installed end to end on 18 in. centers, the break in the line of light being 5/8 in. Available clear or in a variety of colors.

Westinghouse Lamp Co.
30 Rockefeller Plaza, New York, N. Y.

208. DOWN-LIGHT

Designed to give direct illumination from an "invisible" source. A lens system crosses the light beams at the point of opening in the ceiling and directs them over the area to be illuminated. Mirrors and lens must be kept clean. See adv. page 42.

Kliegl Bros
321 West 50th St., New York, N. Y.

209. SPOT-FLOODLIGHT

Elliptical reflecting chamber to give maximum beam direction control as well as minimum light waste. See adv. page 42.

Kliegl Bros
321 West 50th St., New York, N. Y.

210. BUILT-IN LIGHTING

Controlled ceiling light in flush mounted panels. Easily installed in new construction or remodeling work.

Holophane Co., Inc.
342 Madison Ave., New York, N.

211. EXPLOSIONPROOF FIXTURE

For installation in Class I, Group D Hazardous Locations. Cast aluminum body. Available in 200 and 250 watt sizes with enclosed reflector. Also 100 and 150 watt sizes with external reflector.

Benjamin Electric Mfg. Co.
Des Plaines, Ill.

212. INDIRECT LIGHTING

Decorative chandeliers for restaurants and halls. Also adapted to residence use as dining or living room fixture. See adv. page 64.

Lightolier Co.
11 East 36th St., New York, N. Y.

213. THREE-LIGHT LAMP

Two filaments with control switch already in the socket. Only two leads required for connection with existing wires. Available in both pendant and close-to-ceiling types.

The F. W. Wakefield Brass Co.
Vermillion, Ohio

214. SEMI-INDIRECT LIGHTING

For homes and offices. Low intensity illumination of basins and globes causes fixture to blend with ceiling. Trade name "Magnalux Luminaires."

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

215. SLIDING LIGHTS

Movable lighting fixtures built as integral parts of door or mirror frames. Furnished in various models, a wide range of colors and chromium, to fit existing color schemes.

Faries Manufacturing Co.
Decatur, Ill.

216. ILLUMINATING GLASSWARE

Designed for general store illumination and at the same time for spot lighting merchandise. Incorporates the Macbeth Monex enclosing globe and the Holophane prismatic reflector. Trade name "Hale Unit."

Macbeth-Evans Glass Co.
Charleroi, Pa.

217. UNDERWATER LIGHTS

For swimming pool illumination from dry niches beneath the water level. Designed for brick and tile finish construction, served from manhole at rear. Drain removes condensate. Diagram at right shows installation. See adv. page 55.

General Electric Co.
Schenectady, N. Y.

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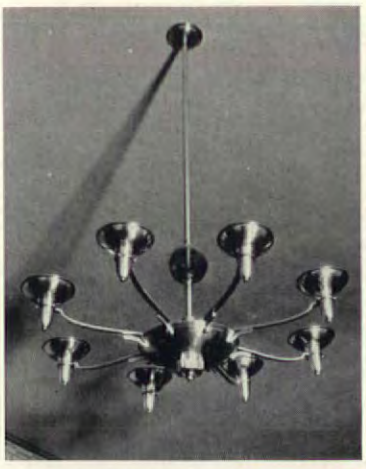

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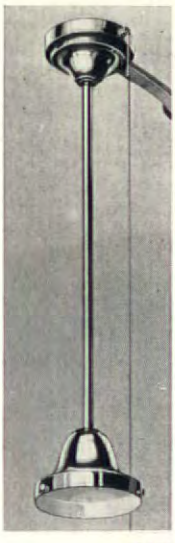

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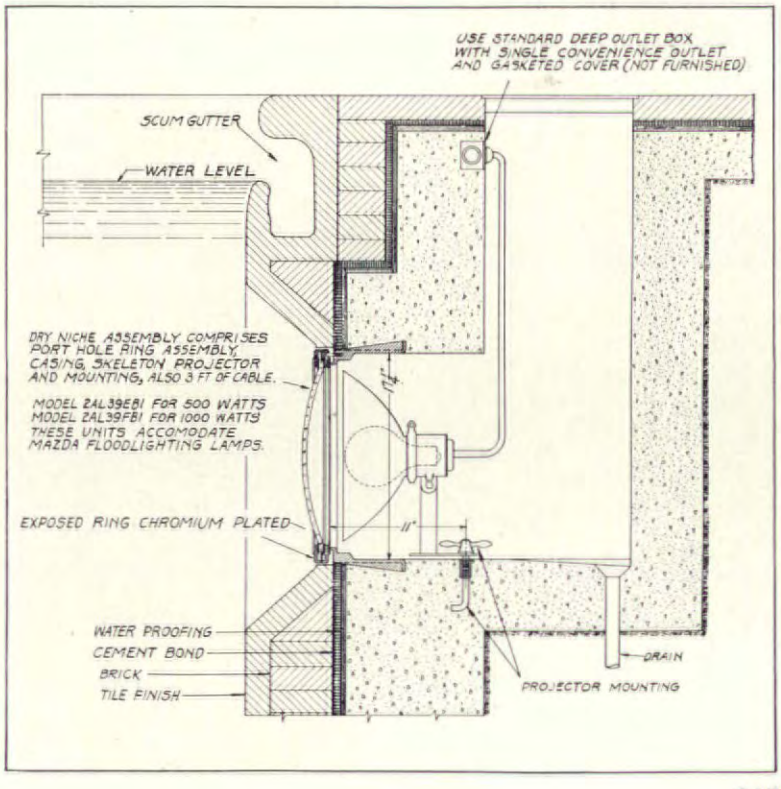

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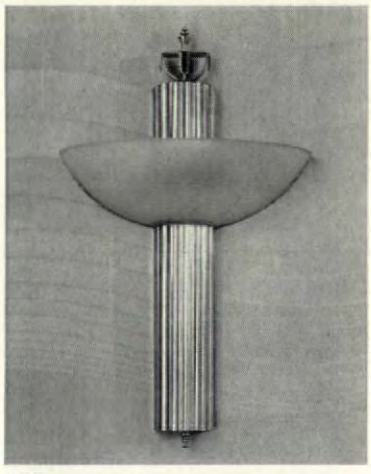

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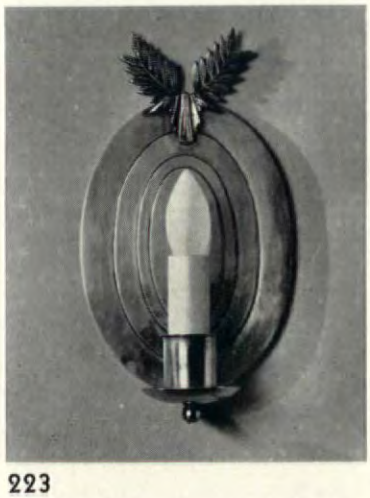

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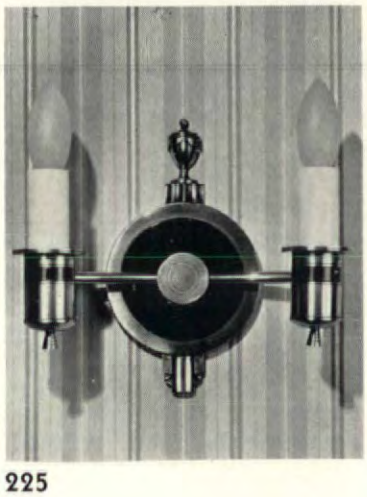

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218–225. BRASS FIXTURES

Available in a range of twenty-two finishes and a wide range of models. Made of sheet brass averaging 18-gauge. Designed to provide good design and construction in a popular grade of lighting fixtures.

218. The "Murat." Empire style. Back plate, candle cups and saucers are wrought brass, while bracket is finished in antique brass.

219. "The Connecticut Sconce." The sconce is of wrought brass, finished in antique tin or antique brass.

220. The "Colonnade." Fluted column of polished chromium supporting half-bowl of crystal glass, sand blasted on the outside.

221. The "Portsmouth Sconce." Finished in antique brass with dull steel reflector, or in antique tin with polished brass reflector.

222. The "Green Mountain Sconce." Wrought brass finished in antique tin. The star is also the nut which fastens fixture to outlet.

223. The "Victory." Forged decoration, wrought metal back plate, finished in antique brass.

224. The "Concord." Eagle decoration is forged brass, entire fixture antique brass finished.

225. The "Brighton." Back plate and candle cups are wrought brass, finished in antique brass and black. See adv. pages through 15.

Chase Brass & Copper C
Waterbury, Con

226. LAMP EQUIPMENT

A line which includes sockets, switches ceiling and canopy pulls and other device designed for use in conjunction with doub filament, three-light lamps.

The Bryant Electric C
Bridgeport, Co

227. INDICATING CUT-OUTS

Porcelain plug and cartridge cut-outs wi Neon lamp indicators. When a fuse blow lamp glows indicating the location of t blown fuse. Insertion of a new fuse puts o the light. Interchangeable with prese lines of plug and cartridge.

L. S. Brach Mfg. C
80 Duryea St., Newark, N

228. ELECTRICAL OUTLET

Designed to bring electrical service from an underfloor source through carpet without damage. For installation in floor outlet boxes or in inserts of underfloor duct systems. Supply wires do not pass through the carpet inside of a sleeve or nipple, but terminate at binding screws below the floor line. The electrical connection of receptacle to the underfloor terminal block is through two insulated screws which pass through the carpet without cutting. The terminal block under carpet is provided with pointed dowels extending vertically upward, thus serving to locate terminal block. The receptacle is slipped over these and conductor screws are threaded through carpet and tightened.

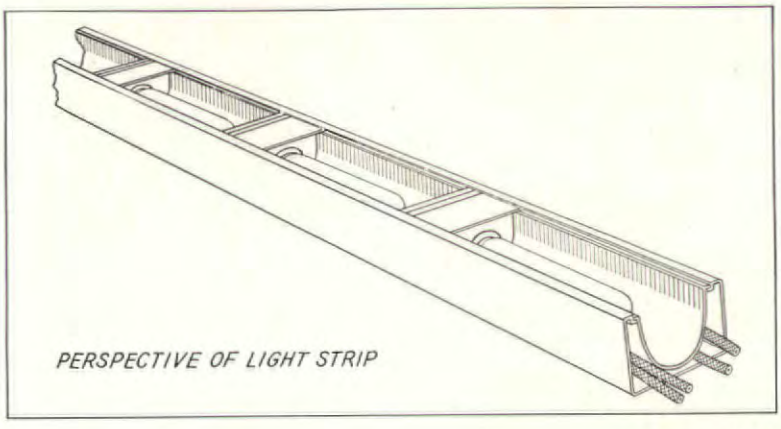
The Fibre Conduit Co.
292 Madison Ave., New York, N. Y.

228

229. LIGHTING STRIP

Prefabricated channel, with aluminum reflectors. The lamps are standard tubular, ranging in capacity from 25 to 150 watts, while the strip comes in three models for different needs with the wiring concealed in the channel. The spacings may be made as low as 6 in. o.c. or as wide as desired.

Curtis Lighting, Inc.
1123 West Jackson Blvd., Chicago, Ill.



PERSPECTIVE OF LIGHT STRIP

229

230. FUSE ELIMINATOR

Circuit breaker to replace fuses in homes. Employs system of arc interruption which allows current to be restored by flipping a switch. Models are available to break circuits up to 600 amperes, 600 volts a.c., and 250 volts d.c.

General Electric Co.
Schenectady, N. Y.

231

232

231. LIGHT METER

Instrument for checking light intensities and conditions. Designed to have an unlimited life, its batteryless light-sensitive cell converts light directly into electric energy, which is conducted to a sensitive micro-ammeter, calibrated to indicate light intensity in units of foot-candles. On this scale, intensities are classified according to the various seeing tasks.

Weston Electrical Institute Corp.
50 Church St., New York, N. Y.

232. LIGHT METER

Designed to indicate intensities of light in terms of foot-candles and seeing tasks.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

233. SIGHT INDICATOR

Light-sensitive meter with dial, calibrated to show light intensities. Intended for architects, renting agents and electrical dealers.

Sight Light Corp.
Chrysler Building, New York, N. Y.

WIRING, ETC.

234. ELECTRICAL DISTRIBUTION

Aluminum (or steel) housing with copper (or aluminum) busbars. Assembly designed to withstand short circuit stresses. Telescopic joints between sections, and cover plates where needed. Bars do not exceed ¼ in. in thickness.

The Trumbull Electric Mfg. Co.
Plainville, Conn.

235. UNDERFLOOR DUCT

Sherardized steel duct provided with factory-made convenience outlets on 24 in. centers. Intended to give the same convenience in floor outlets as is generally provided in walls, so that light, telephone or bell circuit connections may be made easily.

Walker Brothers
Conshohocken, Pa.

236. CONTROL UNITS

Circuit breakers and other items combined into units of wall mounting, floor mounting or panel types. Single dead front construction for improved appearance and ease of installation.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

237. CIRCUIT BREAKER PANEL

Tamperproof distribution center for three-wire service. Galvanized steel box, black lacquer finished trims. Operates without fuses.

Benjamin Electric Mfg. Co.
Des Plaines, Ill.

238. EMERGENCY CONTROL

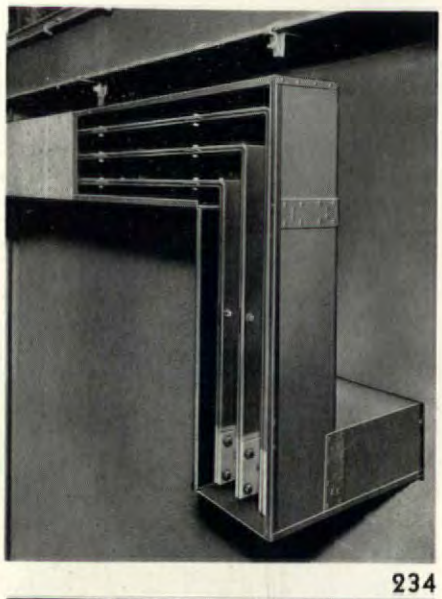
Thirty-ampere capacity, designed to transfer automatically the emergency lighting load to a 60-cell Exide glass jar type battery and to return the load to the a.c. supply upon restoration of normal power service. See adv. page 38.

The Electric Storage Battery Co.
Allegheny Ave. and 19th St., Philadelphia, Pa.

239. GAS ELECTRIC SETS

For emergency light and power in public and private buildings or for isolated locations. On power failure, cranks the engine automatically, chokes it properly and lets it carry its load within a period of approximately 10 seconds from the time of failure. Operates on gasoline, or natural or artificial gas, generating either direct or alternating current.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.



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235

244

245

240. GRADED WIRING SYSTEMS

Designed to provide various qualities of wiring systems to suit different applications. (A) "G. E. Code Grade" meets N. E. and local codes and is intended for buildings where minimum initial cost is desired. (B) "G. E. Supr-Kode Grade" exceeds code requirements, and offers low operating and replacement costs. (C) "G. E. Delux Grade" is designed for structures where the finest wiring equipment available is desired, such as public buildings, hospitals, banks, cathedrals, high type residences, etc. See adv. pages 43, 44, 45, 46.

General Electric Co.
Merchandise Dept., Bridgeport, Conn.

241. WIRING DEVICES

Designed to permit the use of combinations of two or three switches, convenience outlets, pilot lights, etc., in a single standard size plate.

Arrow-Hart & Hegeman Electric Co.
103 Hawthorne St., Hartford, Conn.

242. RUSTPROOF CONDUIT

Seamless metallic tubing designed to be as strong as steel, ductile and completely rustproof. Composed almost entirely of copper, it has certain alloy elements added to improve its physical properties.

The American Brass Co.
Waterbury, Conn.

243. ELECTRICAL CONDUIT

Designed to reduce difficulties in pulling wires through conduits. The knurled inner surface carries cables on small rounded knobs instead of on the entire surface of conduit, with the intention of reducing skin friction.

Steel and Tubes, Inc.
224 East 131 St., Cleveland, Ohio

244. CIRCUIT BREAKERS

Designed to be used with 600 volts alternating current or 250 volts direct current. Equipped with arc extinguishing devices and combination thermal and magnetic trips. Intended for mounting back of a switchboard panel or in individual wall type steel enclosures.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

245. AUTOMATIC DOOR

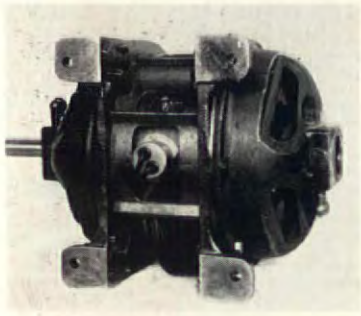
Mechanism actuated by a photo-electric cell located in the flanking railings, door opens when approached.

Stanley Work
New Britain, Conn

246. PROTECTED MOTORS

Built-in thermostats to provide protection against abnormal conditions which cause motors to overheat and burn out. Automatically disconnects from power source, or gives an audible or visible signal, when temperature approaches the danger zone.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.



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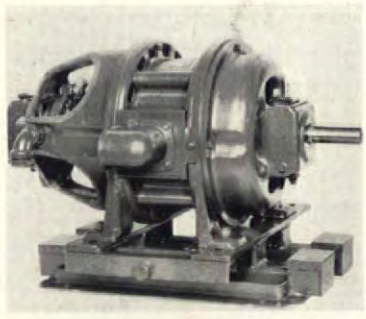


247

247. MOTOR BASE

Designed to reduce motor noise. Rubber mounting and motor suspension allows isolated motor operation. Installed as a unit, and control screw moves motor for belt adjustment.

General Electric Co.
Schenectady, N. Y.

248. QUIET MOTORS

For installations such as hospitals, schools, churches and theaters where noise must be reduced to a minimum, and particularly for ventilating systems.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

248

249

249. RUBBER MOTOR MOUNTING

Designed to dampen motor vibration. Photograph at right shows three shallow cups of mercury, whose surfaces indicate the effectiveness of mounting method (manufacturer's test).

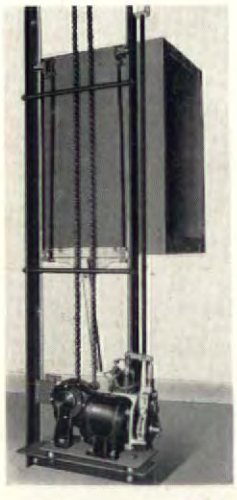
General Electric Co.
Schenectady, N. Y.

DUMB-WAITERS

250. ELECTRIC DUMB-WAITER

Motor raises or lowers the car without reversing. The car is carried by a steel cable fastened to an endless steel roller chain operating between an idler sprocket mounted near the top of the framework, and a driving sprocket mounted on the motor shaft. When the connecting link in the chain passes the upper or lower sprocket, it reverses the direction of motion, preventing overtravel.

Sedgwick Machine Works
150 West 15th St., New York, N. Y.



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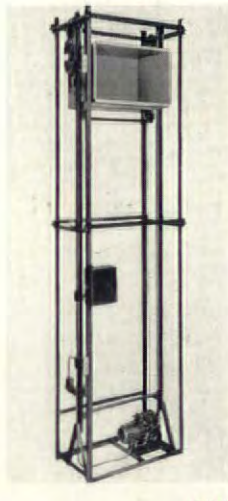


252

251. DUMB-WAITER

Traction type, having a capacity of 350 lbs. and traveling 50 ft. per minute. Operated by a push button and furnished with standard frames built for 10 or 12 ft. rises. Extensions can be furnished for further travel. Shipped already assembled and can be installed by a mechanic. Car is 2 ft. 9½ in. x 2 ft. 6 in.

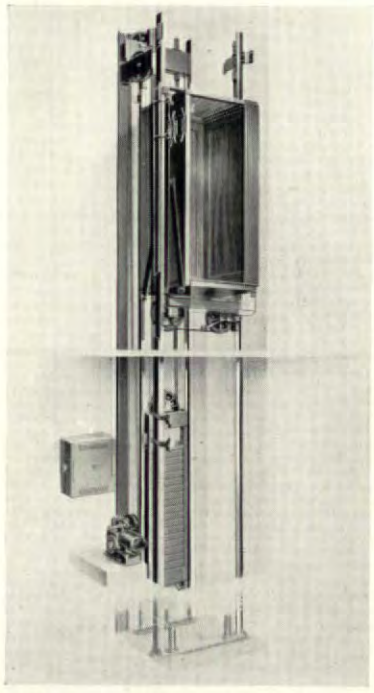
Warner Elevator Mfg. Co.
Cincinnati, Ohio

252. UNDERCOUNTER DUMB-WAITER

Designed to serve two floors. Carries 300 pounds at 50 ft. per minute, and is entirely self-contained in a structural steel frame. The motor is a 1½ h.p., 1,800 R.P.M. Otis drum type. Two buttons at each floor permit calling the car from or sending it to each floor. Standard and special car sizes are available. See adv. page 48.

Otis Elevator Co.
260 Eleventh Ave., New York, N. Y.

ELEVATORS, ETC.



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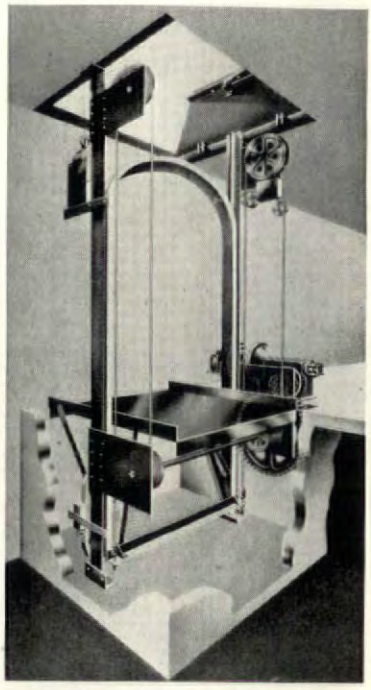

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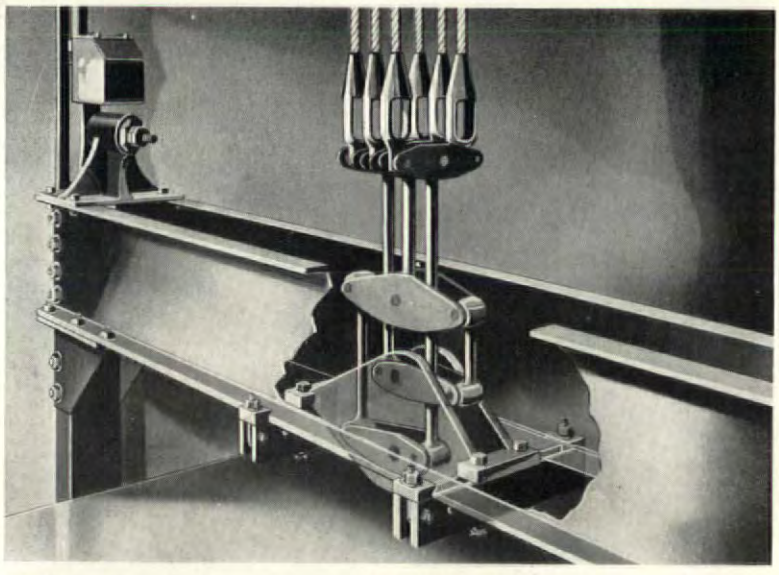

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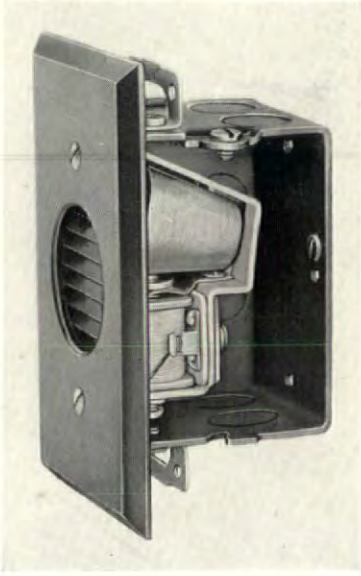


259

253. PERSONAL SERVICE ELEVATOR

Designed for automatic operation in private homes where the rise does not exceed three floors. Maximum load is 650 lbs. at 35 ft. per minute. Source of power can be any standard a.c. house circuit. Outside dimensions of the platform are: (minimum) 2 ft. 2½ in. wide x 2 ft. 7 in. deep, (maximum) 3 ft. 2 in. wide x 3 ft. 8½ in. deep.

Otis Elevator Co.
260 Eleventh Ave., New York, N. Y.

254. SIDEWALK LIFT

Unit construction of the worm gear type. Car is all-welded steel, and stiles form bow to open sidewalk doors.

Westinghouse Electric Elevator Co.
1500 North Branch St., Chicago, Ill.

255. ELEVATOR CABLE EQUALIZERS

To insure uniform tension in hoist or compensating cables by compensating for differential elongation and variation of sheave groove depths. All the hoist cables are attached to an equalizing assembly on the rigid structure of the car.

The Evans Elevator Equalizer Co.
New York, N. Y.

256. CABLE EQUALIZER

System of levers to which the cables are attached. Designed to compensate for changing lengths in cables and to distribute weight of car and counterweight with equal tension on each cable. Also reduces spread of cables.

Westinghouse Electric Elevator Co.
1500 North Branch St., Chicago, Ill.

257. CABLE EQUALIZER

Roller bearings incorporated at pivotal points to reduce friction set up by plain bearing blocks. May be installed in the car crosshead as a unit.

L'Code Co.
419 Fourth Ave., New York, N. Y.

258. VARIABLE RETURN

Device for automatic reversal of elevator travel at point of highest registered car or hall call.

Otis Elevator Co.
260 Eleventh Ave., New York, N. Y.

259. OUTDOOR TELEPHONE

Enclosed in a weatherproof housing for mounting on a wall or post. "Hand-set" type, can be locked when desired.

American Telephone and Telegraph Co.
195 Broadway, New York, N. Y.

260. SIGNAL DEVICES

Bell, buzzer, button, bell transformer, or combinations in flush wall boxes covered by standard plates.

Edwards & Co., Inc.
140th and Exterior Sts., New York, N. Y.

KITCHEN PROGRESS

In the days when servants were plentiful the kitchen requirements could hardly be called exacting on the architect. A large room, rarely too light, a coal range on one wall, a sink on the far side, the icebox out in the "back entry," and the culinary facilities were all one could expect. The hot water tank (nicely polished) was usually there too and perhaps the "set tubs," a miscellaneous collection of unrelated (in plan at least) cumbersome and ugly necessities.

Today the kitchen has become a cheerful, scientifically planned "work space" — compact, unified, convenient, and almost robot equipped. Time, and step-saving demanded (and produced) a plan in which the mechanical appurtenances were logically and chronologically arranged in a "use sequence." Mechanical refrigeration and insulation made practicable such a plan. With food reception and preservation as the starting point, the natural sequence is, in most modern kitchens, refrigerator, storage, preparation table, sink, range, serving table and door to dining room, arranged from left to right. "Everything within arms' reach" has become the slogan of design, and some units even approach the yacht galley in compactness, the apartment kitchenette units being nearest.

This trend toward orderly unity in the kitchen has produced carefully proportioned and correlated units which can be assembled to fit together to make a complete efficient whole. Manufacturers have collaborated, designed together to produce parts that dovetail and harmonize. Tops of cabinets, sinks, range and tables are all of the same height, and frequently provide a continuous work shelf almost completely around the room.

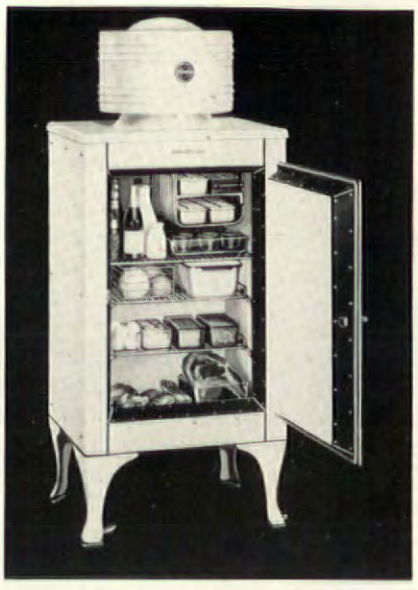
Everything possible is done to lighten labor in the kitchen. Electrical appliances are rapidly gaining favor. An electric range, dishwasher, refrigerator (with interior light), fan, clock, plate warmer, etc., add very little to the current charges, and more than justify themselves by the saving in time and effort they afford.

Equipment is now designed to facilitate cleaning. Broken surfaces and openings at the floor line where dirt would ordinarily collect have been eliminated to a great extent. Built-in dishwashers are so arranged that, when they are not in use, their covers serve as additional work space. These, and many other improvements, are contributing to the liberation of housewives whose lives, for so many generations, have been dominated by kitchen duties. The duties have become more pleasurable than arduous, thanks to the progress of mechanization.

Courtesy, General Electric

Compact modern kitchen

REFRIGERATORS



261

261. REFRIGERATOR

New in design and detail for appearance, cleanliness and efficiency. Smooth walls facilitate cleaning. New G-E defroster automatically returns to normal setting when the cooling unit is defrosted, eliminating interruption of refrigeration. Available with or without monitor top. See adv. page 58.

General Electric Co.
Nela Park, Cleveland, Ohio

262. REFRIGERATOR

Absorption type, designed for operation with manufactured gas, bottled gas, electricity or kerosene. Available in a range of models. See adv. page 68.

Electrolux Refrigerator Sales, Inc.
Evansville, Ind.

262

263. REFRIGERATOR

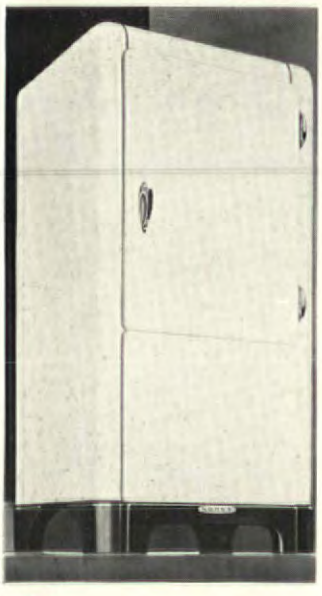
Provides automatic electric refrigeration. A compressor mechanism of three moving parts slowly revolving in a permanent bath of protective oil provides the cold-making power. Exteriors are either porcelain or lacquer, while the interiors are acid-resisting porcelain, electric lighted, with rounded corners.

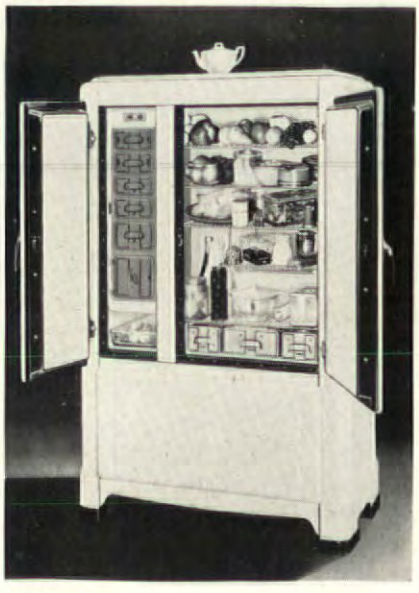
Norge Corp.
670 East Woodbridge St., Detroit, Mich.

264. ELECTRIC REFRIGERATORS

A range of models for various uses. Finished in porcelain, lacquer, and permalain, with chromium hardware. Overall height of most models is approximately 50 in.

Kelvinator Sales Corp.
14250 Plymouth Road, Detroit, Mich.





263 264

265. REFRIGERATORS

Improved models offering a range of capacities. Designed for greater efficiency and ease of cleaning. Trade name, "Frigidaire."

Frigidaire Sales Corp.
Dayton, Ohio

266. PORCELAIN ENAMELED SINK TOPS

For modernization of kitchen and pantry equipment. Available also with plain tops, integral backs and ends for kitchen cabinets and dressers in a range of colors. Made of Porceliron, the result of fusing sheet metal and liquid porcelain.

Ingram-Richardson Mfg. Co. of Indiana, Inc.
Frankfort, Ind.

267. UNIT KITCHEN

Designed to provide small apartments and homes with kitchen facilities comprising a kitchen cabinet, stove, sink and refrigerator in one unit 80 x 45¾ x 22¼ in. Known as the "Pureaire" kitchen, and installed by the plumbing trade.

The Parsons Co.
15843 2nd Boulevard, Detroit, Mich.

267

268. KITCHEN CABINET

Complete with seven-piece glass set, chrome hardware, bread board, wire rack, flour bin, bread box, etc. Designed to modernize kitchen equipment. Seventy-two inches high, top 25 x 40 in.

Showers Brothers Co.
Bloomington, Ind.

268

269. ENAMELED STEEL SINKS

A line of one-piece vitreous enameled steel kitchen sinks of improved design, available in many colors. Installed by the plumbing trade. Known as "Veos."

Youngstown Pressed Steel Co.
Warren, Ohio

269

270. ENAMELED SINK AND CABINET

Light-weight porcelain enameled sinks and cabinets formed from sheet Armco Ingot Iron. Available in various types of acid-proof sinks and cabinets. One type is a sink-cabinet which utilizes for storage the usually waste space under the sink. Wide range of colors. Trade name, "Brigsteel." See adv. page 31.

Briggs Mfg. Co.
Mack & Benson Aves., Detroit, Mich.

271. SINK DRAINBOARD

For kitchen use. Made of "Temperprest" (chemically treated wood in pressed form) designed to fit cast iron or steel enameled sinks. May be obtained in a variety of colors and in any length up to 10 ft.

There is a protected joint line between board and sink.

The Kitchen Maid Corp.
Andrews, Ind.

271

272. MONEL METAL SINKS

A line of sinks, sink tops and tables made of monel metal, a nickel-copper alloy. In one piece, uncoated, silvery color, rustproof and characterized by a modern design. See adv. inside back cover.

International Nickel Co., Inc.
67 Wall St., New York, N. Y.

272

KITCHEN EQUIPMENT

273

273. DISHWASHERS

Available in models combined with kitchen sinks; in combined cabinet, sink and dishwasher; and in portable cabinet-type, requiring no permanent connection to plumbing system.

The Conover Co.
3123 Carroll Ave., Chicago, Ill.

274. DISHWASHER UNITS

Electrically operated, available in a range of models for various uses. Stainless steel, monel metal or vitreous enamel tops, cabinet. Leg and floor types. See adv. page 58.

General Electric Co.
Nela Park, Cleveland, Ohio

275. ELECTRIC DISHWASHERS

Available in a range of models for various uses, portable, floor and sink-combination types. Finishes may be lacquer, linoleum, monel metal, Everdur, and porcelain enamel.

Westinghouse Electric & Mfg. Co.
Mansfield, Ohio

279

276

276. RANGE-HEATER

Designed to reduce cellar construction by combining functions of range, heating plant and hot water heater into a single unit. Equipped with thermostatically controlled single speed fan, capacity 750 cu. ft. per minute. Uses solid fuel.

Heaterange Corp.
Jeddo, Pa.

277. ELECTRIC KITCHEN

A series of appliances including the G-E range, dishwasher and monitor-top refrigerator, an electric timer and clock for the range, electric egg-beater, percolator, etc. See adv. page 58.

General Electric Co.
Nela Park, Cleveland, Ohio

278. GAS RANGE

Improved model embodying new features which include a lever device for sliding hot oven racks; special broiler pan; built-in radio set; toaster; recipe card file.

The Estate Stove Co.
Hamilton, Ohio

279. DOMESTIC GAS RANGES

Modern type stove with new features. Model shown has a self-starting, automatic clock which controls oven cooking by turning gas on or off as desired. Available in white, ivory, or a series of color combinations in marbloid and mother-of-pearl.

Detroit Vapor Stove Co.
12345 Kercheval Ave., Detroit, Mich.

280

280. ELECTRIC RANGE

Centralized panel control, automatic electric timed clock and audible elapsed time signal. Occupies 42 x 27 in. of floor space, overall height 42 in. Monel metal top, white vitreous enamel finish. Trade name "Imperial." See adv. page 58.

General Electric Co.
Nela Park, Cleveland, Ohio

281. EXHAUST FAN

For ventilation of kitchens, toilets and offices. Turbine type, fitting over upper sash of window.

Anderson-Pitt Corp.
209 Goodrich Pl., Kansas City, Mo.

282. KITCHEN VENTILATOR

Adjustable to any depth of wall with full weather closure at the outside. Fan and shutters work automatically with three speed selection. Capacity, 800 cu. ft. per minute.

