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THE ARCHITECTURAL FORUM

DECEMBER 1941

Modern Industrial Architects Recognize *NOISE* as a "Fifth Columnist"

Acousti-Celotex ceiling hushes noise in Atlanta lamp factory of General Electric Company.

New General Electric Lamp Factory Uses Acousti-Celotex Ceilings to Insure Office Quiet

IN THIS NEW General Electric Company lamp factory at Atlanta—as well as in thousands of other modern industrial plants—workers are operating *at peak efficiency* with the noise-quieting help of Acousti-Celotex* ceilings.

Architects recognize NOISE as a "fifth columnist"—actively engaged in sabotage of industry's magnificent defense program *wherever it is not definitely banished!*

That's why Acousti-Celotex ceilings are found "wherever minds work"—*increasing efficiency, improving health and morale, reducing absences and boosting production.* The long experience of Celotex acoustical engineers is at your disposal. Please feel free to question them without obligation.

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*The word Acousti-Celotex is a brand name identifying a patented, perforated acoustical fibre tile marketed by The Celotex Corporation.

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ARCHITECTURAL FORUM

DECEMBER 1941

HOW "TOTAL" IS THE BLACKOUT FOR NON-DEFENSE BUILDING?

Response to the supplement inserted in the November FORUM *keeps pouring in. Individuals and many organizations have endorsed* THE FORUM'S *proposals. Excerpts from these replies will appear in "Letters" in the January issue. Meanwhile, when the mail has abated, this material will be organized and presented for the consideration of the appropriate officials in Washington—Ed.*

Editor, Howard Myers; *Managing Editor,* Ruth Goodhue; *Associates,* Paul Grotz, Joseph C. Hazen, Jr., C. Theodore Larson, George Nelson, Henry Wright; *Assistants,* John Beinert, Anna De Cormis, Richard E. Saunders, Madelaine Thatcher, Nadia Williams. THE ARCHITECTURAL FORUM is published by Time Inc., Henry R. Luce, Chairman; Roy E. Larsen, President; Charles L. Stillman, Vice President and Treasurer; Howard Black, Allen Grover, Eric Hodgins, P. I. Prentice, Vice Presidents; David W. Brumbaugh, Secretary. Publication and Subscription Office, Orange, Conn. Subscriptions may also be sent to 330 East 22nd Street, Chicago, Illinois. Executive, Editorial and Advertising Offices, Time & Life Building, Rockefeller Center, New York. Business Manager, H. A. Richter. Advertising Manager, George P. Shutt. Address all editorial correspondence to Time & Life Building, Rockefeller Center, New York. Yearly subscription, payable in advance, U. S. and Possessions, Canada, Cuba, Mexico, South America, $4.00. Elsewhere $6.00 Single issues, including Reference Numbers, $1.00. All copies Mailed Flat.

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VOLUME 75—NUMBER SIX

THE MONTH IN BUILDING

TRENDS

October statistics for the building industry indicate that the September 9 curtailm nt order of the Supply Priorities and Allocations Board had not yet materially affected the trend of construction activity, that the anticipated tapering off of non-essential activities would be a gradual process. Thus, according to F. W. Dodge Corp.'s compilation of contracts awarded in 37 Eastern States, October's $606 million volume topped the previous October record (1928) by $6 million. And, while the total was a hair below the September 1941 level, privately financed construction continued up to approximately $236 million.

Substantiating these trends are the engineering construction awards compiled by *Engineering News Record* which put October about 25 per cent under September on the basis of total construction, but up more than 30 per cent on the basis of private construction. Moreover, at mid-November both trends were up. (These data cover only large projects whose contracts run more than $15,000 to $150,000, depending on construction types).

As measured by FHA statistics, private house builders show surprising confidence in the future. Applications submitted to FHA for appraisal amounted to $87 million in October, down only 11 per cent from the preceding month when SPAB jolted the industry with its curtailment order. During November's first week, FHA selected some $23 million of mortgages for appraisal, compared with October's weekly average of about $25 million.

$850 MILLION ARCHITECT

Few architects can boast an annual business of $20 million over a period of decades, as does Architect Louis A. Simon.

Harris & Ewing

Louis A. Simon

On the contrary, most architects now face unemployment, but so does Architect Louis A Simon. Thus, last week Mr. Simon retired as Supervising Architect of the Public Buildings Administration, looked back on 45 years of continuous Government service in that office and on $850 million worth of public construction which he helped design.

Established in 1836 the office of Supervising Architect has been headed by only sixteen individuals—first by Robert Mills, designer of the Washington Monument, and in 1896, when Simon joined the staff, by James Knox Taylor. During the following administrations of Oscar Wenderoth and James A. Wetmore, Simon was given increasing control of the Office's Architectural Division, and in 1934, he was appointed Supervising Architect. Meanwhile, he had convinced Andrew Mellon, then Secretary of the Treasury, that the design of Government buildings in Washington D. C. should be controlled by a board of architectural consultants appointed from private practice and had seen two such boards staffed with such architectural authorities as Bennet, Ayres, Medary, Brown, Delano, Pope, Zantzinger, Hentz, Watkin, Klauder, Embury, Shepley, Maher, and Howe.

As supervising architect, Simon's influence is reflected in hundreds of public buildings from coast to coast, from the huge Triangle buildings in Washington to the small new Roosevelt Library in Hyde Park. His work has been well appreciated: in 1937 the Association of Federal Architects awarded him their gold medal; the A.I.A. made him a Fellow. And, President Roosevelt has issued several special orders retaining Architect Louis A. Simon in office for a total of two and one half years beyond the normal retirement age. Fortnight ago, Simon's successor was yet to be appointed.

PARKCHESTER IV

Sold on the safety and money-making possibilities of direct investments in large scale rental housing projects, the Metropolitan Life Insurance Co. has just about completed its 12,000 unit $50 million Parkchester in New York City's Borough of The Bronx, has close to 5,000 units under way in two west coast projects (Arch. Forum, Feb. 1941, p. 2). Last month, the Met announced a fourth project in Arlington Va., across the Potomac from the Nation's capital. Now an undeveloped field of briars and marsh, the project is to bear the most common of all subdivision names, "Colonial Village", but is to be far from common in size and appointments. Some 1,800 dwelling units will be contained in its two-story Colonial garden-type apartment buildings built of brick and stone around interior courts on the 200 acre tract. Inside a protective belt of shrubbery varying from 150 to 700 feet in depth will flourish a 10-acre park, a large swimming pool, tennis and handball courts, play grounds and a commercial center.

In view of Washington's continuous growth and acute housing shortage, the Met expects no difficulty in obtaining Government help in the procurement of critical materials, hopes to finish its fourth "Parkchester" by the end of next year.

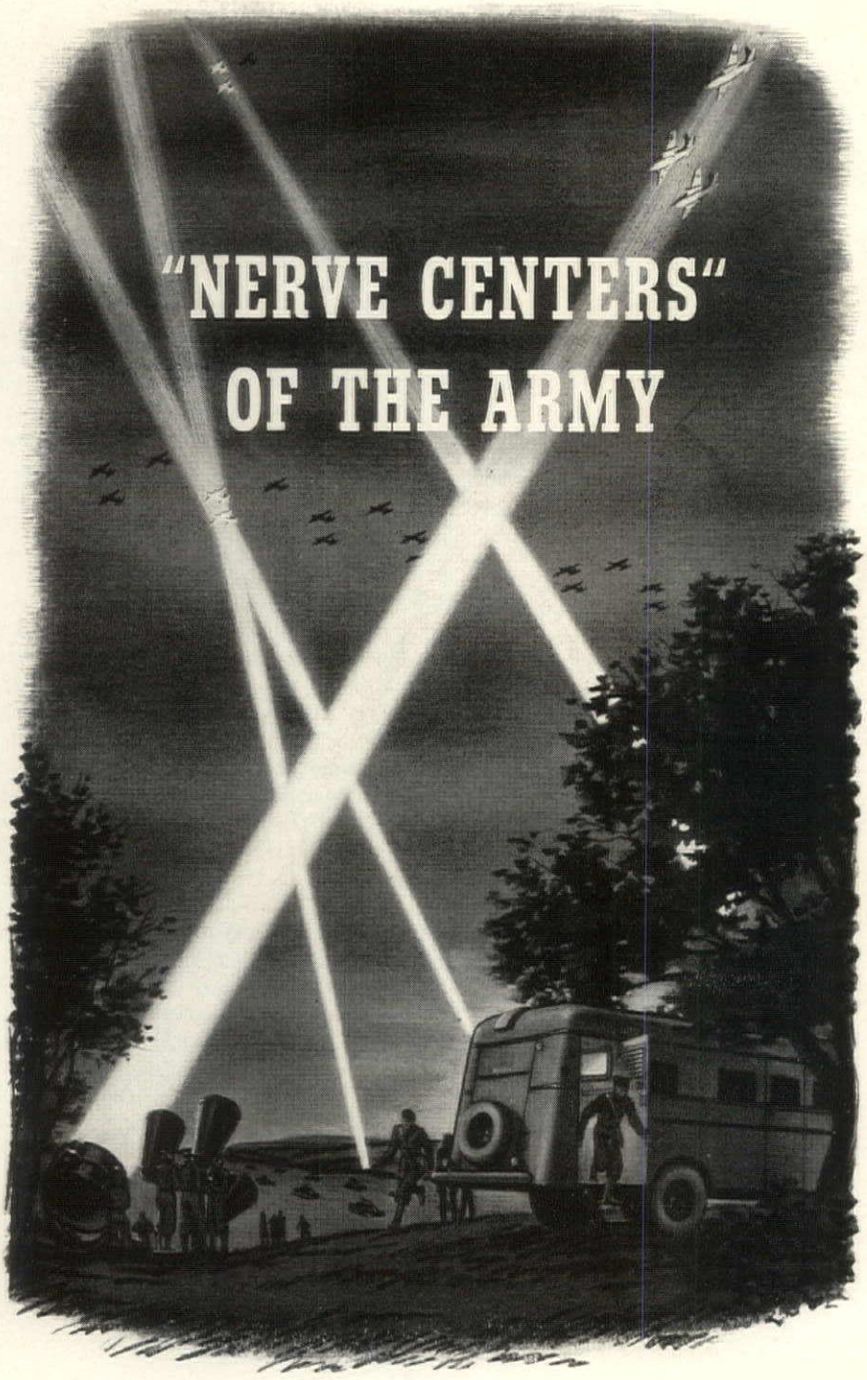
BUILDING IN CONFERENCE

November was a month of building industry conferences. Herewith, highlights from four of them:

The U. S. Saving & Loan League, at its annual convention in Miami last week, was scheduled to take the recommendation of its nominating committee, elect Fermor S. Cannon president. For eighteen years a practising architect, Cannon has designed some of Indianapolis' best known buildings, has for the past twelve years managed the Mid-West's best known savings and loan association, the Railroadmen's, also in Indianapolis. Founded by Cannon's father in 1887, the $31 million association is the third largest in the U. S., the Mid-West's largest. Last year Architect-Financier Cannon, once president of the Society of Residential Appraisers, headed the League's Committee on Financing Low Cost Housing, whose purpose is "to develop new financing arrangements to provide the necessary high percentage financing for home ownership . . . without involving guarantees from the Government such as the FHA provides."

No secret is the fact that the majority of savings and loaners are opposed to the FHA program. Said the League's Advisory Council last month in a resolution condemning several aspects of Government's housing priorities procedure: "There is wide-spread feeling among executives of savings and loan associations . . . that it is not impartial or wise to require such institutions or the builders whom they serve, who have used financing plans other than the insured mortgage plan, to obtain applications, submit applications and generally deal with local FHA personnel and offices. . . . In the interests of national unity . . . it is therefore recommended that the receipt of priority applications, their numbering and their general administration be handled by representatives of the OPM or by the Defense Housing Coordinator . . . ."

The Savings Banks Assn. of New York State held its annual meeting at White Sulphur Springs, W. Va., listened to Irvin Bussing predict the war's effects on mortgages and



• In modern battle formation, the "nerve centers" of army field operations are the communication trailers that house mobile radio units. These trailers must be built of material both strong and light weight . . . something that can withstand salt air, sand, heat, snow or rain—and still be adaptable to high-speed production. Tempered Presdwood*—a Masonite* wood-fibre hardboard—has passed all these severe tests and is now being used to build U. S. Signal Corps trailers.

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THE ARCHITECTURAL FORUM

Published monthly by Time Inc., Orange, Conn. Yearly subscription: U. S. A. Insular Possessions, Canada and Cuba, $4.00. Foreign Countries in the Postal Union, $6.00. Single copies of this December issue, $1.00. Entered as Second Class Matter at the Post Office at Orange, Conn., under the Act of March 3, 1879. Additional entry at New York, N. Y.
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VOLUME 75
Number 6

real estate as he foresees them from his vantage point, as director of research for Wall Street's Savings Banks Trust Co:

► "The war and defense program are likely to accelerate the decentralization of American cities." His reasoning: priorities are limited to low cost houses, and low costs are most easily achieved outside city limits where land is cheap, unplatted and available in large parcels, thus lending itself to large scale operations. Moreover, "an individual can occupy a new house in a new area at a lower tax cost than he can occupy an old house in an old area. . . . New houses are assessed for tax purposes at about cost; but old houses within cities . . . are commonly assessed in excess of cost less depreciation, reproduction cost or market price."

► "New construction methods and materials, including prefabrication . . . are likely to have far-reaching long term effects on residential real estate and on the policies of home financing institutions. . . . It is not unlikely that (they) will develop as extensively in the next twenty years as the motor car industry did in the last." These are significant comments from a spokesman for the traditionally conservative banking fraternity.

► "More and more, as time goes on, the most desirable mortgage business will gravitate to those financial institutions, and combinations of them, which are capable of financing large scale building operations. . . . Economy can be achieved . . . only through the use of large scale methods and these are dependent on large scale financial assistance." Bussing's advice to his fellow savings bankers: band together, pool mortgage money, finance large projects on the guiding principle of "security, not state boundary lines."

► The encroachment of low income groups upon better quality residential neighborhoods will be reduced in direct proportion to the increasing production of low rent and low cost dwellings. Hence, one major cause of blight will ultimately be removed.

► Three new reasons for amortization of mortgages have grown out of the national emergency: 1) Borrowers are better able to pay now than they will be in the future. 2) Current mortgage amortization payments will tap consumer purchasing power, help stem inflation. 3) By getting out of debt today, borrowers will cushion themselves against the inevitable post-war shock.

► As for city real estate, Bussing foresees a rise in building values, an accelerated drop in land values, but hedges his bet with several qualifications. He sees little reason for financial institutions to change their current policy of orderly liquidation of owned real estate, advises them to seek larger down payments and better loan terms rather than higher prices.

► Concluded Banker Bussing: "One major (post-war) program, above all others, which is ripe for exploitation, is that of rehabilitating the blighted areas of American cities. This was overdue prior to the war. It will be mandatory after the war. . . . Urban redevelopment is a part of our job."

The U. S. Chamber of Commerce's Construction Industry Conference in Washington D. C. heard many a prominent speaker make many a sage remark. A few of them:

► President M. W. Watson of the Associated General Contractors of America urged that the counsel of industry be sought by Government and admonished Government with masterly politeness for its recent orders curtailing non-defense construction: "It is not to be construed that the construction industry is critical when it asks for information as to the necessity of an act or when it asks that all industry be called upon to make equal sacrifice, or when it calls attention to unemployment likely to be caused. Instead of being critical, the opposite is true. The construction industry believes that it is performing a patriotic duty when it calls attention to the consequences of acts which can affect millions of people to be sure that their gravity has been fully comprehended."

► Acting President Richard J. Gray, of AFL's Building and Construction Trades Department looked woefully forward to sharply curtailed non-defense construction and gradual completion of the defense construction program: "In approaching the winter of 1942, between 700,000 and 800,000 building construction workers will be faced with the prospect of unemployment." Earlier he noted that AFL's building industry workers numbered 1.5 million, indicating that about half the group would be unemployed a year hence.

► President Thomas S. Holden of F. W. Dodge Corp., Building's private figure factory, gave his listeners a preview of his 1942 building forecast: ". . . a 32 percent decline to a volume a little above that of 1940. Next year's reduction in dollar volume of new building we estimate at 30 percent; the decline in expenditures for heavy construction we estimate at 36 percent." (These figures are based on contracts awarded in the 37 States east of the Rockies.) Said Holden of the long term future: "The post emergency construction market promises to be large and highly competitive."

► Director William H. Harrison of OPM's Production Division indicated that 40 percent of the special-purpose defense plants now authorized had been completed, that 75 percent of the presently planned defense construction program would be finished by spring, that Building had done a good job: "The construction phase of the job stands out as one of the really fine things that has been accomplished in the defense effort."

(Continued on page 48)

NEW PRESIDENTS OF BUILDING TRADE ASSOCIATIONS

Frederick P. Champ
MORTGAGE BANKERS ASSN. OF AMERICA

Associated Press

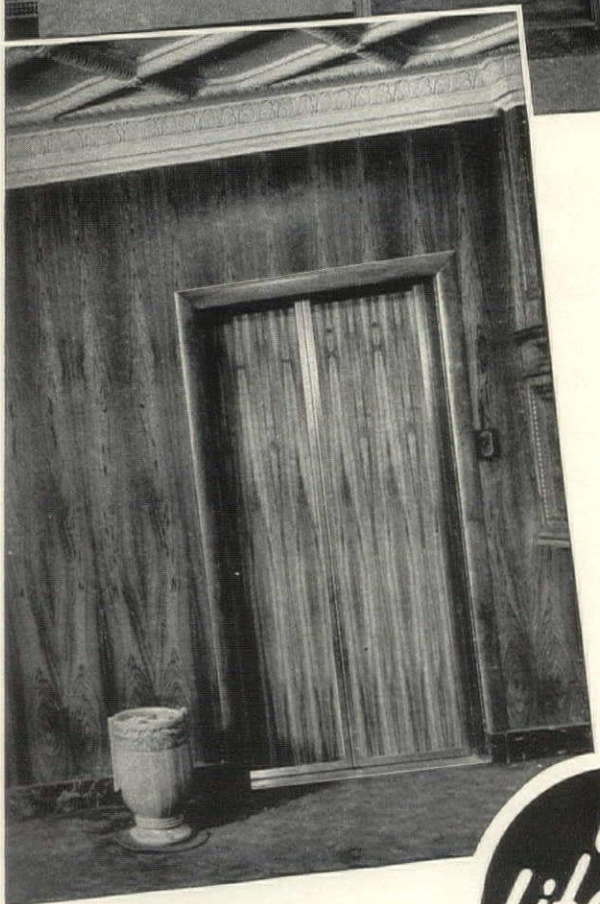
Fermor S. Cannon
U. S. SAVINGS & LOAN LEAGUE

David B. Simpson
NATIONAL ASSN. OF REAL ESTATE BOARDS

Modern ELEVATOR INTERIORS & DOORS WITH FORMICA Realwood

• Formica Realwood panels of quartered Walnut on the interiors of the cabs in the Municipal Center, Washington, D. C.

Safe from Stains!



• Elevator doors, Picadilly Hotel, Chicago, modernized with Formica Realwood.

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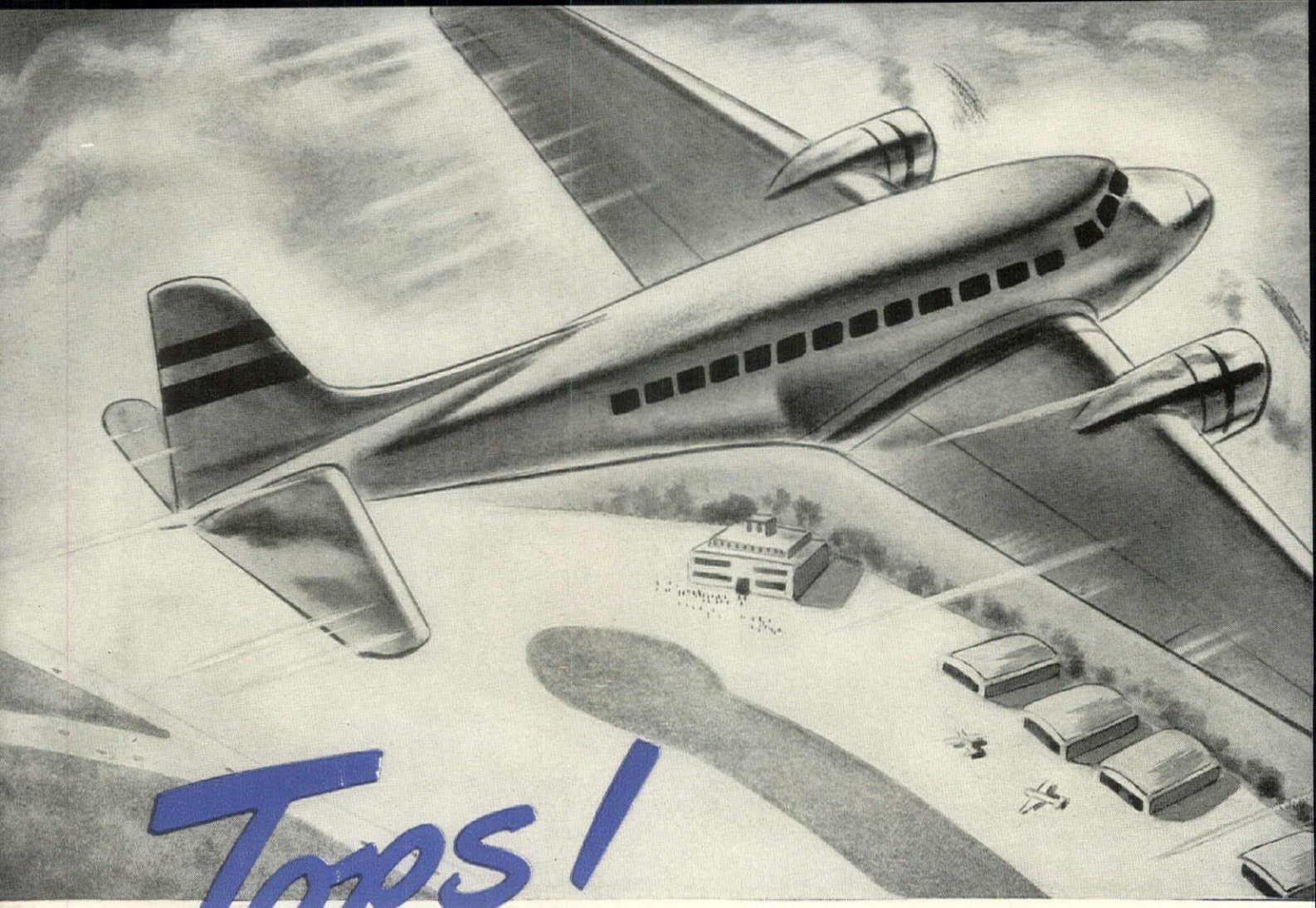
FORMICA

FOR BUILDING PURPOSES



La Guardia Field Accords "Ceiling Unlimited" to Josam Gas-Oil Interceptors

LA GUARDIA FIELD . . . the world's greatest airport . . . terminal for transatlantic clipper ships, as well as cross-continent landplanes . . . above everything else stresses the importance of SAFETY. Every modern facility is provided and every precaution taken to make this gigantic airport as safe as humanly possible in every respect.

With the handling of thousands of gallons of gasoline and oil daily, safety against the hazards of fire and explosion is of paramount importance. Careful study and rigid tests were made to determine the most effective means of preventing these highly inflammable liquids from entering the drainage waste lines . . . where they would be a constant menace to life and property.

The result was that La Guardia Field installed more than a hundred JOSAM Gas-Oil Interceptors in a variety of sizes for protection against fire, explosion, and water pollution. As a further precaution, large storage tanks were connected with the Interceptors to facilitate quick unloading of gasoline from planes in case of fire.

This installation of Gas-Oil Interceptors . . . *the largest in the world* . . . is a high tribute to JOSAM engineering. It means that La Guardia Field accords top position . . . "*ceiling unlimited*" . . . to JOSAM PRODUCTS.

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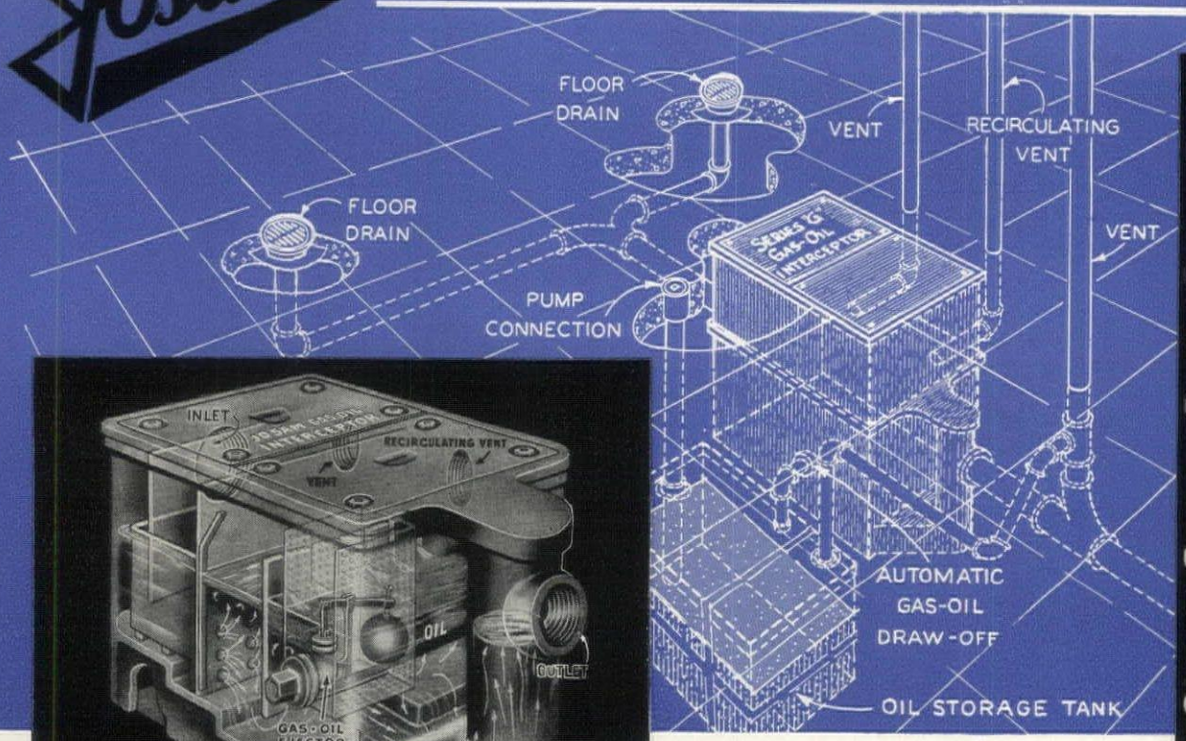

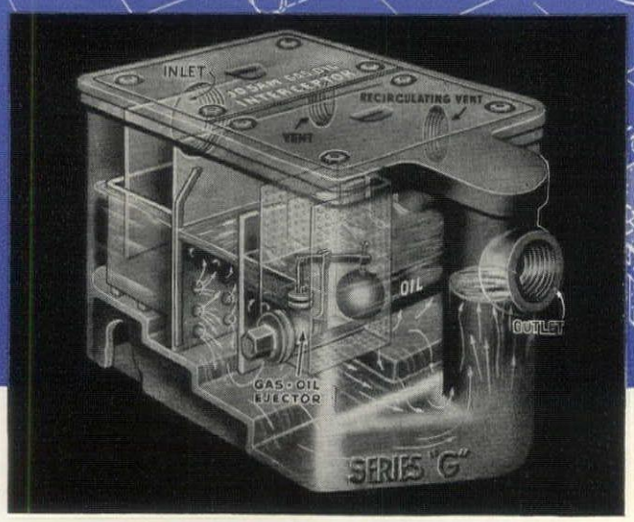

Floor plan of typical airport installation of JOSAM Gas-Oil Interceptors. Note large storage tank to take care of quick unloading of gasoline from planes in case of fire. This tank is cleaned periodically and the gas and oil can be salvaged.

Regularly furnished in 5 sizes ranging from G-50 for airports and other large installations, to smaller sizes for garages, service stations, cleaning and dyeing plants, refineries, plastic plants, machine shops, metal treating furnaces, foundries, and industrial plants. Larger sizes for special requirements designed to order.

Josam GAS-OIL INTERCEPTOR

Safeguards Life and Property Against Hazards of Fire, Explosion, and Water Pollution

PROMINENT airports all over the country keenly recognize the prime necessity of quickly carrying gasoline and oil off the field and keeping these inflammable liquids out of drainage waste lines . . . where they constitute dangerous fire and explosion hazards.

This protection to life and property is vital wherever inflammable liquids are handled. In garages, filling stations, machine shops, paint factories, refineries, cleaning and dyeing establishments, chemical laboratories . . . there is always a chance that the floor drainage contains sufficient inflammable oils, gasoline, naphtha, or other volatile liquids to cause fire, explosion, or water pollution.

The JOSAM Gas-Oil Interceptor, installed in the drainage lines, safeguards against these dangers by intercepting these inflammable liquids . . . keeps them from entering the drainage lines. The intercepted inflammables are automatically discharged into a container or storage tank placed at a convenient and safe location. Accumulated waste oils or gasoline can be removed at convenient intervals. Gasket-tight cover prevents fumes or gases from discharging into the room.

Scientifically engineered on the hydraulic cascade principle, the JOSAM Gas-Oil Interceptor effectively separates all oils and inflammable liquids and solids. *Specify the JOSAM Gas-Oil Interceptor to insure safety to life and property.*

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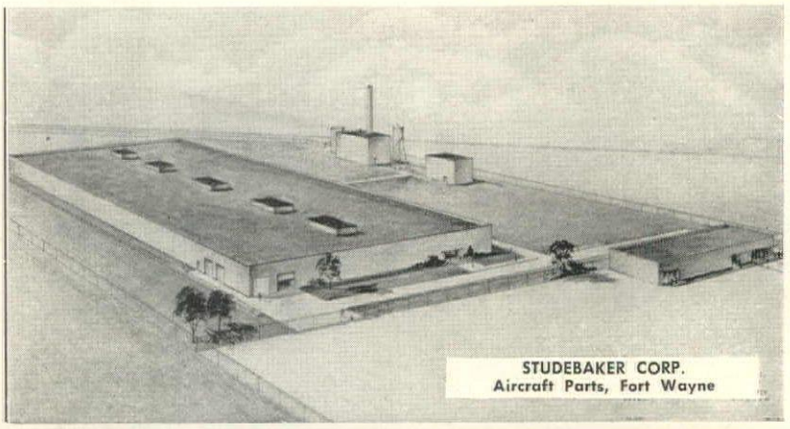
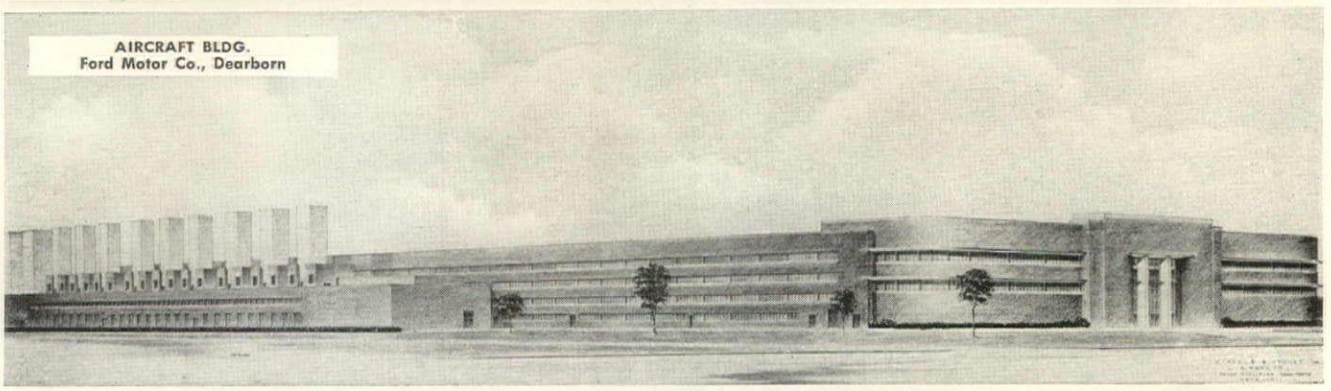


STUDEBAKER CORP.
Aircraft Parts, Fort Wayne

American Air Filter equipment protects men and machines in National Defense Plants



AIRCRAFT BLDG.
Ford Motor Co., Dearborn

where production must not be slowed down by destructive dusts and fumes

STUDEBAKER CORP.
Engine Parts, Chicago

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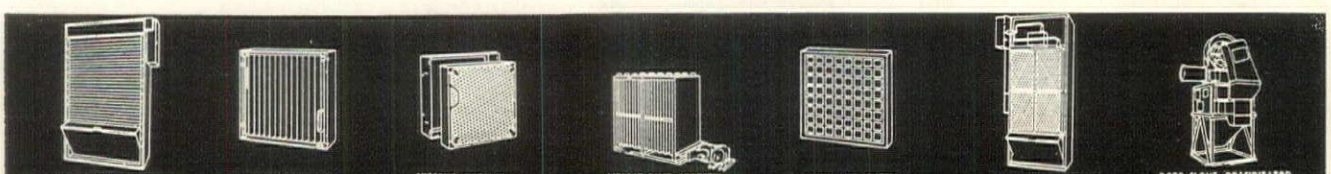
AMERICAN AIR FILTER CO., 196 CENTRAL AVENUE, LOUISVILLE, KENTUCKY



AIR FILTRATION AAF DUST CONTROL

MODERN BUILDING METHODS call for STRAN-STEEL FRAMING

A complete wall section of Stran-Steel studs is raised into position by three men. This small home is one of many built for the U. S. Navy.

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Stran-Steel joists and studs can be *pre-cut* at the factory to exact lengths—ready to go on the job the minute they arrive. Stran-Steel members are marked, to help speed assembly. No time is lost in cutting or trimming.

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GET THE FACTS NOW! A new construction manual showing Stran-Steel in use on typical building projects has been prepared for you. Get your free copy *today*—write to Stran-Steel Division, Great Lakes Steel Corporation, 607 Shelby Street, Detroit, Michigan.

STRAN STEEL

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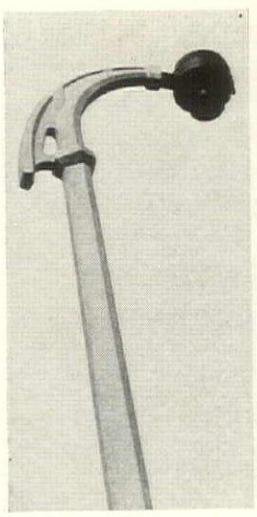
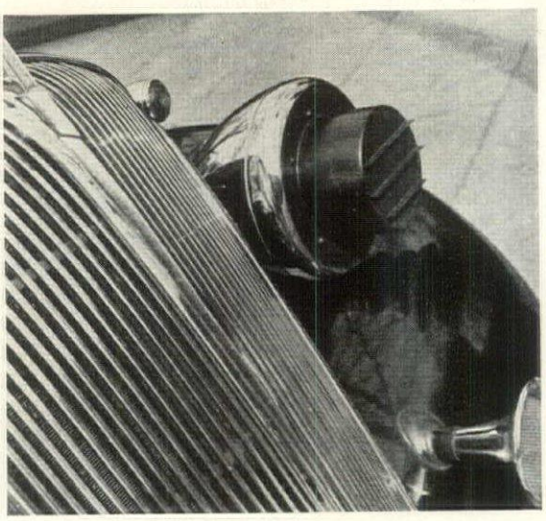
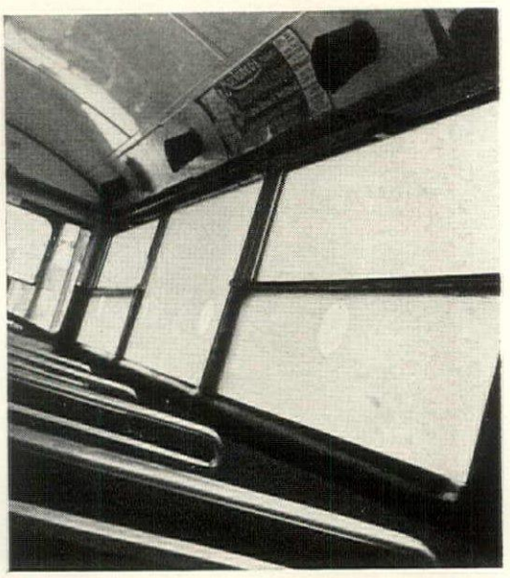
TOTALITARIAN WAR REMAKES CIVILIAN LONDON IN ITS OWN IMAGE

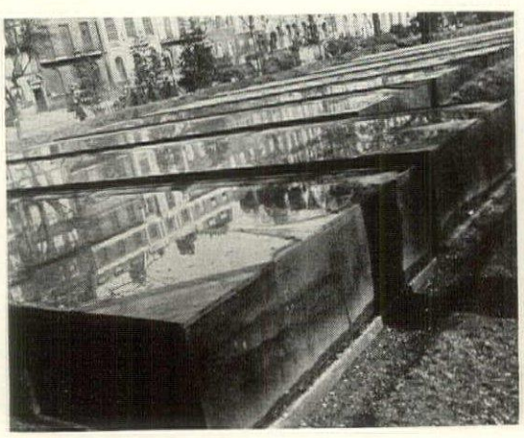
All Photos Peter A. Ray

The picture of war is an old, old story. Its mechanics change, but the picture is equally familiar to the readers of newspapers and history books. It is a gigantic, grisly composite of shattered towns, moving soldiers, mutilated corpses, blackened fields, twisted machinery, endless lines of silent refugees, and all the other paraphernalia of catastrophe. It is international and anonymous. Wrecked Coventry, above, save for its battered spire, could be wrecked Warsaw, Guernica or Chungking. The illustrations on these pages show another aspect of modern war, a remarkable photographic document which loses none of its grimness by concentrating on apparently innocuous details. Taken by Peter Ray, 24-year-old London photographer, the pictures show the pattern which appears spontaneously wherever cities are to be found within the great circles traced by the cruising radii of enemy bombers.



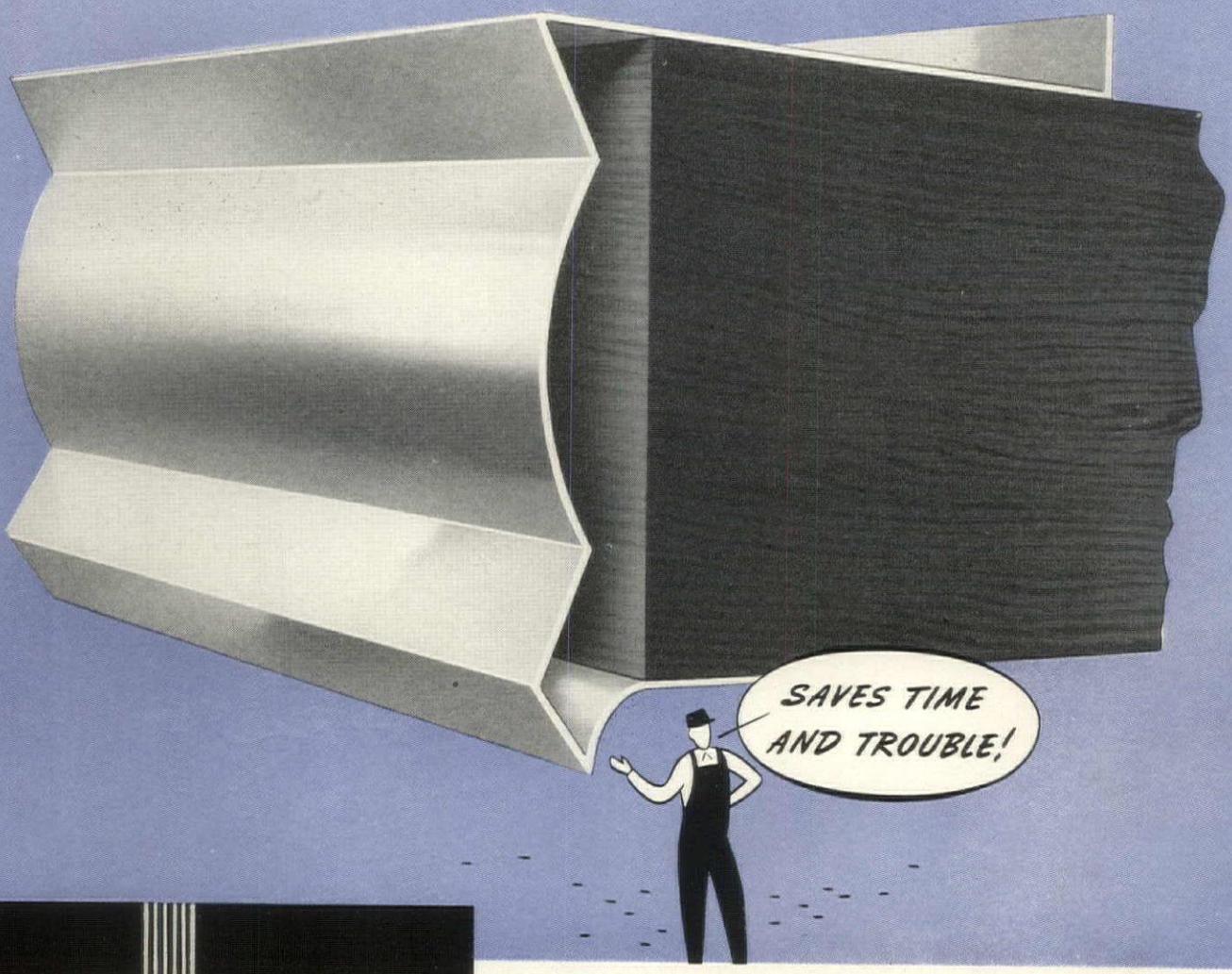


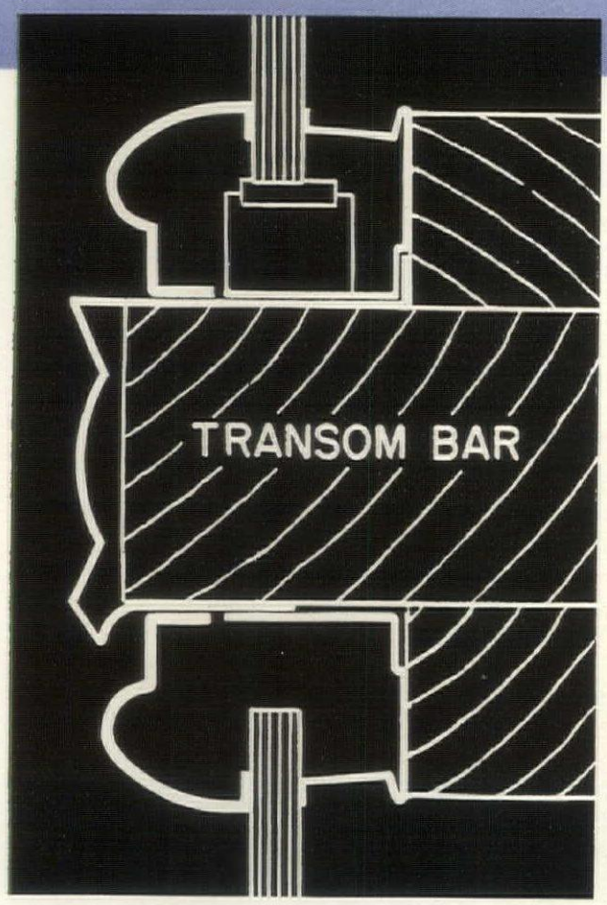




Blackout lights are shown on the lamp post, the automobile headlight, and in the bus interior. London bus windows are now furnished with splinter-proof fabric. In the top illustration is an illuminated marker for a traffic island; the black and white pattern is standard on all obstructions and curbs (left). London squares are now filled with open water tanks, auxiliary reservoirs for fire fighting should the mains be destroyed.

(Continued on page 12)





Kawneer MOULDINGS FIT STANDARD SIZES OF LUMBER

THE complete Kawneer line of Rolled Store Front Construction, long a helpful inspiration to store front designers, is designed to fit standard sizes of lumber. This is a feature of great value to both architect and builder—results in a definite saving of both time and trouble in planning, specifying, and installing.

Kawneer Rolled Store Front Construction meets every other requirement of today. Full resiliency eliminates glass breakage; bronze members assure lasting beauty, low maintenance and trouble-free service. Get latest data from Kawneer distributor, from SWEET'S, or by writing THE KAWNEER COMPANY, NILES, MICHIGAN.

Details at left show how Kawneer Moulding No. 7221 and Sash No. 85 are installed on standard lumber at transom bar.

FREE ILLUSTRATED STORE FRONT MAGAZINE. The Kawneer Front will be sent on request. Write to The Kawneer Company, Niles, Michigan.

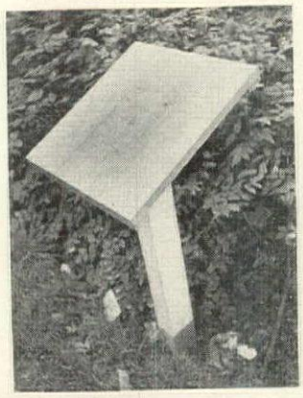
IT'S EASY TO DESIGN AND INSTALL

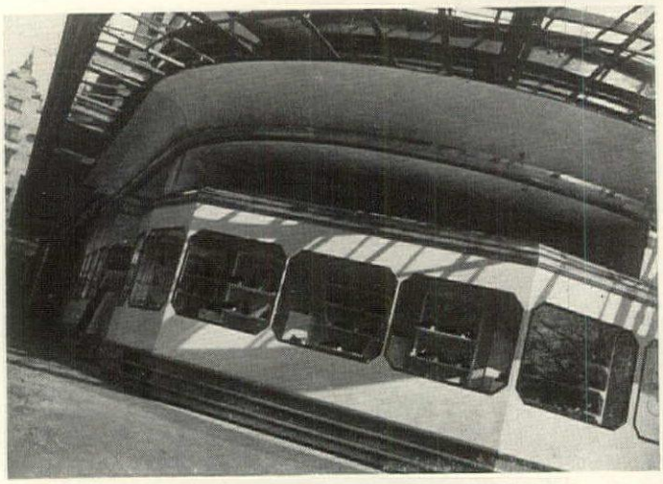
Kawneer STORE FRONTS

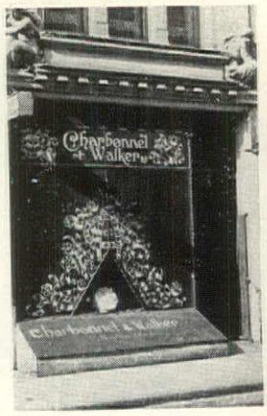
All Photos Peter A. Ray

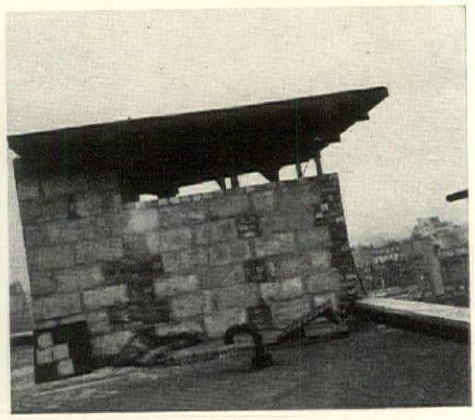
CIVILIAN LONDON, *(Continued from page 10)*

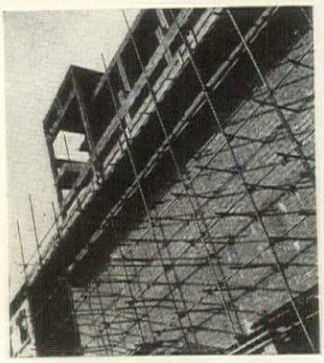
The chemically painted wooden stand is a gas detector whose warning signal is a change in color. Fountains (right) now pour out noisy warnings instead of water. The shops below show ingenious temporary fronts and decorative protections against blast. Below, at the right, is one of the new watchtowers which dot London's skyline; ARP wardens and volunteer firemen go to the roofs during raids and watch for falling incendiaries.



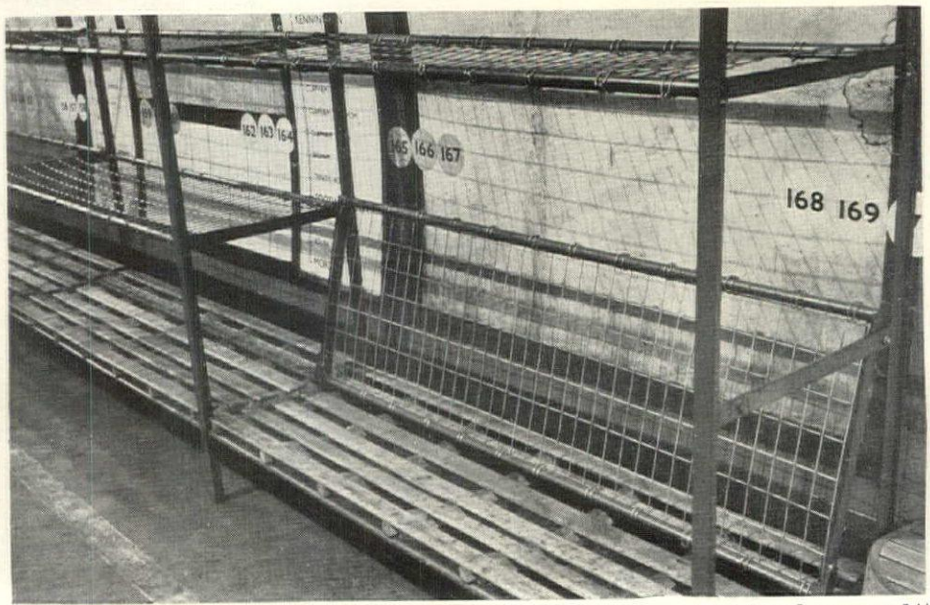






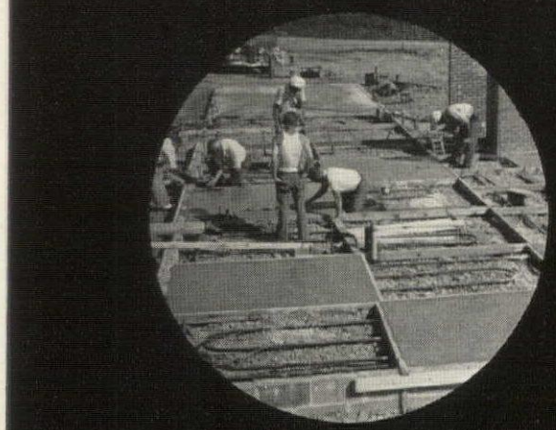


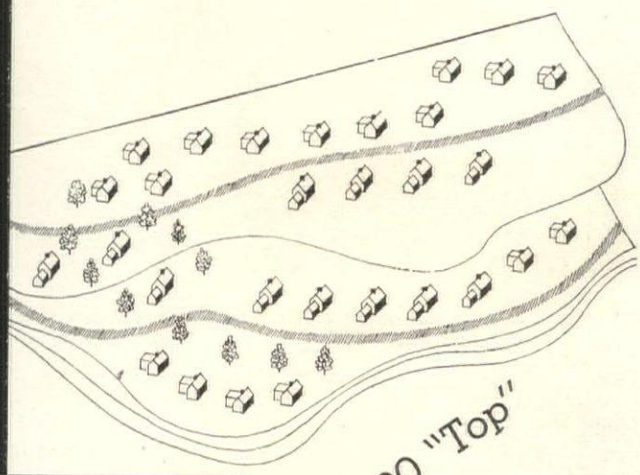
At the left, a frame building being finished without window openings; to its right is one of the numerous groups of new shelters. The entrance to RIBA headquarters, below left, now has a rugged wall in front of its partly bricked up entrance. The wood and metal cots below are standard features of the London subway.



(Continued on page 14)

Is RADIANT HEATING Practical under the $6,000 "Top" on Defense Housing??





What the 300,000 projected "Defense" homes will do to the face of America—whether they will create a series of blots on the landscape today, and a new slum problem tomorrow—depends on the architect. To create homes that will be good to look at, and good to live in, is not a matter of "compressing" the higher-cost home. It calls for a fresh approach and constitutes a challenge to the profession.

Since the one-story basementless house is the point of departure for most new thinking and planning on the subject, and since Radiant Heating is so well adapted to this type of construction, cost is the subject of frequent questions. The most practical answer is found in the small homes equipped with radiant heating which are already constructed and occupied, and which were *built complete* for $4,800 or less.

Here are six such answers. House A—Pennsylvania. 4-rooms, oil-fired boiler, total cost: $4,000. House B—Connecticut. 5-rooms, oil-fired boiler, total cost: $4,000. Houses C, D and E—Ohio. Five and six rooms, one with coal, and two with gas-fired boilers, total cost: $4,800 each. House F—New Jersey. 5-rooms, gas-fired boiler, total cost: $2,500.

Any proper solution of the defense house problem demands savings through simplification and omission, rather than through the use of cheap materials or lowering of construction standards. This is especially important in the case of radiant heating piping, for maintenance cannot be safely disregarded here in favor of low first cost. Byers Wrought Iron combines to an unusual degree the high corrosion resistance, desirable thermal properties, and ease of fabrication that are vital to present and future durability and satisfaction. Our bulletin, "Byers Wrought Iron for Radiant Heating," tells the complete story. Would you like a copy?

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Chicago, St. Louis, Houston, Seattle, San Francisco.

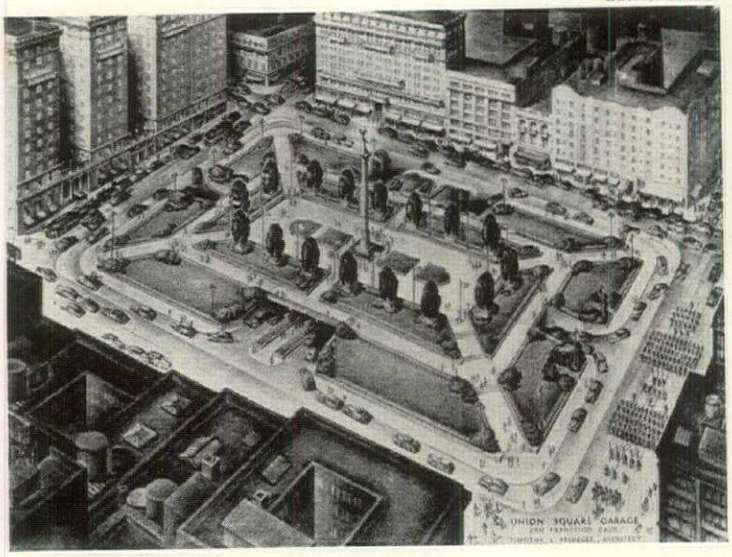
BYERS WROUGHT IRON

FOR EXTRA SERVICE
IN CORROSIVE APPLICATIONS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

FORUM OF EVENTS

Gabriel Moulin



Wide World

Acme

Parking Garage. To ease an impossible downtown parking situation, San Francisco has ripped up Union Square, dug a hole a block square and fifty feet deep, and by next summer should have its park back on top of a four-story garage for 1,700 cars. Designed by Architect Timothy L. Pflueger, the project has had its share of trouble, including amendment of the city charter, a test case in the Supreme Court, the job of feeding evicted pigeons, and the lifting of an OPM ban on steel. Financed by neighboring property owners and a RFC loan, the garage will cost about $1,500,000, will revert to the city in about twenty-five years, when it has paid off the stock subscription and the loan. Designed to stem the tide of business now moving to outlying suburbs, it is an outstanding example of farsighted collaboration by civic and private business groups.

Two Houses for One. Picture on the left shows the answer of Charlie Maynard of Lubbock, Texas, to priorities on building materials. He sawed off the second story of his house, slid it down on telephone poles to an adjoining lot, and now has a cottage to rent.

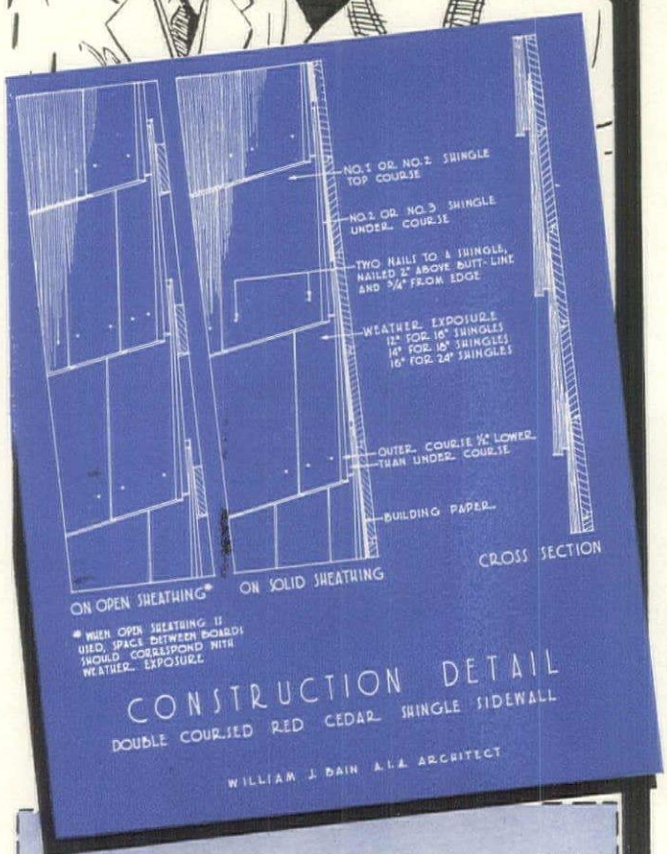
Portable Overpass. Recently tested in Atlanta, Le Tourneau's lightweight over-pass offers a new, ingenious and practical solution for traffic problems. It can be moved from one location to another and used in groups to handle any desired number of lanes.

(Continued on page 74)

PENBERTHY INJECTOR COMPANY

Manufacturers of Quality Products Since 1886

Canadian Plant: WINDSOR, ONTARIO **DETROIT, MICHIGAN**



HERE'S SOMETHING NEW IN SIDEWALL DESIGN

THE DEVELOPMENT of Double-coursing with Red Cedar Shingles has introduced something new in architectural flexibility for residential sidewalls. The double layers of shingles create heavy horizontal shadow lines heretofore unattainable for sidewalls, and architects agree that the sweep of this shadow line is a new instrument for beauty and perspective in modern home designing.

Double-coursing allows architects the freedom to choose various sidewall exposures, up to 16 inches in width. This means that Red Cedar Shingles may be applied with the exposure that is *just right* for each individual home design. It means that with *one time-tested material* architects may employ a great variety of sidewall styles.

You may be accustomed to designing sidewalls to conform with the limitations of "standard" exposures . . . if so, you'll be glad to find that Red Cedar Shingles conform to *your* design.

The blueprint shown here illustrates the proper method for Double-coursing. A complete set of these construction details, covering the various Red Cedar Shingle Roof and Sidewall applications, will be sent to you free. Fill out and mail the handy coupon today!

RED CEDAR SHINGLE BUREAU
SEATTLE, WASHINGTON VANCOUVER, CANADA

CERTIGRADE *Red Cedar Shingles*

SOLD EVERYWHERE BY LUMBER DEALERS

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5508 White Building, Seattle, Washington
Gentlemen: Without charge you may send me your blueprint service detailing methods of applying Red Cedar Shingles.
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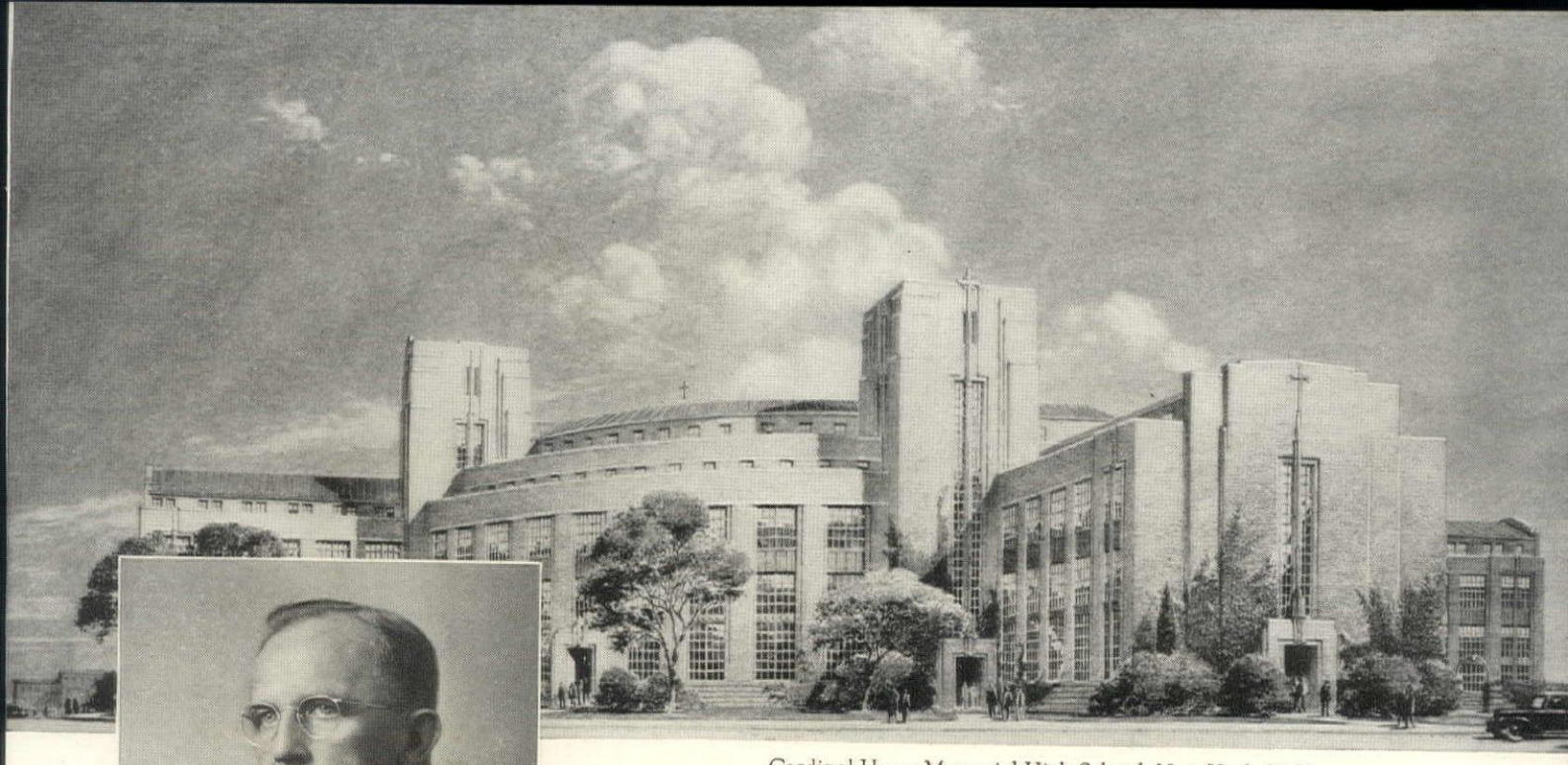


Cardinal Hayes Memorial High School, New York, N. Y.

Adolph G. Syska, of Syska and Hennessy, New York Consulting Engineers. This well-known firm incorporated a "Controlled-by-the-Weather" Webster Moderator System in their design for the Cardinal Hayes Memorial High School.

"Flexibility is an important feature of the mechanical equipment of modern buildings," writes Adolph G. Syska. "Flexibility means freedom to arrange the elements so that the installation will best fit the service requirements at minimum cost. It also means ease in modification for enlargement, rearrangement or change of use. In the heating system, flexibility means also the ability to heat quickly to the desired temperature without lag or over-riding. The modern steam heating system with orifices and central control provides economical and continuous heat delivery and meets our most exacting requirements for flexibility... We specify and use this type of modern steam heating system, both with and without accompanying air conditioning equipment in preference to other less flexible heating methods."

STEAM Heats America . . . .

MODERN STEAM HEATING FOR "SCHOOL OF THE YEAR"

Use Webster Moderator System in Cardinal Hayes Memorial High School for Boys

LUXURY HEAT AT LOW COST

To give the new Cardinal Hayes Memorial High School the finest heating service it is possible to provide, steam was selected as the heating medium and its distribution "Controlled-by-the-Weather" with a Webster Moderator System.

The Webster Moderator System of Steam Heating plays an important part in the heating of this great school. The building includes an auditorium seating 1,200, the chapel, classrooms, corridors, two fully equipped gymnasiums, locker rooms, a cafeteria seating 700, living quarters for 45 priests, administrative offices, living quarters for a community of 13 Brothers and a library.

Steam is generated by oil-fired boilers and distributed evenly and economically to all direct radiation under Webster Moderator Control.

In the Cardinal Hayes Memorial High School, the Outdoor Thermostat feature of the Webster Moderator System adjusts steam delivery automatically in accordance with outdoor weather conditions. Rooms are kept comfortably warm regardless of changes in the weather. Steam is delivered continuously to all radiators and exactly in proportion to the need for heat. Wasteful overheating is avoided.

Eggers & Higgins were the architects for the Cardinal Hayes Memorial High School. Syska & Hennessy, NewYork, served as consulting engineers. George A. Fuller Co. was the general contractor. Almiral & Co., Inc., made the heating installation.

Write for book, "Performance Facts."

WARREN WEBSTER & CO., Camden, N. J.
Pioneers of the Vacuum System of Steam Heating
Branches in 65 principal U. S. Cities—Est. 1888

-since 1888 Webster Systems of Steam Heating

BOOKS

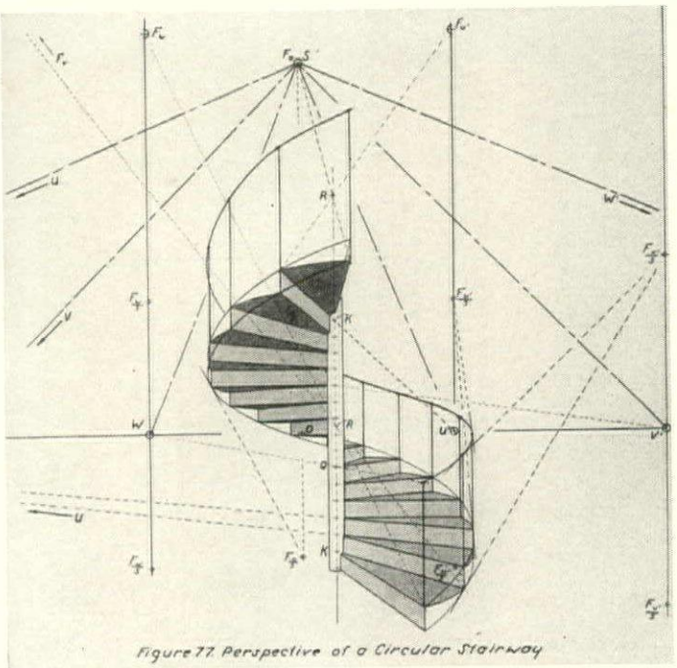
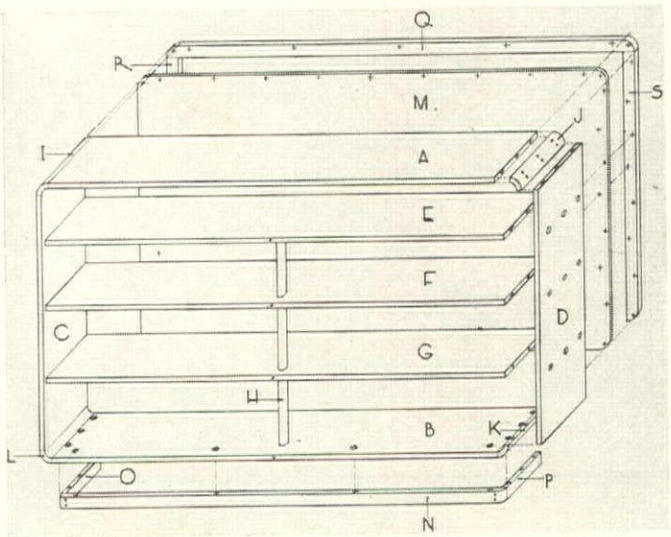


Figure 77. Perspective of a Circular Stairway



A HANDBOOK OF PERSPECTIVE DRAWING, by James C. Morehead and James C. Morehead, Jr. Published by the authors, 4815 Bayard St., Pittsburgh. 166 pp., 9 x 12. $4.50.

Since the Renaissance, perspective has been an indispensable adjunct to painting and an especially valuable tool for the architect. Possibly because of the thoroughgoing conservatism of architectural education, the teaching of perspective has been largely a perfunctory recapitulation of classical rules, and the books offered have not been a great deal better. Actually, as any competent delineator knows, a knowledge of the principles of perspective is vastly enhanced by familiarity with the methods and instruments developed to simplify the making of a drawing. This book recognizes the demands of both theory and practice, and presents its subject matter in a remarkably clear and understandable manner. The plates are beautifully drawn, as can be seen from the illustration, and in each instance the necessary information is presented in the simplest terms. Emphasis is laid on the least tedious means of attaining the desired result, and the 45°-line method has been developed as a method for drawing perspectives of all kinds. The methods of working towards inaccessible vanishing points are also fully treated. For its clarity, completeness, and practical approach, this book deserves widespread use as a standard textbook.

ART OF AUSTRALIA, compiled and edited by Sydney Ure Smith. Published for the Carnegie Corporation by the Museum of Modern Art. 58 pp. and plates. 7¾ x 10¼. $1.00.

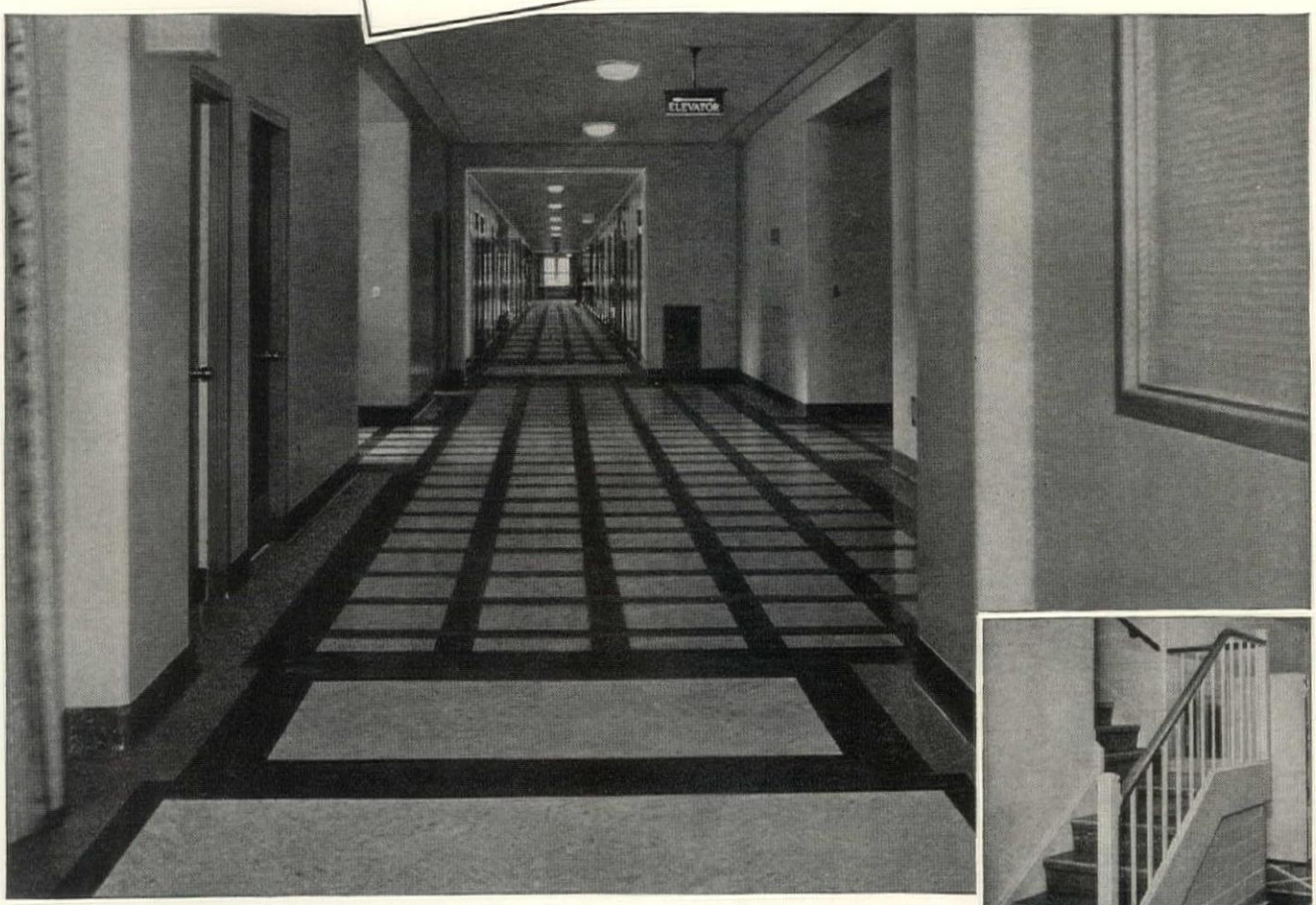
This handsome little book is a catalogue of the first comprehensive exhibition of Australian art ever sent to this country. Sponsored by the Commonwealth Government and the Carnegie Corporation, the exhibition contains paintings, sculpture and aboriginal drawings, and will be shown in a number of American and Canadian cities. Omitting from consideration the primitives, which show typical emphasis on symbolism and pattern, the work is largely derivative in character, a circumstance not unexpected in the art of a country which, like our own, has a background of long cultural dependence on Europe. The ballet design illustrated shows the new interest in indigenous themes. In addition to the plates there are several excellent brief essays on the history of Australia and its art.

HOW TO MAKE YOUR OWN FURNITURE, by Eugene O'Hare. Harper & Brothers. 94 pp., and plates. 8¾ x 11¼. $2.50.

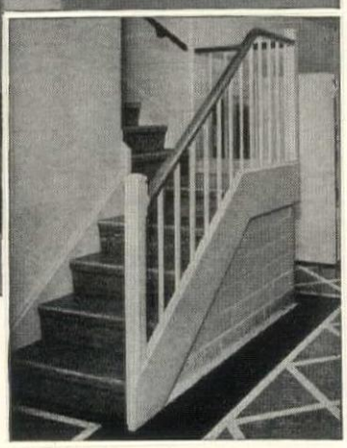
Now that built-in furniture has become an almost inevitable feature of the contemporary house, the architect is apparently under the obligation to gain an understanding of cabinet making in addition to the other intricacies of his profession. While this book makes no claim to comprehensive instruction in such matters, it has a certain value for the designer, because it takes nine very simple pieces of furniture and breaks down their construction and finish into a series of minutely described operations. The book's thesis is that any normal adult, equipped with seventeen simple hand tools and a degree of interest can turn out the bookcase, desk, dressing table and other designs shown. Aimed directly at the novice, the professional, however, will find in it a great number of very useful hints on furniture construction, selection of materials, ways to keep costs down without impairing quality, and finishing techniques.

(Continued on page 68)

WHERE QUIET IS REQUESTED



Goodyear Wingfoot Rubber Flooring graces corridor of New Medical Unit, St. Mary's Hospital, Rochester, Minn. Architects: P.M. O'Meara & Associates



Molded rubber stair treads used here are an exclusive Goodyear product. They are available in sizes up to seven feet.

HOSPITALS can't take chances with flooring. The kind they specify must first of all be resilient enough to muffle footfalls. It must be easy to keep spotlessly clean. And it must be able to stand the everlasting abuse it gets in clinical service.

Goodyear Wingfoot Rubber Flooring embodies these qualities to superlative degree. That's attested by its use—over 50,000 square feet of it—in the corridors, laboratories, nursery and reception rooms of the New Medical Unit of St. Mary's Hospital.

Moreover, Wingfoot Rubber Flooring is impervious to alcohol, cigarette and most acid stains. Once installed it stays in place without buckling or warping.

All these advantages make Wingfoot readily adaptable to institutions and public buildings of every description, as well as private homes. It can be installed in either sheet or tile form and is obtainable in a wide variety of colors.

For complete specifications, see Sweet's Catalog or write to Goodyear, Akron, Ohio—or Los Angeles, California.

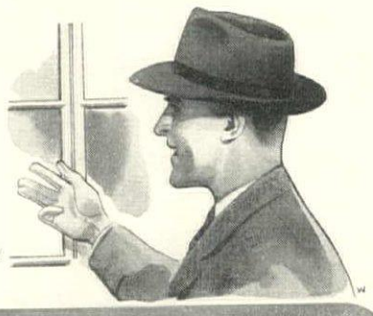
THE GREATEST NAME IN RUBBER
GOODYEAR
Wingfoot Rubber Flooring

Wingfoot—T.M. The Goodyear Tire & Rubber Company

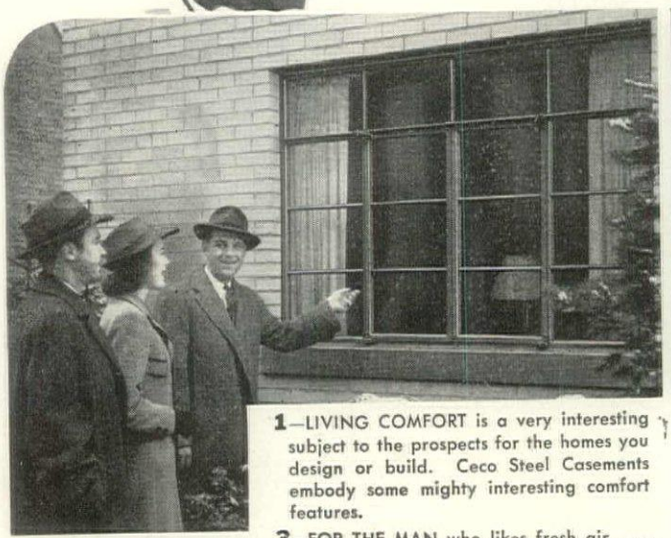
A MAN TO RELY ON

Your local Goodyear dealer is a man whose craftsmanship must conform to the highest standards. That's why you can repose complete confidence in his work.

TALK ABOUT COMFORT



EIGHTH of a series of advertisements on How to Design and Build Homes That Sell!



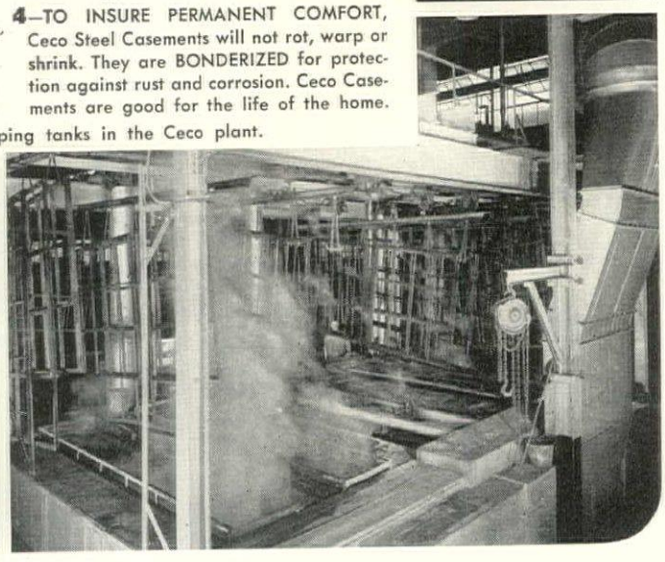
1—LIVING COMFORT is a very interesting subject to the prospects for the homes you design or build. Ceco Steel Casements embody some mighty interesting comfort features.

2—DURING WINTER, when sunshine is scarce, Ceco Casements admit up to 1/3 more light! Yet "double-weathering" and precision fitting make them actually tighter, more snug, than wood windows!

3—FOR THE MAN who likes fresh air . . . "all out" ventilation is a feature of Ceco Casements. Yet a twist of the wrist draws the ventilators to a tightly closed position . . . instantly.

4—TO INSURE PERMANENT COMFORT, Ceco Steel Casements will not rot, warp or shrink. They are BONDERIZED for protection against rust and corrosion. Ceco Casements are good for the life of the home.

(Lower right)—Bonderizing dipping tanks in the Ceco plant.



A PICTURE STORY OF BETTER WINDOW TREATMENTS

Send for this interesting "Beautiful Windows" booklet today. It's filled with actual photographs of attractive window arrangements. Show it to your customers!

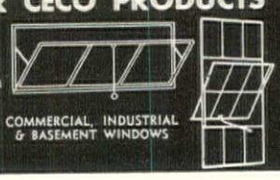
● More and more of the homes of the future will have Ceco Steel Casements. Forward-looking architects, builders and dealers know that America is demanding more sunlight, better ventilation, long life and the other qualities which are inherent in a good steel casement. After all, the customer's enthusiasm and satisfaction is what decides the future of any product! Try a Ceco Casement installation on your next job.

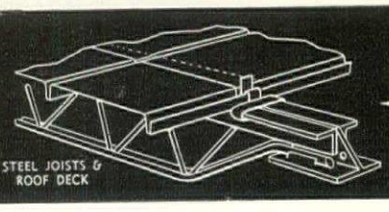
CECO STEEL PRODUCTS CORPORATION

Manufacturing Division: 5701 W. 26th St., Chicago, Illinois

Ceco Steel Windows

OTHER CECO PRODUCTS





MEYER STEELFORMS
ADJUSTABLE SHORES, COLUMN CLAMPS
CONCRETE REINFORCING BARS
WELDED FABRIC
METAL WEATHERSTRIPS

3 WAYS THESE "HOUSES" WERE MADE BETTER "HOMES"

...with Anaconda Electro-Sheet Copper!

1 CONCEALED FLASHING AROUND WINDOWS & DOORS
Thin, for low cost, easy application, yet strong and durable for complete protection against infiltration of air and moisture. That's part of the story of Anaconda "Electro-Sheet" Copper, used here as concealed flashing around window frames.

2 DAMPCOURSE AND APRON BEHIND BRICK VENEER
Adequate protection against moisture is always to be sought at this vulnerable point. Anaconda "Electro-Sheet" Copper provides just such protection because it is absolutely rustproof and will not dry rot, regardless of time.

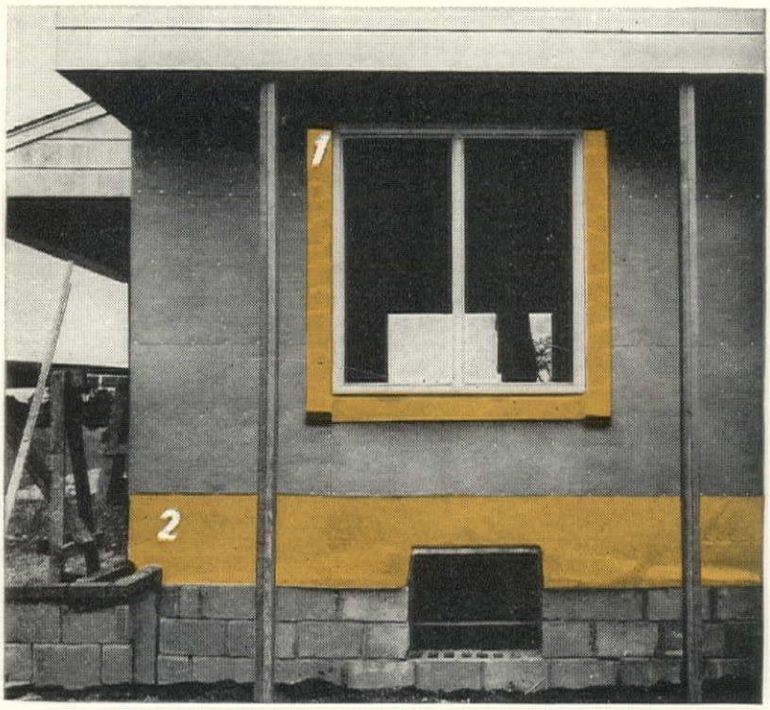
3 DAMP-PROOFING FOR FOUNDATION WALL
Here "Electro-Sheet" provides a low-cost "metallic" answer to a common waterproofing problem. The photo shows how easily "Electro-Sheet," when suitably backed, can be handled. It's easy to install because it is almost as flexible as paper, yet highly resistant to kinking, breaking or tearing.

DEFENSE NEEDS COPPER

"Electro-Sheet" Copper may not be used for building construction after Jan. 1, 1942, except as provided for under Conservation Order M-9-c, Paragraph B, amended Nov. 1, 1941. This unique product has found many defense applications, including damp-proofing defense and officers' quarters of both Army and Navy.

4195A

ANACONDA
from mine to consumer



The house shown here is in Central Islip, New York. The architect was Eugene Marten; the contractor, Harold McGowan. This "Electro-Sheet" is Copper-Armored Sisalkraft—made by The Sisalkraft Co., 205 West Wacker Drive, Chicago.

R. E. Anderson was the architect for this work in Wayne, Illinois. Herman Wendler was the contractor. This "Electro-Sheet" product is also Copper-Armored Sisalkraft.

. . . Let Grinnell Engineers help you plan it as a blended part of the building's design.

That building you are planning now is almost certain to have Sprinkler Protection. Include it in your original plans . . . let it be a part of your building's functional design . . . or it will be added later as a visible piping job.

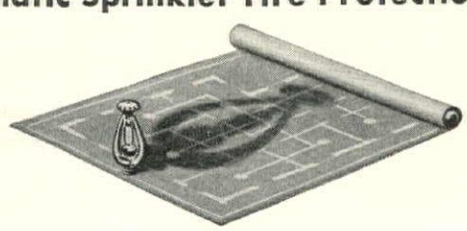
Grinnell – the world's leader in fire protection – can give you valuable help in designing the correct sprinkler system into your original plans. There is a Grinnell System to meet every building requirement . . . industrial, commercial, and institutional.

Your client will appreciate your suggestion of built-in protection, making the building safe from the start. You will appreciate the ingenuity with which Grinnell will help you conceal it within the structure. There is a Grinnell office as near as your telephone. Grinnell Co., Inc., Executive Offices, Providence, R. I. Branch offices in principal cities of United States and Canada.

GRINNELL

Automatic Sprinkler Fire Protection

A BLENDED PART OF YOUR BUILDING'S DESIGN



DON'T SADDLE YOURSELF WITH SIMON DEGREE!

STOP HIM WITH MODINES!

This is the pathetic figure of the man who stuck his neck out. He skimped on the quality of his heating equipment—and his architect let him do it.

Now *both* of them have Simon Degree on their necks. And their troubles are just beginning. Simon Degree is ineffective, inadequate heating in person.

Will this client blame himself because he bought built-to-meet-a-price equipment that will cost him a lot more to operate and maintain five years from now? He will not. He will blame his architect for not protecting him.

Your clients who are building, modernizing or expanding don't have to cut cost corners on heating equipment—*not these days.*

Modine Unit Heaters cost little, if any more in the beginning. In the long run they *always cost less.* The advanced design . . . the superior quality of material and construction will give your clients automatic, fast, effective, economical heating . . . not only *now,* but *years* from now. That's the kind of performance that holds and builds a reputation for the architect.

Horizontal and Vertical Delivery models in sizes to meet every need. Recently expanded Modine production facilities assure delivery as prompt as any in the industry.

Write for the latest literature

MODINE MANUFACTURING CO., 1736 Racine St., Racine, Wis.

Look in your phone book for Modine representative's name —"Where to Buy It" section under Heating Apparatus.

HORIZONTAL DELIVERY MODEL

VERTICAL DELIVERY MODEL

modine

THE UNIT HEATER THAT IS FASTER AND EASIER TO INSTALL

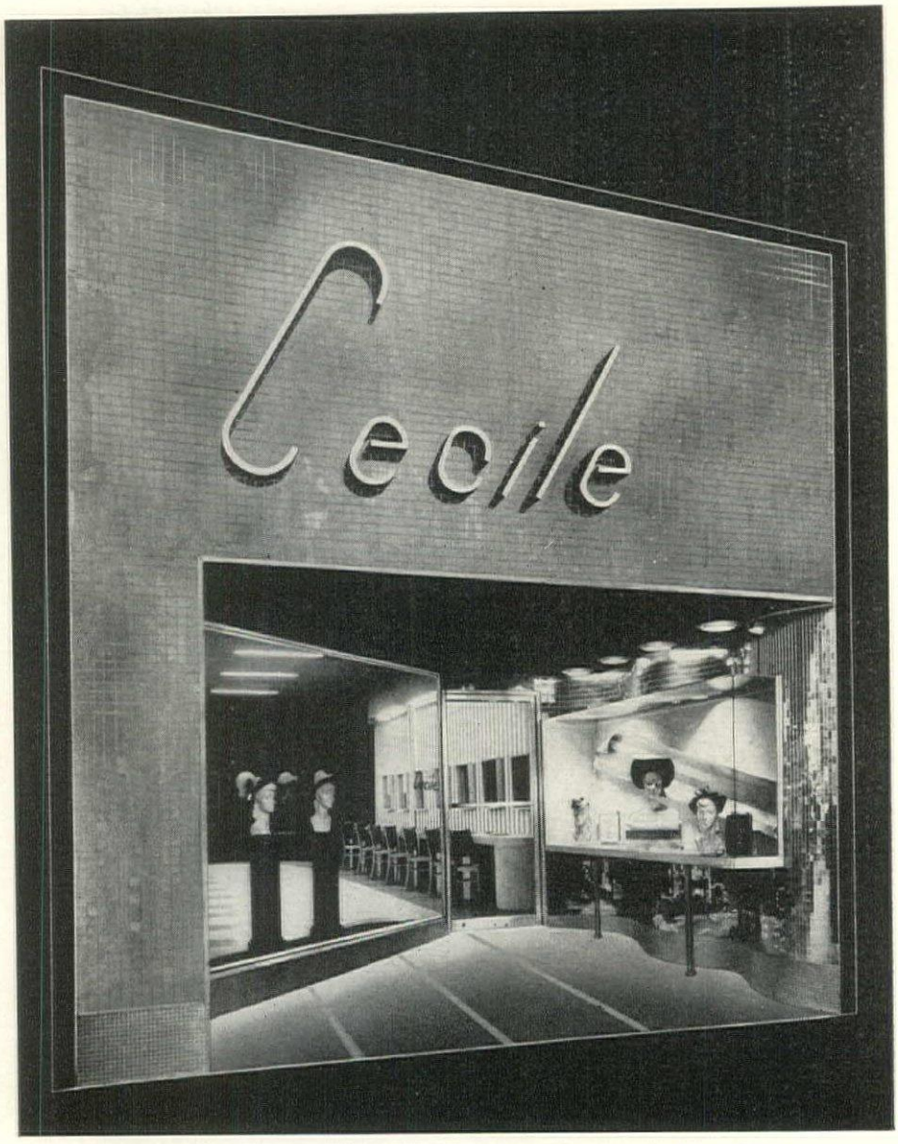
COLORFUL

★ ★ ★

Scintillating

★ ★ ★

SMART



Lustragold and Green Mirror Flexglass Store front; Cecile Shop, Philadelphia, Pa., Angelo Bisenz, Designer; (240 sq. ft. of Flexglass used).

This store front bejeweled with Lustragold and Green Mirror Flexglass is arresting... unforgettable. Its freshness and smartness make it an outstanding example of the modish style that today's designers are creating with Flexglass. Available in 30 brilliantly-beautiful colors and patterns, Flexglass removes the last barrier to full free expression because it is easily and speedily applied to any smooth, hard surface, indoors or out, flat or curved. At your bidding you now have rainbow colors, in glass that bends, to transform walls, panels, ceilings, fixtures and columns... a material with which to express the distinctive schemes you have wanted to create in glass.

Flexglass

THE GLASS THAT BENDS

THIRTY COLORS

UNITED STATES PLYWOOD CORPORATION, 103 PARK AVENUE, NEW YORK—*Manufacturers of Flexwood*

Flexwood and Flexglass are manufactured and marketed jointly by The Mengel Co., Louisville, Ky., and the United States Plywood Corp., New York

MAKE THIS TEST — *Prove* BRIXMENT is BEST!

1

Above: A cylinder of Brixment mortar (left) and a cylinder of mortar made with 50-50 cement and lime mortar (right). Both specimens were made at the same time, and subjected to exactly the same treatment. After curing for 30 days, ¼″ of water was put into the tray and the cylinders were alternately frozen and thawed 15 times. Note in photo 2 that Brixment mortar remains intact, whereas the other mortar has crumbled badly. This simple test can be made in any ice-manufacturing plant.

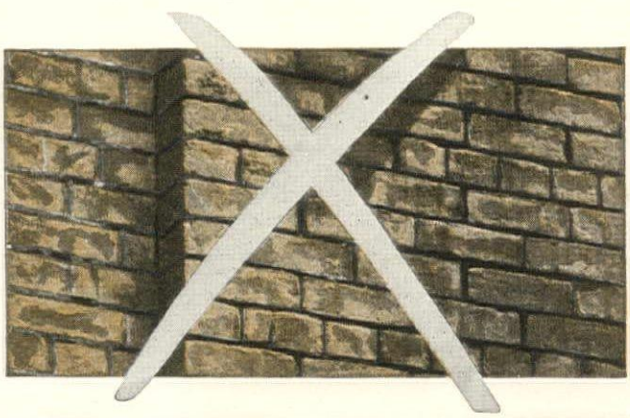
2

BRIXMENT *Makes More* DURABLE *Mortar!*

FOR permanent strength and beauty, mortar must be *durable*—must be able to withstand the alternate freezing and thawing to which it is subjected many times each winter.

Brixment mortar *is more durable.* This greater durability is due partly to the strength and soundness of Brixment mortar, and partly to the fact that Brixment is waterproofed during manufacture. This waterproofing helps prevent the mortar from becoming saturated—therefore protects it from the destructive action of freezing and thawing.

Walls built with Brixment mortar therefore *retain* their original strength and appearance. Even in parapet walls and chimneys, where exposure is particularly severe, Brixment mortar will almost never require re-pointing.



BRIXMENT

For Mortar and Stucco

Louisville Cement Company, Incorporated, Louisville, Kentucky. Cement Manufacturers for Over a Century.

YOU'VE BEEN

TO BUILD 300,000 DEFENSE HOMES...

Now Is the Time to Do the Job Right... So There Will Be No Kick-Backs Later!

ALL OF US in the building business have been issued our marching orders. You've got to build 300,000 homes, not one of which can cost more than $6,000. You've got to build those homes before the snow melts next spring. You've got to get defense workers into those homes — happily.

You've got the job of building 300,000 homes that will stay rentable or saleable, after the defense job is done, and peace is with us again. You can't build shoddily—you must build for the future.

Let's not short-change the public! Let's build defense homes fundamentally sound. Let's build good homes—with good foundations, with good structural framework, with good walls and roofs, with *good windows*.

The Andersen Corporation is ready to help you do this job right. We're making windows—windows you can put in your defense homes with the confidence that they'll satisfy, both from the standpoint of performance and cost.

A word or two further regarding cost. You can buy cheaper windows than Andersen. But you can't buy better windows. You can't buy windows that give you any more for your money. Andersen Windows have frequently been used successfully in low-cost homes. They were used exclusively in the original $3,200 Design for Happiness homes, which cost owners only a dollar a day. Hundreds of other low-cost homes have been built using Andersen Windows. Their builders have built soundly, using good windows, without getting costs one speck out of line. These builders report that Andersen Windows are a big factor in the ready sale of these homes.

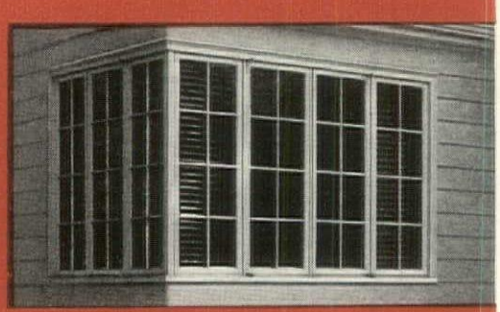
Don't take a chance on leaky, drafty, balky windows. Use windows you know are good. Use windows that don't deplete needed stocks of metals. Use windows that will save coal and oil needed for defense. Use windows that can be installed in a hurry. Use Andersen Lifetime Windows.

★ **Andersen Horizontal Gliding Windows**

Never before a window like this! It glides from side to side, not up and down, or in and out. No weights, no hinges, no springs. Sash lift right out for cleaning. Weathertight, leak-proof, weatherstripped, factory-fitted. Wood frame screen with 18 mesh bronze wire. Doubleglazing optional.

★ **Andersen Narroline (Double Hung) Windows**

This completely weather-stripped wood window unit is made of clear pine, toxic-treated to prevent decay and termite damage. Sash are easy to operate, and are counterbalanced the trouble-free way with flat weights hung on sash chains. Leak-proof frame, weathertight wide blind stop construction.

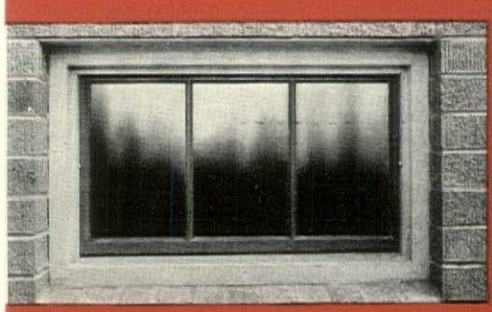


★ **Andersen Casement Windows**

The most weathertight window available today. Outswinging sash, equipped with inside screen and removable double glazing (optional). Completely weather-stripped. Toxic-treated clear pine, precision fitted at the factory. Sash operated by special hardware working independently of screen.

★ **Andersen Basement Windows**

A completely prefabricated, packaged basement window unit, protected against moisture decay and termite damage. Sash hung in frames. Opens to two positions. Completely weather-stripped. Equipped with screen and storm sash (optional). Sash glazed and hung in frames with all hardware in place.



Write Bayport for Details or See Sweet's Architectural Catalog

Andersen Corporation · BAYPORT, MINNESOT

DRAFTED

SUNNY, AIRY

Sunny homes, well ventilated homes, are built with generous window areas. Use Andersen stock-size window units in combinations to achieve maximum fenestration, economically.

INDIVIDUALITY

A home gains individuality by varying window treatments. With the same floor plan,—you can vary Andersen window treatments and make small homes look different.

RENTABLE, SALEABLE

Andersen window units give a small home an attractive appearance. Attractive homes won't be a drug on the market—they'll sell or rent permanently. Good windows help sell homes!

ECONOMICAL

Coal and oil are vitally needed for defense industry. Andersen windows are completely and efficiently weatherstripped — save fuel. They're made to operate easily — for a lifetime! That saves on repair bills.

SAVE TIME

Andersen window units are completely prefabricated. Installation is a matter of minutes. Time-wasting, cut-and-try methods of installation are eliminated. When your labor supply is low—time is valuable!

WOOD WINDOWS
NO DRAIN ON DEFENSE RESERVES

There is no shortage of lumber. When you use Andersen wood window units, you make no demand on metals urgently needed by defense industries.

ANDERSEN WINDOWS can be furnished by any established lumber and millwork dealer; are readily available in most sections from the stocks of near-by distributors.

Only the Rich CAN AFFORD POOR WINDOWS

LETTERS

REVERSE APPROACH

Forum:

. . . Your proposal of a Government fact-finding survey to provide data for advance planning for the post-war period is one which should meet with the enthusiastic approval and support of all broadminded and clear-sighted members of the building industry. It is woefully apparent that private enterprise has contributed very little in this direction and there is little basis to assume that it ever will. It appears to me, therefore, to become an important function of the Government and this breathing spell in the construction industry should be an ideal time for the conduct of such a survey. And I agree that architects should be particularly qualified for identification with such an enterprise.

As I see it, great good can come out of this period if we regard it not as a drought but as a chance to rest an heretofore improperly developed soil and an opportunity to sow the proper seeds from which will germinate a broader concept of planning, as well as the architects' proper relationship to community development. Now is the time for architects to do a little thinking.

Most architects have been so busy with the many small details demanded in conscientious service to their individual clients, they have failed to give thought to the broader concept of community or regional planning — they have failed to recognize either their civic responsibility in this regard or the fact that the architect's education and training should, by proper application, peculiarly qualify him for such valuable service.

We architects have failed to recognize that our traditional planning approach must be reversed, that each of our little construction jobs is unimportant and a distinct failure in planning unless it harmoniously becomes a functional unit within a broad integrated pattern of development. We have failed to see the forest because of the trees.

In the meantime we have permitted the job of planning and developing our communities to be horribly and inexcusably mishandled by incompetent politicians, real estate speculators and so-called engineers paid with taxpayers' money to handle a job they are technically and temperamentally unqualified for. Perhaps the reason that more architects have not entered into this picture is because there has been something basically wrong with our system of architectural education, plus the fact that the organized architectural profession has taken no steps to educate or enlighten the public to the possibility and importance of proper community planning.

We architects were trained for the design of individual buildings, we have been contented to serve in this limited capacity and it is but natural that the public accepts us on this basis. In my generation, at least, the architectural school did not equip or inspire us with a broad concept of planning with view to a clear understanding of land use and control.

I am encouraged to believe, however, that the picture is changing and that our architectural schools are beginning to realize the importance and desirability for a change in the basic training of architects.

This is a good time to stop, take our bearings and set a more accurate course for the future. Therefore, I am most enthusiastic about the possibilities of the survey you propose and am with you 100 per cent in any little way I may be able to cooperate.

The "Post War Pattern" article and the accompanying comments of the advisory panel in your September issue seems to point up the basis for such a survey and an excellent argument to help put it across.

I read this article and comments, by the way, with tremendous interest and pleasure,—although to me the article itself indicates a broader concept of the problem than the comments of the advisory editors, many of whom appear to be still bogged down by the restricted outlook that has been largely responsible for our present ills. Two hundred advisors can give a lot of bad advice, so be careful!

H. Roy Kelley

Los Angeles, Calif.

TOO STRONG

Forum:

. . . It seems to me that your characterization of Building as "chaotic" is inaccurate. The building process may be amorphous or otherwise lacking in rigid form, and is relatively inefficient as a fabricating process when compared with those used in the manufacturing of automobiles, steel sheets or glass bottles. For efficient operation the organization of this process admittedly is much too elaborate, involves too many separate individual enterprises, trades and crafts. Also, the materials of construction and the techniques of their fabrication into finished structures thus far have responded very niggardly to the persuasion of applied science and modern technology. Chaotic, however, is much too strong a word to apply to this process. In view of the intricate character and magnitude of many building projects the effectiveness with which they are organized, designed, financed and fabricated frequently is remarkable.

Lowell J. Chawner

Washington, D. C.

NOT TOO LATE

Forum:

The current article in the Post-War Pattern series is a fine discussion of the problems of regulation and standardization in the construction field. Everyone should read it carefully for real instruction.

Having worked with and studied the development of codes, it occurs to me that if any approach to the application of the modern theory of the legal control of "rule by regulation" should logically be applied to any definite problem, it should be used in the matter of keeping codes up to date. Codes are not static implements nor preferential charters and the theory of an orderly production of "rules with the intent and force of law" promulgated after due course of investigation and public hearings, is a perfect example of the usefulness of the new approach.

Our State has a code set-up of this sort, but it is not implemented as yet to have the proper force behind it. Maybe your statement may stir our own citizens interested in our business to do something about our "status quo."

Our "defense" and "citizen" housing hangs in the balance due to the code restrictions met on every side. The strapping down of required materials and the inability to use substitutes due to inertia of legislative methods is another agreement for my theory. Maybe it is not too late to do a little selling on this type of operating plan for codes.

F. S. Cannon

Indianapolis, Ind.

NO EMPTY PHRASE

Forum:

May I congratulate you on the excellent article on standardization. This is a subject on which there are many popular misconceptions — for instance, the vague feeling in the minds of many people that standardization in the building field would hamper freedom of expression and individuality in the design of homes. Of course the fact is that only a relatively

(Continued on page 64)

What's your outlook for '42?

MILLER-IVANHOE asks...

- Are your industrial clients doing more nightwork?
- Does defense demand more plant capacity?
- Would a remodeling job relieve the pressure?

ARCHITECT-ENGINEERS ON DEFENSE PROJECTS:

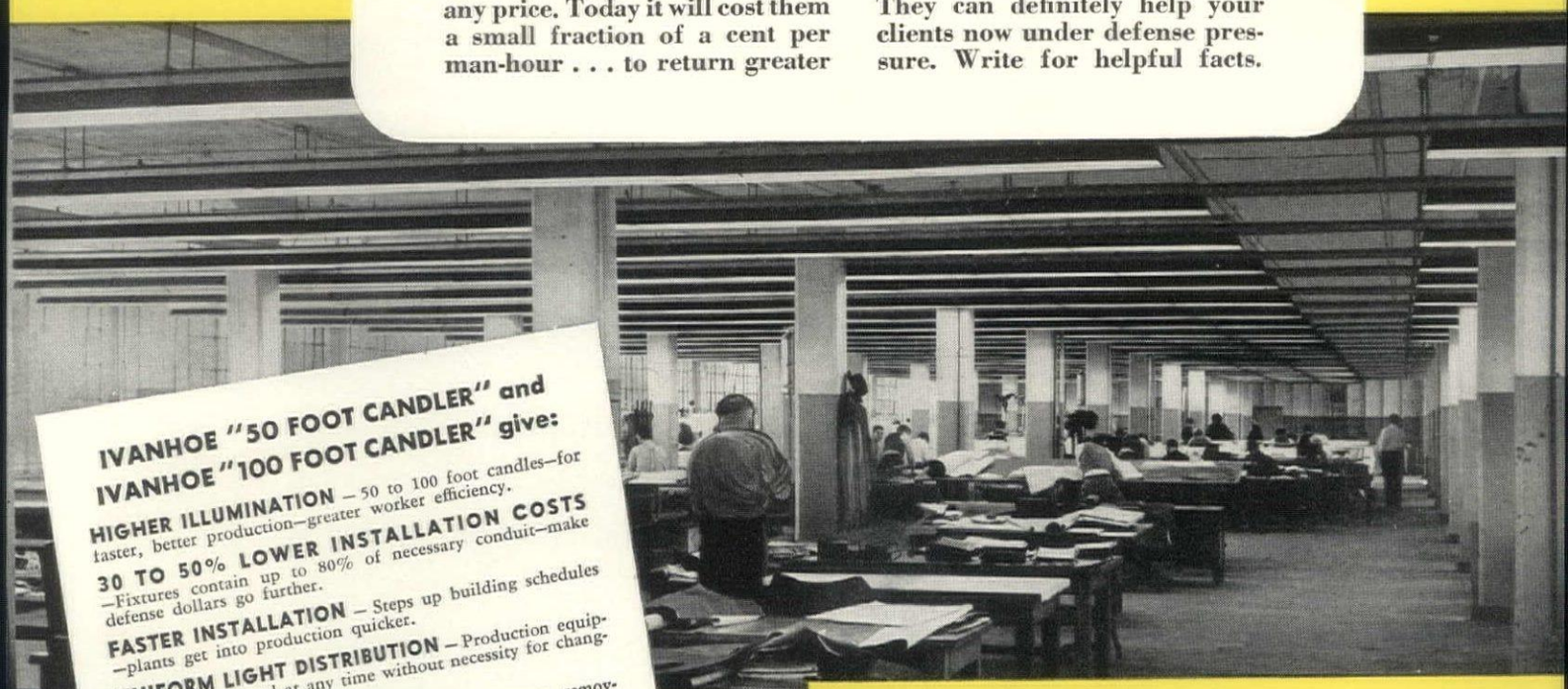
There is no excuse today for prime contractors and subcontractors being "slowed down" by poor lighting. Not when they can have 50 foot candles or better in their plants with IVANHOE "50 FOOT CANDLER," IVANHOE "100 FOOT CANDLER" and MILLER TROFFERS for their offices – the *original* continuous wireway fluorescent lighting systems.

Five years ago they couldn't buy this grade of "seeing" at any price. Today it will cost them a small fraction of a cent per man-hour . . . to return greater and better production measured in dollars.

In case after case . . . in defense plants of all kinds, large and small, handling a wide variety of products . . . and under varying conditions, these guaranteed continuous fluorescent lighting systems have actually *proven* their ability to deliver such benefits. Today lighting experts pronounce them "*the new lighting standard for industry.*" They can definitely help your clients now under defense pressure. Write for helpful facts.

rompt Deliveries—
uperlative Service

are constantly striving to
o deliveries moving smooth-
fast and ahead of building
edules. And no major instal-
on goes in without a Miller-
nhoe engineer on the scene
to live with the job until it
perating with maximum re-
s for you.



IVANHOE "50 FOOT CANDLER" and IVANHOE "100 FOOT CANDLER" give:

HIGHER ILLUMINATION – 50 to 100 foot candles–for faster, better production–greater worker efficiency.

30 TO 50% LOWER INSTALLATION COSTS –Fixtures contain up to 80% of necessary conduit–make defense dollars go further.

FASTER INSTALLATION – Steps up building schedules –plants get into production quicker.

UNIFORM LIGHT DISTRIBUTION – Production equipment can be moved at any time without necessity for changing lighting.

SIMPLIFIED MAINTENANCE – Easy to clean, removable porcelain-enamel reflectors–save valuable man-hours for production.

ALLOWANCE FOR FUTURE LIGHTING NEEDS –Illumination increases up to 45% practical without new fixtures–lower obsolescence.

THE MILLER COMPANY

MERIDEN, CONN.

Pioneers in Good Lighting Since 1844

• MILLER OFFERS A COMPLETE LINE of incandescent and fluorescent lighting equipment, backed by almost 100 years of commercial and industrial lighting specialization. There is an answer to *your* problems in this *unbiased* lighting service.

NO. 9

ALUMINUM, DEFENSE, AND YOU

SIX MORE PLANTS IN FIVE STATES ON THE WAY

DEFENSE PLANT CORPORATION OWNS THEM. We've been designated to build them . . . fast.

Actually, when the names went on the dotted lines of the contract on August 19, we had already placed more than $16,000,000 worth of orders for some of the equipment and materials it takes longest to make and get.

FIVE OF THESE PLANTS will smelt aluminum. Their combined capacity is planned for more than 500,000,000 pounds a year, which is greater than the nation's entire production of aluminum in 1940. Locations: Massena, N. Y., Spokane, Wash., Troutdale, Ore., Los Angeles, and in the State of Arkansas.

The sixth plant will refine alumina from bauxite. Its billion-pounds-a-year capacity adds 58% to the nation's alumina capacity. It will be located at Bauxite, Arkansas.

HOW GOES CONSTRUCTION? At this writing, as fast as title is secured to the sites, contracts are being let for grading and foundations so as to be ready for the structural steel, which is coming as rapidly as it can be gotten.

What is more important, the aluminum plants are scheduled to deliver ingot by the summer of 1942; the refining plant to deliver alumina in early summer, 1942.

WE'VE ASSIGNED a large staff of men full time to headquarters engineering, purchasing, and accounting on this government building job.

We're sending competent and experienced management men out on these jobs as superintendents and other staff executives on construction, and for subsequent operation of such of these plants as we are designated to operate.

EVERY KNOWN IMPROVEMENT in design and construction and equipment is being incorporated in these plants. We intend that every dollar that will be spent shall be the best dollar's worth that experience can build. We do not make one cent of profit from this assigned job of construction.

We think we know how to get the government value-received for its money, because we are completing the expenditure of more than $200,000,000 of our own money in an expansion program which started after the beginning of the present war. Some of this expenditure is in new alumina and aluminum plants which will bring our own Alcoa capacity up to more than 700,000,000 pounds a year. The remainder is in tremendous expansion of facilities for fabricating every form of aluminum.

DEFENSE, GENTLEMEN, is getting its aluminum.

ALUMINUM COMPANY OF AMERICA

ALCOA ALUMINUM ★

ARCHITECT'S QUIZ

How many of these questions can you answer?

1. *What is a fundamental principle in preventing accumulation of moisture condensation in walls?*

2. *Are indoor humidities an important contributing factor in condensation problems?*

3. *What scientific method of construction materially reduces the possibility of condensation?*

HERE ARE THE ANSWERS

1. "A fundamental principle in preventing accumulation of moisture is to place the moisture barrier on or in the warm side of the wall rather than the cold side where it is so often placed."*

Research Bulletin No. 271, Iowa State College of Engineering and Agriculture

2. "Most of the trouble occurs in homes where the relative humidity is maintained at 40 per cent, in which case there may be evidence of condensation after every cold snap."*

Condensation Problems in Modern Building, Forest Products Laboratory, Madison, Wis.

3. "The Insulite Approved Wall of Protection — because Sealed Graylite Lok-Joint Lath, with an asphalt vapor barrier on the stud side, effectively retards vapor travel; and Bildrite Insulating Sheathing outside permits whatever vapor may escape the vapor barrier to pass on to the outside air."*

Sealed Graylite Lok-Joint Lath

Bildrite Sheathing

* A transcription of these and other experts' opinions on the condensation problem will be sent you on request. Address Insulite, Department AF-121, Minneapolis, Minnesota.

INSULITE

MANDO

MINNEAPOLIS MINNESOTA

Division of Minnesota and Ontario Paper Company

THE *ORIGINAL* WOOD FIBRE *STRUCTURAL* INSULATING BOARD

Picture of a Star Salesman

READY TO WORK FOR YOUR CLIENTS

WHO'S the star salesman in this camera display room? The floor, of course. It is low-cost, business-building Armstrong's Asphalt Tile. See how it adds life and color to the whole room—sets off the merchandise to the best advantage. Floor beauty as you see it here, or in any other combination of the many attractive colors available, can be had well within budget limits.

Any office manager or proprietor who "hires" a salesman like this will be smart indeed. He'll not only make his establishment more inviting to customers and clients, at low first cost, but he'll also save money every month in maintenance. All that's needed to keep this floor clean and new-looking for years is routine sweeping plus occasional washing and waxing. Costly refinishing is never needed.

Armstrong's Asphalt Tile is remarkably resistant to abrasion—gives years of trouble-free service even under the heaviest traffic. And it's quickly installed by hand—block by block—with minimum interruption to business. You can walk on it immediately.

THIS FLOOR HELPS SELL camera equipment for Folmer Graflex Company, Rochester, N. Y. Architect Frank M. Quinlan wrote the specifications: Armstrong's Asphalt Tile in Saddle Tan, Malay Brown, Pompeian Red—with contrasting border of Spanish Red and Mahogany. Sibley, Lindsay & Curr Company was the flooring contractor.

• • •

See Sweet's Catalogs ("Flooring" Section), or write today for a sample, illustrated literature, and specifications. Armstrong Cork Company, Resilient Tile Floors Department, 1204 State Street, Lancaster, Pennsylvania.

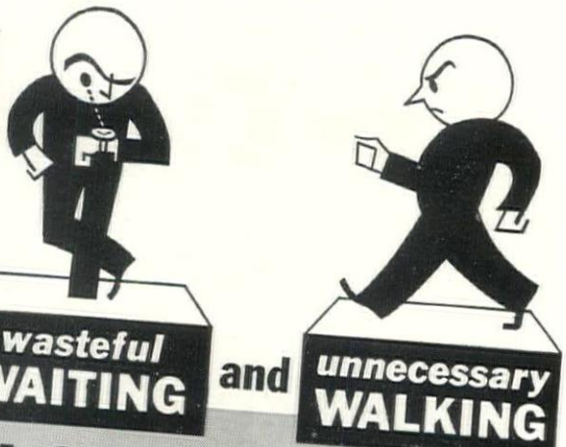
ARMSTRONG'S ASPHALT TILE

The low-cost floor (A) *with the luxury look*

MADE BY THE MAKERS OF

ARMSTRONG'S LINOLEUM • LINOTILE (OIL-BONDED) • CORK TILE • RUBBER TILE • LINOWALL

DISCOVERED!



A WAY TO END wasteful WAITING and unnecessary WALKING

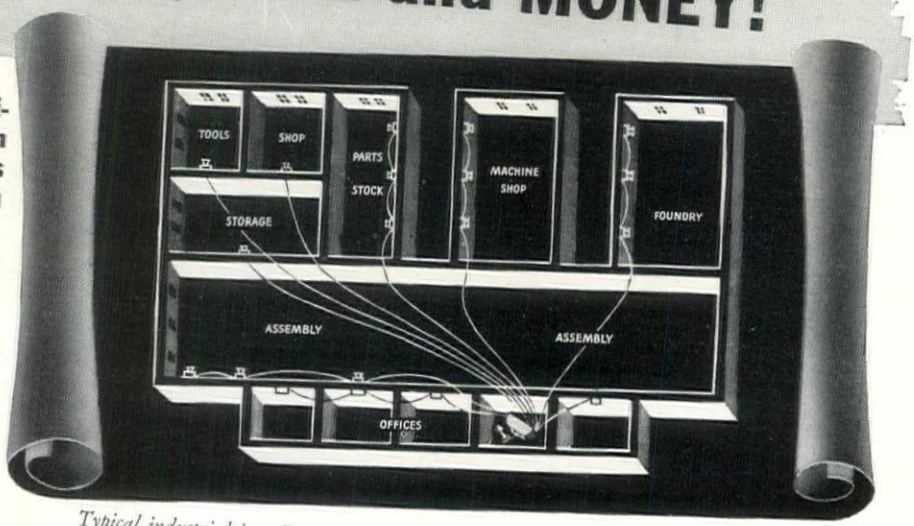
RCA Victor INDUSTRIAL SOUND SYSTEM SAVES STEPS, TIME and MONEY!

Here's equipment that coordinates management, production and man power . . . increases efficiency . . . ends lost motion . . . cuts expense

Factory managers—and the managers of power plants, hospitals, hotels, business offices—*all* are familiar with the *waste* of walking and waiting. And because RCA Victor Industrial Sound *eliminates* this waste, more and more of them are waxing enthusiastic about it each day.

By saving in three important ways—steps, time and money—an RCA Victor Industrial Sound System becomes a real asset to any organization. It converts *wasted* time into *working* time by providing instantaneous communication over large and limited areas. With this system everyone in the building—or buildings—may be addressed simultaneously, or the conversation may be confined to separate groups or individuals.

Although it promotes efficiency and cuts down operating cost, this high quality equipment is moderately priced. We will gladly furnish full details about quality-engineered RCA Victor Industrial Sound Systems—for any number of loudspeaker outlets—on request. Just write or mail coupon. If you wish, a specially trained RCA sound engineer will discuss any sound coverage problem with you.



Typical industrial installation of RCA Victor Sound System. Communication through any individual loudspeaker outlet—or all outlets simultaneously—is provided.

HOW RCA VICTOR Sound System Saves Steps, Time, Money

1. PRODUCTION—Instant communication along production lines, between control positions, between mill floor and overhead moving crane, between office and warehouse. Facilitates the orderly movement of raw and finished materials to accumulation points. Positive instruction to personnel *above* extreme noise level in mills, shops and foundries.

2. PERSONNEL RELATIONS—Safety talks . . . Music during lunch and rest periods, and to relieve fatigue . . . Instructive talks to improve efficiency . . . Management talks to entire personnel or separate groups . . . Recreational or social functions.

3. ADMINISTRATIVE CONTROL—Call and paging system to locate executives, key men and visitors . . . Time, Fire and Safety Signals . . . Instant contact in emergencies.

THESE MODERN INDUSTRIAL BUILDINGS KNOW THE BENEFITS OF AN RCA VICTOR SOUND SYSTEM

H. J. Heinz Company, Pittsburgh, Pa.; Philadelphia Electric Company, Philadelphia, Pa.; Columbia Chemical Corporation, Barberton, Ohio; Campbell Soup Company, Camden, N. J.

We will be glad to supply information concerning scores of other RCA Victor industrial installations.

RCA VICTOR PREFERRED TYPE RADIO TUBES
For Finer Radio Performance

Trademark "RCA Victor" Reg. U. S. Pat. Off. by RCA Manufacturing Company, Inc.

RCA Victor
INDUSTRIAL SOUND SYSTEM
RCA MANUFACTURING COMPANY, INC., CAMDEN, NEW JERSEY
A SERVICE OF THE RADIO CORPORATION OF AMERICA
IN CANADA: RCA VICTOR CO., LTD., MONTREAL

Commercial Sound Division (5-7)
RCA Manufacturing Co., Inc., Camden, N. J.

Please send me folder (Form 152509) describing RCA Victor Industrial Sound System.

Name_____

Address_____

City_____ State_____

AF-12

POWER

In 1769 James Watt harnessing the power of steam brought the "industrial revolution", giant new economies in production and a higher standard of life.

In 1932 unharnessing the latent power of cement through a technologic advance, "cement dispersion", brought better concrete, greater efficiency and economy.

IN STEP WITH PROGRESS.....

CEMENT DISPERSION

CEMENT DISPERSION

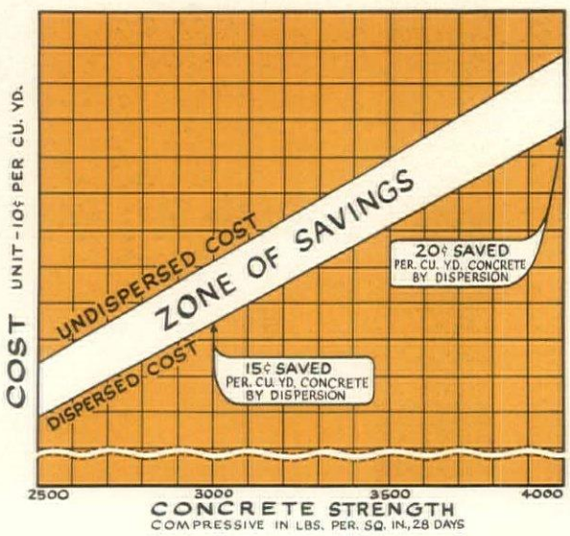
INCREASES STRENGTH 25%

ONLY a part of the cementitious value of all cement is utilized under usual construction conditions. [Anderegg and Hubbell, A.S.T.M. 29 II 554 (1929)].

This fact results from the inherent tendency of all cement to flocculate (or bunch up) when water is added.

CEMENT DISPERSION startling technologic discovery, imparts new power to all cement by activating the dormant cement, driving apart the flocculated particles and exposing more surface area for hydration.

Dispersed cement produces at least 25% higher compressive strength — thus **SAVINGS** are guaranteed in *all concrete structures.*



Based on cement at 50c per sack.

OTHER ADVANTAGES

1. **Durability increased 50% or more.**
2. **Water reduction — up to 20% — slump increased 150% or more for given water ratio.**
3. **Increased water-tightness — 20% or more reduction in absorption and permeability.**
4. **Reduced bleeding and segregation.**
5. **Reduced heat with minimum cement content.**

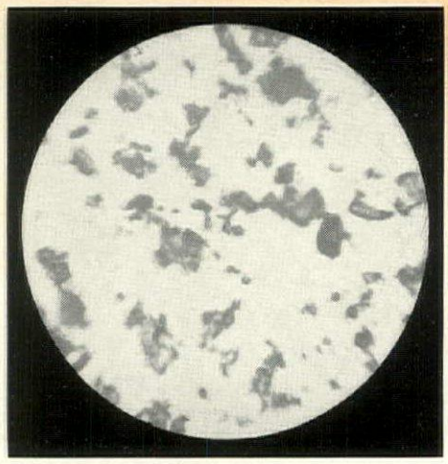
Send for the complete story on Economics of Cement Dispersion and Pozzolith.

THE MASTER BUILDERS CO.
CLEVELAND, OHIO • TORONTO, CANADA

HOW CEMENT DISPERSION WORKS

Investigation shows that with 28 days curing only 50% of the cement hydrates. [Anderegg and Hubbell, A.S.T.M. 29 II 554 (1929)].

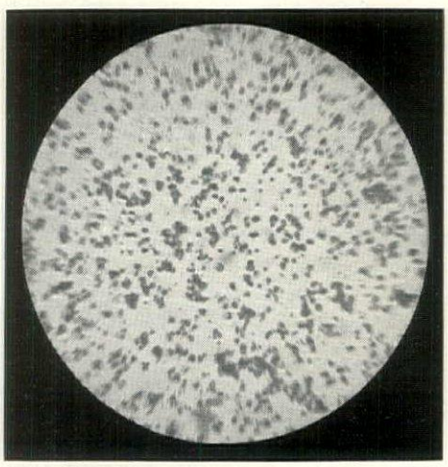
WITHOUT POZZOLITH



UNDISPERSED

Cement particles in their normal state in water tend to gather in bunches; i.e., flocculate. Water never reaches some particles and many are only partly hydrated. This reduces the effectiveness of the cement, entraps water within the clumps, requires an excess of water for placement and often results in bleeding and segregation. See photomicrograph above.

WITH POZZOLITH



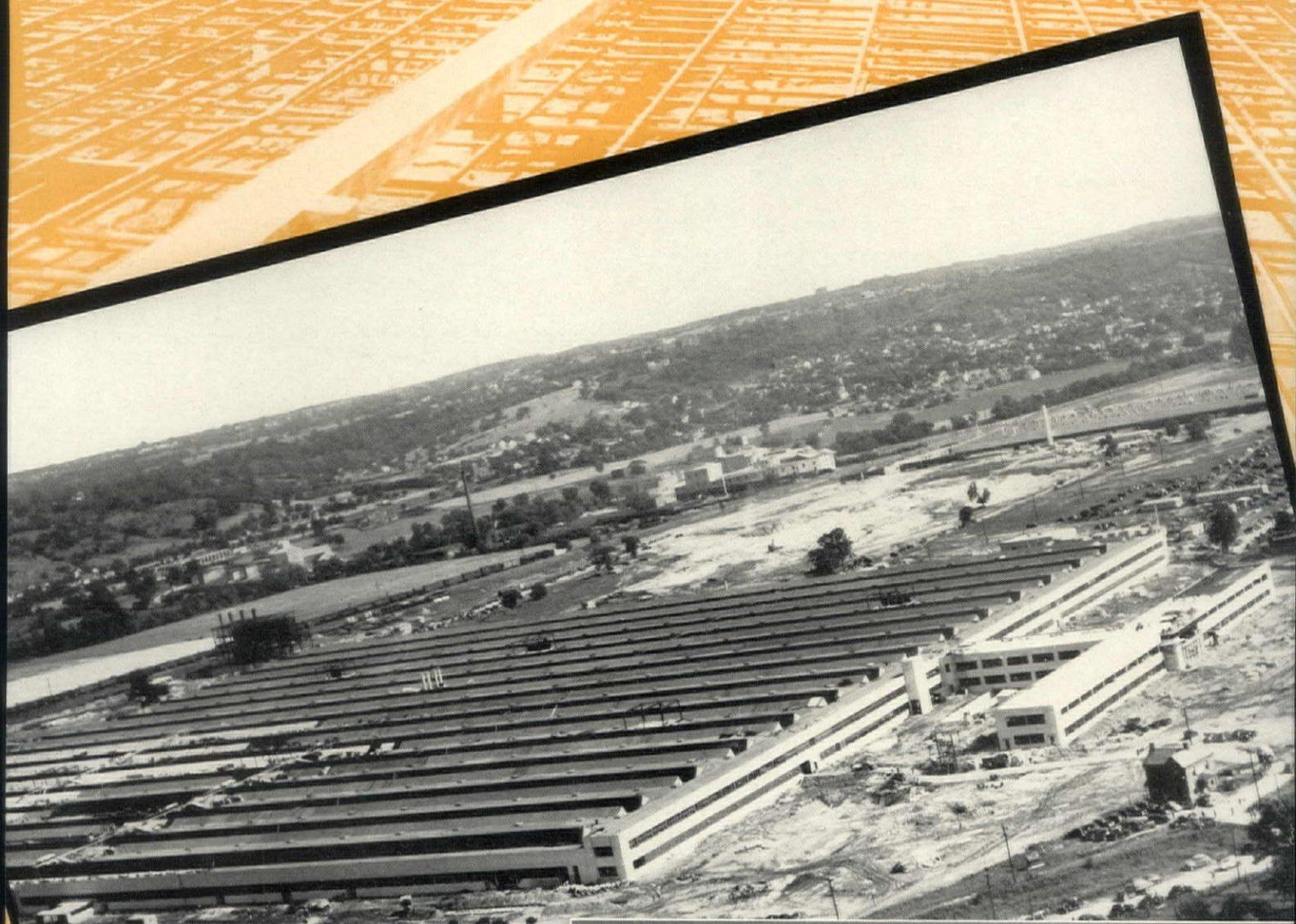
DISPERSED

With Pozzolith the dispersion principle operates to drive each particle apart, thus exposing all the cement particles to the vital hydrating action. See photomicrograph at left.

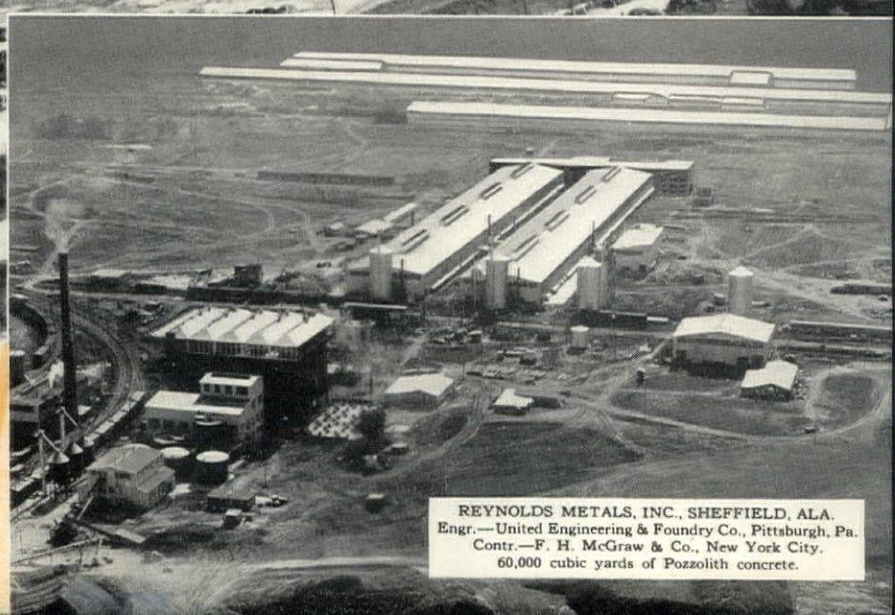
This dispersion makes the cement usable to its maximum efficiency since all the water is made available for lubrication of the mix and the entire surface area is exposed for hydration.

MASTER BUILDERS

Guarantees SAVINGS



WRIGHT AERONAUTICAL AIRPLANE ENGINE PLANT, LOCKLAND, CINCINNATI, OHIO.
Albert Kahn, Associated Architects and Engineers, Detroit, Michigan.
Cement Dispersion employed in both Pozzolith for mass concrete and one and one-half million square feet of heavy duty metallic armored floor finish.



REYNOLDS METALS, INC., SHEFFIELD, ALA.
Engr.—United Engineering & Foundry Co., Pittsburgh, Pa.
Contr.—F. H. McGraw & Co., New York City.
60,000 cubic yards of Pozzolith concrete.

To help bring the news to women...

Each day there is new evidence of the growing belief that the mass production of homes is ahead. New problems of design, manufacture, construction, finance, distribution, are absorbing the attention of the building industry. Newspapers and mass magazines are reporting these matters to tens of millions of families.

In helping to prepare this vast market to accept the new contribution of the architect, the industrialist, the builder, the banker, Revere believes it is important to speak to men and women in terms of their own needs and desires. The house of William Hamby, planned around a woman's household tasks, can help create an eager market of vital interest to every factor in the building industry.

In presenting these various concepts by leading architects and designers, Revere Copper and Brass Incorporated seeks only to stimulate public interest in better housing, confident in the knowledge that the greater use of copper and brass makes any house better to live in, better to own, better to rent or sell. The Revere Technical Advisors are always ready to help you with your problems.

REVERE COPPER AND BRASS INCORPORATED

Executive Offices: 230 Park Avenue, New York

"What! A house with no kitchen?"

"IT ALL depends on what you mean by a kitchen", says the noted architect, William Hamby, in telling about the better, lower-cost homes which tomorrow holds in store. "If, by a kitchen, you mean that place where a woman wears herself out stooping and stretching to get things out of cupboards, where it's hard to be quick or tidy, where she works early and late washing and scouring—then this house I've designed has no kitchen, I suppose.

"A house is not merely a shelter—it is a place to live. The way to make it better is to improve it for the one who has the most to do—the woman. As I conceive the house of tomorrow, it would be planned around the household tasks a woman does—cooking, serving, cleaning, laundering. And it develops that

such a house, without being actually larger, would have much more living space.

"I have started with a kitchen which is not just a room for cooking, but a perfect place for preparing your favorite recipes. It would be *planned* around recipes, with everything you need right at your finger-tips, with plenty of elbow and table room, with refrigeration, cooking and storage arrangements all in straight, handy rows, and with nothing behind your back except the dining area.

"There would be a long horizontal arrangement of cupboard space, in which the heavy utensils are just below shoulder height, with the lighter dishes on the shelves above. The whole length of the counter would be used for food storage, with compartments that hold each food at its own ideal temperature and humidity, including frosted foods and cereals.

"Everything would be grouped so that an entire recipe could be prepared from one spot without stooping or stretching. There would be no range—you would both cook and serve in electric utensils, each located according to recipe. Dish washing would be cut almost in half. Not only would this kitchen be a work-saver, but a living center too, because it is really the end-wall of the dining room.

"Of course such an arrangement permits a whole new organization of the house. So I have visualized such a house, planned to make housework fun instead of drudgery. Many of its parts would be made of copper to prevent rust, leaks and repairs. By mass production methods, such a house could be built complete with its 'super' kitchen and its laundry for little more than $3,000. In this way we can easily have homes tomorrow that will provide better living for millions."

WILLIAM HAMBY

Talented architects and engineers are busy developing new designs, new materials, new building techniques for today's housing emergency. Afterward, these can be available to build better homes for all.

It is too soon to predict exactly what form they will take. But it is certain that many more people can have real comfort and convenience in their homes. And in these homes copper is sure to play a vital part.

Already, Revere copper has given our homes protection against wind, rain, snow, termites—has provided us with clear, rust-free water, has helped to heat our homes more comfortably with less fuel, and has cut down both repairs and depreciation. Architects and engineers know that the more copper there is in a house the better it is to own or rent or sell.

That is why, in their plans for better homes, they are relying more upon copper, are using copper in new places for new purposes. Today, the copper industry is working for Uncle Sam, and copper is restricted for general use. But meanwhile, Revere research is developing new alloys and new forms of copper, new uses for copper, to help prepare the way for the better standard of living to come.

* * *

Naturally, Mr. Hamby was unable to describe the full details of his conception in this limited space. No blueprints are available, so Revere has prepared an illustrated folder which we will gladly send to you, free. Just write to:

REVERE

COPPER AND BRASS INCORPORATED

Executive Offices: 230 Park Avenue, New York

Horse-Sense SUGGESTIONS on FLUORESCENT LIGHTING—

You can save yourself a lot of headaches when you specify Fluorescent lighting equipment — and give your clients a lot more satisfaction — by following these four suggestions:

1. *Pick a manufacturer thoroughly experienced in fluorescent.* When you specify HYGRADE you get the benefits of the broadest experience in this field . . . for HYGRADE *pioneered* in fluorescent — has since brought out the *best* things *first* in fluorescent — has *exclusive patents* in fluorescent — and can therefore give you a *complete,* all-round *better* lighting job.

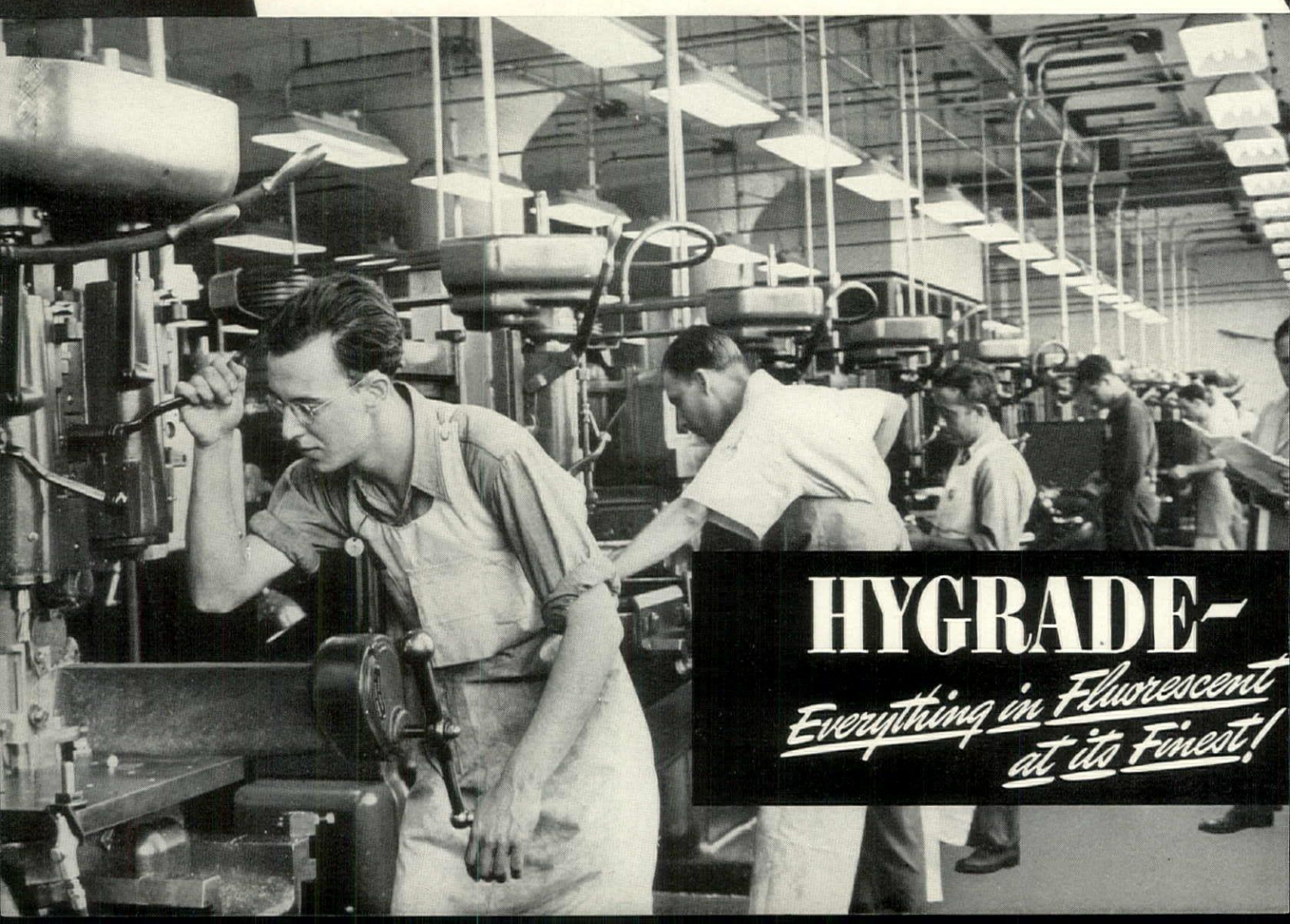
2. *Pick a manufacturer who believes in quality.* For over 40 years, HYGRADE has employed only the best — in engineering brains — materials — and fine workmanship. Results: Lamps that keep their brightness longer from end to end. Fixtures famous for long endurance, low maintenance, easy accessibility. Starters that really start and re-start. A complete line of quality-engineered equipment.

3. *Pick a manufacturer who stands behind his products.* HYGRADE makes everything for fluorescent lighting . . . gives a guarantee covering every part of every fixture!

4. *Pick a manufacturer whose equipment is easy to specify, and inexpensive to install.* HYGRADE designs, engineers, builds, assembles, ships and prices fluorescent fixtures COMPLETE.

Write today for free architects fluorescent data file — A.I.A. No. 31-F — containing catalogue, prices, specification sheets. HYGRADE Sylvania Corp., Salem, Mass. Dep't. A3, Est. 1901. Also makers of HYGRADE Incandescent Lamps and Sylvania Radio Tubes.

Brilliantly illuminated section of Sperry Gyroscope Company plant, Brooklyn, N. Y.



HYGRADE—

Everything in Fluorescent at its Finest!

An Invitation to Sales....

written by the architect, with a floor of Johns-Manville Asphalt Tile

(Top) *Marbleized No. 126 for field.* **(Bottom)** *Marbleized No. 102 for border.*

The eye-catching floor in the woman's apparel shop above was designed from these two marbleized colors.

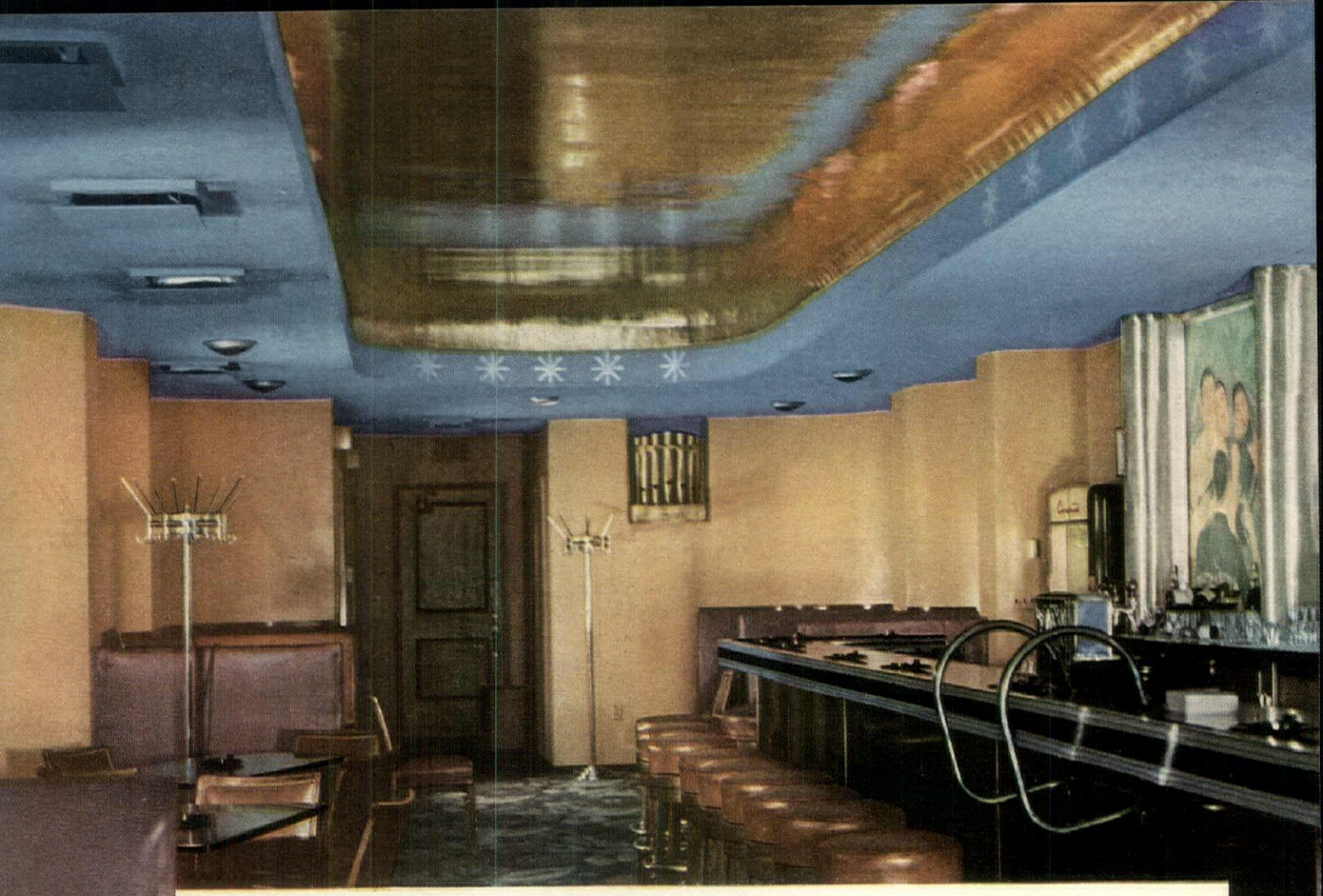
AS EVERY ARCHITECT KNOWS, an attractive, eye-catching floor is an essential in any modern store. And designing floors that say "Come in and buy" is easy with J-M Asphalt Tile. With its wide range of colors, sizes and patterns, this versatile flooring gives you exactly the effect you desire for any type of interior.

The beauty of the finished floor is matched only by its economy. Low in initial cost, J-M Asphalt Tile assures continued low-maintenance service. It effectively resists dirt and grime . . . safely withstands the punishment of heavy foot traffic . . . is easily cleaned to a lustrous surface.

Why not write an "invitation to sales" into *your* next specification—with a floor of Johns-Manville Asphalt Tile? For details, and for stimulating ideas on patterns for stores, offices, restaurants, play rooms, etc., send for a copy of the full-color brochure, "Ideas for Decorative Floors." Write Johns-Manville, 22 E. 40th Street, New York, N.Y.

All J-M Asphalt Tile Is Factory-Waxed!

Johns-Manville ASPHALT TILE FLOORING



McMahon's in Dearborn, Mich.; Bennett and Straight, Architects. The acoustical ceiling of K&M Sprayed "Limpet" Asbestos was painted to carry out the decorative scheme, without impairing its efficiency.

Acoustics unimpaired by paint... K&M Sprayed "Limpet" Asbestos

THE architects who designed McMahon's in Dearborn, Mich., had special requirements in mind for the ceiling. It was to be an acoustical ceiling, with a high noise reduction coefficient. A plain matte surface was needed, to contrast with the smooth, plaster walls—and the material had to be one that could be painted safely without impairing its acoustical efficiency.

Keasbey & Mattison Sprayed "Limpet" Asbestos provided exactly what was needed. Here's what Mr. John F. Swickle, Manager, says about "Limpet":

"We find your material outstanding compared to others we considered, in being fire-resisting, in allowing for the decorative scheme we required, and in giving well balanced musical tones in all parts of the room. Our patrons often speak of the pleasant, quiet atmosphere we provide.

"In short we are completely satisfied and recommend 'Limpet' for superior results."

When applied ¾" thick on solid backing, "Limpet" has the high noise reduction coefficient of .70. Its surface may be covered with as many as ten coats of oil emulsion paint without seriously impairing its efficiency.

Applied by spraying from a "gun," "Limpet" faithfully follows the contours of curved, recessed or irregular surfaces. It completely unties the architect's hands, offering full latitude in design and decoration.

"Limpet" sticks tight to any clean surface, regardless of shape or composition, without the need of mechanical systems or gadgets. It may be built up to any practical thickness to provide the specified degree of sound absorption. It is both fire-resistant and a highly efficient heat insulator (thermal conductivity .31 at 75 degrees F.). Only "Limpet" brings you all these advantages.

Nature made asbestos; Keasbey & Mattison has made it serve mankind—since 1873.

FREE . . . write Dept. 23 for new A.I.A. Catalog, giving full details on "Limpet."

K&M Sprayed "Limpet" Asbestos is still available without delay. Since we are cooperating fully with the National Defense program, we cannot tell how much longer this favorable situation will continue.

KEASBEY & MATTISON

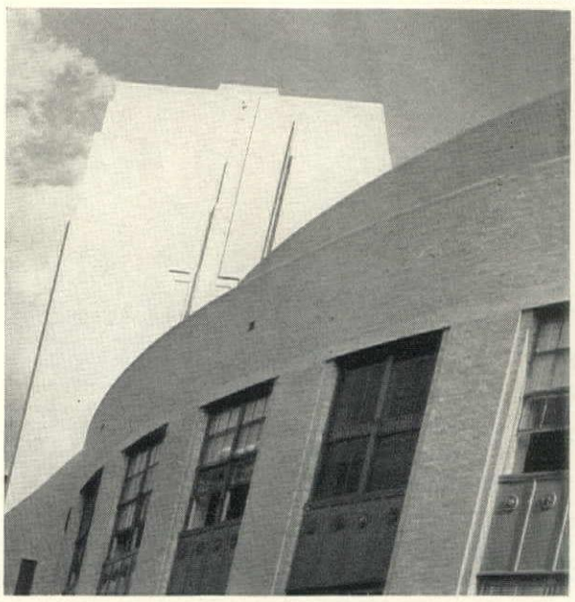
COMPANY, AMBLER, PENNSYLVANIA

THE ARCHITECTURAL FORUM DECEMBER 1941

Eisenstaedt-Pix

MAN OF THE MONTH . . . Housing's Judge . . . F. D. R. the Jury (page 44)

S. H. Gottscho



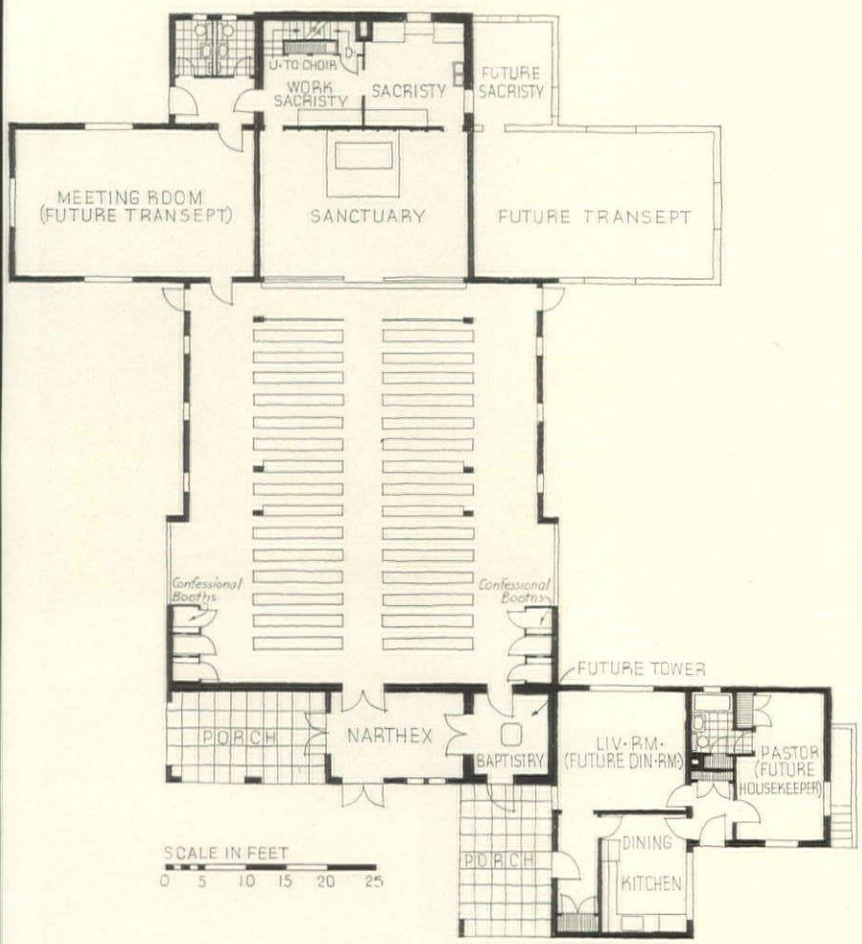
BUILDING OF THE MONTH . . . In a great tradition (page 435)

R. E. Leppert, Jr.

PROBLEM OF THE MONTH . . . In its place, tanks or stockpile? (page 383)

CHURCH OF OUR LADY OF THE LAKE, SEATTLE, WASH.

PAUL THIRY, ARCHITECT

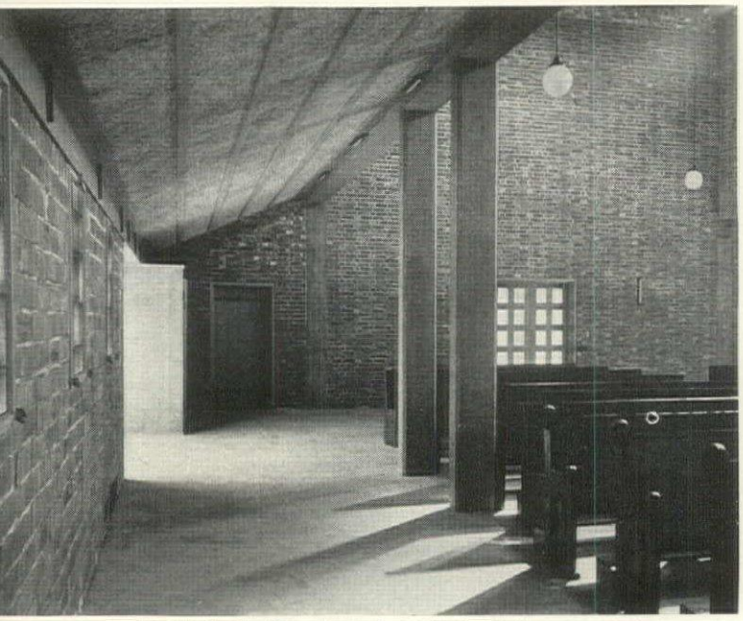


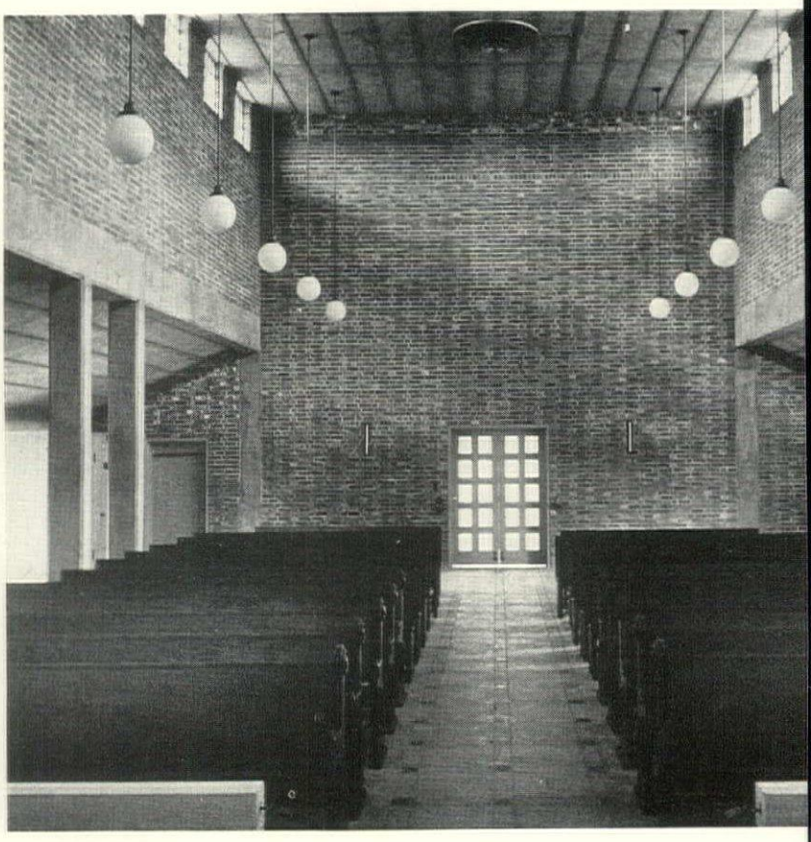
Of all the building types which have resisted the advance of modern architecture, the church, with almost two thousand years of accumulated tradition behind it, has been the strongest. The reasons are clear enough: arguments based on contruction, functional expression and contemporary planning mean very little when applied to a field in which architecture has been as much symbol as shelter and where plan problems have scarcely changed in centuries. Nevertheless, the contemporary solution is possible for the church if the architect is capable of imbuing his design with the necessary emotional content, and in such examples as this it may even seem preferable. The complete absence of pretense evident here seems entirely in accord with the oldest and most essential aims of the Church. In this connection the architect's statement is interesting: "The building was designed with due consideration for the recent consciousness of the Catholic Church regarding the early liturgy. Each material was used in its true representation, which in symbolism denotes truth in all matters. Having read so many reasons for the contemporary solution I am at a loss to explain one for myself. I attempted to resolve

(Continued on page 381)

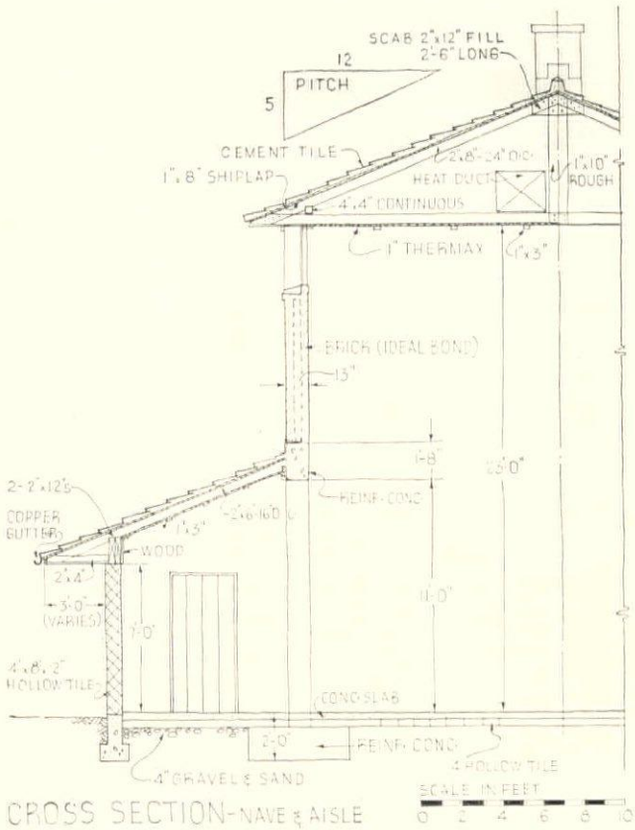
All photos, Ernst Kassowitz

CHURCH OF OUR LADY OF THE LAKE



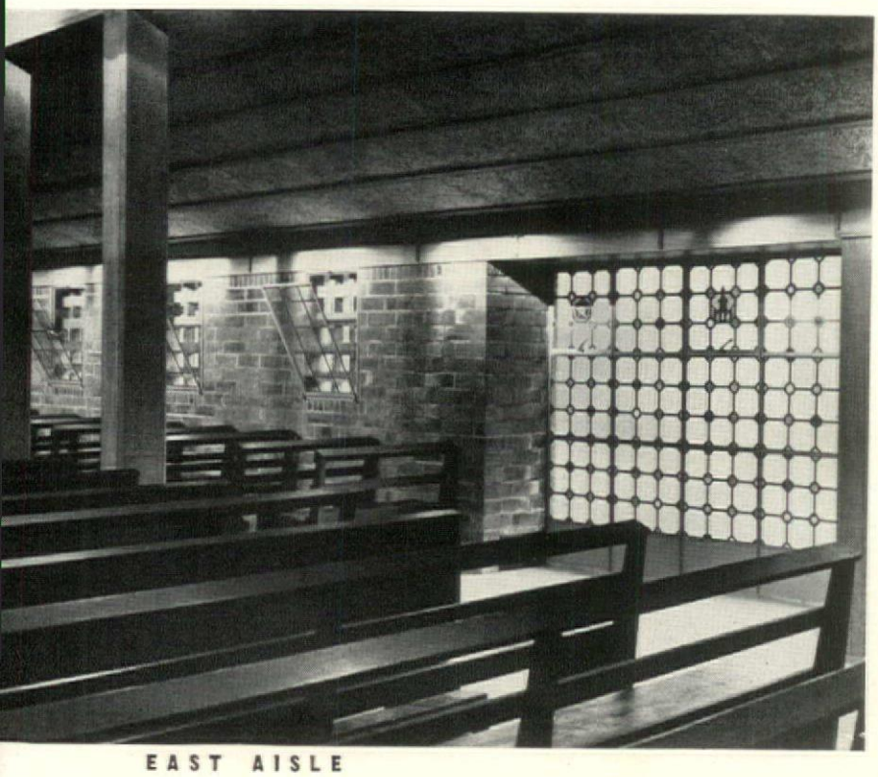


AISLE looking toward main entrance



things into their simplest form commensurate with the requirements of the Owner. The Owner liked the form of the Romanesque and from this silhouette is derived a contemporary building with complete respect for an ancient form devoid of its arch."