Victor Electric Products, Inc.
712 Reading Road, Cincinnati, Ohio

283. LAUNDRY EQUIPMENT

Motor driven, equipped with safety device. Trade name "Utex," designed for schools, clubs, etc. See adv. page 66.

American Laundry Machinery Co.
Norwood Station, Cincinnati, Ohio

283

MODERN FURNITURE AND DECORATION

With the advancement of modern design from the status of a fad to that of a sound, accepted style trend, the furnishings industry has assumed a place of ever-increasing importance. In the past it was common practice to consider the choice of furnishings when the building was ready for occupancy, thus producing some of the absurd contracts, still to be seen, between architectural settings and furniture. Now, however, manufacturers of furniture and interior decorators, as well as architects, have awakened to the desirability of close collaboration, with the result that many exceptionally fine interiors have been, and are being created. The commendable foresight of the manufacturers has also led them to produce a large range of designs to which the architect or decorator may refer in planning an interior.

An outstanding characteristic of the advance in furniture design is the emphasis placed on the natural beauty of materials. Simple forms are employed to set off the charm of wood grains, the gleam of metals, the luster of fine glass, the rich tones of synthetic plastic materials, and the textures of fabrics and leathers.

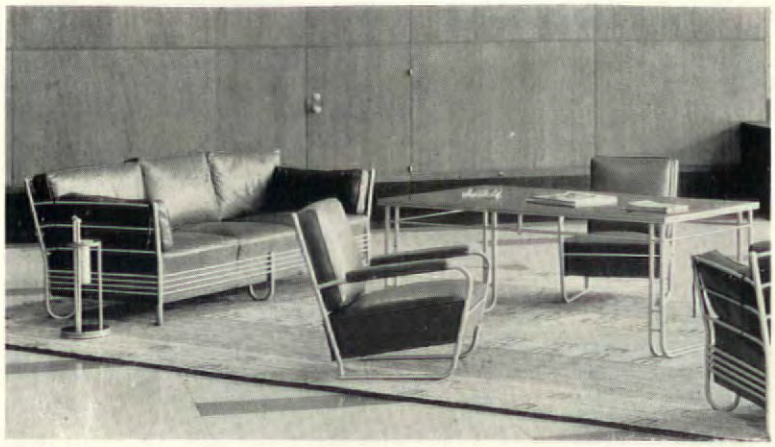
Comfort is no longer considered merely desirable, but essential. The awkward, angular, fantastic, objects with which the market was flooded during the early "modernistic" craze, have given place to furniture which embodies grace as well as the maximum in scientifically determined comfort. This is illustrated, for example, by the success of tubular metal furniture.

Our ever-changing civilization has also brought into being new types of furniture. The radio set and cabinet, for instance, has assumed an important place in interior design; the preciousness of floor space has resulted in the introduction of various movable tables, convertible pieces, built-in desks, etc. Perhaps in the near future the arrival of television will cause living room designs to be centered about a screen. The furniture industry is forced to be wide awake, with the result that its activities are well worth watching.

Among the innovations which should be noted are the new types of washable wall papers, available in tasteful designs and pastel shades; the technique which permits inlays of dyed aluminum in various materials; and the increased use of linoleum and rubber inlays in modern patterns for floor covering.

284

FURNITURE



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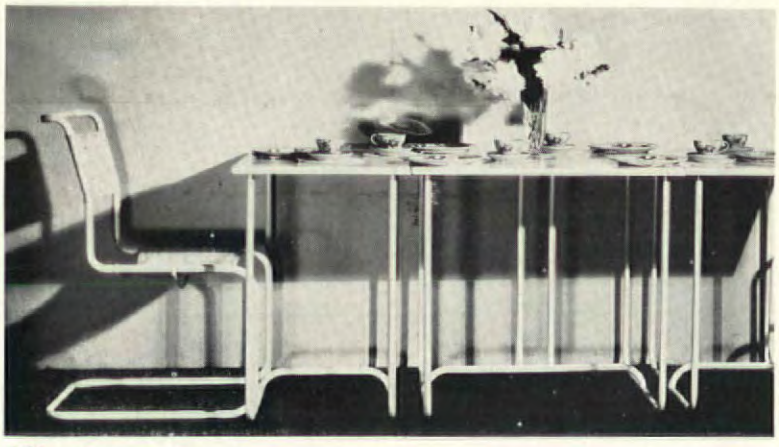

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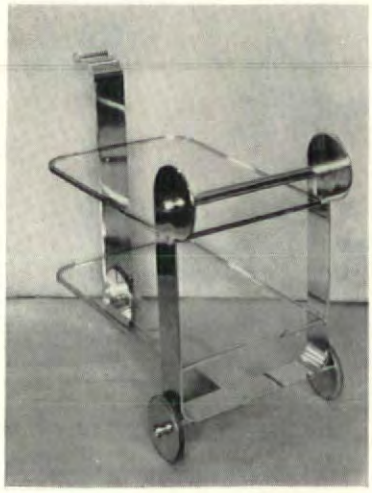


290

284. CHROMSTEEL FURNITURE

Seamless tubular steel, triple chromium plated. Recommended for indoor use. Upholstery may be selected from loom and hand-woven fabrics, top grain leathers, Du Pont Fabrikoid and Permatex.

The Howell Co.
Geneva, Ill.

285. ALUMINUM FURNITURE

Method of assembly eliminates welding, also permitting electrolytic anodic finish to render surface tarnishproof and corrosion resisting.

Warren McArthur Corp.
Rome, N. Y.

286. STEEL TUBE FURNITURE

Chairs are of spring-steel construction with fabrikoid seats. Frames may be enameled in desired colors.

Ficks Reed Co.
335 East 45th St., New York, N. Y.

287. TRANSITIONAL FURNITURE

Designs to bridge the change from period to modern furnishings. Simplicity of forms permits harmony with both types.

Amos T. Hill
1 Park Ave., New York, N. Y.

288. CHROMSTEEL FURNITURE

Chromsteel tubes, 1 in. thick with imitation leather or Fabrikoid covering, available in a range of colors. Chair illustrated is known as "Croupier."

Thonet Bros., Inc.
33 East 47th St., New York, N. Y.

289. CUPBOARD TABLE

Known as the "Dinex," for small apartment use. When upright serves as a cupboard; kept rigid by a brake locking device. When used as table, it is swung into a horizontal position about a central pivot. Shelves remain horizontal throughout the operation, so there is no need to disturb their contents.

Kiel Table Co.
Kiel, Wis.

290. METAL AND GLASS

Illustration shows a tea wagon, 14 x 24 x 24 in. high. Metal is chrome plated, while the shelves are of clear glass.

Treitel-Gratz Co., Inc.
142 East 32nd St., New York, N. Y.

291. BUILT-IN DESK

Combined desk and dressing table which can be set into a four-inch wall in the same manner as a bathroom cabinet.

Miami Cabinet Division, Philip Carey Co.
Middletown, Ohio

292. FURNITURE

"Traditional" in character but simplified to conform with modern interiors.

Schmieg, Hungate & Kotzian, Inc.
521 East 72nd St., New York, N. Y.

293

293. MODERN SUITES

Made of metal, finished in a range of colors or wood grains. Illustration shows "Carpathian Elm" furniture.

Simmons Co.
228 North Bank Drive, Chicago, Ill.

294

294. FOLDING CHAIRS

Similar in appearance to permanent chairs, but fold for easy storage.

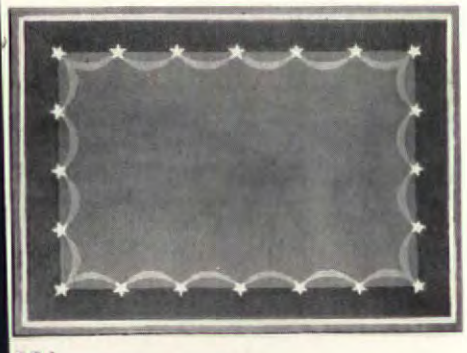
Stakmore Co., Inc.
200 Madison Ave., New York, N. Y.

295

295. FABRICS

A range of designs for decorative purpose, known as "Hudson River Series," designed by Ruth Reeves.

James McCutcheon & Co.
5th Ave. and 49th St., New York, N. Y.

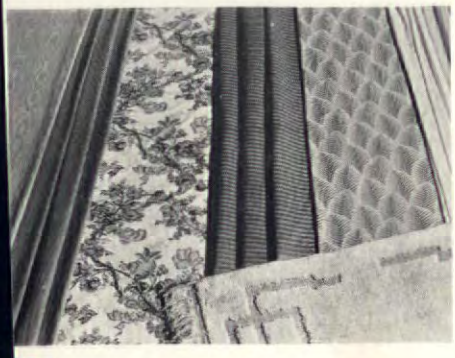


296

296. CARPETS

Made with special seam which permits cutting, reshaping and salvage. Known as "SeamLoc." See adv. page 73.

L. C. Chase & Co.
295 Fifth Ave., New York, N. Y.



297

297. FABRICS

Drapes, rugs and decorative fabrics in a range of patterns, colors, weaves and textures.

F. Schumacher & Co.
60 West 40th St., New York, N. Y.

298. SUMMER AND BATH RUGS

Designs suitable for sun-rooms, porches and summer living rooms.

Deltox Rug Co.
Oshkosh, Wis.

299. RUGS

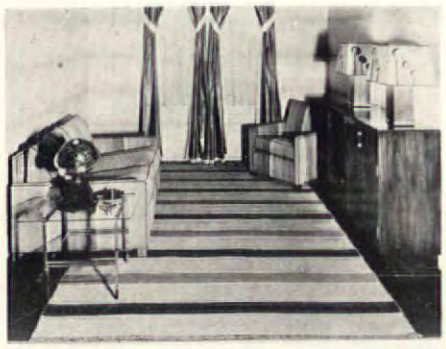
A range of weaves, colors and patterns for various applications. Adaptable for furniture coverings and draperies.

Stroheim & Romann
35 East 53rd St., New York, N. Y.

300. LINEN RUGS AND CARPETS

Tweedlike texture, reversible, designed for home and utility floor coverings. Available in wide range of colors and patterns.

The Klearflax Linen Looms, Inc.
Duluth, Minn.



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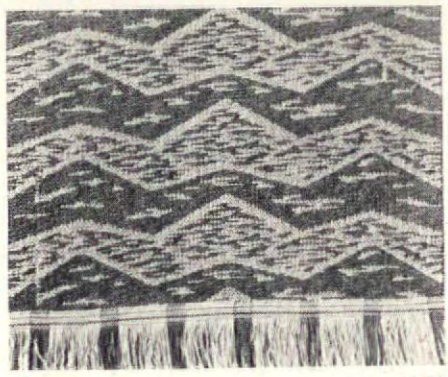


300

301

302

301. PHOTO-MURALS

Large composite photographs used for wall decoration, in a range of styles.

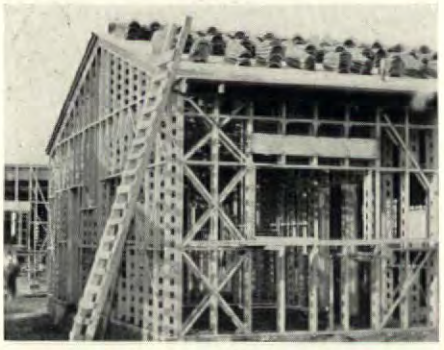
Drix Duryea
54 East 57th St., New York, N. Y.

302. PHOTO-MURALS

Photographic enlargement applied as wall decoration. Modern design effects.

Margaret Bourke-White
Chrysler Building, New York, N. Y.

MISCELLANEOUS



303

305. ALUMINUM SPANDRELS

Light-weight spandrels, corrosion-resisting, non-staining. Made to specified designs.

Aluminum Co. of America
Pittsburgh, Pa.

306. EXPANDED STEEL STUD

For use in fireproof partitions and structural walls in residences. Flange width 1¼ in., available in depths of 3 in., 4 in. and 6 in.

Kalman Steel Corp.
Bethlehem, Pa.

307. SHEET METALS

Trade names, "American Black," and "Apollo Galvanized Sheets" especially manufactured for duct work in heating, ventilating and air conditioning.

American Sheet & Tin Plate Co.
Pittsburgh, Pa.

308. PINE PANELING

Arkansas soft pine, treated by "Wolmanizing" process to make wood resistant to fire and vermin. Designed for interior paneling.

Crossett Lumber Co.
Crossett, Ark.

309. ALUMINUM PAINTED GUTTER

Wood gutters with a coating of aluminum. At the corners and all other joints connection is made with flanged brass plates.

Long Fir Gutter Co.
Cadiz, Ohio

310. ASBESTOS SIDING

Imitation of wood shingles and siding especially intended for use over wood or stucco. Trade name, "Eternit Econotop Asbestos Cement Siding." See adv. page 69.

The Ruberoid Co.
95 Madison Ave., New York, N. Y.

303. STEEL FRAMING

Bolted and welded system of light steel framing for residence and other small work. Fireproof, vermin-, shrinkage- and earthquake resisting. Trade name "Lea."

W. C. Lea, Inc.
653 South Clarence St., Los Angeles, Calif.

304. LIGHT STEEL SYSTEM

For light construction. Skeleton steel pipe framework covered by collapsible diagonal channeling over which lath is placed. Concrete is applied by spraying. Trade name "Ruppel System."

Latisteel Corp. of California
Pasadena, Calif.

311. METAL WALL FURRING

Assures minimum of 2 in. air space between masonry and furring. Clip which supports metal furring strips is adjustable to ⅛ in. for other desired air spaces.

Simplon Products Corp.
551 Fifth Ave., New York, N. Y.

312. BULLET-PROOF PLATE GLASS

Designed for application in banks and other types of buildings where bullet-resistance is desired in conjunction with plate glass beauty.

Pittsburgh Plate Glass Co.
2200 Grant Bldg., Pittsburgh, Pa.

313. WELDED WIRE GLASS

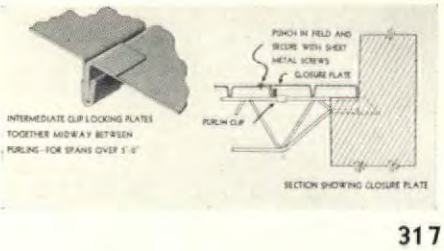
Made free from the bubbles found in ordinary wire glass, by using a special wire electrically welded at each intersection. Particularly applicable to places where wire glass is required by fire regulations. Known as "Misco."

Mississippi Glass Co.
220 Fifth Ave., New York, N. Y.

314. SPECIAL PLATE GLASS

Filters out the infra-red, or heat-carrying ray of light, thus functioning as insulation. Designed for protection against the summer sun (if the windows are kept closed) and for use in connection with heat-producing lighting fixtures. Trade name "Aklo." See adv. page 63.

Libbey-Owens-Ford Glass Co.
Toledo, Ohio



317

304

315. DOUBLE GLASS

Two layers of glass with dehydrated, hermetically sealed air space between. Intended to furnish window insulation, frost prevention, and reduction in sound transmission and condensation. May not be cut or altered on the job, but must be manufactured to the correct sizes. Known as "Thermopane."

Charles D. Haven
3508 North Oakland Ave., Milwaukee, Wis.

316. FLEXIBLE "GLASS"

Zinc-coated screen cloth with a heavy transparent film of cellulose acetate. Can be applied to fit corners or curved areas without breakage; transmits ultra-violet rays. Used particularly for green houses, etc. Trade name, "Vimlite."

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

317. ROOF DECKS

Steel roofing panels, furnished with ribs 6 in. or 9 in. o. c. The ends of the deck overlap with an offset to facilitate nesting of ribs. Available in lengths as required.

Milcor Steel Co.
West Burnham St., Milwaukee, Wis.

318. EXPANSION CORNER BEAD

Extra wide (5 in.) corner bead flange for reenforcing plaster. Made of 24-gauge Galvanized Steel, Armco Ingot or Toncan Iron. Furnished with ¾ in. radius.

Milcor Steel Co.
West Burnham St., Milwaukee, Wis.

319

320. SPRING-LIFT GARAGE DOOR

Overhead type, with single enclosed spring for counterbalance. Additional tension may be supplied through adjustable wheel on outside bracket of door.

The J. G. Wilson Corp.
11 East 38th St., New York, N. Y.

322. ASBESTOS CHIMNEYS

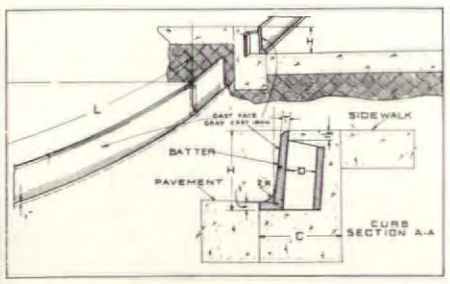
Built of blocks made of asbestos serpentine rock, portland cement, lime hydrate and calcium carbonate, compressed. Each block is one-piece, and includes flue and air spaces. Weight of block, 80 lbs. Size, 16 x 16 x 6½ in. high.

Patee Asbestos Shingle Co.
Casper, Wyo.

323. CONCRETE CURBING

Heavy cast iron forms of special shape having reenforcing arms which bond into the concrete. Resists any vehicular impact. See adv. page 50.

Armored Concrete Corp.
83 Polk St., Newark, N. J.



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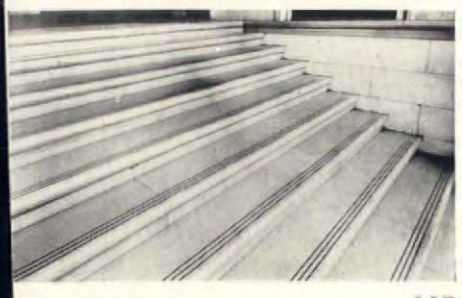


327

319. OVERHEAD GARAGE DOOR

Operates on tracks along the jambs and ceiling. Available in a variety of sizes and weights and can be applied to old doors as well as new. May also be opened electrically from a remote point. Allows the use of a full-size pass door.

Frantz Mfg. Co.
Sterling, Ill.

321. OVERHEAD GARAGE DOOR

Suspended by cable from counterweights in a box. On an ordinary 8 x 8 ft. opening, the door will clear a car 6 ft. high provided the top is 2 ft. from the door.

Coburn Trolley Track Mfg. Co.
Holyoke, Mass.

324. CAULKING COMPOUND

For pointing masonry joints, expansion joints, etc. Made in three consistencies for application with power gun, hand gun and putty knife. See adv. page 50.

Pecora Paint Co.
Sedgley Ave. & Venango St., Philadelphia, Pa.

325. GLASS WALL FINISH

Opaque sheet glass in a range of sizes and colors for kitchen and bathroom walls. Trade name "Carrara."

Pittsburgh Plate Glass Co.
Grant Bldg., Pittsburgh, Pa.

326. FLOOR REPAIR

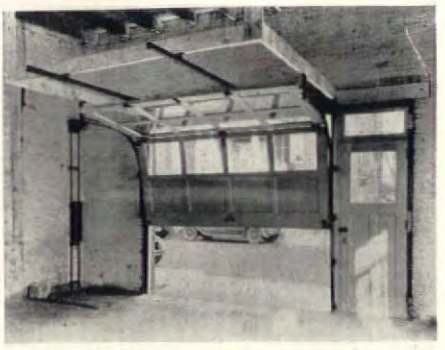
For resurfacing and repairing concrete, wood, asphalt, composition or brick floors. Can be mixed soft for foot traffic or as hard as concrete for heavy wear by the proportionate addition of sand, cement and gravel or trapped rock. Trade name, "Amolastic."

American Oil & Disinfectant Corp.
129 East 26th St., New York, N. Y.

327. NON-SLIP TREADS

Three parallel grooves cut in the stair tread and filled with an abrasive, non-slip compound known as "Safonite," to provide stair safety with a minimum sacrifice of appearance, and to improve visibility.

Safety Processing Co.
39 Cortland St., New York, N. Y.



321

328. NON-SKID FLOOR PLATE

"Inland 4-way" floor plate has special pattern of segmented projections at right angles to each other, giving equal resistance to slippage in four directions, so spaced that heels will not catch. Designed to drain quickly and sweep clean in all four directions. See adv. page 47.

Inland Steel Co.
38 South Dearborn St., Chicago, Ill.

329. CANTILEVERED HEARTH

Three and a half inch concrete slab supported by chimney masonry on cantilever principle. Hearth is thus freed from floor structure.

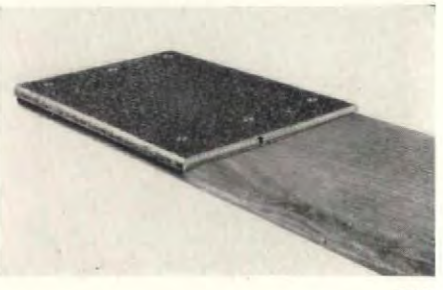
The Donley Brothers Co.
13900 Miles Ave., Cleveland, Ohio

330. SAFETY TREADS

Alundum aggregate bonded in a reenforced base of hard rubber. Non-slip under water, suitable for outdoor as well as indoor use, and has a level surface which may be formed to the profile of the nosing. "Alundum Rubber Bonded Safety Tread."

Norton Co.
Worcester, Mass.

329



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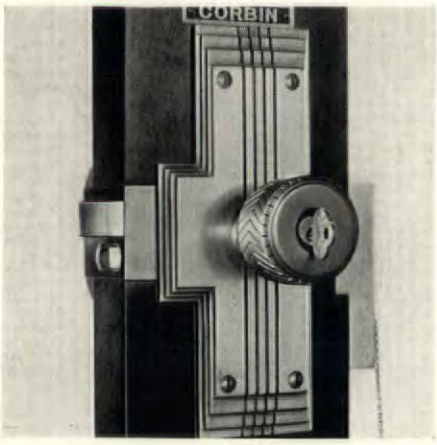


331

331. MODERN LOCK

Installed in a cut made in edge of door. Adjusting screw brings escutcheons in close contact with door, while four screws in each fasten lockset in place. Particularly designed for offices.

P. & F. Corbin
New Britain, Conn.

332. HARDWARE

Line includes "traditional" and modern designs of door-knobs, locks, handles, etc., for residential and all other types of buildings.

Russell & Erwin Mfg. Co.
New Britain, Conn.

332

333. FLOOR TILE

For decorative flooring. Asphaltic type, resilient and durable. Makers report that the tile heals itself after injury and that it may be used on ground level concrete.

Paraffine Companies, Inc.
475 Brannan St., San Francisco, Calif.

334. CERAMIC FACSIMILES

Process for reproducing sketches, photographs or drawings, at any size, on ceramic tile. Pictures are fired onto the tile to prevent fading.

American Encaustic Tiling Co., Ltd.
16 East 41st St., New York, N. Y.

335. READY-MADE HOUSES

Fabricated plywood sections, assembled in a range of small house plans. Walls and roof may be used as delivered, or covered with any desired finish or veneer. Walls and partitions are double construction, filled with insulating material. Exterior style may be period or modern.

Elliott Plywood House Co.
Aberdeen, Wash.

336. METAL SPINDLES

For banisters, made in sections which screw together. Between these, buttons of iron or polished brass may be screwed. Maximum size is 36¼ in. Top and bottom collars fit on the end studs and are caulked or pinned into position.

J. G. Braun Co.
537 West 35th St., New York, N. Y.

337. ZINC-COATED WIRE

Process for producing tight, ductile and pure coating for wire. Trade name of wire, "Bethanized."

Bethlehem Steel Co., Inc.
Bethlehem, Pa.

338. SHOWER CURTAIN AND ROD

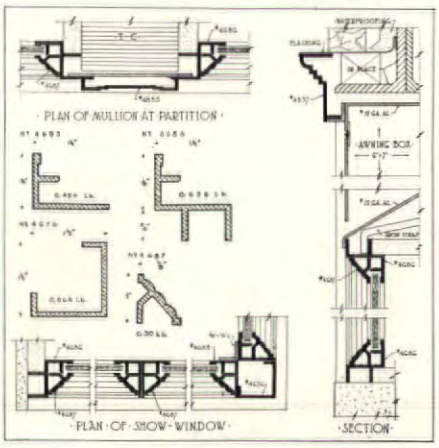
Rectangular chromium plated rod with roller-bearing hooks to support curtain. Grommets, hooks and rod concealed by curtain for drape effect.

Meneley-Diederich Co., Inc.
2455 East 8th St., Los Angeles, Calif.

339. CEMENT-LINED PIPE

Available in many sizes and shapes with special fittings. Designed for applications where a high degree of corrosion-resistance is desired. Trade name "Duroline."

National Tube Co.
Pittsburgh, Pa.



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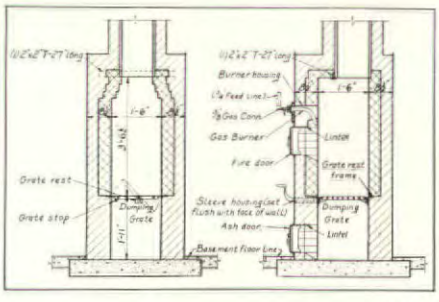


343

340. ESCALATORS

For handling floor to floor traffic with quiet operation, increased safety at landing and boarding points, maximum safe speed and carrying capacity per unit of floor space. See adv. page 64.

Peter Clark, Inc.
544 West 30th St., New York, N. Y.

Otis Elevator Co.
260 Eleventh Ave., New York, N. Y.

Westinghouse Electric Elevator Co.
1500 North Branch St., Chicago, Ill.

341. PNEUMATIC TUBES

Improved design of parts and construction. For conveying money and papers between departments. An automatic damper device for power saving is included.

Peter Clark, Inc.
544 West 30th St., New York, N. Y.

342. ALUMINUM SHAPES

Extruded shapes in a range of standard designs for store fronts, trim, saddles, copings, panels, rails, etc. Light-weight, easily applied, corrosion-resisting. Illustration shows store front installation.

J. G. Braun Co., Distributors
537 West 35th St., New York, N. Y.

343. RESIDENCE INCINERATOR

Masonry-built, flue-fed incinerator for small homes. Capacity about six bushels. Gas fuel provided for use when non-combustibles are introduced for disposal. Under usual conditions, however, it functions as simple garbage burner.

Kerner Incinerator Co.
3707 North Richards St., Milwaukee, Wis.

344. INCINERATOR COMBINATION

Designed to provide a compact unit for hot water heating and garbage disposal. Water sections are available in two heights for different capacities.

American Radiator Co.
40 West 40th St., New York, N. Y.

345

345. WATERLESS STEAM TABLE

Electrically operated, portable or stationary, designed to keep food warm without the use of water or steam, and especially intended for hospital use. Compartments are insulated with cork and may be used for either hot or refrigerated service. Available in several models.

The Prometheus Electric Corp.
401 West 13th St., New York, N. Y.

346. BOILER TUBES

Made of steel or Toncan iron, electric resistance welded. Designed for uniformity and ease of installation.

Steel and Tubes, Inc.
224 East 131st St., Cleveland, Ohio

347. SPRINKLER SYSTEM

Combined dry system and thermal element installation. In the event of fire, a thermal element causes flooding of the pipes with water, and automatically sounds an alarm. If fire progresses, heads release and act as wet sprinkler system.

Automatic Sprinkler Corporation of America
Standard Bank Bldg., Cleveland, Ohio

353

348. PERFORATED GRILLES

Modern designs suitable for the various white metals. Available in a range of patterns and sizes for various applications.

The Harrington & King Perforating Co.
5648 Filmore St., Chicago, Ill.

349. PERFORATED GRILLES

Manufactured from stock metal sheets to suit specifications, with margins any desired width. Designed to be stronger than cast grilles and made in steel, brass, bronze, copper, commercial bronze, manganese bronze, aluminum, nickel silver, etc.

Diamond Manufacturing Co.
Wyoming, Pa.

350. CURTAIN FIREPLACE SCREEN

Designed to furnish spark protection. Operates by chain pulls which hang at either side. Automatically overlaps at the center to eliminate any gap. Mesh is of special spiral weave, with one wire running from top to bottom to insure strength.

Edwin Jackson, Inc.
175 East 60th St., New York, N. Y.

351. SCREEN CLOTH

Made of "Inconel," a neutral colored, corrosion-resisting alloy, which the makers report will not discolor or stain painted frames and exterior masonry. Installed by the carpentry trade.

C. O. Jelliff Manufacturing Co.
Southport, Conn.

352. CHEMICAL EXTINGUISHERS

Sealed in a glass container, the chemical contents are expelled by gas within two cartridges placed in the handle. Hence no pumping is necessary. Intended for use with one hand. Also available as automatic model, in lamplike bulb.

International Fire Equipment Corp.
West New Brighton, Staten Island, N. Y.

353. HAND AND FACE DRIERS

Electrically operated, warm air driers, designed for built-in, flush installations in public washrooms to improve appearance and efficiency. Trade name, "Sani-Dri." See adv. page 481.

Chicago Hardware Foundry Co.
North Chicago, Ill.

354. COPPER PATINA

A process to provide copper roofs, spandrels, etc., with the green patina ordinarily produced only by long exposure. The copper is lightly sand blasted if tarnish has developed and then sprayed at 10-minute intervals with a solution of 10 per cent ammonium sulphate and other ingredients adjusted to a definite hydrogen ion concentration.

Copper & Brass Research Assn.
25 Broadway, New York, N. Y.

355. PLASTIC MATERIAL

Trade name "Plaskon." May be molded in a large variety of forms for decorative and utility purposes. Available in specified colors. Smooth finish, rotproof, easily cleaned.

Toledo Synthetic Products, Inc.
Toledo, Ohio

356. GROUP LOCKERS

Designed for use in elementary schools and wherever group control of lockers is desired. One trigger locks or unlocks all the individual compartments. Trigger is padlocked.

Lyon Metal Products, Inc.
Aurora, Ill.

357. SWINGING-LEAF BLACKBOARD

Intended to provide additional blackboards and cork bulletin boards in a compact space. Leaves measure 3 x 3½ ft. Cork bulletin surfaces are also available. A device provides for removal of each leaf or entire unit for use in other rooms.

Weber Costello Co.
Chicago Heights, Ill.

358. COATED NAILS

Nails made of zinc-iron alloy coated with pure zinc. Makers recommend them for use on roofs, as having high resistance to air and moisture, and being rustproof.

W. H. Maze Co.
Peru, Ill.

359. GARDEN ORNAMENTS

Terra cotta and pottery items including urns, pedestals, armillary spheres, etc. Available in a range of designs and finishes.

Galloway Terra-Cotta Co.
Walnut and 32nd Sts., Philadelphia, Pa.

360. SELF-STIRRING PAINT CAN

Enamel colors available in a can with a stirring device attached to cover to use for mixing before opening.

Valentine & Co.
386 Fourth Ave., New York, N. Y.

MISCELLANEOUS

361. CONCRETE BEER STORAGE

This type of building has been in successful use abroad and is now available in this country. Known as the "Rostock Stock House," it is a reenforced concrete structure of rectangular tanks. The interior surfaces of the tanks are coated with special lining, producing a smooth, black, glossy, uniform surface which promotes a firm yeast deposit. It is acid- and alkali-proof, and easily cleaned or repaired. Each tank is equipped with cooling facilities so that minimum cooling cost and operation are maintained.

Figure 361a shows the interior of the fermenting room, 361b illustrates the arrangement of the storage tanks and the system of construction.

Turner-Rostock Corp.
420 Lexington Ave., New York, N. Y.

362. CONCRETE VIBRATOR

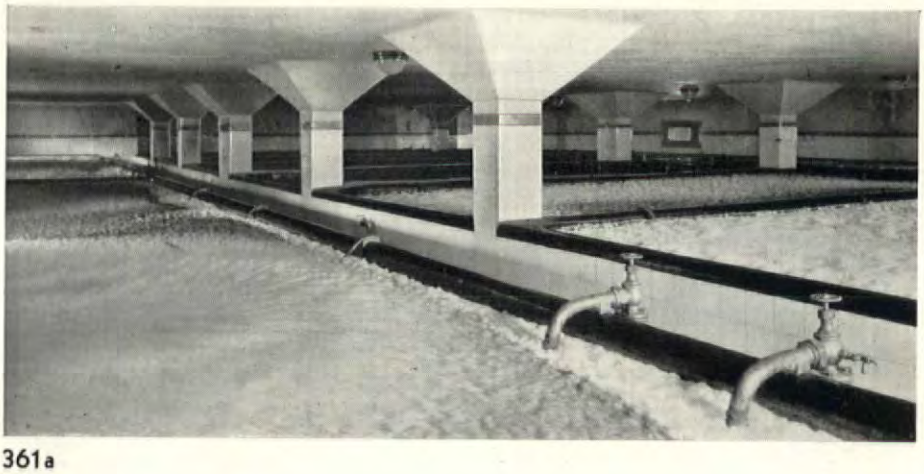
A machine to replace the custom of hammering forms to facilitate the flow of concrete. It consists of a vibrator which may be applied either to the forms, or directly to the concrete, allowing a stiffer mix to be used, thus improving the quality of the result.

Portland Cement Assn.
33 West Grand Ave., Chicago, Ill.

363. STEEL SERVICE STATIONS

Makers furnish and erect all materials above concrete foundation except lighting and plumbing. Designed to permit decoration in several colors to be applied at low cost. Available in a wide range of models.

The Edwards Manufacturing Co.
328 Eggleston Ave., Cincinnati, Ohio



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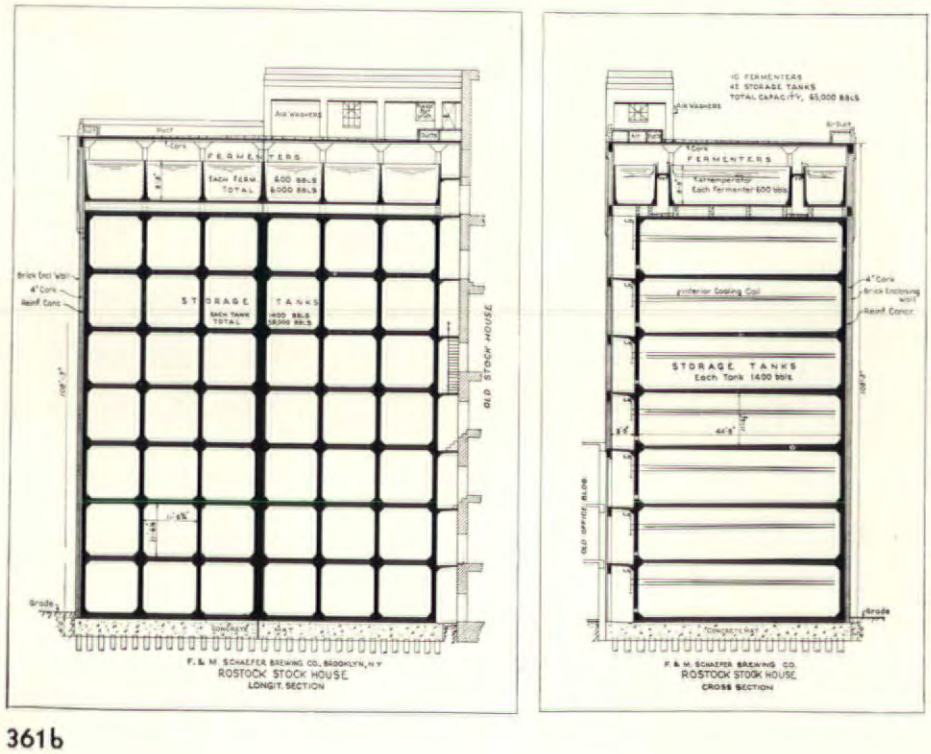

361b

364. WINDOW SASH LOCK

Described by the makers as invisible and burglarproof. Installed *in* the sash rail, instead of on top of the sash rail.

Faultless Sash Holder Co., Inc.
Chicago, Ill.

365. TAVERN FIXTURES

Bars, counters, paneling and miscellaneous equipment for taverns and cafés. The makers also offer a consulting service for this type of work. See adv. back cover.

Brunswick-Balke-Collender Co.
623 South Wabash Ave., Chicago, Ill.

366. MAIL CHUTE

Improved models for installation in office buildings, large apartment houses and hotels.

Cutler Mail Chute Co.
Rochester, N. Y.

367. PAPER CABINETS

Designed to improve the efficiency and appearance of toilet and towel cabinets. Available in a range of models for various applications.

A. P. W. Paper Co.
Albany, N. Y.

368. METAL DESK

Four legged type, including internal raceways for wires to desk lamp, telephone, buzzers or other electrical appliances. Finished with several coats of baked-on furniture enamel, with fittings of bronze or steel in chromium finish. Trade name, "Dynamique."