When completed the church will have the traditional cruciform plan and a total seating capacity of 500. At present the single existing transept is used as a meeting room. Throughout the church every effort has been made to concentrate attention on the services. The conventional statuary has been omitted from the main body of the church for this reason, and the paneled choir screen will later be enriched with carved wood bas-reliefs. The louvers above the altar allow the choir master to watch the priest during services without distracting the congregation. Windows are stained glass, by Ray Nyson, with decorative inserts from a collection of old Belgian and English glass.



EAST AISLE

BAPTISTRY

CONSTRUCTION OUTLINE

FOUNDATION: Concrete. Waterproofing—Flintkote Co.

STRUCTURE: Exterior walls of nave—12 in. brick and 8 in. hollow tile, Seattle Brick & Tile Co.; inside—studs or 8 in. hollow tile. Wood partitions finished both sides with V-join vertical fir boarding. Columns—reenforced concrete. Floors—(church) concrete, cement finish. Rectory—wood over wood joists. Ceilings—1 in. Thermax, Celotex Corp.

ROOF: Wood rafters, solid sheathing, building felt, concrete tile, Condap Products.

SHEET METAL WORK: Flashing and gutters—Anaconda copper, American Brass Co. Ducts—Armco, American Rolling Mill Co.

SOUND INSULATION: Thermax, 1 in., Celotex Corp.

WINDOWS: Sash—steel, casement, Fentron Steel Works. Art Glass—fabrication by Nyson Glass Co.

FLOOR COVERINGS: Rectory—linoleum, Armstrong Cork Co. Entrance hall—ceramic tile, U. S. Quarry Tile Co.

TRIM: Douglas fir vertical grain.

HARDWARE: By Yale & Towne Mfg. Co.

ELECTRICAL INSTALLATION: Wiring system—conduit and knob and tube. Switches—Harvey Hubbell, Inc. Fixtures—Seattle Lighting Co.

PLUMBING: Fixtures—American Radiator-Standard Sanitary Corp.

HEATING AND AIR CONDITIONING: Forced air with filters, filtering, summer cooling. Furnace—Hurley Engineering Co. Thermostats—Minneapolis-Honeywell Regulator Co. Water heater—Wesix Electric Heater Co.

HOUSES WITHOUT PRIORITIES

All Photos, R. E. Leppert, Jr.

Last month The Forum announced that it would present in December a detailed analysis of the use of critical materials in a typical over-$6000 house. The following report is sufficiently encouraging to invite study by Government officials and Building professionals. It may influence allocations which permit minimum but essential use of critical materials in non-defense houses.—The Editors.

THE CASE FOR THE OVER-$6000 HOUSE

All over America, architects and builders who specialize in over-$6000 houses are asking the same questions: Must the construction of over-$6000 houses be stopped entirely to meet defense needs? Must offices be closed for the duration? If so, is such a complete stoppage of civilian construction really necessary and desirable? Is it equitable, in view of the fact that other kinds of non-defense activity are not to be stopped entirely, but merely curtailed? Is it true that house construction really consumes important quantities of strategic materials? If so, can't such consumption be sharply reduced without necessarily building fewer houses? If, as Donald Nelson has said, the announced policy of no priorities for non-defense building is "far from being a stop building order," will it not have exactly this effect unless something is done to assure a supply of essential items, like electric wire and nails? And unless something is done to reassure potential clients and customers who have been scared away by newspaper headlines based on official statements?

The answers to these questions, and hundreds of others like them lie partly in the midst of a sticky morass of SPAB rulings, conflicting news dispatches, and Washington dope stories. And they lie partly within the building industry itself—in the realities of the situation, whatever they are, in the laboratories of manufacturers who are developing new substitutes for "short" materials, in the ingenuity of the individual builder, and in the resourcefulness of the individual architect. They are not easy questions, for either Government, or the manufacturer, or the architect or builder to answer. For one thing, they are brand new: no one has ever before been asked just how much metal is really needed for a comfortable, modern house. For another, not all the cards are on the table: nobody knows exactly what our defense needs are, if only because they depend, in the last analysis, on factors only partly within our control. The only answers that can be given are partial, contingent answers, answers which depend upon the solution of other problems extending far beyond the confines of Building.

This much is clear. The policy of the Supply Priorities and Allocation Board will be to discourage, and if possible prevent, construction involving the use of "appreciable quantities of strategic materials" which is not "directly necessary for national defense or for the health and safety of the civilian population" (SPAB announcement of Oct. 9). In the case of large, steel-frame buildings, which clearly involve appreciable quantities of strategic material, the intent of this policy would be to prohibit, or at least do nothing to encourage such construction unless its necessity to national defense or health or safety could be clearly established. In the case of "pork barrel" public projects (which are supposed to have been the target of the announcement) the same reasoning would apply. And in such cases the *effect* of SPAB rulings, which refuse the priorities essential to such construction, would jibe with the announced *intent*.

But what about the type of building which does not involve "appreciable" quantities of strategic material? As Donald Nelson himself has said (letter to Senator Wiley, amplifying the announcement of Oct. 9), "Such basic building materials as lumber, brick, stone, mortar, concrete and the various clay products are not particularly scarce, are not under priority control, and hence may be obtained freely for any building job whatever. The man who plans a construction job which uses only those materials and does not involve the use of steel, copper and brass components is as free to go ahead now as he was a year ago." Assuming that this means, as the order says, "*appreciable* use of steel, copper and brass," rather than their complete absence, how are essentials, such as electric wire, to be obtained? Do over-$6000 houses, now ineligible for priorities assistance, come under the heading of buildings using "appreciable" quantities of such material? If so, how about the house in which the use of metal is cut to a bare minimum, but nevertheless fails to qualify as defense housing?

Washington pronouncements on this question, as these quotations indicate, verge dangerously on double-talk. Spokesmen for

Building have contributed to the confusion by concentrating their fire on the $6,000 upper limit on housing priorities, proposing instead that some over-all limitation on the amount of metal per house be substituted. This, in effect, would mean the extension of priorities to all types of housing, defense and non-defense alike, an arrangement which would not only defeat the primary purpose of all priorities—preferential treatment for direct defense activity—but would also defeat itself, since the effectiveness of priority aid is in inverse proportion to the number of cases granted priority status.

This does not mean, however, that construction of over-$6,000 houses must necessarily be stopped. This is a question not of priorities, not of defense alone, but of the general public interest, the effect of civilian consumption upon the defense program, the available supply of essential materials *over and above direct defense needs, including defense housing.* In a word, it is a question of *allocation.*

ALLOCATING CIVILIAN SUPPLIES

Home building, especially home building in the over-$6,000 class, consumes appreciable quantities of strategic materials, notably steel, copper, zinc, and lead. If all of the available supply of these materials was clearly needed for defense or essential to more important civilian needs, it would obviously be in the public interest that this consumption be stopped. But such is not the case. Take, for example, copper—shortest of the short. On Sept. 20 the Office for Emergency Management estimated the 1942 supply and demand as follows:

SUPPLY	*Short Tons*	DEMAND	*Short Tons*
Domestic production	1,100,000	All military	1,000,000
Imports	600,000	Essential civilian	400,000
Secondary copper	100,000	Other civilian	1,170,000
Total	1,800,000	Total	2,570,000

This works out to a shortage of 770,000 tons. But this figure is based on "the theory of unrestricted consumption in accordance with the anticipated rise in the national income—that is, the amount of potential buying power created by bigger payrolls." The table also indicates a total of 800,000 tons available for civilian consumption—half this amount for "essential" uses and half for "other civilian" uses. Already there is evidence that a considerable amount will have to be added to the military figure, variously estimated at 500,000 to 800,000 tons, or enough to wipe out civilian supplies entirely. Copper production, however, is not fixed, but depends on the price, which is set by the Government. An increase in price for copper to be used in certain special categories would permit the reopening of mines whose operation is not presently profitable, and thus provide a surplus for limited civilian consumption. Assuming such a supply, the question arises of how it can be allocated among competing civilian demands.

Leon Henderson, who is in charge of this aspect of the defense program, has listed the following factors to be taken into account in distributing civilian copper supplies:

a. The need to provide adequately for civilian uses of copper essential to the public welfare.

b. The degree of hardship upon labor or business resulting from the restrictions.

c. The past rates of consumption of copper by fabricators.

d. The objective of achieving an equitable relation with regard to copper supplies among all copper fabricators.

e. The availability of substitutes for the particular uses for which copper is sought.

f. The policy of the Administrator to refuse to allocate copper to any person who, in the conduct of his business, discriminates against defense orders.

Applying these principles to non-defense housing, a good case could certainly be made out for allocation of a sufficient quantity of copper for the electric wire, small parts, and plating needed. As the analysis on the following pages demonstrates, the amount of copper absolutely essential for such construction is tiny indeed: probably less than 100 lbs. per house. With rigorous restrictions, many of which are already in effect, 100,000 such houses would consume less than 5,000 tons of the possible 200,000 to 800,000 which *may* be available for civilian uses. Assuming any surplus at all over bare essentials, non-defense building—beginning with hospitals, etc., and followed by repair and maintenance of existing structures, alterations, farm buildings and, finally, new non-defense houses—is entitled to an equitable share.

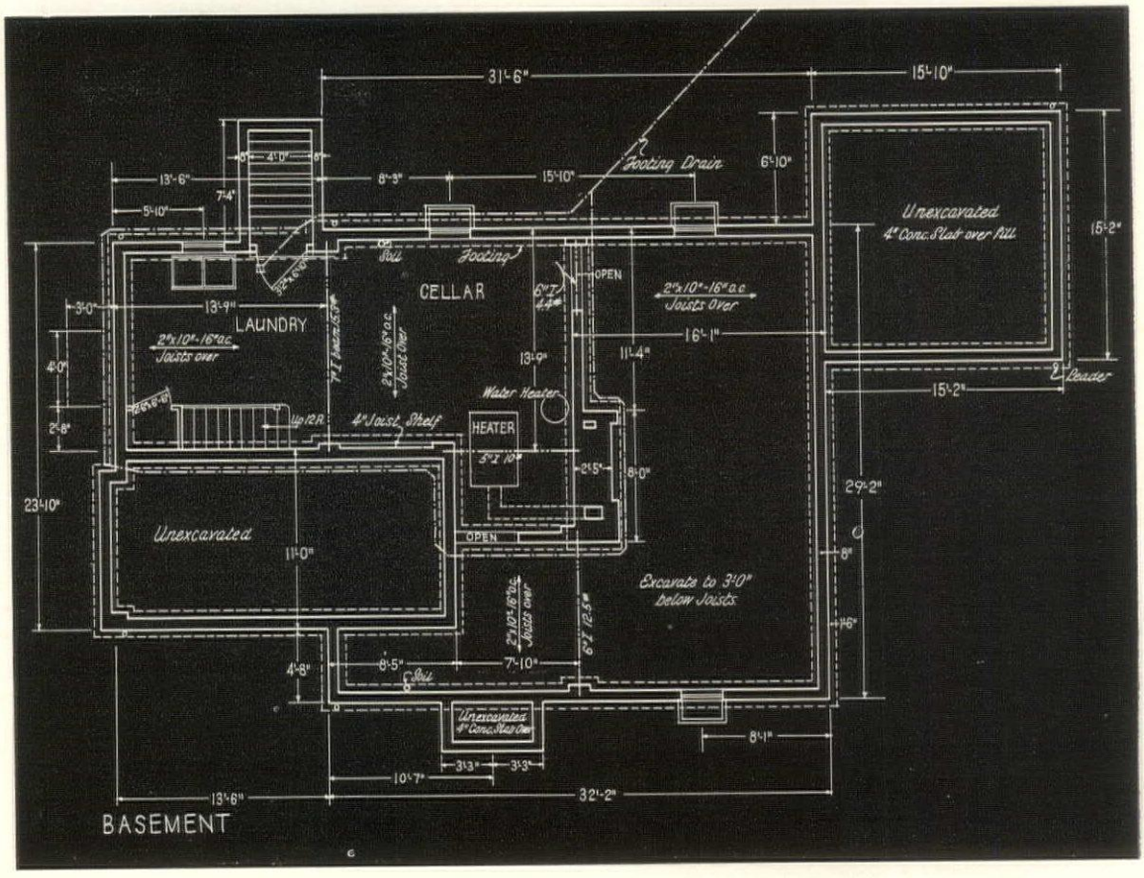
If this argument holds with regard to copper, it applies with greater force to zinc, lead, and especially steel—where some surplus for civilian needs is practically certain. Except for electrical supplies and plating, houses can be built, if necessary, with no non-ferrous metal at all, provided sufficient quantities of iron and steel are available for substitutions. And the total amount of metal of all types that is essential to the construction of 100,000 over-$6,000 houses (a probable maximum under any circumstances) is not of consequential dimensions—something like 175,000 tons as against an estimated production of 89 million tons of steel and iron in 1942.

MINIMUM VS. NORMAL USE OF METAL

But these figures assume minimum use of metal. Actually, under normal circumstances, over-$6,000 houses consume about 3 times this much metal of all kinds and up to 6 times as much copper. A bare half-dozen houses identical to the one analyzed on the next 5 pages would use up enough metal of all types to build one of the Army's basic 28-ton medium tanks, 100,000 such houses, enough to build more than 16,000 tanks. And this house, and hundreds like it which got in under the wire are just now being completed—8 months after the President's proclamation of a national emergency.

Naturally, so long as existing supplies of fabricated strategic materials—such as copper insect screen—continue to be available and are not recalled to be melted down as scrap, there is no reason why they should not be used. Copper flashing, on the other hand, which may be used for many other purposes and represents little or no investment in fabrication, should obviously no longer be used (there is enough copper in the flashings of the Watertown house to wire nearly 50 similar houses on a minimum basis). Present regulations wisely forbid such use, and should be accepted and enforced.

However, not all of the suggested methods of metal conservation proposed in the part-by-part analysis which follows should be construed as recommendations to be followed in practice. Rather, they are merely a device for determining what the minimum necessary quantities of metals of all types for a house of this size would be. It is possible, and even probable that many of the suggested substitutes for steel and iron are unnecessary in view of the small quantities of metal involved. Some of the suggestions require additional amounts of non-ferrous metal in order to eliminate larger quantities of steel and iron, a type of substitution certainly open to question. The main object of the analysis is simply to determine the rough quantities of metal such houses consume, where metals are used, and to what extent substitutions are possible.



Steel and iron items in the basement of this representative architect-designed house totaled 1,187 lbs. As explained in detail below, this figure could have been cut to 10 lbs. by the substitution of wood girders and cellar windows in place of steel, omission of floor reenforcement, and elimination of chimney accessories.

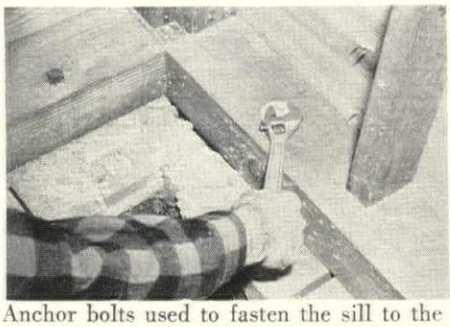
MISCELLANEOUS METAL WORK

Use of metal in the Watertown house began at the basement floor, where specifications called for light mesh reenforcement:

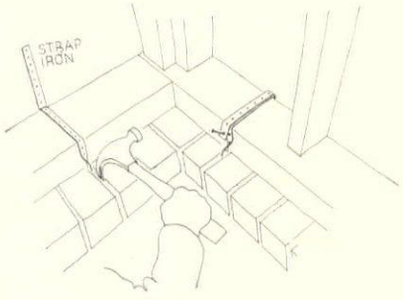
> 75. Under cellar floor, level off the entire grade and fill with 6" steam cinders or gravel. Excavation is to be thoroughly tamped at the required level. On top of this lay a 3" course of concrete with road mesh weighing 42# per square foot, well tamped, until the water rises.

Together with similar reenforcing in the porch floor, this item accounted for 510 lbs. of steel, or more than 6 percent of all steel and iron used in the house. It might have been eliminated entirely by using a heavier cellar floor slab and some other pavement for the porch, such as flagstones, which would not show cracks.

Four steel beams, together with bearing plates, used another 490 lbs. of steel where wood girders would have served as well if set flush with the floor joists to minimize shrinkage.

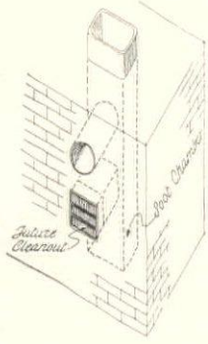


Anchor bolts used to fasten the sill to the foundation wall took another 20 lbs. of iron which might have been cut to a fifth this amount by using perforated pipe-hanger strap as shown in the sketch below:

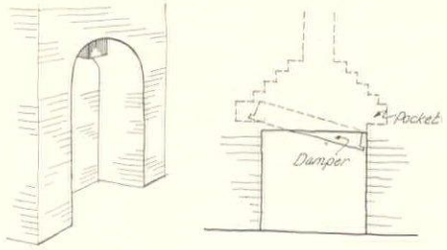


The four steel cellar sash, a rather small number for a house of this size, weighed (without glass) 84 lbs. Wood sash of the same glass area would have required less than 6 lbs. of steel hardware.

Chimney accessories included a cast iron clean-out door for the heater flue, a cast iron fireplace damper, and a steel angle lintel for the fireplace opening—total weight 82 lbs. Such items are not even given priority for defense housing, and obviously must be eliminated when and if the supply runs out. Suggested substitute for the iron clean-out door is an opening closed by brick set loosely with joints pointed-up. These can be taken out when the chimney requires cleaning and put back in the same way, or replaced by a metal door when possible.



Fireplaces can be built without dampers if necessary, using a narrow throat to minimize wastage of heat. They can also be designed to receive a damper later on, or an arched space provided in the chimney for a future fireplace, and temporarily finished off with a mantel in which the opening is closed with dark-colored sheet material:

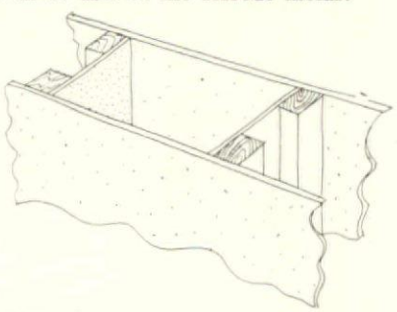


Thus the metal work under the mason's contract, which totaled 1,186 lbs., could have been cut to less than 10 lbs. with no sacrifice of quality that could not be corrected later when metals are again available, and with no changes in design of any consequence.

HEATING

The heating system, which is forced warm air, probably used less metal than any other conventional type of equipment. Even so, it consumed more than a thousand (1155) pounds of steel and iron, 10 lbs. of copper, and 84 lbs. of zinc. Of this total, 560 lbs. of the steel and iron, all of the copper, and 1½ lbs. of the zinc were used in the furnace. Change-over to a well-designed gravity system would eliminate the 6 lbs. of copper wire used in the motor windings and a small part of the iron and zinc. Elimination of the motor would be more important than these figures indicate, since there is a scarcity of this type of equipment over and above the metals involved.

Ductwork for the system used 550 lbs. of iron and 82½ lbs. of zinc (for galvanizing), registers 45 lbs. of steel. Use of asbestos ducts, or insulation board faced with asbestos cement for the hot-air ducts and plaster board for the cold-air returns would save all of the zinc and all but about 50 lbs. of the ferrous metal:



WINDOWS

All first and second floor windows are double-hung, and all except the four dormer windows are fitted with cast iron weights. This took 480 lbs. of iron, ¾ lb of copper, and ½ lb. of zinc. Change-over to the spiral-type balances used in the dormers throughout the house, plus fixing the outer sash in the triple windows in the living and dining rooms, would have reduced the amount of ferrous metal to 51 lbs., and *increased* the quantities of copper and zinc to 3¾ lbs. and 2 lbs. respectively. Another possibility would be non-metallic weights, currently in the development stage.

Window fasteners, used on all windows, took 4 lbs. of steel. Elimination of fasteners on second floor windows, and the suggested fixed sash on first floor, would have reduced this about one half. The windows were equipped with bronze half-screens and zinc weatherstripping, using 15 lbs. of steel, 24 lbs. of copper, and 58 lbs. of zinc. Temporary omission of the weatherstripping, (or use of a non-metalic substitute) and temporary use of painted steel screen cloth would have required but 79 lbs. of steel. Elimination of shutter hardware would save another 40 lbs. of steel.

PLASTERING ACCESSORIES

Interior finish was plaster on gypsum lath, with internal corners reenforced with expanded metal lath. This required 54 lbs. of steel which might have been omitted provided special attention was paid to framing details to avoid cracks resulting from shrinkage and racking of the frame, and lath more carefully applied. Galvanized corner beads were not needed for external corners, thus saving steel and zinc. Use of any of the sheet finishes would also eliminate these metal accessories and probably reduce the amount of metal needed for nailing the finish in place.

ELECTRICAL WORK

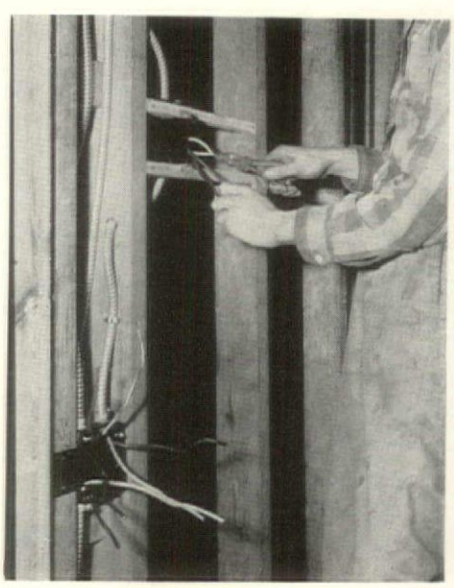
The electrical system as installed in the house was unusually complete, and included such items as 3-way switches for the dining room and lower hall, 4-way switching for the garage light, plenty of convenience outlets, a radio outlet, kitchen-dining room buzzer, etc. Wiring was BX cable. The complete system used 393 lbs. of steel and iron, 59 lbs. of copper, and 14 lbs. of zinc. These figures include service wiring and switches, exclude the meter.

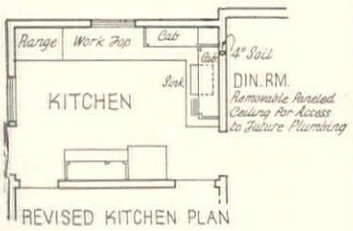
The electrical plans on the opposite page show the wiring system of the basement and first floor as installed, and revised in accordance with the restrictions imposed by the Defense Housing Critical List. Similar plans for the second floor are shown on the second page following.

These limitations, while not mandatory for non-defense construction, are one way of saving a considerable amount of the metal used in the system. They represent a rock-bottom wiring minimum, especially when applied to a house of this size. Further savings can be effected by the use of non-metallic sheathed cable (or knob-and-tube wiring) in place of BX. Reduction in the number of outlets, elimination of all signal systems (as required by priorities regulations), and use of non-metallic cable would save 332 lbs. of steel, 16½ lbs. of copper, and 10½ lbs. of zinc. A further saving in the amount of steel might be made by the use of porcelain outlet boxes.

Fixtures

The permanent fixtures used in the house are few and, from the point-of-view of metals consumption, unimportant. In general, most of the fixtures used were, or could have been non-metallic—in some cases porcelain and in others plastic. Use of porcelain fixtures is officially encouraged for defense housing, but spun fixtures, even in brass, use so little metal that it is scarcely necessary that they be eliminated entirely. The same is probably true of the use of chromium plating on fixtures.

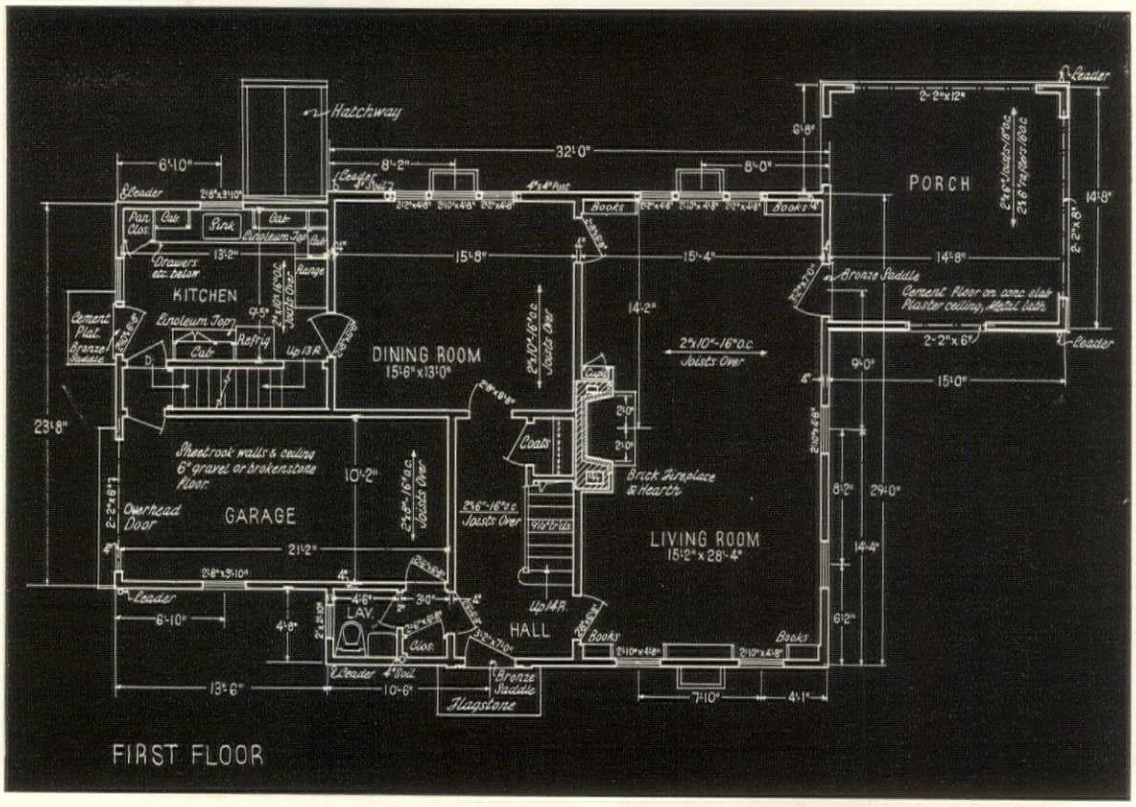




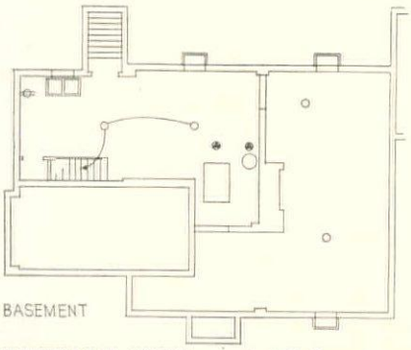
REVISED KITCHEN PLAN

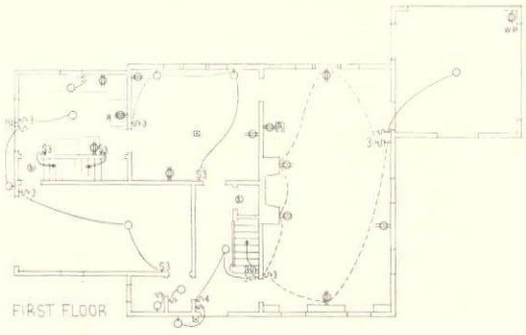
Revised kitchen layout to save piping and separate basement laundry tubs. Still more can be saved by omitting the lavatory fixtures and piping, converting the space into a temporary coat closet and telephone room. Paneled, removable dining-room ceiling is for installation of piping for a future second floor bathroom.

First floor plan shows house as actually constructed. Suggested metal-saving changes include omission of lavatory plumbing, omission of living room doors, and substitution of various materials as described on the facing and succeeding pages. Wiring changes are shown in the plans below.

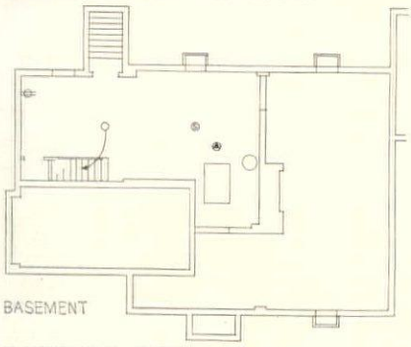


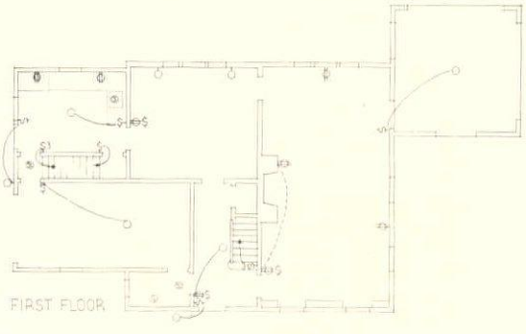
FIRST FLOOR





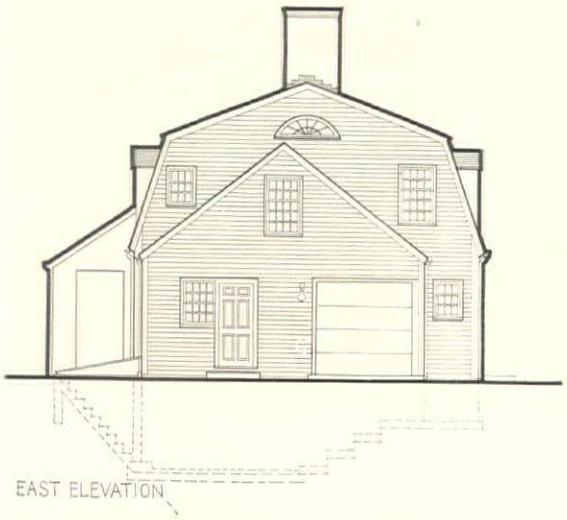
ELECTRICAL WORK—as installed



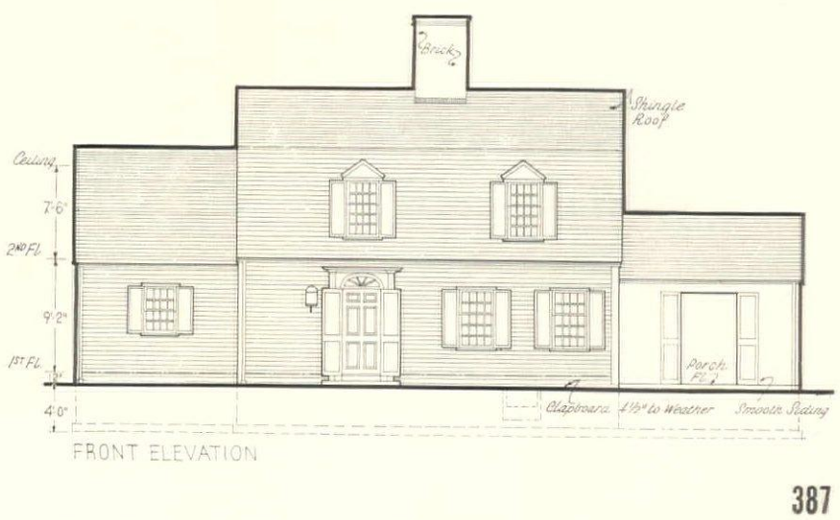


ELECTRICAL WORK—revised

Electrical plans (left) show outlets, switches, etc. as actually installed (upper plans) and revised in accordance with regulations for defense housing under the Defense Housing Critical List. While these regulations are not mandatory for non-defense housing, they represent the only practicable way of conserving the copper used in electrical wiring, since of the two available substitutes — aluminum and silver — the first is even more scarce than copper and the second much too expensive. Besides limiting the number of outlets (including switches) used in each room, these regulations forbid installation of any type of signalling equipment, such as doorbells. As applied to this particular plan, they result in a definitely less-than-adequate wiring installation, especially in the ground-floor rooms. These deficiencies might be fairly easily corrected later, since additional wires on the underside of the first floor joists would be simple to run and could easily be connected to convenience outlets in the baseboard. Also, some provision might be made, such as removable trim, for future installation of additional switches.



EAST ELEVATION

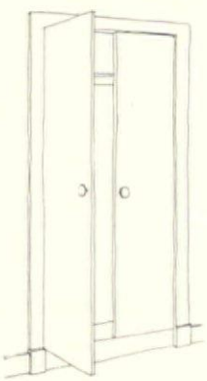


FRONT ELEVATION

HARDWARE

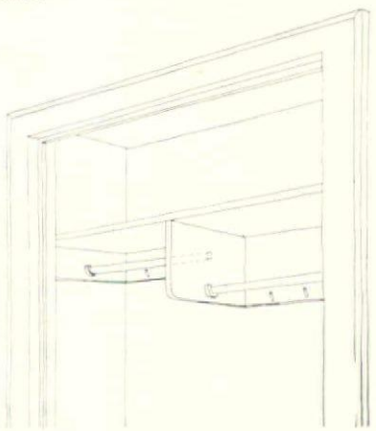
Hardware throughout the house is solid brass. Including the overhead garage door it required 247 lbs. of steel, 12 lbs. of copper, and 6½ lbs. of zinc. A change-over to plated hardware with plastic or glass knobs, plus substitution of hinged garage

doors (assuming that overhead equipment becomes hard to obtain), and the elimination of non-essential doors within the house would reduce the amount of steel to 84 lbs., the copper to ½ lb., and zinc to ¼ lb. These figures are based on the use of cupboard-type closet doors hung on light pivots and equipped with bullet catches and wood knobs, in place of butts and latches, an improvement over the conventional arrangement.



Closet Poles

All closets were fitted with brass-pipe poles, using 7 lbs. of copper and 4¾ lbs. of zinc.



Wood poles, set on two levels for different-length clothing, will not sag and would eliminate this item entirely.

FLASHING

Copper flashing was used at window heads, around dormer windows, at the junction of the porch roof with the side-wall, and around the base of the chimney:

FLASHING:

152. Provide all flashing required to make roofs, tops of windows and all other parts of the building perfectly weathertight at every point. All flashing to be 16 oz. copper. Flash around all plumbing pipes passing thru the roofs. Step flash chimney, counterflash all flashing against brick work. Chimney flashing to be concealed type carried into flue lining.

This took 234 lbs. of copper. Under current defense regulations, such use of copper is prohibited. Metallic flashing could have been largely eliminated by design changes such as the alternate end elevation shown on the opposite page, or eliminated entirely by the use of a non-metallic substitute of the type now appearing on the market.

GUTTERS & LEADERS

The roof drainage system was galvanized iron, consuming 145 lbs. of iron and 6½ lbs. of zinc:

LEADERS:

153. All leaders are to be 3" Toncan metal round leaders with Toncan metal strap holders, all to be carefully fitted.

This item could have been eliminated entirely by a design change to concrete splash slabs or by the use of wooden gutters and leaders, both of which are available.

MISCELLANEOUS

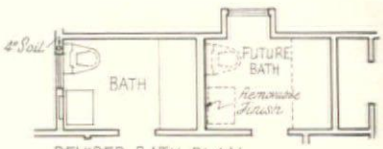
Other metal items not included in the forgoing were nails (800 lbs. steel), roofing nails (64 lbs. steel, 18 lbs. zinc), 3 medicine cabinets (45 lbs. steel, 2¾ lbs. copper, and 2 lbs. zinc), bronze door screens and zinc weatherstripping (6 lbs. steel, 31½ lbs. copper, and 13 lbs. zinc). Elimination of two of the medicine cabinets and substitution of painted steel mesh on the screen doors and non-metallic weatherstripping would reduce the total for these items 22 lbs. in steel, 33¼ lbs. in copper and 13 1/3 lbs. in zinc. Some slight reduction is undoubtedly also possible in the quantity of nails.

PLUMBING

The house was equipped with 2 bathrooms on the second floor, a first floor lavatory, kitchen sink and basement laundry tubs—a total of 10 fixtures, or, if tub showers are counted as ½ fixtures, eleven. All the plumbing except the first floor lavatory is on a single soil-stack, but several of the fixtures required looped vents. The lavatory is on a separate stack. Soil pipe was extra-heavy cast iron with lead connectors, supply-piping red brass; all fixtures except w.c.'s were porcelain-enameled cast iron.

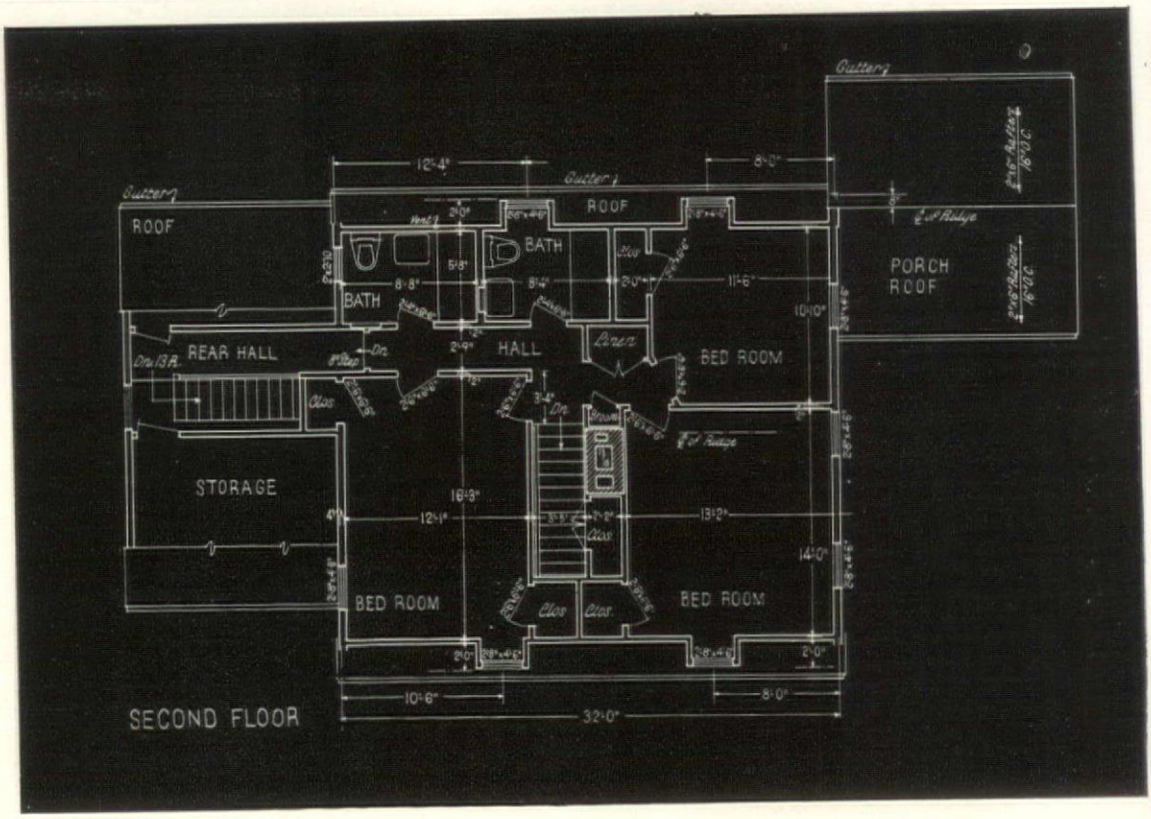
The installation as made required more than twice as much iron and steel, almost 3 times as much copper, half-again as much zinc and 2½ times as much lead as the average per house as estimated by FHA, and accounted for almost half the total amount of metal in the house. Figures in pounds were: iron and steel, 3,787; copper, 291; zinc, 83; and lead, 252. First step in reducing these totals is obviously the elimination of the extra bath and lavatory, with workable provisions for their installation later on, and rearrangement of the remaining fixtures close to a single stack and vent. Further savings can be effected by using a combination sink and laundry tray in the kitchen in place of the basement tubs, by the substitution of galvanized iron supply piping in place of brass, regular weight soil lines in place of extra-heavy, and the use of a vitreous china

wash bowl and sink and a pressed-steel tub in place of cast iron. Design changes necessitated by these substitutions are shown on the facing and preceding pages. Result is a saving of 2,790 lbs. of steel and iron, 240 lbs. of copper, 53 lbs. of zinc, and 180 lbs. of lead, bringing the totals to substantially *less* than the estimated quantities of metal needed for plumbing in defense houses. With the further development of substitutes—such as plastic fixture-trim and water-supply tubing — and the relaxation of local codes to permit the use of vitreous-tile soil pipe, these totals could be reduced still further.

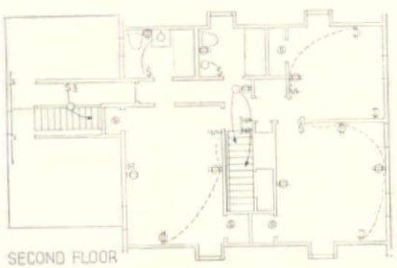


REVISED BATH PLAN

Revised bathroom layout to conserve metal shows elimination of second bath, to be used temporarily as sewing room with provision for installation of plumbing later, and relocation of stack to save pipe. Text on facing page gives estimated metal saving in pounds.

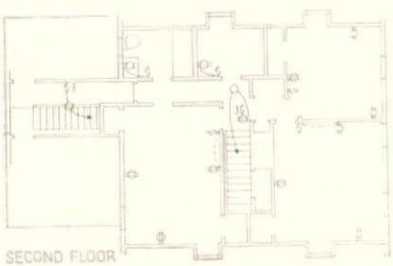


Second floor plan shows house as actually constructed. Suggested changes to conserve metal include omission of second bath (above, use of cupboard-type, double closet doors with light hardware, and substitution of various metals as described in the text on the facing page. Wiring changes are shown in the plans below.



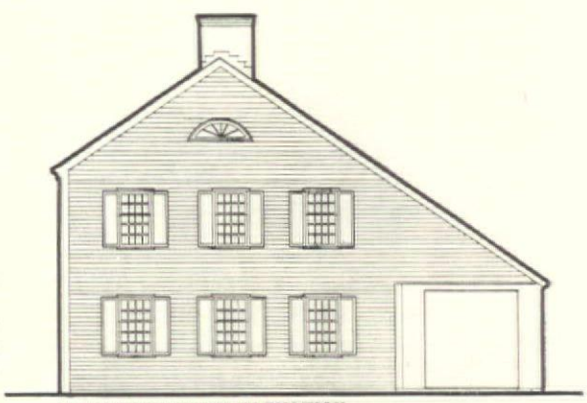
ELECTRICAL WORK—as installed

Electrical plans (left) show changes in electrical wiring to conform to regulations of the Defense Housing Critical list. Changes in first floor and basement wiring are shown on the second page preceding, and resulting saving in pounds is discussed in text on page 386.

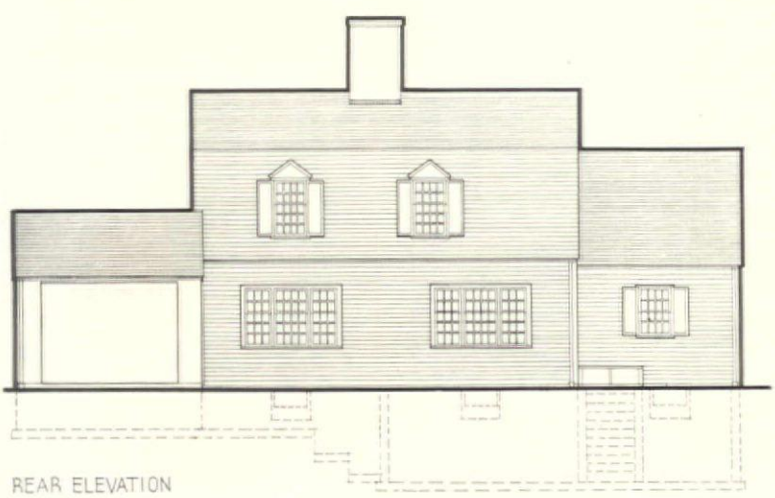


ELECTRICAL WORK—revised

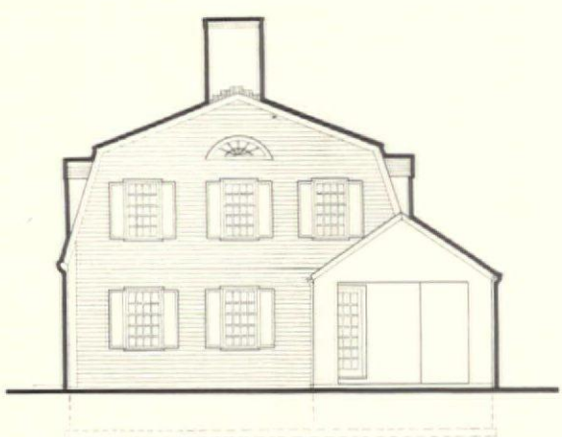
Alternate end elevation (right) shows one way in which the amount of flashing used in the house could be considerably reduced. By shifting the porch to the back and raising the roof to a simple gable, flashing between the porch roof and the sidewall, and around the dormers would be eliminated.



ALTERNATE WEST ELEVATION



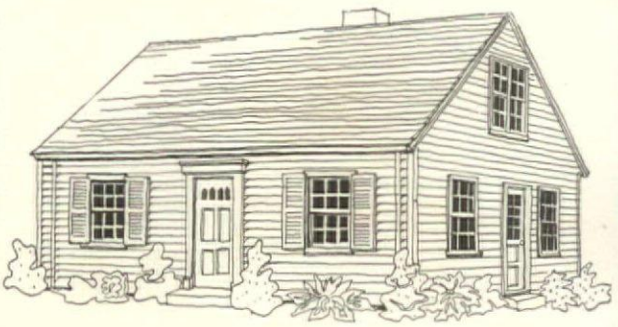
REAR ELEVATION



WEST ELEVATION

AVERAGE USE OF METALS IN HOUSING . . .

To make possible an estimate of the effect of varying amounts of house construction on the defense program, the Federal Housing Administration has prepared an analysis of the quantities of various metals consumed in the construction of 1,000 representative FHA-insured, single-family detached houses. The results, with the three zeros representing the thousand-unit base removed, give a good idea of the *average* amount of metal consumed in the construction of a single house—not any particular house, but rather a composite of the various design characteristics of FHA houses as determined from a still larger survey. They also represent an excellent vantage point from which to examine the quantities of metal consumed in the Watertown house.

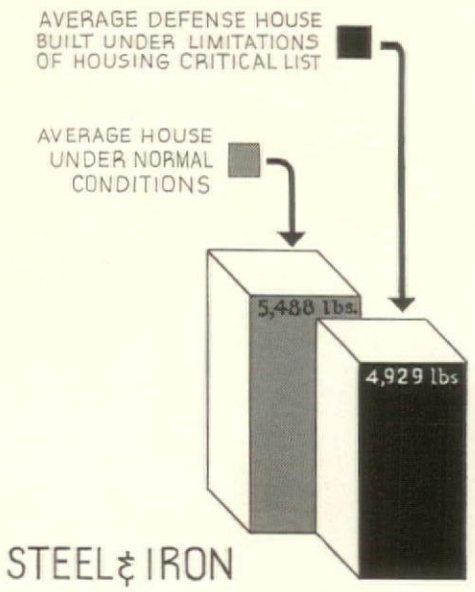


The average property valuation of FHA-insured, single-family houses as determined by this survey was $5,199 including land. Of the houses in the sample group, more than two-thirds were one-story, the balance 1½ and 2 stories high.

About one-half the total group had 5 rooms, slightly less than a quarter 4 rooms, a quarter 6 rooms, and about 5 percent had more than 6 rooms. Two-thirds had full or partial basements, one-third no basement; about 90 percent were wood frame throughout. Three-quarters had one bathroom (4 fixtures), the rest more. About .4 of the houses had warm-air heating equipment, .2 radiator systems, the balance stoves, space heaters, or no heating equipment at all.

As listed in the table below, and shown in the chart at the right, a composite house embodying these characteristics in exactly the correct proportion would consume, under normal conditions, about 3 tons of metal, of which about 2¾ tons would be ferrous metal and about ¼ ton non-ferrous. Greatest total amount, as shown by the table, would be in the structure, followed by plumbing with an almost equal quantity, and heating, with about half as much as the structure. Electrical work, which consumes only about a tenth as much as heating, also uses less than one-tenth of the total non-ferrous metal consumed.

The chart and table also show the estimated effect of the restrictions established by the Defense Housing Critical List on the average amount of metal which will be consumed by defense housing. The reductions, particularly in the non-ferrous category, are not large. This is partly because in many cases the substitution of non-ferrous metal for ferrous metal will involve an increase in total weight, partly because the average house has already been pretty-well stripped to its essentials, and partly because the importance of getting large numbers of defense houses built quickly, and at low cost, rules out wholesale substitution and radical changes in building techinque. Also, no allowance has been made for the fact that defense houses will probably be somewhat smaller in size than the average house as formerly built. Largest reduction is in copper, which is reduced almost two-thirds, followed by zinc, which has been cut by more than a quarter, and steel and iron, down one-tenth. The structural category furnishes almost 90 per cent of these savings, is down one-third. In addition to the metals shown, negligible quantities of tin, nickel, and various other non-ferrous metals are used.

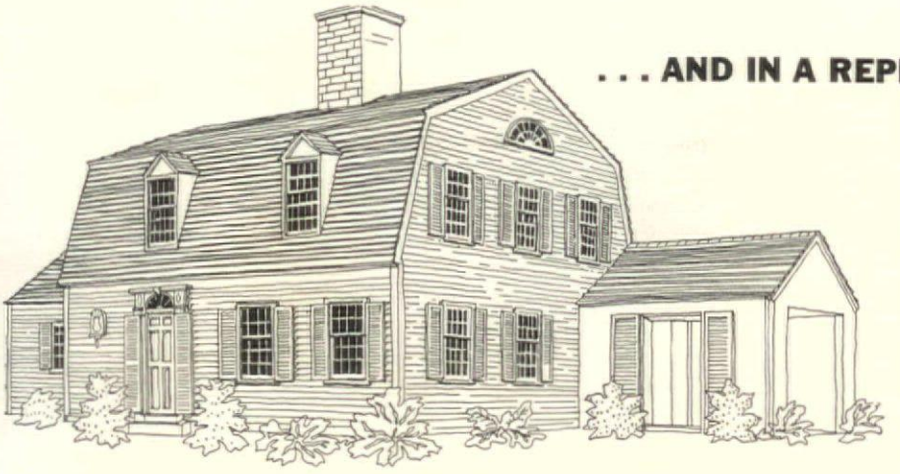


Average consumption of metals in housing (pounds per house) under normal conditions, as determined by FHA, and estimated average for defense houses built under the restrictions of the Defense Housing Critical List. Table at left shows quantities normally consumed, and estimated savings, broken down under various categories.

ESTIMATED AVERAGE QUANTITIES OF METALS (LBS.) PER DETACHED HOUSE AND ESTIMATED SAVINGS RESULTING FROM PRIORITIES CRITICAL LIST

METAL	STRUCTURE	PLUMBING	HEATING	ELECTRICAL	TOTALS	% SAVED
STEEL & IRON	2,384	1,830	1,182	92	**5,488**	STEEL & IRON
Savings	550	21	28*	16	**559**	**10.2%**
Net	**1,834**	**1,809**	**1,210**	**76**	**4,929**	
COPPER	57	105	12	29	**203**	COPPER
Savings	56	52	6	13	**127**	**62.9%**
Net	**1**	**53**	**6**	**16**	**76**	
ZINC	52	37	18	6	**113**	ZINC
Savings	28	7*	8	3	**32**	**28.4%**
Net	**24**	**44**	**10**	**3**	**81**	
LEAD	1	102	3	—	**106**	LEAD
Savings	1	0	0	—	**1**	**.9%**
Net	**0**	**102**	**3**	—	**105**	
TOTALS	2,494	2,074	1,215	127	**5,910**	
Savings	635	66	14*	32	**719**	**12.1%**
Net	1,859	2,008	1,229	95	**5,191**	

*Increase



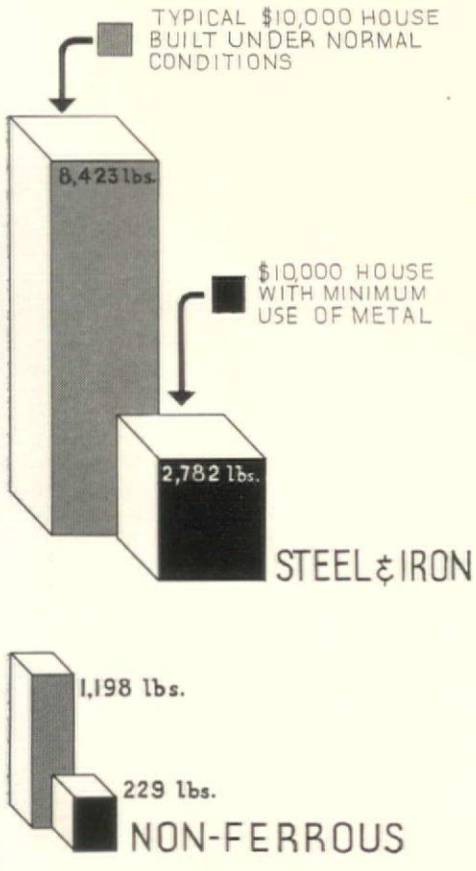
. . . AND IN A REPRESENTATIVE $10,000 HOUSE

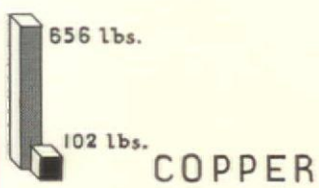
The FORUM's figures for the Watertown house make no pretense of being more than roughly comparable to the FHA's comprehensive survey on the opposite page. In the first place, they are not an average, but are based on a single house. While an effort was made to select a house typical of custom-built, over-$6,000 houses, it was obviously impossible to discover a house that was a composite of all the characteristics that go to make up an average. The best that can be said for the house chosen is that in most respects it represents the *predominant* type.

However, it is certainly true that the house contains somewhat more plumbing than the average over-$6,000 house, more flashing, at least as much structural steel, and so on. The warm-air heating system may contain less metal than radiator systems in smaller houses, but this is undoubtedly counterbalanced by other factors. Certainly the house contains a maximum of copper, with red brass piping and copper flashing throughout. It therefore seems certain that the average consumption of metal for over-$6,000 houses must lie somewhere between the FHA figures and those given for the Watertown house, and equally certain that the average is no higher than the figures given on this page.

Consumption of iron in the Watertown house was about half-again as much as the average figure, and non-ferrous metals almost 3 times as great. Of these, copper was more than 3 times the average, zinc and lead about 2½ times. The over-all ratio, for metals of all types, was about 1 to 1.6.

As might be expected, the contrast between the *minimum* use of metal in the Watertown house and the estimated average consumption for defense housing is even more striking. While these figures are not really comparable, since their bases are entirely different, they do serve as a vivid demonstration of the point that larger houses need not necessarily consume more metal than small ones, in fact, can be built with less if strict conservation is observed. The Watertown house, with plumbing reduced to a minimum and materials changed as outlined on the preceding pages, but with no basic alteration in size or design, can be built with about one-half the amount of metal, both ferrous and non-ferrous, used in the average house under normal conditions. It also can be built with considerably less iron and steel, and somewhat less non-ferrous metal, than is expected will be consumed in defense houses—less than a ton and a half of ferrous metal and an eighth of a ton of non-ferrous metal all told.





Corresponding figures for a representative $10,000 house in chart and table form. Note that in this case, however, figures are not averages but are based on a single house. Savings shown are for the least possible use of metal, as described in detail on preceding pages, and would not be realized in practice without strict rationing.

ESTIMATED QUANTITIES OF METALS (LBS.) IN REPRESENTATIVE $10,000 HOUSE AND ESTIMATED MAXIMUM SAVINGS RESULTING FROM SUBSTITUTIONS, ETC.

METAL	STRUCTURE	PLUMBING	HEATING	ELECTRICAL	TOTALS	% SAVED
STEEL & IRON	3,088	3,787	1,155	393	**8,423**	STEEL & IRON
Savings	1,969	2,790	550	332	**5,641**	**66.7%**
Net	**1,119**	**997**	**605**	**61**	**2,782**	
COPPER	296	291	10	59	**656**	COPPER
Savings	291	240	6	17	**554**	**84.4%**
Net	**5**	**51**	**4**	**42**	**102**	
ZINC	109	83	84	14	**290**	ZINC
Savings	89	53	83	10	**235**	**81.3%**
Net	**20**	**30**	**1**	**4**	**55**	
LEAD	—	252	—	—	**252**	LEAD
Savings	—	180	—	—	**180**	**71.4%**
Net	—	**72**	—	—	**72**	
TOTALS	3,493	4,413	1,249	466	**9,621**	
Savings	2,349	3,263	639	359	**6,610**	**68.7%**
Net	1,144	1,150	610	107	**3,011**	

CONCLUSIONS

►Whether construction of individually-designed houses will be stopped altogether, or simply curtailed, is still at least a partly open question. It is a serious question, as one which involves the entire livelihood of some six or seven thousand architects, at least as many builders, and their thousands of employes must be. It has an important bearing on civilian morale, and considerable importance, both negative and positive, to national defense. To date it has been, at best, ignored—and at worst, badly bungled.

►Over-$6,000 houses normally do consume "appreciable" quantities of strategic material and, while their construction in defense areas may have some effect on defense housing shortages, they can hardly be said to contribute directly to defense or to be essential to health or safety. The amount of metal consumed in their construction can be sharply reduced, even to a point below the amount used in defense houses, but this does not make them eligible for priority aid, since such aid depends, not on the amount of strategic material consumed, but on a direct contribution to the defense effort.

►Whether such houses are entitled to the strategic materials absolutely necessary for their construction depends on what quantities of such material are left over after military and more essential civilian needs have been met—they certainly have an equal right to such material as, say, higher-priced automobiles.

►Whether they will receive material to which they are entitled depends upon Government allocation of civilian supplies—a move which necessarily involves further regulation of consumption if the available supplies are to be distributed equitably between competing civilian demands.

►Voluntary conservation of the metal still available to Building in previously-fabricated form can do much to spread the supply over as long a time and as many houses as possible—Government restrictions, such as limitations on the number of plumbing fixtures and electric outlets in non-defense houses, could do much more.

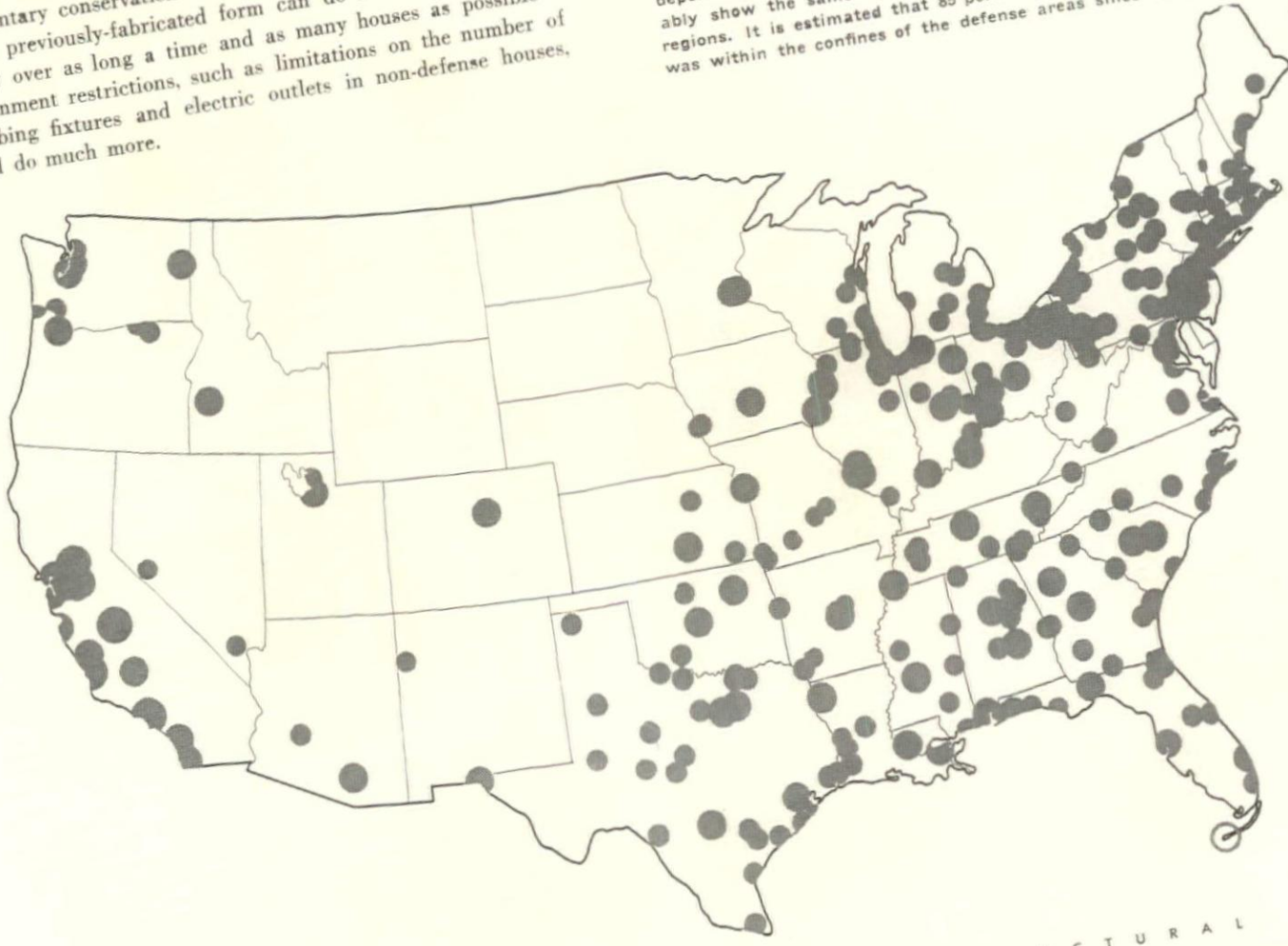
►Substitute materials now rapidly appearing on the market, and those still in the laboratories of building materials manufacturers, constitute one of the most encouraging factors in the whole situation—but until someone discovers a non-metallic conductor for electricity, and non-metallic pipe is perfected, allocation of some items is essential to continued construction.

►As never before, the urgency of revising unreasonable building codes, and the need for the architect and builder to crack the market for low-cost homes are brought into bold relief. "Expansible" houses, eligible for priority aid if under $6,000 with land, constitute a partial solution, but only a partial solution of the latter problem.

►Defense shortages remain, and will probably continue to remain, primarily a local problem, with Washington in the position of a referee who sets the rules. The place to find out whether or not materials for a given job are available is still the local materials dealer and contractor with whom the architect or builder is accustomed to do business.

►Nevertheless, the all-important question of control is national in scope, and Building must present a national front if it is to get the consideration it deserves from those responsible for the defense program. It must cease fighting blindly against regulations which are necessary. It must, recognizing the realities of the situation, realize the need for Government control over certain materials. In turn, Building is entitled to consideration at least equal to that accorded other and certainly less important civilian activities.

Defense areas, within whose confines housing costing less than $6,000 with land or renting for $50 or less per month is entitled to priority aid, are defined as the area within "reasonable commuting distance" of some 278 centers of defense employment. The map below shows an arbitrary interpretation of this phrase in the form of circles of 10, 20, 30 and 40 mile radii, drawn from the designated centers. Actual areas, which are determined locally, are irregular in shape, depending upon transportation and other factors, but would probably show the same tendency to coagulate in densely populated regions. It is estimated that 85 percent of 1940 house-construction was within the confines of the defense areas since designated.



HOUSES

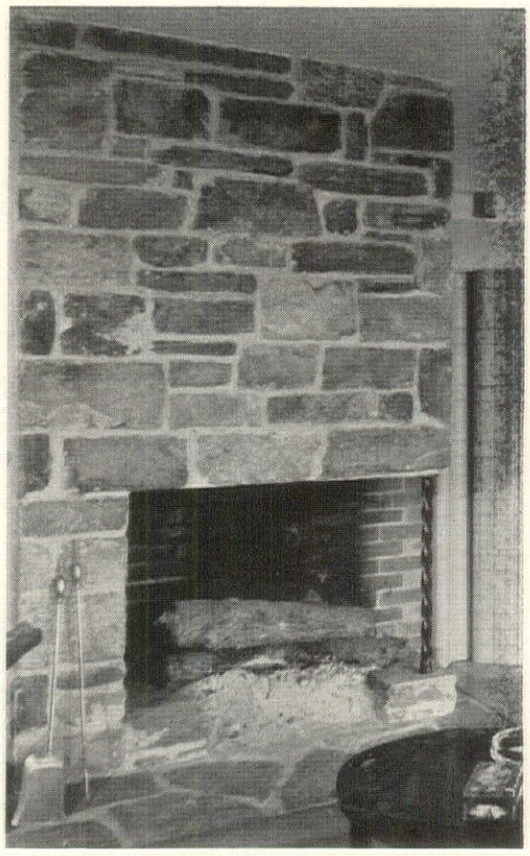
BEFORE

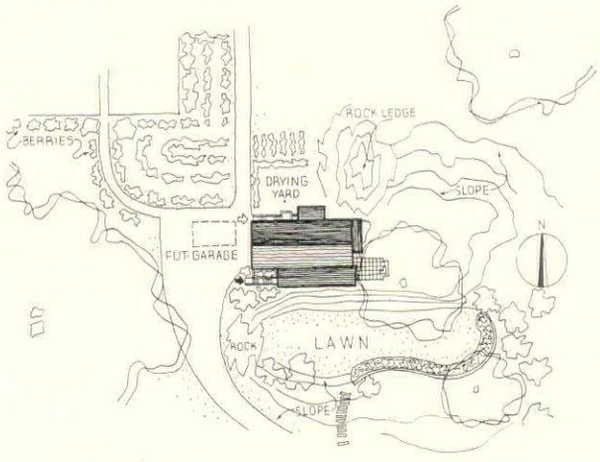
HOUSE IN SPRINGDALE, CONN. THORNE SHERWOOD, ARCHITECT

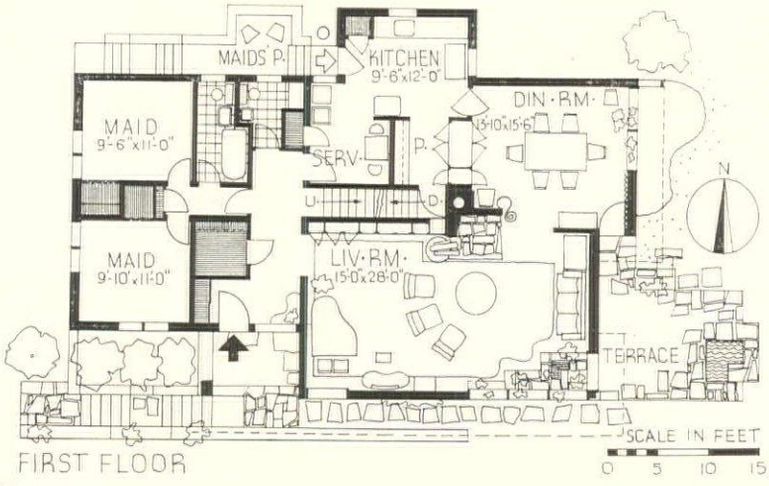
George H. Van Anda

HOUSE IN SPRINGDALE, CONN. THORNE SHERWOOD, ARCHITECT

LIVING ROOM

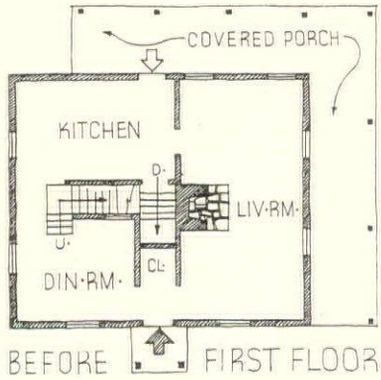




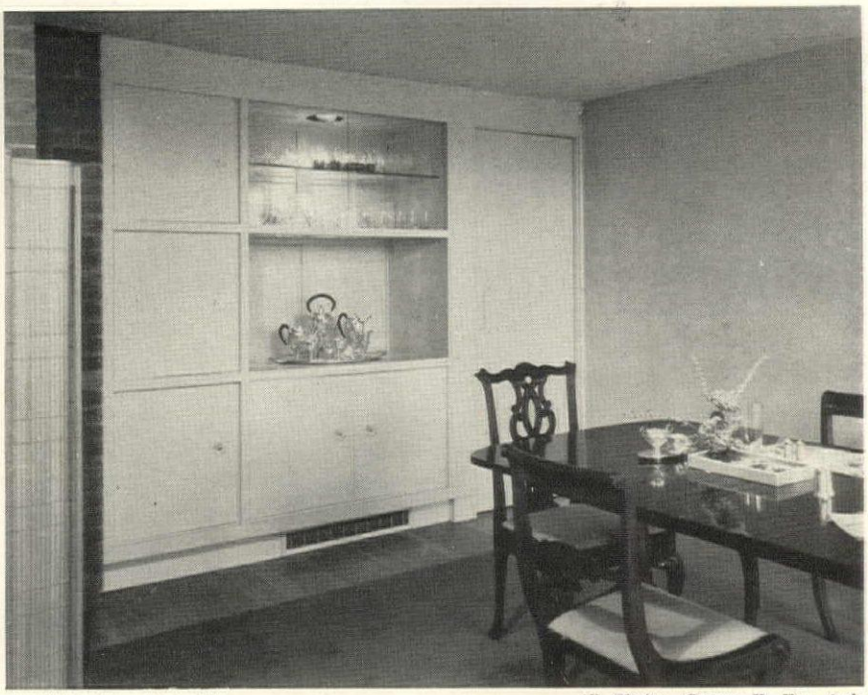


FIRST FLOOR

EAST ELEVATION

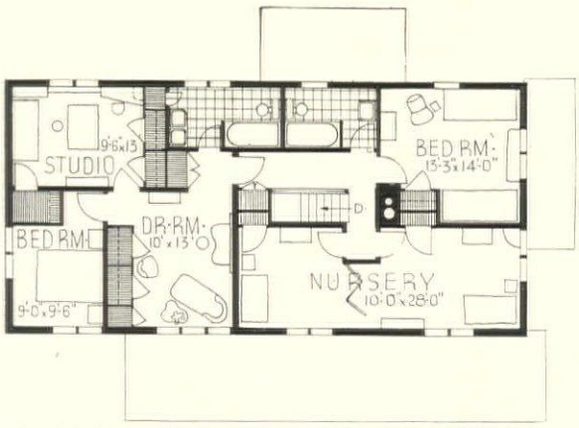


BEFORE FIRST FLOOR

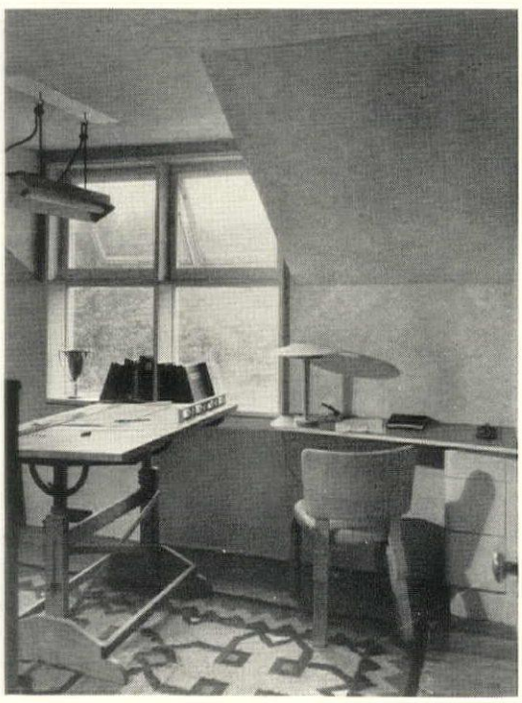


DINING ROOM

All Photos, George H. Van Anda



SECOND FLOOR



STUDIO

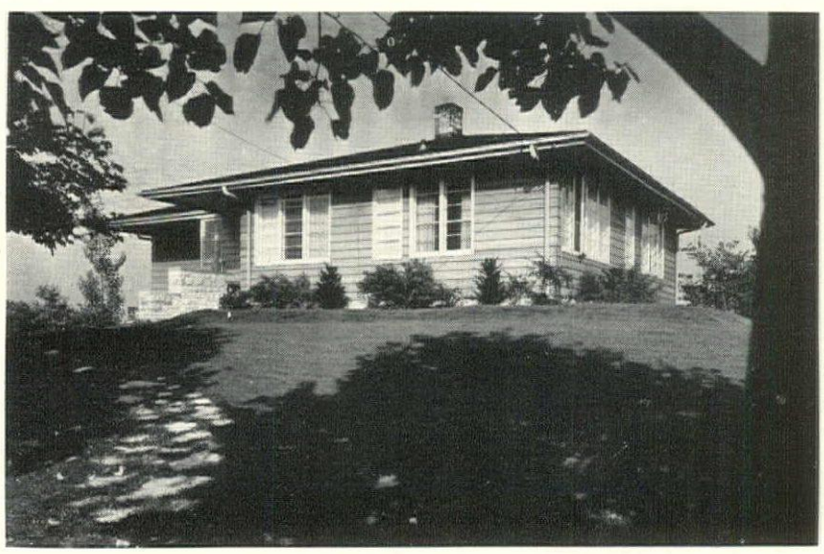
Changes in the original house were so drastic that the operation could hardly be classed as remodeling. More interesting is the manner in which the architect satisfied his desire for a contemporary solution while preserving the character suggested by the old house. Essential in maintaining this character are the small windows, the dark paint and light trim, and the unbroken gable roof. The plan is notable for its convenience, for the excellent placing of wall and window areas and for the really generous provision of usable closet space. An especially commendable feature is the nursery, which needs only a short partition for conversion into two bedrooms.

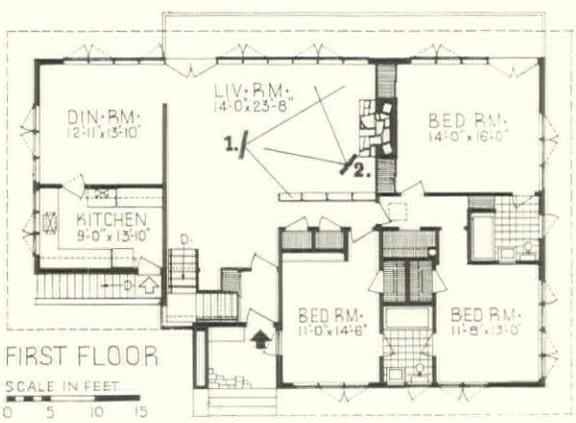
CONSTRUCTION OUTLINE

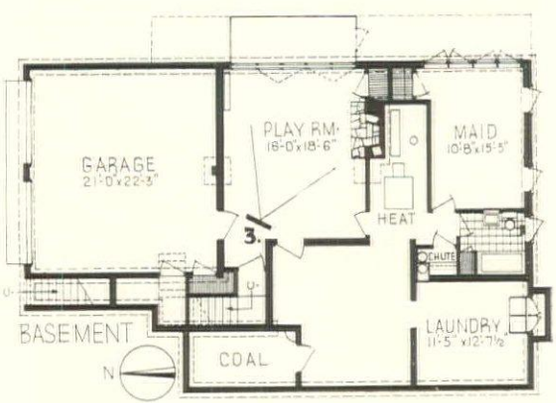
STRUCTURE: Exterior walls—clapboard or wide pine flush siding, 30 lb. Johns-Manville asphalt felt building paper, rough pine sheathing; inside—studs, U. S. Gypsum Co. Rocklath and plaster or pine paneling.
ROOF: Covered with cedar shingles.
SHEET METAL WORK: Flashing and leaders—Anaconda copper, American Brass Co.
INSULATION: Outside walls and attic floor—4 in. rockwool, Johns-Manville.
WINDOWS: Sash—top-hinged wood and double hung. Glass—Pennvernon, double strength, Pittsburgh Plate Glass Co. Corrugated wire glass—Libbey-Owens-Ford Glass Co.
FLOOR COVERINGS: Main rooms—oak. Nursery, kitchen and bathrooms—linoleum, Armstrong Cork Co.
HARDWARE: By Yale & Towne, Russell & Erwin and Stanley Works. Garage doors—Overhead Door Corp.
PAINTS: By Devoe & Raynolds.
ELECTRICAL INSTALLATION: Wiring system—BX. Switches—Hart & Hegeman. Circuit breaker—Westinghouse Electric & Mfg. Co.
KITCHEN EQUIPMENT: Range and refrigerator—Hot Point, Edison General Electric Appliance Corp. Dishwasher—Westinghouse Electric & Mfg. Co.
BATHROOM EQUIPMENT: Tub and shower—American Radiator-Standard Sanitary Corp.; remainder—Briggsteel Beautyware, Briggs Mfg. Co.
PLUMBING: Soil, waste and vent pipes—cast iron and galvanized iron, A. M. Byers Co. Hot and cold water pipes—Anaconda brass, American Brass Co.
HEATING: Warm air system, filtering, humidifying. Oil burner—Gilbert & Barker. Grilles—Tuttle & Bailey Mfg. Co. Valves and thermostat—Minneapolis-Honeywell Regulator Co. Water heater—Lochinvar Products Div., Michigan Tank & Furnace Corp.

THREE BEDROOMS, MAID'S ROOM, THREE BATHS, PLAYROOM

HOUSE IN MENOMINEE, MICH. JAMES F. EPPENSTEIN & ASSOCIATES, ARCHITECTS







VIEW 1.

Photos, Hedrich-Blessing

VIEW 2.

VIEW 3.

Because the site for this house has a view of the water, its natural change in levels was used to produce a plan in which the main rooms are on the second floor. The floor below has the garage, laundry, heater room, maid's bedroom, and a playroom, which serves in summer as a built-in beach cottage. The cement floor, canvas-covered furniture and washable rugs make the room entirely suitable for use by bathers. Materials are of the locality: the limestone was quarried across the bay and the cedar was cut in the forests in the northern part of the state. An unusual practical feature is the two-way linen closet between the master bath and the hall. Cost: $11,000.

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—limestone and 10 in. cedar beveled siding. Floors—oak and pine. Ceilings—Red Top plaster, U. S. Gypsum Co.
ROOF: Covered with wood shingles.
INSULATION: Outside walls and attic floor—metallated wool, Metallated Wool Co.
FIREPLACE: Damper—H. W. Covert Co.
SHEET METAL WORK: Flashing and gutters—Armco iron, American Rolling Mill Co.
WINDOWS: Sash—white pine. Glass—flat drawn, Libbey-Owens-Ford Glass Co.
ELECTRICAL INSTALLATION: Switches—Mercury, General Electric Co.
KITCHEN EQUIPMENT: Sink—American Radiator-Standard Sanitary Corp. Fan—Ilg Electric Ventilating Co.
BATHROOM EQUIPMENT: By American Radiator-Standard Sanitary Corp.
HEATING: Force-Flo hot water system, valves and water heater, Kehm Corp. Boiler and grilles—Armco, American Radiator-Standard Sanitary Corp.

LIVING-DINING ROOM, UTILITY ROOM, TWO BEDROOMS, BATH

Photos, Arthur S. Siegel

HOUSE IN FERNDALE, MICH.

RAYMOND E. EISERMAN, ARCHITECT

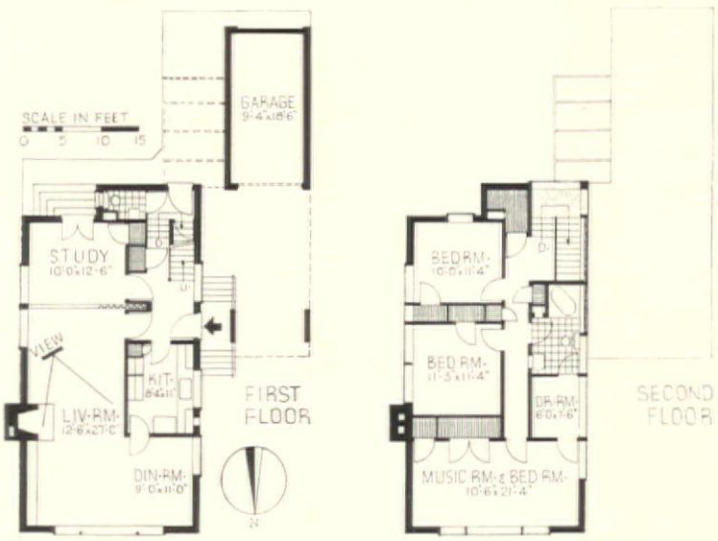
Like the example on the facing page, this house was designed to fit a very narrow lot, a circumstance which dictated the placing of the main living areas at the rear. The plan makes good use of the restricted site, using a narrow wing at the front to obtain the most in light and privacy for the two bedrooms. A garage, omitted for lack of space, was replaced by a shelter. The attic has space for two future bedrooms and a bath.

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—white cement block, waterproofing paste, 2 in. furring, Rocklath, U. S. Gypsum Co. and plaster. Floors—sub-floor, oak finish.
ROOF: Covered with asphalt shingles.
SHEET METAL WORK: Flashing, gutters and leaders—copper.
WINDOWS: R.O.W. preweatherstripped, double hung, Royal Oak Wholesale Co. Frames—Beyster Lumber Co. Glass—double strength and polished plate, West Detroit Glass Co.
WOODWORK: Natural birch throughout.
INSULATION: Ceilings—Celotex lath, Celotex Corp.
HARDWARE: By Yale & Towne Co.
ELECTRICAL INSTALLATION: Wired in Romex, General Cable Corp.
PLUMBING: Fixtures—American Radiator-Standard Sanitary Corp. Soil pipes—cast iron. Hot and cold water pipes—copper.
HEATING: Forced warm air system, filtering, humidifying, zone control, General Electric Co.

MUSIC ROOM-BEDROOM, BATH, LAVATORY, STUDY, CAR SHELTER

HOUSE IN DETROIT, MICH. RAYMOND E. EISERMAN, ARCHITECT



A house for a narrow city lot. The architect comments, "cross ventilation and complete development of every square foot of the lot were the principal factors in evolving the plan. A tandem carport-garage scheme was used which provides not only a sheltered entrance, but also through access from the street to the rear alley. The automobile and entrance requirements consume approximately ten lineal feet, leaving an unbroken front lawn and a maximum of usable garden space in the rear."

LIVING ROOM

Photos, Arthur S. Siegel

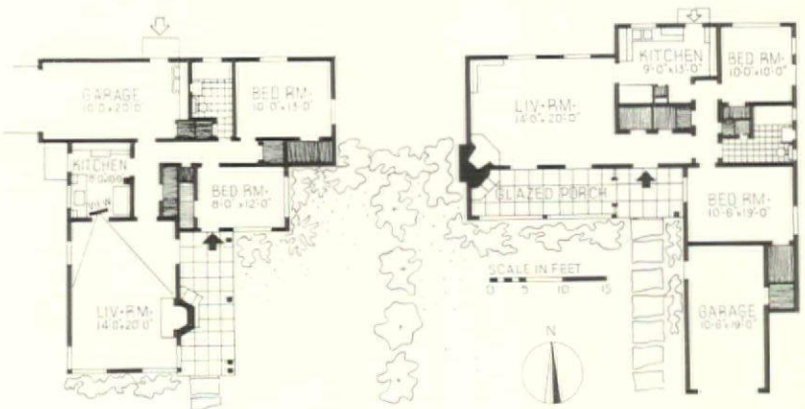
CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—brick veneer, 1 in. air space, 30 lb. felt, insulating sheathing; inside—studs, Rocklath, U. S. Gypsum Co. and plaster. Floors—sub-floor, oak finish.
ROOF: Covered with asphalt shingles.
WINDOWS: Sash—steel casement, Detroit Steel Products Co. Frames—Currier Lumber Co. Glass—double strength and polished plate, Peterson Glass Co.
DOORS: Flush Rezo throughout, metal trim by Milcor Steel Co. Modernfold door—New Castle Product Co.
INSULATION: Ceiling—Air-O-Cel Industries and 2 in. rockwool.
HARDWARE: By Schlage Lock Co.
ELECTRICAL INSTALLATION: Wired in Romex, General Cable Corp.
PLUMBING: Fixtures—American Radiator-Standard Sanitary Corp. Soil pipes—cast iron. Hot and cold water pipes—copper.
HEATING: Forced warm air system, filtering, humidifying, zone control, American Radiator-Standard Sanitary Corp.

LIVING-ROOM, GARAGE, TWO BEDROOMS, BATH

Photos, Berton Crandall

HOUSE IN PALO ALTO, CALIF. BIRGE M. CLARK & DAVID B. CLARK, ARCHITECTS



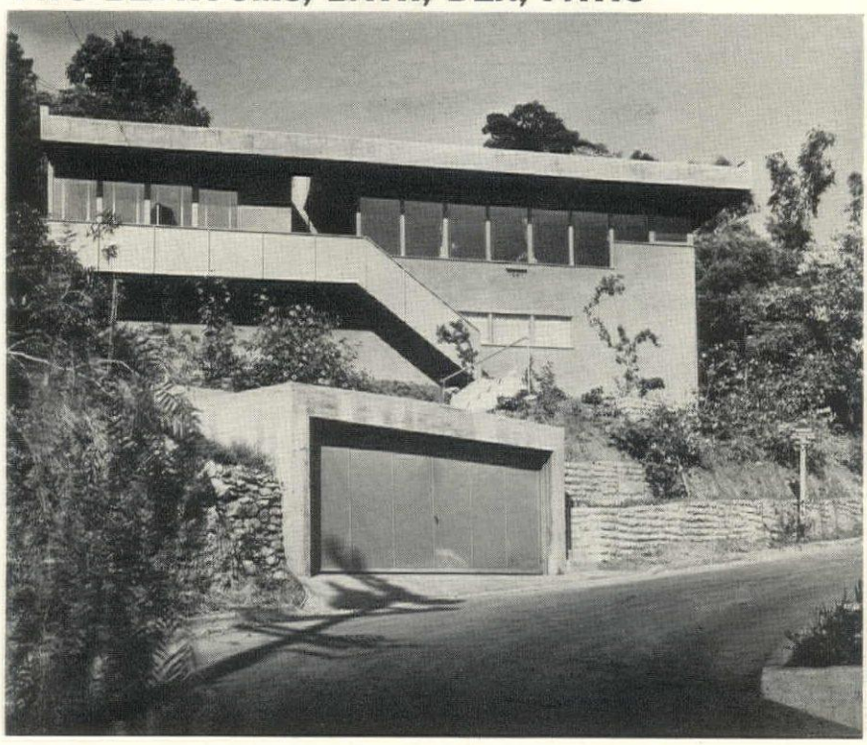
These two houses, built as an investment, were designed to meet the living requirements of married students and instructors at nearby Stanford University. Each house has a living-dining room, two bedrooms, bath and garage. The L-shaped plans are a very good solution to the problem of privacy, and create a common front yard which does a great deal to unify the building group. Construction cost was kept low by the use of simple materials and by eliminating the usual gadgetry considered necessary for successful renting.

LIVING-ROOM

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls — redwood, board and batten, studs; inside—plywood, U. S. Plywood Co. or stucco plaster, California Stucco Co. Floors—concrete.
ROOF: Covered with cedar shingles.
FIREPLACE: Damper—Richardson & Boynton Co.
SHEET METAL WORK: Galvanized iron, Armco, throughout, American Rolling Mills Co.
WINDOWS: Sash—white pine, casement, Pacific Mfg. Co. Glass—single strength, quality B, Libbey-Owens-Ford Glass Co.
HARDWARE: By Schlage Lock Co.
PAINTS: By W. P. Fuller Co.
ELECTRICAL SWITCHES: Bryant Electric Co.
KITCHEN EQUIPMENT: Refrigerator — General Electric Co.
BATHROOM EQUIPMENT: By American Radiator-Standard Sanitary Corp.
PLUMBING: Soil pipes—cast iron. Hot and cold water pipes—galvanized iron.
HEATING: Gas floor furnaces, Electrogas Div., Payne Furnace & Supply Co. Water heater — Day & Night Water Heater Co.

TWO BEDROOMS, BATH, DEN, PATIO



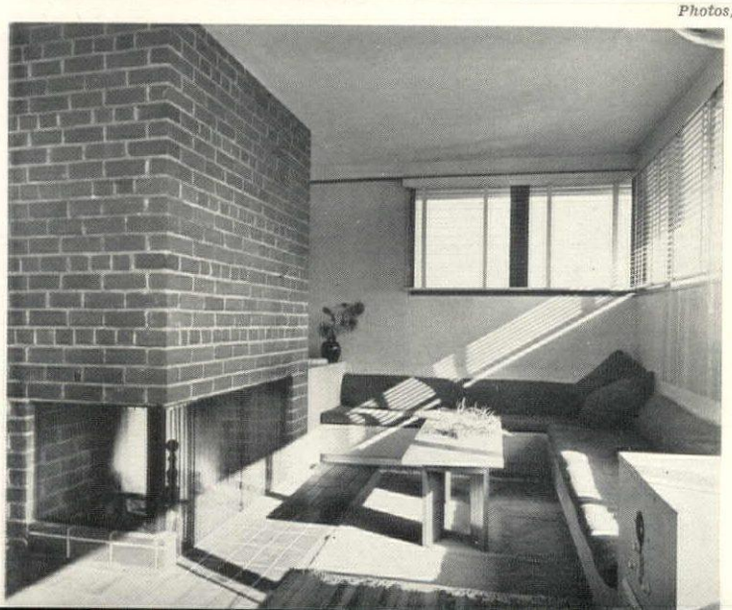
HOUSE IN HOLLYWOOD, CALIF. RAPHAEL S. SORIANO, DESIGNER

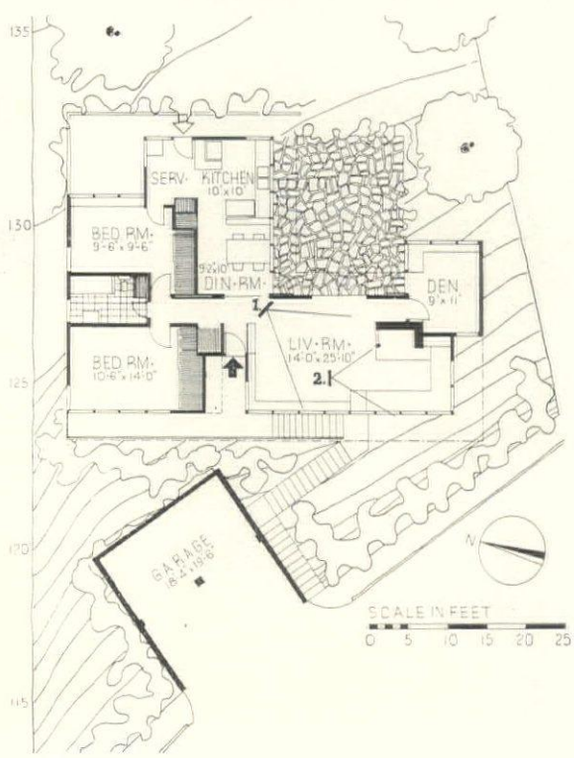
The patio in this excellent small house is not an adjunct, but an integral part of the plan, tied in with the surrounding rooms by a very open wall treatment. When used as a child's play yard, the area can be supervised with a minimum of inconvenience. The interior treatment is equally open, sliding panels of glass forming the only separations between kitchen, dining and living rooms. For additional photographs and drawings of these features, see the October 1941 issue, page 283.

CONSTRUCTION OUTLINE

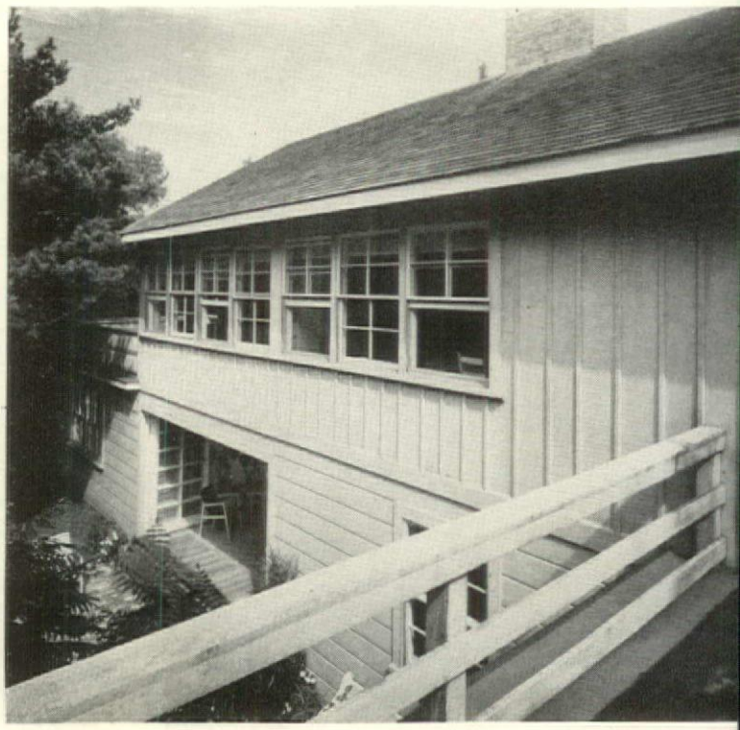
STRUCTURE: Exterior walls — redwood posts between standard steel sash; outside —stucco, inside plastic or plywood.
ROOF: Covered with aluminum cap sheet, Johns-Manville Corp.
FIREPLACE: Damper, Superior Fireplace Co.
SHEET METAL WORK: Armco, 24 gauge, galvanized iron throughout. American Rolling Mill Co.
WINDOWS: Sash—steel casement, Mitchell & Pfeiffer Co. Glass—crystal and double strength, quality B, Pennvernon, Pittsburgh Plate Glass Co. Screens—copper, Mitchell & Pfeiffer Co.
FLOOR COVERINGS: Main rooms — oak, carpet covered. Bedrooms, kitchen and bathrooms—linoleum, Armstrong Cork Co.
WALL COVERINGS: Living room—white pine, U. S. Plywood Co.
PAINTS: By W. P. Fuller Co.
HARDWARE: By Schlage Lock Co. Garage doors—Park Overhead Door Co.
ELECTRICAL INSTALLATION: Switches —General Electric Co. Fixtures—C. W. Cole & Co.
KITCHEN EQUIPMENT: Range — Sears, Roebuck & Co. Refrigerator—Norge Corp.
BATHROOM EQUIPMENT: By American Radiator-Standard Sanitary Corp.
PLUMBING: Soil pipes—cast iron. Water pipes—galvanized iron, Crane Co.
HEATING: Forced warm air system, Payne & Co. Thermostat—Minneapolis-Honeywell Regulator Co. Water heater — American Radiator-Standard Sanitary Corp.

Photos, Julius Shulman





FOUR BEDROOMS, THREE BATHS, SERVANTS' ROOM, PLAY ROOM



VIEW 1.

Photos, Paul Davis

HOUSE IN DUXBURY, MASS.

ELEANOR RAYMOND, ARCHITECT

SARAH PILLSBURY, ASSOCIATE

It is not often realized that the summer house has special potentialities of its own, that even in the northern States the factor of seasonal use permits a kind of planning quite different from that required for a year-round residence. In this house, for instance, the long narrow shape, excellent for light and ventilation, imposes no extra expense for insulation, weatherstripping and double glazing. Similarly, the big opening in the living room is very simply taken care of, since protection against winter weather need not be considered. It will be noted that the playroom over the garage is entirely isolated, and can be reached only by going out of doors. The plan, very conveniently arranged and well oriented, has an especially good feature in the downstairs bedroom and adjoining porch; the latter is easily reached from the living room, is open on three sides, and yet takes light from none of the rooms.

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—horizontal redwood siding, batten covered 2nd. story; inside—studs and Ponderosa pine. Floors—sub-floor, hard pine finish.

ROOF: Covered with red cedar shingles. Deck—covered with canvas, William L. Barrell Co.

FIREPLACE: Heatilator Co.

SHEET METAL WORK: Flashing—copper.

INSULATION: Attic floor and flat roof—Insulite Co.

WINDOWS: Sash—double hung and casement, wood.

WOODWORK: Ponderosa pine throughout.

HARDWARE: By Morgan Sash & Door Co.

PAINTS: By Craftex Co., Charles F. Richardson and Samuel Cabot, Inc.

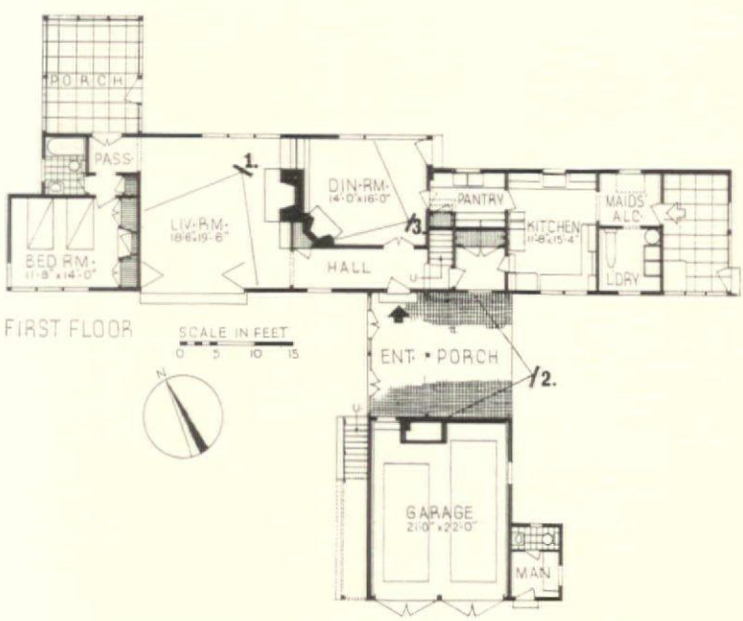
ELECTRICAL INSTALLATION: Wiring system—BX. Fixtures—Litecontrol Co. and Bigelow Kennard Co.

BATHROOM EQUIPMENT: By American Radiator-Standard Sanitary Corp.

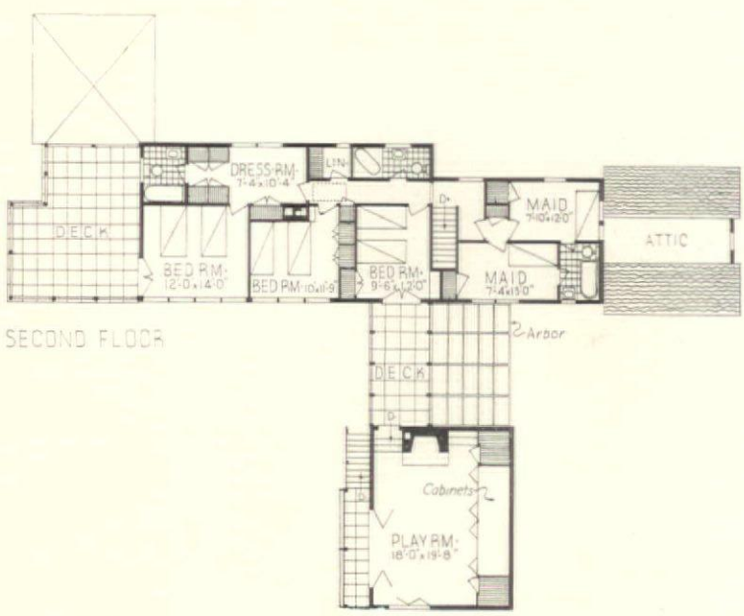
PLUMBING: Soil pipes—cast iron. Hot and cold water pipes—copper.

VIEW 2.

VIEW 3.

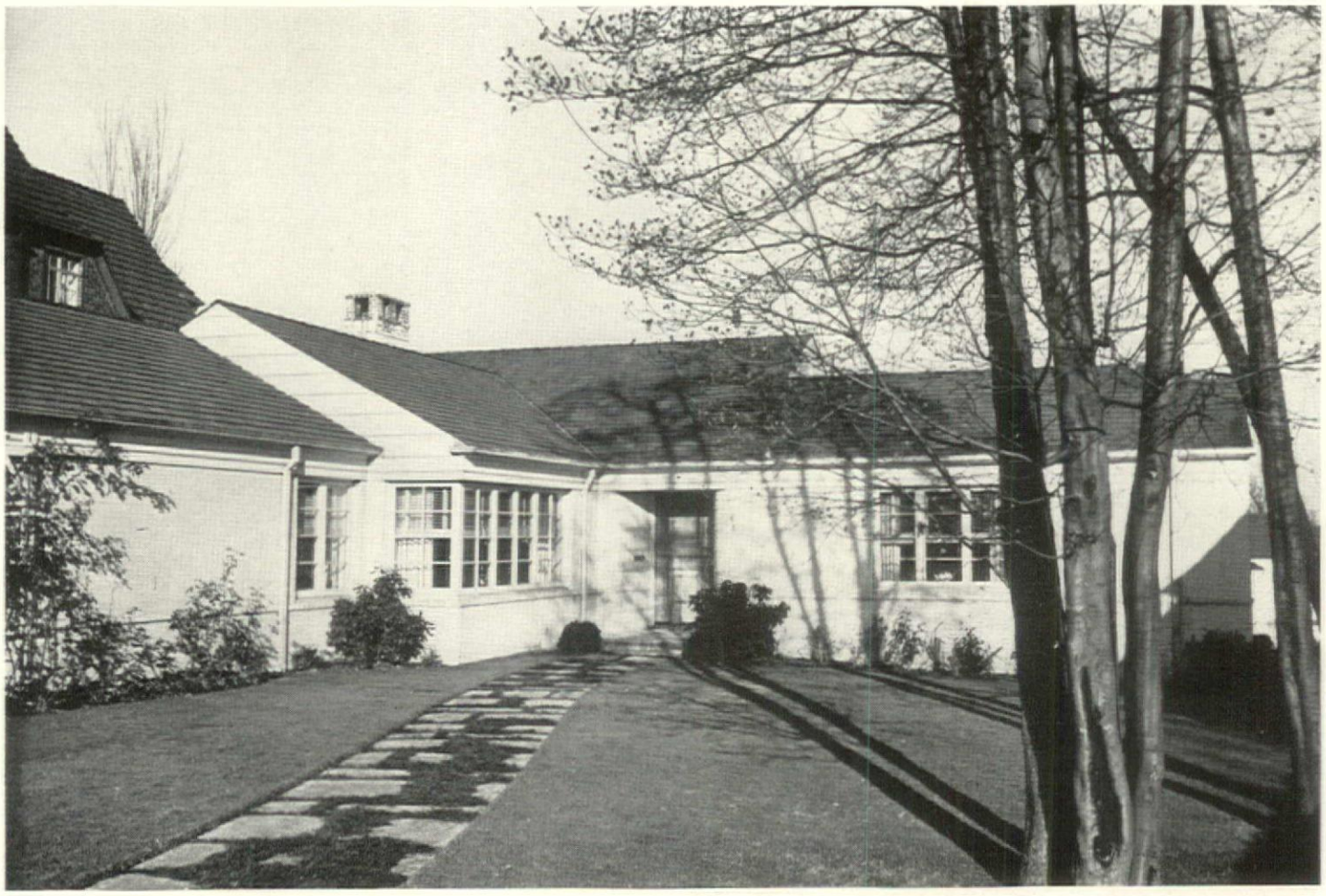


FIRST FLOOR



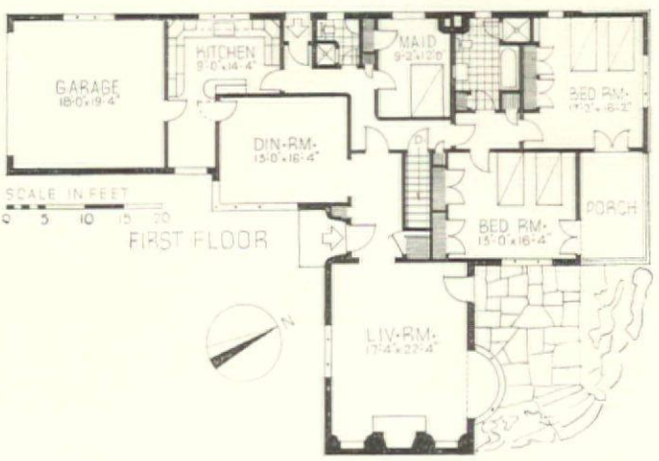
SECOND FLOOR

TWO BEDROOMS, MAID'S ROOM, TWO BATHS, RECREATION ROOM



HOUSE IN SEATTLE, WASH.

WILLIAM J. BAIN, ARCHITECT



Designed for a fairly restricted city lot, this house is arranged so that service rooms face the adjacent dwelling. The front lawn is comparatively large and open in consequence, and the living and dining rooms are set back sufficiently far from the street for privacy. Located in the basement are the heater, laundry and storage rooms, and a large recreation room and porch which make good use of the drop in grade on the north side.

CONSTRUCTION OUTLINE

FOUNDATION: Concrete.

STRUCTURE: Exterior walls—brick veneer, 1 in. air space, Brownskin paper, Angier Corp., shiplap; inside—studs, lath and plaster. Floors—oak finish.

ROOF: Covered with shingles, Creo-Dipt Co., Inc.

INSULATION: Outside walls and ceiling—Celotex, Celotex Corp.

SHEET METAL WORK: Flashing, leaders and ducts—copper, American Brass Co. Gutters—fir.

WINDOWS: Sash—fir. Weatherstripping and screens—Chamberlin Metal Weather Strip Co. Glass—single strength, quality A, Libbey-Owens-Ford Glass Co.

FLOOR COVERINGS: Main rooms—oak. Kitchen—linoleum, Armstrong Cork Co. Bathrooms—tile.

WALL COVERINGS: Living rooms—V-join cedar boards. Bedrooms, halls and bathrooms—Sanitas, Standard Coated Textile Products Co.

WOODWORK: Fir throughout.

HARDWARE: By Yale & Towne Mfg. Co.

ELECTRICAL INSTALLATION: Wiring system—knob and tube. Switches—Bryant Electric Co. Fixtures—Cascade Fixture Co.

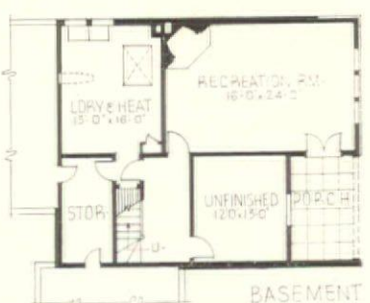
KITCHEN EQUIPMENT: Range and refrigerator—General Electric Co. Fan—West Wind Corp.

LAUNDRY EQUIPMENT: Sink—Crane Co. Washing machine—Thor, Early Machine Co.

BATHROOM EQUIPMENT: By Crane Co.

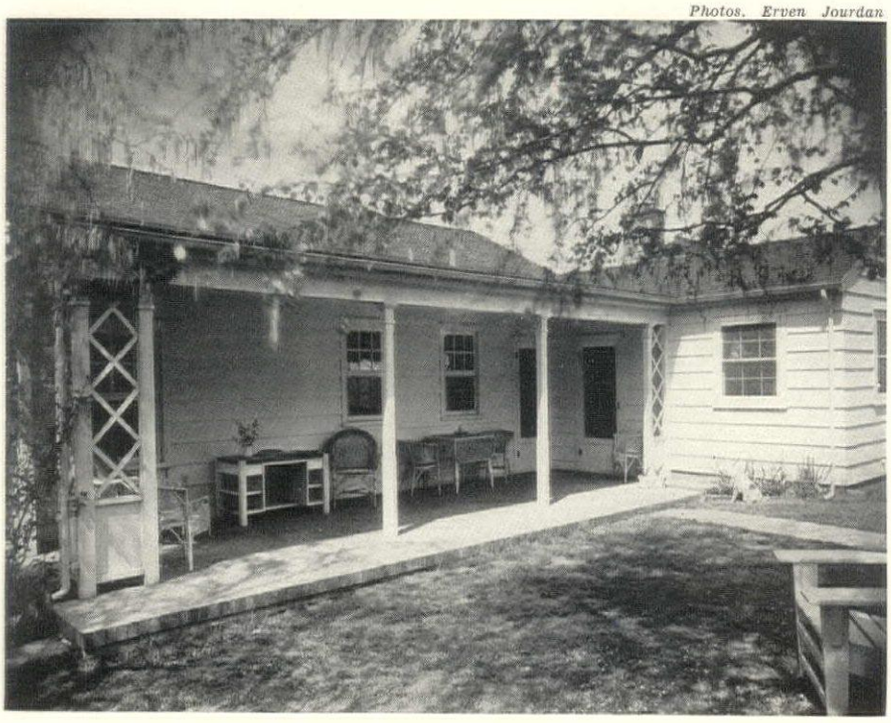
PLUMBING: Soil and vent pipes—cast iron, National Tube Co. Water pipes—copper, American Brass Co.

HEATING: Forced hot air system, humidifying and filtering. Oil burner—General Electric Co. Thermostat—Minneapolis-Honeywell Regulator Co. Water heater—National Steel Construction Co.



BEDROOM, BEDROOM-STUDY, BATH, LIVING PORCH

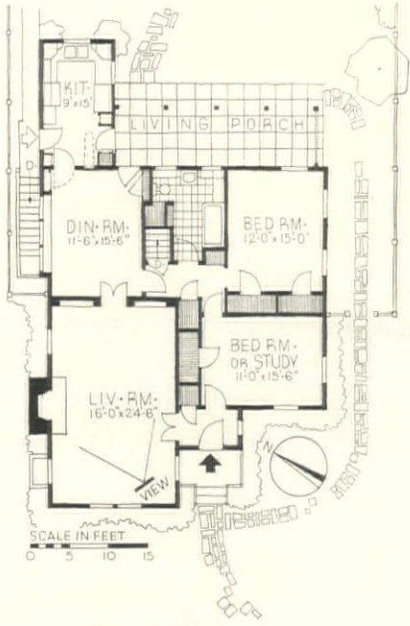
Photos, Erven Jourdan



HOUSE IN KLAMATH FALLS, ORE.

HOWARD R. PERRIN, ARCHITECT

A compact one-story house, somewhat unusual in its use of the dining room as an element of circulation. The kitchen occupies a small projecting wing at the rear; planned in the form of a complete U; it is well placed for service to the living porch and garden. There is a small basement, reached by stairs inside and outside. The garage is at the rear of the lot and is entered from a back street.



CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—shiplap siding, building paper, studs; inside—wood lath and plaster. Floors—oak finish.

ROOF: Covered with cedar shingles. Deck—covered with composition roofing.

FIREPLACE: Damper—Donley Bros.

SHEET METAL WORK: Galvanized iron, Armco, American Rolling Mill Co.

INSULATION: Outside walls and attic floor—rockwool, Johns-Manville.

WINDOWS: Sash—double hung, Silentite, Curtis Co., Inc. Glass—plate, Libbey-Owens-Ford Glass Co.

FLOOR COVERINGS: Kitchen—linoleum, Armstrong Cork Co. Bathrooms—rubber tile.

WALL COVERINGS: Bathroom — Linowall, Armstrong Cork Co.

HARDWARE: By Russell & Erwin Mfg. Co. Garage doors—Richard Wilcox Mfg. Co.

PAINTS: By Pittsburgh Paint Co.

ELECTRICAL INSTALLATION: Wiring system—knob and tube. Switches—General Electric Co.

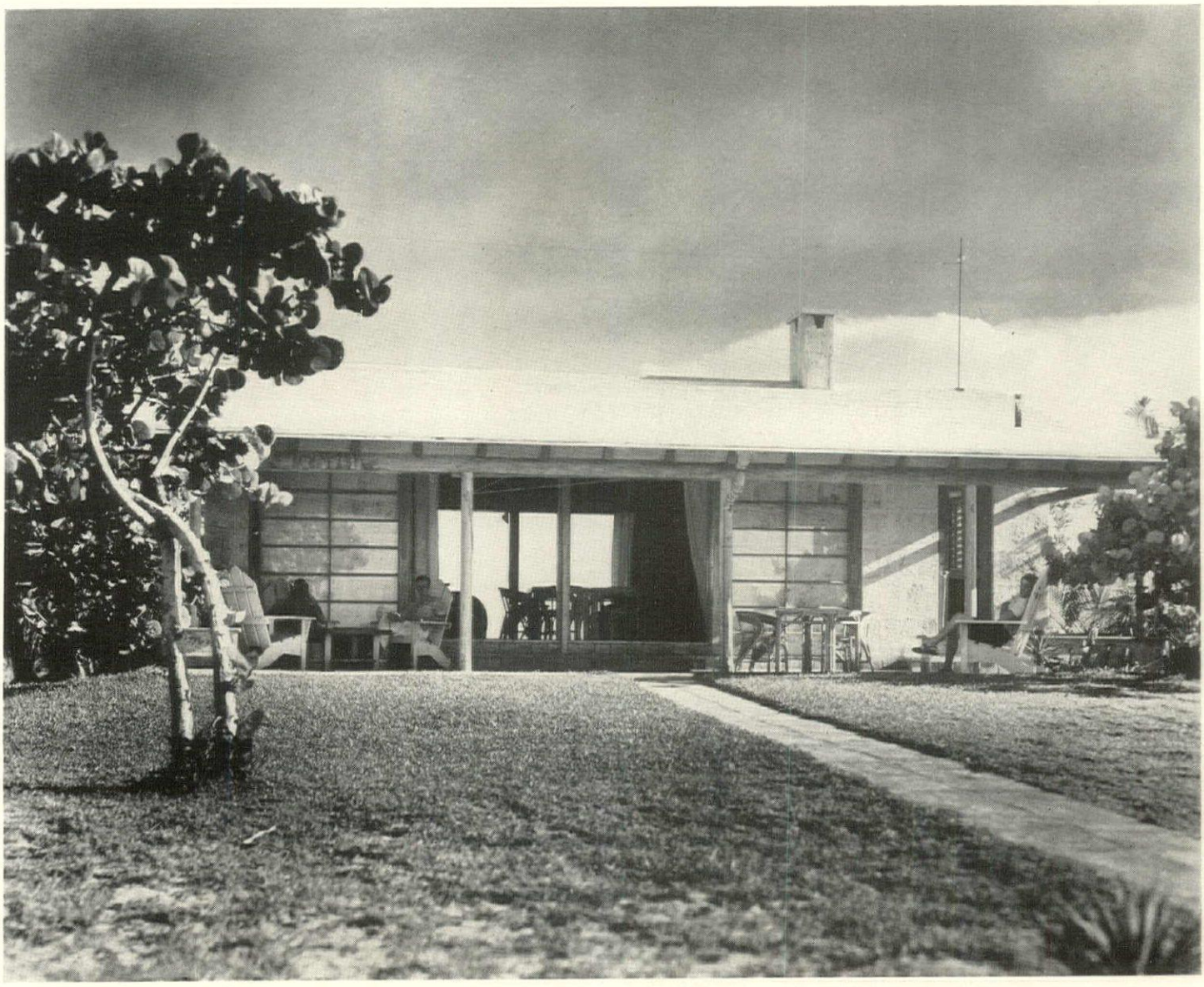
KITCHEN EQUIPMENT: Range—Westinghouse Electric & Mfg. Co. Refrigerator—Norge Corp.

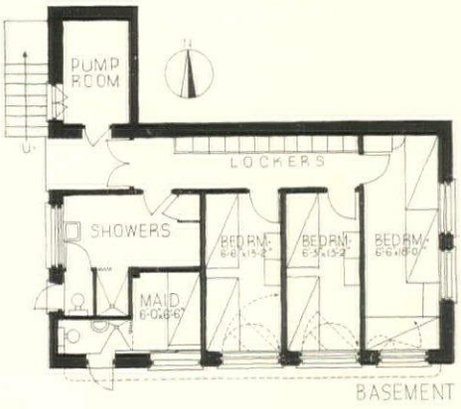
LAUNDRY EQUIPMENT: Sink—Crane Co. Washing machine—Bendix Home Appliance, Inc.

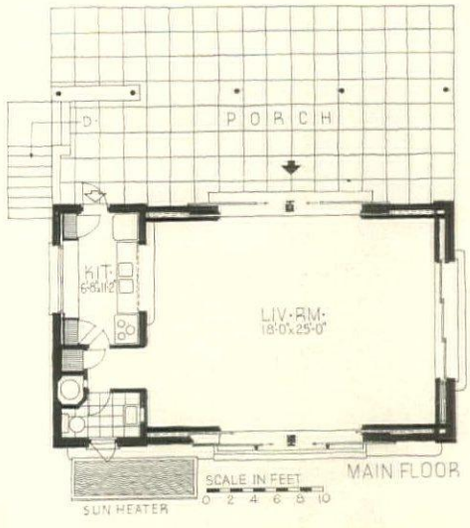
BATHROOM EQUIPMENT: Toilet and shower—American Radiator-Standard Sanitary Corp.; remainder—Crane Co.

HEATING: Thermosyphon system, operating from natural hot water well, thermostatically controlled. Boiler—Pacific Steel Heating Boiler Div., U. S. Radiator Co. Radiators—American Radiator Co. and Modine Mfg. Co. Thermostat—Minneapolis-Honeywell Regulator Co.

THREE BEDROOMS, TWO BATHS, KITCHEN-BAR







Located on one of the world's finest bathing beaches, this house is an appropriate and sensitive solution for a very special problem. Walls and roof of light-colored stone are excellent insulators against heat; the material is quarried locally, and apparently resembles the coral rock of Bermuda, for it can be cut with a wood saw and gradually hardens on exposure. Large openings ensure free passage for cooling breezes, and are protected against direct sunlight. The use of adjustable blinds for the bedrooms is especially interesting. Special care was taken to keep the bedrooms cool and dry by means of stacks which run in the walls from the bedrooms to the roof. According to the architect, this method of securing a forced draft for these rooms has been very successful. Living facilities are of the simplest, with a porch-type living room, a minimum kitchen that serves also as a bar, and bedrooms, lockers and showers on the lower floor.

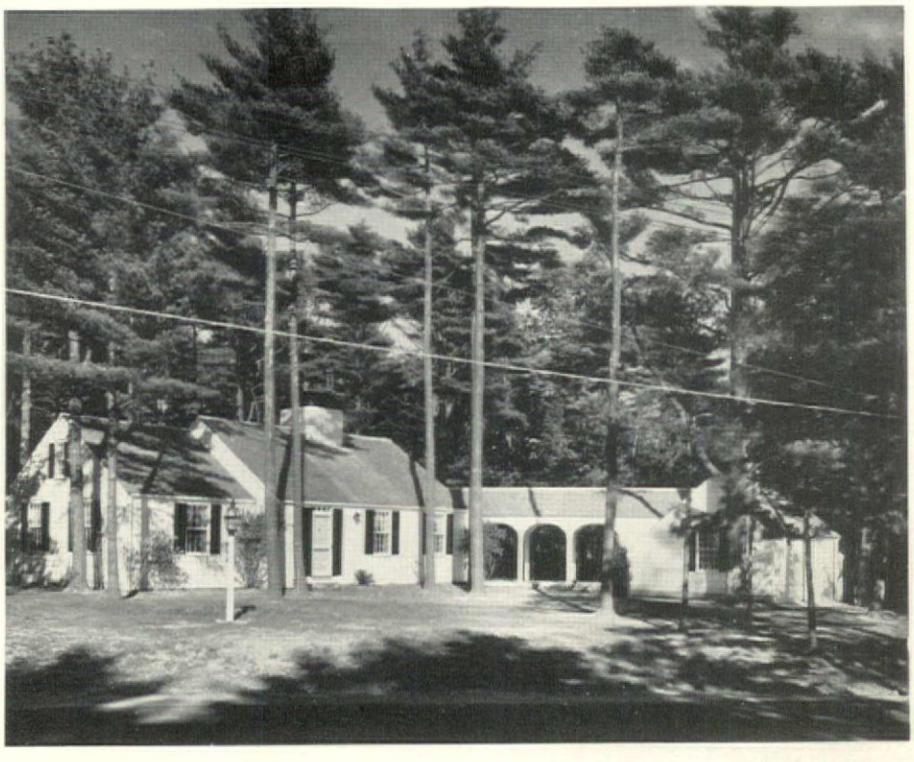
BEACH HOUSE IN HAVANA, CUBA

SOUTH ELEVATION

BEDROOM

LIVING ROOM

BEDROOM, LIBRARY-GUEST ROOM, TWO BATHS, KITCHEN-DINING ROOM



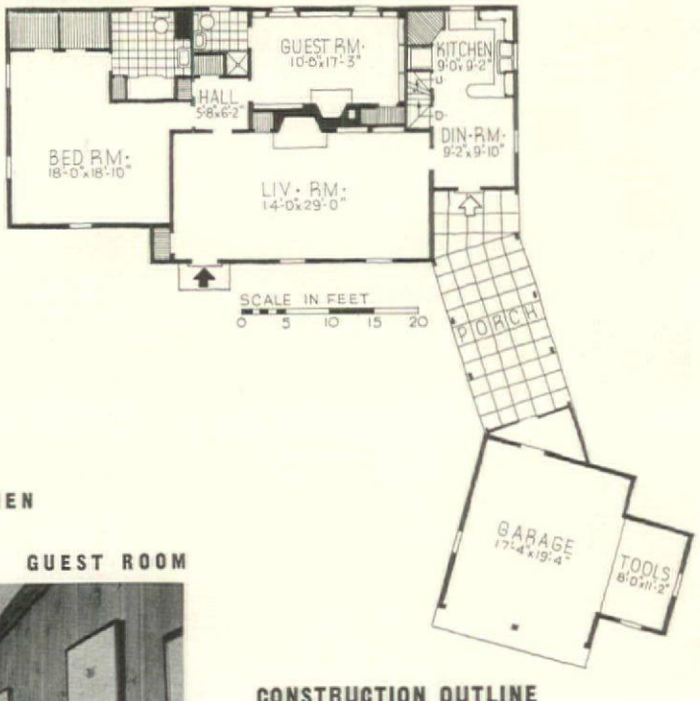
HOUSE IN HINGHAM, MASS.

GEORGE R. PAUL, ARCHITECT

The plan for this house was established by a very definite series of requirements, which included a garage as near as possible to the street, a porch suitable for dining, and a library usable as a guest room. The owner also wanted a house of the rambling Cape Cod type. Garage, porch and house form a rather irregular unit, the shape being determined by the view and by a desire to save as many of the tall pines as possible.

Photos, Paul Davis

KITCHEN



GUEST ROOM

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls — wood shingles, 12 lb. asphalt paper, fir sheathing, Cabot's Quilt insulation, Samuel Cabot, Inc.; inside—U. S. Gypsum Co. lath and plaster or pine. Floors—select red oak finish.
FIREPLACE: Damper—The Majestic Co.
SHEET METAL WORK: Flashing—copper. Gutters—fir. Leaders—Idaho pine.
WINDOWS: Glass—single strength, Libbey-Owens-Ford Glass Co.
FLOOR COVERINGS: Kitchen and bathrooms—linoleum, Armstrong Cork Co.
HARDWARE: By Yale & Towne Co.
PAINTS: By Sherwin-Williams Co.
ELECTRICAL INSTALLATION: Wiring system and switches—General Electric Co. Fixtures—Chase Brass & Copper Co.
KITCHEN EQUIPMENT: Range and refrigerator—Westinghouse Electric & Mfg. Co.
BATHROOM EQUIPMENT: By American Radiator-Standard Sanitary Corp.
PLUMBING: Hot and cold water pipes—copper, American Tubing Co.
HEATING: Hot water system. Boiler, radiators and water heater—Weil McLain Co.

HOUSES FOR DEFENSE

Private architects prove that a Government project can be attractive at low cost and without sacrifice of speed. Site planning and design studies with models precede 840 handsome houses.

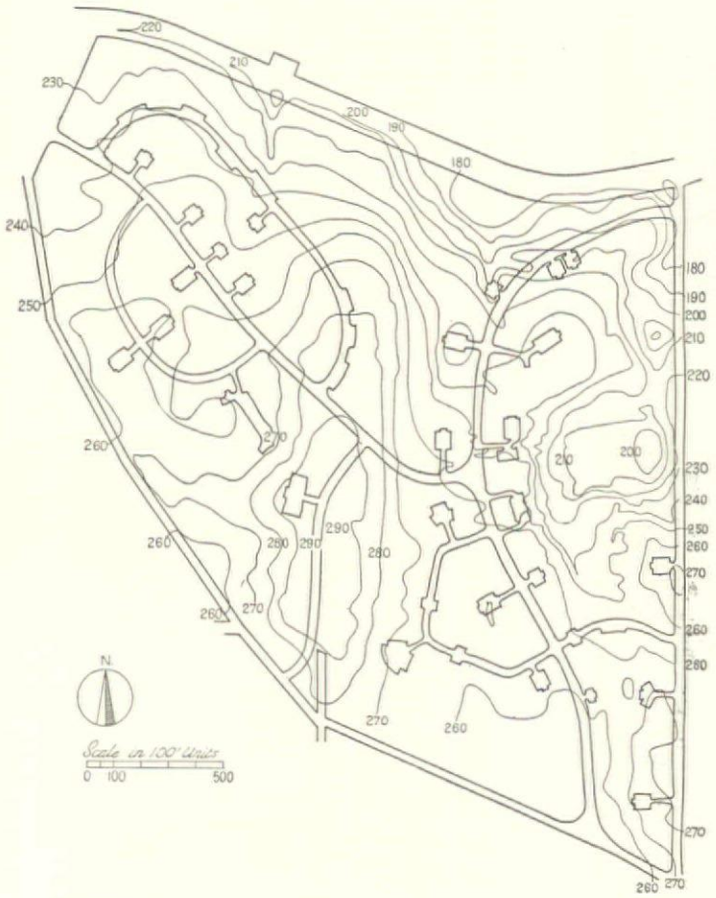
Big and convincing is the argument for the participation of private architects in defense housing offered by Westpark, an 840-unit Government project in the Naval shipbuilding town of Bremerton, Wash. It was built quickly: the first units were opened for occupancy just eight months after the architects were retained, the balance during the next three months of rapid-fire construction activity. It was built economically: dwelling facilities cost an average of $2,258 per unit, were raised to only $3,344 by the inclusion of land, utilities, site improvements, landscaping, community and other non-dwelling facilities. And, despite this speed and economy, Westpark is attractive: the natural beauty of the wooded tract was enhanced by reasonable site planning, by simple but effective landscaping and, most important, by good architectural design—all of which were carefully studied in scale models as well as on paper. Seldom does defense housing receive such design attention, and seldom do the finished projects compare with Westpark.

Roger Dudley

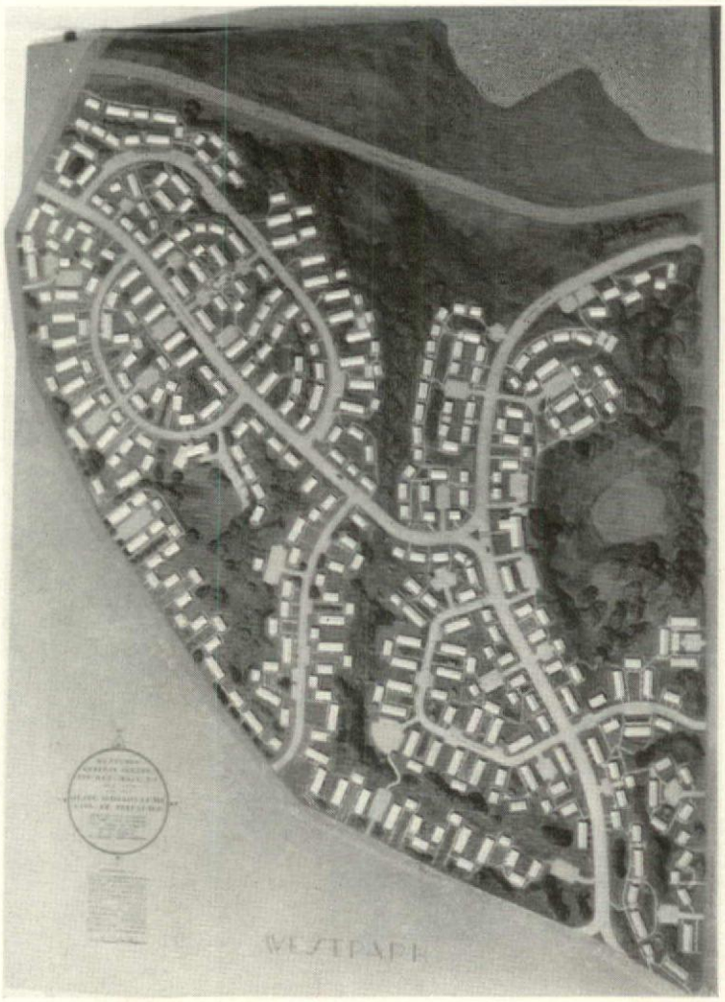
Background. With 10,000 Navy enlisted men and civilian shipyard workers crowding its 15,000 peacetime population, Bremerton recognized the need for new housing early in the defense program. In September 1940, THE FORUM (p. 4) reported that "garages have been converted into bedrooms; beach houses are commanding $50 rents; the municipal jail sleeps seven or eight newcomers per night; others sleep in trailer camps, parked automobiles, tents and on the city park's well worn grass." By that time Bremerton had formed a local housing authority, had petitioned the U. S. Housing Authority for loans and subsidies with which to build and operate 1,400 units of public housing to supplement the 500 new units expected of private enterprise.

Approved by the Federal Defense Housing Coordinator, this public program was soon underway, despite the opposition of local property owners and the Apartment Operators Assn. They recalled that during World War I Government built in Bremerton a hotel, an apartment project and some 250 scattered houses whose boarding-up at

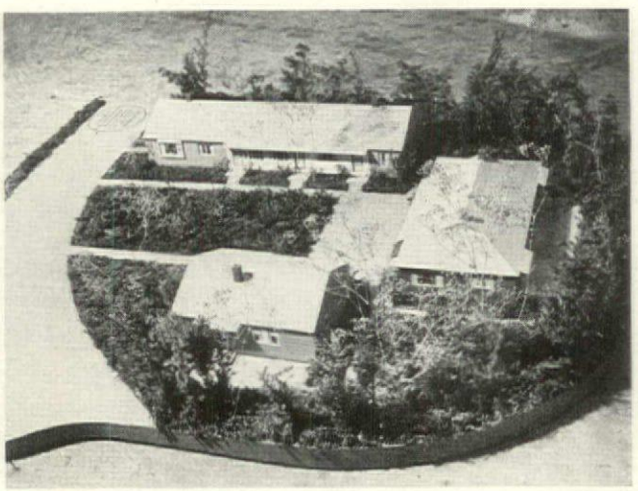
HOUSES FOR DEFENSE — BREMERTON, WASH.



CONTOUR MAP



SITE PLAN MODEL



DETAIL MODELS

Site plan of Westpark covers 95 acres, makes room for 840 dwelling units in 357 one-, two- and four-family buildings. It was developed by Architects Naramore, Grainger & Johanson in collaboration with Landscape Architect Butler Sturtevant and Civil Engineer Edward A. Duffy. (Other participating professionals: Mechanical Engineer Lincoln Bouillon, Structural Engineer Edwin L. Stranberg and the contractor, Western and West Coast Construction Co.) Solving the problem presented by rough terrain with the aid of the scale models presented on this page, the site planners arranged the buildings in small intimate groups, avoided the atmosphere of regimentation so often apparent in large scale housing projects.

AIR VIEW

Roger Dudley

In real life, Westpark from the air (top view) closely resembles the site plan model (opposite) from which it sprang. Likewise, the three-building court (viewed immediately above) which includes a hipped roof variation of the standard two-family building. Note use of different exterior finishes and colors.

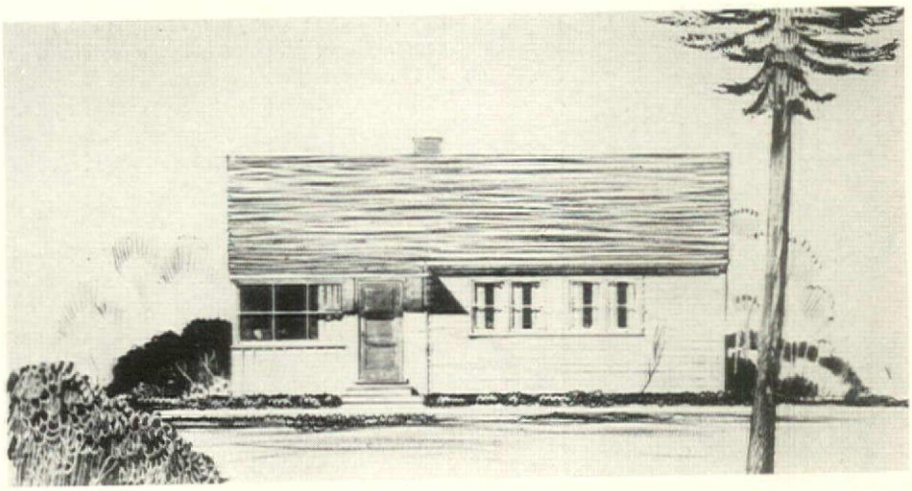
the Armistice crippled realty values for years. However, since the new World War II housing is being concentrated in a few large projects and will be operated by the Government after the emergency, many of the fears of private interests have been quelled.

Progress. First of Bremerton's new public projects is Westpark—originally conceived as a 600-unit defense development to be financed with USHA funds and later expanded to 840 units with Lanham Act funds entrusted to USHA. On August 14, 1940, Architects Floyd A. Naramore, Clyde Grainger and Perry B. Johanson from three different Seattle offices were retained by the Bremerton Housing Authority. In six weeks they had completed the preliminary drawings for the first 600 units; in three more, the working drawings and specifications. Bids were opened on November 13, and after ten days' consideration the $1.8 million lump sum contract was awarded to Seattle's Western and West Coast Construction Co. The "proceed order" was issued on December 11 with the requirement that the 600 dwelling units, eight laundry buildings and one community building be completed in 150 days—by March 9.

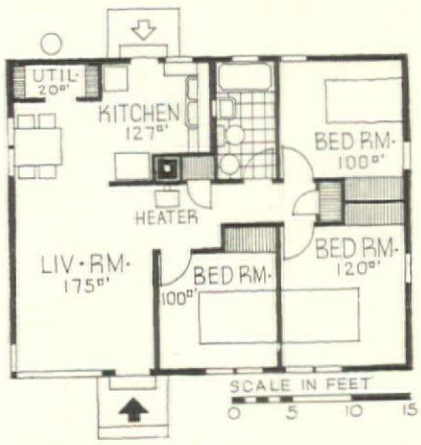
Meanwhile (January 29), the contractors were awarded another contract of about $686,000 covering the 240 additional units and a second community building designed by the same architects for the same site. These were completed and occupied only ten days after the original group—on July 12. During the construction of these "permanent" houses and those in Bremerton's three other USHA-aided defense projects (all 1,400 units are now complete), Government found it necessary to throw up 500 single-worker dormitory units and to rush a squadron of 200 family trailers to stop the local housing gap.

Land planning. Located about three miles west of the city center and the booming Navy Yard, Westpark covers about 95 acres of moderately rough terrain overlooking one of the many salt water bays which surround Bremerton. Much of the logged-off land was covered with a second growth of fir, pine, cedar and hemlock; some had been developed into small farms; one deep ravine had served as a garbage dump. Bounded on one side by a State highway and its bus line to Bremerton, the property is also conveniently near a number of grocery and miscellaneous small stores.

Such was the site handed the architects who, in collaboration with Landscape Architect Butler Sturtevant, were to develop it into an 840-family community. Most important factor in the land planning was the terrain. A north-south ridge divides the site almost in half, and several areas were considered too steep for economical development—the elevation varies 125 ft. between the low and high points. To minimize grading expenses and thus to preserve a maximum amount of existing



ONE-FAMILY DWELLING



Roger Dudley

growth, streets and the buildings were laid out to follow the contours.

Another controlling factor behind the site development was the proposed post-war use of the project. While it will house primarily civilian Navy Yard employes "for the duration," Westpark will subsequently be occupied for short terms (60-90 days) by the families of Navy enlisted personnel on shore leave. In view of this ultimate short-term tenancy, it was decided to cut tenant and project maintenance to the minimum by leaving most of the open areas in their natural state and by planting the other areas with slow growing ground covers. For this purpose Landscape Architect Sturtevant specified ivy, roses and hypericum, maintenance expenses for which will be above average for the first few years but next to nothing thereafter.

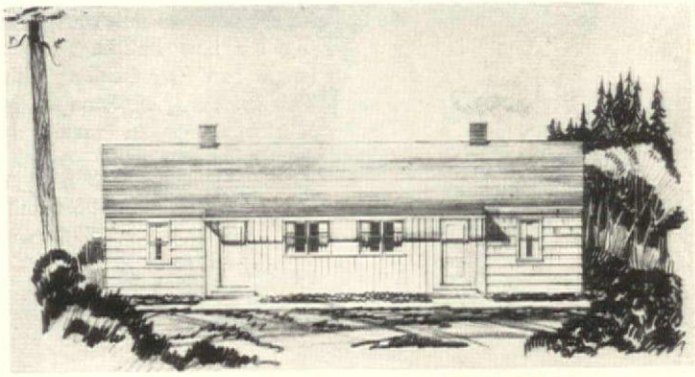
To the same end, backyards are graveled and the numerous children's play areas are bituminous paved. Only lawn areas are around the two community buildings and their adjacent play fields, one of which was formerly the city garbage dump. The landscape architect's task was somewhat simplified by the presence on the site of such shrubs as broadleafed evergreens, madrona, mahonia, huckleberry and dogwood trees. "To add sparkle to the dull winter months," he specified the planting of large numbers of birch trees, set forsythia bushes against the masses of green background.

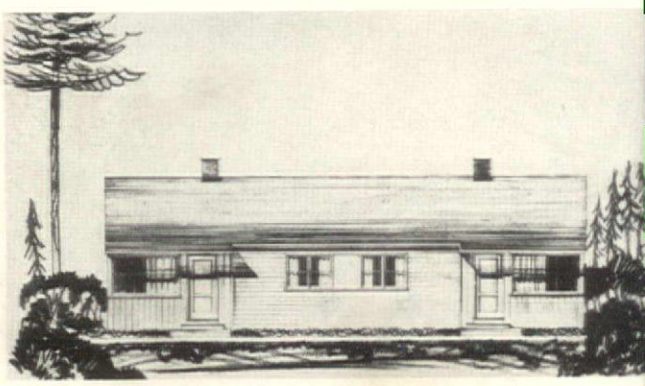
As shown in the accompanying photographs, the land planning problem was carefully studied with the aid of scale models—first, the relation of buildings to the land and, then, with larger models, the relation of the buildings to each other. Note the close parallel between the photographs of the models (p. 410) and the finished project (p. 411).

Architecture. Much the same type of study preceded the final design of the houses—even to the development of the minutely accurate scale models shown on these two pages. Since it was estimated that most of Bremerton's current and post-war housing demand would come from two-person families, it was logical that Westpark should be comprised primarily of one-bedroom dwelling units. And, since the project is located at the edge of a suburban area, it was decided to preserve

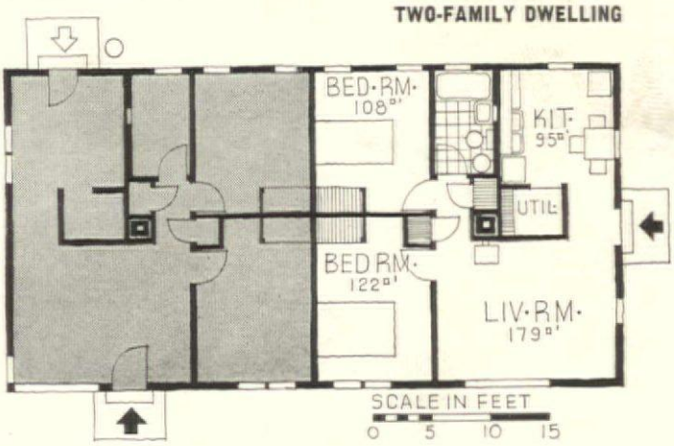
(Text continued on page 414)

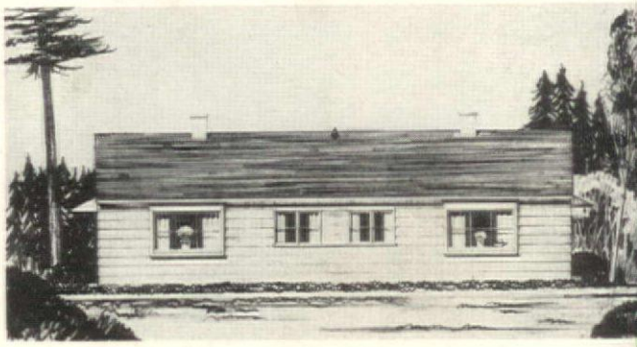
One-family house plan shown above jibes with the rendered elevation and, when reversed, with the scale model. Completed house (left) is based on the same plan, but displays one of several variations in fenestration. According to the architects, "The floor plans are all developments of minimum requirements of the U. S. Housing Authority. The attempt was made in the three-bedroom plan to have living, dining and kitchen areas open in sequence with a continuous ceiling line to give an appearance of greater area" (see interior view, p. 415).



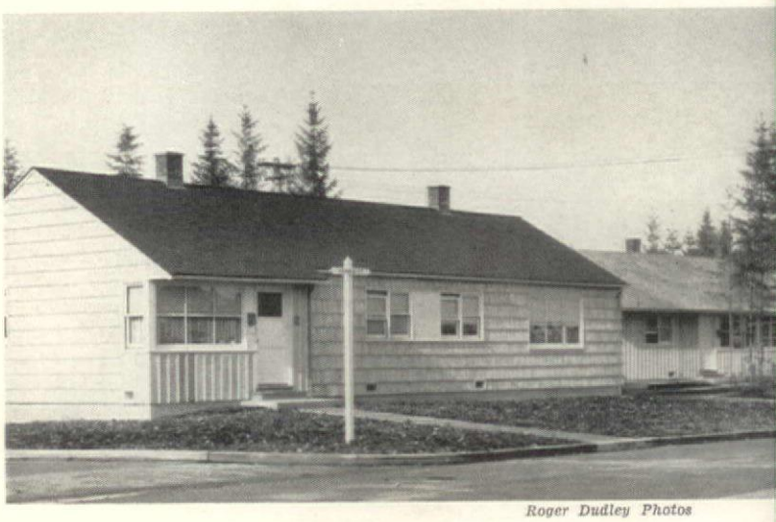


TWO-FAMILY DWELLING



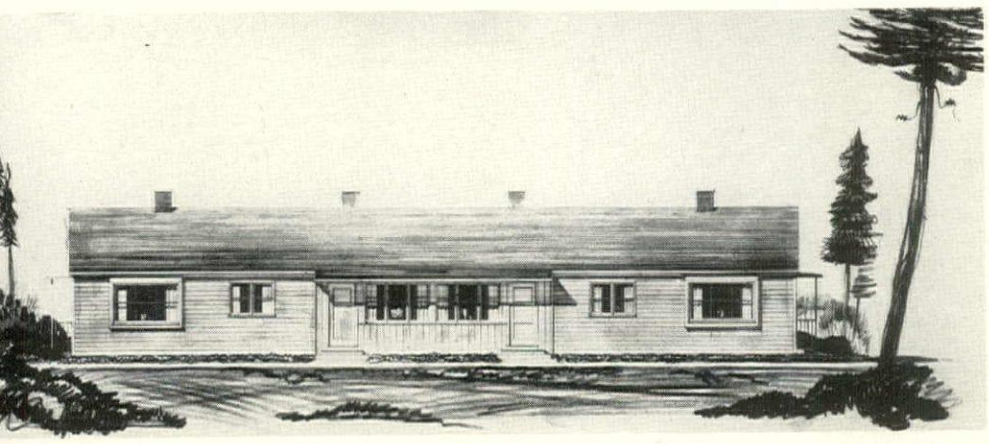


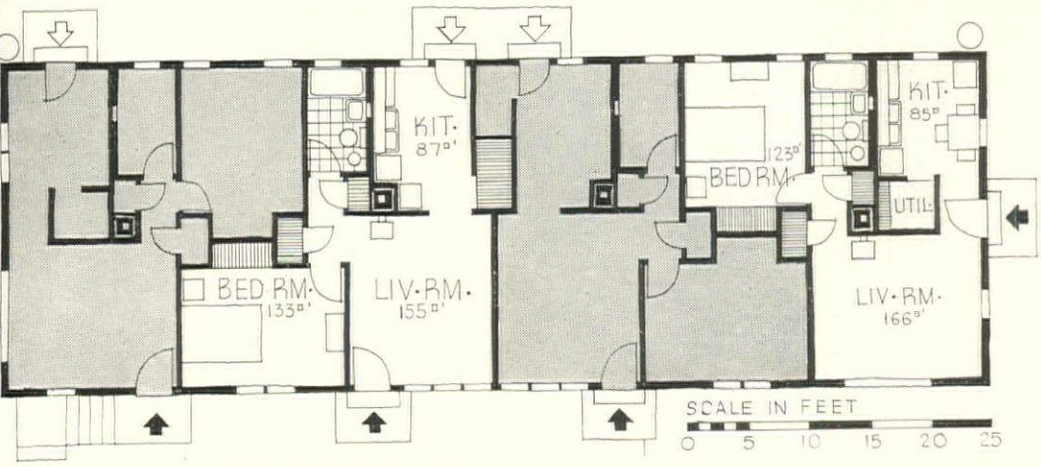
MODEL

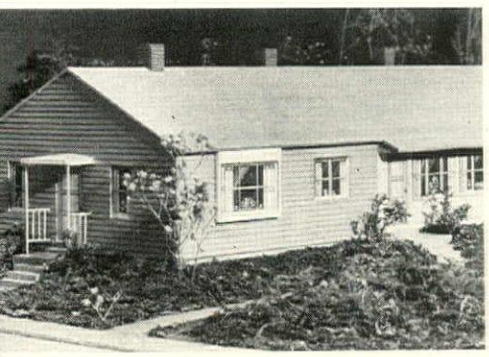


Roger Dudley Photos

Two-family buildings shown completed on this page also spring from one standard floor plan, for which three exterior variations were rendered. Thus, the completed building to the right follows in every detail the third rendered exterior variation, while the building above it is a combination of the second and third rendered variations. And, the model pictured above is like the first rendered variation, except for its hipped roof. Note the use of three different exterior materials—all native wood: shingles, clapboards and vertical boards and battens.







FOUR-FAMILY DWELLING

Best illustrations of the plan-to-rendering-to-model-to-building sequence are these photographs of Westpark's four-family building. Particularly noteworthy are the large windows and closets, the compact arrangement of plumbing fixtures. Heat is supplied by oil-fired space units; cooking and water heating is by gas; refrigeration, by electricity. Eleven detached laundry buildings, strategically spotted about the 95 acre tract, supplement the laundry trays built in combination with all kitchen sinks.

Roger Dudley

its character as much as possible by limiting the new buildings to one story in height and four dwelling units in length. This reasoning explains the breakdown of Westpark into its various building and dwelling unit sizes:

392	1-BR units in	98	4-unit buildings
378	2-BR units in	189	2-unit buildings
70	3-BR units in	70	1-unit buildings
840	units in	357	buildings

In addition to these living quarters, the site plan makes provision for two community buildings and eleven laundries well distributed among the residential buildings. The latter are roughly the same size and design as the one-family houses.

In the interests of economy, only one floor plan was developed for each of the three building types, but the standardization was deftly disguised by numerous variations in exterior appearance:

1) Entrance details are varied in design and, except in the case of interior dwelling units, the entrances are frequently shifted from the front to the side of the living rooms. 2) Coupled with the latter, three variations in living room fenestration are used for each building type to take advantage of orientation and outlook — see renderings, p. 413. 3) While most of the roofs are gabled, some are hipped. 4) Three types of exterior finish are employed either individually or in combination with one another—shingles, clapboards and vertical boards and battens. 5) Five colors and white are used. The different combinations of these dozen design and finish variations are almost limitless and were used in good taste at Westpark to give the many houses the tenant-pleasing character of individuality.

Particularly noteworthy is the use of color. In the wooded sections of the site, warm colors predominate — tan, dark brown and red. Where the growth is low, houses are painted gray, green or tan. All are roofed with bleached gray shingles. Finally, to relieve these large expanses of color, those portions of the exterior walls sheltered by the wide eave overhangs are frequently painted white with the doors accented in bright yellow, pink, blue and green.

Construction of Westpark was, for the most part, conventional. There were, however, several money- and time-saving exceptions: 1) Gabled end walls were framed and sheathed horizontally on jigs in a central field shop, were then trucked to the various building sites for erection. 2) All other framing members were precut before delivery, but were conventionally put together. 3) Concrete pier footings used inside the poured concrete foundation walls were precast in another field shop. 4) "Roughing-in" plumbing was preassembled at a central point, installed in the houses as units.

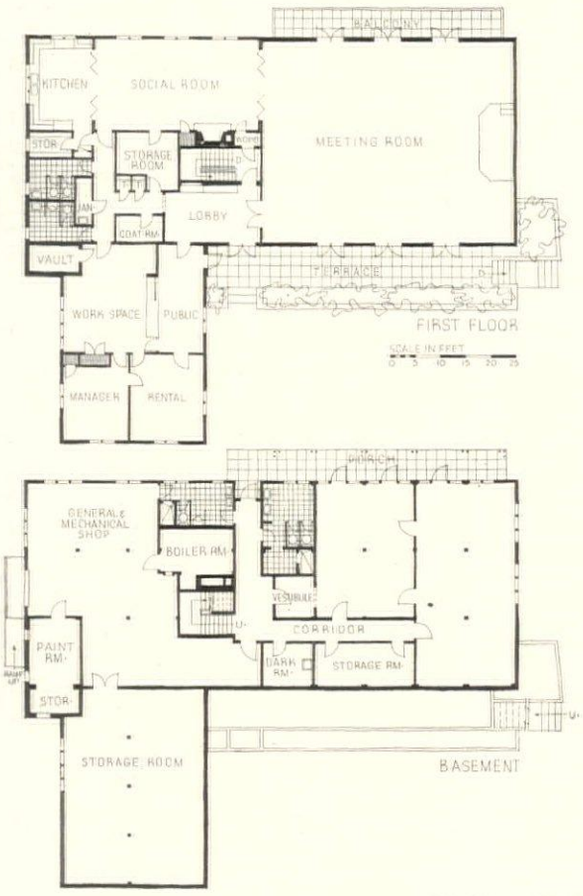
Cost. In view of Westpark's above-average appearance in site layout, building design

(Text continued on page 42)

LIVING-DINING ROOM

KITCHEN

Living-dining space pictured to the left is typical of Westpark's one-family house shown on page 412. Two community buildings, like the one shown below, provide the management with office and storage space, the tenants with indoor recreation facilities. They are surrounded with play fields—the only lawns within the project. Many of the small courts, on which the residential buildings face, are paved for recreational purposes.



COMMUNITY BUILDING

Photos, Roger Dudley

FIVE ROOMS AND LOT AT $5,200

is the average house in a sampling of 160,000. FHA experience indicates plenty of headroom under the priority price ceiling.

Despite complaints about the $6,000 price ceiling on private defense houses eligible for priority assistance, Government's firm attitude has been made clear by its Chief of Housing Priorities Sullivan W. Jones: "I know, and everybody who builds small houses knows, that you can build a house anywhere in the U.S.—a livable house suitable for defense workers—and sell it with land for less than $6,000. We are standing pat on that in spite of the pressure." To prove his point, Architect Jones might well have pointed to FHA's recently issued annual report which shows that about 70 per cent of all single-family houses built last year sold for less than $6,000 with lot.

More than an argument for one of Government's present priority policies, FHA's 1940 review is one of the most accurate reporters of facts and trends in the fields of house building and finance. Interesting, useful and in many cases prophetic are the characteristics of houses, mortgages and borrowers which these FHA statistics define.

HOUSES.

In the most comprehensive survey of its kind, FHA examines the 160,000 new single-family houses which were built during 1940 with the aid of mortgage insurance. This is a wide sampling, embracing about 42 per cent of all the privately financed detached houses produced in the entire U.S. But, there are two limitations of the FHA data which affect the year-to-year trends discussed below and, to a lesser extent, the general usefulness of the 1940 averages: 1) Since its establishment in 1934, FHA has several times liberalized its insurance policies, extending the term of eligible mortgages up to 25 years and the mortgage-to-value ratio up to 90 per cent. This action has brought an increasing number of low income purchasers and low priced houses into the program. 2) Houses and lots valued at more than $20,000 are not eligible for mortgage insurance, and a large proportion of $8,000 to $20,000 properties are financed without benefit of mortgage insurance. Hence, the FHA statistics tend to overstate somewhat the preponderance of low price properties.

Sales prices. Most significant fact disclosed by the FHA report is that the building industry is paying increasing attention to the advice of market analysts, is continually shaving the size and price of its product to reach the masses. Thus, last year's average new one-family property—house and lot—was valued at $5,199, compared with $5,352 in the preceding year and $6,440 back in 1935. (Since properties are usually marketed at or near FHA's appraised valuations, these figures may be considered as selling prices.) Particularly noteworthy was the decrease registered in 1940, when family incomes, construction costs and most other prices were on the upswing. There are two reasons behind the trend in new house sales prices: 1) The average house has continually decreased in size from six rooms in 1936 to five rooms last year. 2) Builders are capitalizing more and more on the economies of large scale operations and efficient construction techniques.

Plotted on the accompanying graph, the trend of average property valuations, or sales prices, and divergent trend of construction costs cut curves which demand attention. And, chances are that the defense economy will continue them in the directions indicated by the arrowheads. This fall, construction costs rose to 112 per cent of the 1935-39 average from the last point (103 for 1940) plotted on the graph. Meanwhile Government has placed a ceiling of $3,500 over the continually increasing number of publicly financed defense houses, a ceiling of about $4,500 over privately financed defense houses built under FHA's new Title VI program, a ceiling via its priority procedure of $6,000 over all other privately financed defense houses and has made it difficult to build any houses which sell for more than this amount. Net effect of these ceilings: this year's average property and next year's will sell substantially below the 1940 average of $5,199.

Since most builders erect only a few relatively high priced houses each year, they will probably be surprised by FHA's proof that more than half of all the houses in the country are built to sell for $4,000 to $6,000 and that 22 per cent of the total are cheaper still (see tabulation below, cols. 2 & 3). While it is shown that only a little more than 5 per cent of all FHA-insured properties sell for more than $8,000, the percentage would probably be swelled if uninsured properties were also included in the calculations. But, not by much; a previous sampling based on building permits issued in 72 typical communities has indicated that only about 13 per cent of the total number of one-family properties sell above $8,000. (ARCH. FORUM, Dec. 1940, p. 535.)

Size. As mentioned above, the average property at $5,199 contains 5.1 rooms, but only about one-quarter of the 160,000 houses surveyed boast six rooms each. Roughly another quarter contain 4 rooms. Five-room units predominate, account for almost half of the total.

Another measurement of the size of today's house is its garage capacity. In a little more than half of the cases, one-car garages are included in the property valuation or sales price, while no garage is provided for about one-quarter of them. The remaining quarter make room for two or more cars. Interestingly, the shift

CHARACTERISTICS OF NEW ONE-FAMILY HOUSES BY PROPERTY VALUATIONS

PROPERTY VALUE	Distribution of properties		Garage capacity			Exterior material				Land values in metro. areas	
(HOUSE & LOT)	% each value	Cumulative	No garage	One car	Two or more cars	Wood	Brick	Stucco	Other	Average land value	% of total prop. value
Under $2,000	0.1%	0.1%	54.7%	37.2%	8.1%	79.1%	9.3%	4.6%	7.0%	....	....
$2,000 - 2,999	3.1	3.2	38.3	58.0	3.7	82.3	1.1	8.9	7.7	$ 303	11.1%
$3,000 - 3,999	18.6	21.8	25.0	56.4	18.6	61.6	4.4	23.3	10.7	402	11.4
$4,000 - 4,999	26.8	48.6	27.8	50.3	21.9	52.9	16.1	20.4	10.6	553	12.5
$5,000 - 5,999	23.6	72.2	24.8	53.1	22.1	39.9	33.3	18.7	8.1	654	12.1
$6,000 - 6,999	16.5	88.7	23.9	54.0	22.1	29.5	47.0	15.8	7.7	848	13.5
$7,000 - 7,999	5.7	94.4	14.3	57.8	27.9	25.8	52.2	12.9	9.1	1,078	14.7
$8,000 - 9,999	3.8	98.2	9.8	49.7	40.5	21.4	53.6	14.2	10.8	1,325	15.4
$10,000 -11,999	1.0	99.2	5.6	37.4	57.0	17.9	55.4	15.1	11.6	1,739	16.4
$12,000 -14,999	0.5	99.7	3.7	27.5	68.8	16.1	50.5	19.7	13.7	2,326	18.0
$15,000 and over	0.3	100.0	3.4	16.8	79.8	14.8	51.3	19.1	14.8	3,264	18.7
TOTAL	100.0%	100.0%	24.4%	53.0%	22.6%	45.1%	26.8%	18.7%	9.4%	$ 698	13.1%

in predominance from one- to two-car garages occurs at the $10,000 price level.

Construction. As might be expected, wood is the most popular exterior building material; it is used for shingles and clapboards on 45 per cent of the houses. But, as shown in the tabulation below (cols. 7-10), when the $6,000 price level is reached, brick assumes the dominant position. A little more than one-quarter of all the houses are either brick veneered or of solid brick walls — in the ratio of roughly two-to-one, respectively. Stucco, whether alone or in combination with wood or brick, outruns brick in the under-$5,000 field, has West Coast tradition to thank for its rank as the third most popular exterior material.

The "other" exterior materials used on one out of ten houses include principally asbestos shingles, stone, concrete blocks and, subordinately, steel siding and prefabricated panels. Note in the tabulation to the right the difference in average valuations of new houses built of these four classifications of materials.

Lot values. A helpful rule-of-thumb for house builders and purchasers is the ratio of land value to total property value presented for each price bracket in the tabulation below (cols. 11-14). Inside metropolitan areas, where more than three-quarters of all FHA-insured houses are built, the value assigned to the lot of the average $5,328 property amounts to $698, or 13 per cent. But, land values range from $303 for $2,000-2,999 properties to $3,264 for the $15,000-and-up group, or from 11 to about 19 per cent to total property valuation, respectively. Outside metropolitan areas where land comes cheaper, both its value and its ratio to total property value are correspondingly lower; $508, or 11 per cent of the average $4,618 property, is the average value of the non-metropolitan lot.