Art Metal Construction Co.
Jamestown, N. Y.

369. METAL PARTITIONS

Known as "FB" partitions, designed for the subdivision of office space. They are provided with grilled tops, to present a semiflush appearance.

Wright Metal, Inc.
Jamestown, N. Y.

370. CURTAIN CONTROL

Intended for application of noiseless power to small theater curtains without an undue number of specially designed units. Motor operates on 110 volts, 60 cycles, single phase, a.c. current. Curtains move from any travel point at 2 ft. per second. Faster or slower operation is available. Stock equipment for curtains not over 44 ft. wide.

Tiffin Scenic Studios
Tiffin, Ohio

THE

ARCHITECTURAL

F O R U M

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BUILDING MONEY

A monthly section devoted to reporting the news and activities of building finance, real estate, management and construction

JOHN CUSHMAN FISTERE
Editor

NATIONAL HOUSING ACT

. . . the industry's hope, the banker's dread; how it will operate if passed.

WITH alternate hope and despair the building industry awaited last month the fate of the National Housing Act. Passage seemed certain one day, impossible the next as bankers, realtors, building and loaners, architects, Administration experts, cranks spoke their pieces for and against at Senate and House Committee hearings.

As the month drew to a close backers of the bill grew fearful that the President, anxious to have Congress go home, might sacrifice the bill to gain passage of some other measure. Insiders knew, however, that the President had no such intention, that his failure to ask specifically for adoption of the housing measure was simply good political maneuvering. He was waiting, so they said, for Congress to clear away other "must" legislation before asking for more. With the House gagged and the Senate well under control it was certain that the bill would be passed.

As passed, however, it will not in all probability be the same one that was first introduced. In effect it will be the same, but its provisions will be much more specific. Thinking that too many details would only confuse the un-moneyed minds of Congressmen the bill drafters left as much as possible out of the first bill, simply delegating administrative authority to the new agencies which the bill created. Though Congressmen dislike being confused they dislike even more to hand over unrestricted power to the executive branches of government. The result is that a new bill, written by the same National Emergency Councilites who wrote the first one, will be reported out as a committee measure.

Still titled the National Housing Act, it will:

1. Establish a Home Credit Insurance Corporation with authority to insure modernization and new construction loans
2. Establish federally chartered mortgage associations
3. Guarantee building and loan savings
4. Liberalize the rediscount facilities of the Federal Home Loan Bank

Powerful Lobby. Few financial institutions are enthusiastic about the measure, but thoroughgoing disapproval is what building and loan men feel toward it. Headed by small nimble-witted Morton Bodfish, the U. S. Building & Loan League fought it tooth and nail. So effective were his attacks that pro-Administration papers cried: POWERFUL LOBBY THREATENS PASSAGE OF HOUSING ACT. Reason for b & l antipathy was the belief that the low interest rates prescribed for insured mortgages would seriously handicap their operations, and also that competition offered by National Mortgage Associations would be harmful.

Their objections had been anticipated by the NEC, who tacked onto the bill the building and loan shares insurance plan as a pacifier. It was not enough, however, and it looked for a time as though Bodfish might have his way. Backers of the bill retorted that building and loan associations were charging too much interest and even went so far as to call some associations "loan sharks."

For the most part, insurance company officials kept their comments within the family. It was no secret that they were in almost unanimous opposition to all but the modernization drive. William H. Kingsley, Penn Mutual's president, and one of the few who spoke publicly, voiced "unreserved encouragement and heart-whole support" for modernization. But as for the mortgage insurance plan, and as for Federal mortgage associations, he thought both "might well be studied from the viewpoint of apprehension rather than enthusiasm."

Still plugging for a Federal Mortgage Bank, despite the lifting of restrictions on the Federal Home Loan Bank, the National Association of Real Estate Boards advocated an amendment creating a $3,000,000,000 discount bank for urban mortgages.

Modernization. $1,500,000,000 is the amount the NEC hopes will be spent before next January 1, 1935, in reconditioning residential, commercial and industrial property. Of the two principal steps to be taken to accomplish that end, one, the supplying of credit, has already been detailed; the other, persuading property owners to spend, was still in the process late last month.

To supply credit the Home Credit Insurance Corporation will qualify private financing agencies (banks, building and loan associations, and finance or acceptance corporation) in all sections of the country to make insured loans to owners "whose current income and reputation for meeting obligations are satisfactory."

Property owners who have work done will be required to offer no security but their own signed notes. Loans will range from a plus interest minimum of $100 to a maximum of $2,000. Amortized over periods up to five years, the minimum monthly payment will be $10 (or payable quarterly or annually at the discretion of the insurance corporation). Maximum interest will be 5 per cent on decreasing balances, plus authorized service fees, which include $2 for credit investigation and entry on books; collection costs of 50 cents per payment, and supervision and legal costs of ½ per cent per annum on the amount of the job.

For ½ of 1 per cent or for 1 per cent, lending agencies will be insured against loss on promissory notes up to 20 per cent of the total face value of notes purchased by them. This provision is regarded as taking the place of repossessible chattels which is the basis of current forms of consumer credit.

With the money lending facilities set up, the carrying out of the program, obviously awaiting passage of legislation, was far less definite in the minds of NEC members. To head the drive no one had been picked late last month, but most everyone thought Relief Director Harry L. Hopkins was the name uppermost in the President's mind. General Johnson, an early entry, had apparently accumulated too much opposition in his administration of the NRA. The Council's chairman Frank Walker was believed to have no liking for the job.

From a score or more different agencies, each with a plan, Charles Edison, with his right-hand-man Arthur Walsh, vice president of the Edison interest, was last month sifting all proposals to find a skeleton on which to hang the drive. What had apparently been decided was that State Committees would be headed by State Chairman of the NEC, and that volunteer groups (architects, engineers, realtors, contractors, bankers) would be organized locally.

On one point there was general agreement: success of the campaign is wholly dependent upon the thoroughness with which the job of selling is done. Though there is much more than $1,500,000,000 worth of work in the offing, the simple fact of making money available would not produce that much expenditure.

It was considered likely that effective use would be made of the technical staff of each of the 300 branch offices of the Home Owners Loan Corporation which director Don H. MacNeal was establishing last month. (See page 480.)

To architects who were wondering how much work would come their way with insurance of loans limited to $2,000, it was pointed out that lending institutions would not necessarily limit loans to that figure but would simply have that amount insured. Thus a bank, requested for $5,000 loan, could lend $2,000 under the government's plan, and an additional $3,000 on a mortgage. Also, under the provisions of the Home Owners Loan Act, owners with no mortgages on their property can obtain as much as $14,000 for modernizing from the

HOLC if they cannot obtain funds elsewhere.

To manufacturers of materials and equipment for large buildings who saw no place for them in the drive, a ray of hope appeared in the Glass bill for direct loans to companies. It was understood, although no official commitment had been made by the RFC, that it would make loans for property modernization.

Mutual Mortgage Insurance. Because Congressmen are happy in finding faulty details, NEC's wisemen decided to omit from the bill the actual operation of the insurance plan. Thus, the effectiveness of the measure lies not in what the law permits but how it is managed.

The plan's soundness, say all who have agreed and disagreed with the plan, rests with the type of appraisals on which mortgage insurance is issued. Though HOLC appraisals have been the subject of much criticism, it is believed the corporation will be able to develop from HOLC's experience a national standardized system of appraisal practice. More than one prominent banker, insurance company, and building and loan man has privately expressed his opinion that he and the rest of their confreres will use the insurance plan to dump their bad loans off on the government. Hence, the importance of good appraisals to prevent such action is apparent.

Mortgages eligible for insurance will be first liens on owner-occupied dwellings, held by mortgagees approved by the corporation's board, amortized at not more than twenty years (or up to 30 where property values are deemed to be exceptionally stable). Mortgages are limited to 80 per cent of the value of the property on new construction and 60 per cent on existing dwellings. Except where a 6 per cent net return is authorized by the board to attract mortgage funds, the net interest return to the mortgagor will not exceed 5 per cent.

Operation of the plan represents a sincere effort on the part of the U. S. to keep out of the financing business, with as little interruption of the normal processes between mortgagor and mortgagee as possible.

The mortgagee would reserve the right to foreclose if the mortgage falls in arrears, in which case he would be required to give title, free of all charges to the board of the corporation, and at the same time to submit to the board a claim for expenses incurred in foreclosure, covering foreclosure costs, delinquent interest and amortization charges, repairs, etc. In return the board would give the mortgagee 3 per cent debentures equal to the unpaid principal maturing three years after the maturity of the mortgage itself. In addition, the board would issue a certificate covering the claim of expenditures rendered by the mortgagee, not to exceed 10 per cent of the unpaid principal.

Upon realization of the property the board will reimburse itself for the debentures, and then honor the claim certificates. Should the sum realized exceed the amount of the debentures and the amount of the claims, the added proceeds will go to the mortgagor. Should the sum realized be less than the amount required for the debentures and the claim, the board will reimburse the mortgagee pro rata with the board's own realization on the property.

Thus, if a mortgagee had cost claims of $1,000 on a $10,000 mortgage, and in realizing the Board received only $5,500, the mortgagee would receive $500, the board $5,000.

Premiums for the insurance will vary from ½ of 1 per cent to 1 per cent, according to the risk. Premiums will be paid by the borrower to the mortgagee with interest and amortization payments, and the mortgagor will remit premiums to the Board of the Corporation. Because the insurance is of the mutual type, the home owner will eventually receive in whole or in part the amount paid for insurance. On 20-year amortized mortgages, if there were no losses, there would be built up a reserve fund sufficient to retire the mortgages at the end of seventeen years.

Underwood & Underwood

On the threshold of the White House, Messrs. Walker and Fahey with Senator Fletcher.

Insured mortgages will be segregated into separate funds based on the risk involved. For instance, instead of lumping 50, 60, 70 and 80 per cent loans into one huge fund, each of these will be in a separate fund so that a company restricting itself to 60 per cent loans will not be required to share in the risk of mortgages made for a higher percentage of the appraisal.

When one of the segregated funds becomes large enough to retire the mortgages insured by the fund, it would have to be large enough to permit deduction of from 10 to 15 per cent for general reinsurance fund to take care of losses in other segregated funds where the paid-in premiums might prove insufficient to cover its obligations.

Example: the 60 per cent fund with an outstanding indebtedness of $100,000,000 would have to reach $115,000,000 before it could retire its mortgages, and the left over $15,000,000 would go into the 80 per cent fund, for instance where losses might be unusually heavy.

To test the safety of the plan, Treasury experts set up worse than anticipated conditions to learn how heavy Treasury losses might become. They imagined that in a single fund all mortgages were of the 80 per cent type, that defaults reached 25 per cent, that realization on defaulted property averaged only 50 per cent, that all the defaults occurred during the first five years, that two years were required to dispose of all the property, that mortgagees received maximum reimbursement for foreclosure costs.

With these conditions, what would happen to the fund?

Answer: It would be solvent at all times, and would have terminated its obligations some time in the nineteenth year, without drawing on the general insurance fund.

National Mortgage Associations. Inaugurated primarily to increase mortgage market liquidity, the mortgage associations are now expected to become a rich source of financing for low cost housing. Chartered and strictly supervised by the Federal Home Loan Bank Board, they will be required to have a minimum paid-in capitalization of $5,000,000, and their debentures will be held to a maximum of fifteen times the capital.

Their operations will be limited to issuing bonds against mortgages eligible for insurance by the Home Credit Insurance Company, which in addition to owner-occupied houses will accept projects involving slum clearance and other low cost housing projects.

Said a member of the committee which drafted the legislation:

"The insurance feature of their underlying mortgages will constitute the equivalent of a substantial guaranty of their debentures. Because they will raise money in centers where capital is most reasonable, they will be in a position to make lower cost money available for home financing. By the basic terms of their organizations, they will of necessity be confined to conservative financial operations and not subject to stock-selling promotional abuses. Because their investments will be limited to insured mortgages, for which they are in a position to provide adequate servicing, they will not be able to recapitalize properties for the purpose of selling securities nor to act as a mortgage outlet for speculative real estate affiliates."

It is not the intention of the Federal Home Loan Bank Board to permit the associations to compete with local institutions in originating mortgages for owner-occupied houses. Rather will they serve to take mortgages off the hands of banks, insurance companies, etc., after they have been amortized to a conservative figure, and thus free funds for additional financing.

Building and Loan Insurance. One element in the program that none of the proponents

intended to include was the insurance of building and loan savings. But so strong was the opposition of building and loan men, and of Morton Bodfish in particular, that to win their support, insurance of building and loan savings was tacked on to the bill.

It provides for:

1. The establishment of $100,000,000 Federal Savings and Loan Insurance Corporation, stock of which is subscribed to by the HOLC, and management of which is vested in the Federal Home Loan Bank Board.

2. The insurance by the corporation of savings in eligible institutions of savings up to $2,500, payable 10 per cent in cash, 50 per cent of the remainder within a year and the balance within three years from the date of the insured institutions default. Eligible institutions will be limited to members of a Federal Home Loan Bank.

3. Yearly payment of premiums by insured members of ½ of 1 per cent of the total amount in all accounts of insured members, plus any other creditor obligations into the Insurance Corporation, until a reserve of 5 per cent of all insured accounts shall have been built up.

4. Additional payments of special assessments of not more than ¼ of 1 per cent in any one year to meet unusual losses and expenses.

Liberalization. Under amendments to the Federal Home Loan Bank Act, district banks of the FHLB system will be permitted to discount insured mortgages up to 90 per cent of their value, to discount uninsured amortized mortgages up to 65 per cent, and straight mortgages up to 50 per cent. The banks will also be permitted to make loans for home reconditioning on terms similar to those insurable by private financing agencies, as provided in the section under modernization. Other amendments provide for free flow of funds between Home Loan Banks to meet the enlarged scope of their activities.

An important amendment to the Federal Reserve Act has also been proposed, by which members of the reserve system will be permitted to make insured loans for longer than five year periods and for more than 50 per cent of the property value.

Further, member banks will be permitted to classify six-month construction loans not as mortgages but as ordinary commercial loans. Such loans would be eligible for discount with the reserve system provided some other lending agency had agreed to take up the loan upon completion of the house.

These were the provisions of the National Housing Act last month as it made its way slowly through the Senate and House Committees and headed for passage.

✚ Quick to sense the significance of the NHA to his business, W. Burke Harmon, young president of the mighty Harmon National Real Estate Corporation, was quick to make a bid for his share of work in the New York area if the bill becomes law. In the Daily *News* one day, in the *Herald-Tribune* the next, in the *Times* the next he placed duplicate half page advertisements titled "The American Eagle Builds Its Nest."

Therein he explained in brief the general plan, pledged his fullest cooperation toward its success, offered to send to all who filled in a coupon his weekly news letters on the program's progress. Not only coupons but letters of congratulation, of inquiry, of suggestion poured in upon the office for a week, totaling almost 5,000. Most were from laymen interested in learning what the program could do for them; many were from banks, real estate men, builders, architects, all anxious to keep posted on what were then, and still are to a lesser degree, the quiet actions of the plan drafters.

Coupled with the advertisements, window displays were provided to 500 real estate brokers in the New York area, offering to send the news letters to those who would step inside and fill out blanks, and offering also photographs and floor plans of houses that Harmon's architect Randolph Evans was ready to build for buyers of Harmon property. Thus another 2,000 names were added to the mailing list.

Because he had been invited to Washington to lend his aid in formulating the program, realtor Harmon knew much that he could not tell in News Letter No. 1; but he did project the events of the following week without violating confidence, and thus won the confidence of his readers. Letter No. 2 made intelligible to laymen the provisions of the bill which had by that time been introduced in Congress.

By the time Letter No. 6 is sent out some time in June, it is planned to have a Harmon representative call on all letter readers, to learn if they have specific modernizing, financing, or building problems. Besides attempting to interest prospects in Harmon property, canvassers will be equipped with sufficient facts to reply to questions in the answering of which no profit could come to the company as a seller of land and houses. Modernization prospects will be turned over to building material manufacturers in return for good will or some more tangible benefit.

Because a few good prospects have already been uncovered, and because others seemed likely to follow, Mr. Harmon believed last month the $15,000 he planned to spend would be repaid a hundred fold.

Almost 5,000 readers of the New York News, Times and Herald-Tribune signed the coupon in response to the Harmon advertisement, offering weekly news letters on the progress of the National Housing Act.

The American Eagle builds its nest

You who do not live in a home of your own; your Government plans to make it possible for you to finance and build one.

You who own your own home; your Government plans to help you repair and modernize it.

Millions Planned for Home Repairs

The Government is working out an intensive home renovation campaign which will in all probability pass Congress at *this* session. Through existing agencies you may borrow under the plan from $200.00 to $2,000.00 for as long as 10 years. The Government, to facilitate loans and insure low interest rates, and to stimulate the flow of private capital into this channel, will act as Guarantor.

Adequate Financing for New Homes

Underlying the temporary renovation campaign, a national home construction drive is intended to furnish the needed impetus toward permanent employment and complete recovery.

Here is the missing link in the Recovery Program. The construction of even one home creates 3,000 hours of work. This program will reach into every corner of our economic structure and will create endless millions of work hours. It will employ and pay wages to carpenters, brick layers, plasterers, painters, plumbers, draftsmen, one working man in every five. It will turn factory wheels to manufacture materials. It will move railway trains to transport these materials and trucks to deliver them. It is designed to end abnormal unemployment and extensive relief.

Soundly Financed Home to Replace Over-Mortgaged Home of the Past

The Government aims to put within the reach of every family not only a home, but a livable and soundly financed home. The sad experiences of the past must not be repeated. Not again need the home owner suffer the uncertainty, the insecurity and too often the total loss of a home built at speculative prices and financed unsoundly. No family need longer undergo a precarious rent-paying existence under another man's roof. The satisfaction, security and freedom from worry, inseparable from the home properly built and sensibly financed, will be available to all.

Safe Home Ownership Controlled Costs and Budgeted Payments

The Government aims to make home ownership not only possible but wise. The program is designed to remedy defects in the old system of home mortgage financing that fell down so badly during the depression, and for your particular benefit it aims to secure:

1. Reduced interest rates, minimum financing charges and lower costs of construction.
2. Elimination of fixed-term mortgages that are costly, difficult to renew, and that are the cause of so much foreclosure and loss.
3. Easy-payment budgeted mortgages which really pay out instead of "coming due" every few years and which lead safely and surely to *debt-free* ownership.

Complete Information For the Head of Every Family

Every family head should know what this Program means to him. He should keep himself informed, fully and promptly, of its progress. The plan is still in its constructive stages. But it is so timely and so essential to complete national recovery that undoubtedly it will develop too fast for you to follow all details in the daily papers.

Progress of the Program to be Outlined in Free Weekly News-Letters

As head of an institution vitally interested in home development for 47 years, I want to cooperate to the utmost with the Government and the home builder in furthering the success of this program.

Our research department, aided by our Washington correspondent, will secure definite and immediate information during the development period and supply it free in weekly news-letters to all who desire it.

Home Plans, Cost Schedules, Loan Details to be Furnished Free

They will advise fully on interest rates, Government Insurance provisions, size and duration of loans, types of amortization, application procedure, etc. They will furnish tentative building plans of many types, estimated cost schedules of buildings and sites in various localities, special information for working out your own individual problems and countless other items of interest and importance.

All this information will be assembled as available and mailed to you in Weekly News-Letters without cost or obligation to you. To keep yourself fully informed and to safeguard your best interests, fill out and mail the coupon, *now*

W BURKE HARMON
President, HARMON NATIONAL and affiliated Companies

Mr. W Burke Harmon, President, 140 Nassau Street, New York City
With no cost or obligation to me, kindly put me on your mailing list for the Weekly Harmon News-Letters covering the progress of the projected U. S. Housing Program

Name .....

Address .....

You Have Ideas of Your Own Which the Government Might Use. Sit down now, put them on paper. Send them to me. I will be pleased to pass them on.

H7

THREE PROFITS GROW

. . . where one grew before for architect Dalzell who is also a builder and real estate man.

A HEAVY stone's throw from the Maplewood, New Jersey, station of the Lackawanna Railroad is the office of Kenneth William Dalzell, architect. It is also the office of the Budal Co., builders, and of the Budal Realty Co., as well. In none of these facts would there be anything unusual if it were not for an additional fact: architect Dalzell is all three.

In good times swank Essex County is a fertile field for Northern New Jersey architects and for a great many New York firms besides. But neither in good times nor bad do the architects of Northern New Jersey, or of any other suburban area, grow rich from their work. The big profits, as everyone knows, go to the entrepreneur, who is, in most cases, a real estate man or a builder. To architect Dalzell this became surprisingly plain in 1922 when, with borrowed money and much less effort than he puts in the design of a house, he netted $85,000 from cutting up five Maplewood acres and selling them.

Though no less an architect today than he ever was Mr. Dalzell saw the logical link between architecture, building and real estate, so he welded together an organization embracing all three, independent yet closely related. Sometimes he plays one, sometimes two, and sometimes all three of his roles. In each he is capable.

Staffed by only eleven men even in peak seasons, the Dalzell affiliates share overhead as well as office space. The permanent staff includes an estimator-superintendent for the building company, a real estate salesman, two draftsmen (serving both the architect and builder), and common stenographic and bookkeeping help.

Kenneth Dalzell was born in New York 42 years ago. He studied architecture at Columbia, and worked in the office of Edward Dunn, Newark architect, before opening his own office. A good golfer, well informed on the multiple aspects of home building, and full of suburban congeniality, he has used all three traits in rolling up a substantial house business in Jersey.

Knollwood is the prize of all Dalzell ventures. Twenty-five acres of wooded fields in 1928 when he bought it, he laid out and paved the streets, brought in utilities, and designed and built a few typical houses. Like any good real estate man he advertised. The last lot was sold this year; the last house may be finished before January 1, 1935. In its development, not all the work was done by Mr. Dalzell, either as builder or architect. Many lots were sold to builders who constructed houses for sale or for clients. He did, however, reserve the right to approve the design. Early in Knollwood's history he sometimes made plans and preliminary sketches for builders who had bought lots, but the practice was soon abandoned when he saw the results of not supervising construction.

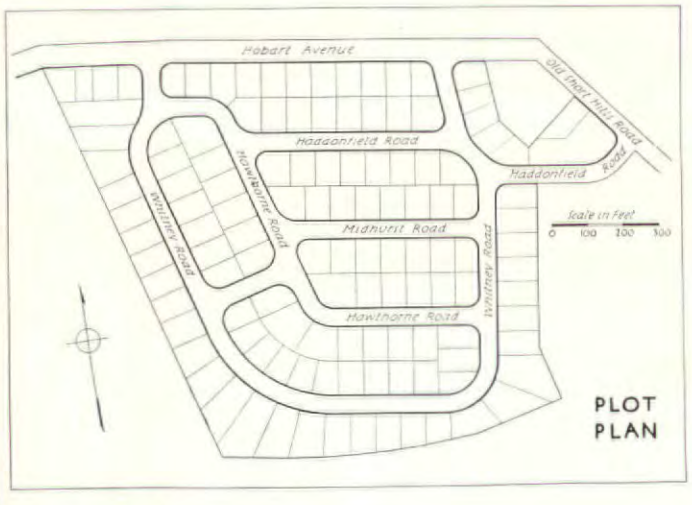
Architect Dalzell

Though none of the companies offered complete financing, Mr. Dalzell, until the recent freeze, aided a large percentage of his clients in obtaining money from local agencies, and in 50 per cent of the houses took a second mortgage on the house himself. Partly because of the stable character of the neighborhood and the desirability of residence in Knollwood, none of the houses has been lost by its owners through foreclosure.

Apart from his connection with either affiliated company, Mr. Dalzell has a general architectural practice, unrestricted except that the Budal Co. is not permitted to bid on any of his work. Salesmen for the Budal Realty Co. may offer one of two kinds of service to lot buyers — either the services of Kenneth W. Dalzell, architect, or the complete building service of the Budal Co., which includes designing, building and financial counsel. In both cases the house is designed by Mr. Dalzell.

If the Budal Co. is retained by the home builder, Mr. Dalzell charges the company 6 per cent for his services, which is included in the complete cost of the house. In addition to the preparation of plans and working drawings (on which drafting costs average about $30) he supervises the work as an outside architect.

Less successful than Knollwood because less fortunately timed is a development at Metuchen, New Jersey, where 50 acres have been laid out, but where only fifteen houses are now standing. The development is, according to Mr. Dalzell, "healthy but inactive" and awaits only more and less expensive mortgage money to prove itself. Through newspaper and billboard advertising he has built up an "interested" list of 175, who for the most part await only the financing that is in the offing.



Knollwood's Plan

Knollwood House

A QUIZ IN TASTE

shows which way the wind is blowing in home design, construction and equipment.

FEW architects, contractors or realtors there are who don't list among their professional assets an intimate knowledge of householders' likes and dislikes in homes. But the National Association of Real Estate Boards got a surprise when it learned from quizzing potential home builders that one thing they wanted above all else was a bedroom on the ground floor.

So too did the *Time*-owned ARCHITECTURAL FORUM come in for a series of surprises when it balloted random *Time* subscribers to learn if tastes had been changing in house design, construction and equipment. Though the answers were in no way startling, some of the conclusions drawn from the answers of the 500 who filled in the 8-page questionnaires were:

One-twelfth of U. S. families would build modern houses if they could finance them. More than half the car and home owners of the country prefer built-in to detached garages. Nine-tenths of the people appreciate the value of thorough insulation. Oil is favored over gas as a fuel by two to one. Only 52 per cent would have their houses air conditioned.

A mythical house built on specifications indicated by the expressed preferences would be of fireproof construction, of English design, with brick walls, slate roof, casement windows, thorough insulation and weather-stripping, copper leaders and gutters, rustproof screens and hardware. Walls in the living room would be rough plaster painted, in the dining room paneled, in the bedrooms papered, in the kitchen and bath colored tile. Living room, dining room, and bedroom floors would be hardwood. The bathroom floors would be tiled and the kitchen floor covered with linoleum.

Its heating plant would be of the oil-fired hot water type with full thermostatic control and concealed radiation. The kitchen would be equipped with a gas range, a porcelain sink, built-in cabinets, and an electric refrigerator.

Only 24 of the 500 were "thinking seriously" of building in 1934, and only 22 of building next year. Lack of money was holding half the 500 back from building. The complete results follow.

1. *If you were building or buying a house what architectural style would it be?*

English	122
Georgian	102
Dutch Colonial	84
Modern	61
Southern Colonial	42
American Farmhouse	41
French Provincial	34
Spanish	23
Italian	10
New England Type	2
California Type	1
Undecided	1
Cape Cod Cottage	1

2. *How many double bedrooms would you have in your house? How many single rooms? How many servants rooms? How many bathrooms?*

ROOMS	DOUBLE	SINGLE	SERVANTS	BATHS
1	95	120	222	39
2	236	164	108	189
3	109	84	14	169
4	42	27	4	60
5	9	10	1	18
6	..	4	1	9
7	..	1	..	2
8	1	1	..	3
9	..	1	..	..
None	20	39	58	..
Lavatories				15

3. *Would you insist on a separate dining room? Or would you prefer a combination living and dining room? Would you insist on a game room in the basement? Would you have a separate library, study or den? Would you insist on a sleeping porch? Would you insist on a sun porch?*

	Yes	No
Separate dining room	409	..
Combination	76	..
Game room	270	200

English..... 122

Georgian..... 102

Dutch Colonial..... 84

Modern..... 61

Southern Colonial..... 42

American Farmhouse..... 41

French Provincial..... 34

Spanish..... 23

Italian..... 10

Library, den	406	83
Sleeping porch	181	286
Sun porch	247	227

4. *What type of roofing would you specify? Wood shingles; composition shingles; slate; tile; metal.*

Composition shingles	157
Slate	170
Tile	91
Wood shingles	61
Metal	18
Asbestos shingles	6
Concrete	2
Lead	1
Copper	1

5. *What material would you specify for the exterior walls? Shingles; clapboard; brick; stucco; concrete; stone; metal and glass; prefabricated units.*

Brick	184
Clapboard	81
Stone	57
Stucco	32
Shingles	10
Metal and glass	8
Concrete	16
P.F.U.	11
Logs	1

COMBINATIONS

Stone, metal and glass	1
Brick, metal and glass	2
Shingles and clapboard	1
Brick and stucco	17
Brick and clapboard	9
Brick and stone	16
Stone and stucco	7
Clapboard and stucco	3
Metal glass and P.F.U.	5
Brick and concrete	2
Clapboard and stone	9
Adobe	1
Hollow tile and concrete	1
Stone and P.F.U.	1
Concrete and P.F.U.	3
Brick and hollow tile	1
Shingles and brick	4
Stone, metal and glass and P.F.U.	1
Shingles and stone	1
Concrete and stone	1
Shingles, metal and glass	1
Concrete and clapboard	1

6. *What type of windows would you specify? Casement; double hung. To get more light and air would you insist on: larger windows or more windows? Would you specify health glass at slight extra cost?*

Casement	248
Double hung	211
Both	11
Larger	231
More	215
Both	20
Fewer windows	1

HEALTH GLASS

Yes	246
No	191
Some	19

7. *What material would you insist on for leaders and gutters? Would you insist on rustproof screens? Would you insist on rustproof exterior hardware? Would you insist on weatherstripping of windows and doors? Would you insist on insulation?*

LEADERS AND GUTTERS

Copper	60
Galvanized iron	14
Rustproof	5
Lead	11
Brass	5
Tile	2
Wood	3
Zinc	3
Aluminum	2
Steel	1
Tin	2
Stainless steel	2

RUSTPROOF SCREENS

Yes	475
No	17

RUSTPROOF HARDWARE

Yes	468
No	19

WEATHERSTRIPPING

Yes	436
No	46
Some	5

INSULATION

Yes	424
No	46
Some	4
Probably	1

8. *Would you pay 5 per cent more for your new house in order to make it entirely fireproof?*

Yes	373
No	84
Probably	4

9. *If modern construction brought the extra cost of a fireproof first floor base down to about $150 would you insist on having it?*

Yes	377
No	57
Probably	3

10. *Please indicate by rooms which type of interior wall surface you would specify.*

	Living Room	Dining Room	Bedrooms	Bathrooms	Kitchen	Study
Rough plaster painted	210	157	138	19	74	1
Wall paper	143	143	335	14	9	1
Linoleum	1	4	2	18	108	1
Wood paneling	151	166	8	2	2	4
White glazed tile	..	..	1	112	64	..
Colored tile	2	..	..	295	131	..
Glass tile or slab	..	..	..	48	23	..
Composition tile and slab	2	2	3	35	69	..
Smooth plaster painted	5	6	6	6	28	..
Sanitas	3	3	6	1	2	..
Canvas painted	2	2	1	..	..	..
Canvas covered with plaster	3	3	1	1	1	..
Cork	1	..	..	..	..	..

11. *What flooring materials would you specify for each kind of room?*

	Living Room	Dining Room	Bedrooms	Bathrooms	Study	Kitchen	Game Room
Carpet	100	89	102	3	1	1	..
Linoleum	8	19	21	37	..	259	1
Hardwood floors with rugs	376	353	357	2	..	3	..
Tile	6	6	3	346	..	29	..
Rubber tile	9	17	9	111	..	220	..
Cork tile	..	..	..	2	..	1	1
Board	1	1	1	1	..	1	..

12. *Would you insist on a built-in garage? Or a detached garage? Would you insist on automatic garage doors?*

Built-in garage	267
Detached	201
Automatic doors	
Yes	196
No	266

13. *What type of heating would you specify? Steam; hot water; warm air? What type of fuel? Oil; gas; coal? If coal would you insist on a mechanical stoker? If you used steam or hot water, would you insist on built-in concealed radiators? Would you insist on thermostatic control? On air conditioning?*

HEATING

Hot water	248
Warm air	108
Steam	109
Vapor	2

FUEL

Oil	274
Gas	133
Coal	95
Wood	1
Coke	4

MECHANICAL STOKER

No answer	322
Yes	115
No	56

CONCEALED RADIATORS

Yes	301
No	77
Some	5

THERMO. CONTROL

Yes	447
No	29

AIR CONDITIONING

Yes	259
No	173
Some	10
Doubtful	9
Probably	1

14. *What kind of range would you specify in the kitchen? Coal; gas; electric? What kind of sink? Metal; porcelain; enameled iron? Would you insist on built-in kitchen cabinets? Would you insist on laundry facilities? With washing and ironing machines? Would you take present refrigerator with you, or would you buy another? Would it be ice; electric; gas?*

RANGE IN KITCHEN

Gas	311
Electric	183
Coal	14
Combination gas and electric	3
Wood	1
Kerosene	1

SINK

Metal	203
Porcelain	206
Enameled iron	63
Slate	1
Tile	1
Composite stone	1

KITCHEN CABINETS

Yes	470
No	21

LAUNDRY FACILITIES

Yes	434
No	53

WASHING AND IRONING MACHINES

Yes	335
No	109
Washer only	12

PRESENT REFRIGERATOR

Yes	230
No	230
Undecided	1

BUY ANOTHER

Yes	243
No	57

WOULD IT BE?

Electric	409
Gas	47
Ice	12
Undecided	5

15. *How many electric outlets would you insist on in each room?*

ELECTRIC OUTLETS	LIVING ROOM	DINING ROOM	BEDROOMS	BATHROOM	KITCHEN
1	2	18	15	146	18
2	11	148	156	194	122
3	36	77	119	67	126
4	135	109	113	25	106
5	41	25	13	11	28
6	107	35	21	..	34
7	5	..	..	..	..
8	56	12	4	..	7
9–10	23	4	4	..	2
11–15	12	1	..	..	..
16–20	3	..	..	..	..
Plenty	20	17	15	15	16

16. *Would you insist on concealed lighting? (Built-in recesses for indirect lighting)*

Yes	129
No	336
Some	13
Doubtful	7

17. *How many telephones would you specify?*

1	108
2	306
3	64
4	7
5	1
None	3
All rooms	1

18. *Have you any preferences regarding pipe? Brass; steel; wrought iron? Would you insist on a stall shower? Or a shower over the tub? Or no shower at all?*

PIPE

Brass	348
Wrought iron	57
Steel	24
Copper	4

WHAT KIND OF SHOWER?

Stall shower	313
Tub	137
No shower	18
Stall and tub	19

19. *Would you specify built-in bookcases? Would you specify built-in china and glassware cabinets? Would you specify built-in furniture in any of the rooms? Which? Would you insist on a built-in radio installation?*

BUILT-IN BOOKCASES

Yes	392
No	82
Some	9

GLASSWARE CABINETS

Yes	338
No	121
Some	11
Pantry	5
Doubtful	3

BUILT-IN FURNITURE

Yes	102
No	350
Some	14

WHICH

No answer	392
Kitchen	33
Bedroom	22
Living room	15
Bath	10
Den	8
Dining room	6
All rooms	4
Game room	6
Window seats	3
Closets	2
Nursery	2
Dressing room	2
Hall	2
Library	1
Recessed window seats	2
Sun porch	1

BUILT-IN RADIO

Yes	162
No	300
Doubtful	6

20. *What proportion of the furniture for your new house would you have to buy? (Five per cent; 10 per cent; 25 per cent, etc.) If buying furniture, would it be mostly Period furniture or Modern style?*

PERCENTAGE

None	18
5%	45
10%	93
15%	2
20%	1
25%	148
30%	2
35%	2
40%	2
50%	59
60%	6
75%	21
80%	4
90%	8
100%	38
Period	169
Modern	165
Both	10

21. *Do you rent or own the house you live in?*

Own	404
Rent	66

22. *If you were going to build a house would you insist on having it individually designed by an architect? Have you chosen your architect?*

INDIVIDUALLY DESIGNED

Yes	351
No	113

HAVE YOU CHOSEN YOUR ARCHITECT?

Yes	62
No	320
No answer	118

23. *Are you seriously thinking of building a house during 1934? Or 1935? Have you chosen your building site? How large is it? If not how large a site would you want?*

Are you seriously thinking of building during 1934?

Yes	24
No	427
Summer cottage	1
Remodeling	1

During 1935?

Yes	22
No	372
Undecided	3
Perhaps	19
Possibly 1936	4
Possibly 1937	1
Summer cottage	1
Doubtful	1

Have you chosen your building site?

Yes	60
No	294
Already own	14

How large a site?

Under 10,000 sq. ft.	11
Over 10,000 sq. ft.	28
½ acre	1
¾ acre	2
One acre	5
Two acres	2
Two to five acres	11
Six to ten acres	6
Eleven to twenty acres	1
Over 30 acres	2

If not, how large would you want?