MORTGAGES

With an original principal amount of $4,242, the average FHA-insured mortgage on one- to four-family houses covers about 85 per cent of the property value, is amortized over a 23 year period (two years shy of the maximum) by monthly payments of $26.59.

BORROWERS

Looking into the personal finances of borrowers, FHA has found that the average purchaser of new properties boasts an annual income of $2,665, pays 12 per cent of it toward the interest, insurance and amortization of his mortgage, which is secured by a property valued at almost two times his annual income. Only one-third of the borrowers buy properties whose values fall within the limits of the generally accepted rule-of-thumb: two to two-and-one-half times annual income. More than 40 per cent spend less; about 27 per cent spend more.

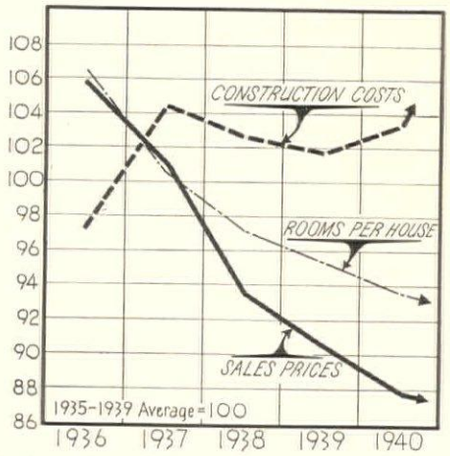
FHA

Good indication that the averages hit by the FHA program are just about right from a sound-business point of view may be seen in the status of the insurance agency's financial accounts. By the end of last year FHA had insured a total of 634,000 mortgages to the tune of $2.7 billion on new and existing one- to four-family properties and had taken a licking on only 2,311—less than 0.4 per cent of the total. At that time, 1,613 of the acquired properties had already been sold at an average net loss of $611 each, involving a total net charge of $985,000 against FHA's Mutual Mortgage Insurance Fund.

This deduction is small compared to FHA's net earnings of $8 million last year from its insurance premiums, fees and investments which were added to the insurance fund. During the fiscal year ended June 30, 1941, FHA for the first time in its seven-year history made enough money to cover its operating expenses which theretofore had been footed wholly or in part by Congressional appropriations. Today, FHA is one of the few Government agencies which are making money instead of spending it.

Land values outside metro. areas

Average land value	% of total prop. value
$ 199	11.0%
236	10.0
343	9.9
451	10.3
577	10.8
740	11.8
906	12.4
1,199	13.9
1,532	14.6
2,172	16.9
3,268	18.6
$ 508	**11.0%**



Sales prices (FHA-appraised values of new houses and lots) have dropped to 88 per cent of the 1935-39 level while building costs have risen above 103 per cent. Decreasing house sizes (rooms) are only partially responsible. Raw data sources: FHA and FHLBB.

CHARACTERISTICS OF NEW HOUSES

Total properties FHA insured 162,333

SIZE DISTRIBUTION of Properties
- One-family 99.0%
- Two-family 0.7%
- Three-family 0.1%
- Four-family 0.2%

VALUE of properties—all sizes $5,223
- One-family $5,119
- Two-family $6,976
- Three-family $7,932
- Four-family $9,971

LOCATION of properties
- Inside metropolitan areas 78.7%
- Outside metropolitan areas 21.3%

One-family houses FHA insured 160,710

VALUE OF PROPERTY—average $5,199
- Median $5,059

LAND VALUE—average
- Inside metropolitan areas ..... $ 698
- Outside metropolitan areas ..... $ 508

LAND VALUE—as % of total value
- Inside metropolitan areas 13.1%
- Outside metropolitan areas 11.0%

SIZES OF PROPERTIES BY ROOMS
- Proportion with 3 or less rooms 0.9%
- 4 rooms 21.7%
- 5 rooms 47.1%
- 6 rooms 25.7%
- 7 rooms 3.5%
- 8 or more rooms 1.1%
- Average number of rooms 5.1
- Median number of rooms 5.6

GARAGE CAPACITY
- No garage 24.4%
  - Median property value $4,848
- One-car garage 53.0%
  - Median property value $5,054
- Multi-car garage 22.6%
  - Median property value $5,354

MATERIAL DOMINATING EXTERIOR
- Wood 45.1%
  - Average property value $4,692
  - Median property value $4,599
- Brick 26.8%
  - Average property value $6,169
  - Median property value $6,044
- Stucco 18.7%
  - Average property value $5,045
  - Median property value $4,863
- Other materials 9.4%
  - Average property value $5,172
  - Median property value $4,868

CHARACTERISTICS OF FHA MORTGAGES AND BORROWERS

- Annual income of average borrower $2,665
  - Median borrower $2,381
- Principal amount of average mortgage $4,424
  - Median mortgage $4,358
- Mortgage to property value ratio—
  - Average 84.7%
  - Median 87.0%
- Duration of mortgage—average ..... 23 yrs.
  - Median ..... 25 yrs.
- Monthly mortgage payment—average.... $26.59
  - Median $25.39
- Monthly payment to income ratio—
  - Average 12.0%
  - Median 12.8%
- Property value to annual income ratio—
  - Average 197.0%
  - Median 214.0%

FLORIDA TRAINING STATION FOR MARITIME COMMISSION

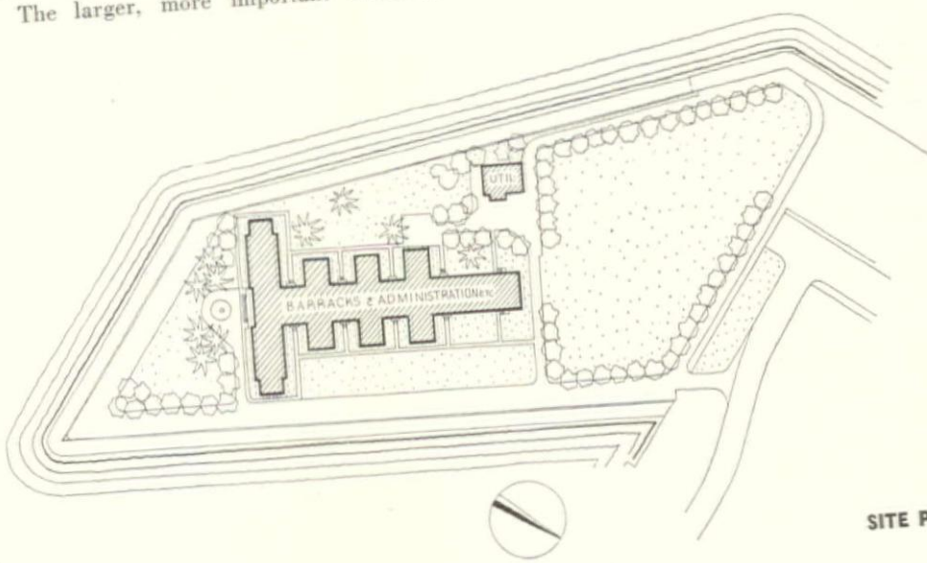
displays Federal architecture at its best. PBA designers divide the 400-man dormitory project into eight buildings, join them with open porches, wind up with a hotel-like structure of clean design. Builder Blair produces it for $600,000.

To man the 1,200 new ships which have already begun to slide down the ways for the nation's enlarged Merchant Marine, the U. S. Maritime Commission last year launched an extensive training program for both officers and seamen. Supplementing its Cadet Training System, which is coordinated with the State Nautical School System, the Commission in July 1939 established the Maritime Service to be administered by the U. S. Coast Guard for the Commission and under the general supervision of Director Telfair Knight of its Division of Training.

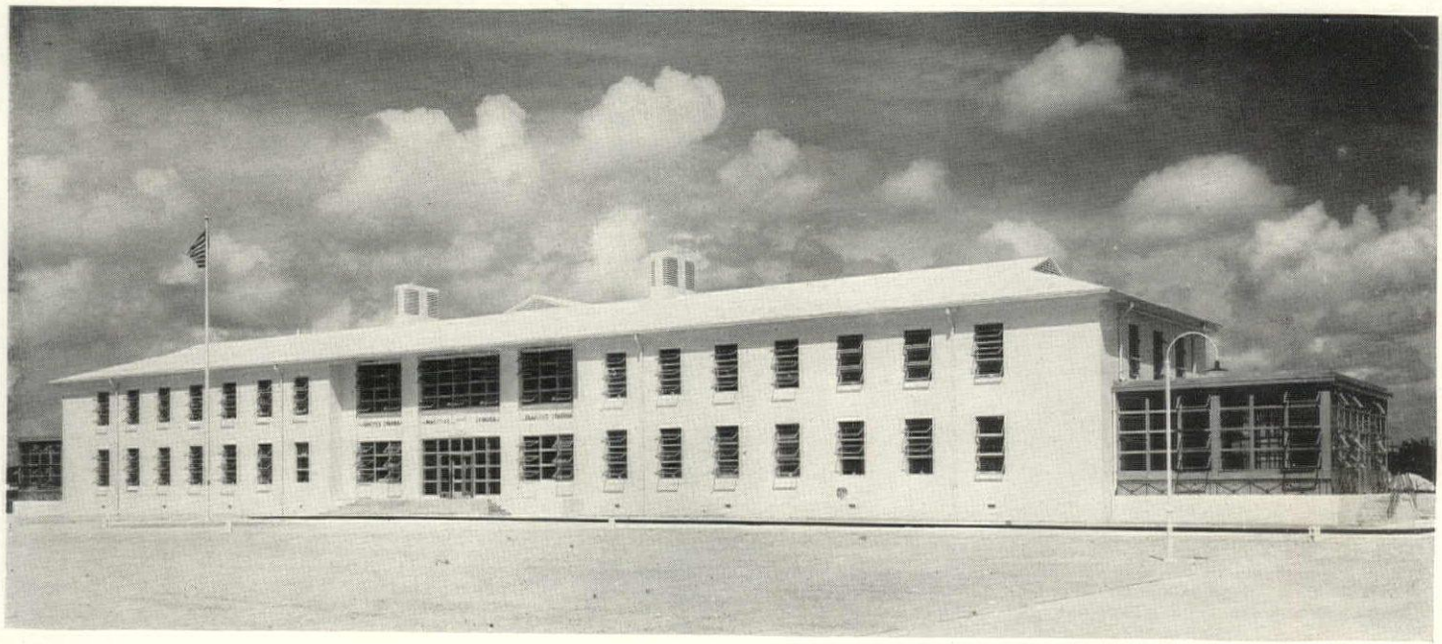
One phase of this new operation is the training of apprentices for the deck, engine and steward departments of ships and for radio operation. For this purpose, the Commission required more elbow room and got it this summer with the completion of the St. Petersburg Fla. Training Station (presented on these pages) and an exact duplicate in far-away Hueneme, Calif. Each station turns out 400 apprentices every two months, sends them off on four-month training cruises.

Designed by Government's Public Buildings Administration under the direction of Commissioner W. E. Reynolds, the handsome Florida project overlooks Bayboro Harbor from a ten-acre site bulkheaded, filled and donated to the Commission by the City of St. Petersburg. It is comprised of two buildings.

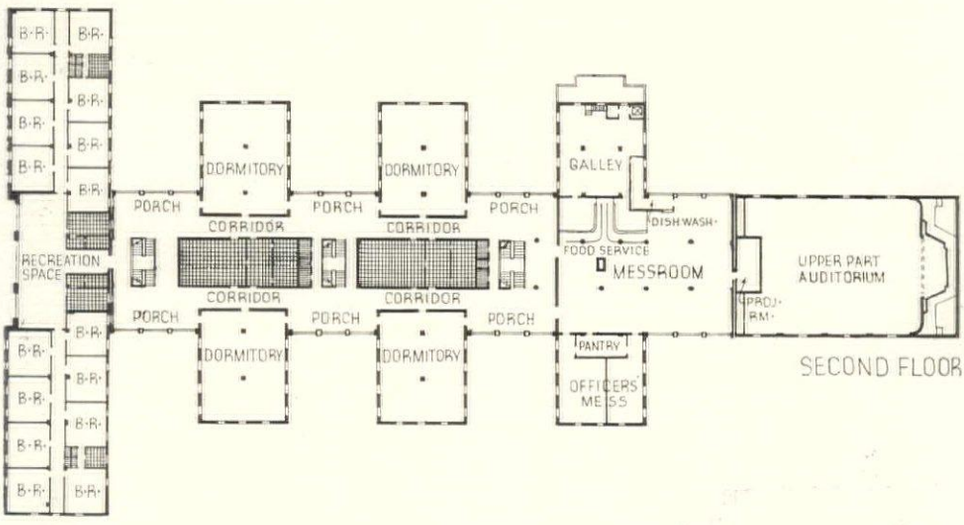
The larger, more important building pictured on these pages is based on a symmetrical but uncommonly interesting plan. T-shaped, its head provides office, recreation and sleeping accommodations for the Station's staff of 100 administrative and medical officers. Shank of the two-story T is, in effect, a large screened

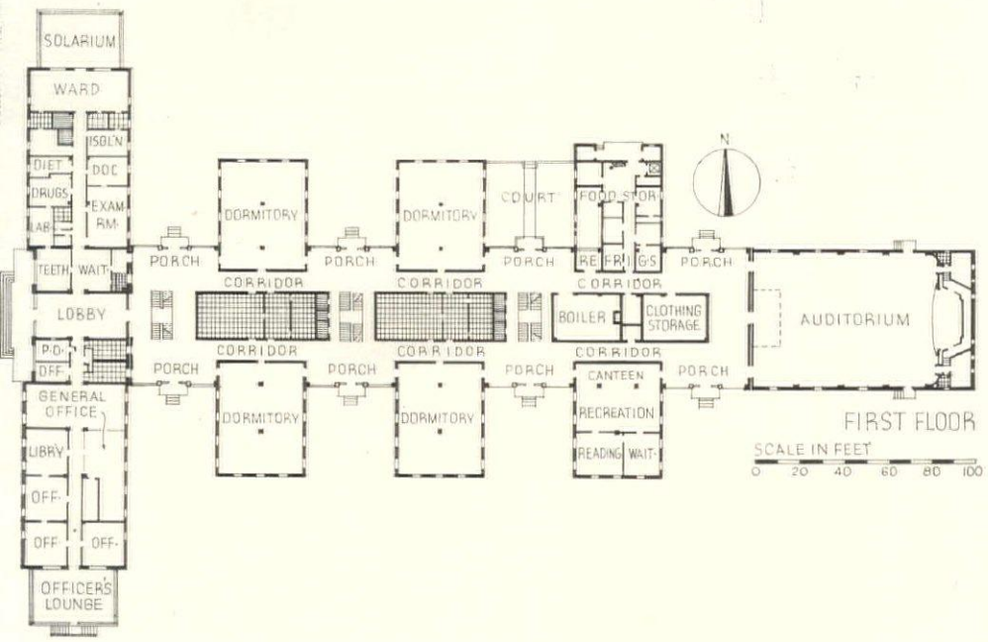


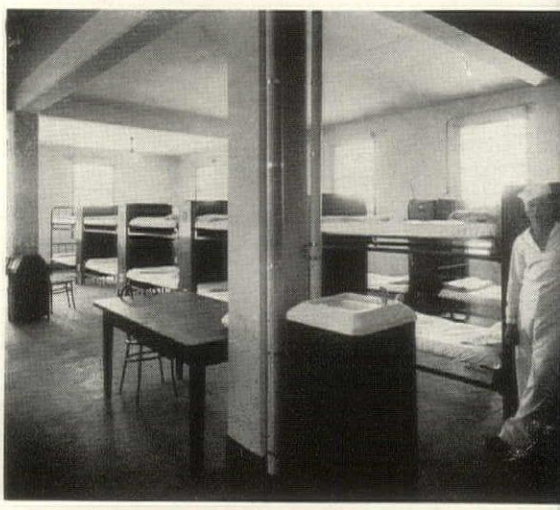
SITE P



FRONT ELEVATION of the administration-medical wing features a glazed recreation room—second floor, center—and a glazed solarium and officers' lounge—first floor, ends. Porches connecting the dormitory and dining facility wings along the shank of the T-plan are unglazed but screened—see side elevation, opposite. Exterior walls are of concrete rubbed to a smooth sand-like finish and painted "off white", and the roof is finished in flat clay tiles to match.







DORMITORY—one of eight—measures about 38 x 48 ft., sleeps 50 apprentice seamen in double-decked bunks arranged in long rows and separated by steel lockers.

STAIRCASE—repeated three times down the shank of the T-plan—connects the first and second floor porches between the dormitory wings. Space below the landing serves as a closet. The building has no basement.

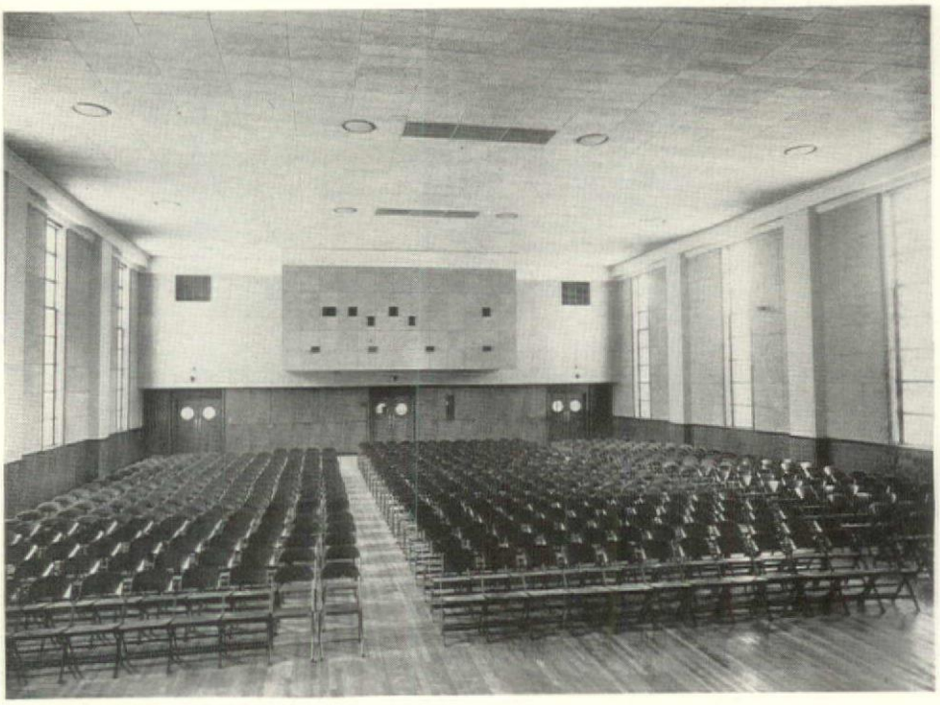
porch, closed at the rear end by dining facilities and an auditorium and with three wings projecting from either side at 80 ft. intervals. Giving the building the general appearance of a modern hotel, these projecting wings provide abundant natural light and ventilation — important in the warm southern climate, which make the open porches feasible. In four of them are eight 38 x 48 ft. dormitory rooms, each sleeping 50 enrollees in double-decked beds. A fifth such wing houses food storage and kitchen (galley) equipment. The sixth wing contains recreation facilities for enrollees on its first floor with officers' and petty officers' mess rooms above. Both the large 58 x 79 ft. mess hall and the 58 x 98 ft. auditorium-stage boast capacities of approximately 500.

Erected atop some 1,100 piles driven 30 to 40 ft. into the filled earth, the building is of fireproofed construction. Walls are of concrete rubbed to a smooth sand-like finish and painted a light cream color. Windows are large horizontally opening steel casements. The low pitched roof is finished with flat clay tiles whose light color blends with the architectural tradition of the vicinity. Since the structure measures 426 ft. from front to rear, two transverse expansion joints were provided — one immediately behind the 269 ft. long administration-medical wing, the other at the front end of the auditorium. In the absence of a basement and heating plant (made possible by local climatic conditions), all utilities have been economically concentrated in rooms running down the center of the large porches.

Called the "utility building", the project's smaller structure (see site plan, p. 418) contains machine and carpentry shops, toilets and a laundry on the first floor, a sail loft, store room and four class rooms on the second. This upper floor is cantilevered 18 ft. from the first floor walls on three sides of the building and forms a sheltered, unobstructed space for the repair of small boats. In construction, the Station's two buildings are similar.

Built by contractor A. Farnell Blair of Decatur, Ga., the St. Petersburg project cost the Maritime Commission $685,000, exclusive of landscaping ($5,000), equipment and supplies ($71,000), and such site construction details as fender piles, dolphins, concrete decking and davit bases ($10,000). Of this total, $600,000 is allocated to the cost of the larger building, including about $61,000 for PBA's expenses and contingencies. This building covers a ground area of 44,685 sq. ft., contains 1,398,000 cu. ft., cost about 43 cents per cube.

Justly proud of its design contribution to the Maritime Commission's apprentice training program, PBA, through its enthusiastic Supervising Engineer Neal A. Melick, last month commented: "As we look at these clean, modern, well constructed buildings, we have a feeling that, as a result of training in these schools, the graduated classes of men will be just as clean and snappy in appearance."



AUDITORIUM

MESS ROOM

GALLEY

HEADWAY AND HEADACHES

PRICES

While Government has placed price ceilings over only three building materials (all of them lumber), it has been indicated that more ceilings are in the making (see p. 52, col. 2). Other recent price developments of interest to Building:

► Pending the formulation of a formal price program for their industry, Leon Henderson of the Office of Price Administration has asked manufacturers of heating and cooking stoves not to raise their prices above October 24 levels.

► The House of Representatives passed and sent to the Senate a bill which would freeze apartment, house and hotel rents in the District of Columbia at levels prevailing on January 1, 1941. Thus, the District last month was nearer rent control by law than any other U. S. community — all other efforts at control are voluntary. There are more than 900 citizens on 110 "fair rent committees" formed by local mayors or defense councils in 26 states. Last month representatives from 21 of these committees met with Federal Price Administrator Henderson, advised him that legislation is required to cope successfully with rent profiteering in certain defense areas, that such legislation should be made a part of the broad price control bill now before Congress.

► Meanwhile, rents throughout the country, as measured by the National Industrial Conference Board, jogged up in October from 88.0 to 89.2 per cent of the 1923 average, stood a scant 2.1 per cent above the comparable 1940 level.

►Also up were October wholesale building material costs (1926 equals 100):

Material	Oct.-41	Sept.-41	Oct.-40
Brick & tile	96.6	95.7	90.2
Cement	92.7	92.2	90.7
Lumber	129.5	129.1	114.4
Paint	96.0	94.7	84.8
Plumbing	87.8	87.1	80.5
Steel	107.3	107.3	107.3
All materials	107.3	106.4	97.8

PRIORITIES

Now that Government has perfected its priority or preference rating machinery to insure the flow of critical materials to defense projects, it faces the prospect of not enough materials to go around. Hence, the Supply Priorities and Allocations Board last month began developing an allocation system to replace the priorities system, which fails to check hoarding of critical materials and the accumulation of excessive inventories.

First big step in the new direction was SPAB's late October request that the Office of Producion Management work out an allocation system for the steel industry. OPM will determine the amount of steel available for all demands, will then weigh competing demands and advise manufacturers of the amounts they may deliver to their customers. Indication that much the same procedure will be followed for all other industries came within a week when SPAB asked OPM to determine the month-by-month requirements of all critical materials needed for the production of military, industrial and civilian items and essential public services, including repairs.

Other recent developments in the priority picture significant to Building:

Pipe line taboo

Despite the protests of Defense Petroleum Coordinator Harold Ickes, SPAB ruled against the proposed 1,589 mile pipe line from East Texas oil fields to Bayonne, N. J. refineries. Said SPAB crisply: "It is not essential."

Washing and ironing

SPAB's Director Donald M. Nelson ordered the production of domestic washers and ironers between August 1 and year-end cut 17.3 per cent (to 164,410 units per

Wide World

BALLYHOOED BALLOON. Widely publicized on the Air, on the Screen and in the Press last month, this concrete four-room house, based on a dumbbell floor plan and built on balloons, is the latest experiment in defense housing. It was developed by Hollywood's 44-year-old Architect Wallace Neff, designer of the famed Pickford-Fairbanks home. Dismissed as a dreamer by most other Government defense housers, Neff and his balloon house ideas were received kindly by RFC's Chairman Jesse Jones. He authorized a ten-house experiment at Falls Church, Va. to be financed and supervised by his Defense Homes Corp., a comparatively inactive defense housing agency which provides the equity investments for rental projects.

Most important tool used in the construction of the unique house is a hemispherical balloon of 12 ft. radius which is laced to the concrete floor slab and pumped full of air. With the inflated balloon acting as the form or centering for the dome, a 1 in. layer of concrete is blown over the surface through compressed air hoses (this becomes the inside finish of the rooms). Then comes a layer of insulating material and a second (2 in.) layer of concrete. During the shooting of the concrete, chicken wire is imbedded for reinforcement and templates are temporarily installed to provide door and window openings. After the concrete has set, the balloon is deflated, dragged out through one of these openings. Architect Neff estimates the life of his $900 balloon at 1,000 houses.

Within 48 hours after the first blast from the concrete spray gun, the house is ready for occupancy. One of the 11 ft. high hemispheres of the 1,000 sq. ft. house contains a living room; the other, two bedrooms; between is a flat-topped bathroom, kitchen and entrance hall. Floor finish is asphalt tile; interior partitions are prefabricated; wiring is in the floor; heating is supplied by a fireplace and gas-fired unit heaters. Cost is rumored as $3,000.

Similarly shaped houses have been designed by Harvard's Architectural Professor Martin Wagner (Arch. Forum, Feb. 1941, p. 87), have been produced by Inventor Buckminster Fuller and the Butler Manufacturing Co. (Arch. Forum, June 1941, p. 425), and have been lived in for years by the Eskimos. Moreover, in the construction of Navy bombproof shelters, a spherical balloon was once used as centering for a concrete dome, but proved unsatisfactory because the excavation required was difficult to fill. At month's end opinions of the balloon or bubble house were in conflict; the Army was said to be interested in the construction system for building concrete balloon "tents," airplane hangars and powder magazines; some reporters predicted it to be the house of the future; some observers considered it unfortunate that public funds were being spent on such a spectacularly unorthodox house; and some predicted that Architect Neff's idea would burst long before his bubble.

month) below average monthly factory sales in the 12 months ended June 30. If the order stands, 32,000 tons of steel plus other critical materials will be saved during 1942, particularly by the bigger producers which will stand more than their proportionate share of the industry's curtailment. Alleviating unemployment in the industry (34 plants, 13,000 employees), the Army has already placed a $12 million contract for anti-aircraft gun mounts with three of the washer companies, has indicated the others may get orders for any one of 17 different defense items.

700 to 350 Shapes

Beginning in February, the steel industry will cut in half the number of beams, channels and other shapes ordinarily used in various types of construction. Reason: A "request" from OPM seeking an industry-wide simplification of structural steel shapes to avoid tying up mills with small miscellaneous rollings for odd-sized items. Still on OPM's approved list, however, are some 350 structural shapes and sizes, and only about 60 of them are used exclusively in the building of cars and ships. The balance is for Building.

CURRIER HOUSE. Last month, while Government still refused Currier Lumber Company's low bid for 300 CIO-prefabricated defense houses to be erected in the Detroit Area (Arch. Forum, Nov. 1941, p. 330), the indignant United Construction Workers Organizing Committee reaped donations (including a $1,000 check from the United Automobile Workers' Detroit local) from other CIO affiliates to help finance their Detroit organizing drive. Meanwhile, Prefabricator Currier, undaunted, launched a defense housing project of the same size in the same area but with private backing, heralded it with the advertisement above. It shows the famed Currier house for the first time, shows that it will be marketed at a monthly cost lower than the ill-starred Government project.

Copper curb

Originally scheduled for effect on November 1, SPAB's restrictions on the use of copper sheet, strip and screen in building construction (Arch. Forum, Nov. 1941, p. 38) have been postponed until January 1, after which their manufacture is prohibited. Purpose of the postponement is to permit the use of already fabricated materials which would have been "frozen" in the hands of manufacturers, distributors and consumers.

Building repairs

Accurately previewed last month (Arch. Forum, Nov. 1941, p. 4), the priority procedure for maintenance and repair materials has been officially announced for all types of buildings except commercial and residential structures. Program details for these two classifications were still on the OPM fire fortnight ago.

Half gone

Both encouraging and discouraging was the announcement by the Federal Home Loan Bank Board month ago that applications for critical materials had been received from private builders covering nearly 100,000 new defense dwelling units —about half the number for which OPM set aside critical materials for use by April 1. Encouraging, because the announcement would indicate that private builders will do all that is expected of them. Discouraging, because it indicates that applications for priority assistance in obtaining the materials may far exceed the available supply. However, since FHLBB has no active part in the priority or defense housing programs, its announcement may be premature. Federal agencies which should know the answers are not yet calling trends.

Effective date

Announced as a certainty was priority assistance for defense houses (selling for less than $6,000 in specified defense areas) under construction on September 1. Heretofore the orders were not clear as to whether the deadline was September or October 1. Estimate is that 60,000 units were under way on the effective date. (They are outside private enterprise's quota of 200,000 new defense houses by April 1.)

"All kinds of inequities"

Not so certain is Government's reaction to the industry's oft voiced complaint concerning the $6,000 price ceiling on privately built defense houses. The statistics are against the complainants (see p. 418); so is the arrogance displayed by many. In their favor is congressional reaction to the intelligent but somewhat partial reasoning of Robert Taft, senator from the clay products State of Ohio: "It would seem much more reasonable to provide that no more than a certain amount of iron, steel or copper shall be used for any family unit than the minimum required for small homes. Many homes costing $8,000 or $10,000 can be built with just as little critical material as homes of $6,000. . . . It creates all kinds of inequities. A much better house can be built for $6,000 in States where the climate is mild than the same house will cost in colder sections. A man with a family of five children can have no more room than a man and his wife without any children. Since the cost of the house must be held within $6,000, it will force the use of cheaper materials, such as lumber, and prevent the use of brick and concrete. . . . A cheaper house must be put on a lot costing $1,000 than can be put on a lot costing $200, because only $5,000 is left for the house instead of $5,800. . . Why should a man who wishes hardwood floors be denied that right because such floors run the cost over the $6,000 limit? Why should he be denied a garage, or properly finished yards, driveways and walks? Why should he be prevented from having his bathroom tiled? . . ."

HOUSES

On the first anniversary of the signing of the Lanham Act — October 14 — Federal Works Administrator John M. Carmody reviewed results, counted 28,000 Federal defense dwelling units complete, 64,000 more under construction, an additional 10,500 assigned but held up for the lack of funds. Totaling more than 100,000 units, the 371 projects in 41 states are estimated to cost $398 million or about $3,940 each. Pennsylvania, with its seriously overcrowded "heavy industry" areas, led all states with 45 projects totaling 13,235 dwelling units. Thanks to its expanding aircraft and shipbuilding industries, California came next with 30 projects containing 12,933 units. Other leaders: Maryland, 6,090 units; Connecticut, 5,725; New York, 5,627; Washington, 5,545; Virginia, 4,717; New Jersey, 3,815; Texas, 3,435 and Ohio, 3,050.

October was the biggest month for the Federal program to date, the completion of 9,962 dwelling units (compare: 6,305 in September) having boosted the cumulative total to 37,937. Interestingly this total is just 314 units in excess of the figure predicted by FWAdministrator Carmody before a House of Representatives Committee last February.

Exit Carmody; enter Fleming

Carmody's good guessing notwithstanding, last month he was out of the Federal Defense housing family. Ailing, he had temporarily relinquished his post to Acting FWAdministrator John N. Edy, and Washington dopesters had predicted that by the time he had recuperated in The Virgin Islands he would find his chair occupied by Brig. Gen. Philip B. Fleming, Administrator of the Labor Department's Wage and Hour Division. They guessed right; on Nov. 19 Carmody was shifted to the Maritime Commission, and Fleming took his place at FWA. Background on which the dopesters based their predictions: Several of his critics in public housing circles

(Continued on page 44)

BUILDING FOR DEFENSE . . . A 52-ACRE PLANT

at San Diego fabricates parts for Consolidated bombers. Architect-Engineers Taylor develop a tough site with eight buildings, mount drop hammers on springs.

Six years ago when the infant Consolidated Aircraft Corp. moved from Buffalo to San Diego, only 311 names appeared on its payroll. By the end of 1939 it had built a 456,000 sq. ft. plant adjacent to Lindbergh Field, had supplemented it with 212,000 sq. ft. of unsheltered paved yard for final assembly operations (made possible by San Diego's equable climatic conditions) and had employed some 3,000 workers. Then came a flood of domestic and foreign orders for Consolidated's huge naval patrol bombers (known as PBYs to the U. S. Navy; Catalinas to the British) and land bombers (B-24c, or Liberators), which today total some $750 million. To meet this war and defense demand, Consolidated last year added 1.1 million sq. ft. to its Lindbergh Field plant, 1.3 million sq. ft. to the paved assembly areas and 10,000 people to its payroll (ARCH. FORUM, Nov. 1940, p. 375). But, the expansion program had just begun—this year Consolidated completed nearby the 1.6 million sq. ft. Parts Plant presented on these pages, launched another of equal size in Fort Worth, Tex. and a third, to be operated by Douglas Aircraft Co., at Tulsa, Okla. At year's end, Consolidated's San Diego payroll, now expanding at the rate of 1,000 a week, is due to hit 40,000—the main reason behind San Diego's 3,000-unit Kearny Mesa defense housing project, Government's biggest (ARCH. FORUM, May 1941, p. 352).

Located about a mile north of Consolidated's main Lindbergh Field plant, the 1941 addition is a completely independent plant specializing in the production of component parts and assemblies for airplane wings and tail surfaces construction. It occupies a 52-acre site conveniently paralleled on the east by the Santa Fe Railway and on the west by the Pacific Highway which separates the plant from its 72-acre parking lot. Not so convenient were the site's soil conditions as described by Foundation Engineers Dames & Moore: "The relatively flat ground . . . on the north is covered by a veneer of soft recent alluvium which is directly underlain by . . . older geologic formations . . . separated by an earthquake fault of uncertain location. . . . The high ground immediately east of the site is formed of dense and firm old marine deposits . . . eroded by the San Diego River which formerly traversed this area. . . .The flat land is composed of delta deposits of the San Diego River and of marsh deposits formed in San Diego Bay when the bay covered this area in very recent geologic time. . . ."

By boring and driving steel rods to locate hard underlying strata, the earthquake fault was judged to be near the west boundary of the site. Hence the location of the parking lot on this side of the highway with the plant to the east. This decision required that an elaborate overpass be built for the private 25 ft. road which connects the Parts Plant with the Lindbergh Field headquarters, and over which all vehicles entering and leaving the new plant must travel.

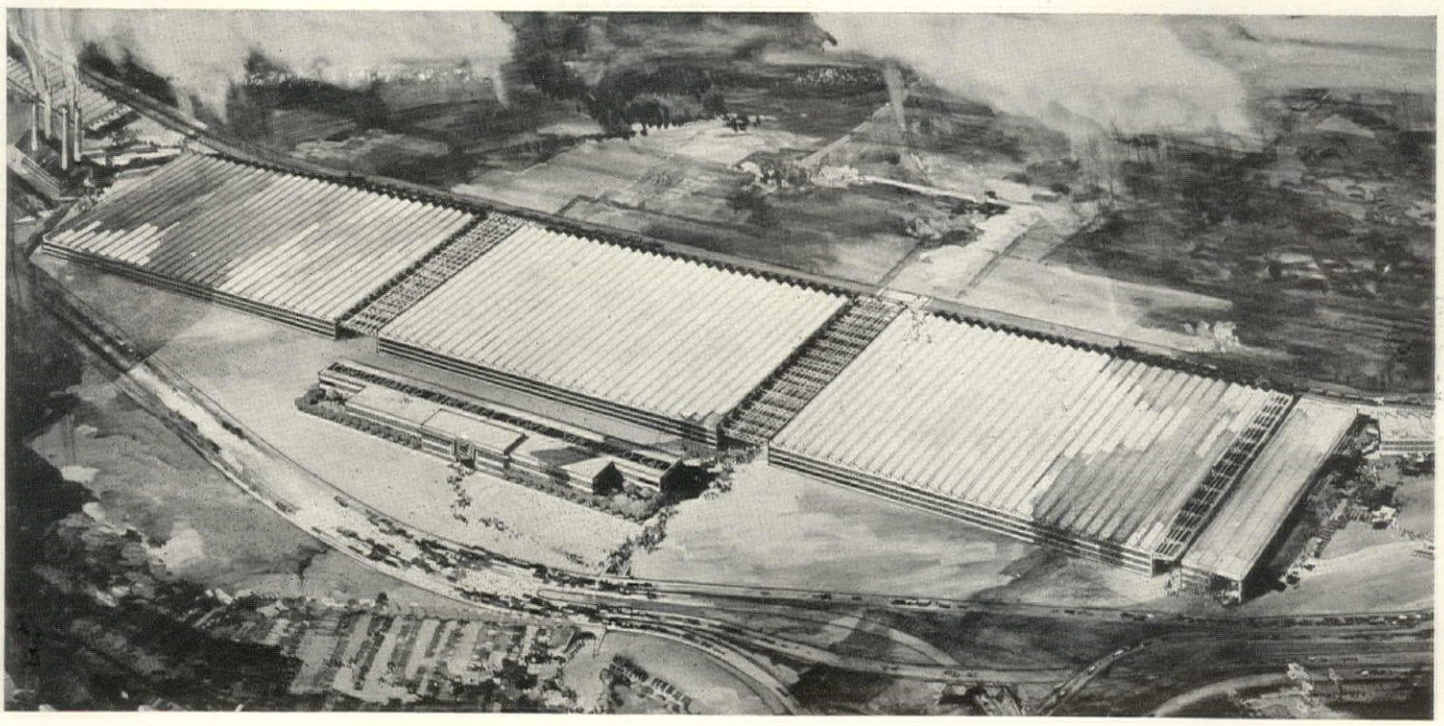
Soil conditions also gave Architect-Engineers Edward Gray Taylor and Ellis Wing Taylor their knottiest design problem: "Our difficulty was to construct heavy steel frame buildings with concrete floor slabs and foundations for heavy machinery and warehouse loads and numerous pits required in the processes of manufacture on this mud foundation. Piling was decided upon. . . . Special designs provide pile caps, foundation footings and concrete ties between pile caps for the support of the building columns and for the concrete first floors and for special machinery, tanks, furnaces, anodic pits, etc."

Atop such foundations and following a pattern suggested by Consolidated's Vice President and Coordinator of Plants C. A. Van Dusen, the architect-engineers laid out the eight separate buildings which comprise the plant:

3 Factory bldgs., 400 x 750 ft., 1 story
1 Office bldg., 50 x 750 ft., 2 stories
1 Paint shop, 100 x 400 ft., 1 story
1 Drop hammer bldg., 80 x 250 ft., 3 stories
1 Warehouse, 100 x 400 ft., 2 stories
1 Boiler house, 80 x 125 ft., 1 story

The factory buildings are laid out in tandem with their ends separated by 100 ft. paved openings. They are steel framed, walled with corrugated sheet metal and steel sashed windows, roofed with saw-tooth monitors whose steel sash are electrically operated. Each unit is thirty 25 ft. bays

AIR VIEW RENDERING



long and four 100 ft. bays wide, has a maximum clear height of 36 ft. to the trusses. However, the height at one side of each building is cut down by the provision of two levels of mezzanine, each measuring 40 x 750 ft., and by projecting mezzanines measuring 50 x 140 ft. Presence of these mezzanines, connected by five electric elevators in each building, explains the three strip windows on the side walls. Both ends of each building are comprised of large steel-framed hangar-type rolling doors which extend up to the lower chords of the trusses.

Arrangement of the factories and their accessory buildings in a straight line permitted the use of a continuous loading platform (64,000 sq. ft.) along the depressed tract railroad siding and a continuous monorail over the platform connecting all parts of the project (see photograph, directly below). The former makes for quick car-floor-level loading and unloading, while the latter facilitates the transportation of materials from any part of one building to any part of any of the other buildings. Thus, the inter-building monorail connects with the monorail systems inside the various units from which electric cranes sweep the entire floor areas (except, of course, under the mezzanines). In the factory units, this monorail connection is made at the large rolling side doors which open upon the loading platform and at the monorail bridges which span the gaps between these three buildings (see photograph, left below).

The drop hammer building is the most interesting of the Parts Plant's accessory buildings. Comprising the largest battery on the

Inter-connecting monorail systems unify the eight-building Parts Plant of the Consolidated Aircraft Corp., which extends some 3,500 ft. along the Santa Fe Railway. Shown above is one of the 100 ft. paved openings between the three factory units—note the monorails overhead, the large hangar-type sliding doors, the gasoline "skooter" with sidecar used by company guards to police the sprawling plant. Right: east facade of the factory with monorail from paint shop and drop hammer building—note transverse monorails in background extending over the loading platform and depressed railroad siding. Architect-Engineers: Edward Gray Taylor and Ellis Wing Taylor. Contractor: B. O. Larsen.

West Coast, its 26 hammers of various sizes are set on unique vibration isolation foundations developed by the architect-engineers in collaboration with Consulting Mechanical Engineer Edmund G. Grant and Consolidated's Plant Engineer William A. Maloney. The installation is similar to that in the nearby headquarters plant (discussed below) where the first successful application of this special design was made.

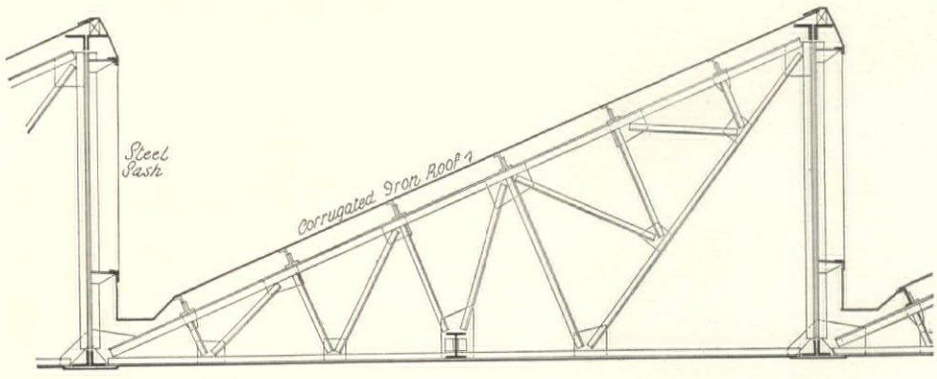
Equipped with weights totaling more than 30,000 lbs., the largest hammer is raised and dropped 5 ft., accelerated by an average air force of 18,000 lbs. behind the piston. In an ordinary installation such a blow might crack the floors and walls of the drop hammer building and might easily affect the efficiency of machine tools and personnel in adjacent buildings. Rather than isolate the drop hammer building geographically, as is frequently done, Consolidated's engineers decided to isolate the vibrations of each hammer within the building. The means: a spring-mounted heavy inertia block which carries the hammer and is sunk into a concrete pit to lower the top of the anvil to a convenient working level.

The large hammer mentioned above is mounted on a 6 in. wood wearing surface affixed atop a 560,000 lb. inertia block of concrete whose unusual weight of 225 lbs. per cu. ft. was obtained by substituting boiler punchings for the ordinary gravel aggregate. The block was poured inside a reinforced concrete pit supported around the perimeter by long steel H-section piles, but was prevented from bonding to it by wood forms at the sides, a membrane at the bottom. To absorb the shock of the falling hammer, the block is elastically supported by 28 stout spring units between the walls of the pit and the projecting members of a steel spider placed in the block during the pouring operation. And, to kill quickly the oscillations of the springs and thus permit rapid use of the hammer, large automobile shock absorbers were added to the spring mechanism. Claim is that felt compression pads would serve the same purpose and that the steel piles supporting the pit could be eliminated where soil conditions are more satisfactory than at the Consolidated site. Comments Consulting Engineer Grant on the success of the initial installation*: "Standing on a floor cantilevered over the inertia block, the operator himself remains stationary. . . . The concrete block and springs . . . act to prevent any vibration transmission to the surrounding buildings, earth, floor or even delicate machine tools. This installation could be made in the middle of a precision manufacturer's plant or on the twelfth floor of a hospital."

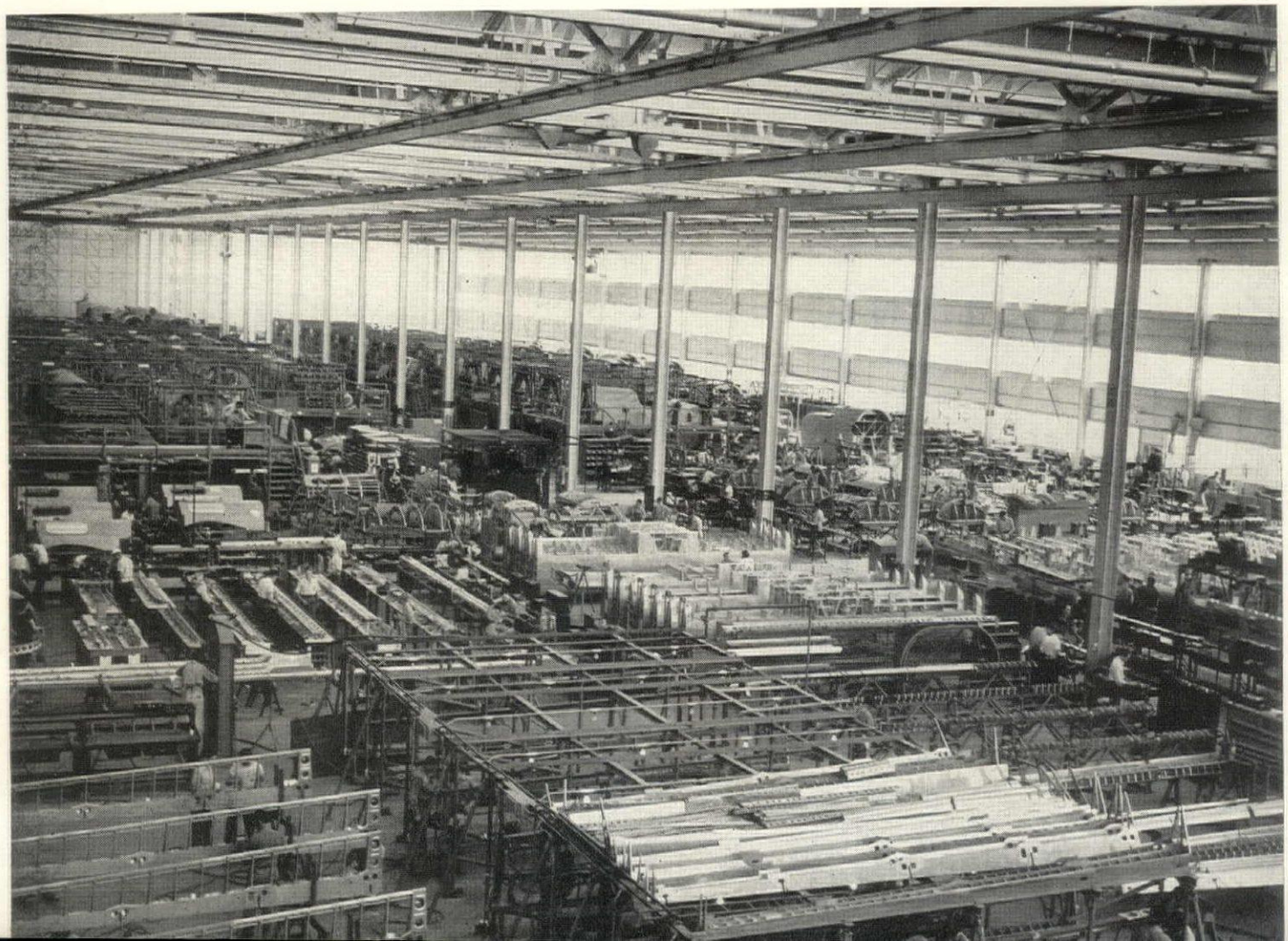
* In *Southwest Builder and Contractor*

In addition to its battery of 26 drop hammers, this building's three floors house three compressors, five hydraulic presses, a four-pot foundry, a die-storage department and a complete pattern shop. It is served by one elevator.

Financing. Formally dedicated in late October, the huge Parts Plant cost between $6.5 and $7 million, including machinery, and was built by Consolidated as agent for the Defense Plant Corp., an RFC subsidiary which financed and owns the buildings. Consolidated has leased the facilities from the Government at a nominal rental for the period of the emergency, has agreed to pay all taxes and maintenance expenses and has been given an option to purchase the plant at its depreciated value at the end of the emergency.



SAW TOOTH DETAIL

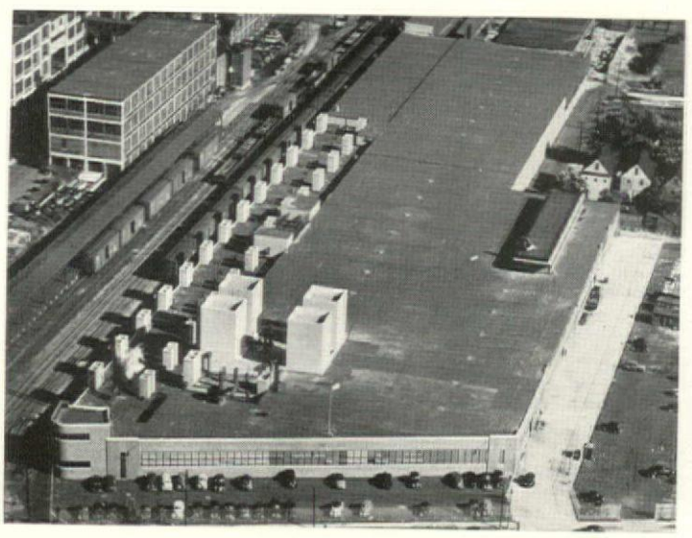


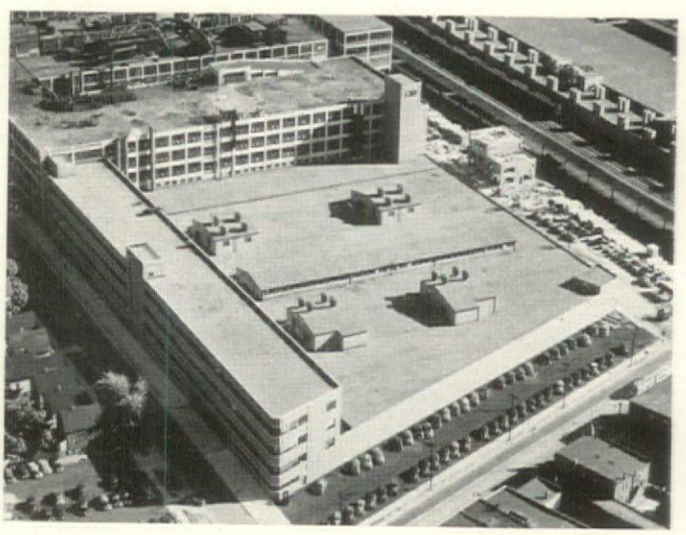
BUILDING FOR DEFENSE . . . PACKARD'S DETROIT PLANT

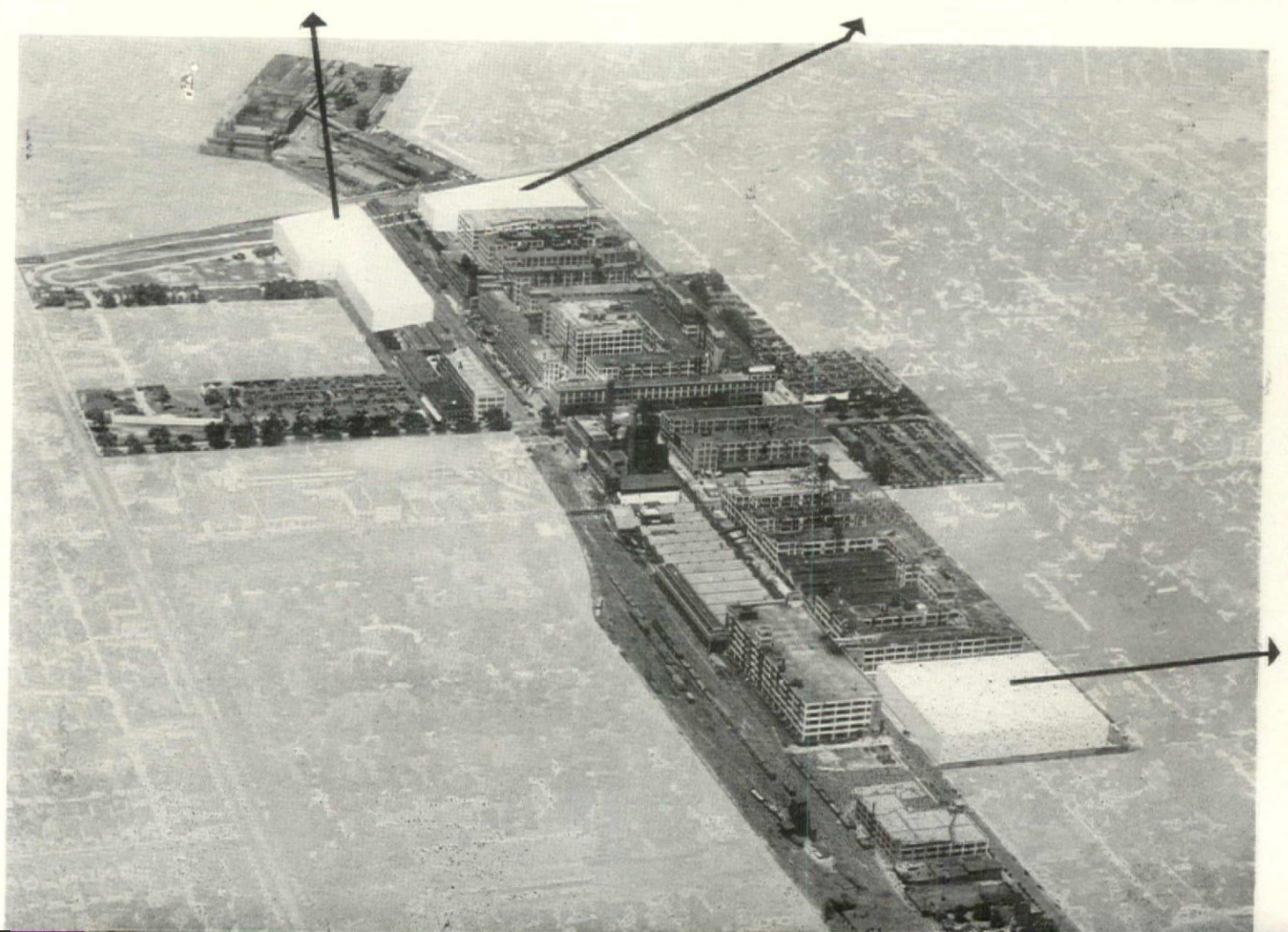
is expanded by 536,000 sq. ft. in three new buildings for production of Rolls-Royce aircraft motors. Features: penthouse utility rooms, recessed lighting, sound insulation.

Under a license issued by the British patent holder, Packard Motor Car Co. is producing Rolls-Royce aircraft motors for the British and U. S. Governments. To this end, Packard cleared out 450,000 sq. ft. of one of its existing automobile factories and on August 9, 1940 retained Architect H. E. Beyster to design a new machine and heat-treating shop, a main assembly and office building, and Architect Albert Kahn to design a tear-down, test and reassembly building. Working under constant pressure for speed and limited design-wise by the maze of streets, railroad sidings and existing buildings, the architects had their drawings far enough advanced to permit the beginning of construction on September 24. And, by mid-May all three buildings and the tunnel connecting the two main units under the railroad were complete.

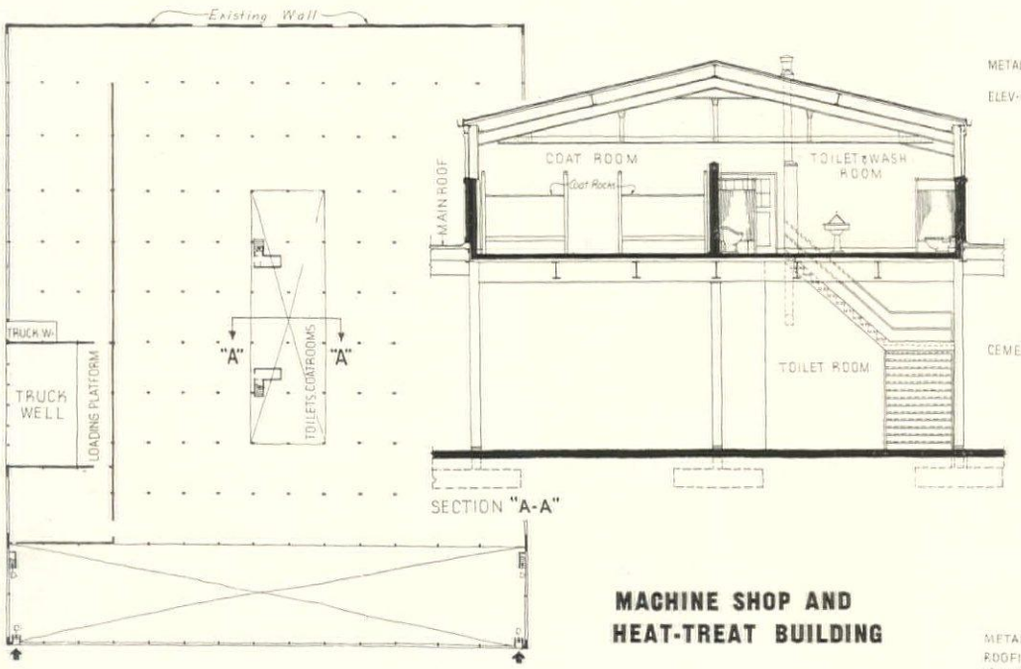
While all three buildings are of steel frame construction with walls of brick, cinder block and continuous window sash



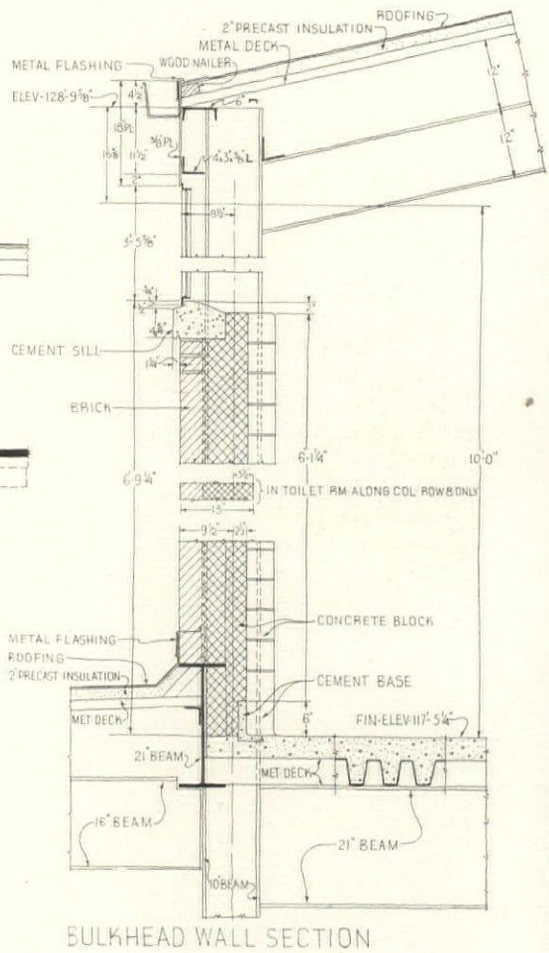




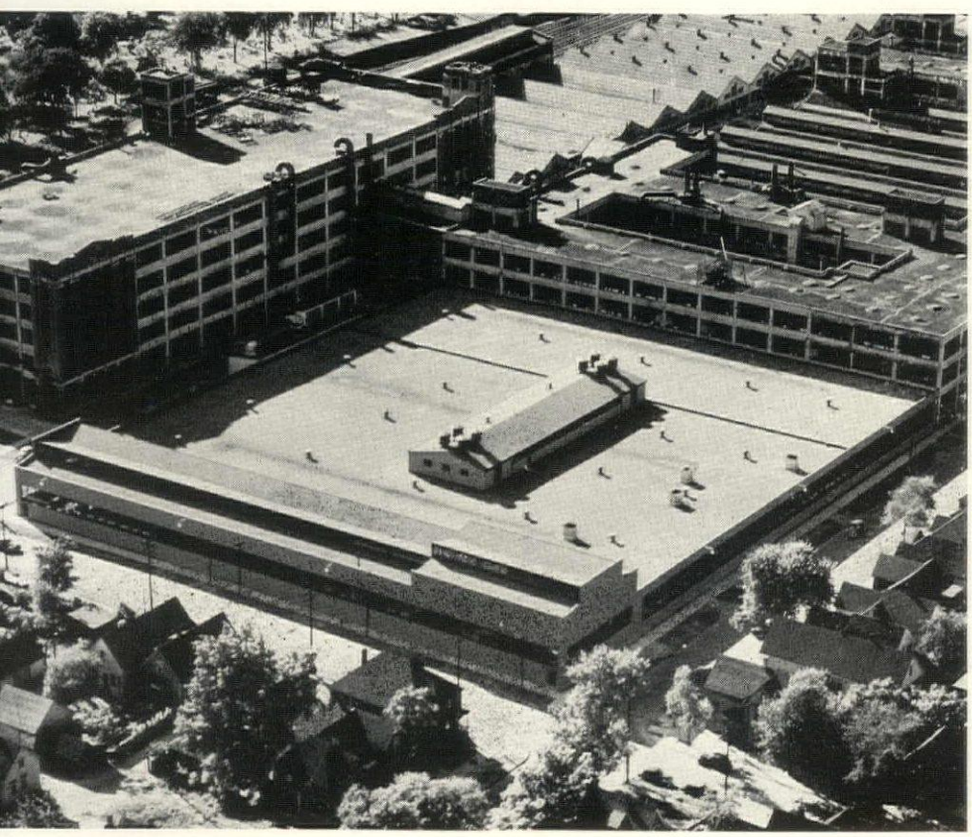
Arthur S. Siegel



MACHINE SHOP AND HEAT-TREAT BUILDING



BULKHEAD WALL SECTION



and boast a clear ceiling height of 15 ft. in the production areas, each includes features worthy of individual note:

The machine shop and heat-treat building, located at the south end of the plant, is the one-story beam-and-girder type. A second floor penthouse at the center of the building houses dressing rooms and toilet facilities and, flanking them, two large transformer rooms. The 60 ft. concrete floored bay under the one roof monitor is devoted solely to the heat-treat process to which each Rolls-Royce crankshaft is subjected for 87 hours. Balance of the ground floor area is finished in wood block and is occupied by the machine shop

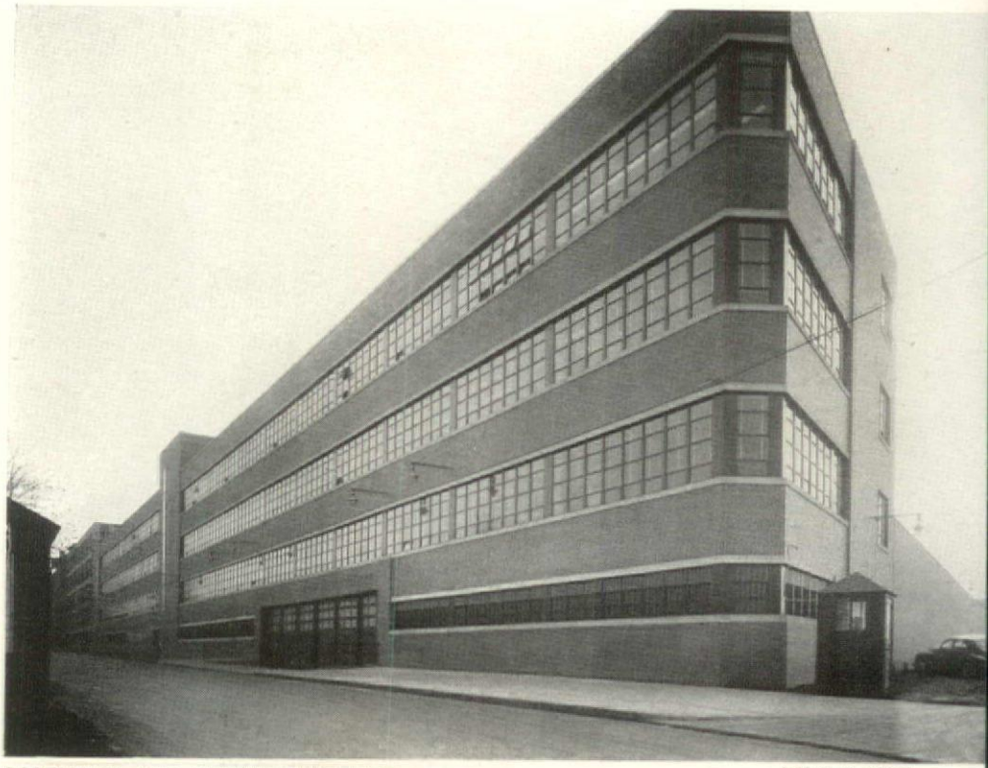
and the receiving department. Unlike the other new buildings, this unit includes a basement, an excavated area in which the heat treating equipment foundations were built so that the equipment itself might be at ground level.

The assembly and office building is located at the opposite (north) end of the plant on the site of a long-since demolished building in which Packard produced Liberty aircraft motors of World War I fame. The odd shaped factory unit of the building is one-story high and is divided into 40 x 47 ft. bays spanned by Warren-type roof trusses. It is floored with 2 in. wood block atop 5 in. concrete and roofed with metal decking, 2 in. insulation and built-up finish. This section of the building is air conditioned. All utility and service rooms are in five penthouses (see air view, right) supported by special framing rather than by the roof trusses. The two other roof projections at the rear of the factory wing are for elevators—one serves the five floors of the adjacent building, the other lowers industrial trucks loaded with finished motors from the assembly floor to the tunnel connecting with the test and tear-down building.

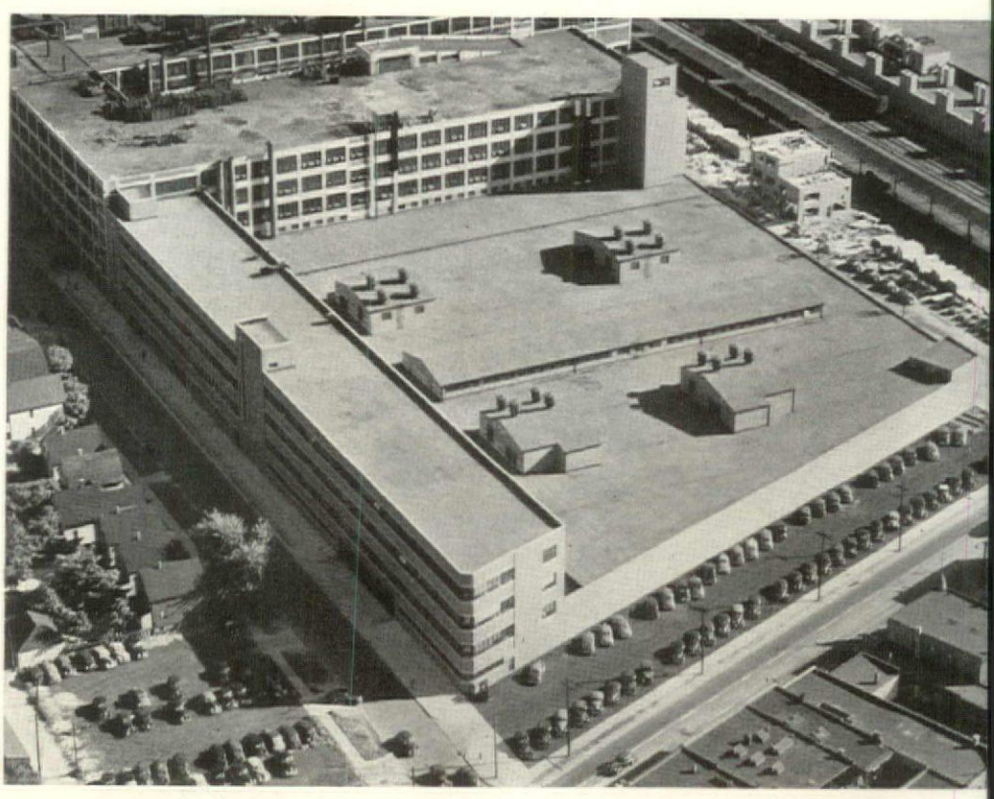
Ground floor of the four-story office wing opens onto the assembly floor, contains the factory entrance and time clock alley, the office entrance lobby, the "hospital" and unloading, receiving and inspection facilities. The narrower bays on each floor accommodate a 7 ft. corridor and a row of private offices, while the deeper bays are combined into large open rooms occupied by the engineering, design, accounting, laboratory and clerical departments, etc. (See third floor plan, opposite.)

Floors are constructed of cellular steel decking carrying a concrete slab and asphalt tile, a system requiring a total depth of only about 8½ in. While story heights are 14½ ft., hung ceilings employed to conceal the sprinkler system, steam piping and lighting conduit decrease the clear height to about 10 ft. Of unique design, this hung ceiling is composed of perforated acoustical panels, through which the

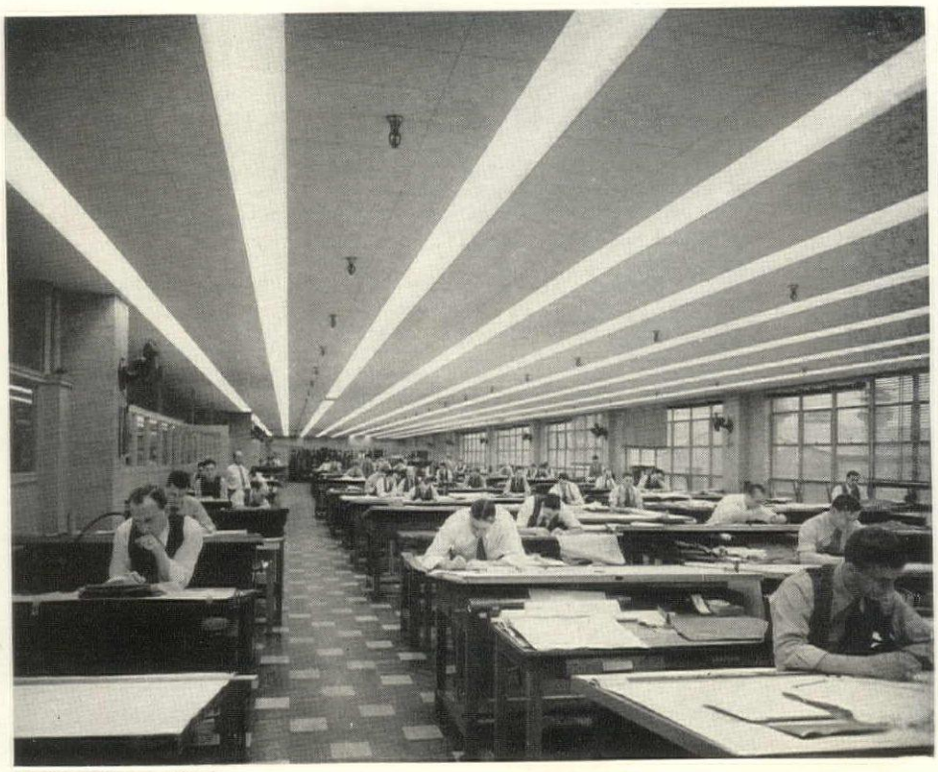
(Text continued on page 430)

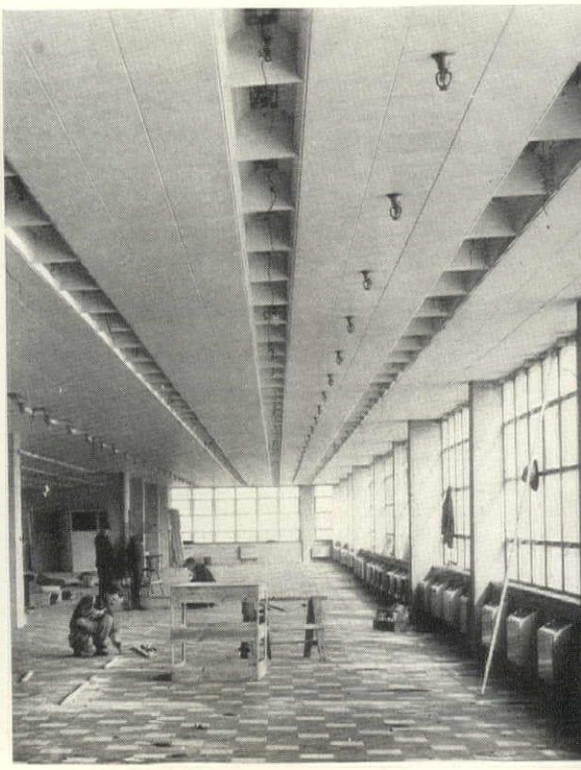


ASSEMBLY AND OFFICE BUILDING *Arthur S. Siegel*



BUILDING	ARCHITECT	GEN. CONTRACTOR	BLDG. COST	SQ. FT. COST
MACHINE & HEAT-TREAT	H. E. Beyster Corp.	Barton-Malow Co.	$ 493,674	$4.12
ASSEMBLY & OFFICE	H. E. Beyster Corp.	O. W. Burke Co.	$1,381,065	$5.50
TEST & TEAR-DOWN	Albert Kahn	O. W. Burke Co.	$1,268,258	$6.57

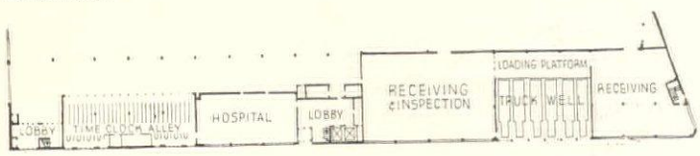




Photos, Arthur S. Siegel

Erected on a site once occupied by its World War I Liberty aircraft motor plant, this Packard building houses in its four-story wing all offices necessary for the production of Rolls-Royce motors and, in the one-story wing to the rear, the final assembly space. Like the machine shop and heat-treat building (p. 427), it was designed by H. E. Beyster Corp. successor to the C. A. Handeyside Co. And, again like the smallest of the plant's three new buildings, the toilet facilities serving the manufacturing area are located in roof penthouses of almost identical layout. Particularly noteworthy are the long fluorescent lighting troughs recessed in the false ceilings of the office space. These ceilings conceal all utility lines except the projecting heads of the sprinkler system.

THIRD FLOOR



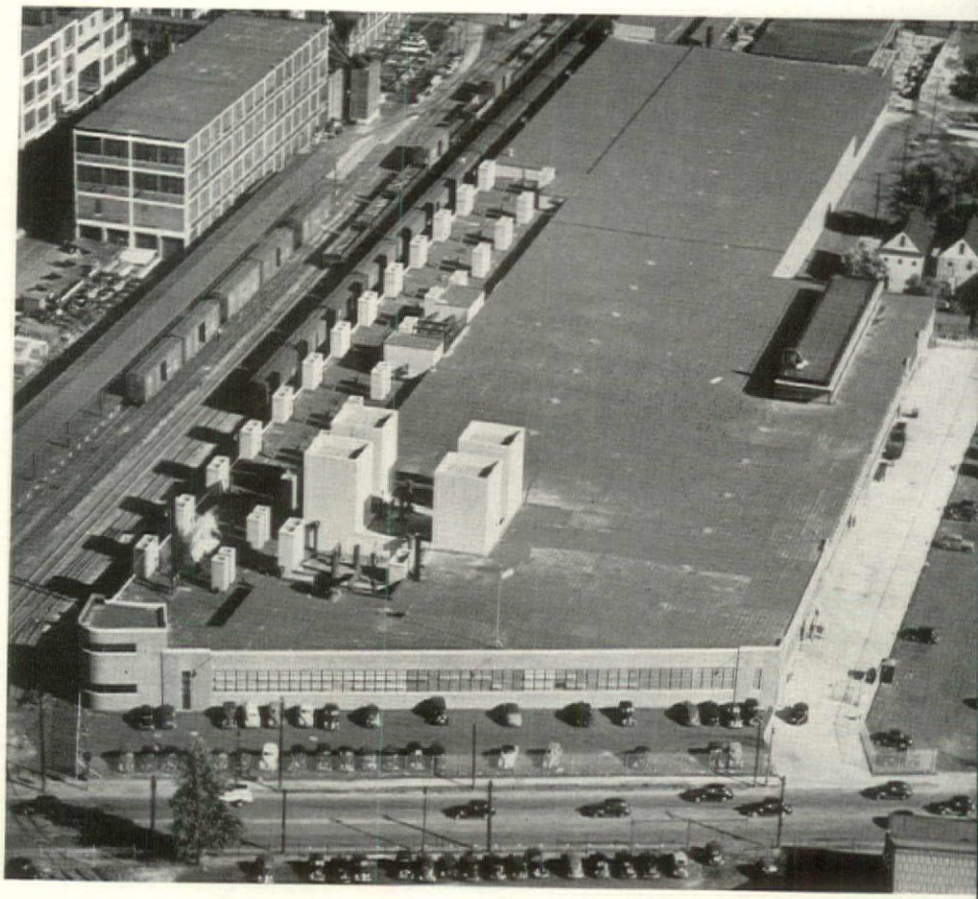
FIRST FLOOR

sprinkler heads protrude, and recessed troughs for the fluorescent lighting tubes. Three of these continuous lines of tubes light the private offices; one lights the corridor; nine, the large department rooms. All columns in the office building are furred with cinder block.

The test and tear-down building, designed to solve an unusual industrial problem, is the most interesting of Packard's new trio. Delivered to this building via the tunnel from the assembly building, a finished motor is mounted in a dynamometer test cell, run for several hours, then disassembled, inspected, cleaned, reassembled, test-run again and finally sent to the shipping room. In view of this sequence, Architect Kahn and associates logically laid out the building with the battery of test cells along the east side between the tunnel corner and the shipping room. Balance of the floor area—except for a quartet of engineering test cells (under the four large towers seen in the air view, right) and a row of offices and engineering laboratories across the north front and west projection—is devoted to the tear-down and reassembly operations. The wood block floor of this main working area is obstructed only by the columns spaced 40 x 60 ft. on centers—the locker rooms, toilets and fan room are carried overhead on a 30 x 300 ft. mezzanine balcony.

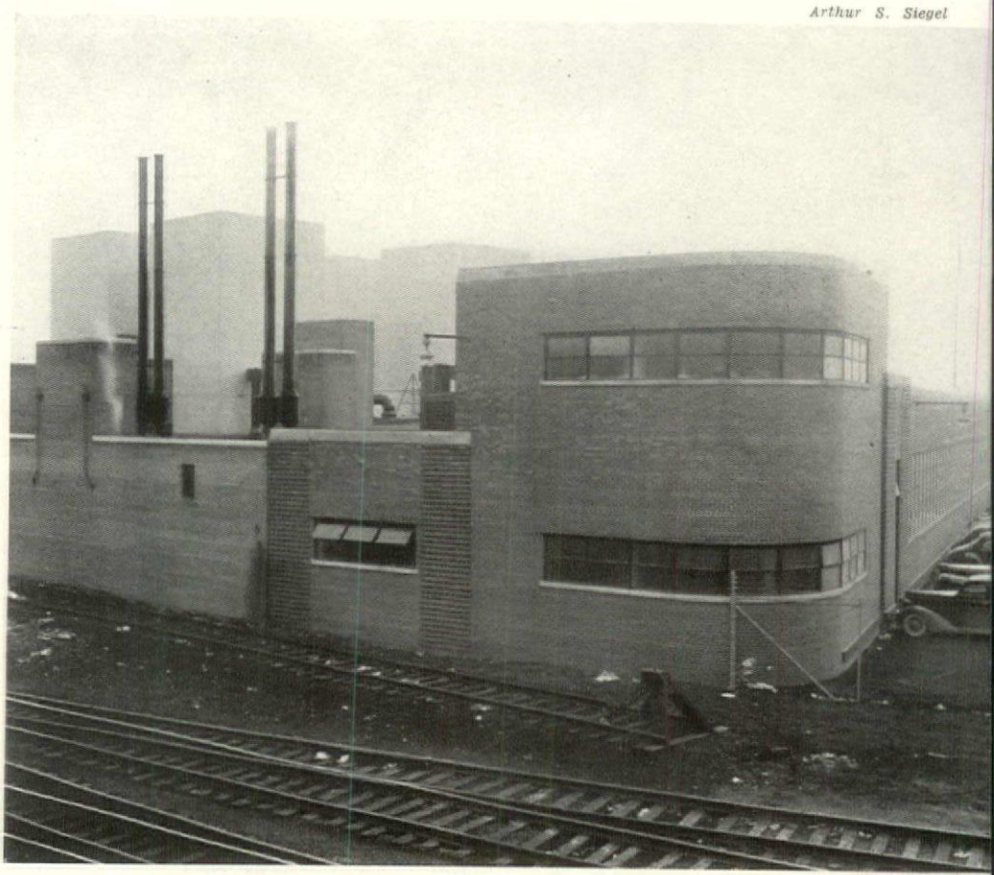
Curtain walls in the steel frame construction of the building proper are of face brick with cinder block backup and steel sash. The roof is comprised of metal decking, insulation and composition built-up finish. Of wall bearing construction, test cells are poured concrete from footings to grade, face brick and cinder block from grade to stone coping with interior walls of cinder block only. These cells are constructed in pairs separated by sound-proofed control rooms with multiple-glazed windows for observation of tests. Ventilation of the cells is mechanically forced by powerful fans which discharge into the atmosphere through sound-deadening baffles in the projecting stacks.

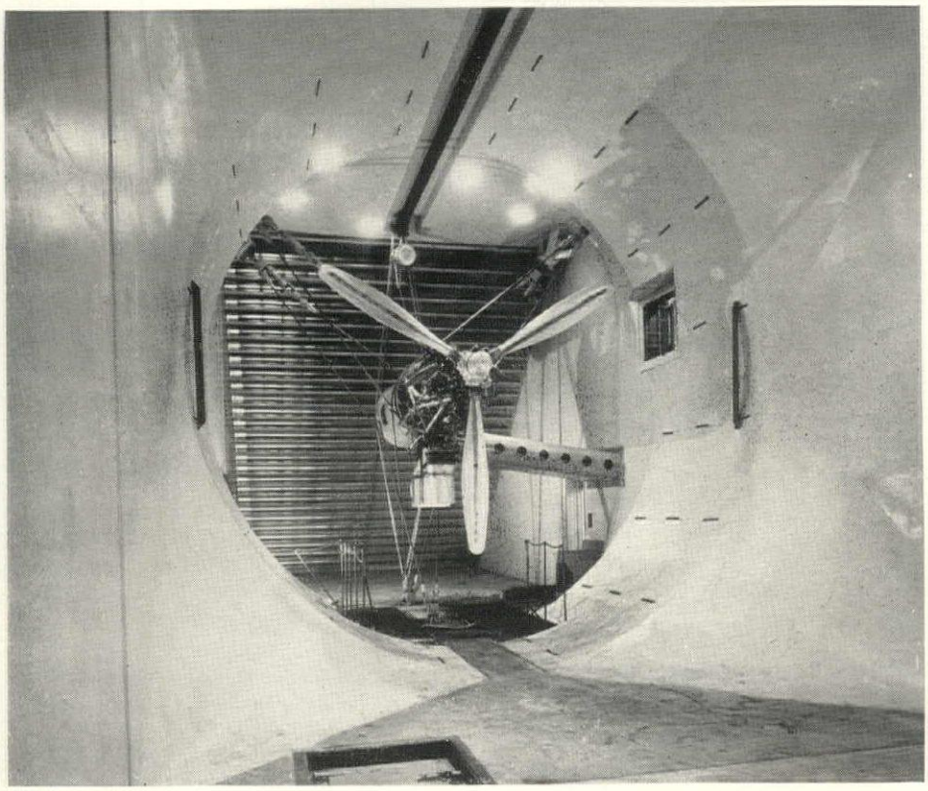
Steam at 175 lbs. is piped from Packard's central heating plant and after reduction is distributed to the air conditioning systems serving the main working area and each test cell control room, to the unit heaters in the test cells and engineering section and to radiators in the offices, store rooms and mezzanine rooms. Lighting at an average intensity of 35 ft. candles is provided by 100 watt F-type fluorescent lamps (Packard was first to use them) in two-tube fixtures spaced 10 x 12 ft. on centers at a height of 12 ft. And, as a protective measure, 1,000 watt pendant-type fixtures were installed on outside walls at 100 ft. intervals. Interestingly, some of the electricity used in this lighting system is produced as a by-product of the testing operation. In two of the cells, aircraft motors, when under test, drive generators which pump power back into the utility company's lines.



TEST AND TEAR-DOWN BUILDING

Arthur S. Siegel





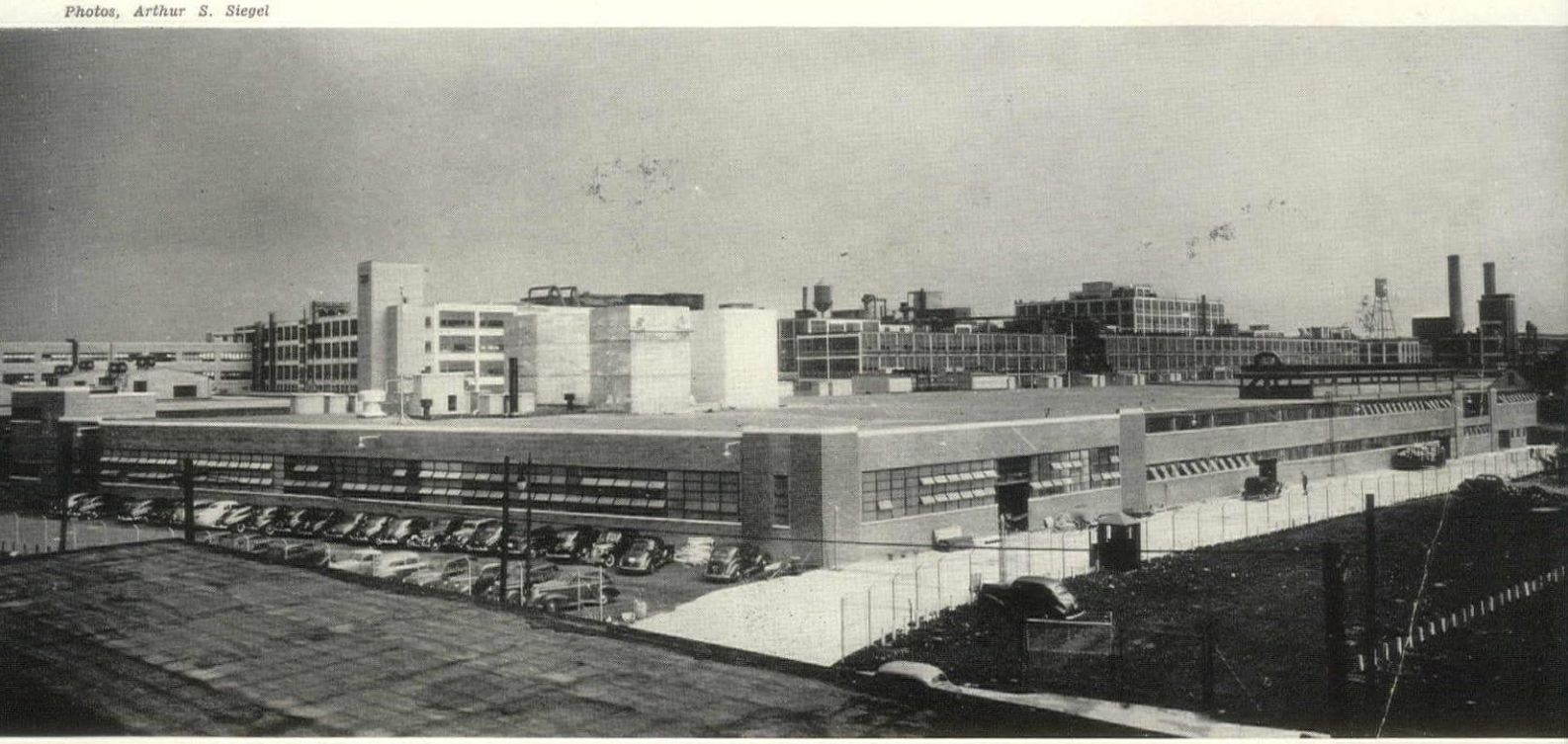
Dynamometer Test Cell Interior

These specialized electric generators, called dynamometers, have the same loading or braking effect on the motors as do propellers in actual flight.

While propellers are used in only two of the test cells (in the engineering department), the noise of the motors themselves is deafening. This is one of the reasons behind Architect Kahn's specification of cinder block for the walls—"the necessity for an acoustic material." (The other two reasons: "The initial saving of material costs" and "the speed and efficiency they provide in the construction of a wall.") Comments Packard: "A sound intensity of about 150 decibels is cut to 90 by making all test cell walls of porous cinder block construction and by using acoustical ceilings." At 150 decibels, the sound of racing Rolls-Royce motors is more disturbing than thunder, artillery action or nearby riveting and produces the sensation of feeling. Muffled down to 90 decibels, the sound is comparable with that in the average noisy factory.

Designed by Albert Kahn Associated Architects & Engineers, Inc., this test, tear-down and reassembly building is located on the former site of Packard's small automobile proving ground. The building is connected with the assembly and office structure (pp. 428 & 429) by a 255 ft. tunnel (14½ ft. wide, 7½ ft. headroom) under the separating railroad sidings. It makes room for utility lines and two 6 ft. industrial truck roadways, is connected to the two buildings by 8 x 26 ft. hydraulic platform lifts. Tunnel roof is uniformly 30 in. thick but is reinforced under the tracks by steel H-sections.

Photos, Arthur S. Siegel

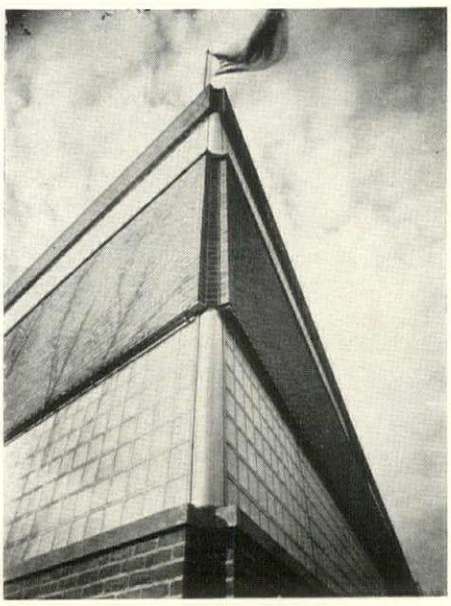


BUILDING FOR DEFENSE . . . AIR CONDITIONING IS A TOOL

in the production of accurate gages at Greenfield Tap & Die Corp.'s new Massachusetts factory; comfort control, a by-product. Accessories: glass block, double brick walls, a flooded roof.

Usually aimed at comfort control, air conditioning equipment in the new Gage Building Plant of the Greenfield Tap and Die Corp. serves a purpose almost as important as any of its machine tools. Improved working conditions are secondary by-products of the system.

Completed last spring from the plans of Architect-Engineers McClintock & Craig, the new two-story and part-basement building is an addition to the corporation's main plant in Greenfield, Mass.,



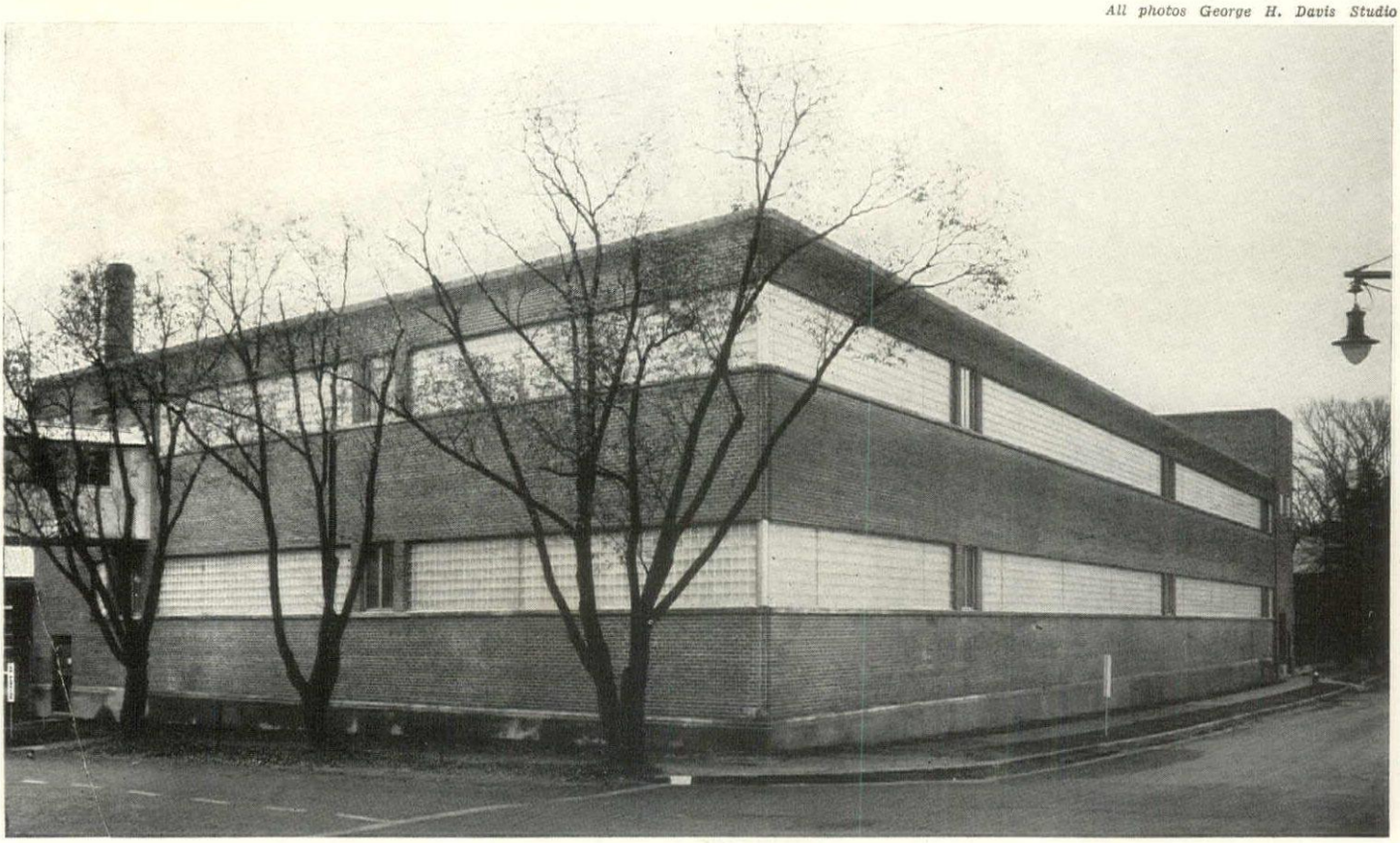
where the finishing and inspection of gages take place. These gages, industrial instruments for measuring and controlling the size of mechanical parts used by a host of defense industries, are carefully machined by Greenfield's technicians who think nothing of working regularly to tolerances of 1/10,000 in. Major problem in this extremely accurate process is the contraction and expansion of both production machinery and product due to temperature changes—a problem compounded by the time lag between the expansion and contraction of the various metal materials and thicknesses used.

Solution to this problem was obviously the stabilization of temperature which, in turn, dictated the use of elaborate air conditioning equipment and many of the building's unusual features of design. Thus, to increase the efficiency of the air conditioning system, and at the same time to admit abundant natural light, long strips of glass block were built into the exterior walls, interrupted only by a few casement windows. Sealed air chambers were built into the exterior walls by reversing every 8 ft. the cells of the 4 in. hollow tile which serve as a barrier between the 8 in. of brick on the outside and the 4 in. of brick on the inside. To the same end, the roof is insulated with 2 in. of cork, covered with four-ply composition roofing and by about 4 in. of water to reflect summer sun. Like the floors, the roof construction is reinforced concrete supported by steel beams and girders. And, it may some day be used as a floor, for the copper-flashed ends of the supporting steel columns extend beyond the roof line to permit easy vertical expansion—see photograph, right. (This heavy floor construction and its 2½ in. wood block finish were specified to help minimize vibration—another bugaboo in the precise business of producing gages.)

The air conditioning installation consists of two distinctly separate systems: one serves the manufacturing space on the two floors; the other, the second-floor final inspection room. The former is considerably larger and is divided into two similar air supply systems—one for each floor—with equipment located in superimposed rooms projecting out of the building proper. Here the return air from the manufacturing area and fresh air from outdoors combine to pass through an automatic self-cleaning filter, then through evaporator cooling coils into the suction of a motor-driven multi-vane fan. Discharge air from the fan splits into four duct systems which serve the four zones into which each floor is divided. Registers are located 20 ft. on centers; each serves 400 sq. ft.

The rooms are heated via reheat steam coils installed inside the four discharge ducts. Completely automatic, temperature

All photos George H. Davis Studio



control in each zone is effected by a thermostat which regulates the steam supply to the reheat coils. During the cooling season, the thermostats, operating through a cumulator, open or close in rotation the expansion valves on the four cooling coils also installed in the duct system of each floor. It is expected that the evenly maintained temperature will be adjusted weekly or monthly during the weekends or shutdowns from 68° in winter to 78° to 80° in summer. In this way the company expects to operate the air conditioning system at maximum economy with no jeopardy to the accuracy of manufacture.

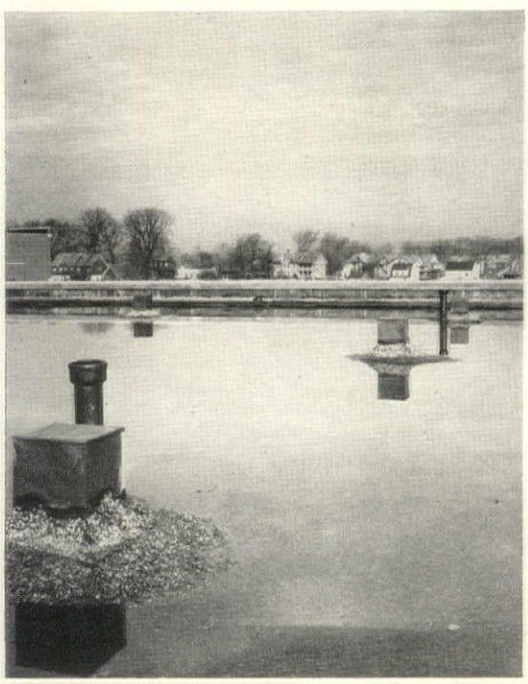
An inside tile-walled room on the second floor, the 40 x 60 ft. final inspection area is separately air conditioned by equipment housed in an adjacent "closet." Return air from the inspection room may be combined in the plenum chamber with fresh air either from outdoors or from the supply ducts of the manufacturing area. To insure its purity, the air is then passed through an electrostatic air filter and an air washer before being forced past a heating coil through ducts and diffusers into the inspection room.

This system is designed to maintain a dry bulb temperature of 68° with varia-

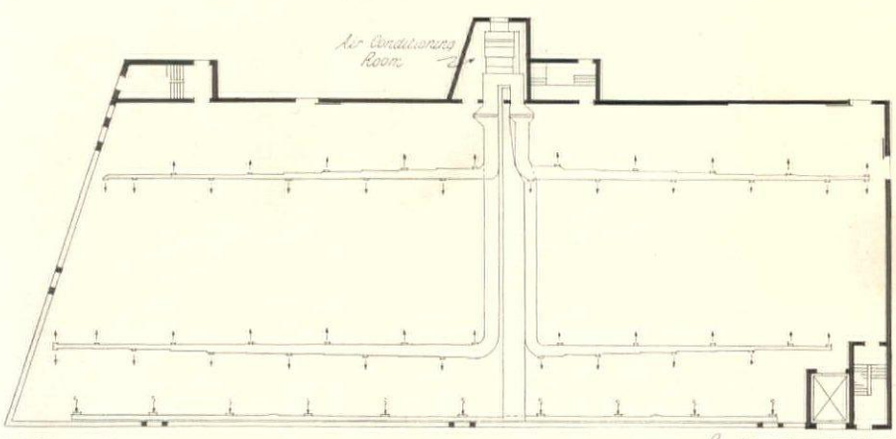
AIR-CONDITIONING DUCTS — MANUFACTURING AREA

Covering one side of the central part of the manufacturing area, the photograph above shows the air conditioning ducts as they bend toward the air conditioning machinery room—the projection in the left hand floor plan below. Return duct is backed against the brick exterior wall under the glass block strip. Discharge ducts are at the ceiling with registers spaced 20 ft. on centers. Note fluorescent lighting fixtures, also layout of air conditioning systems, below.

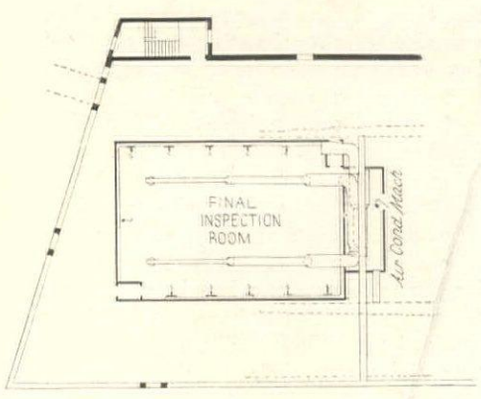
View to the left shows the roof (reinforced concrete, 2 in. of cork, four-ply composition material) flooded with 2 to 4 in. of water to reflect the heat of the summer sun. Box-like projections are the copper-flashed ends of supporting steel columns which have been carried above the roof line to permit easy vertical expansion of the building.



WATER INSULATION — ROOF



FIRST FLOOR



SECOND FLOOR

MANUFACTURING AREA

tions not exceeding ½° and a relative humidity of 50 per cent with variations not exceeding 3 per cent, equivalent to ½° variation in wet bulb temperature.

To preserve the carefully controlled air conditions within this room, access is provided by only two doors each separated from the manufacturing area by a small vestibule, serving somewhat as an air lock. Delivered to this room for final inspection, the finished gages are set aside until the temperature of the metals reaches that of the room, and then the accurate inspection measurements are made.

Greenfield Tap & Die Corp.'s new 39,000 sq. ft. plant was under construction only five months before it began production on May 1 of its defense-vital gages. Major reason for this quick time was the fact that General Contractor E. J. Pinney, Inc. was able to order the structural steel and begin his foundation work while the architectural plans were still in preliminary form. (Architect-Engineers McClintock & Craig were commissioned November 1, comp'eted their plans December 10, but construction began on November 22.) Thus, the steel was on the job by the time foundations were complete, the contract for the superstructure had been let, and the air conditioning subcontract had been awarded to E. B. Howell Co. This saved time and money, helped hold the building cost to $208,000, or $5.30 per sq. ft.

FINAL INSPECTION ROOM

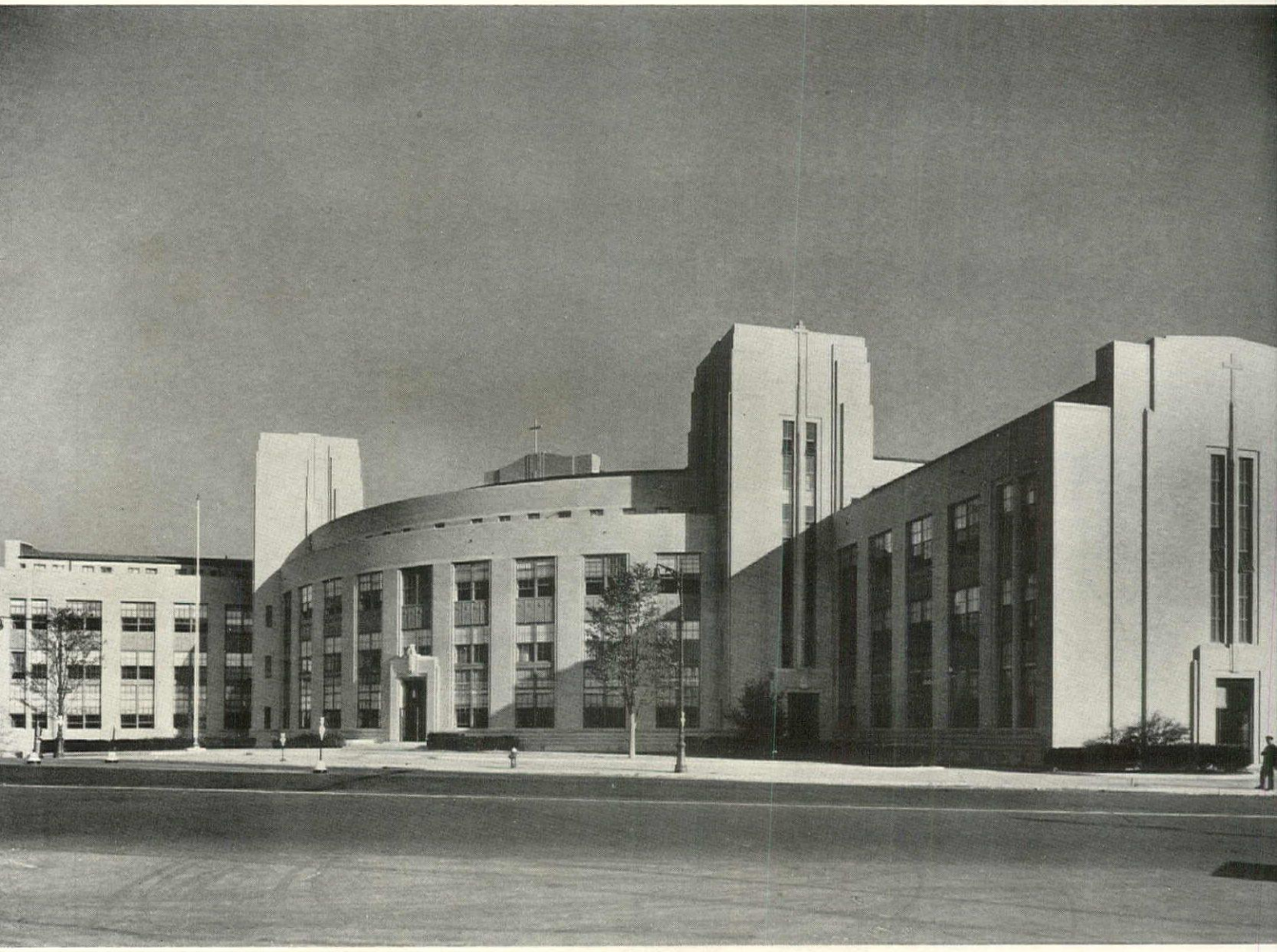
CARDINAL HAYES HIGH SCHOOL

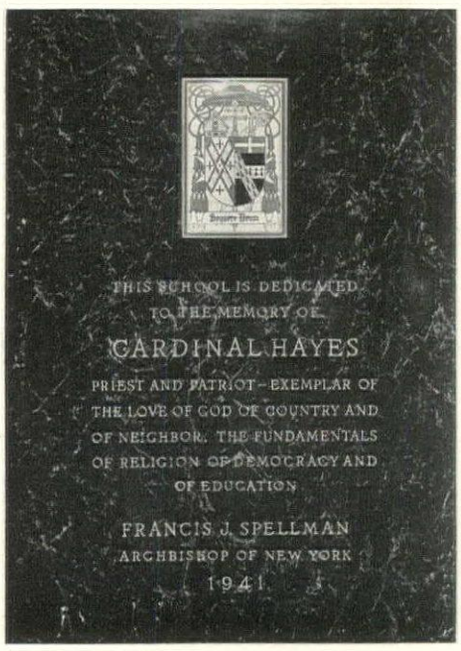
BRONX, NEW YORK

EGGERS AND HIGGINS, ARCHITECTS

All Photos, Samuel H. Gottsche

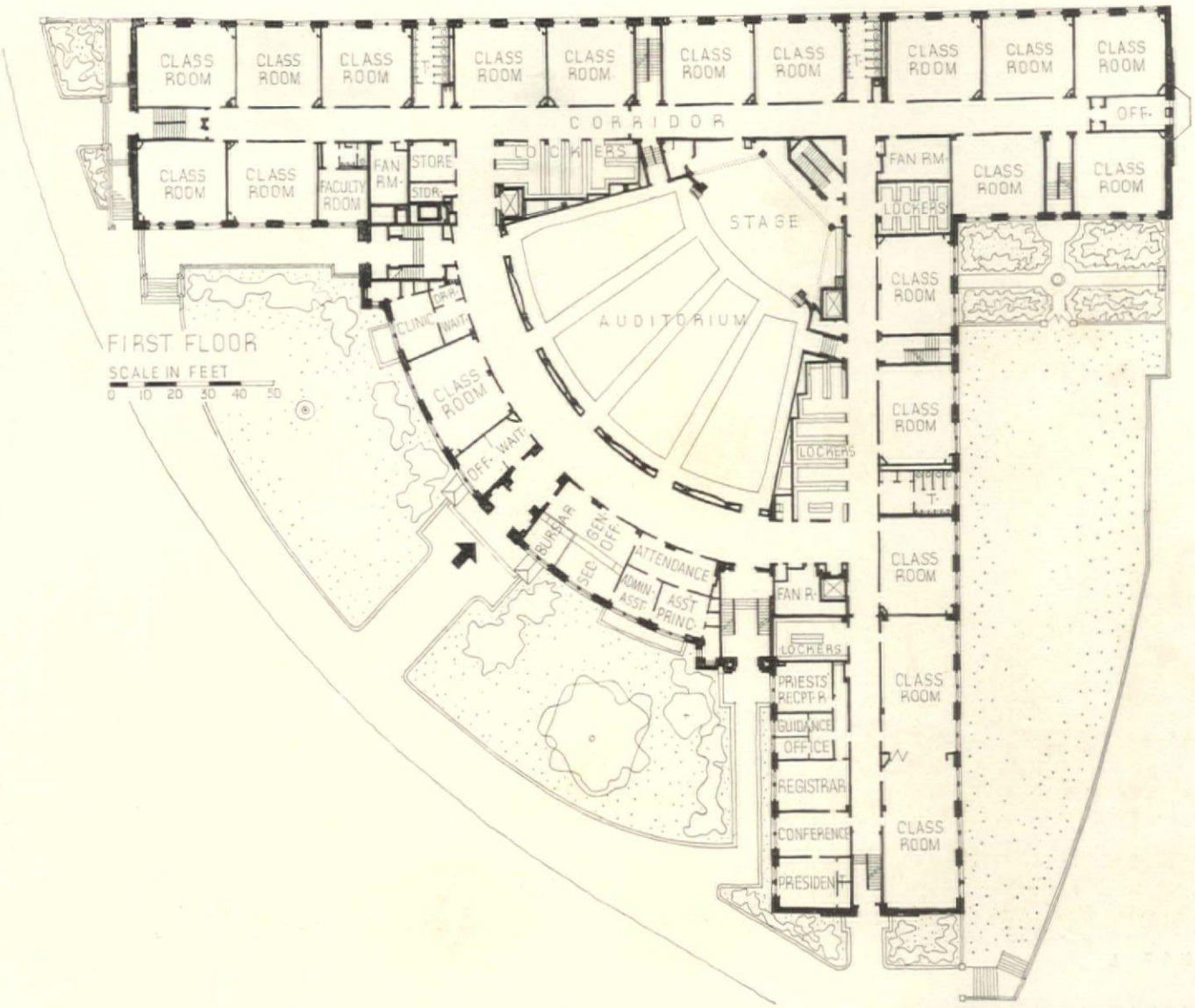
CARDINAL HAYES HIGH SCHOOL, BRONX, N. Y.





The Cardinal Hayes High School presented the architects with a difficult site and a complex set of requirements. On a pie-shaped lot, with a drop of nearly 50 feet from front to rear, it was necessary to arrange in their proper relationship, classrooms for 3000 boys, an auditorium for 1200, two fully equipped gymnasiums, a cafeteria and kitchen, living quarters for 45 priests, a chapel for their use, a library, living quarters for thirteen Brothers, including their chapel, and a variety of offices and service rooms.

The heart of the plan is the auditorium, whose shape is roughly similar to that of the lot, and is so placed that it may be used by students and the public with equal convenience. Classrooms occupy the two wings, and the athletic facilities, thanks to the drop in grade, are comfortably housed in well-lighted basement rooms. This general disposition of the main elements is clearly indicated by the above exterior, which has resolved in a most interesting fashion the requirements of a modern school and an expression of its ecclesiastical character.

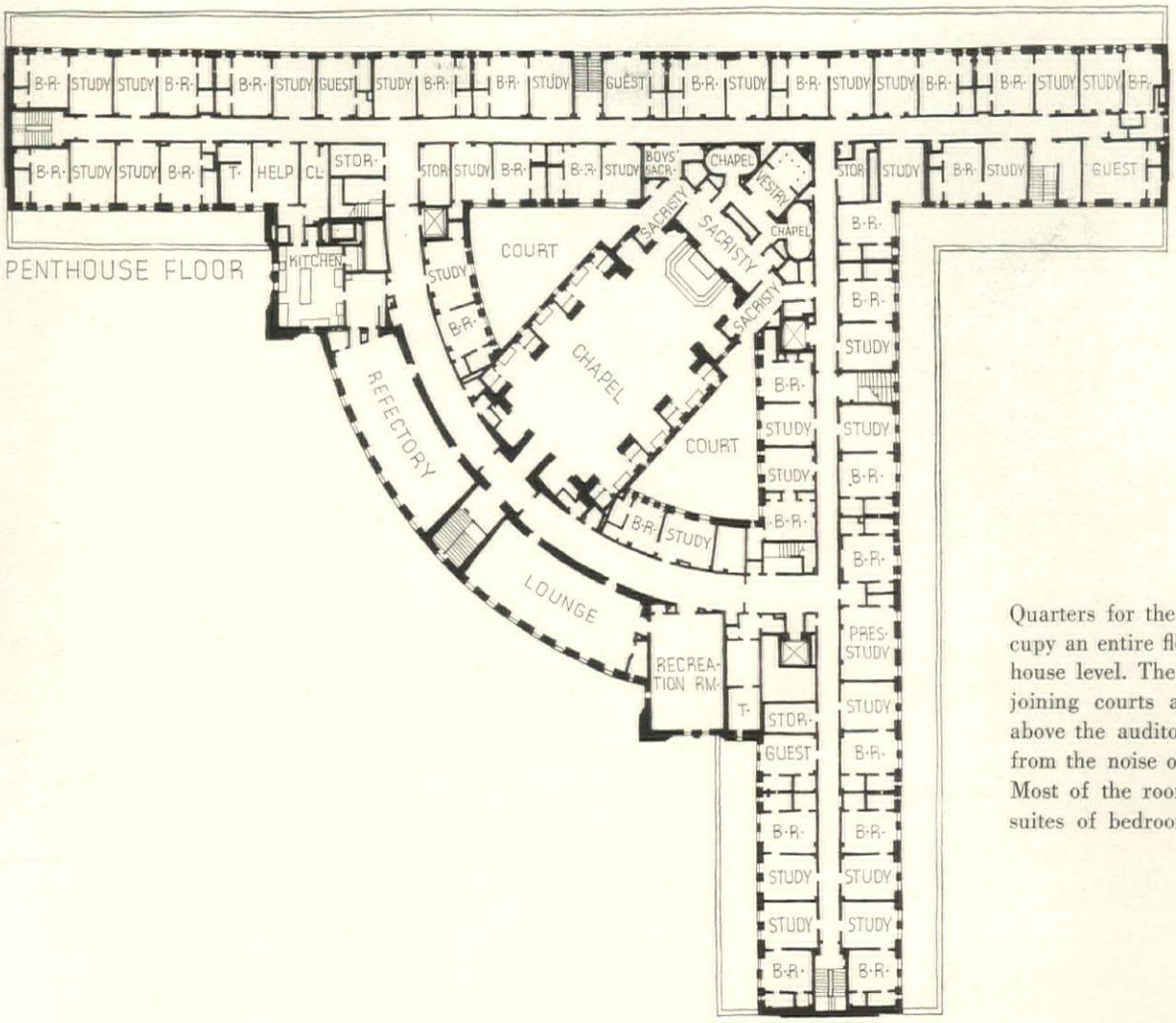

CLASS ROOM
CORRIDOR
LOCKERS
STAGE
AUDITORIUM
FACULTY ROOM
FAN RM.
STORE
CLINIC
WAIT.
OFF.
BURSAR
SEC.
GEN. OFF.
ATTENDANCE
ADMIN. ASST.
ASST. PRIN'C.
PRIESTS' RECPT. R.
GUIDANCE OFFICE
REGISTRAR
CONFERENCE
PRESIDENT
FIRST FLOOR
SCALE IN FEET
0 10 20 30 40 50

AUDITORIUM

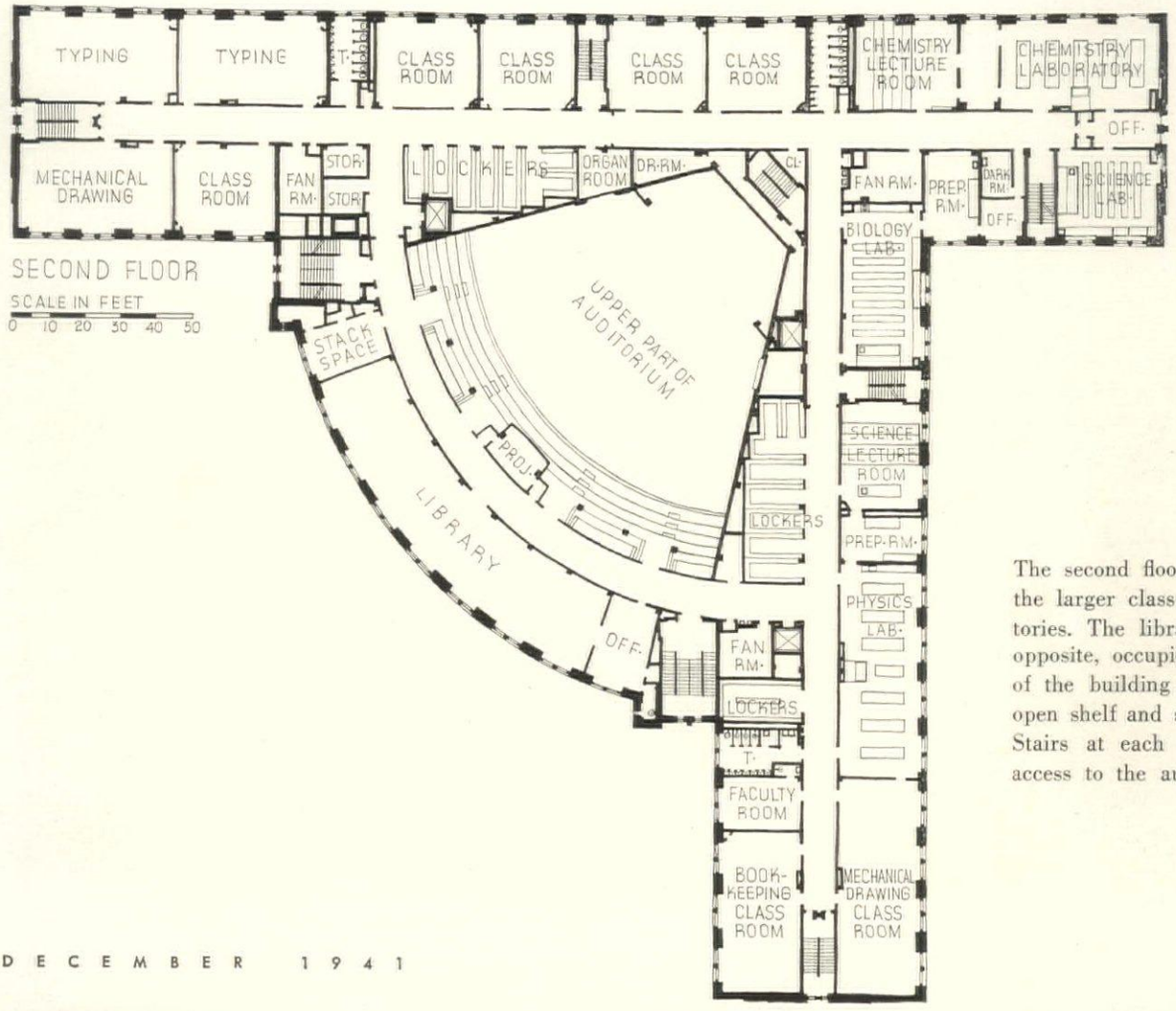
CARDINAL HAYES HIGH SCHOOL, BRONX, N. Y.

CHAPEL

LIBRARY



Quarters for the resident priests occupy an entire floor at the first penthouse level. The chapel and its adjoining courts are located directly above the auditorium, well shielded from the noise of the streets below. Most of the rooms are arranged in suites of bedroom, study and bath.

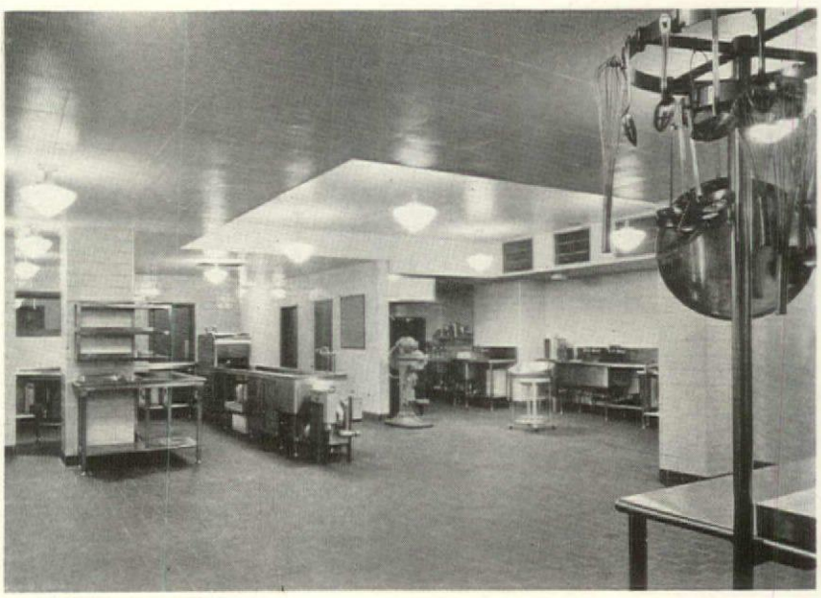


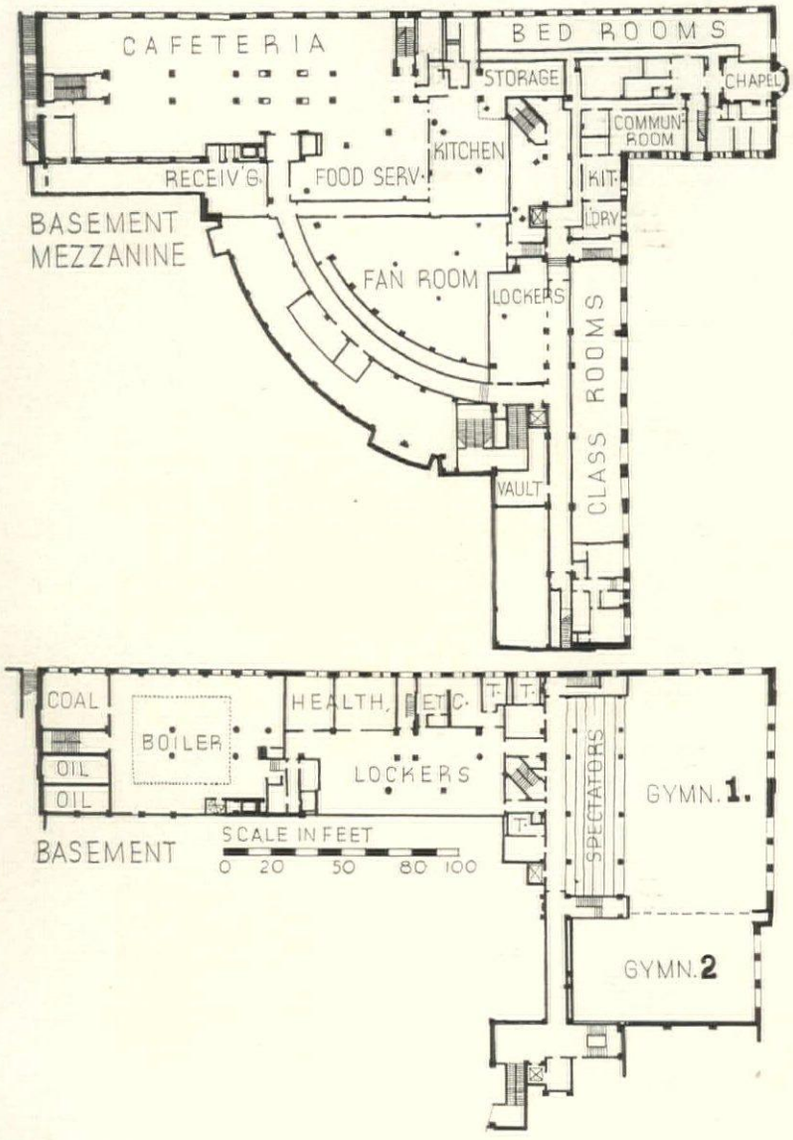
The second floor contains some of the larger class rooms and laboratories. The library, shown directly opposite, occupies the curved front of the building and contains both open shelf and stack storage space. Stairs at each corner give direct access to the auditorium balcony.

GYMNASIUMS

The gymnasiums, kitchen and cafeteria have all been generously provided for, both in space and equipment. The solution for the two gymnasiums is especially notable: completely free of obstructions of any kind, the rooms may be used separately or together; in the illustration above the dividing partition has been pulled part way back. At the left side of the larger room is a gallery seating 635, with bleachers below which can be pulled out to take care of another 250 spectators. The entire area is flooded with an abundance of daylight, diffused through the large panels of glass block. The noise level is controlled by an acoustic tile ceiling.

KITCHEN





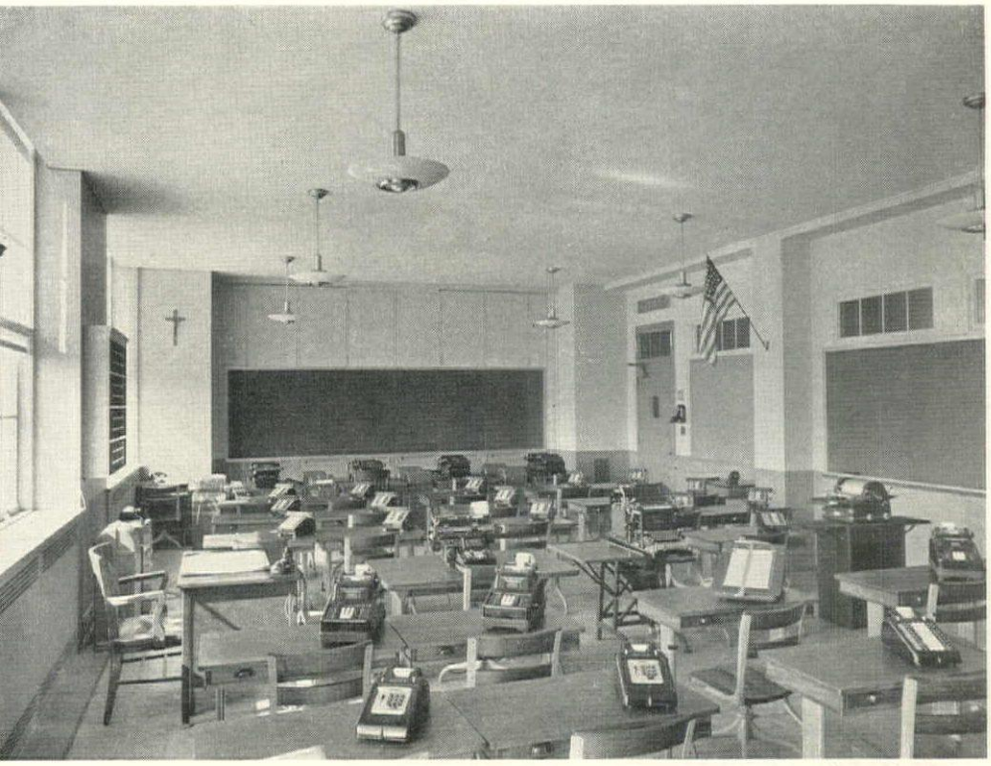
The main services, athletic facilities and cafeteria are located on two basement levels, with excellent daylight obtained through use of the drop in grade. The bedrooms and chapel for the Brothers attached to the school, are also provided here. The plan gives the relative positions of the two gymnasiums shown in the facing illustration.

CAFETERIA

CARDINAL HAYES HIGH SCHOOL, BRONX, N. Y.

EGGERS AND HIGGINS, ARCHITECTS

General Contractor: GEORGE A. FULLER, CO.



CLASSROOMS

TYPICAL LOCKER ROOM

CONSTRUCTION OUTLINE

FOUNDATIONS: Reenforced concrete.

STRUCTURE: Exterior walls—face brick laid in non-staining mortar; brick back-up damp proofed with pitch, free-standing terra cotta furring. Interior partitions — terra cotta. Columns—steel. Structural steel—American Bridge Co. and U. S. Steel Corp. Floors—stone concrete arches, cinder concrete fill, cement finish. Hung ceilings of Milcor Steel Co. metal furring and wire lath, acoustical plaster or tile finish.

ROOF: Structural steel framing and concrete arches with nailing concrete surface. Precast roof slabs by Porete Mfg. Co. Flat roofs covered with 20-yr. bonded built-up, Barrett Co.

SHEET METAL WORK: Flashing and gutters—copper. Ducts—galvanized sheet iron. INSULATION: Roofs—2 in. cork.

WINDOWS: Sash—double hung and casements, Truscon Steel Co. Glass—plate, Pittsburgh Plate Glass Co. Glass blocks—Insulux, Owens-Illinois Glass Co.

STAIRS AND ELEVATORS: Stairs—steel. Elevators—Westinghouse Electric & Mfg. Co.

FLOOR COVERINGS: Classrooms and corridors — asphalt tile. Gymnasium — wood. Living quarters—linoleum. Cafeteria and lobbies — terrazzo. Toilets and showers—ceramic tile.

WOOD AND METAL TRIM: Trim—hollow metal. Doors—fireproofed wood, Hardwood Products Co. and bronze for exterior.
HARDWARE: Russell & Erwin Mfg. Co.

PAINTS: O'Brien Paint & Varnish Co. and Pratt & Lambert. Floor hardener—L. Sonneborn Sons, Inc.

ELECTRICAL INSTALLATION: Complete installation by Lord Electric Co. Equipment by General Cable Wire Co., Graybar Electric Co. and Pittsburgh Reflector Co.

PLUMBING: Soil pipes—iron. Hot and cold water pipes—red brass. Toilet fixtures—American Radiator-Standard Sanitary Corp. Kitchen equipment—stainless steel, Arkay Co.

HEATING AND AIR CONDITIONING: Low pressure steam system equipped with vacuum pumps; controlled by Webster Moderator System, Warren Webster & Co. Boiler—Pacific Steel Heating Boilers, U. S. Radiator Corp. Thermostats on classroom radiators and supply air fans—Johnson Service Corp. Valves—Jenkins Bros., Inc. Water heater—Patterson Kelley Co., Inc.

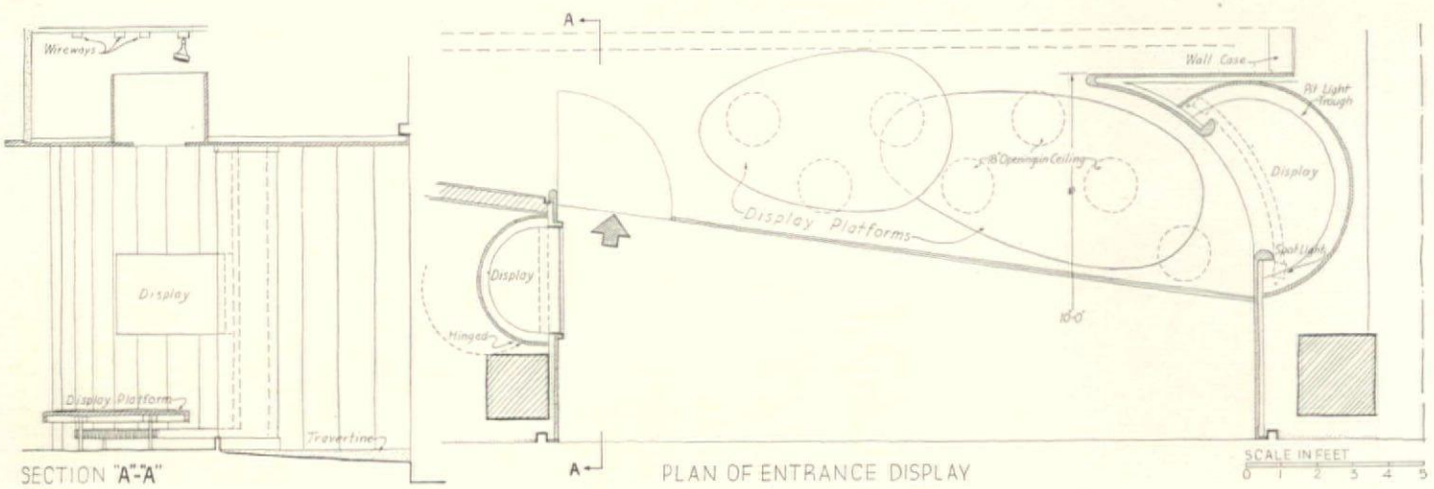
SPECIAL EQUIPMENT: Organ—Hammond Instrument Co. Gymnasium equipment—Medart Mfg. Co. and Horn Co. Laboratories—Hamilton Mfg. Co. Corkboard and blackboard—Austral Sales Co. and Mundet Cork Co. Lockers — Naragansett Machine Co. Furniture—American Seating Co. Irwin Seating Co., A. H. Irving & Casson and Thonget Bros. Toilet partitions—Philadelphia Fire Retardant Co.

MAN'S SHOP

THE NEIMAN MARCUS SPECIALTY SHOP, DALLAS, TEXAS

ELEANOR Le MAIRE, INTERIOR DESIGNER

Ezra Stoller



MAN'S SHOP THE NEIMAN MARCUS SPECIALTY SHOP

Two important problems were encountered in the design of this shop: the proper treatment of excessively long and narrow interiors and the creation of an atmosphere suitable for the display and sale of men's clothing. A solution for the latter was found in the use of rough textured woods and natural leather. Handling of the difficult interior spaces was essentially a matter of avoiding long, monotonous lines of storage and display cases. The room shown in the large photograph on the opposite page, for example, was broken up into three related spaces, with integral lighting successfully used to accent the division. A wider frontage was available for part of the first floor and the show window. The open-back window functions mainly as a frame for the main selling area and shows a very handsome combination of plate glass, dark brown oak planks, thin metal trim and pink travertine.

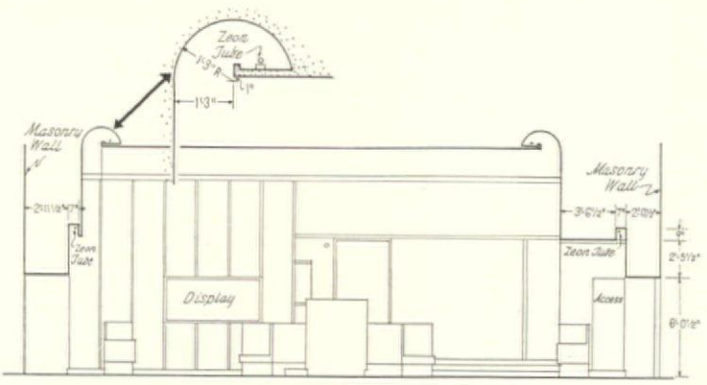
Rhoton Gilbert

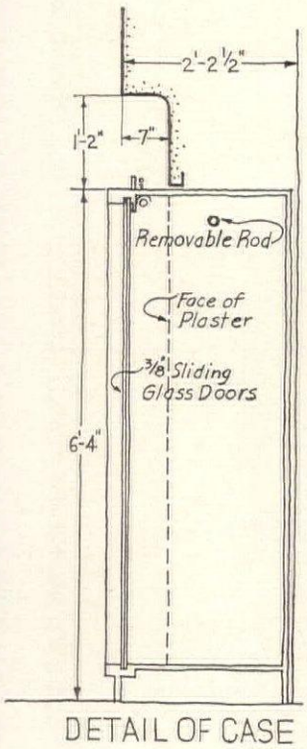
BEFORE ALTERATIONS

VIEW 1.

Photos, Ezra Stoller

VIEW 2.



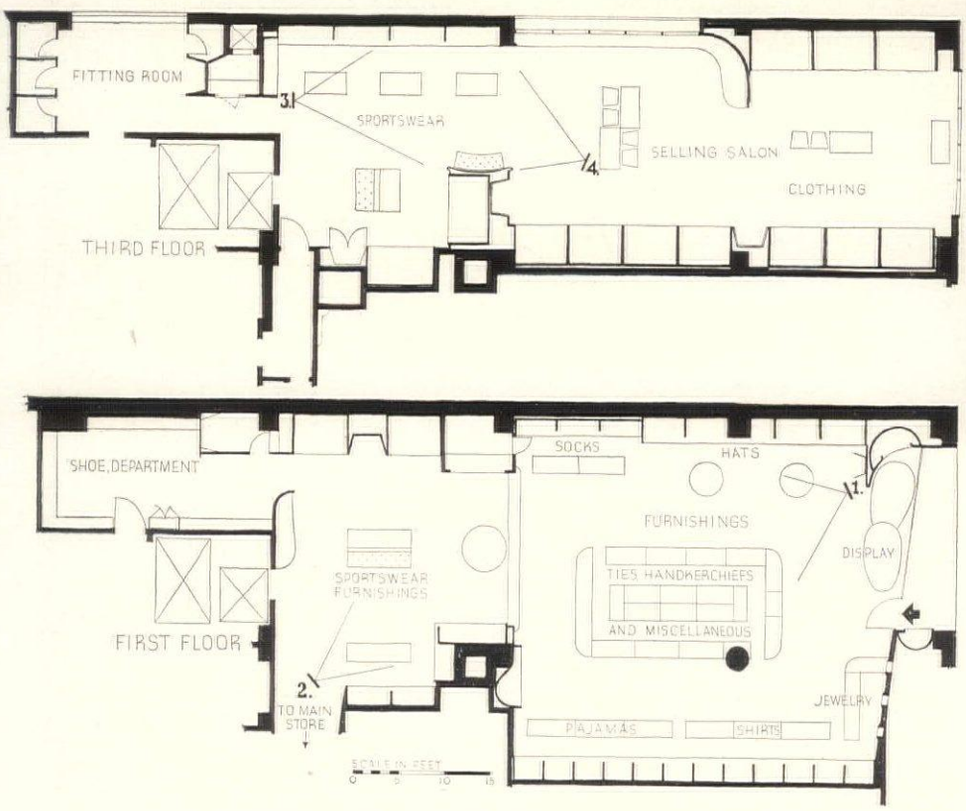


DETAIL OF CASE

VIEW 3.

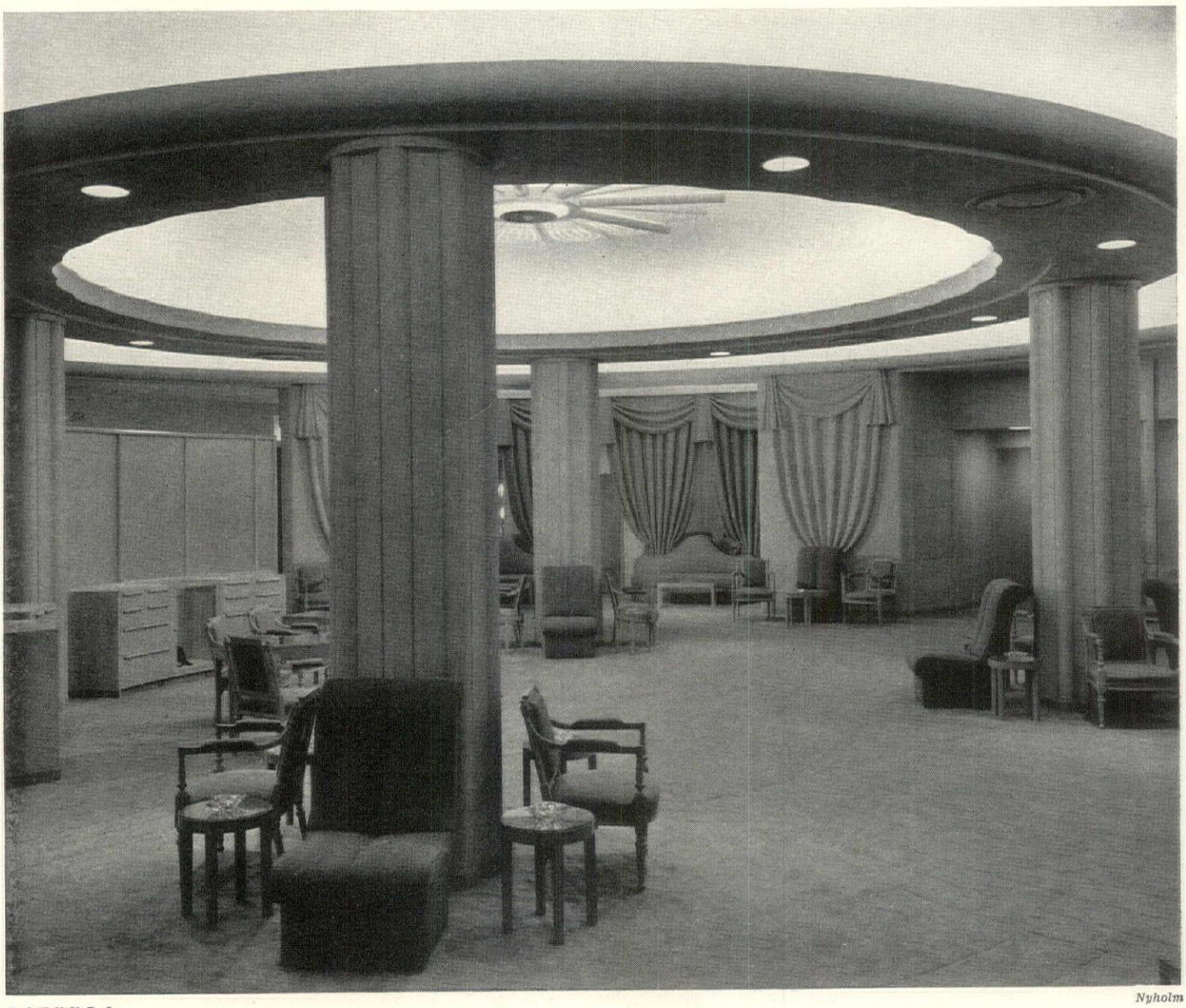
Photos, Ezra Stoller

VIEW 4.



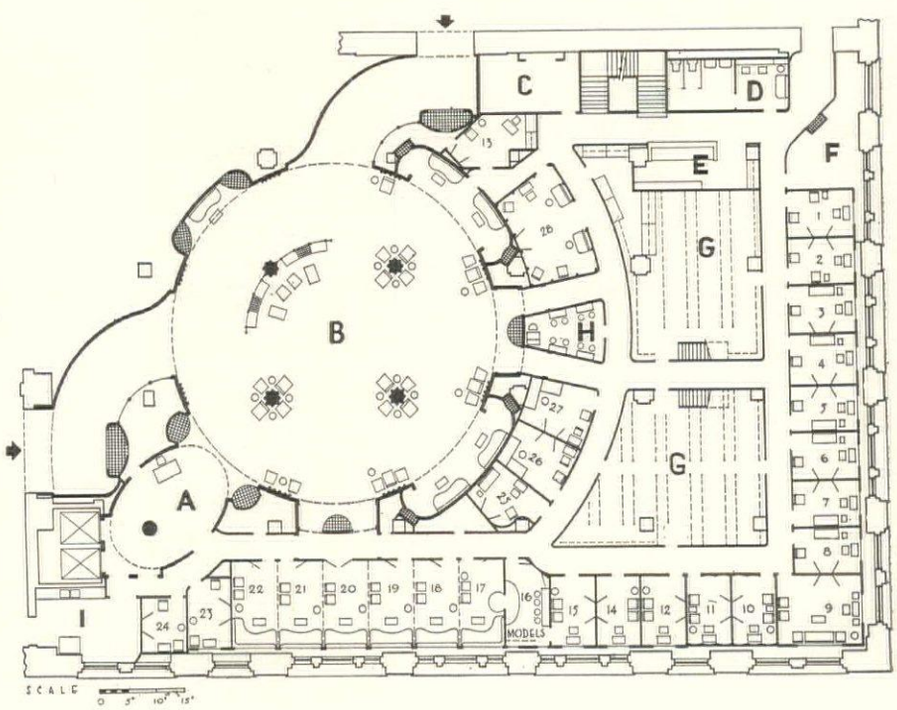
FINISHES. Light combed oak for fixtures and for some ceilings. Floors: pink travertine and blue-gray carpet. Upholstery: pigskin colored leather. Colors on plaster walls: beige, tan, blue and mauve. Shop front: pink granite facing, stained combed oak plank walls and ceiling, nickel bronze trim.

"28 SHOP" MARSHALL FIELD & CO., CHICAGO, ILL.



Nyholm

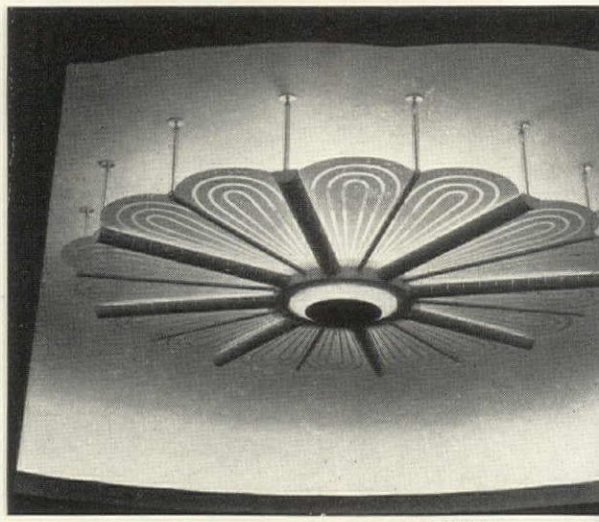
ROTUNDA



A RECEPTION FOYER
B "28 SHOP" ROTUNDA
C OFFICE
D POWDER ROOM
E INSPECTION
F SEWING ROOM
G STOCK ROOMS
H SALES PERSONNEL
I BUTLER'S PANTRY

JOSEPH B. PLATT AND C. E. SWANSON ASSOCIATES, DESIGNERS

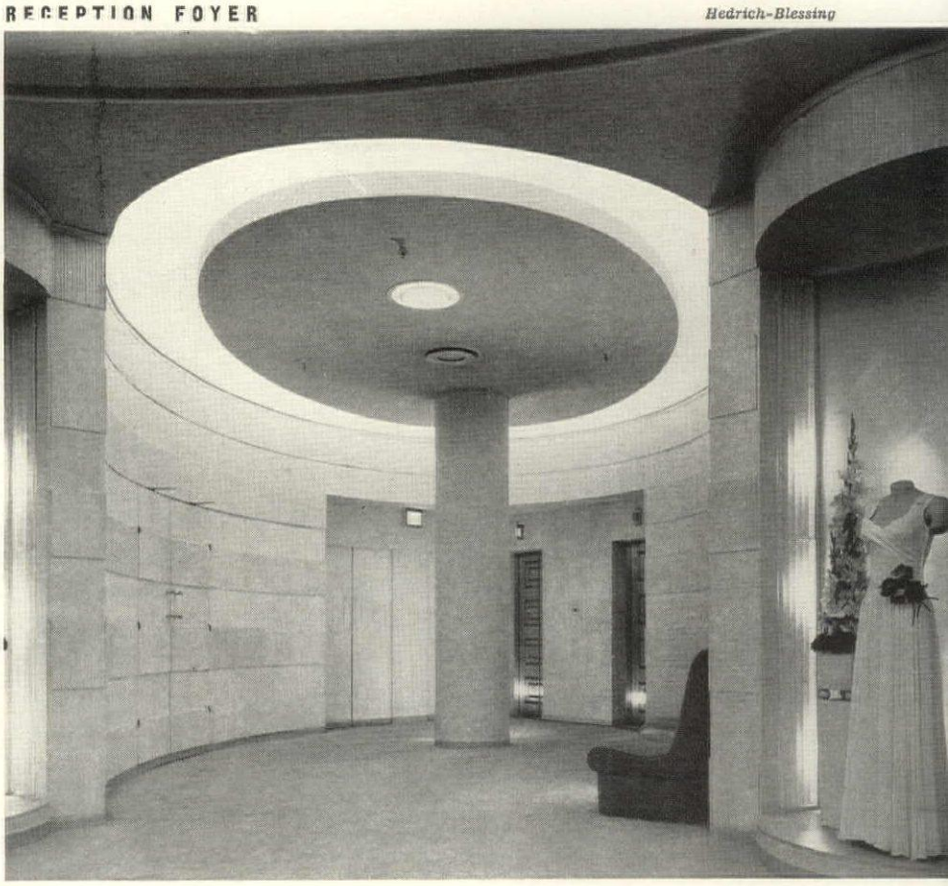
Gordon Coster



Nyholm

RECEPTION FOYER

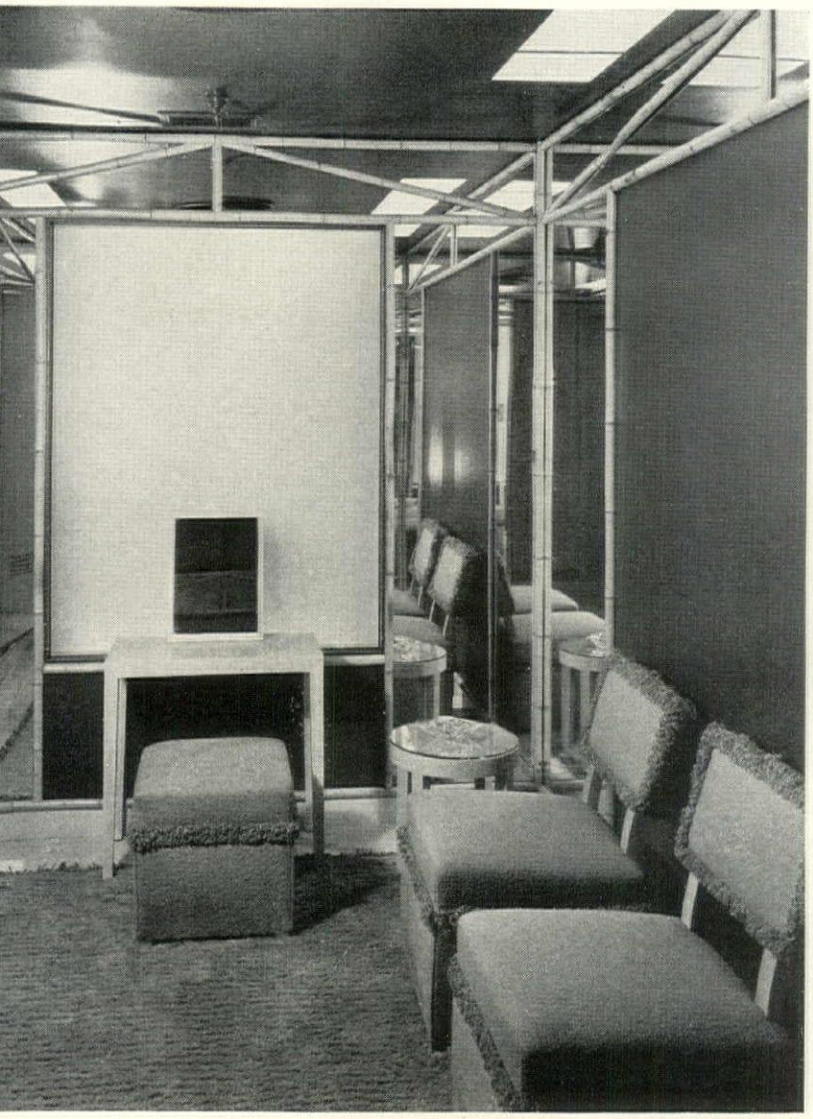
Hedrich-Blessing

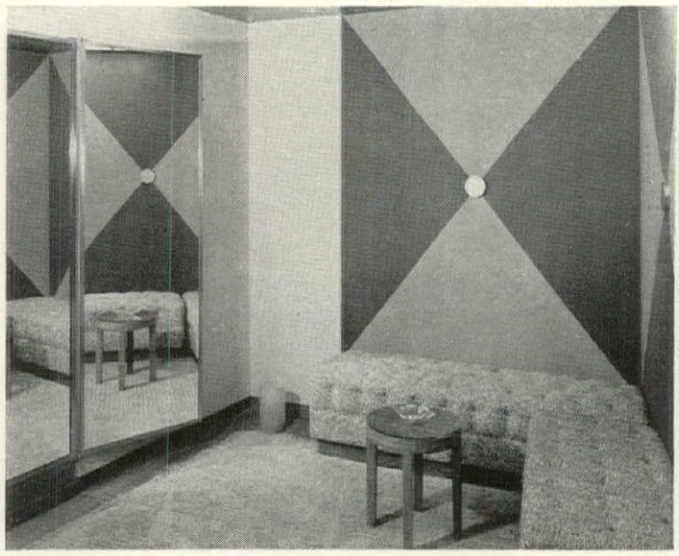


The "28 Shop" is a complete unit within Marshall Field's department store, a frankly luxurious background for the finest in ready-to-wear women's apparel and accessories. The air of elegance required by both merchandise and an exacting clientele has been developed in an unusually interesting manner by the designers, who have used full curves extensively in walls, columns, draperies and furniture, and subtle but very rich variations in texture. The main rooms are shown on these pages, the entrance foyer at the right, a carpeted oval space with pink-beige walls of oak, and the rotunda above, a great circle broken by alcoves. There is no fixed display of merchandise, it will be noted, except in the comparatively inconspicuous niches just off the foyer.

"28 SHOP" JOSEPH B. PLATT AND C. E. SWANSON ASSOCIATES, DESIGNERS

FABRICS DESIGNED BY DOROTHY LIEBES

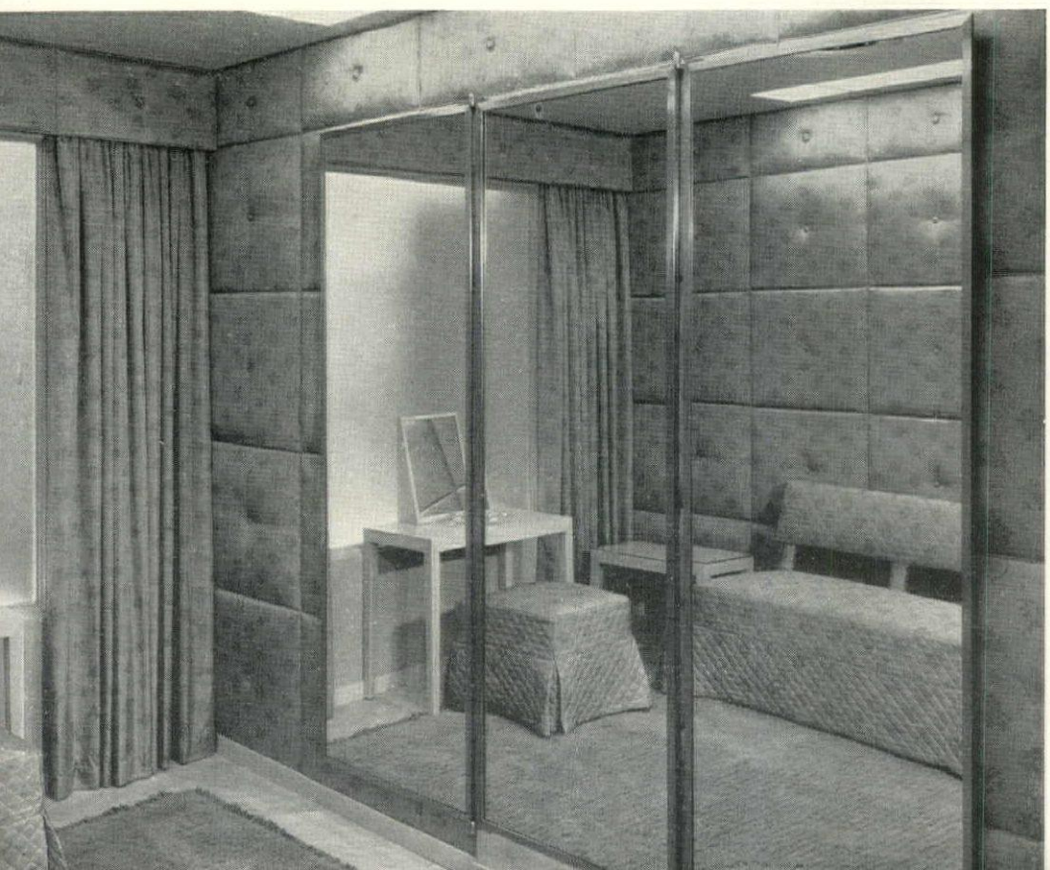




Photos, Nyholm

FITTING ROOMS

Nowhere in the "28 Shop" is the note of luxury more strongly emphasized than in the individual dressing rooms, which are large enough for the customer and friends, salespeople and fitters. Each room is individually decorated except for a series of seven, which can be thrown together by means of sliding mirror panels, and used for intimate showings. In contrast to the main part of the shop, where a series of curved shapes dominate the decorative scheme, the dressing rooms depend entirely on materials, color and lighting for their effect.

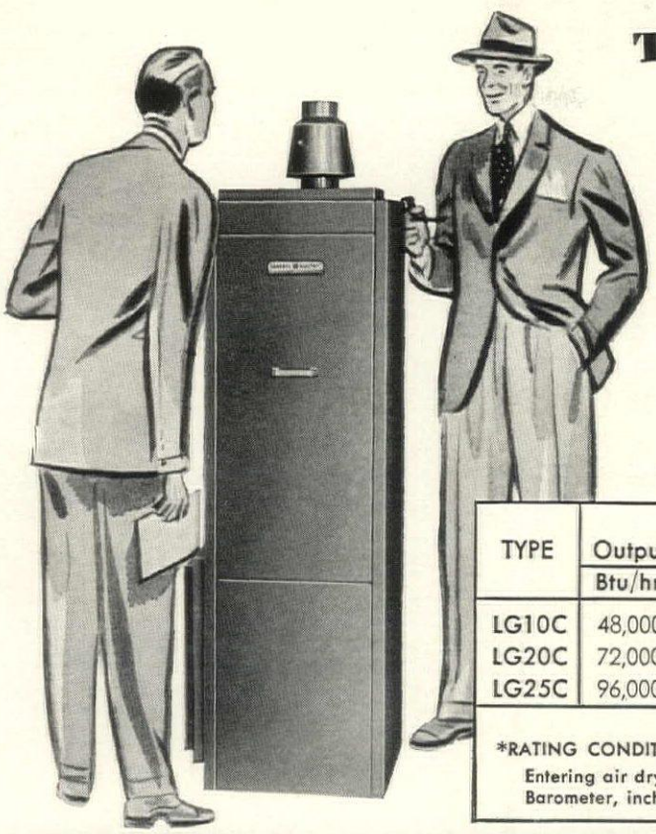


New low cost G-E Gas Furnace for Defense Housing Projects

Highly efficient . . . compact . . . factory packaged

Look at these features

1. **Occupies as little as 3½ square feet floor space.**
   All in one compact unit, these new G-E gas furnaces provide warm, filtered, circulated and moistened air.
2. **Corrosion-resistant cast iron heat transfer surface.**
   G-E designed "pin-point" type heat transfer surfaces develop high transfer efficiency with low cost, small size units.
3. **Completely factory-wired and assembled for easy installation.**
   Factory "packaged," completely ready for installation by any sheet metal contractor.
4. **Approved for installation in basement, utility room or closet.**
   Specially approved by Underwriters' Laboratories, Inc. for installation in closets with only 2 inch wall clearance.