Under 10,000 sq. ft.	61
Over 10,000 sq. ft.	84
½ acre	14
One acre	25
Two acres	13
Two to five acres	19
Six to ten acres	4
Eleven to twenty	1
Over 30	2
Two lots	3
Two to ten acres	1
Over twenty acres	2
Five to twenty acres	1
Owns 200 acres	1
3 lots	1

24. *If you are not planning to build before the end of 1935, what are the two or three biggest things that are holding you back?*

Lack of money	236
Already have satisfactory home	114
Location not permanent	53
Unsettled conditions	47
Position uncertain	12
Unmarried	13
Heavy taxes	9
Financing	10
No market for present home	22
Small income	7
High cost of materials	4
Family connections	2
Old age	2
No market	1
Waiting until retirement	1
Too many to mention	1
Have just built	9
Fear	3
Future security	2
Apartment house	2
Death of wife	1
Invested interests	1
Dislike climate	1
Cheaper to rent	1
Wife	1

A CENTRAL EXCHANGE

for mortgage information is set up by Brooklyn's savings bankers.

THE 21 savings banks of Brooklyn, $650,000,000 strong in mortgages, are designated as Group Five in their State association. Biggest bank in Group Five is the Williamsburg, which built itself a high tower in 1929 (THE ARCHITECTURAL FORUM, January, 1930, page 143). Officed last month in the Williamsburg's tower was a new organization called the Group Five Mortgage Information Bureau. Thus first appeared the sort of central statistical agency which was strongly espoused at last February's Mortgage Conference of New York (THE ARCHITECTURAL FORUM, March, 1934, page 238) as a remedy for the mortgage ailments of many lending institutions which, lacking access to a store of information on vacancies, trends, etc., are said to have provided funds for building heretofore in a more or less unguided manner. Last month enough savings banks had paid dues in the amount of $10 per million of mortgages held, to provide the bureau a working capital of $5,000. With this and an office force of two, G5MIB began to percolate.

At present, operations include the handling of data only on real estate owned or held in possession by member banks. Cards have been sent to each bank, asking a full description of all property of such a character, including assessed and appraised valuations, asking price, average rentals and a yearly income statement. From this information the central office is to compute and enter onto each of the cards the average rent per room and per store for the district, and the average assessed and appraised valuation per sq. ft. in the same zone. These cards are to be put on file and referred to when member banks request data.

In this survey the banks themselves were requested to make an estimate of trends in districts where their properties are located. "Backward?" "Forward?" "Standstill?" "Toward Business?" "Toward Manufacturing?" and "Nationality?" were the questions asked. Often last month extremely different estimates of trends in identical neighborhoods were received from different banks. A second survey — one on vacancies — is now in process, and notable is its proposal to find out in what districts and to what extent either large or small suites are preferred.

G5MIB will be more than a clearing house for all information formerly held within each bank. Representatives from each of the participating banks will meet in committees permanently assigned to the study of certain districts. It is expected that the reports of these committees will furnish enough material for a monthly publication, to be distributed to members.

"It is an attempt at pooling the experience of each for the mutual good of all," declared a G5MIB prospectus. "We have . . . real estate in hand, under assignment of rents or in serious default of an amount estimated at 40 millions. In the past we have engaged in direct competition for mortgage loans, frequently outbidding each other to the benefit of the mortgage broker or real estate speculator and to our own detriment. Now we are in direct competition on the sale and rental of "Other Real Estate." Sales are made with little regard to true value and for the purpose of converting real estate assets to mortgages. It would seem obvious that this practice has greatly aggravated a demoralized real estate market. Its continuation will most surely delay any recovery which we have a right to expect from present indications. . . . Our great present opportunity lies in our cooperative leadership in the handling of real estate and mortgage investments."

Underwood

Mortgagee Hogan

Author of the above lines was Bernard F. ("Barney") Hogan, alert vice-president of the Greater New York Savings Bank, who is largely responsible for the existence of G5MIB. Last Spring at a Group Five meeting it was Mr. Hogan's resolution which brought about the formation of the committee which devised the bureau. A student of real estate problems, Mr. Hogan could furnish many a reason for G5MIB's being.

"It is probable," said he, "that the members could agree on front foot values for all lots in the county, as well as upon square and cubic foot costs for all types of buildings. . . . Agency members may discuss with some advantage changes in the present types of mortgages as to term, rates of interest, and amortization, with a view to standardizing practices of all the banks. . . . The younger men with the banks, who are to follow in our footsteps, can be trained to the science of proper appraisals. . . . The present executives will have the benefit of discussion and exchange of information applicable to loans in the district with which they are most familiar. . . . Advice may be given to up-State banks seeking mortgage investments in the metropolitan area. . . . Plans may be formulated to overcome the present practice of selling and renting below value to the detriment of adjoining mortgages. . . ."

And for the stubborn, Mr. Hogan was able to advance the argument that the savings banks' stake in the Savings Banks Trust Co. and the Institutional Securities Corp., two agencies funded partly by the RFC and partly by New York State's savings banks so that they might cash in their securities when funds run low, gave every bank "at least an indirect interest in the type of investments being made by his partners." Further, said Mr. Hogan, "It is likely that within a short time some form of supervision will be exercised, either by a State agency or a committee of the State association, over the investment practices of those banks requiring assistance. . . . The proposed organization will be valuable to any supervisory agency or committee."

G5MIB's Hogan has always been closely connected with Brooklyn real estate. He was long in the trust department of the Title Guarantee and Trust Co.'s Brooklyn branch. Later he took over the F. C. Sauter Agency, Inc., a general brokerage business, and in 1926 became a trustee of the bank of which he is now vice-president. It was his belief last month that G5MIB held untold possibilities for good, which certain of Manhattan's banks with investments in Brooklyn property may be quick to recognize. No one is to be denied membership who is willing to contribute his share toward defraying the cost of maintaining the bureau. A number of life insurance companies, Mr. Hogan affirmed, might both augment, and profit by participation in, G5MIB's program.

EARNINGS

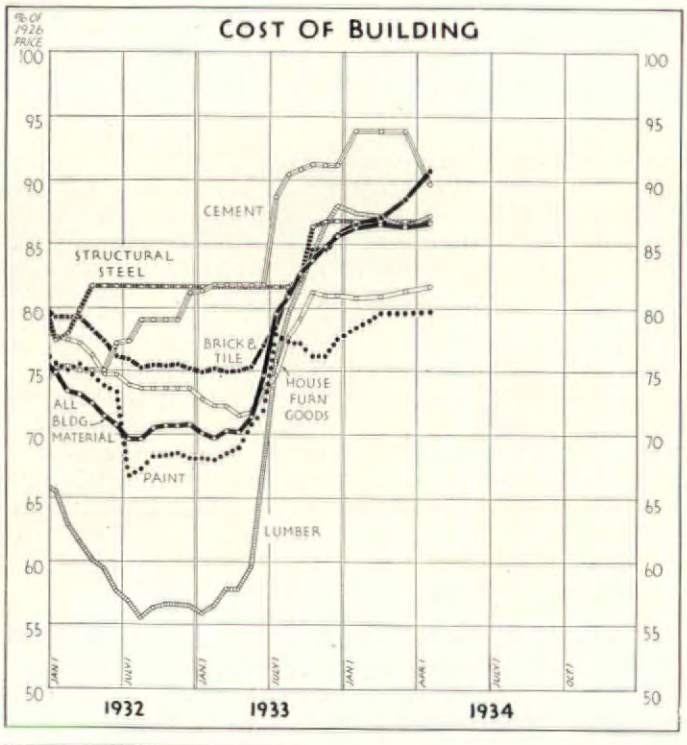
LAST month first quarter earnings reports for the following representative building supply companies were available for comparison with reports for the same period last year:

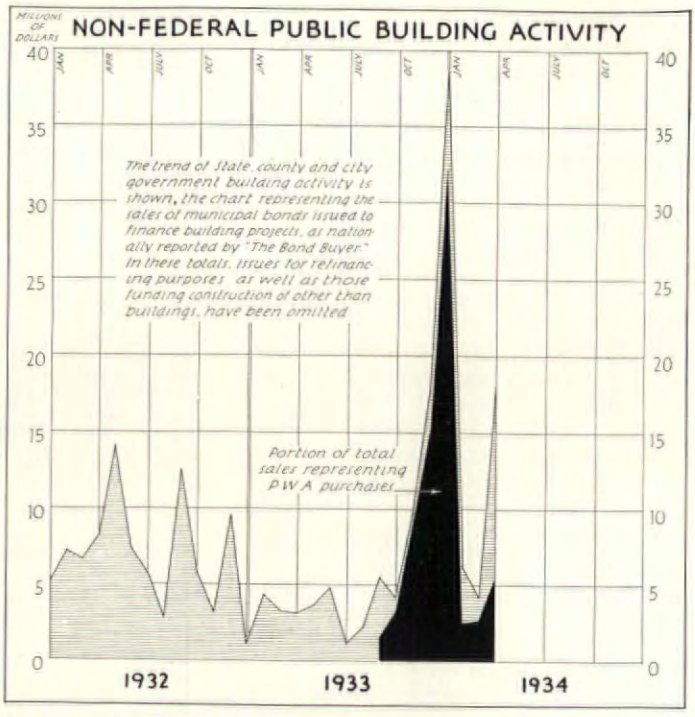
(000's omitted; D=deficit)

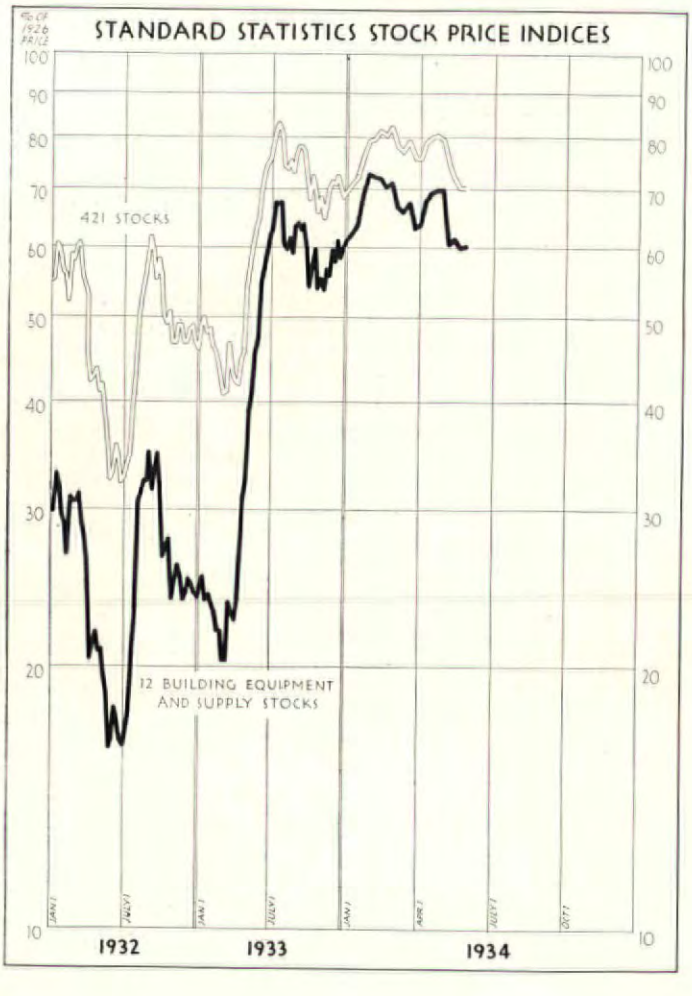
	1934	*1933*
American Encaustic Tiling	$122 D	$145 D
Archer-Daniels-Midland (linseed oil)	565	215
Art Metal Construction	7	51 D
Brunswick-Balke-Collender	15	187 D
Certain-teed	441 D	631 D
Flintkote	136	294 D
Formica Insulation	19	43 D
Foundation Co.	10 D	2 D
Heywood-Wakefield (theater seating, school furniture, etc.)	115 D	225 D
Long-Bell	969 D	1,091 D
National Tile	59 D	—
Otis Elevator	252 D	609 D
Segal Lock & Hardware	65 D	115 D
Universal Pipe & Radiator	34 D	187 D
Westinghouse	1,776 D	3,492 D
Yale & Towne	21	107 D

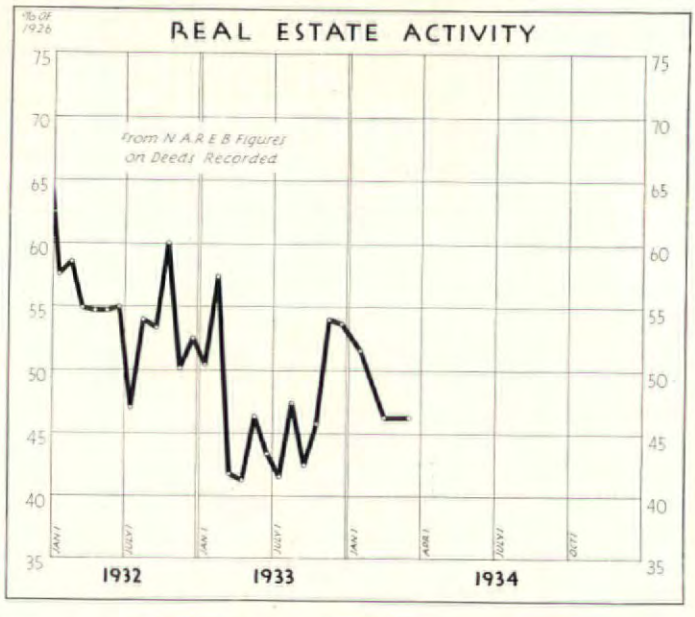
"BUSINESS AS USUAL"

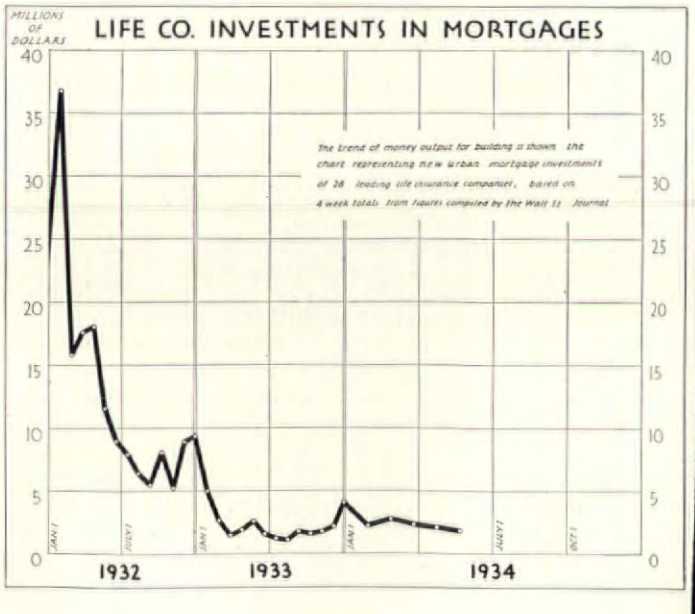
is the word as dealers resume buying municipals. Life company output recedes; costs mount.











HOUSING CATALOGUED

in 25 cities; Real Property Inventory facts on vacancies and doubling up.

STILL unfinished, but complete enough to prove many things previously guessed at, the Real Property Inventory last month was called into initial service by the National Emergency Council to convince Congressmen of the need for the National Housing Act. Without it, the NEC's witnesses before the Senate Banking Committee would have been hard pressed to prove the need for a U. S. stimulated residence reconditioning drive.

Having been once used, the Inventory's potential uses became clearer to building industry men and bankers who until last month were conscious only that "some sort of survey" had been made. By special permission of the Bureau of Foreign and Domestic Commerce, whose Daniel E. Casey is the RPI director, THE ARCHITECTURAL FORUM publishes on the following two pages summaries for 25 cities. When completed, probably some time next month, 63 cities * will have been tabulated. According to director Casey the figures for the 38 cities not shown on the summary charts approximate the same percentages, so that as indicators of nationwide residential conditions, the charts are reliable.

Representative of all sections of the country the picture they give of residential conditions has never before been seen. The population of the cities covered totals 1,030,154, distributed between 301,670 families. The largest of the cities is Shreveport with 74,662, and the smallest Santa Fe with 9,039.

The total number of dwelling units is 299,880, of which 111,607 are owner-occupied. Of the latter, 50,403 are owned free and clear, 42,767 are mortgaged, and the tenure of the remaining 17,219 is unreported.

In value the properties are classified thus:

Under $1,000	14,537
$1,000–$1,499	9,642
$1,500–$1,999	9,636
$2,000–$2,999	18,290
$3,000–$4,999	25,909
$5,000–$7,499	13,426
$7,500–$9,999	3,939
$10,000–$14,999	2,953
$15,000–$19,999	998
$20,000 and over	763
Value not computed	11,543

As rent payers, the families are split up this way:

Monthly Rentals	*Number*
Under $10.00	47,868
$10.00–$14.99	38,609
$15.00–$19.99	33,391
$20.00–$29.99	37,395
$30.00–$49.99	25,092
$50.00–$74.99	3,618
$75.00–$99.99	414
$100.00 and over	150
Not reported	5,401

*In addition to the 63 cities canvassed by the Bureau of Foreign and Domestic Commerce, about 30 other cities have initiated inventories of their own, using RPI forms. The results will be included with the original 63 in the final report.

The Inventory presents the first substantial report on family doubling up. Of the 301,670 families reported, 22,389 are extra, which is 7.4. What the surveyors failed to find out, however, was how much of the doubling up was normal, how many families would undouble if times were better. Particularly significant is this circumstance in Southern cities where regardless of economic conditions, Negro families would double up anyhow. The percentage varies from 2.7 in Caspar, Wyoming, to 11.1 in Asheville, N. C.

These facts have a new significance in the light of the vacancy figure which totals 21,663 or 7.18 per cent. Theoretically, if all families were to undouble there would be an actual housing shortage.

Two other indications of a shortage are the statistics on crowding. The figures:

Very spacious	78,228
Spacious	70,683
Adequate	73,206
Crowded	49,137
Overcrowded	4,894
Greatly overcrowded	1,138

Reduced to percentages, approximately 20 per cent of the living quarters are in one of the three stages of crowdedness.

The Senate subcommittee holding hearings on the National Housing Act was particularly interested in the tabulation on the physical condition of residences:

1st Class	87,743
2nd Class (requiring minor repairs)	110,660
3rd Class (requiring major changes)	42,421
4th Class (unfit for habitation)	6,875

In percentages: 44 per cent require minor repairs, 18 per cent major changes, and 3 per cent should be demolished.

Frederick, Md. Though national trends are interesting, the real value of the RPI lies not in what it tells of the state of housing in the nation, but what it tells the town surveyed about itself.

In Frederick, for instance, bankers and builders will have to do no guessing when it comes to determining whether or not there is a need for the type of house on which a loan is sought. All the information shown on the general tables on pages 77 and 78 is broken down by number of rooms per unit and monthly rental per unit. (A part of one table is shown at bottom of page.)

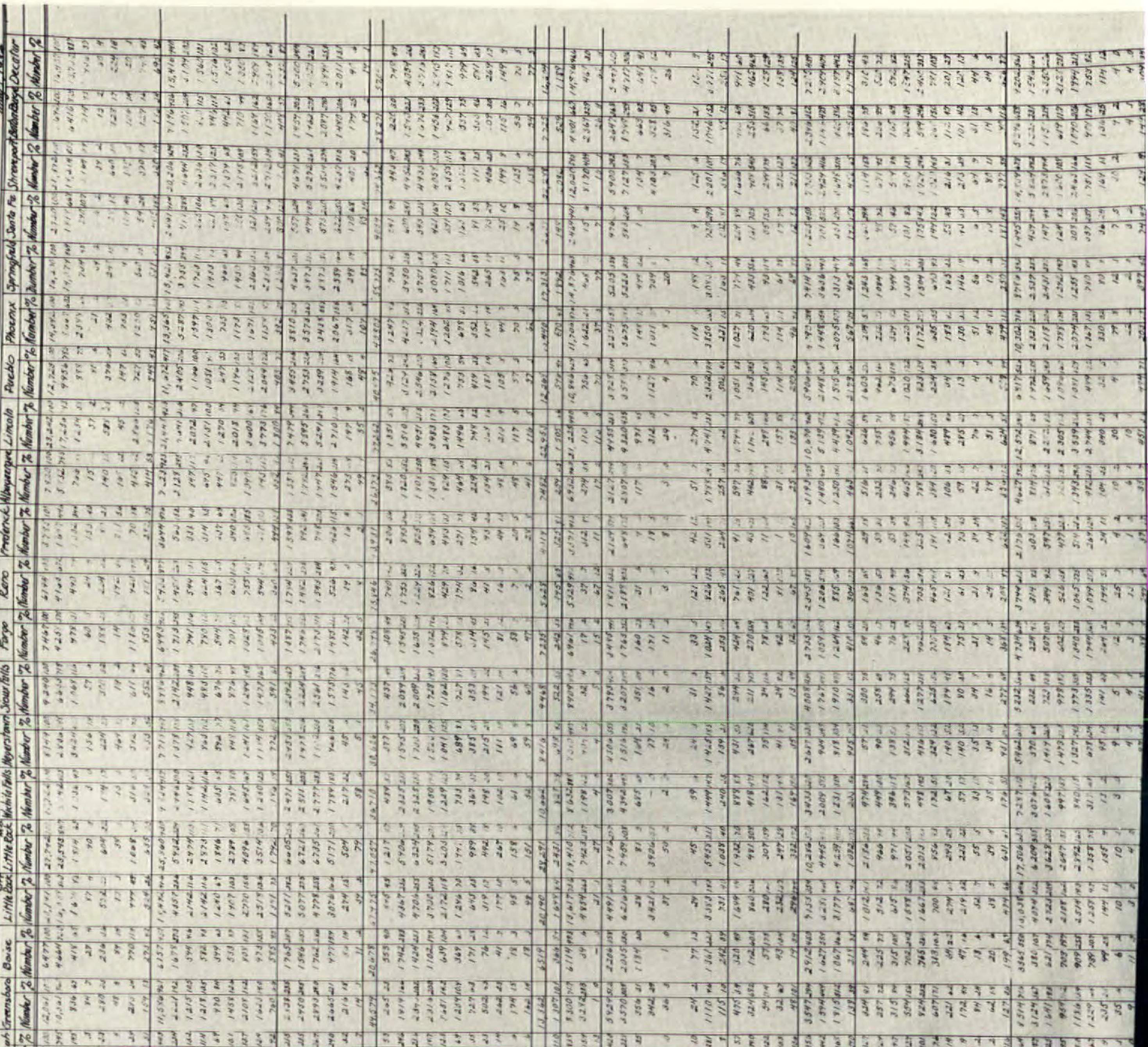
A typical use of the material gathered will be: Francis Scott Fritchie imports an architect from Baltimore to design an apartment building. Without RPI figures the Baltimore architect would have to engage in some inconclusive guessing to determine whether he should make 3-, 4-, or 5-room apartments predominant. RPI figures show the largest vacancy percentage in 5-room units, which is clue enough to the architect. In his rental schedule owner Fritchie puts a price of $35 on his 4-room units, but the mortgage officer of the Fredericktown Savings Institution knows from his RPI figures, that $35 for 4-rooms is too high for the average Frederick family, and that there is an abnormal vacancy in that type of unit already. He points out that there is a real need for 2- and 3-room apartments for between $20 and $25 a month. And so the apartment is planned.

The Baltimore architect looks further at RPI figures, and finds that 70 per cent of 2- and 3-room apartment tenants paying $20 to $25 monthly rent have automobiles, that it is the custom for apartment house owners to provide garages as a concession. From that he knows exactly what capacity the garage should be. What type of fuel for heating, for cooking, whether to provide mechanical refrigeration, how many baths per room to include, and a dozen other pertinent Frederick habits of living become at once apparent.

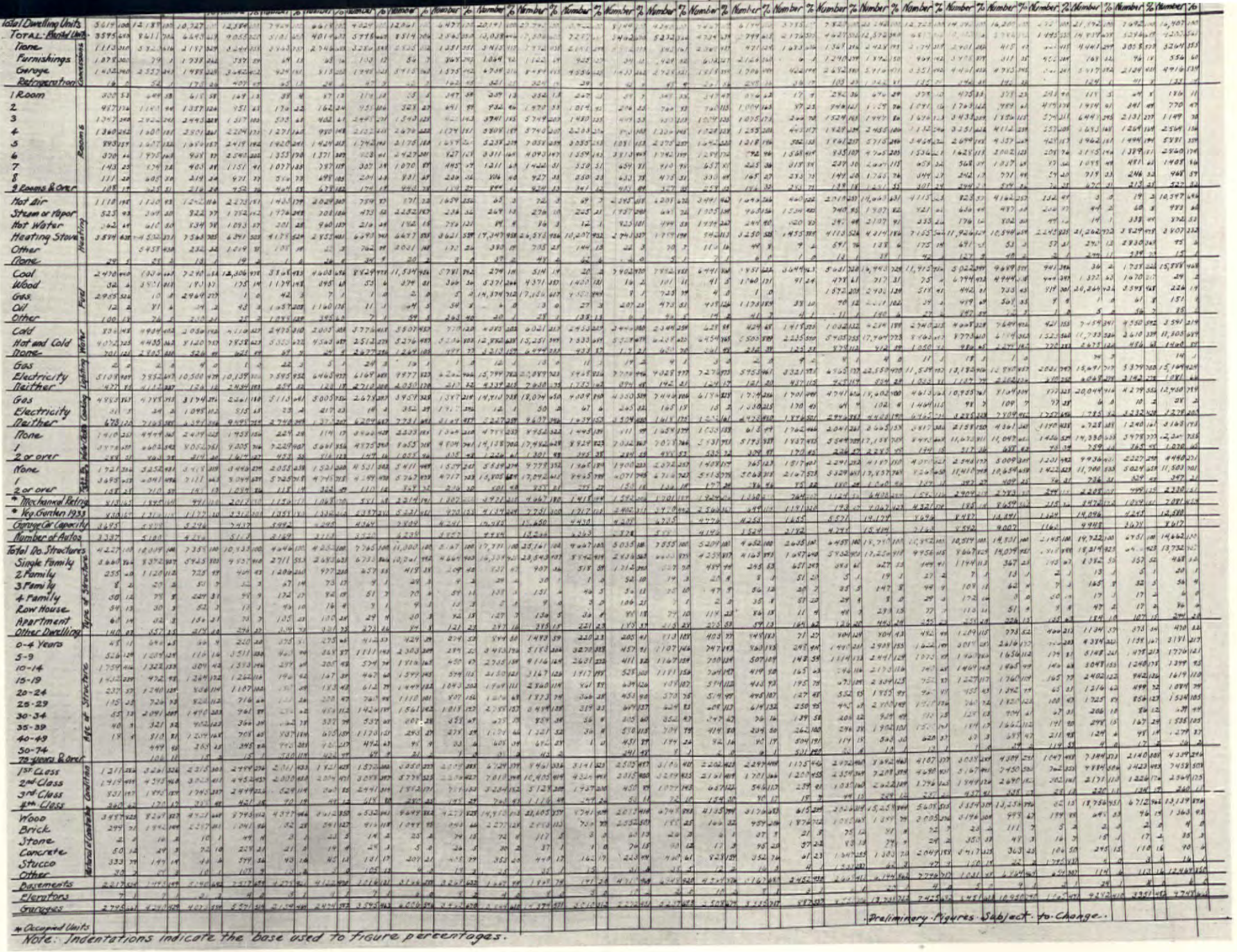
As in Frederick so will it be for all cities where Real Property Inventories are taken. The Bureau of Foreign and Domestic Commerce is now at work trying to obtain an additional appropriation from federal relief funds to carry out the survey to a satisfactory completion.

NUMBER OF FAMILY UNITS

			Rooms						
		Total	1	2	3	4	5	6	7
Total for Area		3,785	17	87	266	461	502	1,568	884
A. By Types Total and Vacant									
Single Family	Total	1,687	5	7	51	125	179	677	643
	Vacant	27		1	2	7	2	8	7
2 Family	Total	1,302	4	28	102	150	158	722	138
	Vacant	37			3	13	5	13	3
3 Family	Total	153	1	12	25	41	38	16	20
	Vacant	12		1	1	3	6		1
4 Family	Total	80	1	9	17	24	18	10	1
	Vacant	3				3			
Row House	Total	211	1	4	6	41	37	93	29
	Vacant	5			1	1		2	1
Apartment	Total	70	1	9	24	26	9		1
	Vacant	1				1			
Other Dwellings	Total	282	4	18	41	54	63	50	52
	Vacant	6			3	2	1		
B. By Type: Condition									
	1st Class	751		2	3	13	55	309	369
	2nd Class	759	1	3	28	67	85	324	251
Single	3rd Class	163	1	1	16	42	39	43	21
Family	4th Class	12	3	1	4	3		1	
	Not Reported	2							2



Summary Table of Data.
Secured by the Real Property Inventory, 1934.
Real Property Inventory Unit
Statistical Division
Bureau of Foreign & Domestic Commerce
May 1934
Casper
Columbus
Butte
Asheville
Nashua
Burlington
Paducah
Greensboro
Boise
Little Rock
Little Rock
Wichita Falls
Hagerstown
Sioux Falls
Fargo
Reno
Frederick
Albuquerque
Lincoln
Pueblo
Phoenix
Springfield
Santa Fe
Shreveport
Baton Rouge
Decatur
Number
%
Total Dwelling Units
Single Family
2 Family
3 Family
4 Family
Row House
Apartment
Other Dwelling
Number Occupied
0-5 Months
6-11
1 year
2
3-4
5-9
10-19
20 Yrs. & over
Very Spacious
Spacious
Adequate
Crowded
Overcrowded
Density
Total Persons
1 Person
2
3
4
5
6
7
8
9
10
11 Persons & over
Number of Persons
Total Families
Extra Families
White Families
Walking
Auto
Bus
Street-car
Railway
Rapid Transit
Other
Transportation
Number Vacant
0-5 Months
6-11
1 year
2 years & over
Number owner occupied
Owned Free
Mortgaged
Under $1000
$1000-1499
$1500-1999
$2000-2999
$3000-4999
$5000-7499
$7500-9999
$10,000-14,999
$15,000-19,999
$20,000 & over
Value
Number of rented units
Under $10.00
Rentals



Real Property Inventory from Santa Fe to Nashua

A FORGOTTEN FUND

for reconditioning homes is ready for spending by the HOLC, with jobs for many in the offing.

ALMOST lost sight of in the hubbub of comment raised over the new National Housing Act (see page 468) is the $200,000,000 fund for modernizing set aside by the amendment to the Home Loan Act of 1933 signed by the President in April. Should the National Housing Act fail to pass at this session, as some Capital seers are saying, it may be to this fund that home modernizers may have to turn for financing. For under the amendment home rehabilitation money up to $14,000 will be available to three classes of owners:

1. Those who apply to HOLC for refinancing, and whose homes are in need of repairs or additions.
2. Those whose homes have already been refinanced by the HOLC.
3. Those who have no mortgages on their homes but who are unable to obtain modernizing loans from local sources.

Last month the Home Owners Loan Corporation established a Reconditioning Division to administer the $200,000,000, and appointed Donald H. MacNeal of Chicago to be its head. No novice in either construction or financing, director MacNeal is a registered architect, was general manager of the National Homes Finance Corporation. He is tall, thin, an able administrator whose background makes him well suited to the job.

An early step in director MacNeal's program was the specific defining of terms used in altering buildings, heretofore used interchangeably. He would supply funds for all three.

Repairing: minor operations which put houses in livable condition.

Remodeling: operations which require basic structural changes, including additions.

Modernizing: operations which raise the standard of the house above its original intent.

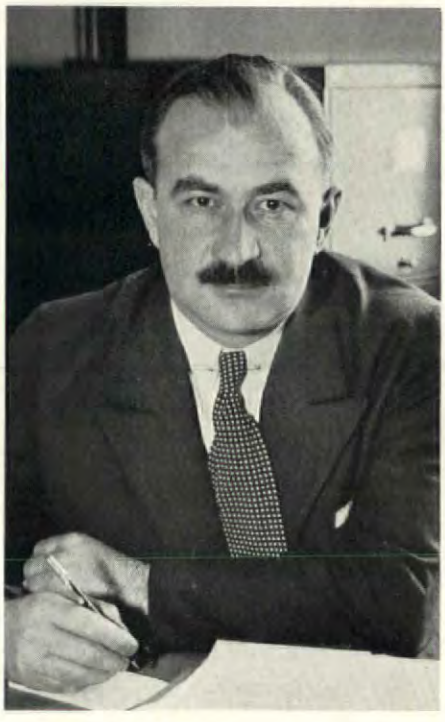
All three are grouped under the general classification of reconditioning.

It will be no minor problem for director MacNeal to spend his money wisely, and all last month he was busy working on organization plans that could be put immediately to work. From Chicago he drafted an old associate, Pierre Blouke, to become supervising architect for the entire Reconditioning Division, and together with the HOLC's board, they reached some preliminary conclusions.

In each of the 300 branch offices of the HOLC, except in regions where inactivity will permit doubling up, a technical adviser will be stationed to counsel with applicants on modernization loans. Though no definite decisions had been made, it seemed probable that the technical adviser would be one thoroughly familiar with construction, presumably an architect, who would exercise a supervisory capacity over all reconditioning loans. For repairs the procedure probably would be that from a list of qualified contractors the applicant might select three to bid on the job, with the work going to the lowest bidder. In such cases, the technical adviser would inspect the work, and issue a certificate of approval when the work was completed.

Harris & Ewing

Donald H. MacNeal



Pierre Blouke

For the major reconditioning operations, remodeling and modernization, it was believed likely that architectural services would be strongly recommended by the technical adviser. It would be illegal to compel a home owner to retain an architect, but it would be possible to point out to applicants that work would have to be approved before loans were granted, and that a reasonably safe way of insuring satisfactory work would be the retention of an architect. If such a procedure is adopted, it is also probable that each technical adviser will be required to prepare a list of local architects acceptable to the HOLC.

Another possibility was also being considered: that the technical adviser might fill out his staff with draftsmen and construction superintendents who would receive salaries from fees paid by home reconditioners.

Last month many an A.I.A. convention attendant, hearing rumors of architectural appointments being made by HOLC, found time to talk with the busy Mr. MacNeal, and his equally busy supervising architect Pierre Blouke.

While the organizing of the division was still incomplete it had been decided definitely that only Blue Eagle contractors and (if the architects code chapter is adopted) Blue Eagle architects will be employed to do the work.

✚ Up to the middle of last month the HOLC had closed 231, 968 loans amounting to $681,052,741. It had also turned over to State, county and municipal governments more than $44,000,000 in back taxes on homes refinanced by the corporation. Approximately $9,000,000 had been spent in repairs and maintenance of homes.

SAVINGS BANKERS

meet, criticise the U. S., and get some advice.

SIX hundred mutual savings bankers gathered in annual session last month at the Waldorf Astoria Hotel in New York to listen to reasons why the Administration should and should not take its finger out of their pie, to elect officers, to listen to reports on the state of their business.

As at all conventions, the delegates learned more from the after-session room conferences where they could, in Johnsonesque fashion, "talk with their hair down," than they did from the generalities of public discussion. Of the speeches the one most provocative was the lashing of the administration by **C. Willard Young,** investment counselor.

Excerpts: "Continued inflation for the United States is inevitable under the pres

ent circumstances. . . . Instead of Reds in Washington, we have a lot of Pinks, Parlor Pinks. These, to my mind, are more dangerous, more contemptible, and more insidious than the Reds."

Because of the inevitable inflation he advised, "foreclosed real estate should be held, as this is a good hedge against inflation, unless the properties are in such locations that increasing taxes will be overburdensome.

Robert E. Simon, one of New York's shrewdest real estate operators, said apropos of the mortgage situation: "Probably there should not be again guaranteed mortgages; group certificate issues definitely should be prohibited; the present companies should be reorganized. . . . The vast majority of the guaranteed mortgages outstanding are or will prove sound and will pay principal and interest in full. Many of the mortgage companies, if given a fair chance and with improved conditions in real estate, could be successfully reorganized.

"In my opinion there should be set up in the State a separate banking department charged with the supervision of all forms of mortgage investment held by savings banks, life insurance companies, of houses of issue and mortgage companies offering for sale mortgages or participations in mortgages."

Longest and most amusing speech of the session, was the rambling, aphorismic discourse of auctioneer **Joseph P. Day,** who graciously delivered his speech in two parts to accommodate Chairman Fahey's radio defense of the Administration's activities.

In a reminiscent mood, as he almost invariably is, auctioneer Day plucked a few recollections from his eventful past, gave a few pointers to the bankers.

The pointers: "Real estate needs today what a few years ago Owen D. Young said industry needed, the priming of the pump. I believe that a few drops will do the trick.

"The first drop is for every savings banker to make a few loans now. You all have applications on file right now for loans that would be perfectly safe in this market. . . . Very likely some of you will tell me you are doing the very same thing. All I can say is, if you are doing it, you are keeping it as secret as though it was something to be ashamed of, and when a savings banker wants to keep a secret, nobody can beat him at it."

The second drop: "Do not be secretive about these loans. Take the chance that you may be flooded with application, but publicize the ones you make."

Chairmanned by **W. W. Miller,** the committee on mortgages expressed itself in favor of modernizing foreclosed properties "even though the contemplated improvement does not show any return above a fair return on the new money."

It urged "all savings banks in the same community to cooperate with each other or with their colleagues in the commercial banks, life insurance companies and mortgage companies in the matter of appraising real estate. It has been suggested that a central bureau of appraisal be set up in the larger cities, available to those who contribute to its support. This is a step in the right direction."

It expressed approval of amortized mortgages as opposed to unamortized loans.

The work of the Home Owners Loan Corporation was held "both beneficial to the mortgagor and the mortgagee." The committee opposed financing of homes by government agencies.

"There is plenty of institutional money among mutual savings banks, and insurance companies to finance new building as soon as such building becomes necessary.

"Financing for the construction of new homes by any form of government guarantee or other Federal channels would further retard the return to a normal real estate market.

"The committee believes that it would not wish to see the government in the mortgage-insurance business. (As proposed in the new National Housing Act, see page 468.)

In true banker fashion the committee did not advocate membership in the Federal Home Loan Bank System but cautiously said it "appears to furnish a most useful and timely service to savings institutions."

Before the convention closed it reelected Philip A. Benson as president and John W. Sanstedt as executive-secretary. New officers are Robert C. Glazier, vice-president and Walter E. Hallett, treasurer.

ON SOFT PAWS

the PWEHC proceeds to speed its tempo; Cincinnati is entered.

CINCINNATI'S colorful new Union Terminal, which THE ARCHITECTURAL FORUM described last June, was set down smack dab in the center of a slum district. Its broad esplanade led down into one of the city's dingiest quarters, crammed with four and five story brick flats, crosspatched by narrow streets. It was six blocks to the nearest through trafficway.

To save Queen City visitors an unpleasant half-mile walk, the Laurel Street Approach was created, half as wide as long, and stretching to trolley-lined Laurel Street. An over-awing tract of pavement and greenery, the Approach is the biggest piece of property to have been bought by a municipality in the year 1933. At that year's close, Reporter Forest Frank was able to explain for Cincinnati *Enquirer* readers how the Approach, big as it is, cost as little as it did.

To the home of Mayor Russell Wilson one day in the Fall of 1931 came all Cincinnati's councilmen to discuss means of giving their new, spider-bellied union station a proper front yard, and from start to finish that depression-time meeting was characterized by many a frown, much incredulous squinting, some inverted mirth.

The Approach would cost $2,700,000, said representatives of the Cincinnati Union Terminal Co. This was an estimate, but as the council's finance expert, Charles O. Rose, sat dazedly shaking his head over it, Assistant City Solicitor William S. Edgemon was even more, if temporarily, dismayed. He too had prepared a hurried estimate for the meeting; it made his hair rise to think himself $1,000,000 off. And when City Solicitor John D. Ellis's young assistant in charge of real estate rose to say "My estimates indicate roughly an expenditure of $1,800,000," he met naught but polite skepticism.

Three months later, the assistant solicitor had detailed figures ready for the council, determined to appropriate for the Approach, which Cincinnati's citizens were loud to demand. The first appropriation ordinance, passed May 25, 1932, called for the purchase of 149 parcels of land, 146 buildings. The City Solicitor's office put down a total offering price of $1,215,234, a limit price of $1,422,176, and went ahead.

The *Enquirer* told how Abe Berman's demands for $13,500 for property adjudged worth $8,293 were settled in court at $8,500; how a jury made Anton Wahl, who had refused to budge, sell his house for $200 less than he first had been offered; how, in general, a usually long, drawn-out, worrisome business was expertly carried off in less than two years by able Accumulator Edgemon. Cincinnati *modus operandi:* Where the amount involved is estimated as under $10,000, the city mails out on the same day to all owners affected, contracts with suggested negotiation prices. Thus, neighbors receive at one time estimates that are generally similar. Then most differences are ironed out in the solicitor's office; some in court, after the city has filed appropriating suits. In cases involving more than $10,000, property owners are dealt with individually, disinterested appraisers often being called in.

Fortnight ago Accumulator Edgemon went quietly to work for the U. S. A. Cincinnati's able City Manager Clarence Addison Dykstra made arrangements in Washington that he should work half-time for the Public Works Emergency Housing Corp., which though it tried to put a damper on the news, went blasting into Cincinnati last month, bent on getting a $6,000,000 housing project started, if possible, on a location contiguous to the Laurel Street Approach. A project so situated has been Cincinnati's plan and hope since rough sketches for such were drawn last year by the city planning commission, directed by Engineer Myron D. Downs. Recently the board of governors of the City Plan Association urged Cincinnati's Metropolitan Housing Authority to select a site on the Approach, calling it "an opportunity to kill two birds with one stone." Architect for the housing authority is Frederick W. Garber, whose firm of Garber and Woodward has done many a notable Cincinnati job, public and private.

Part-time Assistant City Solicitor Edgemon, PWEHC-employed, has 20 appraisers and title examiners under him, an office in the Temple Bar Building, and nine tentative locations to consider.

✚ Best indicators of the increase in the Federal housing corporation's secret doings were figures on its spending. PWEHC expenditures to date: March, $1,930; April, $48,070; May, $316,047. This totals $366,047, a mere fraction of the $100,000,000 yet to be spent.

Again, Barter, as N. J. Building Trades Workers Drum Renovizing.

IN suburban towns like Lyndhurst, N. J., relief rolls are still largely made up of stranded building trades workers. Last month off Lyndhurst's relief list went five building tradesmen — a plasterer, a bricklayer, a carpenter, a plumber and an electrician — to start the Mutual Building, Remodeling and Repair Co. They proposed to forage for modernizing jobs among home owners, schools, churches, building and loan associations and mortgage companies; to accept commodities of all kinds for pay. If the company waxed, jobs loomed for others of Lyndhurst's idle.

THE PRESIDENT PROVIDES

more funds for building. A tinge of normalcy slows PWA spending.

THE President stuck to his January budget estimates last month in making a long-awaited request for additional funds for public works and relief purposes. He asked, as everyone knows, for $1,322,000,000, an appropriation in excess of which "would make more difficult if not impossible an actual balance of the budget in the fiscal year 1936, unless greatly increased taxes are provided."

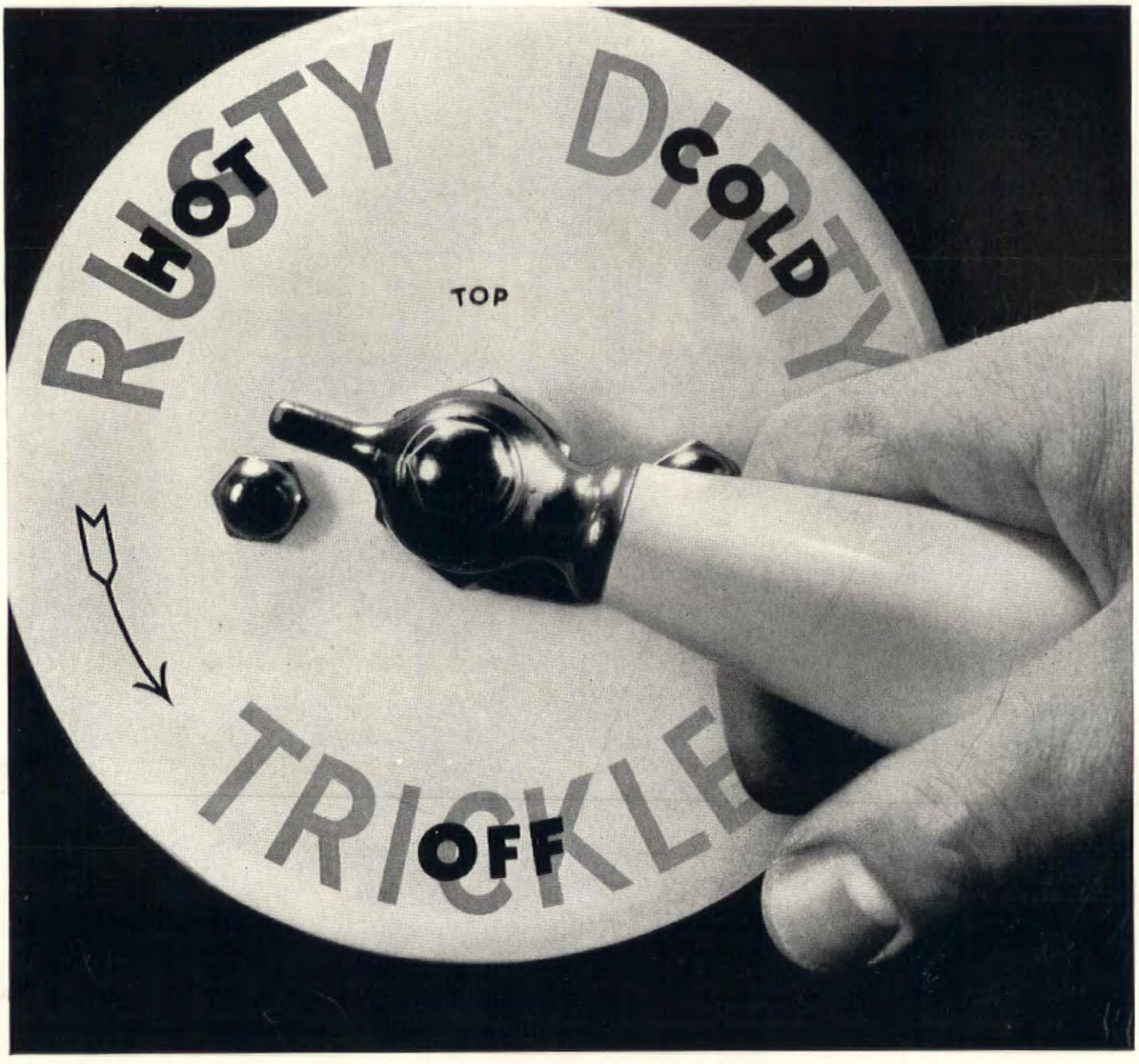
Of this amount, $940,905,000 will be called a General Public Works Relief Fund, and this the President wants to distribute with a free hand among his emergency agencies. However, in a succinct "must" list of six items, detailing how $228,325,000 of this sum should be spent, he included "Public buildings construction, $35,000,000."

Thus, dimmed were hopes that the PWA might yet attack in earnest the problem of building revival. Of the GPWRF, the PWA will possibly get $500,000,000, which will be available for loans and grants on non-Federal projects, several thousand of which are said to be awaiting the PWA's approval. Of all non-Federal projects approved to date, approximately one-fifth are building projects. But no fifth of $500,000,000 is $35,000,000.

A suggestion that the PWA's new money might be tripled in effect, were the RFC allowed to lend 70 per cent of the cost of non-Federal projects approved and 30 per cent funded by the PWA, was quickly dropped.

With taxpayers' Irish up on the question of voting bonds, it was doubtful last month whether a magnificently re-funded PWA could actually have accomplished much else, without a complete change in its financing regulations. Seventy per cent of all PWA funds for non-Federal projects must be secured by duly voted State, county, city or school district bonds, and last month the PWA's efforts to place its funds were apparently still being staved off by a reviving private demand for this type of security — a factor which made itself felt early as month before last (see page 476). The PWA reported "wholesale shifts" by successful applicants for PWAid from "loans and grants" to "grants only." The PWA has spent but $68,184,000 of the $570,400,000 allocated for non-Federal works.

Last month the municipal securities committee of the Investment Bankers Association of America reported an improving credit situation as a result of drastic retrenchments by local governments. One factor noted by the committee: The HOLC is helping by requiring delinquent tax payments (amount to date, $44,000,000).



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Remember, decorative features may catch the eye, but if you want to catch a signature on a deed or lease, you need the basic advantages of Chase rust-proof brass and copper building products.

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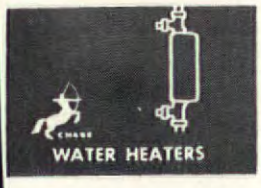
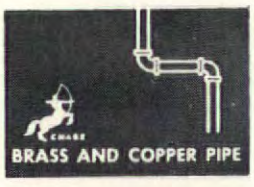
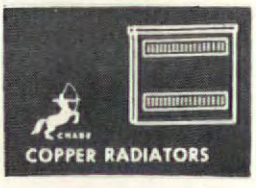
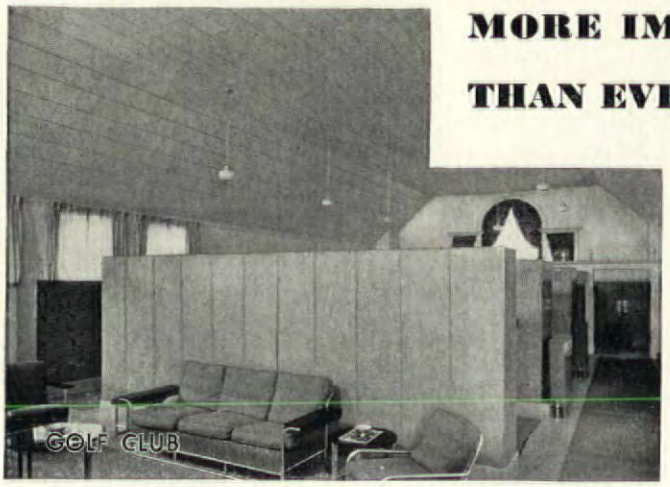
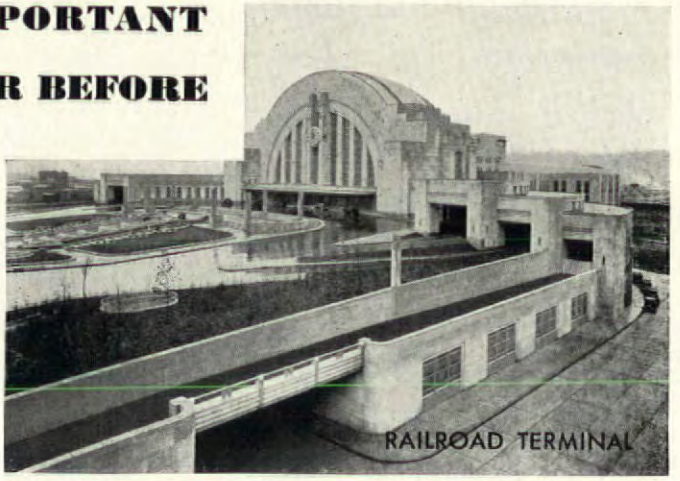






AIR-CONDITIONING MAKES INSULATION MORE IMPORTANT THAN EVER BEFORE





UPPER LEFT—*Philadelphia's "Home of Controlled Climate," sponsored by the Philadelphia Gas Works Company, and heated and cooled by gas, is insulated with corkboard. Architect—Richard W. Mecaskey, Philadelphia.* LOWER LEFT—*Ladies' locker room at the Fox Chapel Golf Club, Pittsburgh. Ceilings in the clubhouse are insulated with corkboard. Architects—Brandon Smith & Harold O'Reif, Pittsburgh.*

UPPER RIGHT—*Concrete decks on all flat roof areas of the beautiful Mary Reed Memorial Library at Denver University are insulated with corkboard. Architect—Harry J. Manning, Denver.* LOWER RIGHT—*Concourse and other areas of the Cincinnati Terminal are insulated with corkboard. Brine lines are insulated with Armstrong's Cork Covering. Architects—Fellheimer & Wagner, New York City.*

For small areas or large, the problem of maximum comfort and minimum heating cost can be solved by insulating with Armstrong's Corkboard

IMPORTANT is the part insulation plays in assuring greater comfort—greater coolness in summer—for all types of buildings. Important, too, is its contribution to substantial fuel savings in the winter months.

With the increased use of air-conditioning, the need for insulating materials to retard the passage of heat becomes more vital than ever to building owners.

Architects for the Cincinnati Terminal . . . for Philadelphia's "Home of Controlled Climate," . . . for Denver's Mary Reed Memorial Library . . . for Pittsburgh's Fox Chapel Golf Club . . . knew how to get the kind of insulating efficiency they wanted. They specified Armstrong's Corkboard Insulation, thus insuring protection over a long period of years.

Armstrong's Corkboard can be depended on to guard roofs and walls against the passage of heat outdoors . . . to reduce the penetration of the sun's heat indoors.

And for insulating cold storage rooms, Armstrong's Corkboard is equally effective. Structurally strong, corkboard is light in weight, easily handled. Its natural moisture-resistance insures efficiency through years of service.

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THERE'S A RESILIENT ARMSTRONG FLOOR FOR EVERY PURPOSE

UPPER LEFT—*Colorful walls of Armstrong's Linowall complement the smart Armstrong's Linoleum Floor in this attractive modern kitchen.* LOWER LEFT—*Library of Scripps College for Women, Claremont, Calif., with a quiet floor of Armstrong's Cork Tile. Gordon B. Kaufman, architect.*

UPPER RIGHT—*For this gay basement playroom, a bright floor of Armstrong's Accotile was chosen because of its ability to withstand dampness.* LOWER RIGHT—*Main floor of the Public Service Building, Glendale, California. The floor is durable, dirt-resistant Armstrong's Linotile in a pleasing design.*

With Armstrong Floors you can meet the practical needs of any type of interior . . . at the same time secure the exact decorative note you want

YOU work with a free hand when you work with resilient Armstrong Floors—Linoleum . . . Linotile . . . Accotile . . . Cork Tile.

These smart, modern floors place no restrictions on your creative ability. They permit original harmonious designs . . . offer, as well, scores of rich standard patterns from which to choose.

The various types of Armstrong Floors further enable you to select a floor that best suits the character of the interior. Is it a fine home or apartment—a store, school, hospital, or other public building? Armstrong's Linoleum Floors offer lustrous beauty that endures . . . plus the important practical advantages of easy cleaning, of quiet and comfort underfoot.

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For installations over concrete floors in direct contact with the ground, they employ Armstrong's Accotile, an asphaltic flooring. And for buildings where quiet and dignity are essential, a floor of Armstrong's Cork Tile is the popular solution.

Remember, the expert workmanship of trained layers employed by Armstrong Floor contractors everywhere assures accurate rendering of your designs and proper installation of the floor.

The current issue of Sweet's Index carries full descriptions of the various Armstrong Floors—also complete details about Linowall, Armstrong's permanent, washable wall covering. For additional information and names of near-by Armstrong Floor contractors, write Armstrong Cork Company, Floor Division, 1203 State Street, Lancaster, Penna.

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ACCOTILE
CORK TILE
LINOWALL

THE

FORUM OF EVENTS

(Continued)

THE SIXTY-SIXTH A.I.A. CONVENTION

After omitting the 1933 convention, for depressing reasons, the A.I.A. delegates, members and friends assembled May sixteenth at the Mayflower Hotel in Washington to attack once more the old problems of the profession and to consider the new ones. The officers of the Institute, the Executive Committee and the Board of Directors had been working day and night long before.

The President's address was, as usual, the first order of business, the keynote of the meeting. President Ernest John Russell stressed the major problems of the architect — the need for greater public recognition and appreciation; the need for a more realistic education and training for the architect; the need for ways and means to meet the encroachments by others on the field of the architect. He raised again the question of adequate compensation for services; stressed the need for a larger, more democratic Institute through more active regional divisions; cooperation with others in the construction industry; NRA code considerations; the architect and Public Works; and lastly, the Institute's lack of funds to carry on all the work it should and would undertake.

The report of the Treasurer showed how well the funds had been administered, but revealed also the deplorable but inevitable situation of membership dues. Then followed the reading of the Report of the Board of Directors.

After old friends and new had lunched together, the reading and passing of Resolutions was resumed, and item by item the suggested changes in by-laws were adopted to make the operation of the Institute more effective. The dues, membership and finance portions of the by-laws were changed. The endorsement by the Institute of the Architects' Small House Service Bureau was withdrawn, with sincere recognition and appreciation of the efforts of the members who developed and carried on the work of the Bureau.

Five o'clock found the convention and its guests seated in the East Room of the White House, gazing at the oversize crystal chandeliers, ready to stand at attention when the President of the United States should come in. The occasion was the presentation of the Gold Medal of the Institute to the distinguished Swedish architect, Ragnar Östberg. Graciously the President received the medal from Mr. Russell and bestowed it upon the honored guest. "I take particular pleasure," said the President, "in presenting this medal for I am, I believe, the only President of the United States to have Swedish blood in his veins."

Two other medals were presented at the evening session of the convention — one to James Henry Breasted and one to Walter Kantack. (See page 5.) The Committee on Education presented Resolutions regarding the personnel of registration boards, the appointment of Mentors for candidates for registration, and like matters designed to elicit the aid of practicing architects in preparing the younger men for practice.

Thursday morning, nominations for officers were in order. Edwin Bergstrom withdrew his candidacy for the presidency. Results of the day's voting were next day announced as: Ernest John Russell, *President;* Frank C. Baldwin, *Secretary;* Edwin Bergstrom, *Treasurer;* Charles D. Maginnis, *First Vice-President.*

N. Max Dunning presided over the joint luncheon of the Institute and the Producers' Council. In the principal address, "Good Architecture, The Architect, The Producers," Lewis H. Brown, President of Johns-Manville, brought out the need of architectural control to insure the use of quality materials in the public interest.

The afternoon was left to the whims or fancies of the delegates — some looking up old friends or new jobs; others looking at the vital paintings of the Public Works of Art Project; others looking for golf balls or low scores at the Producers' Council tournament. The evening was well spent in hearing Horace H. Russell, General Counsel, Federal Home Loan Bank Board, tell of the HOLC work and of its plans regarding the $200,000,000 fund it may spend in modernizing. It was his hope that the architect might find employment in various capacities in connection with this work. Electus D. Litchfield read a paper showing the necessity for a real program of public building in which architects would be employed on a commission basis, not on relief salaries, if the industry and the profession are to survive. He reiterated the facts of the failure of PWA effectively to stimulate building.

Public Works discussion enlivened the Friday morning session. The successful work of the Committee on Public Works was recorded in the report read by Louis

Underwood & Underwood

ERNEST JOHN RUSSELL

reelected President of the American Institute of Architects

LaBeaume, chairman. The agreement with the Treasury Department, which the board made, assures the employment of private architects on all department projects over $60,000. It was hailed with gratitude; and inwardly with regret that all other government agencies (including PWA) have as yet failed to come to a similar intelligent decision. Ralph Walker made it very evident that PWA had not shown such wisdom, and further that building construction has been allotted less than 15 per cent of the PWA funds, thus leaving the building industry (and the architect) still prostrate.

At the afternoon session Stephen F. Voorhees explained the present status and plans of operation of the Construction Code, and William Stanley Parker told of the Architects' Code which is yet to be approved by the NRA. Many resolutions were passed, among them Institute approval of the Fletcher Bill.

The grand finale of the Convention was of course the Dinner, with the inimitable Irving K. Pond as toastmaster. The speakers were Ragnar Östberg, Robert D. Kohn and Frederic A. Delano.

Courtesy, Swedish State Railways

Beside Lake Mälaren in Stockholm, the famed Town Hall, designed by Ragnar Östberg

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THREE GREAT INDUSTRIES

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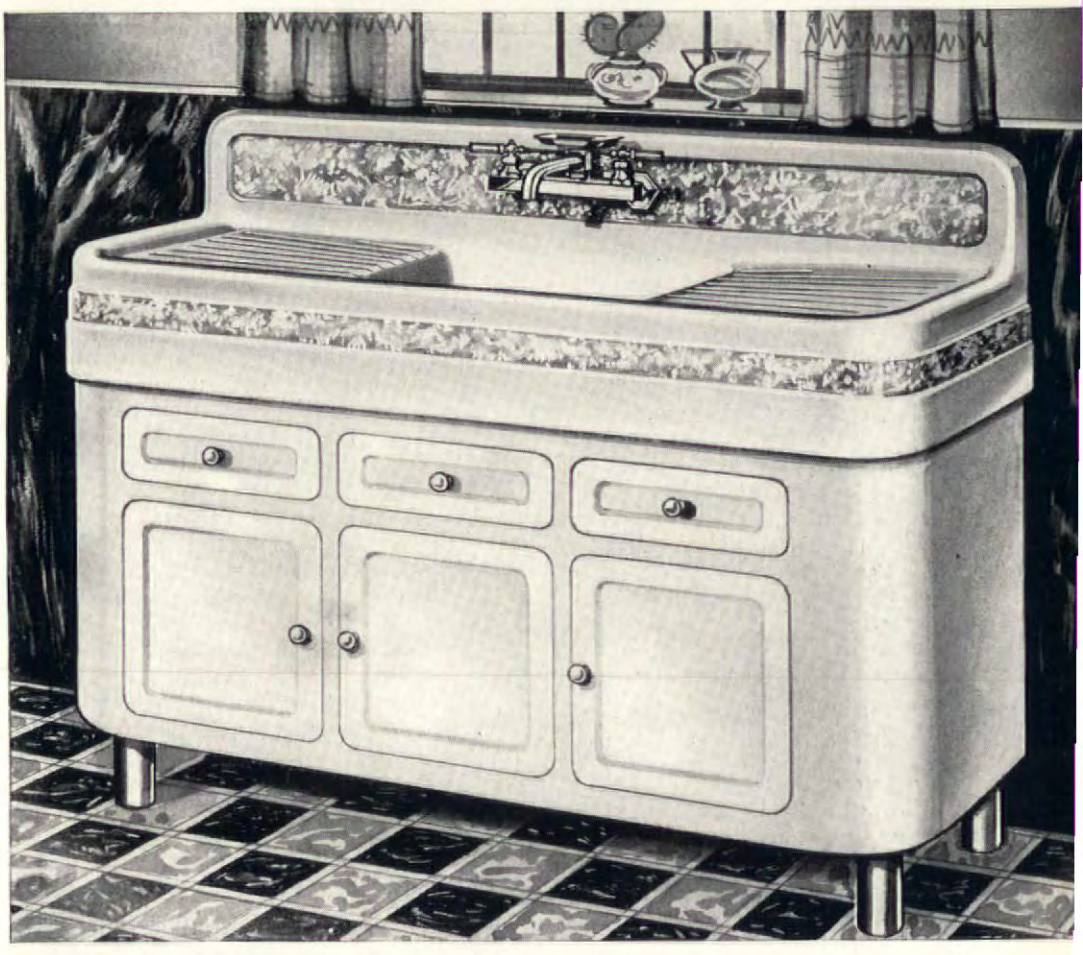

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NEW BEAUTY AND COLOR COMBINATIONS

The flowing lines and rich colors available in "BRIGSTEEL" sinks and cabinets will harmonize with practically all types of kitchens. All sinks are acid-proof at no extra cost.

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The sink-cabinet pictured eliminates an awkward place in the average kitchen—the lost space under the sink—providing storage room and convenience which a woman will be quick to appreciate. Cabinet is all steel, finished to match sink.

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You will find "BRIGSTEEL" Sinks and Cabinets specified and on exhibit in the following model homes—Armco-Ferro, Frigidaire, Sears-Roebuck and also in the Ceramic Parade. Do not miss these interesting installations when you are in Chicago this summer.

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SINKS *and* CABINETS

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BRIGGS MANUFACTURING COMPANY

DETROIT, MICHIGAN

THE

FORUM OF EVENTS

(Continued)

MURALS FOR KOHLER

AN ADDITION to the Kohler Company building at the Century of Progress by Ely Jacques Kahn called for a quick solution of a decorative problem, to suggest by a dramatic decorative statement the romance in the far-flung empire of a commercial enterprise which delves into remote corners of the earth for its raw materials and markets them as finished products in equally remote spots.

Six young mural painters sat down over one week-end to evolve rough color sketches of six possible solutions in terms of mural design. The artists were Charles B. Gilbert, Madeleine Kroll, Stuart Eldredge, Anne Ophelia Todd, Kenneth Loomis, Charles Dean and Dock Curtis. In conference with the architect, Mr. Gilbert's plan was selected for execution.

After structural details had been worked out with Mr. Kahn, the group of six painters were organized into a unit to produce the display mural on the specified date. They used the architect's drafting room as an atelier. One week later approximately half of the 500 sq. ft. of pictorial decoration were completed.

As a Twentieth Century application of the guild system, this is a departure from usual modern procedure. It is an educational method of reproduction intended to achieve a closer and more desirable correlation of the decorative and structural elements of an architectural design.

In July THE ARCHITECTURAL FORUM will publish photographs of the murals and of the Kohler Building, along with a fuller account of the materials used and how they were applied.

RURAL MURAL

"YOU don't need the latest model truck to catch the spirit of the soil." Thus did painter Gilbert White answer critics of his mural, "Spirit of Agriculture," which was unveiled without the blessing of Secretary of Agriculture Henry Wallace and his left wing assistant, Rexford Tugwell, in the Agricultural Building in Washington last month. "The point of my mural," said 56-year-old Mr. White, who was commissioned under the Hoover régime, "is timeless, ageless. Just as soon as I put in the latest 1934 tractor, along come improvements, and next year my picture would be dated. No, this is agriculture. . . . It began a long, long time ago; it will go on. . . ."

Whenever Mr. Tugwell walks out of his office, he will see in the left-hand corner of the mural one eternal verity: an aged man telling words of wisdom to a young man.

Dated or undated, the Administration prefers murals to gold leaf and scrolls. A recent Sunday afternoon visit by the President to the Corcoran Galleries elicited considerable praise from the Chief Executive. Gold decorations and scroll work, he indicated, are somewhat more expensive than murals and decorations. Subsequently he expressed satisfaction at the quality of the work displayed by PWA artists in 600 paintings, and added it was easy to recognize the subject in each case. For hanging in the White House and Hyde Park he chose 32 pictures.

BIGGER AND BETTER

. . . will be the Kohler exhibit at this year's Chicago Fair. Model of the addition to their building, designed by Ely Kahn, showing sketches of the murals for the front facade

SCARS FOR SCARSDALE

FEW towns in Europe have escaped architectural smallpox. There is the bizarrely modern Boettcher Strasse in Bremen, the Martyrs' Memorial at Oxford and the Albert Memorial in London, not to mention the modern grotesques of the Campo Santo at Genoa. Last month a rash broke out on the smooth English face of Scarsdale, N. Y., when a bright yellow "diner" rolled into the heart of the busines district and thereby roused the ire of this svelte metropolitan suburb of New York. Indignant citizens organized mass meetings, swamped the village administration and eased their spleen in letters to the Scarsdale *Enquirer*. But the "diner" remains firmly planted, an eyesore in the midst of a community which tries to follow the English tradition. Much criticism has been aimed at the Scarsdale Holding Corporation, which leased the ground where the wagon rests.

"I have cooked for the Duke and Duchess of Leeds and they seemed satisfied. I should think my cooking might be good enough for Scarsdale," said Adolph Cotenna, its chef.

Most architects would not hold that a model community should stop just short of being spick-and-span. But a town is not a building arts exhibit at the Century of Progress or a scenic set at the Metropolitan Opera House. As a New York *Times* editorial puts it, "In many thousands of comfortable suburban homes people are reading novels extremely outspoken in plot and detail, because life is like that. Well, a rainbow-colored lunch wagon in a town of beautiful homes is only one more case of life being like that."

COLONIAL LANDMARK

Rebuilt with Rockefeller money by the firm of Perry, Shaw & Hepburn, after extensive research and archæological study, the 18th Century Governor's House at Williamsburg, Va. Soon to be completed, it is the last of the major projects in the old Virginia capital

WALNUT PARK PLAZA APARTMENTS
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Long life and low maintenance cost are two cardinal points of a Genasco Standard Trinidad Built-up Roof which have won for it such widespread use on important buildings.

For this roof is waterproofed and weathersealed with Nature's own product — Trinidad Native Lake Asphalt — which cannot be equalled for resistance to water, wear, and weather by any manufactured compounds.

It will pay to find out why leading architects specify Genasco Standard Trinidad Built-up Roofs, and to look into their records of enduring service.

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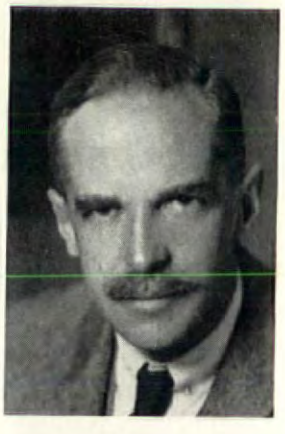
LEAGUE SHOW

WITH what critic McBride of the New York *Sun* called "courage in the face of the four worst years the profession has ever known," the Architectural League of New York held its annual exhibition last month, awarded its medals. The highly prized Gold Medal in Architecture went to no one, but silver medals were awarded to Benjamin Wistar Morris and Robert B. O'Connor for their Avery Memorial wing of the Wadsworth Atheneum in Hartford, Conn. (next month in THE ARCHITECTURAL FORUM), and to William Lawrence Bottomley for "masterly accomplishments in the preservation of a precious phase of our architectural heritage and the skillful keeping alive of this noble style in the solution of modern problems," referring to his restorations of early Virginia houses, and his editing of the book, "Great Georgian Houses."

In landscaping, the work of Alfred Geiffert, Jr., partner of the late great Ferruccio Vitale, on the gardens and approach to an estate in Riverdale, New York, took a silver medal.

Hugh Ferriss' rendering of the new Philadelphia Post Office by Harry Sternfeld and the Ballinger Company won the Birch Burdette Long Memorial Prize. To Helen Sardeau went the Avery Prize for Small Sculpture, for her panel, "Samson and Delilah," in a fire screen.

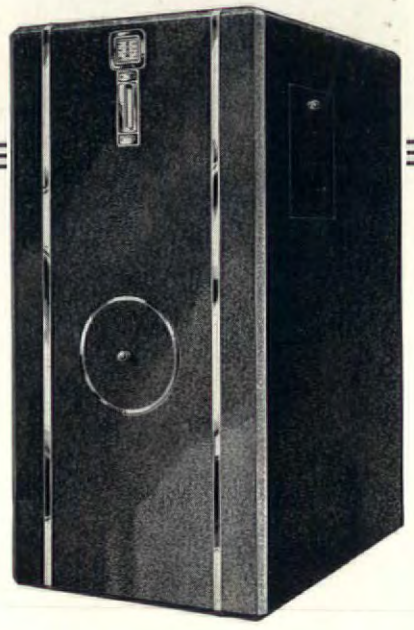
Containing nothing startlingly new, this exhibition was a combination of traditions, more of them old than new. It was designed by Ralph Walker.



Medal winners, left to right and then down — Benjamin Wistar Morris, Robert B. O'Connor, William Lawrence Bottomley, Alfred Geiffert, Jr., and Hugh Ferriss

Burnham Builds a *New* Oil Burning Boiler

HAVING MANY OUTSTANDING FEATURES



You can use in its built-in design, practically any of the standard makes of oil burners. You no longer have to take a boiler you don't care particularly for, to get a burner you do.

Service Advantage

Furthermore, there's the distinct advantage with a Burnham of being able to use a certain burner, that is well serviced in one section where others are not.

You have the Burnham Boiler you want, and a local-sold and serviced burner that insures best results.

Economy Claims

Of course, every maker of boilers claims theirs have outstanding economy features possessed by no others. We are no exception. The only possible difference may be, that we can come pretty close to backing up our claims with proofs.

Provisions for Safety Devices

In addition to which, it has provisions for various safety devices and automatic controls.

Practically Noiseless

And we discovered a way to almost completely hush noisy burners, and make quiet ones still quieter.

Appearance

It has a good-looking sound and heat insulated jacket — in fact it is rather elegant in its restrained colors.

Over Half a Century of Building Boilers

To which we might add that for over half a century Burnham has been making cast iron boilers, and for 20 years, steel ones as well.

P.S.

Frankly the catalog isn't ready this week. But it will be next. Send for it *now*. You'll get it then.