TURN TO GE

For these furnaces (available for defense home requirements only), and other General Electric heating and cooling equipment, look in the Classified Telephone Directory for the G-E distributor, or write to General Electric, Div. 1213, Bloomfield, N. J.

RATINGS AND SPECIFICATIONS

TYPE	Output* Btu/hr	Input* Btu/hr	Air Flow Cfm	Duct Resistance In. Water	Dimensions Height	Width	Depth
LG10C	48,000	60,000	540	0.1	54¼"	16½"	29¼"
LG20C	72,000	90,000	810	0.1	54¼"	19½"	29¼"
LG25C	96,000	120,000	1080	0.1	54¼"	24½"	29¼"

Approved by A. G. A.

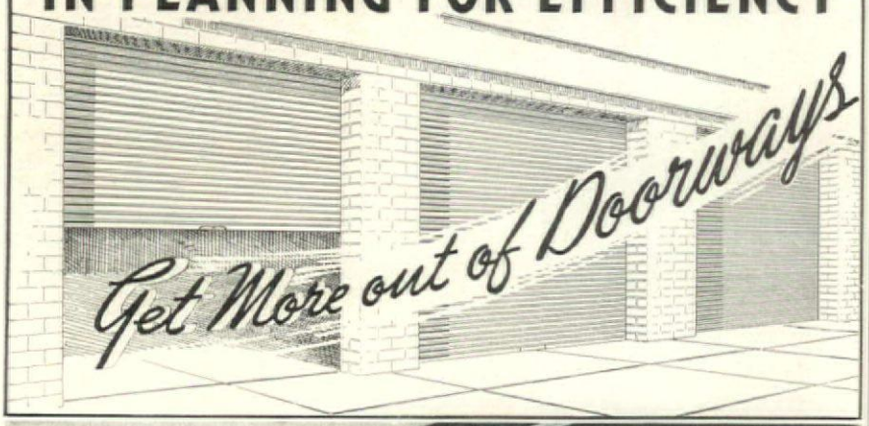
*RATING CONDITIONS
Entering air dry bulb temp., deg F 70
Barometer, inches mercury 29.9

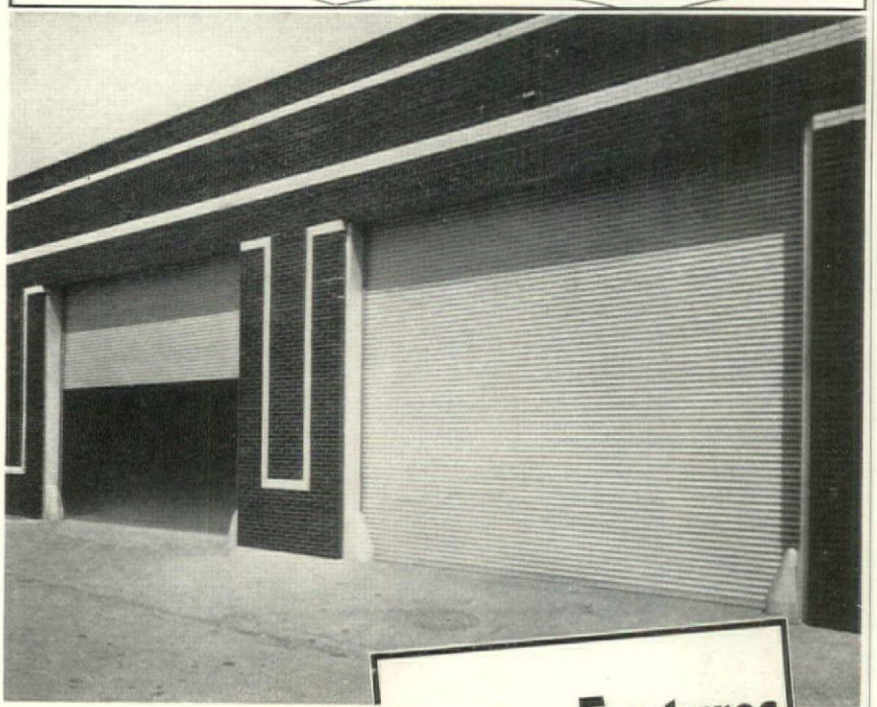
POWER SUPPLY
Volts 115
Phase . . . . . Single
Cycle 60

..save time ..save money select

GENERAL ELECTRIC

IN PLANNING FOR EFFICIENCY





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The
KINNEAR
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1640-60 FIELDS AVENUE
COLUMBUS, OHIO

OPEN STRAIGHT UPWARD AND COIL COMPACTLY ABOVE THE LINTEL, *which . . .*

Makes all surrounding floor and wall space usable *at all times.*

Permits maximum flow of light from all overhead sources *at all times.*

Keeps ceilings clear *at all times,* for widest use of conveyors, etc.

Clears doorway from jamb to jamb . . . from sill to lintel — doors open out of the way, safe from damage!

THEY FEATURE KINNEAR'S FAMOUS INTERLOCKING STEEL-SLAT CONSTRUCTION, *which . . .*

Makes them tough, rugged, long-wearing — yet resilient enough to absorb sharp blows and impacts.

Affords extra protection against fire, theft, sabotage and the elements.

Scores *high* in attractiveness with any type of architecture!

Saving Ways in Doorways
KINNEAR
ROLLING DOORS

HOUSES FOR DEFENSE

(Continued from page 414)

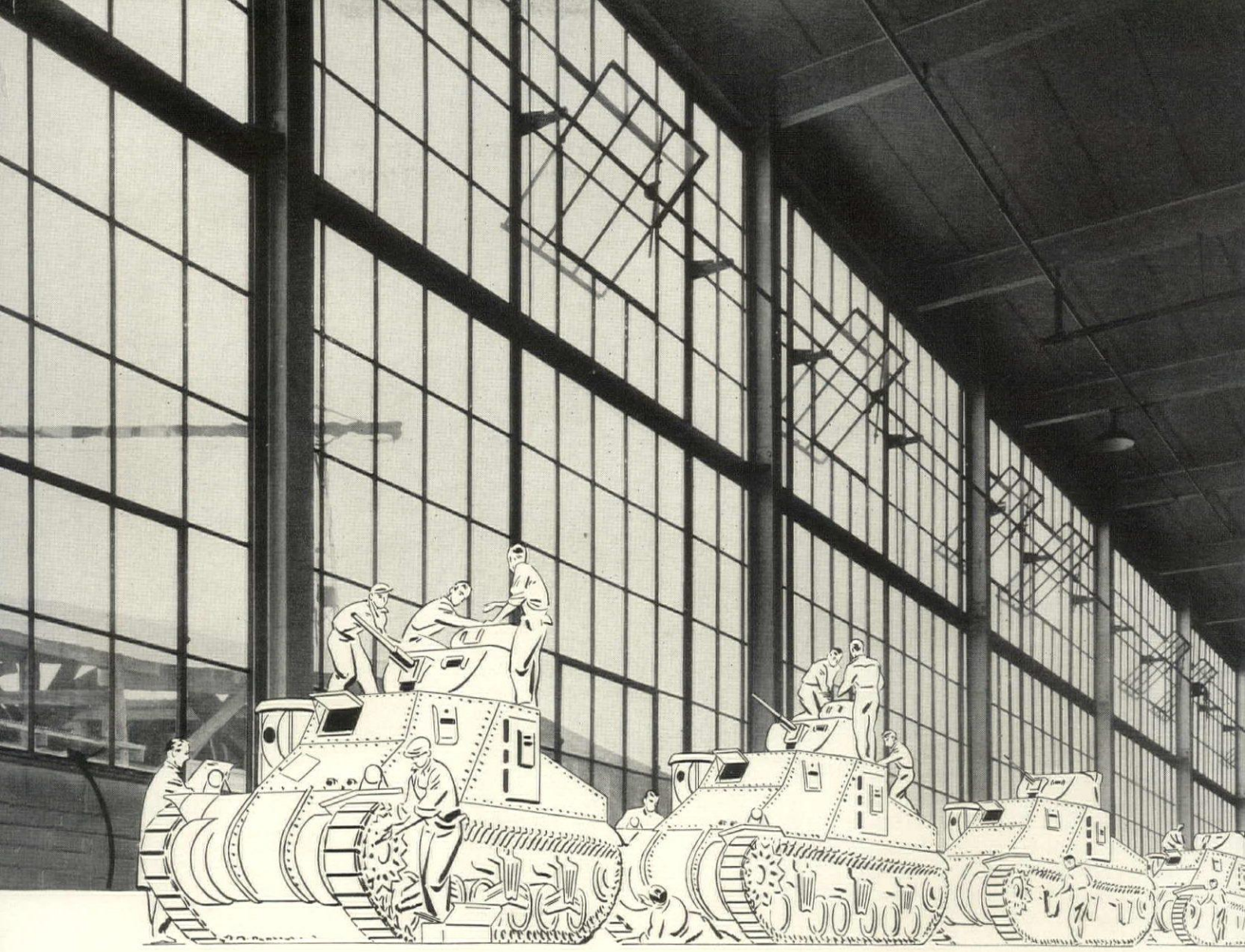
and landscaping, it is somewhat surprising that its costs are well below average. As shown in the breakdown below, the total estimated cost per dwelling unit, including land, architects' fees and everything else, comes to only $3,344—more than $600 below the average for the 303 Federal defense housing projects for which contracts had been let month ago.* Most of these projects are being built without benefit of private architects. Hence, Westpark's Architects Naramore, Grainger and Johanson and Landscape Architect Butler Sturtevant have made a distinct contribution to defense housing and to the case for the participation of their professions in the program—contributions measured in dollars and cents as well as in the attractive appearance of their Bremerton project.

*Westpark's average house contains 1.6 bedrooms, compared with the total program's average of a little more than two bedrooms. However, a half of a bedroom cannot account for the $600 cost differential.

COSTS	Project	Per Unit
Dwelling facilities	$1,897,000	$2,258
Utilities & site impvts.	492,258	586
Landscaping	42,500	51
Non-dwelling facilities	84,000	100
Total Construction contract	$2,515,758	$2,995
Ranges & refrigerators	80,178	95
Land, fees, etc.	213,334	254
Total estimated cost	$2,809,270	$3,344

CONSTRUCTION OUTLINE

FOUNDATIONS: Concrete, Diamond Cement Co.
STRUCTURE: Exterior walls — shingles, bevel siding, vertical boards and battens, building paper, shiplap sheathing; inside—wood lath and gypsum plaster, Pacific Portland Cement Co. Floors—vertical grain hemlock finish.
ROOF: Covered with red cedar shingles, Wyman Lumber Co.
SHEET METAL WORK: Flashing galvanized iron. Gutters—Douglas fir.
WINDOWS: Sash—double hung, Douglas fir. Glass—single and double strength, quality B, Libbey-Owens-Ford Glass Co.
FLOOR COVERINGS: Kitchen and bathrooms—Pabco linoleum, Paraffine Co.
FURNISHINGS: Range—Tappan Stove Co. Refrigerators—Kelvinator Corp. and Frigidaire Corp.
WOODWORK: Douglas fir throughout.
HARDWARE: By Stanley Works and Russell & Erwin Mfg. Co.
PAINTS: By W. P. Fuller Co. and Preservative Paint Co.
ELECTRICAL INSTALLATION: Wiring system—knob and tube. Switches—Bryant Electric Co. Fixtures—Pass & Seymour.
PLUMBING: Fixtures—American Radiator-Standard Sanitary Corp. Soil pipes—cast iron. Water pipes—galvanized iron, The Youngstown Sheet & Tube Co. Gas pipes—black steel.
HEATING: Space oil heaters. Water heaters—Federal Water Heater Co.



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☐ Industrial Defense Buildings Bulletin.

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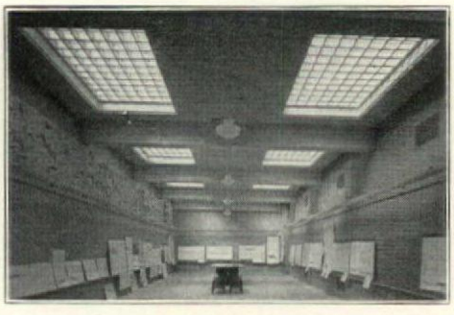
Address_____



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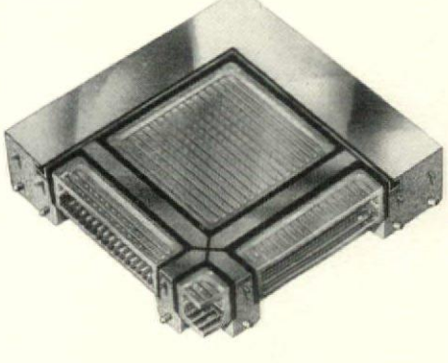
● THERMAG's *rigid*, insulated reinforced concrete grid construction is designed to withstand all snow loads and foot traffic. THERMAG's smooth surfaces clean easier. Its design and insulation guard against any chance of condensation.



● THERMAG's even diffusion of mellow white daylight over wide room areas keeps skylight areas at a minimum. The soffit is highly ornamental. For details, see Sweets. For prompt engineering service without obligation, write direct to 2139 West Fulton Street, Chicago.

Light Up—the AMERICAN Way!

DAYLIGHT ENGINEERS

AMERICAN **3way-Luxfer** PRISM CO.
CHICAGO NEW YORK

HEADWAY & HEADACHES

(Continued from page 422)

have long been gunning for Mr. Carmody; Judge Samuel Rosenman, the President's trusted reorganizer, has submitted to the White House confidential recommendations as to how the Federal housing agencies should be set up for maximum efficiency; Judge Rosenman's wife is on the staff of Defense Housing Coordinator Charles F. Palmer, one of Carmody's adversaries; the President himself has been talking loosely of unification of the defense housing agencies; a rider on recent Lend-Lease legislation authorizes the President to appoint an Army officer as FWAdministrator.

More for Martin

Outside the jurisdiction of FWA, the Farm Security Administration has been providing temporary defense housing via trailers, dormitories and demountable prefabricated houses. Last month it awarded three contracts for 1,200 prefabricated dwelling units to augment the 600 privately financed houses and 300 publicly financed dormitory units near the booming bomber plant of Glenn L. Martin at Middle River, Md. (Arch. Forum. Nov. 1941, p. 321). Allied Housing Associates of Langhorne, Pa. will prefabricate 600 two-bedroom units on a bid of $1.6 million; Home Building Corp. of Kansas City, Mo. will supply 100 duplex houses at $284,000; Stansbury Manor Corp., the Martin subsidiary which built the 600 new-type houses featured in last month's FORUM, will produce 400 more to cost FSA a little more than $1 million.

Prefabricators' pep talk

Called to Washington month ago, 21 of the nation's leading prefabricators were told by Director Clark Foreman of FWA's Division of Defense Housing, which has already contracted for 6,780 prefabricated houses, that the Government was satisfied with several aspects of their work, dissatisfied with several others. Credits: "We have learned that this type of house is practical, sound, livable and that it undoubtedly can become a major factor in the home building industry during and after the present emergency." Debits: Some projects of demountable prefabricated houses are "monotonous. . . . The houses in themselves are not always thoroughly studied from the standpoint of elevation . . . organization of window openings and the use of roofs with overhangs along with an intelligent use of color could do much to brighten up the individual houses."

On the move

Defense Housing Coordinator Palmer apparently overestimated the housing needs of the Navy's powder plant at Indian Head, Md. Thus, after FWA's Public Buildings Administration had completed 586 prefabricated, demountable houses

(Continued on page 46)

Sentenced for LIFE

HOW TWO H. B. SMITH CAST-IRON BOILERS SET A 57-YEAR RECORD FOR LOW MAINTENANCE COST...

Fifty-seven years without a major repair! That is the record set by the two H. B. Smith boilers installed in the Hampden County (Massachusetts) Jail. A dramatic proof of the outstanding durability of "Smith-Mills" sturdy cast-iron construction.

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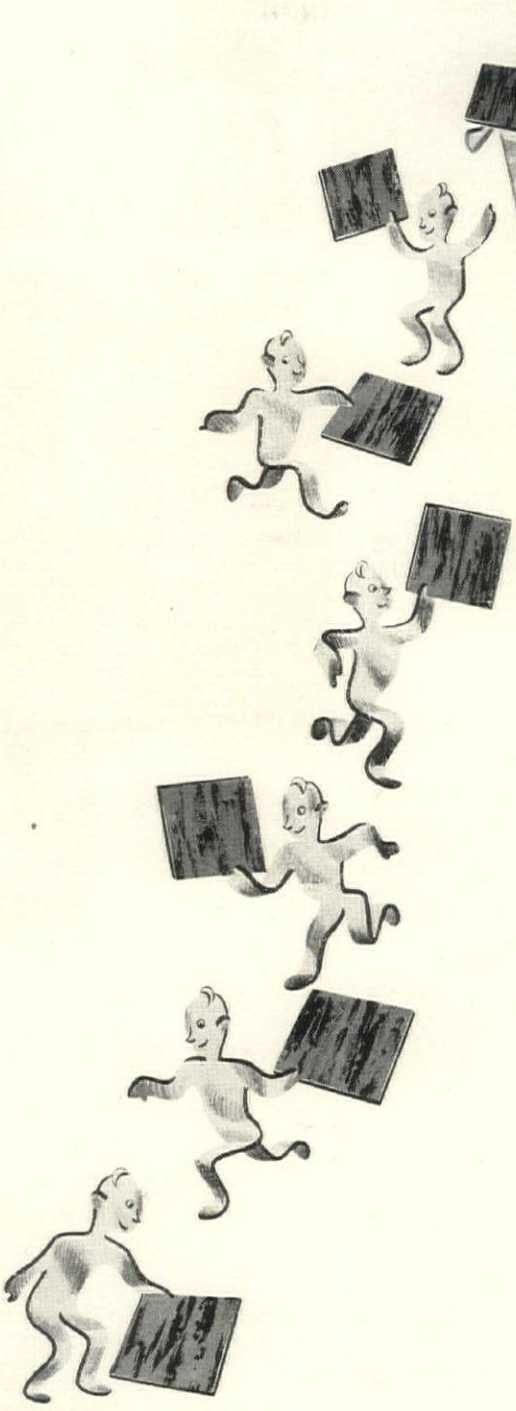

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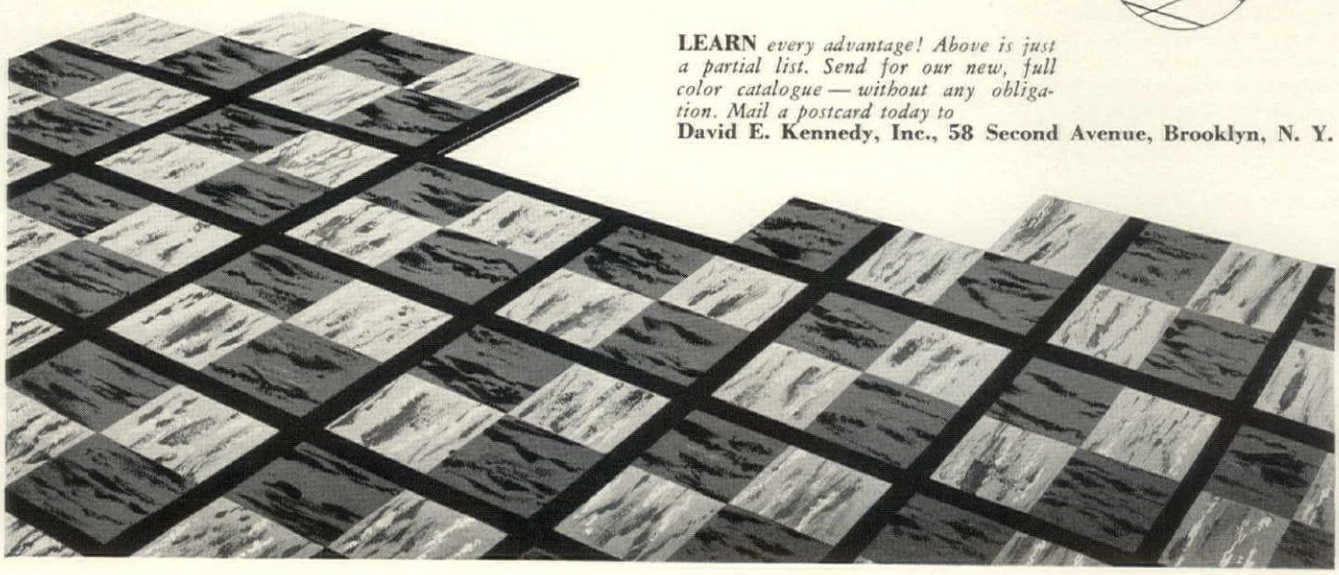

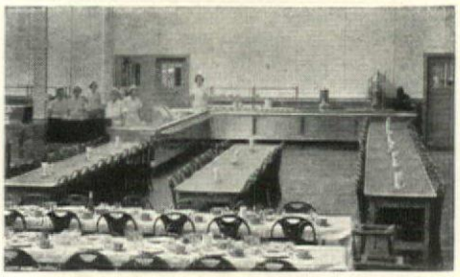

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The services of our engineers are available without charge or obligation to architects having food service problems on their boards.

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HEADWAY & HEADACHES

(Continued from page 44)

there, Palmer directed that 186 of them be knocked down, moved across the Potomac for more important business at the Marine Base in Quantico, Va. The seven prefabricators which produced the 586 houses have been invited to submit bids on the demounting, transportation and re-erection of the houses to be moved.

$300 million knot

Still tied up in a House committee last month was the $300 million Lanham Act appropriation bill, passage of which is necessary before more Federal defense housing can be built. As usual, the reason for the delay is the continual squabble between competing public housing agencies on one hand and between Government's public and private housing advocates on the other. Meanwhile, until several congressional investigating committees, Judge Rosenman and the President make their reports and recommendations, Congress is sitting back waiting to see who comes out on top. Rumpus of the month was created by U. S. Housing Authority's Administrator Nathan Straus who lamblasted all eight Government agencies concerned with housing — except, of course, his own. Said Straus: "None of the seven newer agencies has done the job as well as the one that existed in the beginning — USHA." There was much wisdom in Straus' plea for consolidating the defense housing agencies and for assigning USHA a bigger share of the program, but his belittlement of private enterprise's possibilities rubbed Palmer, Congress and the building industry the wrong way, substantiated the off-voiced observation that USHA's public relations department is its weakest.

Palmer's co-op.

Championing private housing whenever he gets a chance, Defense Housing Coordinator Palmer month ago suggested a co-operative housing plan for defense workers as a private enterprise counterpart to the "mutual ownership" program sponsored by the Federal Work Agency's Col. Lawrence Westbrook (Arch. Forum. June 1941, p. 443). Noting that cooperative projects which meet the requirements of ordinary Title VI defense housing are eligible for FHA mortgage insurance, Palmer in an open letter to defense workers throughout the country outlined two types of financing plans possible under the cooperative arrangement. In one, title to the property is given to the participants as soon as construction is completed. In the other, title resides permanently with a corporation owned by the participants who lease the individual properties. As in all cooperative housing ventures, the big difficulty will be to organize large groups of home seekers who have enough cash for the requisite equity investment.

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Iron Fences

SPECIFY JOINTS ELECTRICALLY WELDED UNDER PRESSURE

Then Compare This Weld *for* **STRENGTH RIGIDITY PERMANENCE**

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Anchor-Weld Iron Fences live up to the architect's ideal specifications for permanent, beautiful Iron Picket Fence. For strength, the joints (see illustration) are electrically welded under tremendous pressure to provide maximum rigidity. For permanence, the Rails and Pickets are of *equal* weight, made from copper-bearing steel, to prevent sagging and to eliminate ugly center-supports and cross-bracing. For beauty, center supports and ugly cross-braces are eliminated. Anchor-Weld Iron Fence panels require no center support, yet each panel will withstand one ton of distributed load without showing a permanent set.

Anchor-Weld Iron Fences are available in many beautiful designs with gates to match and in varying heights to meet all requirements. Anchor Sales and Erecting Service covers the nation. Mail the coupon today for Architect's Catalog and sample Anchor-Weld.

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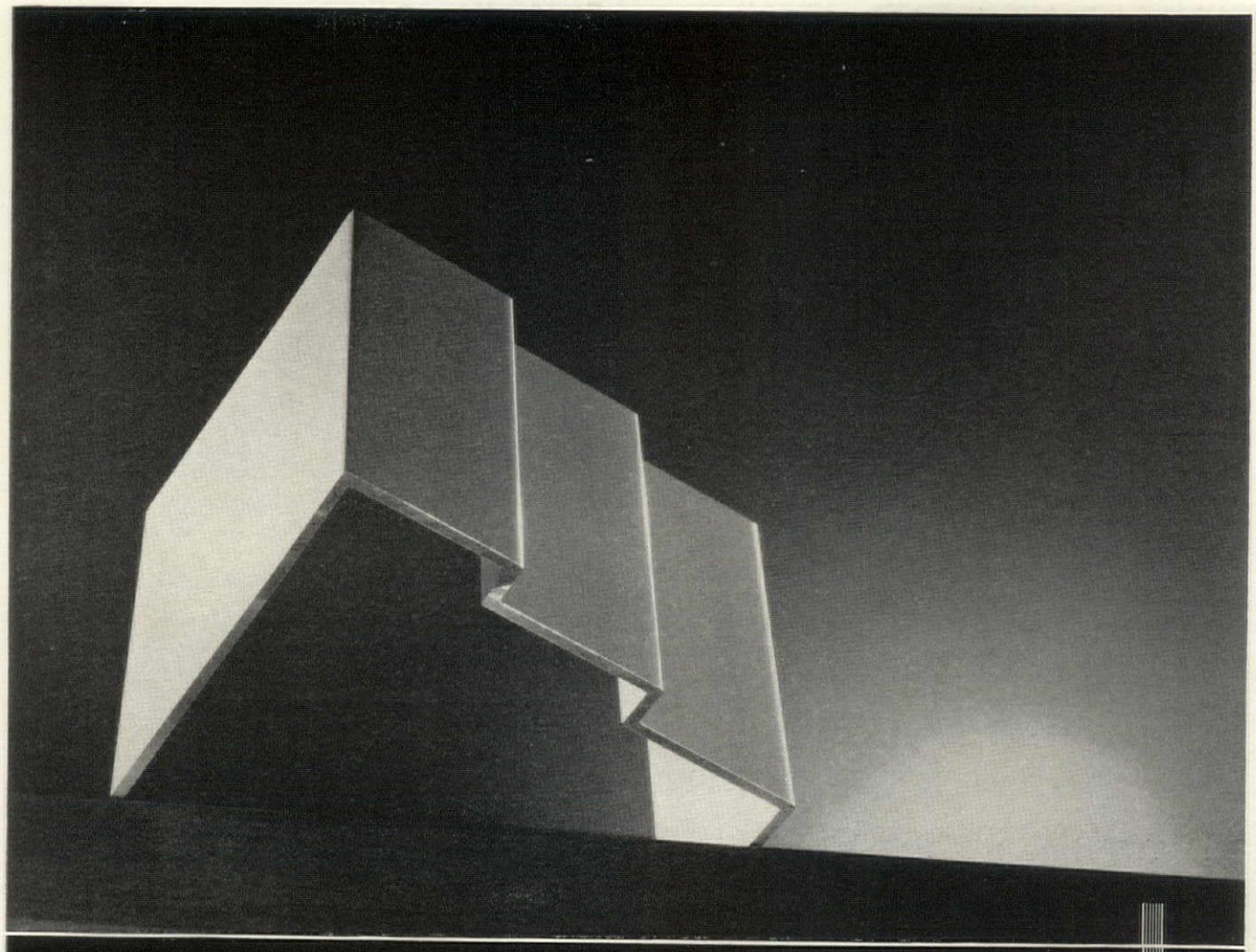
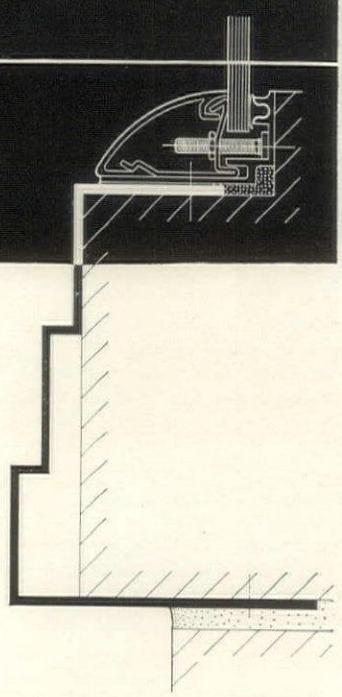


SELF-SUPPORTING



• Pittco Store Front Metal shapes are extruded of aluminum and bronze, with thick, sturdy walls of sufficient rigidity to make them self-supporting. With Pittco members, snug-fitting cores to prevent denting of the metal surface are unnecessary. Were the moulding illustrated above made of light sheet metal, the marks of common abuse would soon be evident upon its smooth, plain surfaces. But when extruded in the Pittco manner, it should retain its original surface beauty indefinitely. This is but one of the reasons why Pittco Store Front Metal is being used more extensively every day by leading architects to meet exacting store front requirements. Pittsburgh Plate Glass Company, Grant Bldg., Pittsburgh, Pa.

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Eljer fits the home owner's idea of the perfect bathroom—modern, colorful, luxurious!

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Our new and colorful booklet, "Fixtures of Beauty and Distinction", illustrated, is crammed full of sparkling ideas and inspirations which may be helpful in planning your bathrooms. It's FREE for the asking.

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MONTH IN BUILDING

(Continued from page 4)

► Architect Harvey Wiley Corbett, one of the designers of New York City's skyscraping Rockefeller Center and the C in its PHC (prefabricated) Housing Corp., made fun of Building's defense dilemma, made sense with his several interesting prognostications: "How can a poor architect make a decent looking job after priorities have taken away from him all the essential materials. I don't believe we are going to have anything left to fasten our buildings with except Scotch tape and wall paper. I understand that is the way they have been building bungalows in Los Angeles for years. . . Without steel we couldn't have skyscrapers and without the lally column modernistic architecture would certainly be at a loss. Both of these might well be regarded as blessings. . . .

"Just what can we do with these great war time factories to turn them quickly into peace time production. . . . Plans should be made now to turn them into the production of interlocking, interchangeable, standardized, completely finished building units with which needed buildings for peace time activities can be rapidly erected. . . . Our government must, of course, be ready to spend what is necessary to prepare for such a transfer. If we are spending billions to defend democracy, should we hesitate to spend billions to preserve it? . . . Let me draw a word picture of the future of building as I see it. First: No more skyscrapers. I used to be a strong advocate of skyscrapers; in fact, the last time I spoke before the Chamber of Commerce of the United States it was in a debate with Henry Curran on this very subject. I was arguing for skyscrapers. I've changed my mind. . . Buildings of the future . . . will weigh about one-third what they do now. Masonry — as we know it — brick, stone, cement — will not be used. Walls three or four inches thick are ample to make a complete division between indoors and outdoors. Pre-made synthetic materials will replace the usual things now employed. We will cease to think of buildings as permanent structures lasting for many, many years, but will conceive of buildings so flexible that they can be readily changed to meet changing human needs and not be built as they have been in the past of great unnecessary masses of solid masonry, which fill the streets with rubble as we have seen in the pictures of the bombings in London, all an unnecessary and uncalled for expense of effort in time and human labor. For centuries the human animal has been trying to adjust itself to its permanent buildings, trying to fit himself like new wine in old bottles. Let us in the future make our buildings so that they meet with our own human needs as those needs demand. We will then be designing buildings for human use, and the

(Continued on page 52)

MODERN DEFENSE CONSIDERS THIS, TOO!

★ With America more alert than ever to the need for conserving all resources, it is wise to weigh the hazards of lightning against the modest cost of thoroughly reliable protection.

Lightning can — and often enough does — cause practically total loss of buildings. It can cause temporary plant shutdowns. Now and then it even takes lives.

Lightning is unpredictable. You never know when it will strike, or with what results. Only two things are certain: Lightning starts more fires than almost any other source (records of the National Board of Fire Underwriters' prove it)... and a West Dodd installation provides a thoroughly reliable safeguard. The sense of security alone is well worth the cost.

West Dodd is the oldest name in lightning protection. Its materials and methods of installation are approved by the National Board of Underwriters', the American Institute of Electrical Engineers. They are being widely used on National Defense projects such as powder magazines, ammunition loading lines and igloos.

Why not at least investigate West Dodd Systems? Details on request.

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FREE estimating and engineering service to architects on installations when inquiry is accompanied by blue-prints of all elevations and roof detail showing location of soil pipes, metal ventilators, etc. Write for literature.

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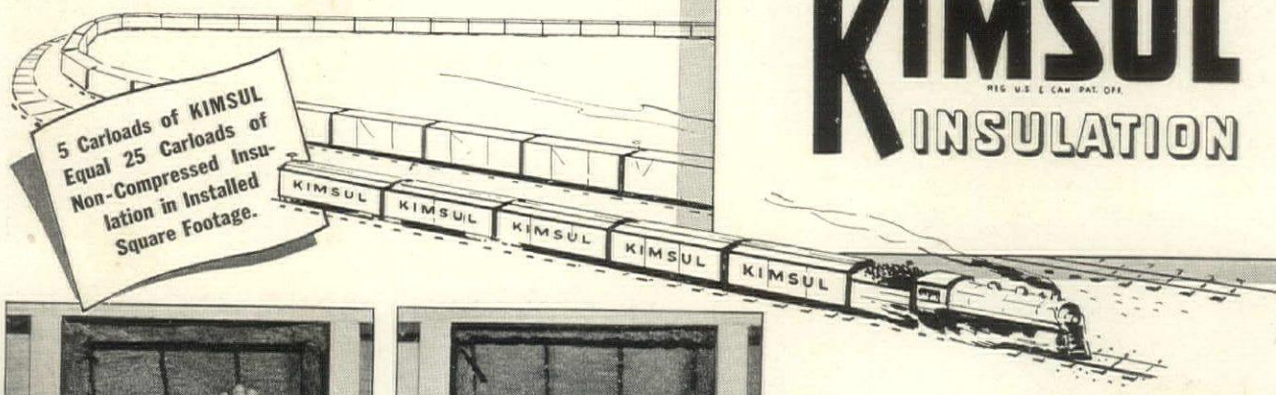

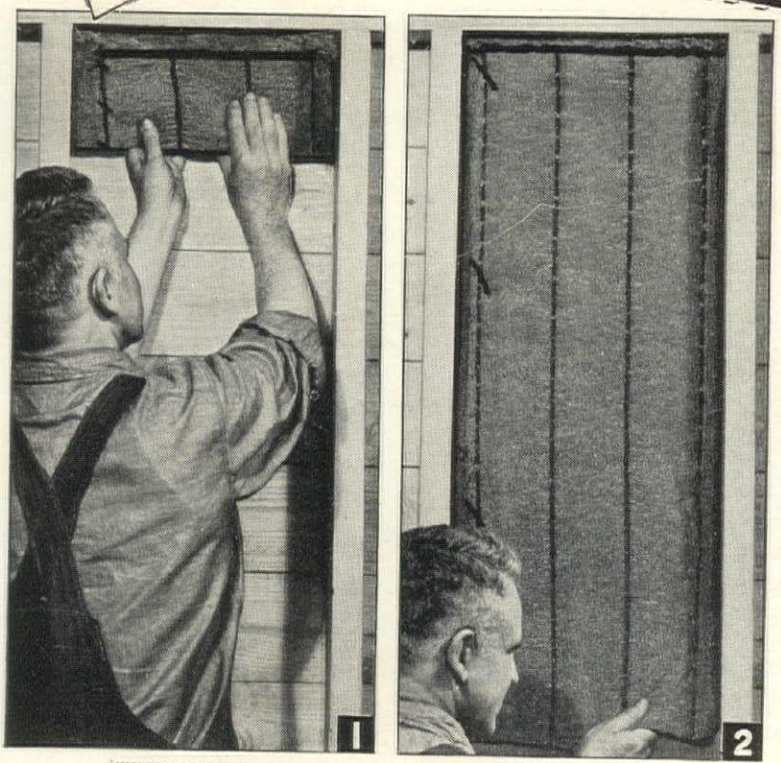

KIMSUL IS COMPRESSED AT THE FACTORY — EXPANDED ON THE JOB

KIMSUL is a soft, flexible insulating blanket composed of processed wood fibers. KIMSUL comes in wanted widths and thicknesses...is compressed to about 1/5th its installed square footage. Thus KIMSUL is extremely easy to ship, store, handle and install. Illustration No. 1 shows compressed blanket attached to top plate of side wall. Illustration No. 2 shows blanket being expanded to correct density and length.

KIMSUL Does Not "Hog" Space

Compressed form results in fewer cartons. KIMSUL does not get "in the way" on the job. Illustration shows 1,375 square feet of KIMSUL on the job and not in the way.

KIMSUL is Easy to Handle

Carton containing 125 sq. ft. of KIMSUL weighs only 19 lbs. Remarkably easy to carry... adds but negligible weight to structural load of the building.

KIMSUL Saves Man-Hours

KIMSUL goes up FAST! It's usually only a one-man job to install KIMSUL. Workmen like to work with clean, odorless, non-disintegrating KIMSUL.

KIMSUL* gives top insulation efficiency — KIMSUL releases freight cars for urgent defense uses!

• By using KIMSUL Insulation in Defense construction, the U. S. Government not only obtains top-rank insulation efficiency, but at the same time releases freight cars for other important transporting jobs. KIMSUL Insulation is delivered in compressed blankets. Five carloads of KIMSUL equal 25 carloads of non-compressed insulation in installed square footage!

KIMSUL is one of the most effective heat and cold stoppers ever developed. It is fire-resistant, moisture-resistant and *lasting*. But just as important in this period of emergency, KIMSUL's exclusive compressed form speeds shipments, simplifies installation and lowers over-all costs. Specify KIMSUL and you assist the U. S. Defense Program by releasing freight cars for other urgent needs.

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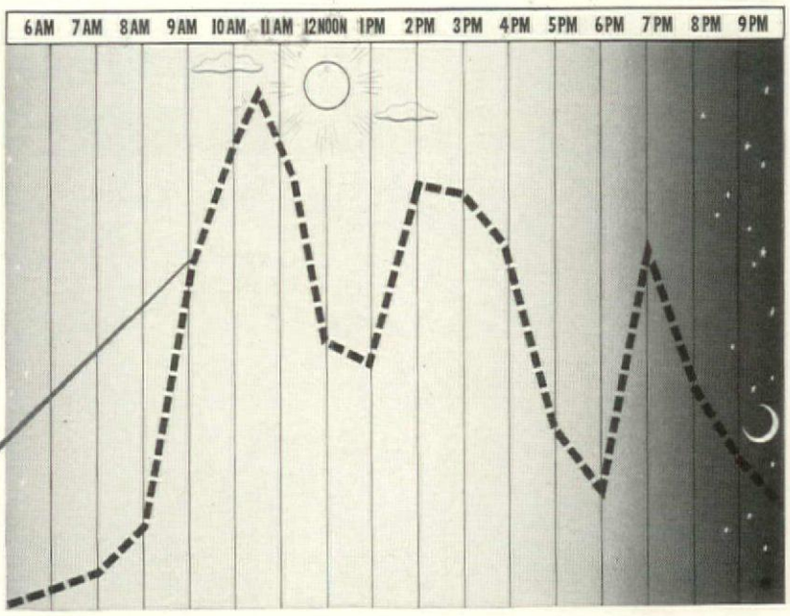
What are the best times for your Long Distance calls?



THE chart shows the ebb and flow of Long Distance telephone calls during an average day.

Notice the sharp peaks in mid-morning and mid-afternoon.

That's when the people you want to reach are busiest.

See the third peak at 7 P. M.

That's when other people are most likely to be telephoning, too.

If you avoid these three peak periods, you'll get better service and find folks more free to talk.

It's a simple suggestion — but worth remembering these days when defense puts such a load on telephone facilities.

Long Distance
helps unite the nation

"THE TELEPHONE HOUR" *is broadcast every Monday evening over the N.B.C. Red Network.*

Auer makes many grille designs in stamped metals for all purposes. Furnished in sizes, materials and finishes to fit your requirements for air conditioning, ventilating, radiator enclosure, or concealment. To simplify your specification and detail work on grilles, use the Auer Grille Catalog "G". It gives complete grille dimension tables with actual size details. A copy will come to you on request. Auer Register Book 41 also sent if desired.

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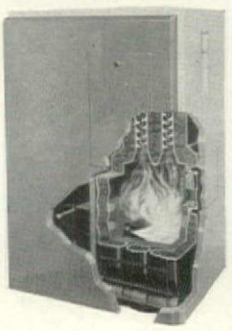

HERE are the facts. In the factory laboratory tests, made with the Burnham DeLuxe Boiler under average conditions, the results were not only upheld, but exceeded in actual on-the-job-performance.
It does cost more than the regular run of boilers. But when you consider that in its only 19 inches of fire travel, from 1600 to 1800 units of heat, are extracted, you know why altho it may cost a few dollars more to buy, it costs decidedly less to keep bought. Send for catalog. See for yourself.

See Sweet's. See for yourself.

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Burnham Boiler

New Exchange Building in La Crosse, Wis., architectural concrete throughout, was constructed in temperatures as low as 19 degrees below zero. Designed by J. Mandor Matson, architect, of Racine and La Crosse, built by Standard Construction Co. of Minneapolis.

Let the owner tell you why it paid him to build with CONCRETE

"The proper use of concrete in design and construction has produced an outstanding building at a cost of at least $35,000 less than it would have been had ordinary materials and procedures been used," says Dr. Frank J. Hoeschler, owner of this building.

"The insurance underwriters are giving the building the *lowest fire insurance rating in the city.*

"The building was 80% occupied before it was officially opened on June 14, 1941. Any future buildings I may undertake . . . will be architectural concrete."

Concrete is adaptable to any architectural style; helps achieve good appearance with very little ornament.

Construction is rapid, first cost is moderate and upkeep is very low with firesafe concrete construction. Ask your architect or engineer about the advantages of concrete for the industrial plant, the public or commercial building you may have in mind.

Write us for literature sent free on request in the U. S. or Canada. *See Sweet's Catalog, Section 4-49.*

PORTLAND CEMENT ASSOCIATION
Dept. A12-7, 33 W. Grand Ave., Chicago, Ill.

A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

ARCHITECTURAL CONCRETE
Combining Architectural and Structural Functions in One Firesafe, Enduring Material

MONTH IN BUILDING

(Continued from page 48)

design instead of being static and dead, will become dynamic and alive."

The National Assn. of Real Estate Boards, at its 34th Annual convention in Detroit also heard headline-making addresses and made headlines itself:

► Director of Housing F. W. Nicolls of Canada's Department of Finance outlined the Dominion's war-time building restrictions, made the U. S. realtors envious of the law which requires a Government license for all contemplated construction projects except those in four broad classifications: 1) private houses, 2) one-to-three-family buildings for rent, 3) additions or repairs costing less than $2,500 and 4) all new buildings costing less than $10,000. Nicolls also revealed that Canada's 1941 residential building will be up 40 per cent from last year, despite the license law and a priorities program curtailing the use of critical metals, that a National Building Code has been sponsored by the Dominion's "FHA." (Total building contracts awarded in Canada during the 12 months ended October 31 came to $424 million up 43 per cent from the total of the preceding 12 months and the best since 1930.)

►Assistant Price Executive L. Seth Schnitman of OPA's Lumber and Building Materials Section indicated that, while price ceilings had been placed over only three materials (Douglas fir plywood, southern pine lumber and Douglas fir lumber), the prices of several other materials were under close scrutiny: millwork, doors, asphalt roofing, western pine lumber, California redwood, vitrified sewer pipe, electrical porcelain, native hardwoods, hardware and screen cloth.

► Industrial Realtor Chester A. Moores of Portland, Ore. documented the West Coast's growth into the nation's No. 1 aircraft industrial area: "With an estimated 60 per cent of national airplane production concentrated on the Pacific Coast, airplane manufacture in the West, fast approaching a pace of $1 billion a year, now exceeds such older industries as lumber, agriculture and petroleum in employment and pay rolls as well as in value of production. The monthly rate of aircraft production as of September would result in an annual Pacific Coast production of $750 million, six times the dollar volume of 1940 and about ten times the dollar volume of 1939 production. Estimated 1941 lumber production for the West Coast states is $420 million." (For one of the latest additions to the West Coast's airplane plant capacity, see p. 423 et seq.) Further documenting the increasing development of the West, Realtor Moores noted that Seattle, where defense money is now being spent at the rate of $5,880 per family, now claims to rank highest among the nation's large cities in the per capita allotment of Federal defense funds.

► Subdivider Hugh Potter of Houston, Tex., one-time NAREB president, earnestly pleaded that Government makes the small allocation of critical materials necessary to maintain civilian home building as a "skeletonized operation" during the defense period, said: "Giving civilian home building enough toe hold to carry on, even though with gradually lessened quotas, as has been done in the automobile industry, is vitally important to our entire economic and social life. It is essential to civilian morale, without which no army or navy can do its best." As a reward for Potter's plea, Home Builders Institute of America, NAREB affiliate, passed the hat among convention delegates, raised $15,000 in 15 minutes, gave it to Hugh Potter to spend on the operation of a new Washington office which will "bring before the proper agencies of the Federal Government the most accurate body of facts that can be brought together to measure both the economic advantage of continuation of ordinary home building in however skeletonized form and the feasibility of such continuance without jeopardizing national defense."

►Realtor Arthur W. Binns of Philadelphia, in one of the convention's most thought-provoking addresses, reviewed the

(Continued on page 56)

PRE-FABRICATED

Today, Form-Tys too, come to your job ready to use . . . and the RICHMOND way is the profitable way in concrete Form-Tying. Always better . . . faster . . . less costly.

RICHMOND 10-WAY PROFIT PLAN

1—Over 60 different form-tying devices meeting every condition.
2—Cost less to use than usual "Home-Made" wire, band, or rod tys.
3—Engineered for safe working loads of 1500 to 25000 lbs.
4—Faster erecting and stripping saves time and lumber.
5—Promotes perfect wall alignment, plus uniform thickness.
6—1 to 2 inch "hold back" protects job against rust staining.
7—Weight scientifically cut to save shipping and handling costs.
8—Delivery right to the job saves warehousing. Job section labels save time.
9—No cost for working parts. You pay only for tys used.
10—Job planning bureau specifies types, quantities, methods . . . free.

10 ways to profit!

Richmond provides you with patented pre-fabricated form-tying devices specifically engineered for tying and anchoring concrete forms of every kind—from light wall construction to heavy engineering structures. Each Richmond product has basic advantages definitely superior to anything you may have used before. In addition to this Richmond offers you 10 different ways to profit by doing business with them. Proof? You bet. Read that panel to the left.

THE NAME SNAP-TY IS COPYRIGHTED BY US!
In 1930 — 11 years ago — Richmond, alone, coined and copyrighted the name Snap-Ty as the brand name for one of our tie products.

RICHMOND SCREW ANCHOR COMPANY, INC.
816 LIBERTY AVENUE • BROOKLYN, NEW YORK

WHAT? Tile baths in $4,200 defense homes?

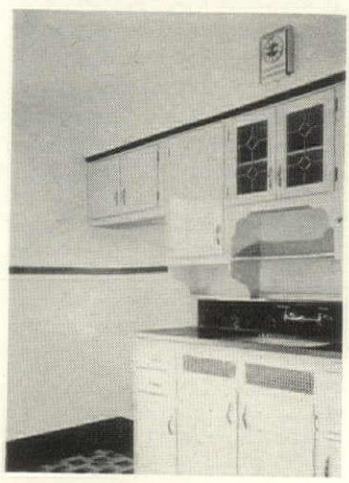
"You Bet!" says CUMBERLAND VILLAGE'S WM. TIERNAN

Typical bathroom in Cumberland Village, a distinctive community of low-cost F.H.A. homes, conforming to the latest ideas in plotting and design, located at Arlington, Staten Island, N. Y. Below: Typical Tiled Kitchen.

"THE prices of Cumberland Village homes vary from $4,200 to $5,600. Each of the 201 houses is to have a tiled bathroom as we consider this one of the outstanding features, and having the most appeal to the buyer," says Wm. Tiernan, the developer. "Many buyers are paying a slight additional cost to have their kitchen walls tiled, also. There is no shortage of tile . . . it can be had as wanted . . . and installation is so reasonable that we can use it even in our lowest priced $4,200 houses."

"Defense workers may not know much about home construction but they do know that tile is the quality material used in the finest homes. Most people feel that a tiled room costs a whole lot more than it actually does. That's another good reason for using it. Everyone knows that tile is easy to clean, lasts indefinitely and is good looking. I know that our tiled baths help to sell our houses."

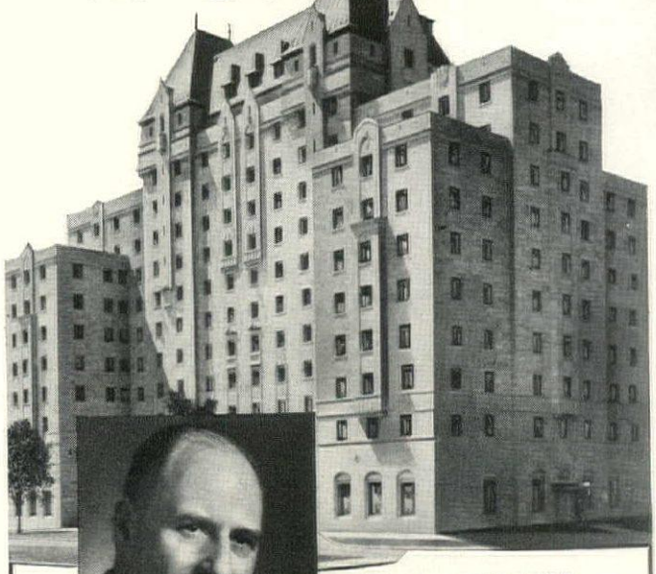
Prospects consider a tiled bath as visible evidence that houses are excellent value. For years it has been known that a tiled room increases the value of a house far out of proportion to its moderate cost. The experience of typical Defense Home developers and builders confirms and re-affirms this fact.



THE TILE MANUFACTURERS' ASSOCIATION, INC.

50 East 42d Street New York, N. Y.

In Canada, too— it's BARCLAY



NEWEST, MOST MODERN HOTEL IN CANADA'S CAPITAL CITY—THE LORD ELGIN. Its Manager, Redverse F. Pratt says: "... The attractive finish and durability of the Barclay Tileboard we feel is outstanding. One particular feature which impressed us so much is the sanitary condition which is created where Barclay Tileboard is used. The two-tone color finish creates that atmosphere which is so desirable in the modern bathroom of today."

Redverse F. Pratt.

Yes, in Canada as well as in the United States, architects, builders and users are voicing their approval of Barclay *Tileboard, Panelboard* and *Stream-Lined*. Its modern plastic-coated surface gives years of service. Its beautiful lustrous finish does not fade and needs only a damp cloth to keep it clean. The new modern Lord Elgin Hotel is justifiably proud of its 400 Barclay Bathrooms.

PLASTIC-COATED UNITS— FOR WALLS AND CEILINGS

Barclay is the ideal material for walls and ceilings, manufactured in pre-fabricated wall-size units, it's extremely simple and fast to install . . . and once installed, there's no more periodic repairing and painting—no "loose tiles" to fall out —the perfect material for walls and ceilings in Bathrooms, Kitchens and Playrooms. For commercial interiors, too, BARCLAY'S Lustrous Finish adds much to cocktail lounges, cafeterias.

BARCLAY MFG. COMPANY, Inc.

BARCLAY FOR WALLS & CEILINGS

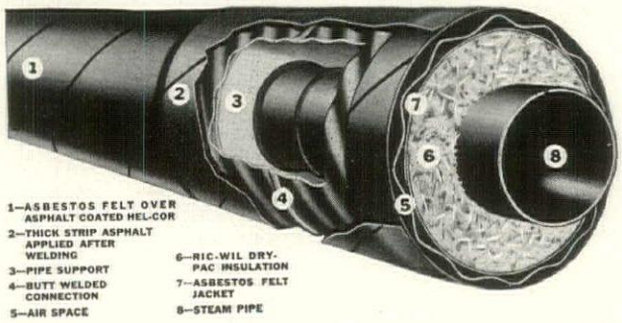
BRONX NEW YORK

Adequate ventilation, through the speedy removal of stale air, cooking odors and smoke, is the one purpose of the Victor In-Bilt ventilator. This fresh, free movement of air can be planned for any room. In every home you build to sell, In-Bilt ventilators in kitchen, bath, or rathskellar are an important sales feature. They add perceptible value to any home at small cost. Write today for your In-Bilt Catalog. Address Dept. IB-122.

VICTOR ELECTRIC PRODUCTS, INC.
2950 Robertson Road, Oakley
CINCINNATI, OHIO

VICTOR IN-BILT VENTILATORS

RIC-WIL



INSULATED PIPE UNITS

For the underground distribution of steam, hot water, or oil, use these modern, thoroughly engineered, factory built, pre-sealed units which are shipped complete as shown, in 20 ft. lengths or as required · High thermal efficiency, long life, low installation cost · Insulation any type preferred · Total prefabrication means important savings in time and labor on the job · Easy to specify, easy to buy · Ric-wiL is equipped for prompt delivery · Latest Bulletins on request.

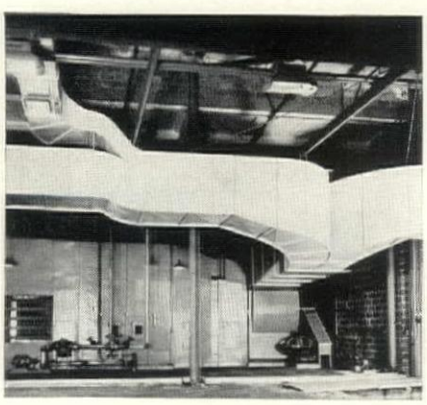
THE RIC-WIL COMPANY
CLEVELAND, OHIO · AGENTS IN PRINCIPAL CITIES

Take a second look at the

WORLD'S FIRST WINDOWLESS PLANT

They gave the weather man the gate two years ago—and now they're working as few plants can!

BETTER THAN DAYLIGHT lighting is helping Simonds Saw and Steel Company set new production records. Two years of experience have proved to Simonds that buildings need not be designed with windows—that they're better *without* them. And modern fluorescent lighting is one of the reasons. In sunshine or rain, day or night, bright daylight is always available inside the plant. Heat radiation is reduced to a minimum, allowing greater economy in operation of the air conditioning system.



WEATHER THAT'S ALWAYS FAIR is supplied by four air conditioning units like the one above. They make possible a higher level of production, output and quality in the Simonds factory than ever before. Clean air, at proper temperature and humidity, supplies perfect ventilation—without the need for windows that let out expensive heat, let in distracting noise. In the Simonds plant, *the reduction in winter heating costs offsets the additional costs in summer of both air conditioning and lighting.*

INSIDE FACTS . . .

about windowless buildings!

- ★ **Lower Cost Heating, Maintenance and Repairs**
- ★ **More Floor Space for the Building Height**
- ★ **Greater Flexibility of Layout**
- ★ **Elimination of "E" and "L" Construction**

SOURCES OF SAVINGS and greater values in windowless buildings are listed above. Consider them carefully. Present conditions make a detailed evaluation of this modern construction more important than ever before.

Kinetic Chemicals, Inc., the manufacturers of "Freon" refrigerants, specified by the careful architect because they are safe and efficient.

**"Freon" is Kinetic's registered trade-mark for its fluorine refrigerants.*

MONTH IN BUILDING

(Continued from page 52)

conclusions to which a five-year study of the nation's most acute problem had led his Committee on Housing and Blighted Areas: First, he boiled down to three major points the many bars to progress in the field of urban reconstruction: 1) inequitable real property taxes, 2) the difficulty of large scale land assembly and 3) the lack of risk capital. Then, he offered the Committee's recommendations as to how these three barriers could be hurdled: 1) Establishment of a "Federal Land Commission" to coordinate the proposed program and to grant funds to local land commissions. 2) The latter would produce master plans for the development of their communities and assemble through powers of eminent domain large areas of land to be redeveloped. 3) Chartered private redevelopment companies would lease the assembled areas and build thereon projects which meet the approval of local land commissions. 4) Assistance would come from financial institutions—which might even buy the entire projects as investments — once the Federal Housing Administration, under a new section of the National Housing Act, had agreed to insure the return on the investment as well as its principal. Binns suggested that the guaranteed yield be 2 per cent, but that the projects be at liberty to earn whatever the unregulated rents would produce. 5) By the time land leases are terminated — 50 years was suggested at a 2 per cent rental — the original owners would have distributed the land and buildings in deeds to the individual occupants of the redevelopment projects, and the companies would be liquidated. Commented Binns: "There is no thought here of setting up permanent large corporate land owners," and "as a condition of these redevelopment projects, the city must move toward the reorganization of its tax structure, making all real estate taxation sound."

► After electing Portland, Ore.'s David B. Simpson its 1942 president, NAREB, in a long series of resolutions, urged that "small private home builders be used on a parity with big contracting firms" in the building of Government defense housing, . . . condemned "a further expansion of Government ownership, operation and management of real property in competition with private enterprise," . . . pleaded that Government agencies use their influence toward the "alteration of local building codes insofar as these tend to establish artificially high cost levels in the building field, and to seek to curb monopolistic practices of trades unions and material distributions," . . . deplored the "present trend in the Federal Government to increased use of its own employees in real estate activities," especially in the land assembly work of the Army and Navy and the appraisal work of the FHA and Federal Home Loan Bank Board, . . . held that any attempt at rent control should also cover wages and property taxes, . . . viewed "as the most serious of all of our urban problems" the continued spread of blight, . . . claimed that "in the case of the decease by death of one spouse, a homestead occupied by man and wife should be exempted from all inheritance taxes if left to the surviving spouse," . . . argued for an amendment to the Federal Revenue Act permitting " a home owner to deduct his or her loss in case a home is sold at a loss," . . . dusted off many other realty tax reform recommendations which have been repeatedly resolved in preceding NAREB conventions without result.

MILWAUKEE'S WANTS

"Boston, Cincinnati, New York and Milwaukee are 'sisters under the skin,' and even their skins show some of the same blemishes when it comes to certain common problems having to do with population flight to the suburbs and its results upon the parent city." Thus, the Urban Land Institute concludes its report on Milwaukee, the fourth in a long list of cities to be examined by the Institute in an effort to advance research and education in replanning and rebuilding cities.

Conducted by Vice President K. Lee

(Continued on page 60)

(Courtesy of the Rockefeller Plaza)

COVERED with ice through the cold winter – ground under whirling wheels of roller skates in spring and fall–scuffled by cafe traffic and dancing feet through the hot summer–that's how they punish this terrazzo floor at Sunken Plaza in Rockefeller Center. Such abuse does not destroy terrazzo's smooth, wear-resisting surface. Isn't this convincing proof that terrazzo needs no pampering and coddling, that terrazzo is a lifetime floor?

But that's not all! Terrazzo lets you design the exact floor that fits the surroundings. Not just a few colors–but any colors. Not just stock designs–but your designs. Hard wearing, long lifed, non-limiting–what more could you ask?

For full information on terrazzo, write for this A. I. A. Terrazzo Kit that tells how and where to use terrazzo. Sent *free* on request.

THE NATIONAL TERRAZZO AND MOSAIC ASSN.

1420 New York Ave. • Department Q • Washington, D. C.

Terrazzo Floors LOWEST COST PER FOOT PER YEAR

THE MIRACLE OF DEFENSE CONSTRUCTION

by Frazier Hunt

FOUNDATIONS FIRST. ***Before the airplane hangar (right) could go up, the hard-working bulldozer (above) had to dig up and level out the foundation. The bulldozer, with its tractor tread and colossal roar, is the building industry's private "tank."***

NOTE TO READERS:

The article reprinted here appears, as a Johns-Manville paid advertisement, on pages 121 and 122 of the December 13th issue of the *Saturday Evening Post.* It is one of a series by well-known writers, designed to help inform the public of the indispensable part American Industry is playing in our National Defense Program.

Because the spotlight of defense publicity has been on tanks, guns, ships and planes, too few people are aware of the miracle of construction which had to precede the production of these defense materials. Factories had to be planned and built. Workers had to be housed. Roads, bridges, air fields, fortifications, bases and a hundred other building jobs had to be started from scratch and completed "yesterday."

How this great building industry, recovering from the worst depression in its history, dug in and achieved the impossible is here recounted for the first time. It is our sincere hope that in presenting this story to millions of readers we are making a contribution to the entire construction industry and to each individual member of it.

Johns-Manville

AMONG THE UNSUNG HEROES of America are the "bulldozers"—those giant machines which, like faith, can move mountains.

The whole story of American preparedness starts with those snorting monsters and with men with blueprints and steam shovels, cement mixers, pile drivers, and the thousand and one other tools that are used on any kind of a building job.

Because bombers don't grow on trees. And tanks don't bloom on rose bushes. And you don't dig TNT out of the ground as you do potatoes. All those weapons are made in great factories, giant plants—in buildings that have to be planned by engineers and architects, and built by carpenters, riveters, welders and roofers, working from sunup to sundown.

Before the tank, before the bomber, before the army, had to come the bulldozer-operators, the masons, the steel workers, the electricians, the plumbers, the painters and the whole construction gang . . . And what an almost inconceivable number of buildings are needed for National Defense! Around 1400 separate housing units in an average cantonment; close to a thousand separate buildings in a powder factory; hundreds of sheds and storage bins at a Navy Yard; houses for the workers near many new plants—ground to be cleared, streets to be laid out, roads built, water mains installed, whole cities built from the ground up. What *is* the construction business? Brother, it's everything you *don't see*—multiplied by ten! You see the tank on the ground or the plane up in the air, but if the construction industry hadn't done *its* job, there wouldn't *be* any tank and there wouldn't be any plane, either.

To realize how the building industry really *has* performed miracles, you must realize that this industry had to start from scratch. Particularly was this true of those architects and large construction companies which, during the great American building era of the twenties, had sent beautiful edifices of steel, stone and cement soaring high into the sky. These builders of great new cities, of office buildings, of mammoth factories, of power plants, of bridges and transportation arteries that were the wonder of the world—these builders and the architects, designers and engineers had faced a famine since 1930. The genius was there. The will to build was there. But only through digging deep into their bank accounts had they been able to keep even a skeleton organization together. Only the courage born of free enterprise could have sustained them. About all they had left was one shirt to their backs . . . Yet these same men are performing the miracle of defense construction for America today.

These men might well have said, "Give us a year to get ready. Our staffs are scattered, our equipment rusty." But there wasn't any year. THE TIME WAS NOW!

The Building Materials Dealer

It wasn't only the big boys who rolled up their sleeves and went to work, either. The local building industry responded, too. The building materials dealers, many hard hit by the depression, instantly made their services available for National Defense housing and other construction. They did this often at a sacrifice because they were already short of materials for civilian needs (that's you and me). Despite the fact that building materials manufacturers have been working their plants 24 hours a day, seven days a week, the dealers are finding it increasingly difficult to furnish supplies with the speed the public has been educated—up to now—to expect.

These smaller companies have shown typical American initiative in meeting their difficulties despite delay in getting materials and shortage of skilled workers. They are particularly deserving of sympathetic understanding on the part of the American public at this time, and it is certainly to their credit that they are not only finding ways around their present difficulties, but are also planning for the future. For these are the men on whom Mr. and Mrs. Homeowner, U. S. A., must depend for the type of housing which will express the true American way of living when peace has come.

We writers and talkers are too deep in the forests of finished products that American genius has built, to be able to see the individual trees. We forget, sometimes, that Uncle Sam didn't furnish the bulldozers and the thousand and one necessary tools when

(Continued on next page)

This is the sixth of a series of advertisements sponsored and paid for by Johns-Manville. For more than 80 years this company has been serving America's basic industries.

How indispensable these industries are to the American Way in time of peace is generally recognized. This series is to help inform the public of the indispensable job these industries are doing in this time of great National Emergency.

Johns-Manville is proud of the contributions its products are making in helping the Construction Industry accomplish "The Miracle of Defense Construction" quickly and at the lowest possible cost.

JOHNS-MANVILLE

THE MIRACLE OF DEFENSE CONSTRUCTION

(Continued from preceding page)

the defense rush struck. These tools were furnished by the great and small building concerns and contractors who had kept alive for ten years only through their courage and ingenuity. Someday they knew they would be needed, and needed desperately. That day came when France fell, and America awoke to her peril. Overnight America demanded adequate defense—armies, training camps, guns, tanks, planes, shells, ships, TNT and powder. And when that call to duty came, not one miracle occurred, *but a thousand!* In a year—in two at the most—the builders HAD to do what Germany had taken seven, in some cases ten years to do.

And they did it! They are saving America by literally building a NEW America. They have conquered Time—they have laughed at Fate. They are winning! Today the bombers and the tanks and the big guns are rolling out of the factories which these men—these builders of the NEW America—have built.

The other day I stood on a spot where for a hundred years tall corn had grown. It was the heart of the broad Corn Belt of this rich land of ours—a single plot of 22,000 acres lying between the Kankakee and the Des Plaines Rivers, a few miles out of Joliet, Illinois. In this single great triangle, where for generations 146 Illinois families had grown corn, were all the basic requirements for a giant plant to make the high explosives for our bombs, shells and torpedoes. Here was plenty of water, excellent transportation, hard roads, safety from enemy bombing attacks and rolling land for protection against inside explosions.

One Miracle Among Many

So *this* was the spot for "the miracle of the corn fields." The construction company which did the job asked few questions when the government gave them the nod. Quietly they shipped in their key men, and then added workmen at the rate of 100 a day. The bulldozers grunted, the cement mixers groaned, the men sweated and swore—but where the tall corn had grown, there now sprouted chimneys, pipelines, buildings and shops. The sum total of these adds up to one of the biggest, most efficient and safest TNT plants in the world—all done ahead of schedule. That's easy to write about, but these men on the job, just as a starter, had to build 51 miles of standard-gauge railroad, with 117 loading and unloading stations; 44 miles of heavy-duty roads and 80 miles of ordinary highways; 85 miles of pipelines that ran from 4 inches to 42 inches—with 15 miles of sewage pipe thrown in for good measure (and good sanitation). Before this mighty TNT plant was completed, the construction company had put up 460 separate buildings.

The building of this plant is but one example of the job being done. So vast, so widespread is our defense construction a writer despairs, in a short article like this, of ever getting across to you its true magnitude. Maybe this would help: In the first nine months of 1941, we have used enough concrete in airport pavements alone to equal almost all the concrete used in road building in these 48 states in the same period. To pave these urgently needed airports, we have laid enough concrete to build a single-lane transcontinental highway from Charleston, South Carolina, to Los Angeles and back again East as far as Indianapolis, Indiana, or more than 5,000 miles.

America Does It Again

The blue eyes of hard-working, super-efficient, 49-year-old Brigadier General Brehon Somervell, Chief of the Construction Division of the Army Quartermaster Corps, twinkled with pride when he talked to me in his Washington office about the all-important part the building industry is playing. "You can't exaggerate what has already been accomplished," he said to me. "It's like the statement made by the great General Goethals about the building of the Panama Canal, *'Birds were singing in the trees one week and ships sailing by the next.'* Americans, working for America, have done it again! The whole building industry has come forward in unbelievably fine shape . . . The results speak for themselves. The efficiency and patriotism of these splendid men have been inspiring. They have tackled what looked to be impossible jobs and they have driven them through, and in many cases ahead of schedule. Labor, too, has, on the whole, been fine . . . We have almost completed our first great program and are deep in our second now. I can't say too much for these men of this fundamental industry."

I don't want to bog you down with figures, but it is fascinating to take hold of one or two items involved in the single business of Army-cantonment construction. We've used enough lumber in our Army camps to nail a 12-inch plank, 1 inch thick, eight and three-quarters times around the world. In building camps and Army cantonments alone we've employed more than 490,000 workers, and a billion dollars' worth of lumber. A score and more of our great civilian building contractors simply rolled up their sleeves, spat on their brawny hands, and dared bad weather and hard luck in their drive to get finished, in time, camps that would be snug and habitable for our expanding army.

How the Job Was Laid Out

The whole enormous job really breaks up into three separate divisions—and behind each stands the vast civilian building industry, with its trained men, its tools and its high patriotism. The Army & Navy Corps and Bureaus developed their specifications and then turned them over to the trained civilian architects and engineers of the country. These men, with their first-hand knowledge of materials and design, did the original planning. They worked night and day, adapting civilian methods and techniques to the new field of construction necessary to our national defense.

All of them did—and are doing—their work in three main divisions because all military construction was split into three parts. *First:* To the Construction Division of the Quartermaster Corps went the job of building the plants for Army training, and ordnance and soldier supplies. *Second:* To the Army Corps of Engineers went the task of laying out the construction of fortifications, camouflage works and all Army Air Corps projects and bases, including the nine great air bases acquired in the Atlantic from the British and the new Alaskan air fields. *Third:* To the Bureau of Yards and Docks of the Navy went the complicated job of building naval air bases in the Pacific and Atlantic, as well as at home, and the whole varied and multiple tasks of Navy construction, from shipyards to training schools.

Behind each of these three divisions stood, in phalanx, the great building industry. Architects, engineers and contractors furnished the brains and the muscle to drive the nails in our far-flung fortresses of safety. Also, hundreds of our finest construction brains were willingly drafted to serve as reserve Army and Navy engineers and Constructing Quartermaster officers. From the Philippines to Puerto Rico is ten thousand miles; from Dutch Harbor, Alaska, to Samoa, in the South Seas, is roughly five thousand miles. So the picture of our preparedness program covers a canvas five thousand by ten thousand miles square. Over this great expanse of land and sea, American engineers, builders with saw and hammers, contractors with fantastic bulldozers and pile drivers, have swarmed like busy bees.

A billion dollars was assigned to the Engineer Corps of the Army. There were bomber and fighter factories and assembly plants to be constructed, air bases to be rushed to completion . . . Altogether 54 great groups of buildings and bases.

Almost overnight a new base is born; a new pearl added to our priceless necklace of national defense—Guam, Wake, Midway, Palmyra, Johnson—these are a few of the names.

Groups of sturdy, daring contractors banded together on most of these jobs, and they found they had to build from the coral and sand *up*. These new Magellans, modern Vasco de Gamas had to tote everything with them, including drinking water!

People Back Home

And (to get back home) in this year of 1941, despite the heavy demands of war, our builders have found time somehow to build many of the new homes needed in defense areas. Next year they will build more. But many materials that might go into homes will have to go to defense plants, powder mills, air schools and shipyards, and so We the People must be patient. When our nation is fully armed and strong we can go ahead and build our new homes once again, without let or hindrance.

And in the meantime we can also thank our building-material manufacturers for having the courage, good sense and patriotism to keep intact their organizations, their research laboratories and their staffs when the going was tough and uncertain. Many had to draw deeply on their reserves, but when the crisis came and the building industry had to really perform "the miracle of defense construction," it was ready with new products, more efficient production, to tackle *and finish* the job. Once again, private industry had proved it could "take it."

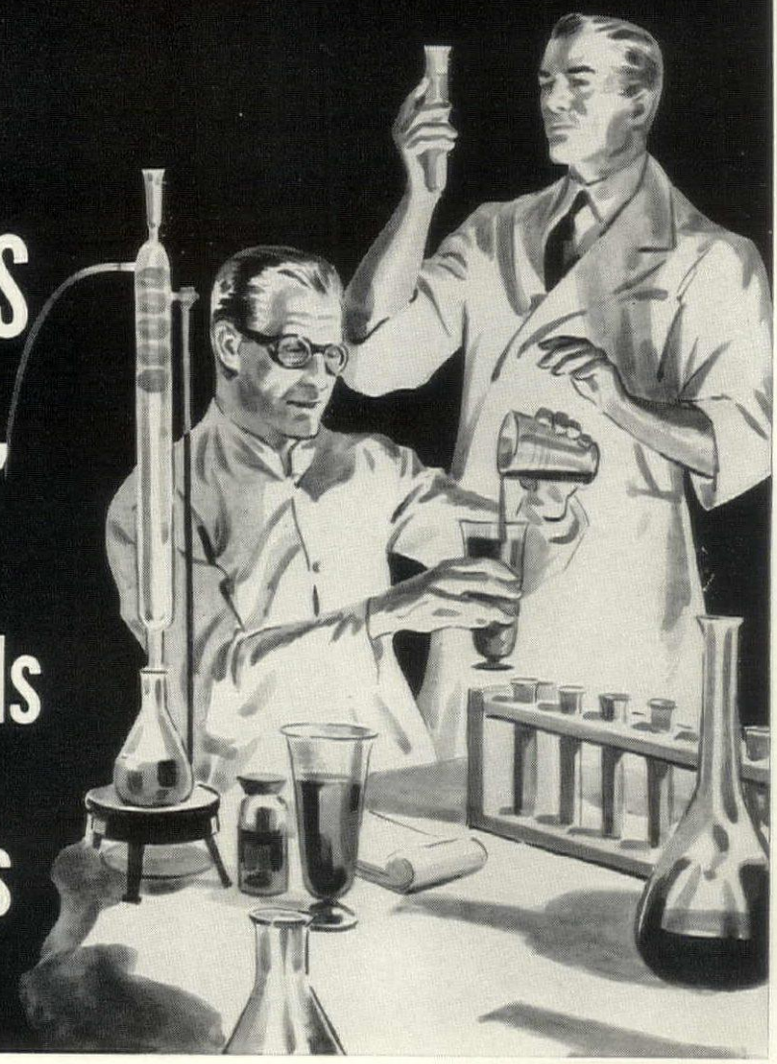
So why should any of us complain if, during this coming year, the great effort and the continued need of turning out vast quantities of war goods leave us short-handed in men and materials for home building? The sacrifice and the temporary hardships will be well worth the cost, it seems to me. For what is a home worth if it be not secure, free and decent?

That's what we're struggling for and arming for, isn't it? And, when we get there, don't forget the defense job had to be done *from the ground up*—that private industry was ready to do it—and that the roar of the bulldozers was the first signal of ultimate victory for our democratic way of life.

This is the sixth of a series of advertisements sponsored and paid for by* Johns-Manville *and designed to tell the American people how indispensable our basic industries are for National Defense.

JOHNS-MANVILLE

PARKER PROCESSES are "Pinch-Hitting" for Defense Materials in Many Industries



In the automotive, electrical, architectural and many other industries, Parker Processes are aiding production executives in making substitution for strategic protective metals.

Priorities are creating finishing problems in all industries, but Parker chemists are in many cases showing a satisfactory way around shortages of zinc, tin, cadmium and chromium. They are providing protective finishing systems for steel windows, hardware, air conditioning, refrigeration and electrical equipment, that assure finish durability.

Parker Processes assure substantial protection, maintain fine appearance and give old products new sales appeal. They provide rust-proofing and finish durability on peace-time products or defense materials. Specify Parkerizing for protection from rust—Bonderizing for a rust-inhibiting paint base. Send for catalogs describing these processes.

PARKER RUST PROOF COMPANY • 2180 E. Milwaukee Avenue, Detroit, Michigan

Send for Literature: For 26 years this company has devoted its entire resources to the improvement of rust-proofing methods. Books describing Parker Processes are available to manufacturers and technical men.

PARKER *Processes* **CONQUER RUST**

BONDERIZING • PARKERIZING • PARCO LUBRIZING

MONTH IN BUILDING

(Continued from page 56)

Hyder of the American Appraisal Co. and Manager of City Loans Howard J. Tobin of the Northwestern Mutual Life Insurance Co., the Milwaukee survey led the Institute to make the same general proposals that were prompted by the three earlier city examinations: (1) a long range housing program which would include restoration of blighted areas and efforts to make the city more compact; (2) revision of the building code to make zoning regulations more constructive and more in scale with actual requirements; (3) immediate action for traffic and transportation betterment including more off-street parking and the by-passing of through traffic around the business district; (4) consolidation of a multiplicity of municipal governments into one metropolitan government supported by the entire metropolitan area; (5) assessment of real estate on a basis supported by current earnings; (6) firm action to abolish such nuisances in the business district as overhead signs, billboards, smoke, noise and "catchpenny" sidewalk business.

While the investigators found the Milwaukee city government to be "one of the cleanest and most efficient in the country," building activity in the central district has long enjoyed a "Rip Van Winkle siesta." Thus: no new residential structures have gone up in this district since 1930. More than 70 per cent of those buildings now standing date back to 1894 or an earlier year. Close to 100 occupied dwellings in the district have been declared unfit for use. About half of all the non-residential structures in the district are more than 45 years old. Assessed valuations run 150 per cent of market value, reach extremes as high as 560 per cent. And, taxes are high ($37.81 per $1,000), eat almost three months' rent per year. Of nearly $76 million spent on construction in the Milwaukee metropolitan area during 1936-40, inclusive, only about 2 per cent went into the central business district while 44 per cent went into other sections of the city proper, and the remaining 54 per cent went into the suburbs.

As in the other three cities, the Institute found that a consensus of informed opinion of citizen leaders as to what steps they believe essential to a revitalization of "close-in" areas:

►Immediate efforts to rehabilitate blighted areas with private capital — assisted by local and Federal governments if necessary.

►Replanning and redevelopment of the city as a whole with special emphasis on the creation and maintenance of livable neighborhoods each with its local business center.

►Control of "wild cat" or premature subdivision to prevent uneconomic drainage of population from the city.

►Annexation of suburban areas dependent upon the city for their major income so that they may contribute to the cost of governing the entire metropolitan area.

►Adjustment of taxes on central business property to a level justified by current earnings.

►Reduction of the present height limitation on buildings in this district.

►Arrangement of public buildings in a civic center.

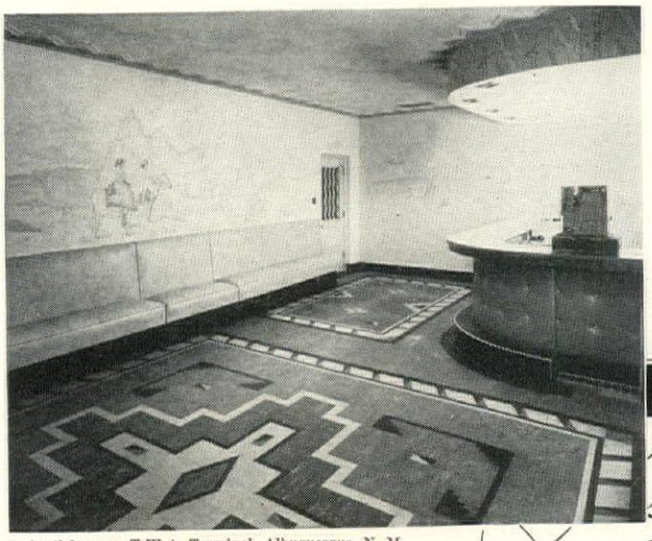
►Improvement in all forms of mass transportation to the central business area and in their terminal facilities.