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THE

FORUM OF EVENTS

(Continued)

NEW DEAN, NEW INSTITUTE

NAMED acting dean last Fall, Prof. Joseph V. Hudnut was last month appointed permanent dean to succeed Dr. William A. Boring of Columbia University's School of Architecture. After studying at Harvard Dean Hudnut received his M.S. in 1917 from Columbia. Practice in New York was followed by an appointment as Professor of Architecture at the University of Virginia and Director of the McIntire School of Fine Arts, until 1926, when he was called to Columbia.

As acting dean, Prof. Hudnut has completed a plan for an Institute of Urbanism to aid "in that vast reorganization and rebuilding of New York City which is believed to be inevitable." The Institute is modeled in spirit upon the *Institut d'Urbanisme* of the University of Paris. With an initial outlay of $125,000 investigation in five fields is proposed. While researches in all these are now going on in the University, the Institute is designed to coordinate them:

1. The evolution of cities, considered as living organisms. Historic research.

2. The administration of cities. Charts: local authorities, public services, traffic management, maintenance of order; sanitation; building codes; fire prevention.

3. The social organization of cities. The requirements of civic populations; hygiene; education; amusements; recreation; housing; zoning laws.

4. Economic problems of cities. The utilization of land and water fronts; financial problems; taxes; rents; mortgages; appraisals.

5. The construction and expansion of cities. Design of open and built spaces; streets; parks; subways; public building; suburbs; civic esthetics.

As a graduating thesis, seniors in the School of Architecture have been given a problem involving the design of a building to house such an Institute. To the author of the best scheme goes a prize of $1,755.

COMPETITIONS

WITH inquiries far exceeding expectations the Brunswick-Balke-Collender Co. last month announced the jury for its bar design competition. (See THE ARCHITECTURAL FORUM, May, 1934.) Architect members of the jury are: Benjamin H. Marshall, Harvey W. Corbett, Ralph Walker and John A. Holabird. Non-architects: R. F. Bensinger, president, Brunswick-Balke-Collender Co., Ernest Byfield and Carl Eitel, both in the hotel business. Competitors should mail their designs before July 2 to Angelo R. Clas, Professional Adviser, 333 North Michigan Ave., Chicago, Ill.

June 15 is the closing date for the competition for a post office lobby design being sponsored by the Architectural Division of the Quarry Tile Industry. (See THE ARCHITECTURAL FORUM, May, 1934, page 30.) The jury, announced last month, includes Edward W. Donn, Jr., Arthur B. Heaton, L. M. Leisenring, Fred V. Murphy and F. W. Southworth. Entries must be mailed to Carl P. Dumbolton, Architectural Director, 600 Investment Building, Washington, D. C.

• • •

JULY 1 is the closing date for the seventh annual small house competition sponsored by *House Beautiful — Home and Field*. Prizes will be awarded in three classes:

CLASS I. Best house of eight rooms and under:

First prize $500

Second prize $300

(Continued on page 38)

At home after July 1st

DOUBLY fortunate are the husband and wife in these times who begin married life in a new home of their own. Not only are homes today far more attractive and convenient than those their parents had to accept, but they are easier to manage, more economical to maintain. And, in many cases, they are fireproof.

A home can be made virtually fireproof at very little cost by using Kalman Steel Joists. The owner of a dwelling built with Kalman Joists will perhaps never see them, but when he understands how much they contribute to make his home more livable, his investment sounder, he will be grateful to his architect.

Combined with concrete slab and plaster, Kalman Joists virtually remove the threat of fire by providing a fire-safe barrier between the living and sleeping quarters and the basement (where 70 per cent of fires start). Further, Kalman-built floors never creak or sag. Vibration is greatly reduced, or eliminated. And no shrinkage of the floor structure can occur to cause those ugly cracks where walls and floor meet.

The use of Kalman Steel Joists is practicable in every type of modern home. They add only a trifle—a few cents a square foot—to the building cost. That's because they reach the job in the exact lengths required and are assembled easily and quickly, without cutting or fitting. Pipes and conduit are run right through the open joist-webs.

Kalman supplies two distinct types of steel joist: Kalman Joists (one-piece steel trusses), and MacMar Joists (steel trusses assembled by pressure welding). Either type, in combination with concrete slab and plaster, provides fire-safe floor construction at very moderate cost.

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THE FORUM OF EVENTS

(Continued)

CLASS II. Best house of nine to twelve rooms:
First prize.....$500
Second prize.....$300

CLASS III. A special prize of $300 is offered for the house of any size, which best exemplifies recent developments in construction, materials and design, without dependence upon period form. The jury will lay particular emphasis upon straightforward designs and upon construction methods permitting saving in both time and expense.

A program may be obtained from the House Competition Editor, House Beautiful — Home and Field Magazine, 572 Madison Ave., New York.

DEATHS

ALICE MARY SIMPSON, 64, in New York, May 16.

Faced with reorganization to save itself from economic demise, the Architectural League of New York last month lost one who had many times in the past helped to prevent that happening. For forty years, most of the time as its executive secretary, Miss Simpson had served the League. It had become, as more than one member had said, "Miss Simpson plus whoever happened to be president."

Few activities were successfully completed, few decisions made without the sanction of Miss Simpson. The annual exhibitions which made the League famous grew under her supervision. Many a banquet came off on time, and many a committee got its job done due to Miss Simpson's verve and attentiveness. She was thoroughly attached to the League and to the interests of its members, many of whom found it remarkable that one never mannish could be so accepted as a man among men.

Miss Simpson studied art at the Art Students League, frequently spent her vacations painting. Hence there was nothing amiss in the League's decision last month to award her the Allied Arts Prize, an honor which she shares with Major Gen. George W. Goethals, Joseph Urban and Julian Clarence Levi. When shown the medal, representing the highest recognition which the League can give, on May 11, she was able to read: "Presented to Alice M. Simpson to record the fortieth year of her unsparing devotion and the admiring affection of the League."

• • •

ROLLIN SANFORD SALTUS, 64, landscape architect, at Mount Kisco, N. Y., April 24.

Mr. Saltus practiced in New York City and was a member of the American Society of Landscape Architects.

Childs & Smith, architects, are now at 430 North Michigan Ave., Chicago.

After 30 years in the First National Bank Building, J. E. O. Primore, architect, has moved his office to 5959 Winthrop Ave., Chicago.

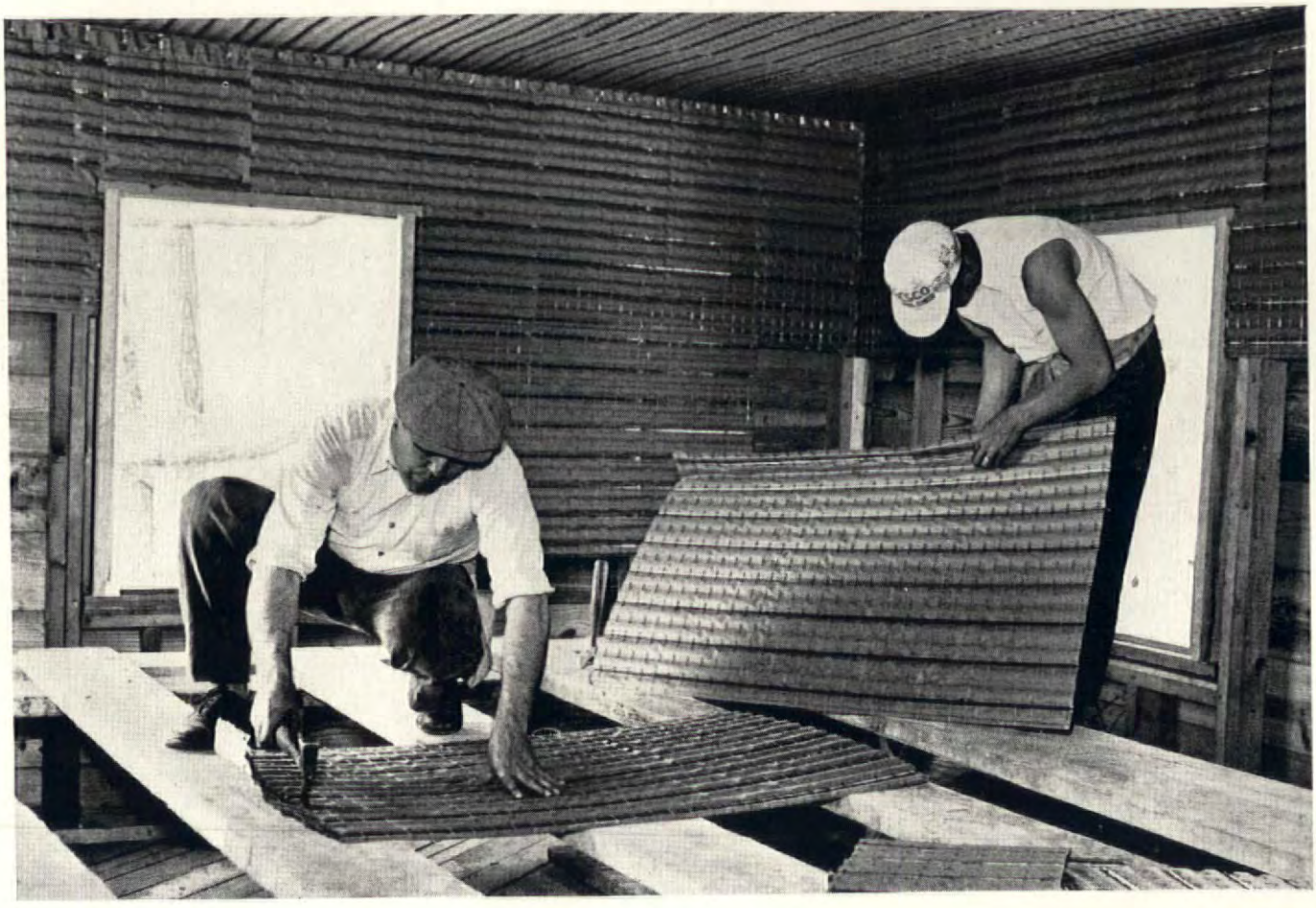
• • •

ELECTIONS

THE newly elected officers of the Boston Society of Architects are: H. Daland Chandler, president; Frank W. Crimp, treasurer; executive committee, George H. Burr, Ralph W. Gray, Ernst M. Parsons.

Officers of the New York Building Congress who were re-elected last month are: Harris H. Murdock, president, John J. Collins, Thomas S. Holden, H. C. Meyer, Jr., Jere L. Murphy and D. T. Webster, vice-presidents, Benjamin D. Traitel, treasurer, and E. L. Strickland, secretary.

Fits every need of every plaster job



REYNOLDS ECOD FABRIC plaster base for the first time offers builders a basic product in two forms to meet all wall specifications—Metallated★ for outside walls, plain for partitions.

Ecod Fabric should not be confused with other plaster bases and laths. It is distinctly different. Of great importance is the fact that no special nails, tools or application methods are needed. The photograph above, for instance, shows how bends are made. In making crosswise bends, the metal reinforcing bars are easily scored with a lathing hatchet. Lengthwise bends are made by the hands alone. Yet when plaster is applied a reinforced monolithic slab wall or ceiling is formed, guaranteed against deterioration for the life of the building.

★ *Metallated Ecod Fabric has Metallation integral with it. Metallation is the trade name for polished metal insulation products made only by the Reynolds Metals Company, Inc.*

When insulation is needed, a modern and highly efficient reflective metal insulation is available in the form of Metallated Ecod Fabric. This gives you insulation and plaster base in one piece, applied in one quick and simple operation, without a single cent of extra labor cost.

At the right is a list of ten major advantages of Ecod Fabric. Claims? Of course! But they can be proved. We can further prove that the installed cost of Ecod Fabric is no greater than that of wood lath. You will spend as much for any other lath as for Ecod Fabric—why not get Ecod's ten superiorities? Send for literature or see your supply house.

10 SUPERIORITIES OF ECOD FABRIC

1 Plastered cost is no greater than that of wood lath.

2 Provides fire-proofing.

3 Is water-proof and damp-proof.

4 Prevents plaster cracks.

5 Is absolutely permanent—guaranteed against rusting.

6 No special nails, tools or application methods required.

7 Saves plaster—makes it cover a larger area.

8 Prevents deterioration of plaster by moisture.

9 Prevents structural timbers from absorbing moisture from plaster during setting.

10 Produces a strong, reinforced monolithic slab wall.

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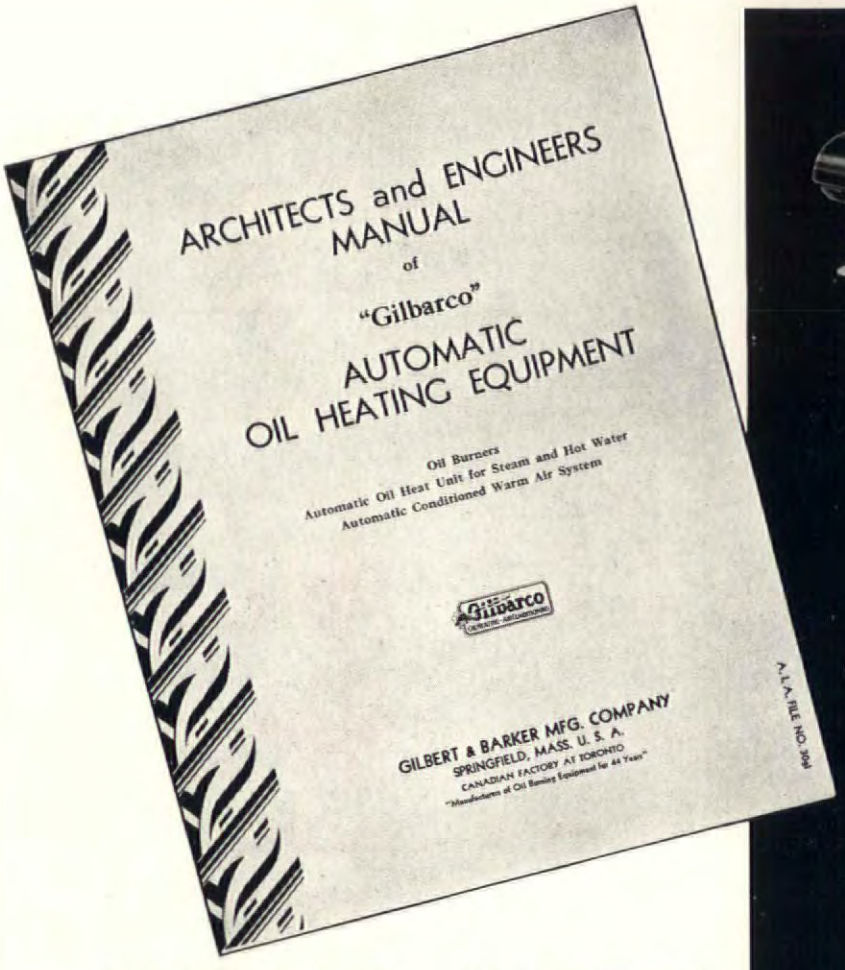
(Continued)

From 130 architectural contestants, Robert A. Weppner, Jr., of Lakewood, Ohio, an instructor at Catholic University, was awarded the Prix de Rome for his memorial in Washington to the founders of the Republic

Though he has never been in Mexico, Gilbert Banever, this year's Yale graduate, had no difficulty in convincing the Prix de Rome jury that his "Pottery Vendor" was worthy of the painting award

So large was Reuben Robert Kramer's prize-winning "Dying Centaur" that only its front half was shipped from his Baltimore home for the jury to judge. Not shown here but also a Prix de Rome winner was Alden Hopkins, in landscape architecture



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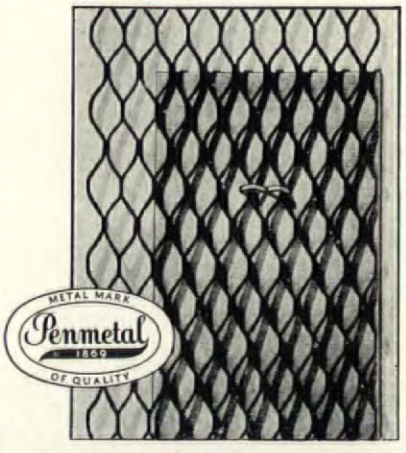

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The Prime Kraft Board is heavy enough to add structural strength but springy enough to permit free flow of plaster on back side of the metal lath. This automatic back plastered job, according to tests we have made, provides a stronger wall.

No plaster is wasted — you can figure on using 25% less plaster and, at the same time, get a stronger wall construction. Lathtex with its heavy backing provides insulation and sound retarding at no extra cost.

Lathtex is offered in three forms — each designed to meet specific lathing conditions:

FOR NAIL-ON WORK—LATHTEX W

The Prime Kraft Board covers the entire back of the lath with the exception of a narrow strip of open mesh lath on one side and one end to permit lapping with continuous reinforcement. See illustration.

FOR TIE-ON WORK—LATHTEX N

The distinctive feature of Lathtex is the attachment of the backing in six inch strips with open lath exposed between each strip to permit wiring of lath to channels in ceiling and partition construction.

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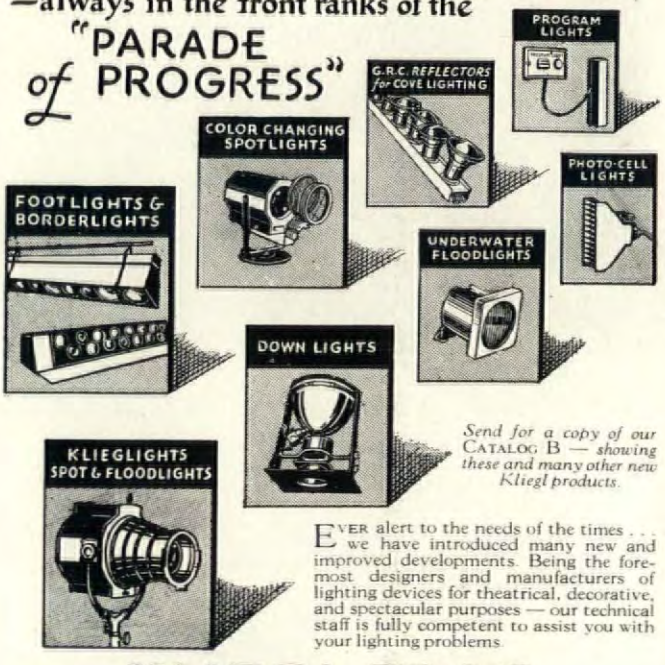

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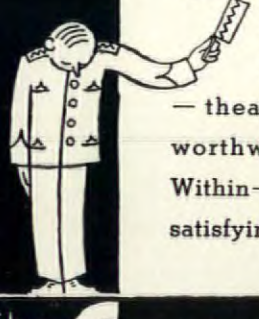

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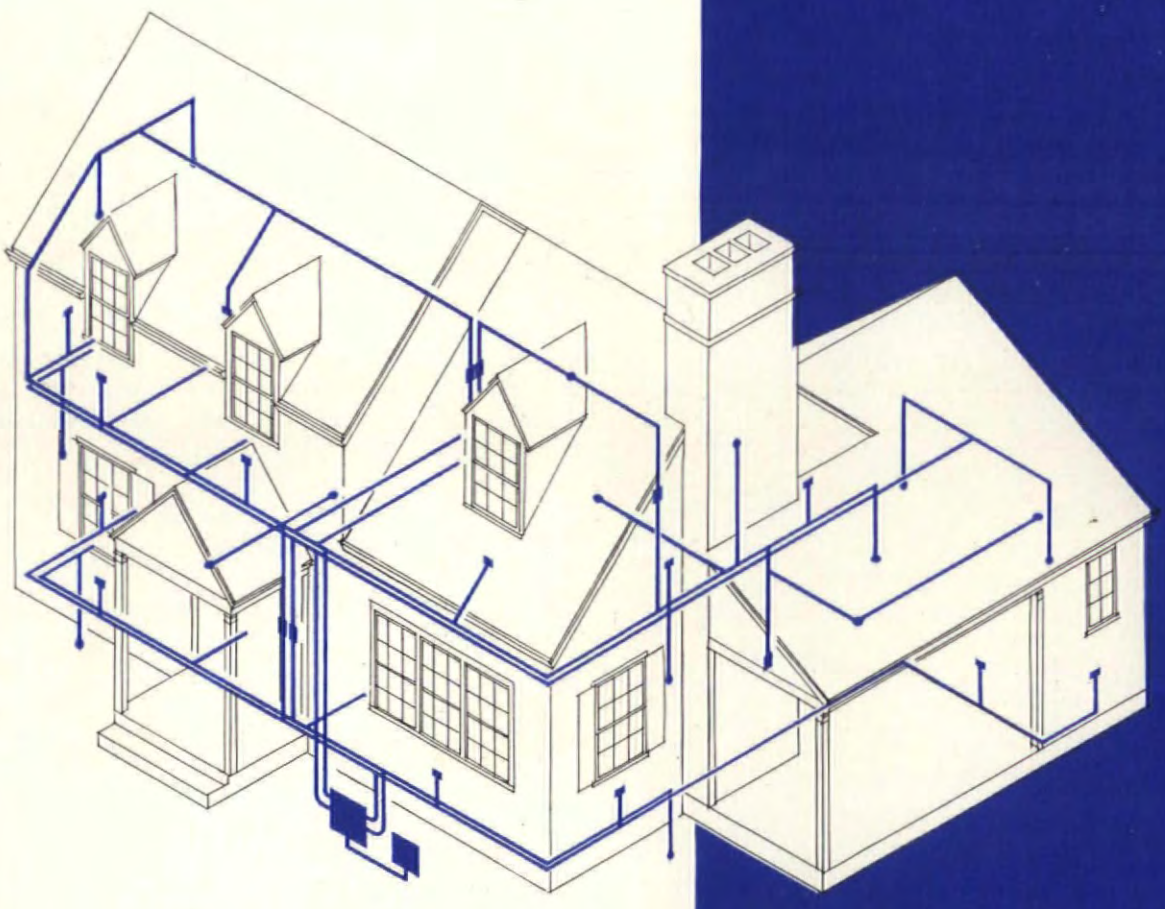
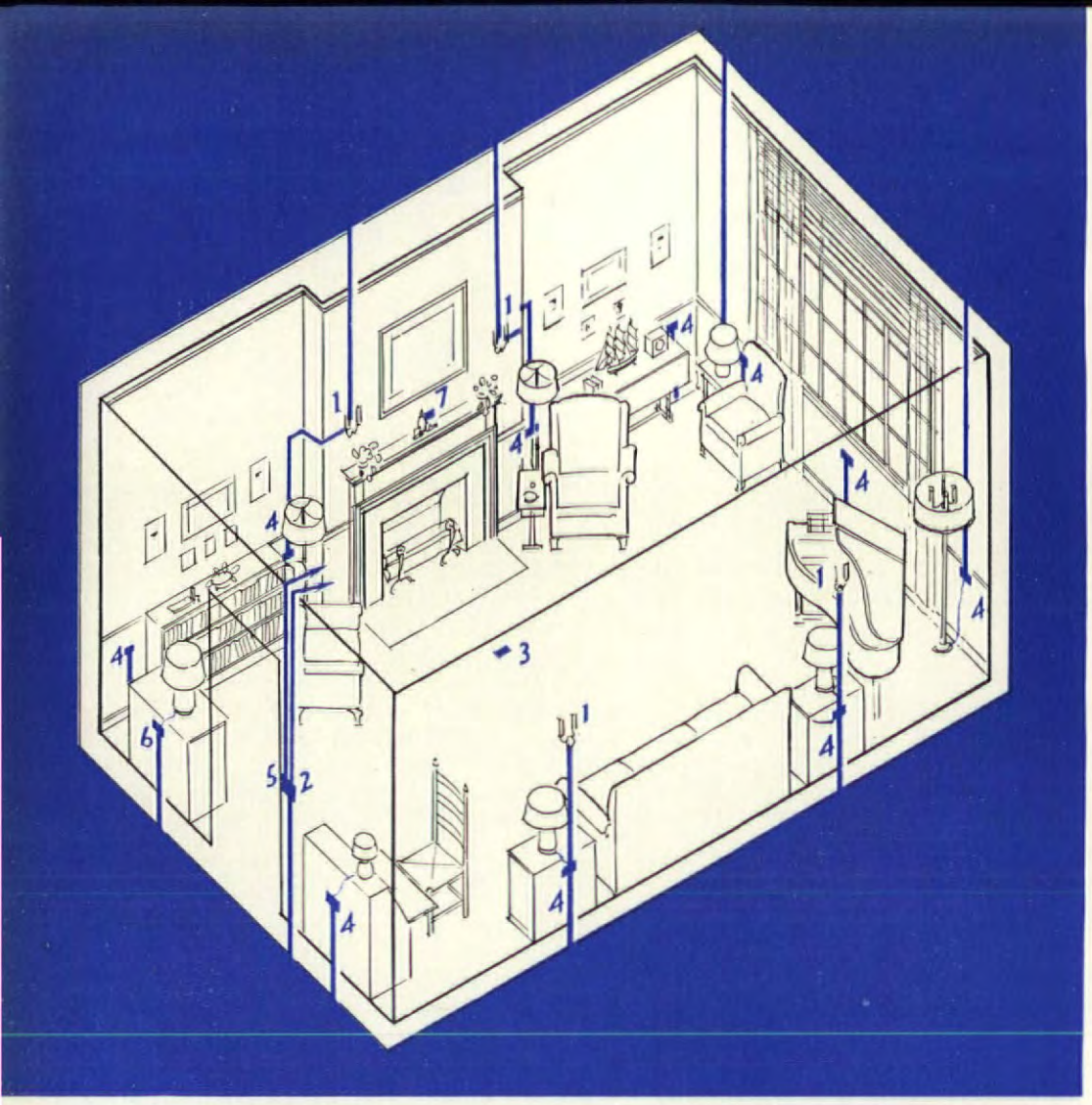
This Manual is published in Sweet's 1934 Architectural Catalogue. Separate copies of this Manual, together with "Time-Saver" Specification Sheets will be sent to Architects upon request to the Merchandising Department, General Electric Company, Bridgeport, Connecticut.

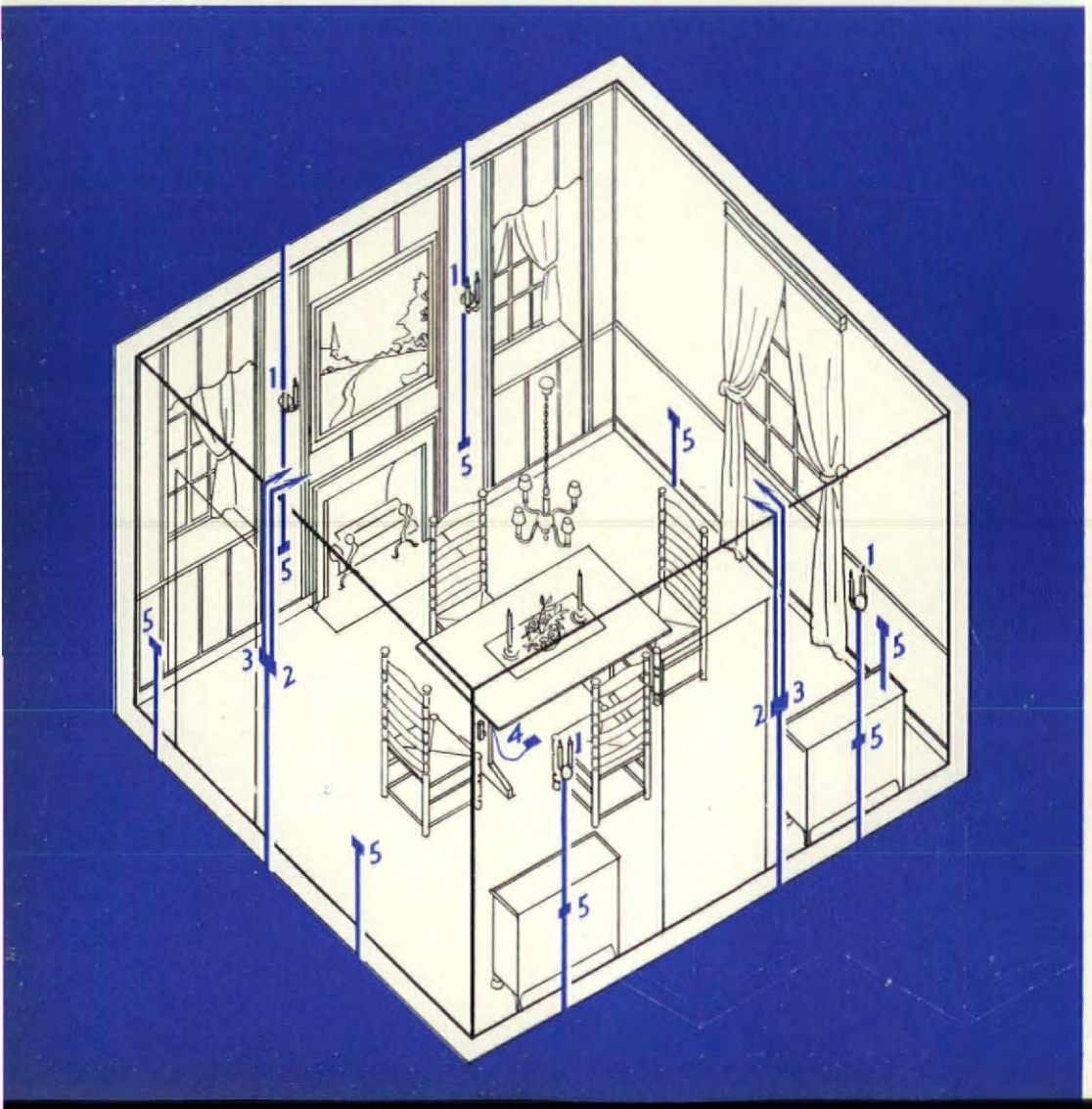
The following pages illustrate how G-E Graded Wiring Systems provide for adequate electric service in the home.





LIVING ROOM

1. Side wall lights
2. Switch to control center cei ing light
3. Floor outlet
4. Sidewall convenience outle controlled by switch No. 5
5. Switch to control side wa convenience outlets No. 4
6. Convenience outlet withou switch control
7. Mantel convenience outlet



DINING ROOM

1. Side wall lights control from three-way switches No
2. Three-way switches to w lights No. 1
3. Three-way switches to cen ceiling light
4. Floor outlet
5. Side wall convenience out

BED ROOM

Side wall lights controlled from switch No. 2

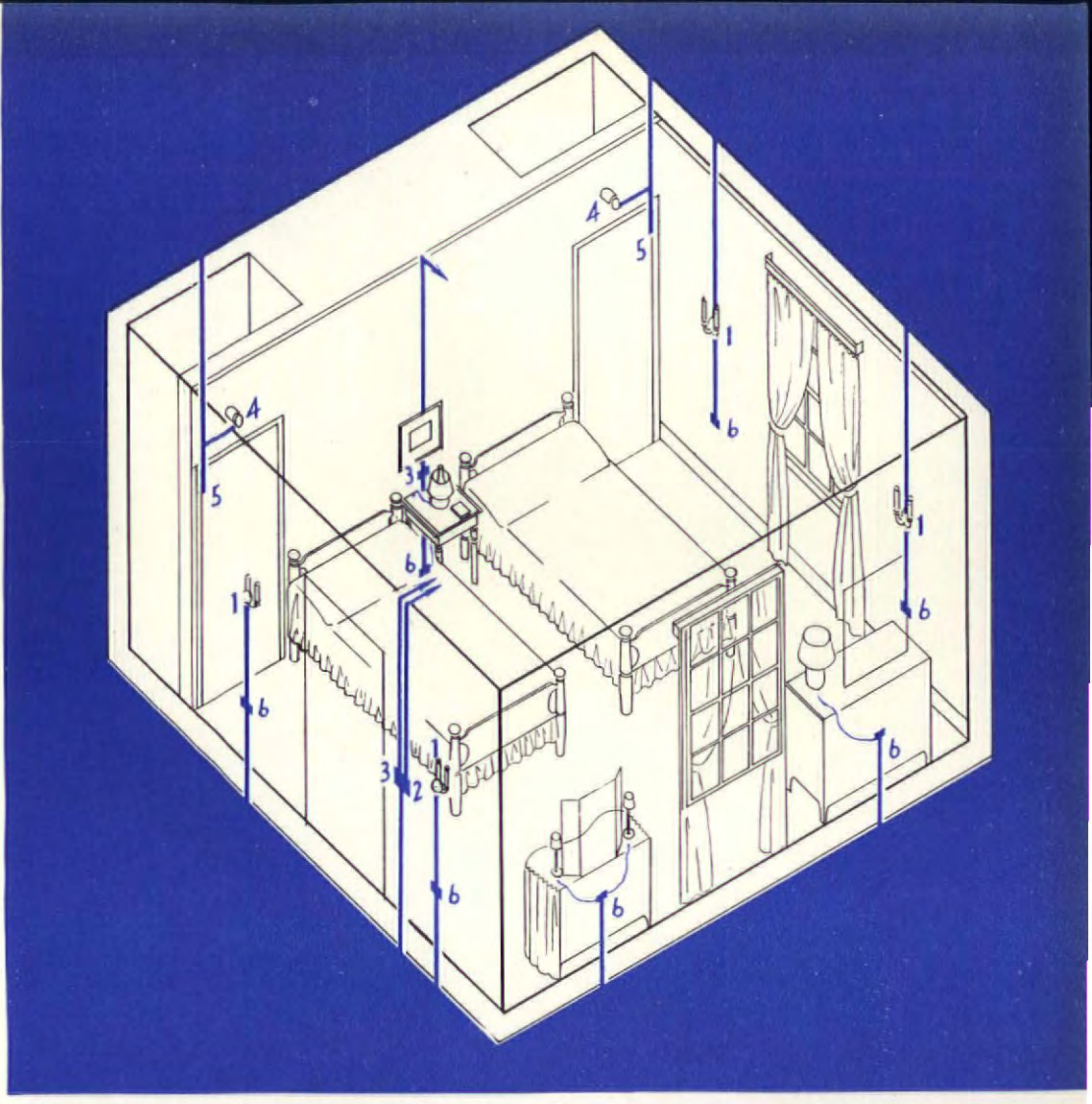
Switch to wall lights No. 1

Three-way switches to center ceiling light

Closet lights controlled from switches No. 5

Door switches to No. 4

Side wall convenience outlets



BATH

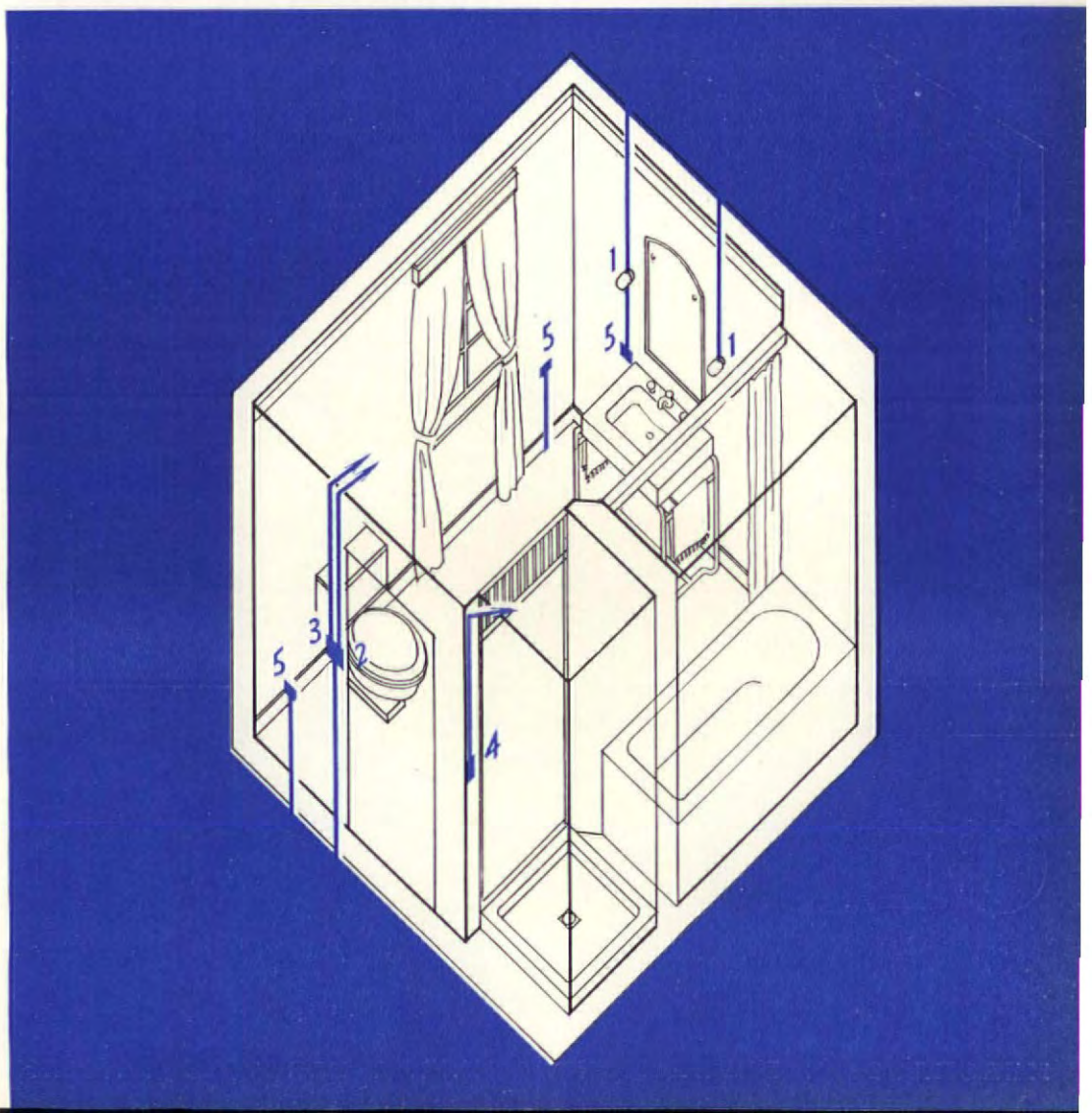
Side wall lights controlled by switch No. 2