►Prohibition of cruising taxicabs.

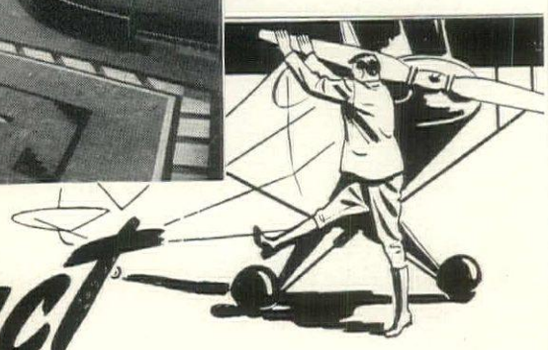
►Betterment of facilities for industry via specially planned and zoned, adequately serviced, close-in industrial areas with other land uses prohibited.

►Scheduling of commercial deliveries in the business area for hours which will not interfere with the peaks of motor and pedestrian traffic.

Commenting on the need for immediate action in Milwaukee, Messrs. Hyder and Tobin concluded their report with the admonition that "if the old civilizing values of urban living are to become real again, replanning must transfer these centers into places of character, outstanding interest and expressions of city personality. They must be made accessable and stripped of the drabness, unsightliness and shabbiness that mark them today."



Cocktail Lounge, T.W.A. Terminal, Albuquerque, N. M.



Contact

On the airport field it is the signal for prompt, bustling action. In waiting rooms, lounges, restaurants, offices and restrooms, it stirs thousands of feet into action . . . into contact with floors that must wear well and look well.

Tile-Tex has all the necessary floor qualities essential for modern airport terminals — long-wearing, colorful beauty; safe, comfortable footing; and an almost un-hurtable surface that resists the abuse of baggage blows and burning cigar and cigarette ends. First cost is low—maintenance simple and inexpensive.

You will find design suggestions and complete color charts in the Tile-Tex catalog shown in Sweet's, page 11-64. If you wish, our Design Department will be glad to make specific suggestions or submit sketches.

Our constant objective is to furnish the architect with an honest, steadily improved product that will enable him to design architecturally correct floors which can be installed and maintained properly at minimum cost.

The TILE-TEX Company

Chicago Heights, Ill.

Eastern Sales Office: 101 Park Ave., New York

Now you can get MENGEL Flush DOORS . . . *PROMPTLY!*

THREE months ago so many new friends were just discovering the advantages and economies of Mengel Flush Doors that we were *swamped* by the demand, and had to withdraw prices.

Since then we have almost doubled our production facilities . . . *and you can now order Mengel Doors with the assurance of prompt delivery.*

Mengel Flush Doors are beautifully-engineered, hollow-grid products, resin-bonded and permanently sealed against moisture—strong, light, durable and economical. And the faces are made with Mengel Veneers—veneers that have for years been preferred by manufacturers of top-quality furniture, pianos, and architectural panelling.

Despite their unquestioned excellence, Mengel Flush Doors are *NOT* more expensive. Write for full information today. The coupon is for your convenience.

The Mengel Company, *Incorporated*
1126 Dumesnil Street, Louisville, Ky.

Gentlemen: Please send me full information about Mengel Flush Doors ☐ . . . Also about Mengel Bord ☐.

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Address_____

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-protection in the public interest

to increase the

durability of WOOD

storm sash-

—to give them increased resistance against possible deterioration, laboratory science has developed minimum standards of *toxic preservation*—a treatment designed to supplement the natural, lasting qualities of wood products under the severe demands of modern construction.

NATIONAL DOOR MANUFACTURERS' ASSOCIATION
McCORMICK BUILDING · CHICAGO, ILLINOIS

Seal of Approval—The Identification of a Product Meeting N. D. M. A. Preservative Minimum Standards

LICENSE NO. 000 TOXIC–PRESERVATION APPROVED NATL. DOOR MFRS. ASSN.

FOR FURTHER INFORMATION SEE OUR CATALOG IN SWEET'S

REZNOR Gives You More Heat at . . .

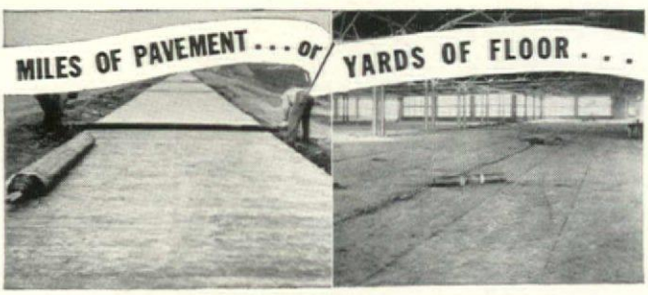
LOW COST PER HOUR

Suspended Fan and Blower Types . . . .

HERE'S an attractive, self contained gas heating plant which provides safe, trouble-free heat ECONOMICALLY. Installation and maintenance costs hit a NEW low. Suspended from the ceilings in factories and commercial buildings, they move more warm air over larger areas with less noise and at lower cost. You sacrifice these features with other types of heating. For years, Reznor Heaters have been giving uninterrupted service to many of America's important industrial and commercial buildings. Reznor Line is complete. Write for interesting catalog U 42 today.

REZNOR MANUFACTURING CO.
203 James St., Mercer, Penna.

"GAS HEATERS EXCLUSIVELY SINCE 1888"



CURE AND PROTECT ALL CONCRETE WITH . . .

SISALKRAFT

SPEED

ECONOMY

EFFICIENCY

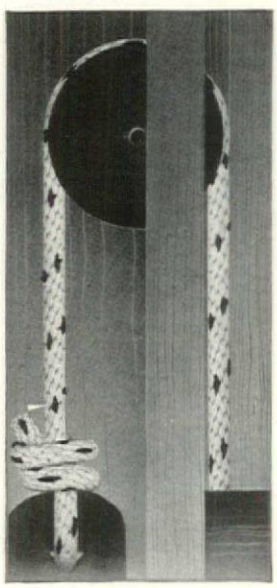
Just cover the fresh slab with SISALKRAFT — and forget it. This air-and-moistureproof paper seals in the water of the mix—thus effectively curing and protecting at the same time.

No sprinkling, no watching — with resulting savings in labor. No sand, straw, burlap or tarps. SISALKRAFT cures and protects at ONE low cost.

Gives hardness, strength and wearing qualities comparable to curing by complete water immersion. It's "automatic" —takes out the guesswork.

Write for file of data

The SISALKRAFT Co.
205 W. WACKER DRIVE • CHICAGO, ILLINOIS
New York San Francisco



BALANCE

perfect and permanent

The counter weight method of mechanical balance is fundamental in principle — it is permanent because the law of gravity is unchanging. Double hung windows with cord, pulley and counter weight are permanently satisfactory — require no adjustments and with Samson Spot Sash Cord give years of trouble-proof, expense-free service.
Architects specify and builders generally prefer Samson Spot Sash Cord — identified by Colored Spots (Reg. U. S. Pat. Off.)

SAMSON CORDAGE WORKS — BOSTON, MASS.

READ ALL ABOUT IT!

Read all the up-to-date facts about Toncan* Iron—the pipe made of *open-hearth iron* alloyed with copper and molybdenum for greatest rust and corrosion-resistance among ferrous materials in its price class.

This new Toncan Iron Pipe booklet is the finest and most complete ever published. From cover to cover are 48 pages of interesting reading—telling what Toncan Iron is made of, how it's made, why it resists corrosion, its other features and advantages, results of tests. It gives fabricating data and specifications—tells how it is used and its record of service—suggests ways to increase the life and reduce the cost of piping systems.

There's one of the new Toncan Iron Pipe booklets ready to be put in the mail for you. A request is all it takes to get it on its way. Write for your copy, today.

*Reg.U.S.Pat.Off.

RESEARCH WILL NOT STOP!

One of our most important activities at Republic always has been research. Today's emergency has not retarded this work. On the contrary, it has greatly intensified our efforts.

We are carrying on a relentless and unceasing program directed toward the development of new steels for certain critical defense problems and the improvement of present steels.

Laboratory and plant research, commercial market research, product development research—all are exploring every possible avenue which may lead to *better* Republic steels for you in the future.

R. J. Wysor
PRESIDENT

REPUBLIC STEEL CORPORATION
General Offices: Cleveland, Ohio
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REPUBLIC TONCAN IRON

An alloy of refined open-hearth iron, copper and molybdenum—*that grows old slowly*

LETTERS

(Continued from page 28)

small group of the wealthiest citizens are today economically able to give full expression to their ideas. Greater standardization in the building industry, with resulting lower costs, would probably indirectly give greater freedom to families of medium income to express their own personality and their own ideas in the design of homes.

As you have so well explained it, standardization, through the voluntary cooperation of industry representatives, will benefit the manufacturer, the architect, the engineer, the contractor, the builder and last but not least, the general consuming public.

I do not want to close without emphasizing that the USHA since its inception has given continuous attention to the standardization of housing design and construction. Therefore, it is no mere empty phrase when we assure you of our keen interest in the furtherance of the establishment of standard products and standard methods in the building industry. You may count on the USHA for all possible encouragement and assistance.

Nathan Straus

Washington, D. C.

STOPS DRAFTS AND LEAKS—CUTS FUEL BILLS

District of Columbia Police Court, Washington, D. C. Consolidated Engineering Co., Builders. Municipal Architect. Calked with Pecora Calking Compound by Chamberlin Metal Weather Strip Co., Washington, D. C.

PUBLIC BUILDINGS
NEED PECORA WEATHER PROTECTION

Almost every important building is designed as a permanent landmark. Therefore, architects provide all possible protection against weather damage. This includes sealing exposed building joints to prevent moisture and dirt seepage. No material has been so extensively used for this purpose as Pecora Calking Compound.

Experience has proved that longer building life, lower repair charges, smaller fuel bills can be anticipated. For 33 years Pecora Calking Compound has demonstrated its dependability in all parts of the country, in all types of buildings, with all kinds of building materials. Definitely, Pecora will not crack, chip or dry out when properly applied.

Pecora invites your specification and requests for details

PECORA PAINT COMPANY, INC. 4TH & VENANGO STREETS PHILADELPHIA, PA.
MEMBER OF PRODUCERS' COUNCIL, INC. ESTABLISHED 1862 BY SMITH BOWEN

PECORA CALKING COMPOUND

ALSO MORTAR STAINS • SASH PUTTIES • ROOF COATING • PECOMASTICS

DUE CREDIT

Forum:

I hardly need to tell you how pleased I am to see THE FORUM do such a job as its article on Standardization. Cheers three times that THE FORUM sees that it can do more than just report current happenings and trends, that its tenative feelers into criticism are branching out into really constructive pieces of analysis, criticism, and even definite proposals for further advancement.

May I make a few comments. I know that THE FORUM always aims at giving credit where credit is due. Hence a few more credit lines to the National Bureau of Standards. It is that part of the Department of Commerce which has done so much, in recent years at least, both alone and through its representatives on the American Standards Association and Central Housing Committees. And a word for the Committee on Hygiene of Housing, part of the American Public Health Association, for its work on basic housing standards. Of course it would not become me to mention the USHA.

A word or two of correction: following the Plumbing Manual — not code — developed by the Bureau of Standards and Central Housing Committee — on Design, Research and Construction (but you don't have to publish its full title if you are pressed for space), may result in savings of $125 per house over some of the stiffest plumbing codes, but a reasonable estimate of average savings is about $60 a dwelling unit. And I hadn't heard — and I thought I was in the know — that is to be applied to *all* government construction. So far it's just public defense housing. It would need to be expanded considerably for all construction as it is written only to cover housing. And how large a number of a special item of equipment for an ideal series of kitchens (such as a tailored counter top) is big enough to make it a stock item?

But I heartily endorse, among the many good things in the article, the superior appearance of a row of identical Georgian town houses to modern suburbia. See the War College in Washington as a good example of the former. And I, as heartily, cheer your cry for a "more deliberate conscious striving for continuity, a more rigorous testing of new ideas before they are put into practice." I intend to use that line a few times myself — with due credit to THE FORUM — if I don't forget.

If a note not strictly in keeping with academic dignity has crept into this letter — well, you always chided my seriousness, and anyway I'm not an academician — it is not intended to imply anything but the most serious appreciation. . . .

A. C. Shire

Washington, D. C.

Westinghouse *Electricana*

Brief items to illustrate the utility of Westinghouse electrical equipment in a variety of applications, which may suggest ideas of value in your building projects.

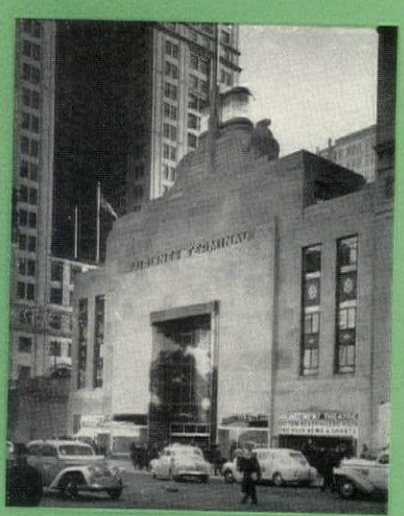
★ The examples shown in the "Electricana" below are but a few from the thousands of Westinghouse products available for the building industry. Specification details on many of them may be found in Sweet's Catalog. For more complete information, and for quick, dependable help on your electrical needs, call your nearest Westinghouse office.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
EAST PITTSBURGH, PA.

ELECTRICAL EQUIPMENT with space-saving characteristics matches the modern design of this educational building. Elevators, lighting, panelboards and switchboards furnished by Westinghouse. *Cathedral of Learning, University of Pittsburgh, Pittsburgh, Pa.*

AIR CONDITIONING, silenced by ingenious sound traps and acoustical duct linings, provides the temperature and accurate humidity control required for comfort in these broadcasting studios. Equipment by Westinghouse. *NBC Building, Los Angeles, Cal.*

LIGHTING for cashiers' windows is ample at the swank new *Turf Club, Albany, Cal.* Westinghouse Fluorescent lighting equipment also provides soft, even, glare-free light in clubhouse, lounges, dining rooms and promenades.



ELECTRICAL STAIRWAYS, with capacities of 6,000 passengers per hour, give swift smooth passage in this Air Terminal, from basement to lobby and from lobby to terminal floor. Westinghouse elevators also serve other parts of the building. *Airlines Terminal, New York.*

WATER COOLERS by Westinghouse serve defense workers in this new clothing plant, engaged in army uniform contracts. Hermetically-sealed refrigeration units with 5-year protection plan provide dependable water cooling at lowest maintenance cost, for every industrial and commercial need. *Haggar Company, Dallas, Texas.*

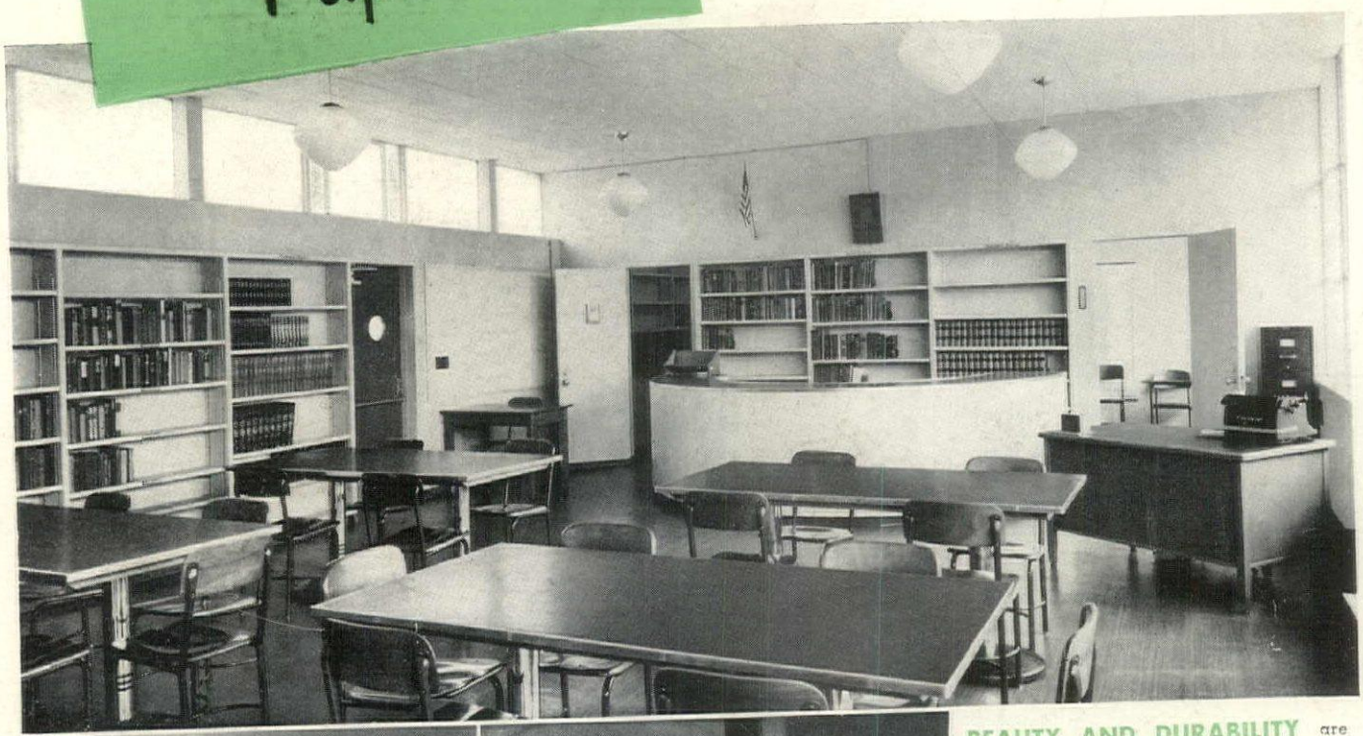
Westinghouse

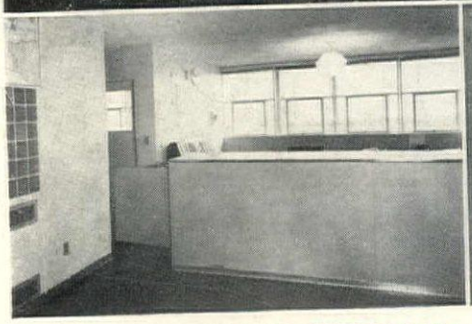
Why so many of Today's Schools are being built of Douglas Fir Plywood

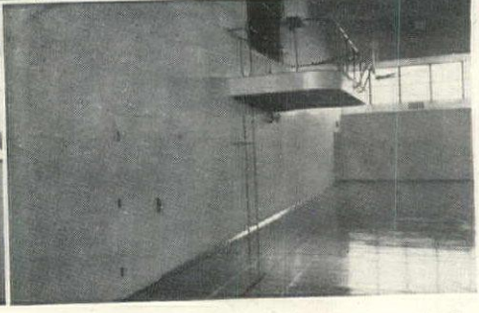
1 The best of today's schools are flexible in plan—capable of being easily adapted to changing needs. Because Douglas Fir Plywood permits the architect greater leeway in design — and gives the taxpayer more for his money at the same time — this "modern miracle in wood" is being specified extensively for both interior and exterior finish. Douglas Fir Plywood is as ideal for demountable units as for permanent construction.

2 Douglas Fir Plywood has many structural advantages: It builds kick-proof and crack-free walls and wainscoting. Used as sheathing or exterior finish, it makes walls 5.9 times as rigid as horizontal board sheathing, 40% more rigid than diagonal board sheathing . . . *vitally important advantages in earthquake or high wind areas.* Douglas Fir Plywood affords excellent insulation . . . is receptive to any finish. It forms smooth, flawless concrete surfaces at lower cost. The big panels minimize labor, speed construction.

3 There is a type or grade, size and thickness of Douglas Fir Plywood for every building purpose. Each panel is made in strict accordance with U. S. Commercial Standard CS45-40 and "grade trade-marked" for easy specification and positive identification. For more details, read the Douglas Fir Plywood Association section in Sweet's Catalog or write Douglas Fir Plywood Association, Tacoma, Washington, for literature.







BEAUTY AND DURABILITY are combined in the Douglas Fir Plywood walls of the Acalanes Union High School, Lafayette, Calif. This photograph shows the library, but all the walls were given a natural finish to produce the human, intimate effect desired throughout. Franklin & Kump, architects, designed this flexible, multi-use school.

BOTH COUNTERS AND CUPBOARDS at Acalanes Union High are constructed of Douglas Fir Plywood, Plypanel grade. All plywood wall panels were butted together without battens.

THE GYMNASIUM was lined with ⅜-inch Douglas Fir Plywood. Regardless of the rough treatment given them, these durable yet attractive plywood walls will never crack nor puncture.

DOUGLAS FIR PLYWOOD
Real Lumber
MADE LARGER, LIGHTER
SPLIT-PROOF
STRONGER

GENUINE DOUGLAS FIR PLYFORM Concrete Form Panel D. F. P. A. INSPECTED

GENUINE PLYWALL Douglas Fir Plywood WALLBOARD D. F. P. A. INSPECTED

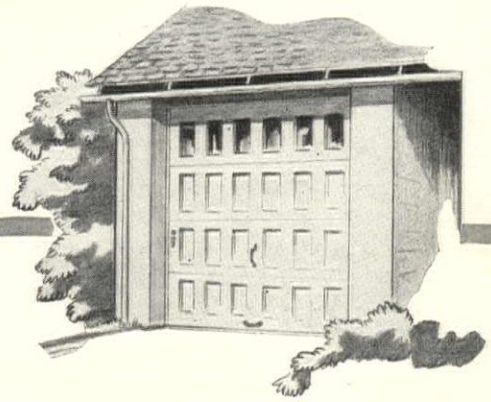
SPECIFY DOUGLAS FIR PLYWOOD BY THESE "GRADE TRADE-MARKS"

PLYPANEL D.F.P.A.

EXT.-D.F.P.A.

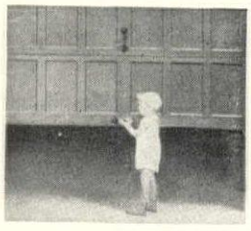
GENUINE PLYSCORD SHEATHING D. F. P. A. INSPECTED

Meet Any Garage Specification With A Stanley Hardware Set

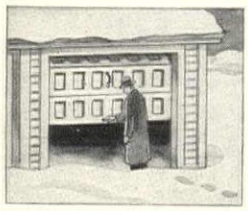


STANLEY "Roll-Up"

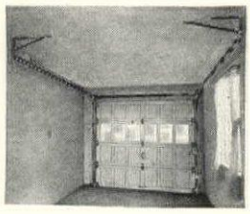
The Finest Garage Door Equipment Made!



Stanley "Roll-Up" Doors are supplied complete, both doors and hardware. Whether doors are small or large, action is so smooth and easy a child can open them. Heavy springs do the work, with a slight starting pull.



Since these doors travel straight up, the inside of the garage need be no longer than the car, and they open easily, even when snow-banked.



Stock sizes are 8′ wide by 7′ high, 8′ wide by 7′ 6″ high, and 8′ wide by 8′ high, doors either 1⅜″ or 1¾″ thickness. Also furnished 14′, 15′ or 16′ wide, 1¾″ thick, for two-car openings. Doors can be supplied on order to fit unusual openings.

YOUR GUIDE TO GOOD HARDWARE

Stanley Catalog No. 61, giving full details on the complete Stanley Hardware line, will prove handy in preparing your specifications. Write for your free copy. The Stanley Works, New Britain, Connecticut.

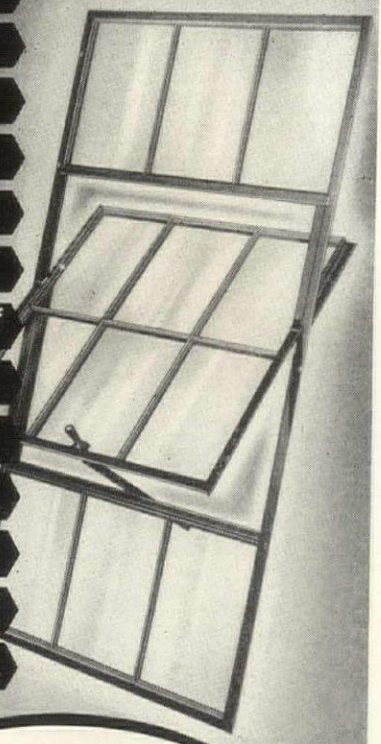
STANLEY

HARDWARE FOR CAREFREE DOORS

Check these points yourself!

Mesker is the only Steel Sash in the world with all these features!

- All weathering members hot-rolled ⅛" angles*
- Rust-proof bronze bearing malleable cup-pivots*
- Vertex corners on all weathering bars*
- One-piece outside glazing sections*
- Frame and ventilator corners riveted and welded*
- Frame bars a minimum of 1½" in depth
- Ventilator bars a minimum of 1⅝" in depth
- Muntin bars a minimum of 1½" in depth
- Muntin joints interlocked and welded
- Cam lock in addition to push bar
- Minimum ⅝" anchorage in masonry
- Available with wrought iron* sills or all wrought iron
- Available with phosphate rust-proofing



*MESKER EXCLUSIVES

PROOF—

that MESKER STEEL SASH gives you at least 35% More Quality for Your Money!

The Steel Sash Merit Meter and the Visual Test Kit provide indisputable, factual proof that you get at least 35% more quality for your money in Mesker Steel Sash. That's why the trend is definitely to MESKER Steel Sash.

☆ FREE ☆
"MERIT-METER"
Compares quality of leading windows!
"Visual-Test Kit"
Compares our gauge metal vs. ordinary!

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Mesker
BROTHERS
424 SOUTH 7th STREET
ST. LOUIS, MO.

CASEMENT WINDOWS • MONUMENTAL WINDOWS • INDUSTRIAL WINDOWS • INDUSTRIAL DOORS • METAL SCREENS • DETENTION WINDOWS

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Without obligation send us: ☐ Ready Reference Steel Sash Merit Meter ☐ Visual Test Kit ☐ Fileworthy Literature on Mesker Steel Sash ☐ Illustrated Steel Sash Price Book ☐ Mesker Dealer Plan

Firm Name _____ ☐ ARCHITECT ☐ BUILDER ☐ DEALER

Address _____ (GIVE STREET ADDRESS OR P. O. BOX NO.)

City _____ State _____

11-AF-121

A Substitute for

COPPER FLASHING

CHENEY BLACK FLASHING is a new product — identical in shape and form with the original Cheney copper flashing — but it is made of PITCH-ON-METAL instead of copper.

You can specify the new CHENEY BLACK FLASHING and CHENEY BLACK REGLET for either defense or non-defense construction as no priorities are necessary.

PITCH-ON-METAL, a brand new development, has a ferrous metal core completely enclosed within a heavy baked-on coating of coal-tar pitch enamel. PITCH-ON-METAL has the strength of steel and the flexibility of copper. It is not affected by moisture, lime, or cement mortar and is resistent to most acid conditions.

Our experiments carried on with the government departments at Washington and with the Bureau of Standards definitely convinces us that our new product, CHENEY BLACK FLASHING, will prove a worthy substitute during the emergency.

CHENEY BLACK REGLET is also made of PITCH-ON-METAL and costs of both Black Flashing and Black Reglet are much less than copper.

We are now in production and as soon as possible complete stocks will be available at warehouses of Sheet Metal Distributors throughout the United States.

Specification For Private Work

Thru-wall flashing shall be provided below parapet copings, for counterflashing in masonry parapets, where low roofs abut the superstructure, wherever flashing is set between two courses of masonry, and elsewhere as indicated on drawings. Thru-wall flashing shall be placed in the wall with mortar below and on top of flashing, so that a mechanical bond is obtained both vertically and horizontally. All counterflashings shall be bent to shape by the manufacturer. These flashings shall be CHENEY BLACK FLASHINGS and shall be furnished and installed according to the standard specifications of THE CHENEY COMPANY, Ardmore, Pennsylvania.

After all roofing and sheet metal work is completed this contractor shall paint all exposed thru-wall flashing with one brush of coal-tar pitch base paint.

Specification For Public Work

Thru-wall flashing shall be provided below parapet copings, for counterflashing in masonry parapets, where low roofs abut the superstructure, wherever flashing is set between two courses of masonry, and elsewhere as indicated on drawings. Thru-wall flashings shall be formed with dovetail or undercut sawtooth corrugation spaced three inches apart and shall be placed in the wall with mortar below and on top of flashing, so that a mechanical bond is obtained both vertically and horizontally. All counterflashing shall be bent to shape by the manufacturer.

These flashings shall be made of 26-gauge sheet iron or steel, and shall be factory coated with a baked on coal-tar pitch enamel compounded to proper viscosity with suitable bituminous solvents. Engler viscosity 100 c.c. at 25 degrees centigrade, 275 to 335 seconds, insoluble in Benzol 8% maximum.

After all roofing and sheet metal work is completed this contractor shall paint all exposed thru-wall flashing with one brush coat of coal-tar pitch paint.

THE CHENEY COMPANY
ARDMORE, PENNA.

BOOKS

(Continued from page 18)

SHELTER FOR LIVING, by Ernest Pickering. John Wiley and Sons, Inc. 370 pp., illustrated with photographs and drawings. 7¾ x 10¼. $3.75

The list of books covering house design and construction has grown so long in recent years that it is as much a source of confusion as comfort to the layman in search of enlightenment. In their general pattern the books are pretty much alike: they tell how to plan, how to avoid the worst pitfalls of bad taste, how to place the house on the lot, how much to spend and where to get the money. Because the information they present is of necessity restricted to rather broad statements, a good part of their valuable space is used up by remarks, which, while indubitably true, contribute little or nothing to the consumer's efforts to get himself a satisfactory home. This bulky and rather pedestrian effort by Prof. Pickering is particularly vulnerable to such a criticism, for his book is literally crammed with observations that might have been omitted, saving the reader much time and the publisher a great deal of paper. In taking his way through the many closely printed pages the reader learns that "the vacuum cleaner is efficient, but for most women, devoid of romance," that "colors may be warm or cool, advancing or receding, stimulating or restful," that "a person may be a good critic but not necessarily a creative designer," that "often drabness is to be preferred to garishness," that "the house is one of the most important necessities of mankind."

Obviously, any writer may be expected to lapse into the repetition of trite phrases now and then, but when page after page is studded with cliches, the thoughtful reader becomes not only a little impatient, but is tempted to reflect on the author's low opinion of his audience, since he does not leave even the simplest notions to be taken for granted. Illustrations of various house types, plans, etc., are fairly numerous but leave a good deal to be desired in the way of quality and interest. Least fortunate of these are the author's own drawings, largely devoted to the presentation of a curiously antiquated kind of "modernistic," which could hardly be expected to fill the reader with confidence when he comes to the chapters entitled "Creative Principles," "Esthetic Qualities," or "The Securing of Character."

Despite these weaknesses the book is by no means without value. It contains a great deal of information, and presents a number of valuable check lists covering the planning process. It also goes beyond the scope of the average book on house design in the sections on group housing and the rural home.

THE MISSIONS OF CALIFORNIA, by Will Connell. Hastings House. 105 pp., largely photographs. 6¼ x 8¼. $2.00.

The first mission in California was founded three and a half years before the Boston Tea Party; the last was established fifty-four years later, in 1823. Based on Spanish designs, or at least precedent, and executed by Indian craftsmen, these buildings form an important part of the only "hemisphere architecture" that has ever existed. In this small book, identical in format with others in this series of pictorial surveys, Will Connell's excellent photographs show these old structures with skill and sympathy. The text which accompanies the pictures is brief and gives general descriptions of the missions and their historical background.

(Continued on page 72)

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★ **permanent**

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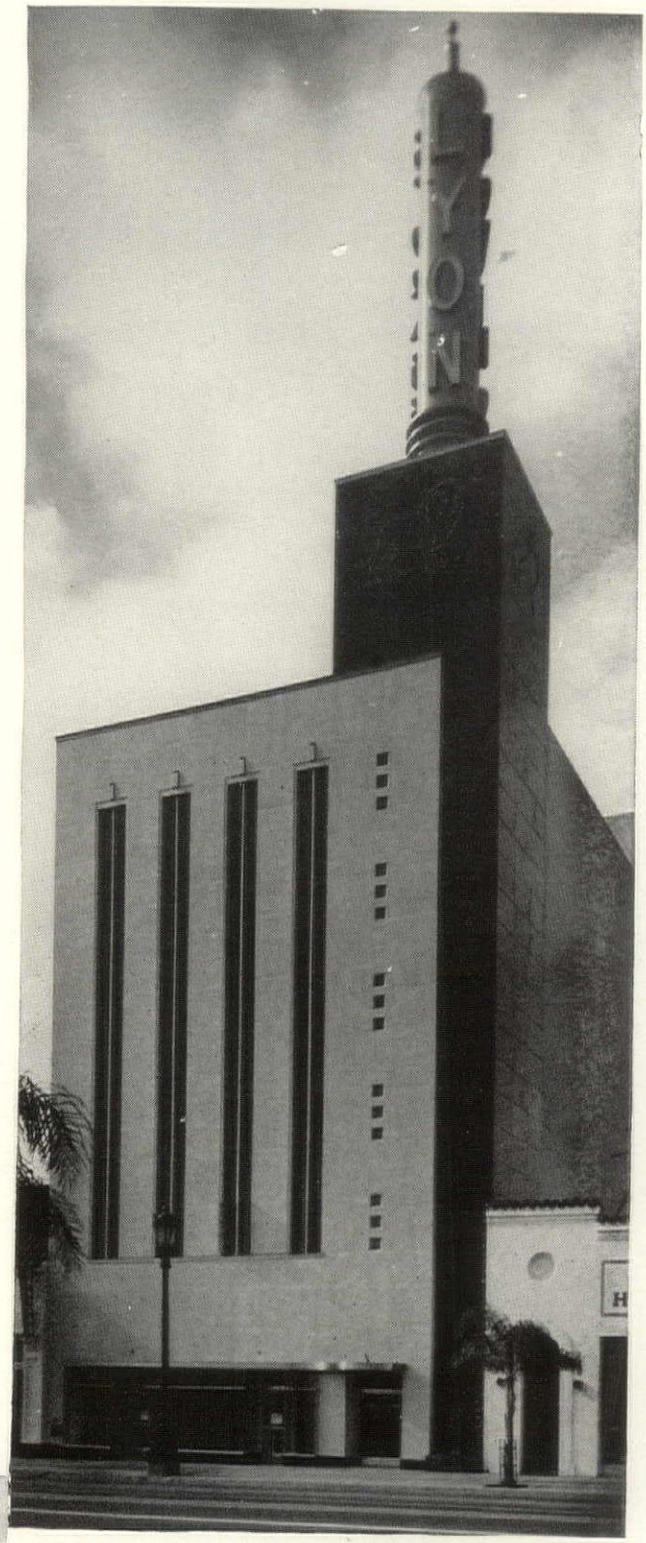
The economy and versatility of Black Serpentine have been demonstrated by hundreds of designers and architects, on modernization as well as for new construction. Black Serpentine meets the demand for a black material which will retain its color and maintain its polish, without being reflective nor mirror-like. It is ideal for panels, bulkheads, facing and spandrels. Because this quarried stone has great toughness and density it can be cut into sections as thin as 7/8". A request on your business letterhead will bring you samples, conveniently boxed, showing the range of stone, including black and mottled dark blues and greens. Please address Alberene Stone Corporation of Va., 419 4th Avenue, New York. Sales Offices in Principal Cities. Quarries and Mills at Schuyler, Virginia.



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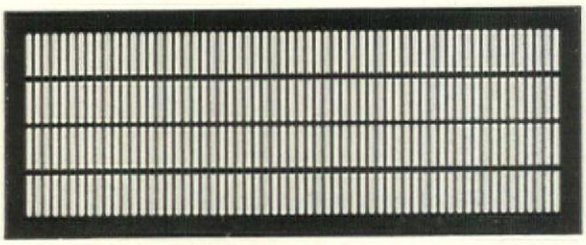

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THOSE who like the simple lines of a slotted grille will be interested in this newest Hendrick version of an always popular, standard design. Note the little innovations which lift this slotted grille out of the conventional class.

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(and until recently the most neglected)
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The resale price of the home is materially increased, for the modern housewife wants these YPS Features—

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Almost invariably, even the most charming houses built ten years or more ago have "perfectly awful" kitchens.

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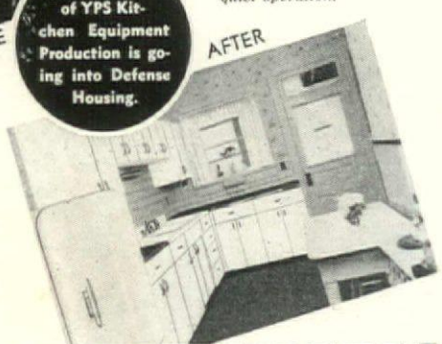

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Please send me the Fall Edition of YPS Kitchen Catalog.

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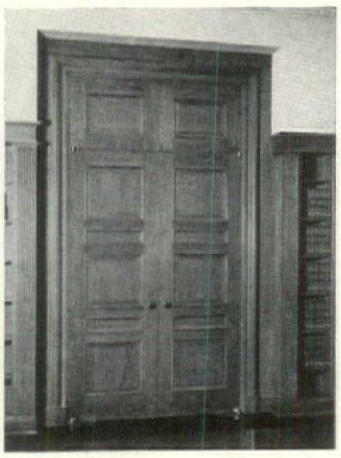

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF MARCH 3, 1933, OF THE ARCHITECTURAL FORUM, published monthly at Orange, Conn., for October 1, 1941.

State of New York }
County of New York } ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Henry A. Richter, who having been duly sworn according to law, deposes and says that he is the Business Manager of THE ARCHITECTURAL FORUM and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, Time Incorporated, Time & Life Building, Rockefeller Center, New York, N.Y.; Editor, Howard Myers, Time & Life Building, Rockefeller Center, New York, N. Y.; Managing Editor, Ruth Goodhue, Time & Life Building, Rockefeller Center, New York, N. Y.; Business Manager, Henry A. Richter, Time & Life Building, Rockefeller Center, New York, N. Y.

2. That the owner is: Time Incorporated, Time & Life Building, Rockefeller Center, New York, N. Y., that the names and addresses of stockholders owning or holding one per cent or more of total amount of stock are: Brown Brothers, Harriman & Co., 59 Wall St., New York, N. Y.; Marine Midland Trust Co., (Account of F. Du Sossoit Duke), 12 East 45th St., New York, N. Y.; William V. Griffin, 140 Cedar St., New York, N. Y.; Louise H. Ingalls, 1658 Union Commerce Building, Cleveland, Ohio.; Irving Trust Company, as Trustee (Benefit of Elizabeth Busch Pool), 1 Wall St., New York, N.Y.; Robert L. Johnson, 135 East 42nd St., New York, N. Y.; Margaret Zerbe Larsen, Time & Life Bldg., New York, N. Y.; Roy E. Larsen, Time & Life Bldg., New York, N. Y.; Henry R. Luce, Time & Life Bldg., New York, N. Y.; John S. Martin, Time & Life Bldg., New York, N. Y. J. P. Morgan & Company, (Account of Henry P. Davidson), P. O. Box 1266, New York, N. Y.; The New York Trust Company, (Account of Edith Hale Harkness), 100 Broadway, New York, N. Y.; The New York Trust Company, (Account of William Hale Harkness), 100 Broadway, New York, N. Y.

3. That the known bondholders, mortagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders, who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

(Signed) Henry A. Richter,
Business Manager.

Sworn to and subscribed before me this 29th day of September, 1941.

SALLIE A. HARRINGTON,
Notary Public.

(My commission expires March 30, 1942)

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TRADE MARK REG. U. S. PAT. OFF.

PROTECT THE HOUSES you build against the vexatious and destructive binding, swelling and warping that beset ordinary sash, doors, millwork, etc. . . . TREAT WITH LAUX REZ, the scientific sealer and wood preservative.

Applied in the shop or on the job, this modern synthetic resin sealer penetrates into the wood cells, seals out destructive moisture, controls dimension and grain raise.

Today, many government projects are requiring this treatment as low cost "life insurance," and the growing practice in jobs, large and small, is to specify this inexpensive LAUX REZ treatment.

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FREE to manufacturers of sash, doors, plywood, and other wood products . . . a descriptive brochure of Laucks complete series of low-cost wood treatments for "plant" application . . . among them water-repellent, toxic preservatives that meet requirements of National Door Manufacturers Association and Western Pine Association. Write today to your nearest Laucks office.

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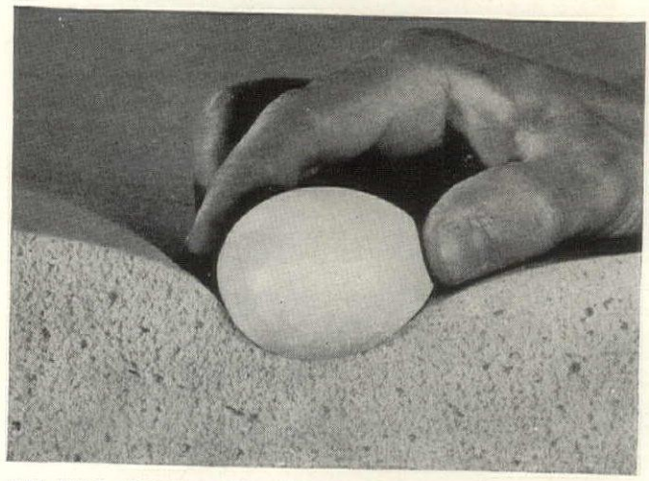
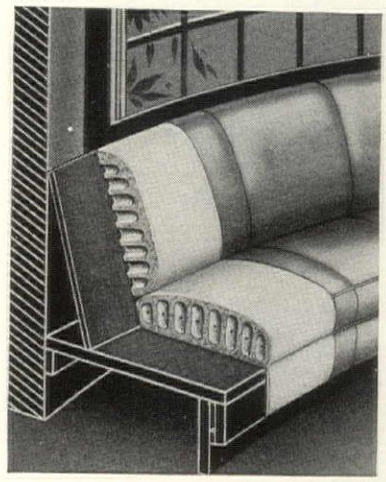
How Koyalon Works for Better Rest



AN EGG GENTLY PRESSED into this springy-soft latex foam cushioning, shows how it "flows" to follow any shape that comes against it. The same thing happens when you sit on *Koyalon*. It shapes itself to you — follows your every curve like a second skin — supporting you more evenly and completely, therefore more restfully.



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SIMPLIFIES FURNITURE CONSTRUCTION

...because it provides both *softness* and *springiness* in a single material. It replaces the loose padding and inner parts of upholstery with one simple, squeakless, sagless piece. A better way to upholster any furniture, and a "natural" for built-in seats.

SNIPS TO SHAPE

A few snips of the upholsterer's shears, and presto, there's the entire upholstery cushioning for your built-in sofa. *Koyalon* also comes already molded to shape in a wide variety of sizes and contours, for practically all types of seating.

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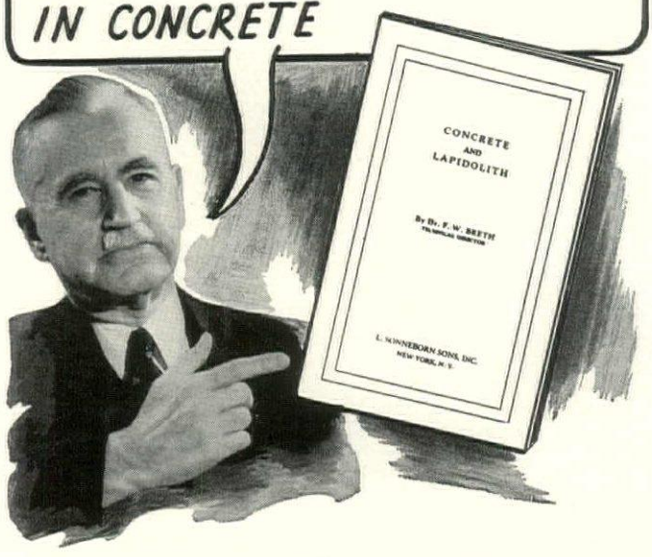

Gathered together in the pages of this interesting booklet are *Test Reports and convincing proof of the extent to which concrete improves when treated with* LAPIDOLITH LIQUID!

Scientific Laboratory tests reveal that LAPIDOLITH LIQUID has at least 100% lower surface tension than any other comparable treatment. This means LAPIDOLITH LIQUID will penetrate quicker and deeper into the concrete, producing a much more thorough chemical hardening result—and this result is permanent!

Write for complete details concerning "on the job" performance of LAPIDOLITH LIQUID. Also see data on LAPIDOLITH LIQUID in Sweet's Catalog, page 5/24.

LAPIDOLITH LIQUID is flushed on finished concrete.

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ONE Time Treatment
Economical to Use
Easy to Apply

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L. SONNEBORN SONS, Inc.

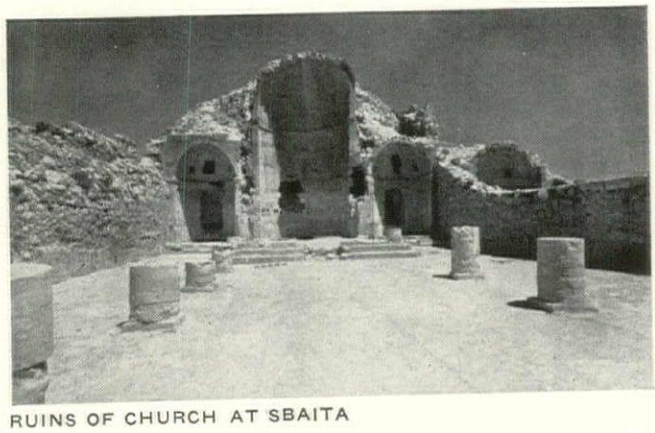
88 LEXINGTON AVE. NEW YORK CITY

BOOKS

(Continued from page 68)

EARLY CHURCHES IN PALESTINE, by J. W. Crowfoot. Oxford University Press, London. 166 pp., 30 plates. 6½ x 9¾. $3.25.

The early Christian churches of Asia Minor have remained an almost unknown part of the history of architecture from the fourth to seventh century until comparatively recently. One reason for this neglect, undoubtedly, has been the greater wealth of material in the Mediterranean countries to the West, and its greater accessibility. In Palestine, which is the subject of these lectures, there are only a few



RUINS OF CHURCH AT SBAITA

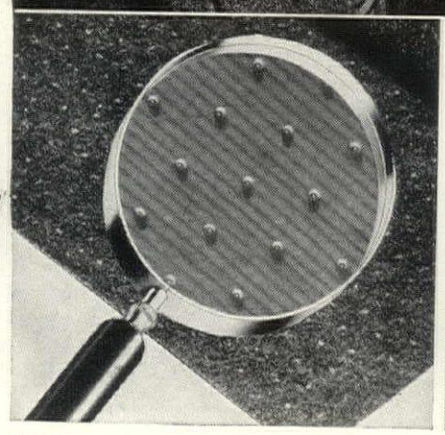
churches still intact, but quantities of fragments which make the archaeologist's work comparatively simple. The author discusses the background of Early Christian architecture in Palestine, the typical plans of the period, methods of construction and decoration. Illustrations deal chiefly with mosaics and sculptured fragments, and include a number of plans.

GLASS: THE MIRACLE MAKER, by C. J. Phillips. Pitman Publishing Corporation. 424 pp., illustrated. 6¼ x 9½. $4.50

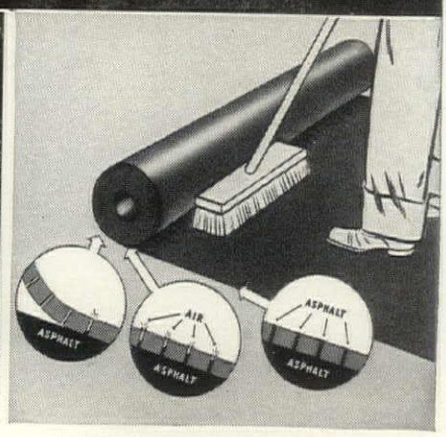
Mr. Phillips, a member of the Corning Glass Works, is in an excellent position for writing a comprehensive book on glass, for his company's activities have had an exceedingly broad range. When an organization's production has included such diverse objects as the mirror for Mount Wilson Observatory, tableware, structural glass and equipment for industry, it may be safely assumed that its technicians speak with authority. The book is unique in its scope, for it extends not only through the entire range of glass use, but deals as well with its mechanical and physical properties, the methods of its manufacture and its history. The reason for so all-embracing a treatment is given by the author: "To apply glass intelligently to new problems, it is necessary to have more than a superficial knowledge of its characteristics and potentialities; an accurate, up-to-date, and reasonably comprehensive account of its technology and numerous applications is necessary. It is my hope that this book accomplishes that purpose, for glass has much to offer, and the literaure does not seem to contain any unified treatment of both phases of the subject." In addition to doing exactly what he has promised to do, Mr. Phillips has accomplished something of a feat in producing a very readable book on a difficult technical subject, written up to rather than down to the layman.

HOW CAN HOLES IMPROVE A ROOF?

THAT'S EASY! JUST LISTEN TO THIS...

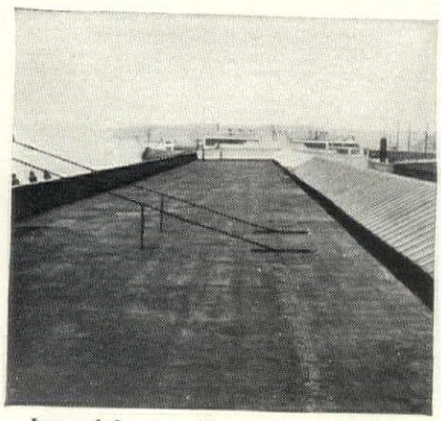


The holes (greatly magnified above) in the new Johns-Manville Perforated Asbestos Felts are the result of years of research, experience and testing. As the felts are laid, these countless tiny perforations act as . . .



. . . **"check valves,"** permitting trapped air to escape. They are then sealed by the waterproofing asphalt. Thus, blistering is virtually eliminated. Application is faster, too, and the felts adhere tighter.

Fire protection is also provided. As shown above, J-M Felts remain undamaged under conditions that quickly destroy ordinary felts. Rotproof as well, they assure continued . . .



. . . **low maintenance.** No periodic re-surfacing is needed to protect against the drying-out action of the sun. For example, the roof above is 27 years old . . . *and still going strong!*

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If you aren't familiar with the many advantages of this important new J-M advance in roofing, write for details. At the same time, ask for specification data on the many styles and types of J-M Built-up Roofs. Johns-Manville, 22 East 40th Street, New York, N. Y.

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Smooth-Surfaced
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● Certainly, PLUGMOLD plug-in-anywhere convenience wiring is fine for homes, offices, stores, hotels, hospitals, etc. But think of the industrial possibilities! Think what it means to have all the outlets needed in exactly the right places along work benches, laboratory benches and tables, test racks, in engineering departments on the assembly line, in plant offices. Such a system quickly and easily solves the problem of outlets for lamps, light electrical tools, test instruments, soldering irons and other appliances. Use this new, modern wiring idea in your planning of defense projects . . . as a time-saver and work-speeder. Samples on request without obligation, also engineering help if you need it. Write us.

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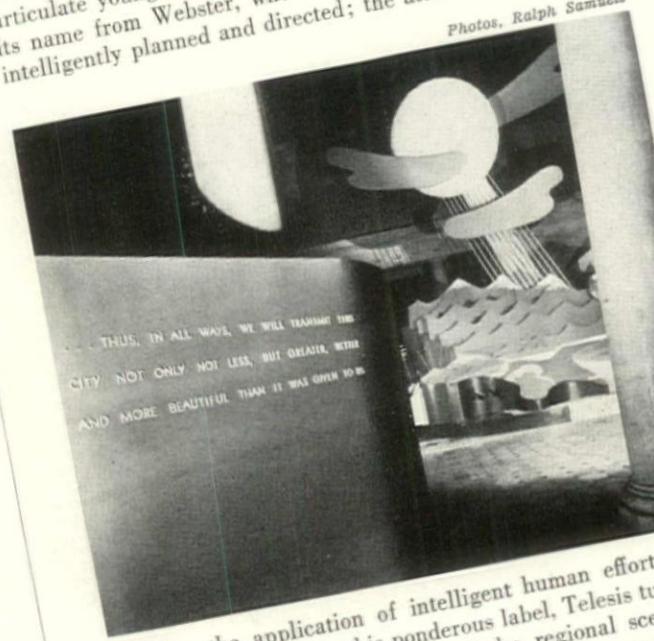
FORUM OF EVENTS

(Continued from page 18)

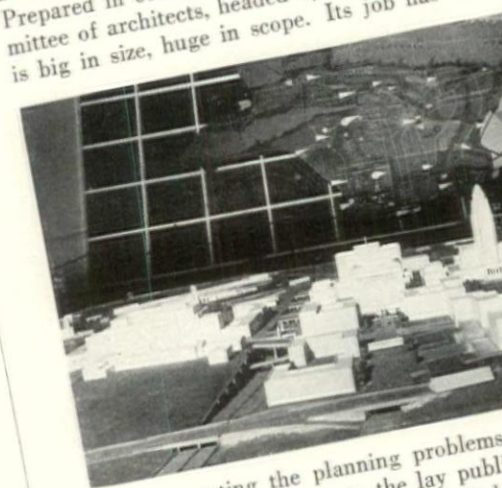
"... AND NOW WE PLAN"

A little over a year ago a group calling itself "Telesis" was formed in San Francisco. Composed mainly of intelligent and articulate young architects and landscape architects, it took its name from Webster, who defined the word as "progress intelligently planned and directed; the attainment of desired

Photos, Ralph Samuels



ends by the application of intelligent human effort means." Saddled with this ponderous label, Telesis tu abundant energies to a survey of the regional sce duced a show on San Francisco whose success en the formation of a similar group in Los Angeles. No II is having its say in ". . . And Now We Plan by the Los Angeles County Museum, in which Te bers worked as designers, draftsmen, painters and Prepared in collaboration with the Museum's ad mittee of architects, headed by Palmer Sabin, th is big in size, huge in scope. Its job has been



than presenting the planning problems the Los Angeles region to the lay publ forceful enough to impress and enligh citizen. All the designer's resources fo tion of a story have been used: photog slides, diagrams and symbols. The to entrance, with a twelve-foot sun floa alized representation of Los Angeles of the proposed Civic Center and country. The exhibition is running

(Continued on p

FOR COMPLETE WALLS OR AN

Inexpensive Beauty Spot

MAKE YOUR FIRST CHOICE

Versatile Vitrolite

Vitrolite supplies permanent, easy-to-clean walls for bathrooms and kitchens in homes of ALL PRICE CLASSES

Beauty in a home too often is a luxury. But not where richly colored, never-fade glass walls of Vitrolite are used, for this material is so permanent that its first cost is the last expense. It adds a distinctive touch to large homes, can be specified even for smaller homes, and still come within limited building or remodeling budgets.

Provided in sixteen attractive colors, it gives free range to the architect's creative ability. A variety of sizes assures minimum number of joints. Its colors will never dim, its surface never be damaged by water or steam. So, make Vitrolite your *first choice* when you want to combine rich beauty with economy. Libbey·Owens·Ford Glass Company, Dept. AF1241, Nicholas Building, Toledo, Ohio.

LOW AND MEDIUM price homes can have Vitrolite beauty without excessive cost. Paneling around tub and washbowl add beauty and provide easily cleaned splash areas.

EASE OF CLEANING and permanent beauty are provided by Vitrolite wainscoting. Impervious to water, stains and greases, Vitrolite wipes clean with a damp cloth.

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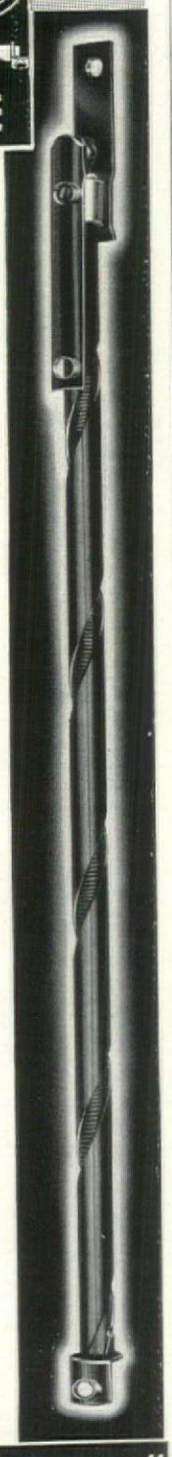
Glass **Designed for Happiness**

CHECKS with STRICTEST STANDARDS

GRAND RAPIDS *Invisible* SASH BALANCE



EASY TO INSTALL

No machining of frames . . . no cuts in sash except stile grooves . . . no blocks to fasten on jambs. Complete, clear, illustrated directions on each carton.

NO ODD SIZES

Use same size balance for both upper and lower sash. If top sash is stationary, balances can be used on another bottom sash. Completely interchangeable. 10 sizes meet 95% of residential requirements.

THOROUGHLY PROVED

User experience and independent tests prove that the GRAND RAPIDS INVISIBLE is amazingly durable. Smooth, quiet, easy, and dependable operation.

FULLY GUARANTEED

When installed according to simple, illustrated instructions, we unconditionally guarantee GRAND RAPIDS INVISIBLE sash balances. Remember, this is the ONE balance that is actually INVISIBLE in all window positions. No exposed tape, tubes, or cables. Only one moving part.

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No. 150 Covered 1½" Wheel Pulley

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COMPLETES THE GREAT "GRAND RAPIDS" LINE

A worthy member of the famous "GRAND RAPIDS" line . . . the line that has set the standard for 40 years. Included in this great line are pulley types (overhead and standard) for narrow trim and conventional installations.

Write for

Catalog Section 41-SB-1, illustrating and describing the "GRAND RAPIDS INVISIBLE," with detail drawings of window installations with and without weatherstripping.

Also available — Catalog "K," featuring narrow trim, standard and heavy duty sash pulleys.

GRAND RAPIDS HARDWARE CO.
GRAND RAPIDS - MICHIGAN

"GRAND RAPIDS"
The Standard for 40 Years

FORUM OF EVENTS

(Continued from page 74)

ANNOUNCEMENTS

The office of the late JOHN CALVIN STEVENS, in recent years known as John Calvin Stevens, F.A.I.A.—John Howard Stevens, A.I.A., Architects, is to be continued as John Howard Stevens, A.I.A.—John Calvin Stevens, 2nd, A.I.A., Architects.

The directory of "ARCHITECTS FOR EDUCATIONAL BUILDINGS," which appears in "The American School and University," a yearbook for school and college executives, is now being revised for publication in the 1942 edition. There is no charge for the listing, and architects who would like to be listed are asked to communicate with The American School and University, 470 Fourth Avenue, New York City.

FREDERICK C. GENZ, Consultant on Building Laws and Practice, announces the removal of his offices to 14 East 46th Street, New York City.

PAUL R. HUNTER and WALTER L. REICHARDT announce the dissolution of the firm of Hunter and Reichardt, Architects. Each will continue practice independently, and a joint office will be maintained in the Architects Building, Los Angeles.

ARTHUR L. FINN has taken new offices at 460 West 24th Street, New York City. Mr. Finn has opened the office for furniture and interior design.

STAMO PAPADAKI announces the removal of his offices to 850 Seventh Avenue, New York City.

AWARDS

The Hamlin Prize, highest award bestowed by the Columbia University School of Architecture for a decorative design, has been awarded to Paul Pippin of Severna Park, Maryland, for the best fountain in a housing development. The prize, a bronze medal, was founded in 1934 in memory of the late Alfred Dwight Foster Hamlin, professor of the history of architecture at Columbia University.

COMPETITIONS

The NATIONAL SOAP SCULPTURE COMMITTEE announces the eighteenth annual competition for small sculpture in Ivory Soap for the Procter & Gamble Prizes. This contest will close May 15th, 1942. Cash prizes totaling $2,200 will be awarded in three classes—Advanced Amateur, Senior, Junior, and special Group and Reproduction awards. For information and applications write to the National Soap Sculpture Committee, 80 East 11th Street, New York City.

The twenty-ninth competition for the award of the FRANCIS J. PLYM FELLOWSHIP in Architecture is open to all graduates of the Department of Architecture in the curriculum in Architecture of the University of Illinois who are under thirty years of age on the first day of June, 1942. The value of the Fellowship is $1200 to be used to defray the expenses for one year of travel for the study of Architecture. Persons wishing to take part in the competition must notify Professor L. H. Provine, Department of Architecture, University of Illinois, Urbana, Ill., not later than January tenth.

The American Institute of Architects will award EDWARD LANGLEY SCHOLARSHIPS in 1942 for advanced study, research and travel. Any resident of the United States and Canada engaged in the profession of architecture is eligible. Proposals of candidates will be received at the national headquarters of the Institute at 1741 New York Avenue, Washington, D. C. from January 1st to March 1st, 1942. All proposals must be made in duplicate on printed forms obtainable from the headquarters.

(Continued on page 78)

. . . bought double rust resistance for this duct work

IT'S U·S·S COPPER STEEL

U·S·S Galvanized Copper Steel duct work in this six-room house cost only 95 cents more than plain galvanized steel and actually less than pure iron. The owner got a heating system with 2 to 3 times the usual rust resistance—plus the assurance that it would not rust out before the house was paid for.

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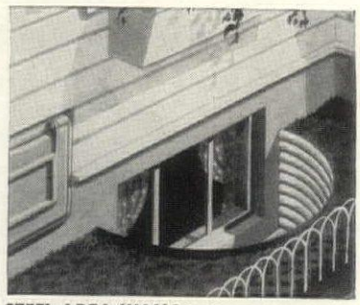
In smoky cities, the sulphur in the air combines with moisture to form a dilute acid. This attacks metals, paint and even the mortar in buildings, causing them to disintegrate faster. Under these conditions, tests show that U·S·S Copper Steel gives better service than any other ferrous metal in the same price range. For proof of this see the accompanying corrosion chart.

When specifying other steel work subject to corrosion, such as roofing, siding, gutters, downspouts, area walls, remember that U·S·S Copper Steel gives the same advantages of durability.



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This chart compiled from inspection reports of the Committee on Corrosion of Iron and Steel, A.S.T.M. Proceedings 1937, shows results of tests carried on at Annapolis, Md. from 1916 to 1936. After 21 years' exposure, 91% of COPPER STEEL sheets remained "sound" (unperforated). Other materials were decidedly inferior.

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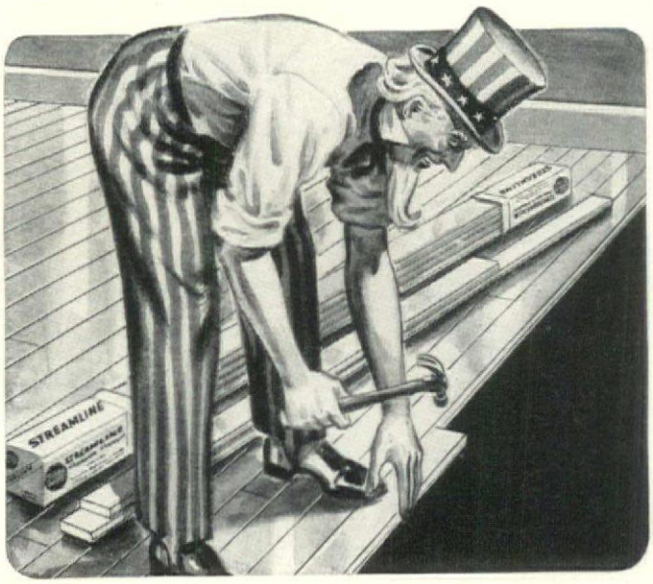

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FORUM OF EVENTS

(Continued from page 76)

EDUCATIONAL

As a result of a successful six-year experiment in offering courses in City and Regional Planning as a field of undergraduate study, the Graduate School at Cornell University announces that, beginning this Fall, graduate students may elect to major in this field leading to the degree of Master in Regional Planning.

DIED

J. M. HEWLETT, 73, architect, mural painter, scenic designer and former director of the American Academy in Rome. During his long career, Mr. Hewlett designed many structures, including Brooklyn Hospital, St. John's Hospital in Brooklyn, the Brooklyn Masonic Temple and the Danbury, Conn. hospital. He had been President of the Architectural League of New York, a Vice-President of the American Institute of Architects, a member of the National Academy of Design, and a President of the Society of Mural Painters.

CHARLES C. POTWIN, 33, nationally known acoustic consultant for Electrical Research Products, Inc. During his professional career, Mr. Potwin was responsible for the acoustic design of the Temple of Religion and the A. T. & T. Building at the New York World's Fair, the new Kleinhans Music Hall in Buffalo, the auditorium of the Metropolitan Museum in New York, as well as many others. His contributions to architectural design based on acoustic principles have been hailed in leading professional journals as spectacular advances in the science. Mr. Potwin was a fellow of the Acoustical Society of America.

DWIGHT HEALD PERKINS, 74, one of the nation's foremost educational architects. Mr. Perkins has left more than 200 school, park, and public buildings as testimonials to a lifetime devoted to planning broader educational and recreational resources for the people of the Chicago area. Among his notable works are the Lincoln Park Lion House which received the gold medal of the American Institute of Architects in 1912; Steinway Hall, now housing the Academy of Music and the Studio theater; the Chicago Daily News Fresh Air Sanitarium in Lincoln Park; and numerous small parks and field houses throughout the city.

ERRATA

In the August issue of the Forum (page 12) the design of the chair done in metal and leather was incorrectly credited to Jorge Hardoy of Buenos Aires. The chair was created by Jorge Ferrari Hardoy, Antonio Bonet and Juan Kurchan.

In the November issue of the Forum, under the heading, "A Trio Of Modern Plants", describing the interior design of the Johnson & Johnson Ligature Laboratory, credit was incorrectly given to the Finnish architect, Alvar Aalto. This furniture, with the exception of two chairs, was designed by Powell & Morgan, and executed by Hans Knoll.

In the review of Eric Mendelsohn's book in the November issue of the Forum, the date under the first picture on page 22 should read 1914 instead of 1941. Also, on page 22, U. S. Distributor E. Weyhe's name was incorrectly spelled. On page 56, Mr. Mendelsohn should have been quoted as saying "Function without (instead of 'with') sensibility".

In the October issue of the Forum (page 256) credit was incorrectly given to Richard M. Bennett for designing the fireplace with the stone firewood frame. This fireplace was designed by Caleb Hornbostel and Richard M. Bennett, Associated Architects.

READY TO GO THROUGH FIRE AND WATER!

NO—the young man's not looking for trouble. But he'll take it when it comes as an opportunity to prove superior worth. Superior Barrett Roofs, too, take adverse conditions in their stride—conditions that spell b-r-e-a-k-d-o-w-n and e-x-p-e-n-s-e for inferior roofs.

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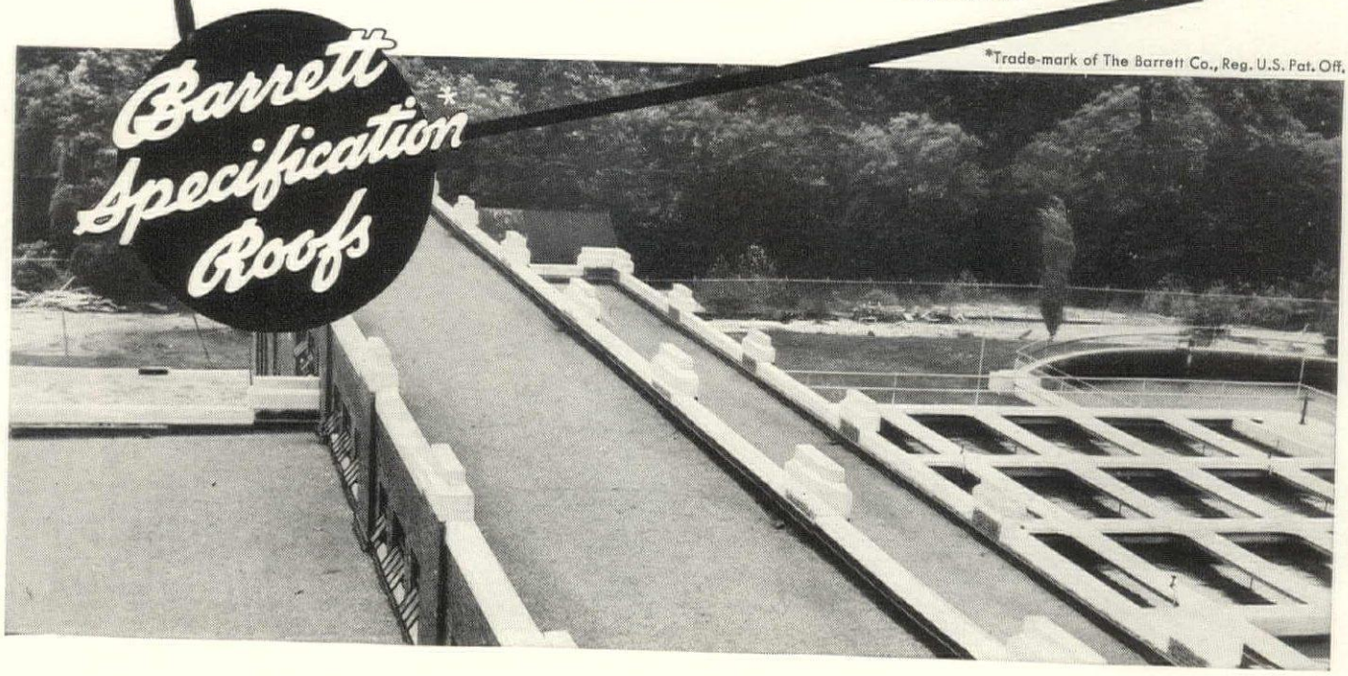

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SPECIFICATION AND BUYING INDEX

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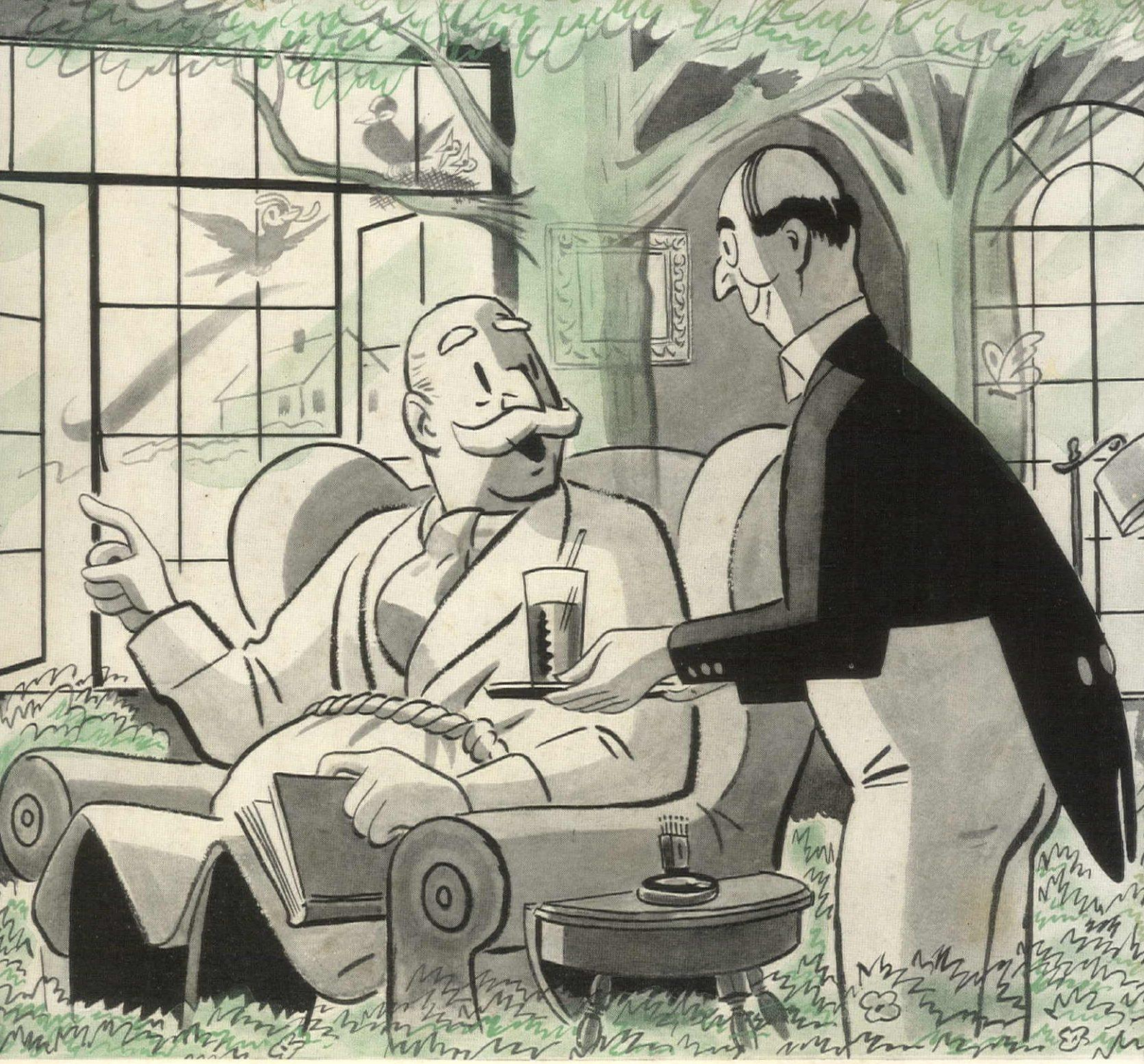

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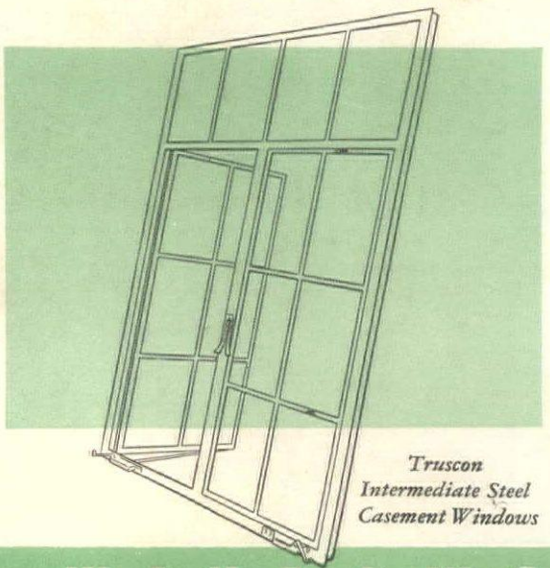

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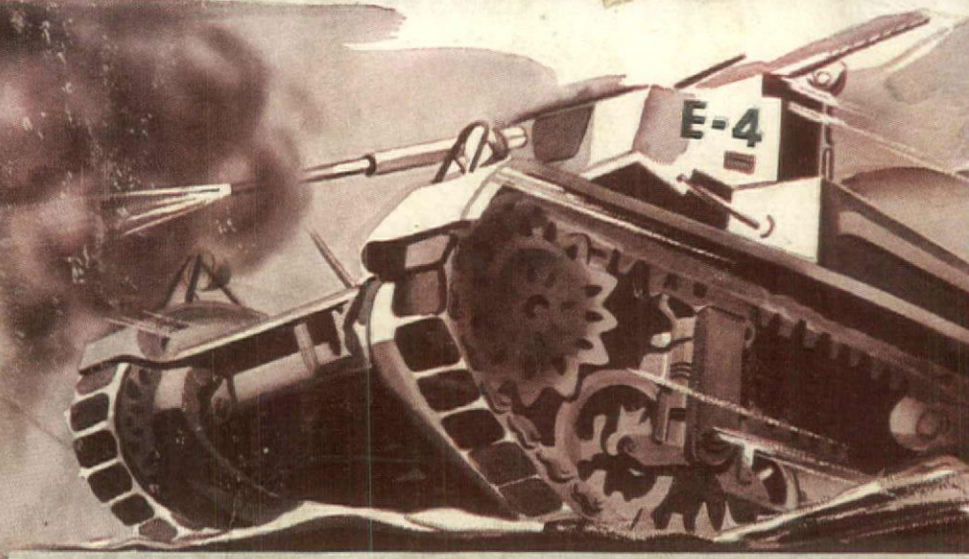

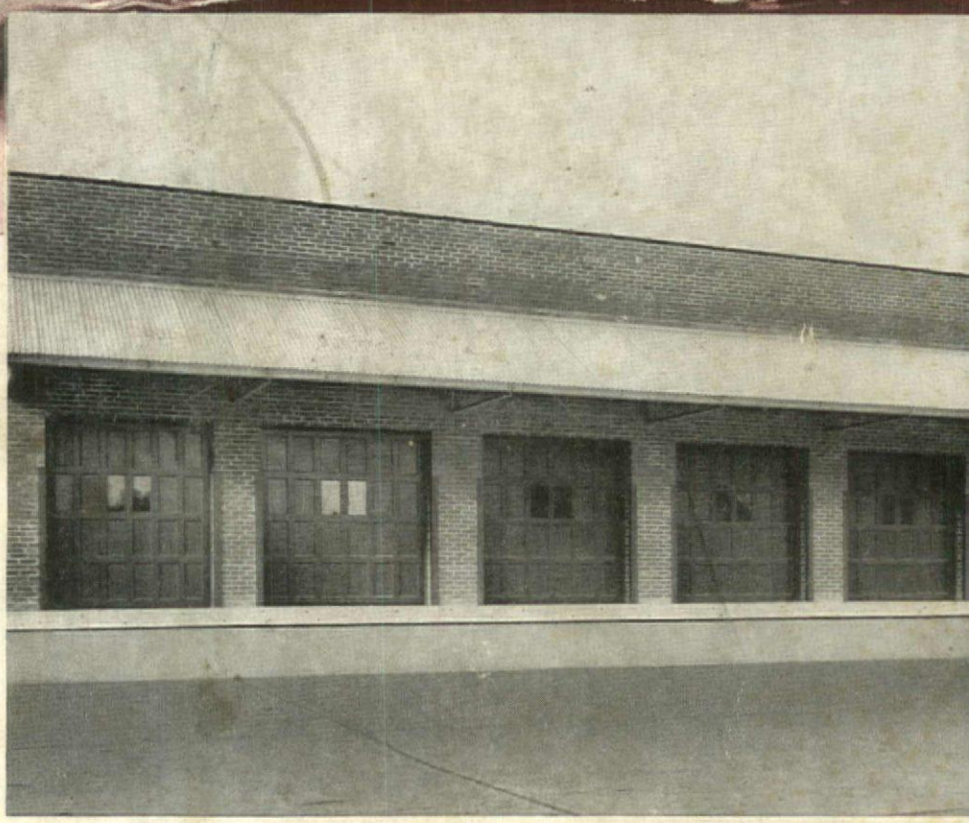

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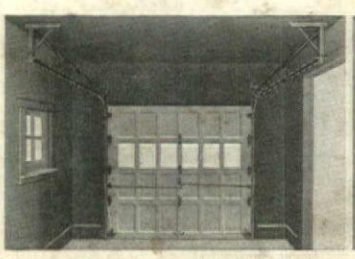

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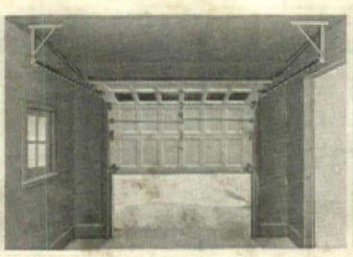

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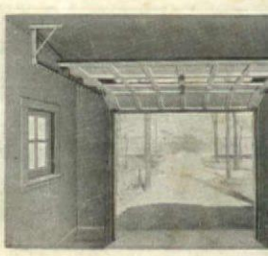

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