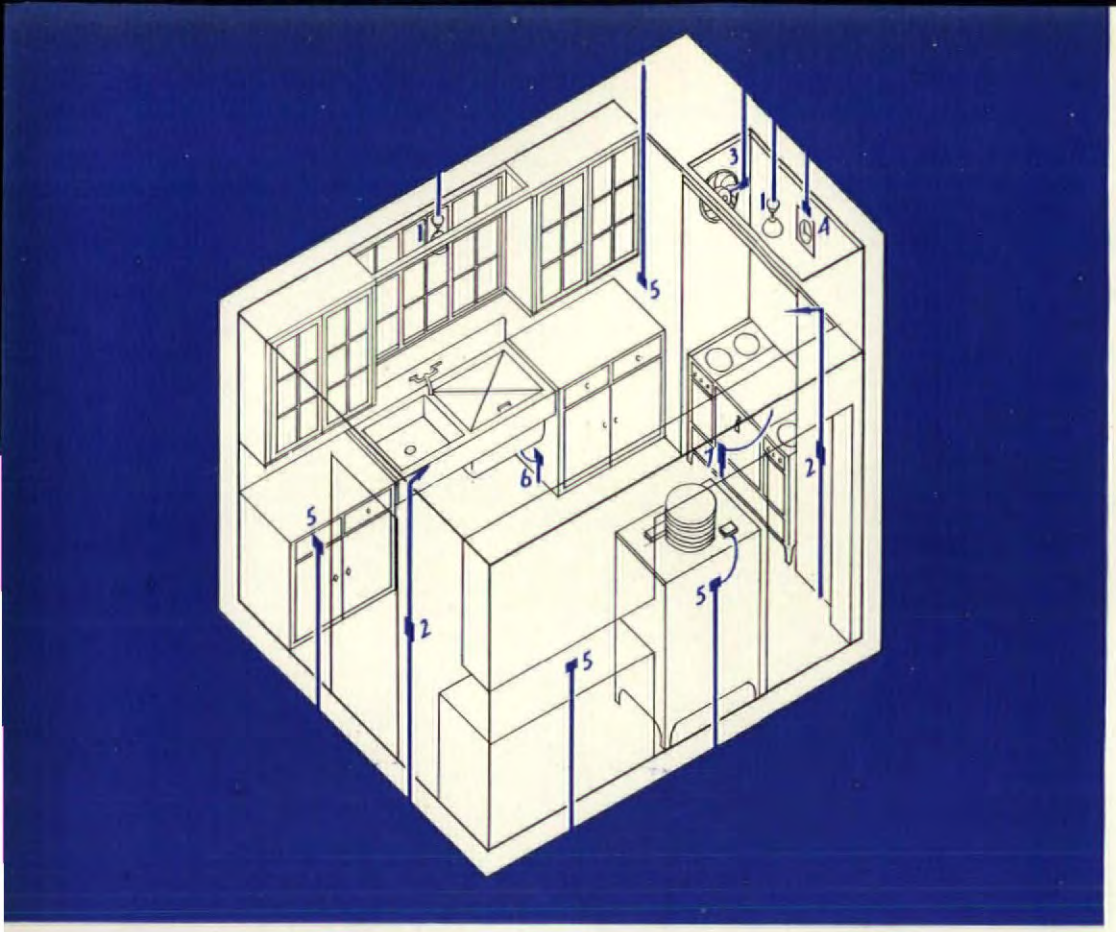
Switch to side wall lights

Switch to center ceiling light

Switch to waterproof center ceiling shower light

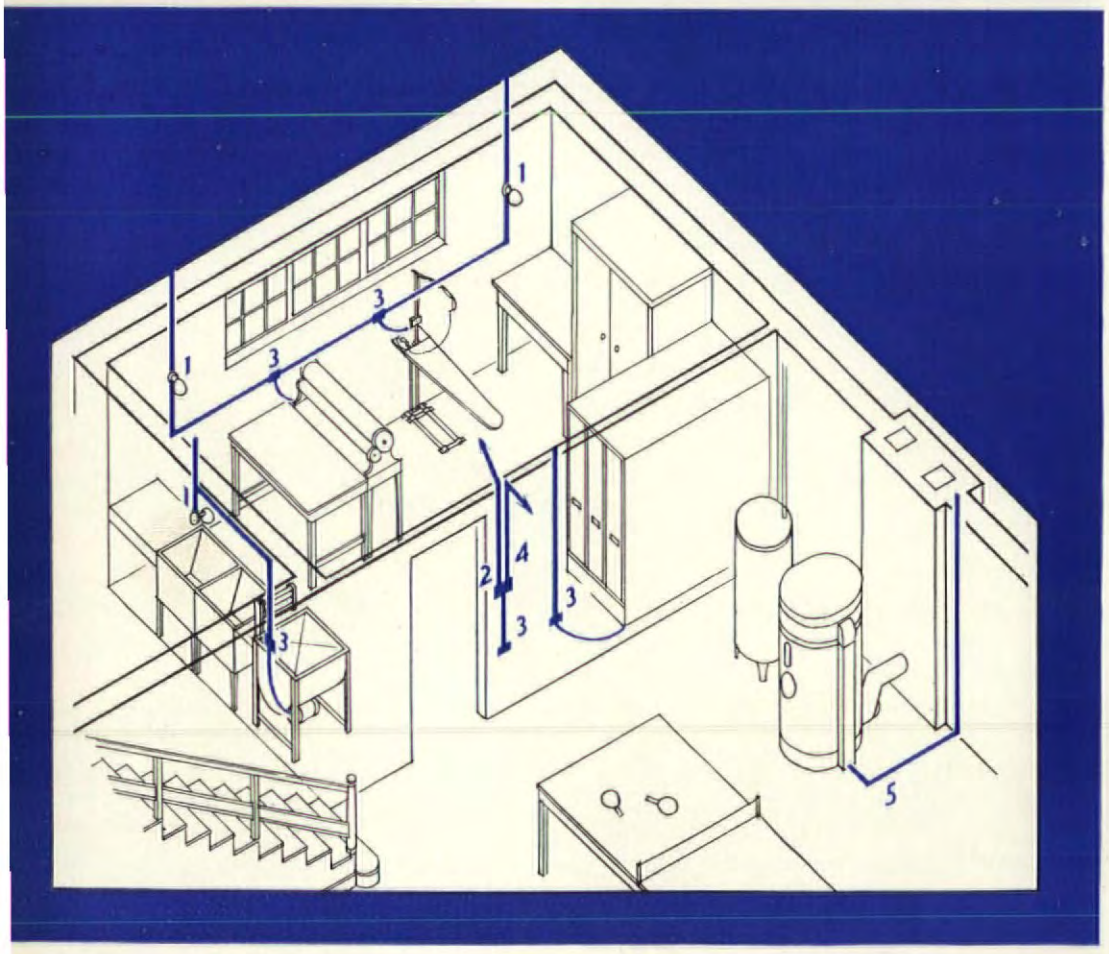
Side wall convenience outlets





KITCHEN

1. Ceiling lights
2. Three-way switches to cen ceiling light
3. Convenience outlet for exhau fan
4. Clock hanger convenience ou let
5. Convenience outlets in si walls
6. Convenience outlet for di washer
7. Range outlet (heavy duty)



BASEMENT

1. Side wall lights
2. Switch to laundry center c ing light
3. Convenience outlets for la dry equipment
4. Three-way switch to rec tion room center ceiling li
5. Separate circuit for furnac

GENERAL ELECTRI

WIRING MATERIALS

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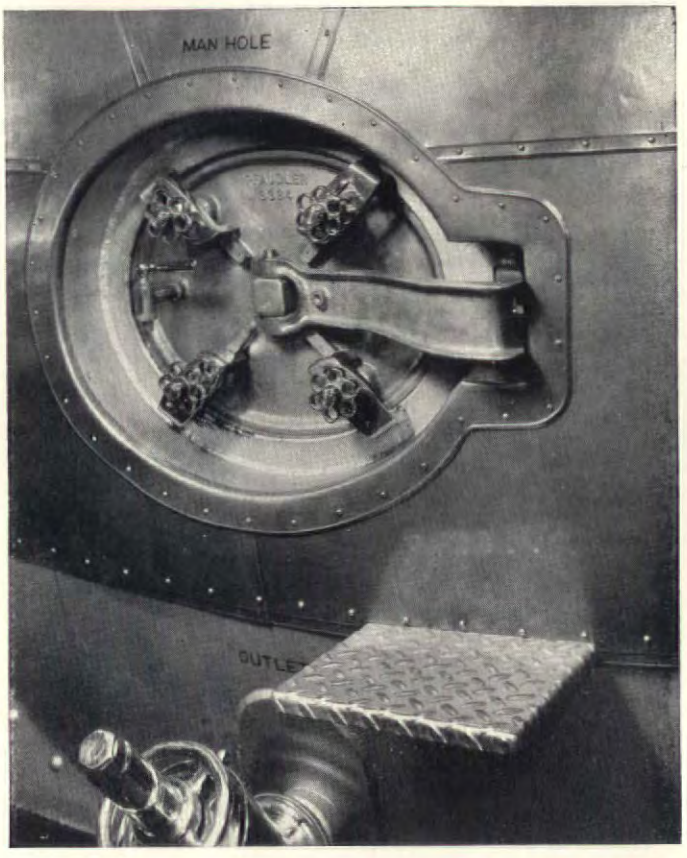
Feet Cling to Inland 4-WAY Floor Plate



● *Interior of Milk Car. For the safety of attendants, Inland 4-Way Floor Plate is used for the step — a small but dangerous spot.*

4-Way Safety

4-Way Matching

4-Way Drainage

Extra Stiffness

STUDY the pattern of Inland 4-Way Floor Plate shown above. No matter at what angle a foot strikes this pattern, it meets friction. But note also that projections are separated and placed at an angle so that a heel will not catch. Feet cling to the 4-Way pattern, but the pattern will not trap the feet.

In safety, the most important factor in choosing floor plate, Inland 4-Way has a distinct advantage. There are other advantages: 4-Way matching minimizes waste. 4-Way drainage makes the safety of cleanliness easy to maintain. Extra stiffness (projections overlap, reinforce one another both lengthwise and crosswise) assures adequate strength for any application.

Since no other material offers such a list of advantages, Inland 4-Way Floor Plate deserves thorough consideration for covering dangerous spots in your plant and on equipment you use or sell, for stairways and landings . . . wherever danger lurks.

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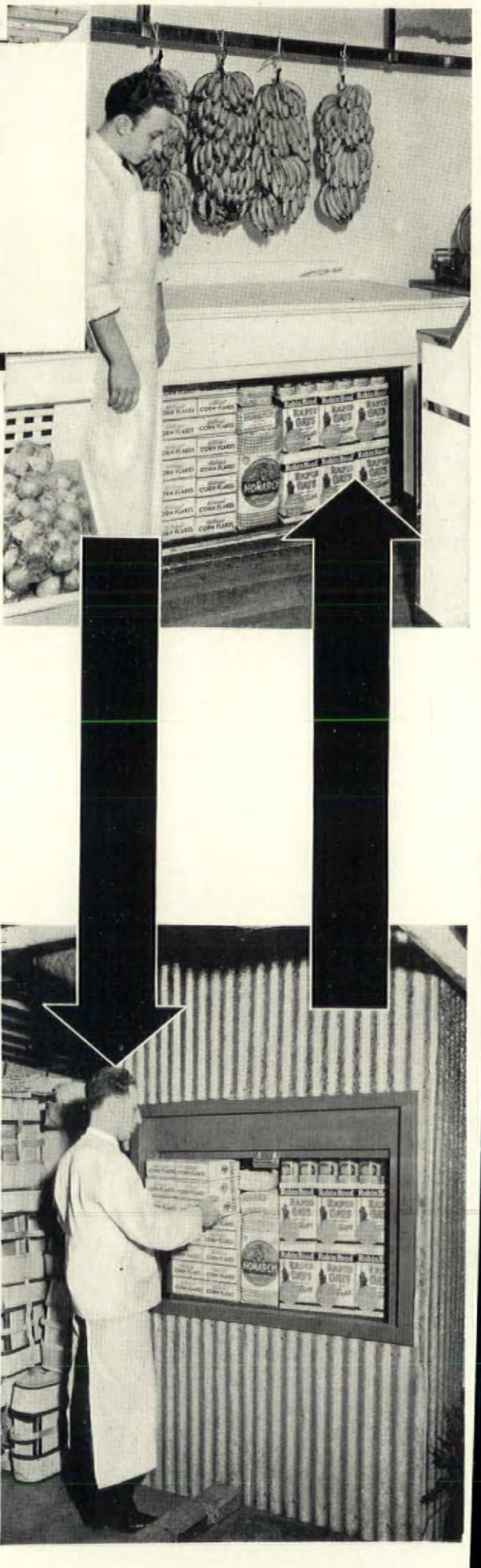
ABLE SERVANT OF THE CENTRAL WEST

Sheets Strip Tin Plate Plates Structurals Piling Rails Track Accessories Bars Rivets Billets

PRESENTING THE NEW OTIS UNDER-COUNTER ELECTRIC DUMB-WAITER



Designed for stores, hotels, restaurants—anywhere that economy of space and installation is desirable.

Otis Elevator Company has designed and built a complete new dumb-waiter. One that is automatic, fool-proof, dependable. One that is practical and economical for almost every two-stop, moderate rise, dumb-waiter installation.

The new Otis electric dumb-waiter is complete in itself — requires no pit; no expensive installation. Has steel hoistway frame which facilitates quick installation. Hoisting machine is of the same quality used in all Otis products.

The new Otis dumb-waiter *conserves space.* As shown in the upper picture, the car, by coming up under the counter, permits the placing of the dumb-waiter at the most convenient point, without sacrifice of space *over* the counter.

Read detailed specifications. Further information available at your local Otis office.

Illustrations show dumb-waiter car loaded with merchandise in the basement and the same car under counter on the first floor.

SPECIFICATIONS

Capacity: 300 lbs. at 50 ft. per minute. Maximum rise 17′ 6″. Two stops and two openings.

Standard Car Sizes:
3′ 6″ wide by 2′ 2″ deep
2′ 5″ wide by 1′ 6″ deep

Control: Full automatic. Two types available. One with two buttons at each floor so that car can be called or sent from either floor. The other with single button at each floor.

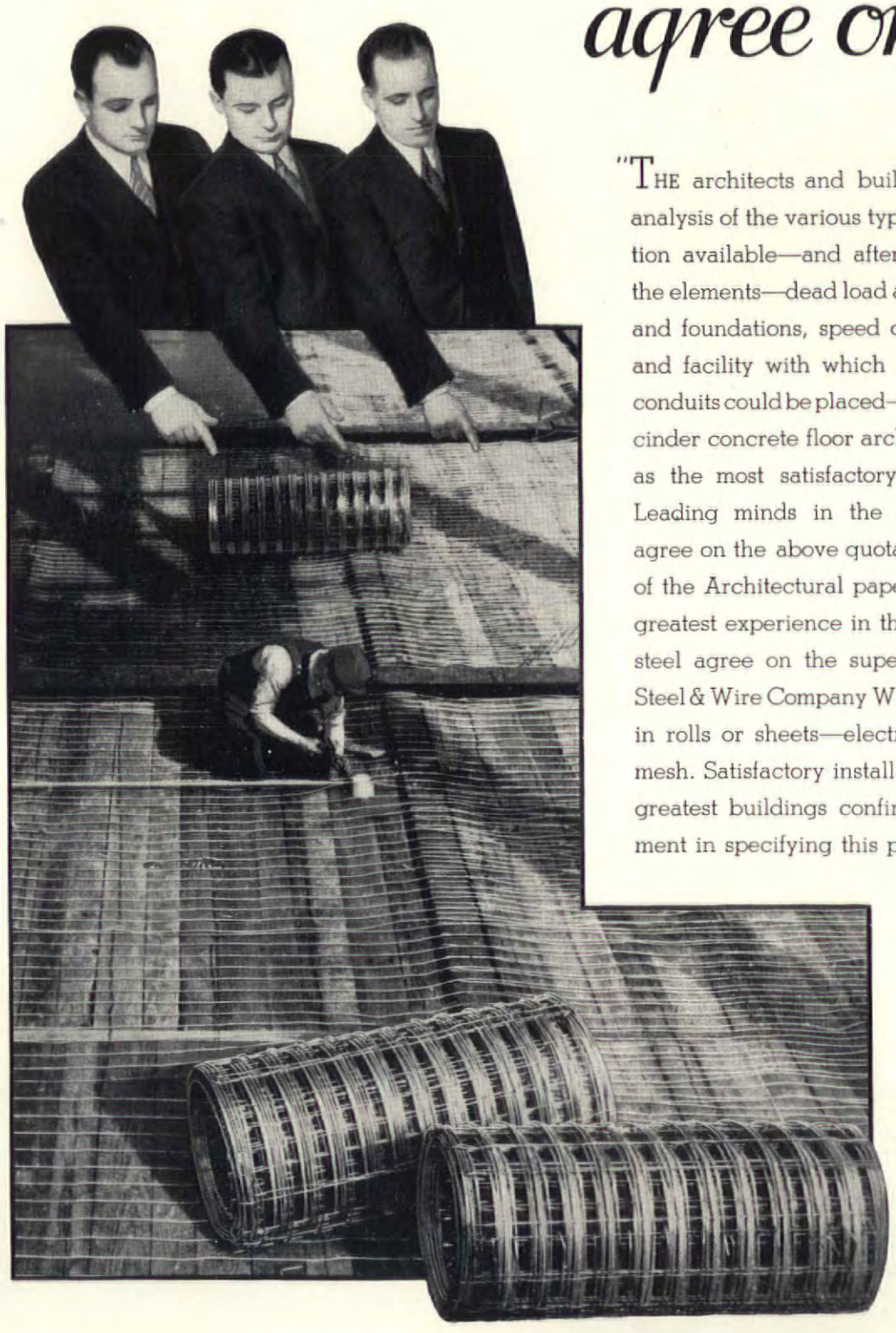
Machine: One-and-a-half-H. P. motor. Ball and roller bearings throughout. Steel worm and worm shaft and bronze worm gear.

Hoistway Construction: Steel hoistway frame that completely supports the entire installation.

Hoistway doors (optional): At the lower floor, fire-proof bi-parting door. At the upper floor, fire-proof one-piece slide down door.

Signals (optional): Speaking tubes and buzzers.

LEADING MINDS *agree on this*



"THE architects and builders made careful analysis of the various types of floor construction available—and after considering all of the elements—dead load and its effect on steel and foundations, speed of construction, cost and facility with which piping and electric conduits could be placed—selected reinforced cinder concrete floor arches and fireproofing as the most satisfactory and economical." Leading minds in the architectural world agree on the above quotation taken from one of the Architectural papers. And, those with greatest experience in the use of reinforcing steel agree on the superiority of American Steel & Wire Company Wire Fabric—supplied in rolls or sheets—electric weld or triangle mesh. Satisfactory installations in the world's greatest buildings confirm their good judgment in specifying this product.

American Steel & Wire Company Wire Fabric installed on floor decking, ready for conduits and slabs.

1831 — MORE THAN 100 YEARS OF PROGRESS IN WIRE MAKING — 1934

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago
94 Grove Street, Worcester

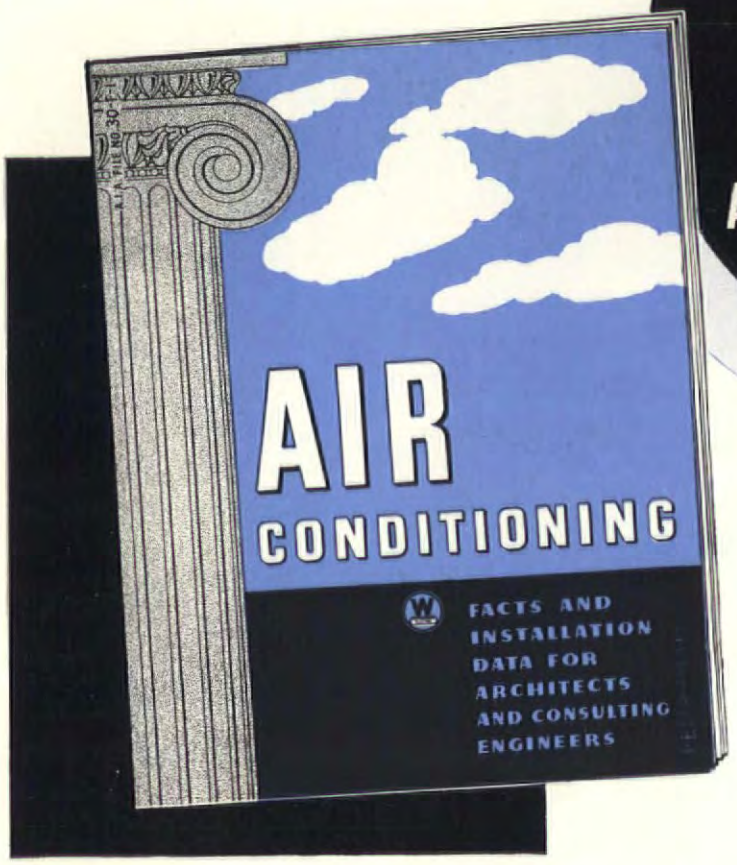
SUBSIDIARY OF UNITED STATES STEEL CORPORATION
AND ALL PRINCIPAL CITIES

Empire State Building, New York
First National Bank Building, Baltimore

Pacific Coast Distributors: Columbia Steel Company, Russ Bldg., San Francisco

Export Distributors: United States Steel Products Company, New York

A MANUAL OF DATA ON AIR CONDITIONING



Compiled for Architects

THIS new data manual on air conditioning has been compiled specifically for architects.

From its introduction, which tells where air conditioning can be most profitably installed . . . to its concluding "typical specification" forms . . . you'll find it replete with valuable information. It answers many of the perplexing questions that may now be bothering you. And you'll want to study the installation examples, chosen because they are typical of various applications . . . such as a fine old home, a bank, a private office, a retail store, and a restaurant.

Summer's sweltering days will soon stimulate the already live interest in air conditioning. Let this book aid you in being better prepared to cope with clients' problems. Mail the coupon today, or get in touch with the nearest Westinghouse office for your copy.

★ ★ ★ ★

True Air Conditioning performs all of these six functions: 1. Refrigerates the air, when too warm. 2. Warms the air, when too cool. 3. Humidifies the air, when too dry. 4. De-humidifies the air, when too moist. 5. Cleans and filters the air. 6. Circulates the air. You can get Westinghouse equipment that performs all of these functions or various combinations of them.

Westinghouse

Westinghouse Electric & Mfg. Company
Room 2-N East Pittsburgh, Pa.

Send me a copy of your booklet compiled for architects, S.P. 2007.

FILL IN THE COUPON

Name .....

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BEFORE and AFTER

UGLY DUCKLING TO SNOWY SWAN

When you MODERNIZE, says architect Cameron Clark, give your surfaces CHARM that lasts

NEVER before has there been such widespread interest in modernization. Repeal of the 18th Amendment starts thousands of renovations in hotels, restaurants, clubs and retail stores.

Slum clearance projects in our big cities convert eyesores and public health menaces into habitations that are sightly and sanitary.

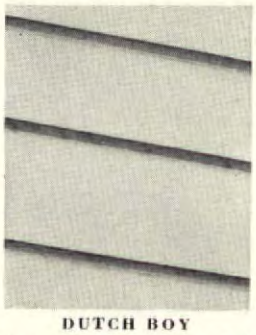
Mortgagees put foreclosed properties into rentable and salable condition.

And thanks to the architect, these activities steadily raise the Nation's architecture to a broader and higher plane of excellence.

Striking transformation at Southport, Conn.

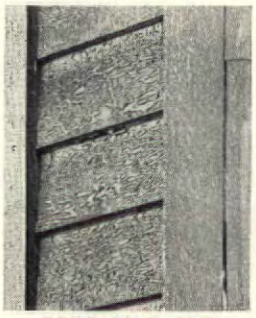
Pictured above is a particularly interesting type of modernization project completed a short while ago at Southport, Conn. Pictured also is Cameron Clark, the architect who planned and supervised this excellent remodeling job.

The "Before" and "After" photographs quickly reveal that the architect was ably supported in this transformation by the immaculate, white surfaces of the paint job.



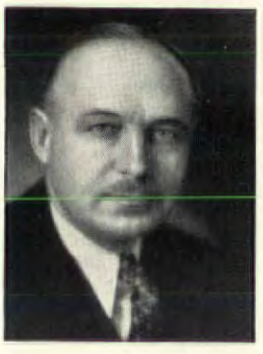
DUTCH BOY

After more than 3 years. Still good for lots of wear.



"CHEAP" PAINT

After 1½ years. Similar house in same Ohio city. Paint gone to pieces.



Maintain architectural beauty with durable paint says Mr. Clark

"In times like these," says Mr. Clark, "when properties must be operated and maintained at the lowest possible cost, the question of paint must be carefully considered from the upkeep angle.

"The architect owes it to his client to specify long-lasting paint, and he should take care to see that the paint he specifies is actually used.

"In order to provide money-saving protection, I specified pure white-lead and linseed oil for all outside work. For inside work we used the same lead mixed with flatting oil, which gives a surface that stands up under frequent washing and scrubbing."

DUTCH BOY... *the Architect's Standard for years*

The panels at the left show why architects prefer paint made with Dutch Boy White-Lead. Paint made with Dutch Boy doesn't crack and scale—therefore does not require costly burning and scraping at repaint time. Instead, it wears down stubbornly by gradual chalking, leaving an excellent foundation for new coats.

Dutch Boy White-Lead now comes as a quick-mixing paste that can be used for both outside gloss paint and inside flat work. For outside work you mix it with Dutch Boy Linseed Oil. For inside work, with Dutch Boy Flatting Oil.

This ALL-PURPOSE Soft Paste is Dutch Boy White-Lead of the same high quality you have always specified, changed only in form for greater convenience.

NATIONAL LEAD COMPANY

111 Broadway, New York; 116 Oak Street, Buffalo; 900 W. 18th Street, Chicago; 659 Freeman Avenue, Cincinnati; 820 West Superior Avenue, Cleveland; 722 Chestnut Street, St. Louis; 2240 24th Street, San Francisco; National-Boston Lead Co., 800 Albany St., Boston; National Lead & Oil Co. of Pa., 316 4th Ave., Pittsburgh; John T. Lewis & Bros. Co., Widener Bldg., Philadelphia.

DUTCH BOY *All-Purpose Soft Paste* **WHITE-LEAD**

LINSEED OIL — FLATTING OIL — LIQUID DRIER — WALL PRIMER — COLORS-IN-OIL

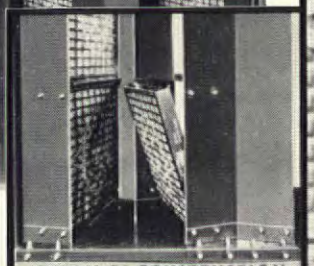
Dustop Air Filters

1¢ PER C.F.M.

complete—ready to install with all frame members, bolts, nuts and filters

MAINTENANCE COST

.3¢ to .4¢ per C.F.M. per year



DETAIL OF CONSTRUCTION

● The new "V" type frame for Dustop glass wool air filters *saves space*. It permits handling 66% more c.f.m. in the same frontal area, with but little added depth, to meet commercial building and industrial clean air requirements. Let us send you further information about Dustop—the *low cost*, *efficient*, replacement type air filter. Owens-Illinois Glass Company, Industrial Materials Division, Toledo, Ohio. (Dustop is assembled and installed in Canada by General Steel Wares, Ltd., Toronto.)

• *Sold by all nationally recognized fan manufacturers and distributors.* •

OWENS-ILLINOIS DUSTOP AIR FILTERS

LET'S KEEP THE RECORDS STRAIGHT

DEPARTMENT of Commerce reports indicate that for the first three months of this year approximately half, (48% to be exact), of all heating and ventilating units selected by school authorities were manufactured by The Herman Nelson Corporation. The remaining 52% was left to be divided among all other manufacturers.

These figures we believe to be highly significant, for they show that the nation is again returning to normal thinking after a year of cheapened products and slashed prices.

Many years have passed since The Herman Nelson Corporation introduced the first really workable air-conditioning unit for schools. Its advantages over all other methods were immediately recognized. Hardly had the pioneer work of developing and establishing the new product been completed, when other manufacturers offered competing products at varying prices. This was to be expected, and yet throughout the intervening years The Herman Nelson Corporation has led the field in number of units installed, until today there are over four thousand schools equipped with Herman Nelson Air Conditioning Units.

Only in 1933 when building construction was at a low ebb (and we print this fact here to keep the records straight), did the volume of unit ventilators sold by Herman Nelson fall below that of any other manufacturer. During those days of hectic buying and cheapened products, Herman Nelson was forced to choose between maintaining the high standard of their product, or lowering it to secure a higher sales volume. It is hardly necessary to mention that the former course was chosen. It was felt that in time architects and school authorities would approve this stand . . . They have!

Herman W. Nelson

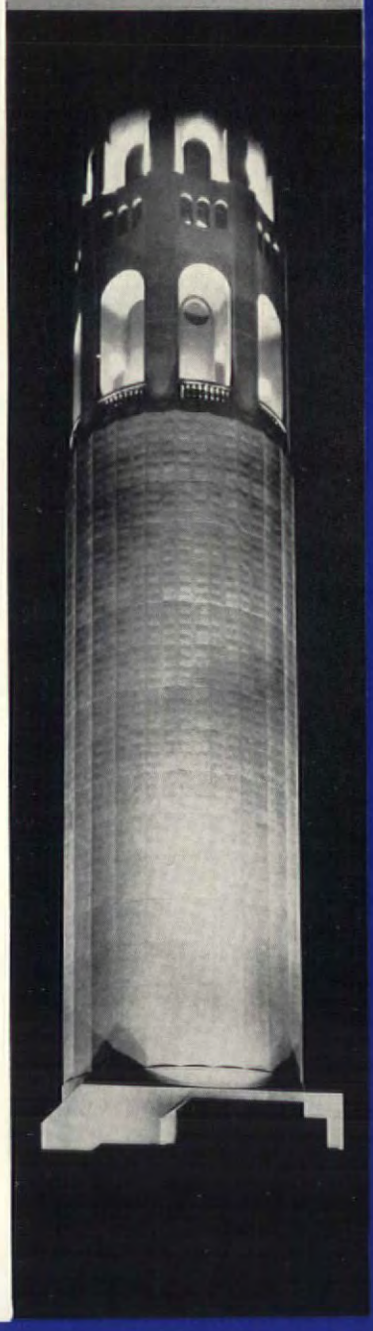
PRESIDENT

THE HERMAN NELSON CORPORATION

Heating, Ventilating, and Air-Conditioning Equipment for Schools

MOLINE, ILLINOIS

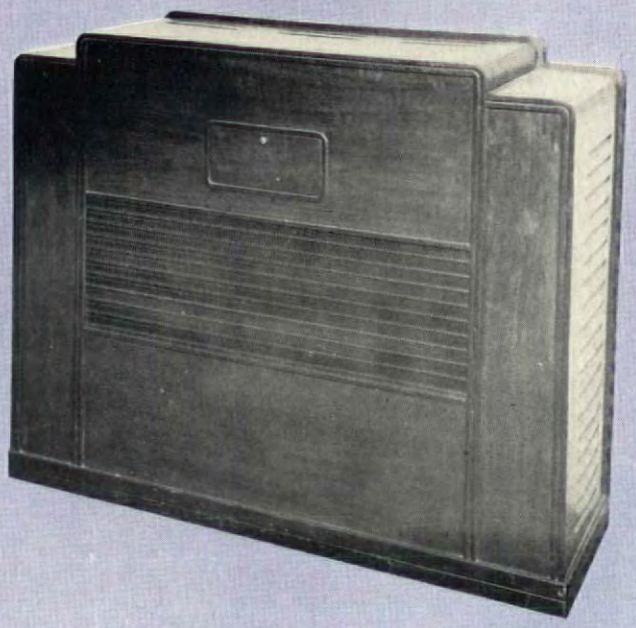
FLOOD LIGHTING

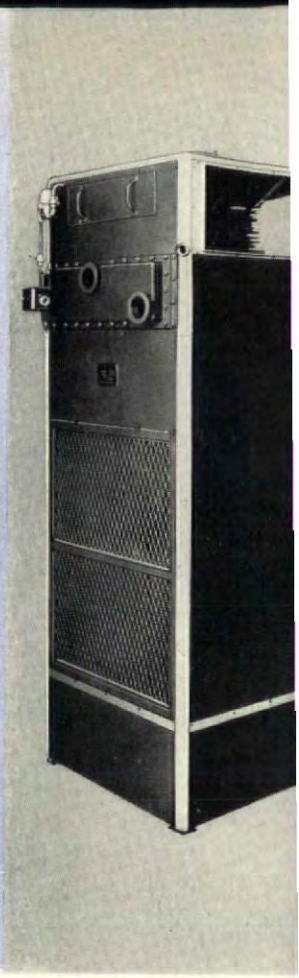


Floodlighting can be used to prolong into the hours of darkness the daytime beauty and appearance of buildings and gardens; it can create, after sundown, striking effects of shadow and color; it can serve the purely utilitarian purpose of making possible work and play at night.

General Electric lighting engineers are glad to help you solve any unusual floodlight problems. They have had wide experience with all types of installations. And, ready to serve you, is a complete line of General Electric floodlights.

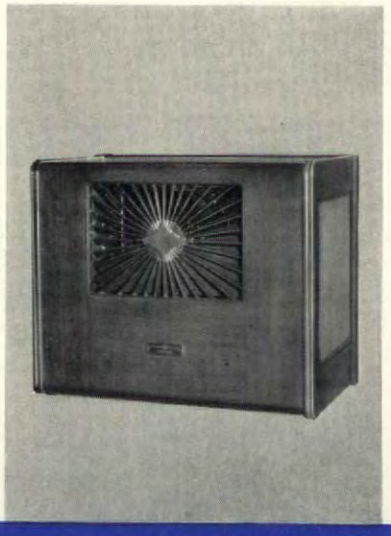
AIR CONDITIONING





(Above) *The G-E Year-Round Room Air Conditioner.* Provides all the functions necessary for complete, year-round air conditioning. What it does to the air, as needed: Heats or cools, adds or removes humidity, filters, and provides gentle circulation. In addition, it brings in outside air for ventilation.

(Above) *G-E Air Condit er.* Used with either G-E Oil or Gas Furn to provide winter co tioned air through du



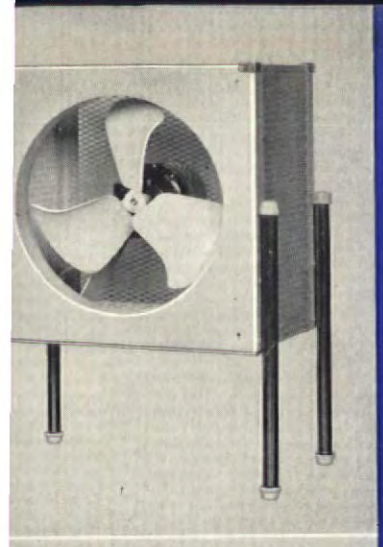
G-E Floor Mounted Room Cooler. Particularly adapted to the summer air conditioning of small stores and offices. May be used individually or in multiple.

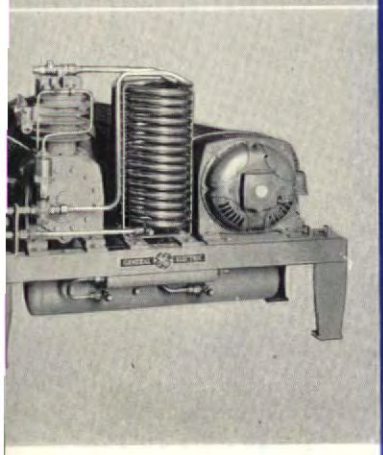
G-E Wall-Mounted Room Cooler. Ideal for shops or rooms where space is at a premium. Conditioned air is discharged through the grille in front.

G-E Portable Room C A complete, self-cont cooling unit. Has cealed wheels and fl connections, so th location can be cha

WE INVITE you to communicate with the G-E Air Conditioning deal in your town. He has on his staff a man who is qualified to discu with architects their needs for automatic heat and air conditioning. You w find our dealer a "headquarters" for products in these two fields—a man wh

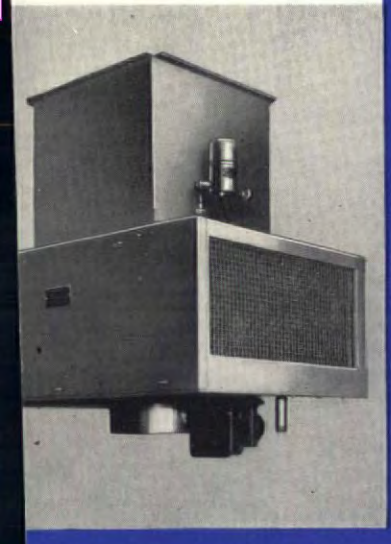
AUTOMATIC HEATING

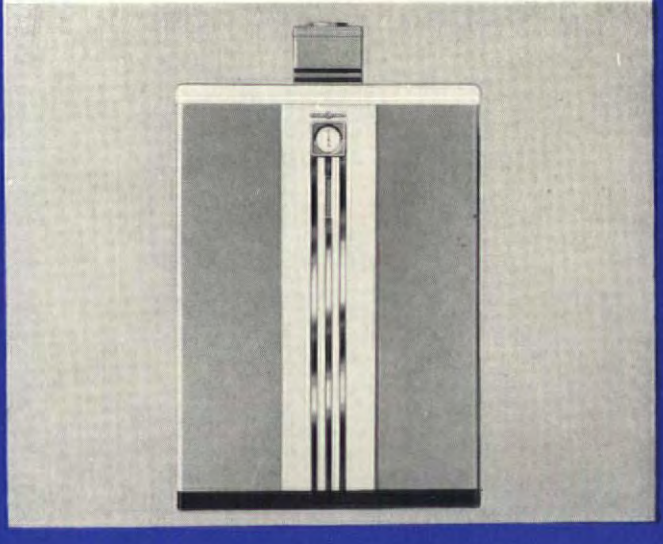




top) *The G-E Air Circulator.* austs hot air through the attic.
Condensing Unit, Type CM- There are 11 different sizes he line.

(Above) *The G-E Oil Furnace.* This complete, coordinated unit is unique in the heating field. Burner and controls sealed in on top. Oil is atomized by new method called "impact-expansion," and burned by "progressive combustion."





ve) *The G-E Winter Air itioner.* This unit provides r conditioned air on one of a radiator-heated home gh a grille. Is suspended basement ceiling.

G-E Gas Furnace — A complete, coördinated gas heating unit. Two types, commercial and residential. 24 different sizes, equipped with such features as a waste-heat saver or water-backed firebox with boiler sections specially designed to "scrub" heat from the flame and hot gases.

sell without bias, because he has all the various types of equipment. The line of air conditioning products is the most complete made by any one nufacturer. General Electric Co., Air Conditioning Department, 570 ington Ave., New York City.

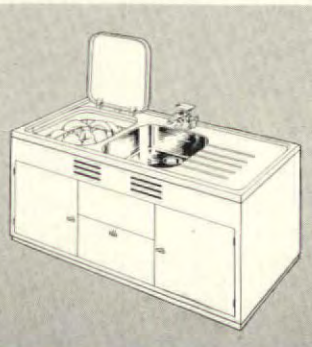
KITCHEN EQUIPMENT

The General Electric Kitchen is a beautifully modern, efficient, and step-saving room that turn old hours of drudgery into new hours of freedom for the modern homemaker. G-E kitchen are individually designed and include the G-E refrigerator, G-E range and G-E dishwashe

Distinguished style joins matchless mechanism in the new G-E Monitor Top refrigerators. G-E now offers 5 *Years Protection* on the sealed-in-steel mechanism for only $1 a year—the standard 1 year warranty *plus* 4 years additional protection for $5.

The new G-E "Ma range will go f popularizing el cookery. Its low modern "table styling and adv features make outstanding in popular-p ranges. Equippe *Calrod* surface

Here is the aristocrat of all popular-priced refrigerators—the new General Electric Flat Top. It will add distinguished new beauty as well as matchless convenience to the kitchen of today, and fits as perfectly into the style trend of the kitchen of tomorrow.



The General E Dishwasher a washes and d whole day's st dirty dishes, g silverware, po pans, in 5 *m* without hands ing water. Ba the most ha all kitchen

THE PLANNING DIVISION of the General Electric Kitchen Institute will gladly work with you on any kitchen modernization or new construction plans. Avail yourself of this free service.

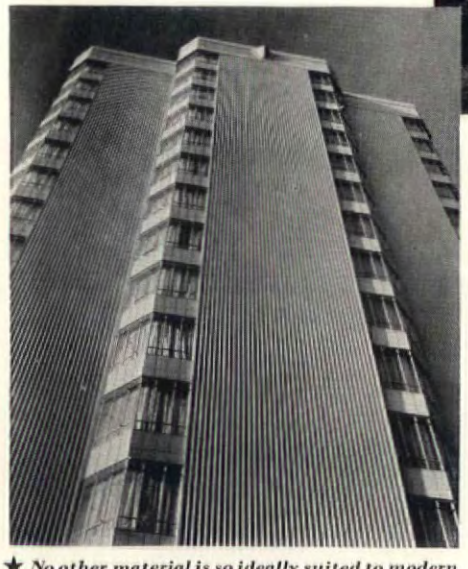
Write for free General Electric Kitch book, showing many attractive kitch designs. Address General Electric C Specialty Appliance Sales Departme Section SG6, Nela Park, Cleveland, Oh

What a Break

THIS WOULD HAVE BEEN FOR BRUNELLESCHI!

● What would the Great Ones of the age of stone have done with modern concrete? What might have been the course of architecture had the Brunelleschis, the Michelangelos, the Mansarts, or the Wrens been able to work with modern concrete . . . with a material that liberates design rather than restricts it?

★ *The City Hall at Pasadena, California—an instance of the way in which concrete lends itself to the execution of traditional styles. Architects: Bakewell & Brown. Contractors: Orndorff Construction Co.*



★ *No other material is so ideally suited to modern design. Here is a facade, executed entirely in monolithic concrete, on the Edmond Meany Hotel in Seattle, Washington. Architect: R. C. Reamer. Contractors: Teufel & Carlson.*

It is an interesting conjecture . . . particularly as we advance further and further into the Age of Concrete. In Europe, today, and in America many designers are throwing off the shackles of old materials to work in concrete: a material capable of the widest latitude in the composition of masses . . . of infinite variety in surface textures . . . and of color.

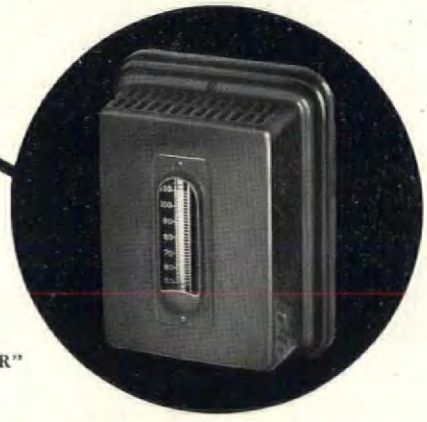
Here, for instance, are notable examples of concrete's adaptability to varied architectural classes: one, the traditional Spanish . . . the other, the modern.

PORTLAND CEMENT ASSOCIATION

ROOM 276 • 33 WEST GRAND AVENUE • CHICAGO, ILLINOIS

HEATING *and* COOLING

CONTROLLED BY A SINGLE JOHNSON REGULATION SYSTEM



JOHNSON
"SUMMER-WINTER"
THERMOSTAT

For automatic control of AIR CONDITIONING installations, the JOHNSON System includes a complete line of devices . . . . Dampers and Valves . . . . Differential Thermostats to maintain suitable relationships between outdoor and indoor temperatures . . . . Remote Readjustable Thermostats, reset automatically in accordance with temperature changes at a remote point . . . . Humidostats and Wet-bulb Thermostats for humidity control . . . . Velocity and Static-pressure Regulators to operate dampers for the control of velocity and pressure in the duct system . . . . *Heating; Cooling, Humidifying; Dehumidifying*—whatever the problem, JOHNSON apparatus is available.

Modern air conditioning systems are designed for winter heating and for summer cooling. Usually, the same central plants or unit conditioners are adapted for use under both conditions. *Johnson* Systems of automatic temperature and humidity control are designed for this dual service. Valves, Dampers, Thermostats—all of the *Johnson* devices—may be shifted from one service to the other by the simple operation of a seasonal switch . . . . For instance, *Johnson* room type thermostats, pictured above, are set from a central point, to control either cooling or heating, as required, and to function at different temperatures for each condition—"Summer" or "Winter."

Johnson apparatus has been developed for every application encountered in the automatic control of air conditioning. Each *Johnson* instrument is precise and accurate, designed to meet the most exacting requirements of air conditioning engineers.

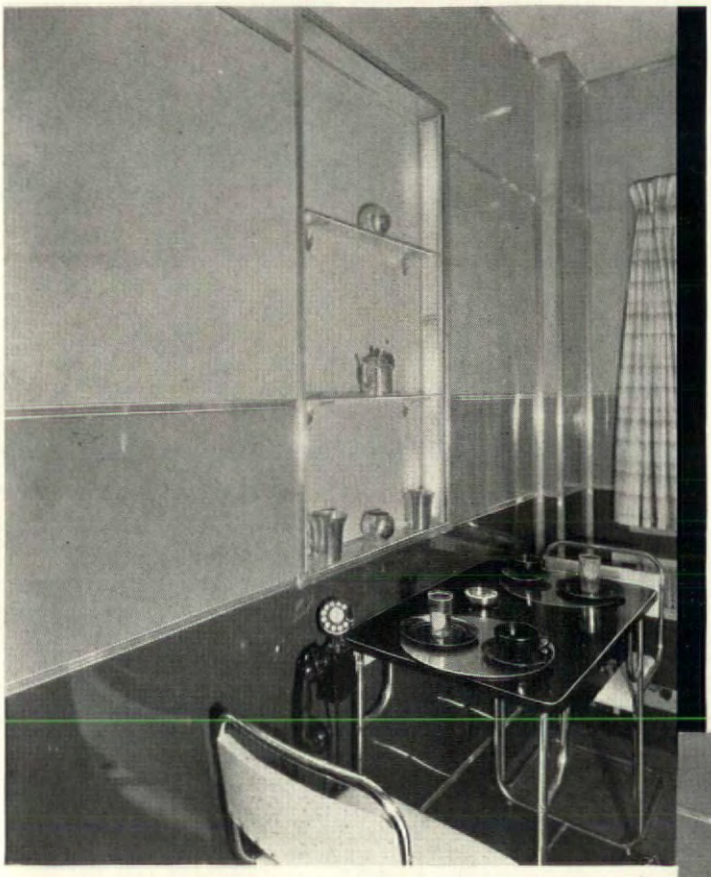
SINCE 1885 **JOHNSON SERVICE COMPANY**

Main Office and Factory: Milwaukee, Wis. Branch Offices in Principal Cities

NRA MEMBER U.S. WE DO OUR PART

JOHNSON HEAT CONTROL

• Clean and Shining



FORMICA WALLS *and* TOPS!

THIS two-tone Formica wall, and the Formica top on the modern table, provide a breakfast room of most inviting appearance, and one very easily kept so. Nothing is easier to clean than Formica.

Formica delights women. They want it. They will overlook many other things in order to get it. Therefore it is a very good choice when you are modernizing old buildings to sell or rent. Write for the facts.

THE FORMICA INSULATION CO.
4672 Spring Grove Ave., Cincinnati, Ohio

FORMICA

FOR FURNITURE AND FIXTURES

IF you are driving for complete satisfaction all-around... your own as well as your client's ... you will find that a closed specification for L·O·F Improved Quality Glass *(brighter, clearer, flatter)* will help you reach the green.

●

LIBBEY · OWENS · FORD GLASS COMPANY, TOLEDO, OHIO. Manufacturers of Highest Quality Flat Drawn Window Glass, Polished Plate Glass and Safety Glass; also distributors of Figured and Wire Glass manufactured by the Blue Ridge Glass Corp. of Kingsport, Tenn.

LIBBEY · OWENS · FORD
QUALITY GLASS

AGAIN "Standard" LEADS IN Bath Design

"Standard"
NEO-ANGLE BATH
$104.85* complete

Pat. No. 1,844,988

THE "Standard" Neo-Angle Bath is as new and different as the streamlined automobile... yet it is the most sensible and practical bath ever designed! It is approximately 4 feet square and 16 inches high, comes in a variety of colors, offers unlimited opportunities for unusual bathroom interiors. Its tub runs diagonally, has a bathing space equal to that of a 5½ foot tub. And on either side of it, in two opposite corners, are roomy, comfortable seats that provide facilities for every type of bathing!

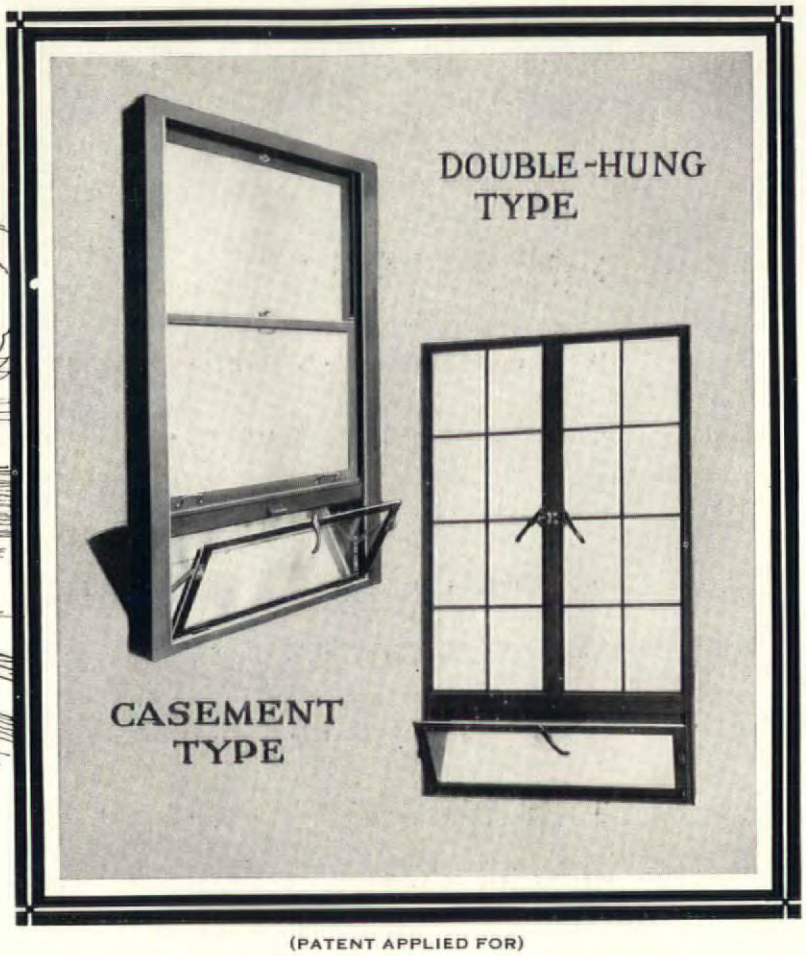
Thousands of home owners, interested in modernization, are visiting the "Standard" showrooms to see the Neo-Angle Bath. It is creating new interest in bath design. See it yourself at the nearest "Standard" showroom. Or write today for complete specifications and literature.

Standard Sanitary Mfg. Co.
PITTSBURGH, PA.
Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

*Price includes bath in white regular enamel, complete with No. 6 chromard all-metal bath and shower fitting. Plus local delivery and installation by your registered master plumber. Time Payments Available.

PRICE SUBJECT TO CHANGE WITHOUT NOTICE

QUIET!



(PATENT APPLIED FOR)

SILENTAIRE

Entirely modern, appealing to quiet and comfort, the Truscon SILENTAIRE Window represents a decided advantage over the ordinary type of window. Available in Double-Hung or Casement type, this outstanding new Truscon development provides ample natural ventilation and closed window quietness. A complete shop-fabricated unit, the original cost of Truscon SILENTAIRE Windows is but little more than that for a standard window. Erection is simple. There are no maintenance or operation costs. Interesting booklet will be sent upon request.

NRA MEMBER U.S. WE DO OUR PART

TRUSCON STEEL COMPANY
YOUNGSTOWN, OHIO

SALES OFFICES IN ALL PRINCIPAL CITIES

LOOK AT THESE ADVANTAGES

FOR YOU

1. NO MOVING PARTS TO WEAR
2. LONG LIFE
3. GAS COMPANY SERVICE

FOR TENANTS

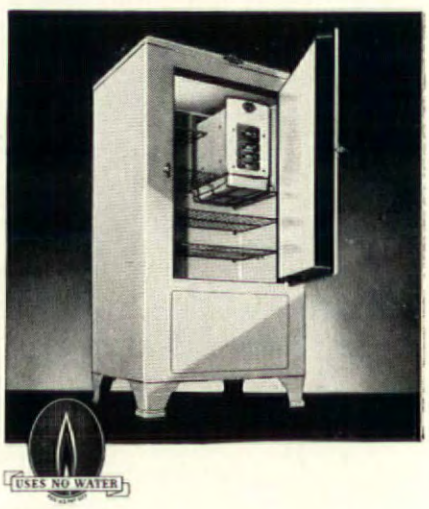
1. LOW OPERATING COST
2. PERMANENT SILENCE
3. EVERY MODERN CONVENIENCE

ASK THE OWNERS and operators who've installed Electrolux in their properties why they prefer this modern gas refrigerator. They'll tell you, "Electrolux is simpler . . . it has no moving parts to wear."

And here's another big advantage! Electrolux is silent . . . naturally and permanently silent! With no moving parts, there's nothing about this refrigerator to make *noise* or become noisy.

Tenants and prospective tenants are also interested in these features of Electrolux! But they're even more interested in the many worthwhile modern conveniences it offers . . . and its *low operating cost, which will never be increased by the inefficiency of worn or wearing parts.*

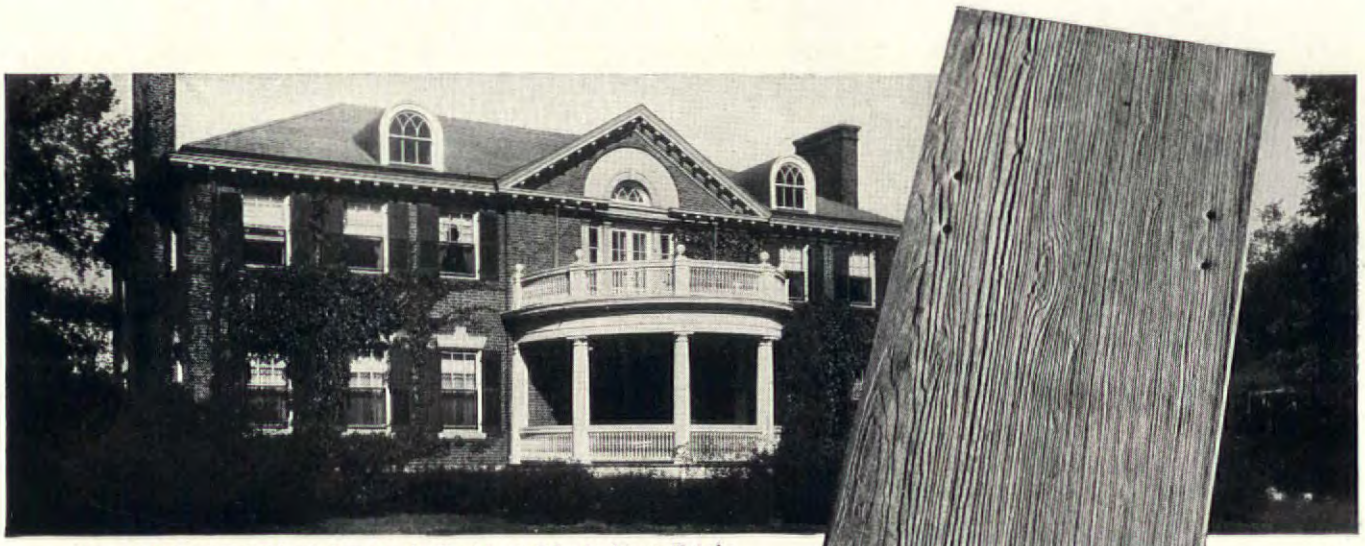
Your local gas company backs and services every Electrolux it installs. Before buying *any* refrigerators for your properties, investigate Electrolux carefully! For full information, see your local gas company, or write direct to Electrolux Refrigerator Sales, Inc., Evansville, Ind.



NEW *Air-Cooled*
ELECTROLUX
THE SERVEL *Gas* REFRIGERATOR

ETERNIT TIMBERTEX

The Beauty of a Weathered Cypress Shingle Wrought in Fire-proof, Rot-proof Asbestos-Cement



Home of Mr. N. W. Willard, Asst. to the President of the Atchison, Topeka and Santa Fe Railway, Riverside, Ill. Roofed with 35 squares of 8" x 16" Quarry Blue Eternit Timbertex Asbestos-Cement Shingles.

This RU-BER-OID Style Leader Has Every Appeal That Wins Roofing and Modernizing Business

HERE is a shingle everybody wants—Eternit Timbertex. Although built from time- and fire-defying Asbestos-Cement, it has all the natural beauty and charm of a Weathered Cypress Shingle.

The beauty of the rich wood colors and the deep shadow lines are still further enhanced by the staggering of the ¼" thick tapered butts.

Buyers marvel at the remarkably low cost of all this beauty wrought in fire-proof, rot-proof Asbestos-Cement. Appliers are enthusiastic about the time-saving application features of Eternit Timbertex. Nail holes are pre-punched for two exposures and every shingle is shaped for perfect application.

Check the unusual features of this Ruberoid leader that is making roofing and re-roofing history. The coupon will bring you samples. Clip and mail it today.

1 TIME AND FIRE-DEFYING
Ingredients: Portland Cement, reinforced with Asbestos Rock Fibres. Both are time and fire-defying.

2 TAPERED CONSTRUCTION
Designed to provide thickness and strength where they are most required. Shaped for perfect application.

3 CYPRESS TEXTURED
Entire shingle textured in various designs of weathered Cypress.

4 WOOD COLORS
Five rich, soft "wood colors" of lasting beauty. The mineral oxide colorings are an integral part of each shingle.

5 STAGGERED BUTTS
Double sets of punched nail holes permit laying irregular shingle courses.

6 DEEP SHADOWS
Butts approximately ¼" thick give interesting shadow lines.

7 MODERATE COST
Surprisingly reasonable first cost and no expense for upkeep.

The RUBEROID Co.
ROOFING MANUFACTURERS FOR OVER FORTY YEARS
ETERNIT MILLS, DIVISION OF THE RUBEROID CO.
Offices: BALTIMORE, MD., CHICAGO, ILL., ERIE, PA., MILLIS, MASS., MOBILE, ALA., NEW YORK, N. Y.
Factory: ST. LOUIS, MO.

NRA WE DO OUR PART

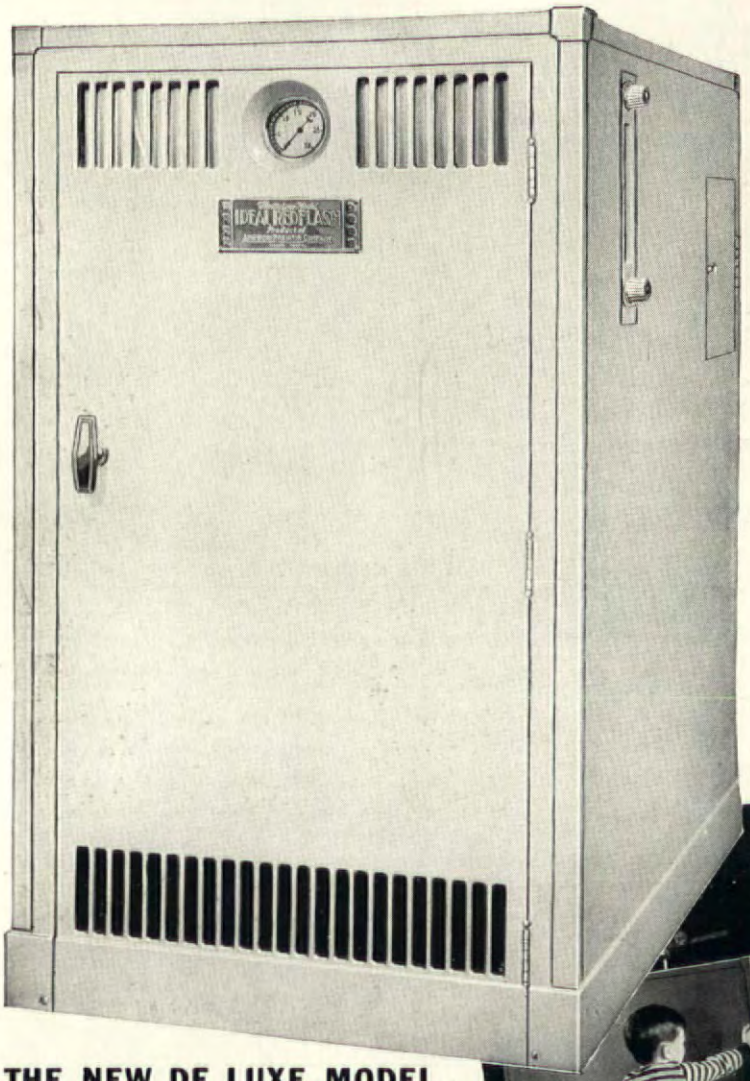
THIS COUPON WILL BRING YOU SAMPLES

Asbestos-Cement Shingles	☐	Asphalt Shingles and Roofings ☐
Asbestos-Cement Sidings	☐	Built-Up Roofing Materials ☐
"Newtile" and "Newmarble"	☐	Safe-n-Dry Sheathing Paper ☐

ETERNIT MILLS, DIVISION OF THE RUBEROID CO.
95 Madison Avenue, New York City, N. Y.
Please send full particulars about Eternit Timbertex Asbestos Shingles. Check at left for added information. A.F.-6-34

Name .....
Street Address .....
City ..... *State* .....

NOW YOU CAN SPECIFY STYLE AND BEAUTY AS WELL AS EFFICIENCY . . .



WHAT lovely fixtures do for the bathroom . . . what colorful equipment does for the kitchen . . . the new De Luxe Redflash Boiler does for the basement. Here at last is a boiler for solid fuel that is really handsome. You will welcome the opportunity it offers to design a distinctive game room, play room or den in the basement without the need for a separate boiler room. You will approve its modern design. And your client, because he knows the name and the dependability behind this handsome boiler, will approve your specification. Write today for all the details.

THE NEW DE LUXE MODEL IDEAL REDFLASH BOILER

THOROUGHLY INSULATED. The handsome jacket of the De Luxe Redflash not only adds to its beauty but to its efficiency as well. It insulates the boiler so well that children can play around it without danger of burns.

SEE THE INSIDE. Open the outer door of the De Luxe Redflash and see the scientific design and sturdy construction that have made the Redflash line famous. Beauty outside, efficiency inside—that's the story!

NRA

AMERICAN RADIATOR COMPANY

40 West 40th Street, New York, N. Y.

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

MUSIC IN EVERY ROOM

. . . a modern note in hotel, school and hospital architecture!

In many of the finest hotels, schools and hospitals it's as easy to turn on music as to switch on the lights —thanks to Program Distribution Systems. This Western Electric equipment is well worth considering when you are planning or modernizing large buildings.

Program Distribution Systems pick up, amplify and distribute speech or music through loud speakers. Program sources may be microphones, a Reproducer Set for playing records, or a Radio Receiver.

Another Western Electric System—particularly suitable for apartment houses—is the Radio Frequency Distribution System. Using only one antenna, this apparatus provides facilities for from one to as many as 3000 radios and assures highest quality reception.

Graybar's sound transmission engineers will gladly assist you in planning installations to meet specific needs. For homes, small office or apartment buildings, there is modified equipment at low cost to serve from one to ten radios. Send the coupon for further information—or telephone the nearest Graybar branch.

Western Electric

PROGRAM DISTRIBUTION AND PUBLIC ADDRESS SYSTEMS

Distributed by* GRAYBAR *Electric Company

GRAYBAR ELECTRIC CO., AF6-34
Graybar Building, New York, N. Y.

Gentlemen: Please send me complete information on:
- ☐ Western Electric Program Distribution System
- ☐ Western Electric Radio Frequency Distribution System

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CITY ..... STATE .....

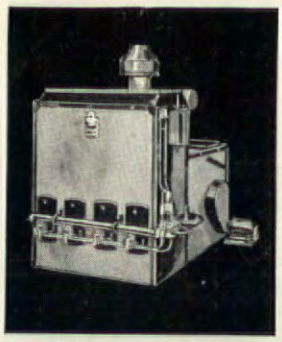
ADVERTISING INDEX

5-★ POINT SERVICE

Lets the pup be your furnace man and weather man, too.

BRYANT *Gas* EQUIPMENT

THE BRYANT HEATER COMPANY
17836 St. Clair Avenue • Cleveland, Ohio
SALES-ENGINEERS IN 40 PRINCIPAL CITIES



AIR CONDITIONING

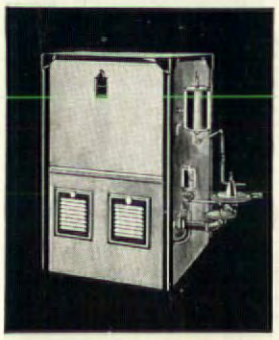
★

Bryant Prepared-Air Equipment is integrally designed for heating, humidifying, cooling, dehumidifying, cleaning, and distributing the air in all or any part of a residence.

STEAM, VAPOR, and HOT WATER HEATING

★

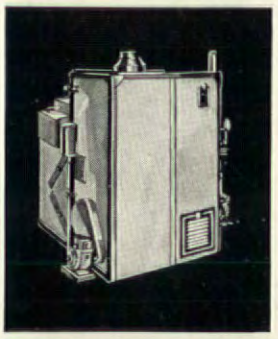
The famous Bryant Boiler is the simplest and most completely automatic of gas heating plants. Bryant Gas operated automatic heating controls have been the most satisfactory and dependable for 20 years.



WARM AIR HEATING

★

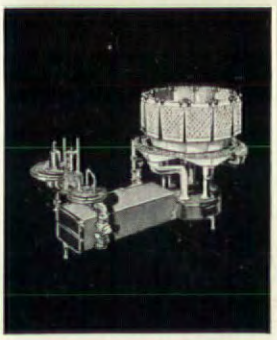
Bryant Automatic Warm Air Furnaces embody the latest progress in the rapidly expanding science of conditioned warm air heating.



COMBINATION STEAM-AND-WARM-AIR HEATING

★

The Bryant Dualator makes it practical to heat one part of a house with conditioned warm air, the rest with steam heat or hot water radiation.



CONVERSION HEATING

★

Bryant Conversion Burners, at little cost, transform a coal or oil burning boiler or furnace into an automatic gas-heating plant.

Plan a MONEL METAL *kitchen with* Standard Units

INCO "Straitline" Monel Metal Cabinet Sink, with 8" back splasher.

INCO "Streamline" Monel Metal Kitchen Sink, double drainboard model.

INCO "Straitline" Monel Metal Cabinet Top, with 1½" integral back splasher.

INCO "Straitline" Monel Metal Kitchen Sink, double drainboard model.

"Whitehead" Automatic Gas Water Heaters are made in three types—all have Monel Metal Tanks. The "Whitehead" Monel Metal Hot Water Tank (Range Boiler) is made in three weights and several sizes—tested to 200 to 350 lbs. pressure.

See the INCO *Exhibit of*
Monel Metal Household Appliances
at the Century of Progress, Chicago, 1934
Home Planning Hall

THE kind of gleamingly efficient kitchen that women yearn for is now simple to obtain...and no longer costly.

A complete line of *standardized* Monel Metal kitchen equipment offers you stock models, at prices within reach of even modest building or remodeling budgets.

Monel Metal sinks and cabinet tops, in 57 *standardized* models and sizes, meet practically every possible kitchen layout.

There are also available Monel-topped tables, gas and electric ranges, Monel hot water tanks (range boilers) and gas water heaters with Monel storage tanks.

Monel Metal advertising is appearing regularly in the great national magazines...as it has for 7 years. Editors, appreciating the news interest of Monel Metal, spontaneously and continuously devote many pages to articles on Monel's efficiency and durability, and to illustrations showing its shining, silvery beauty.

Monel is thus today's ideal of kitchen equipment...the trend is on the upward swing.

Write for our new, fully illustrated catalog "INCO Standardized Monel Metal Sinks and Cabinet Tops," containing plan and sectional drawings of all models.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET NEW YORK, N. Y.

Monel Metal is a registered trademark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

The "Smartline" Monel Metal Table, designed by Ray Patten. Available in four colors—white, ivory, green or black and in three sizes: 20"x24"—24"x36" and 25"x40½".

"Magic Chef" Gas Range with Monel Metal top, burner pan and broiler pan grid.

RUMFORD PRESS
CONCORD, N. H.

BRUNSWICK places No Limit on your Creative Ability . . . .

Restaurant La Rue, 480 Park Avenue, New York City, with its distinguished 17' Special Elliptical Brunswick Bar illustrates the ability of our craftsmen to faithfully translate detail drawings. The alternating columns are black formica and polished copper with fish aquarium in center.

Congress Hotel, Michigan Blvd. and Congress St., Chicago. N. Eastman of Eastman Studios, designer. This Brunswick installation with its red formica top scintillates with rare beauty and originality.

No matter what type of service fixtures you need to carry out your taproom designs—Brunswick can produce them for you. Our matchless manufacturing facilities enable us to build fixtures to fit every requirement. If desired, we can build the interior complete—from bare walls to paneled richness.

Brunswick craftsmen know how to faithfully translate your detail drawings into finished equipment. They are masters at catching the spirit of your designs. That is why some of the foremost architects are specifying Brunswick Service Fixtures for America's most distinguished taprooms.

But beauty is not all that will appeal to your clients about Brunswick fixtures. They offer many practical advantages also. Unequalled efficiency. Greater convenience. Unsurpassed sanitation. Supreme quality.

In addition, Brunswick offers you the free advice and counsel of its skilled staff of fixture experts! These experienced specialists will check your detail plans. Any suggestions they can offer for improving operating efficiency will be given without obligating you in any way, providing, of course, you want them.

Write or wire today for latest information on Brunswick service fixtures. Also for data on Billiard Tables, Bowling Alleys, Toilet Seats and Squash Courts. Brunswick Branches in principal cities insure active cooperation and prompt service.

NRA

THE BRUNSWICK · BALKE · COLLENDER CO.

622-633 S. Wabash Ave., Chicago • Established 1845 • Branches and Distributors in Principal Cities of the United States

THE ARCHITECTURAL FORUM

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