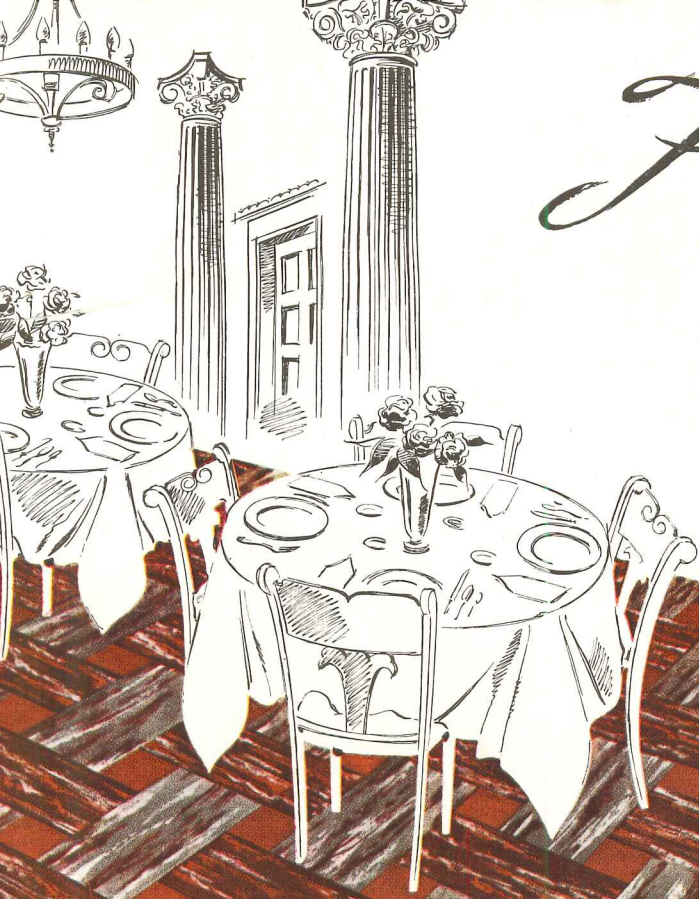


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CELLULAR FIBRE INSULATION

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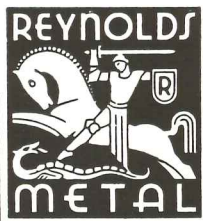
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COTTON OVERCOATS keep Tibetans WARM at 20° below

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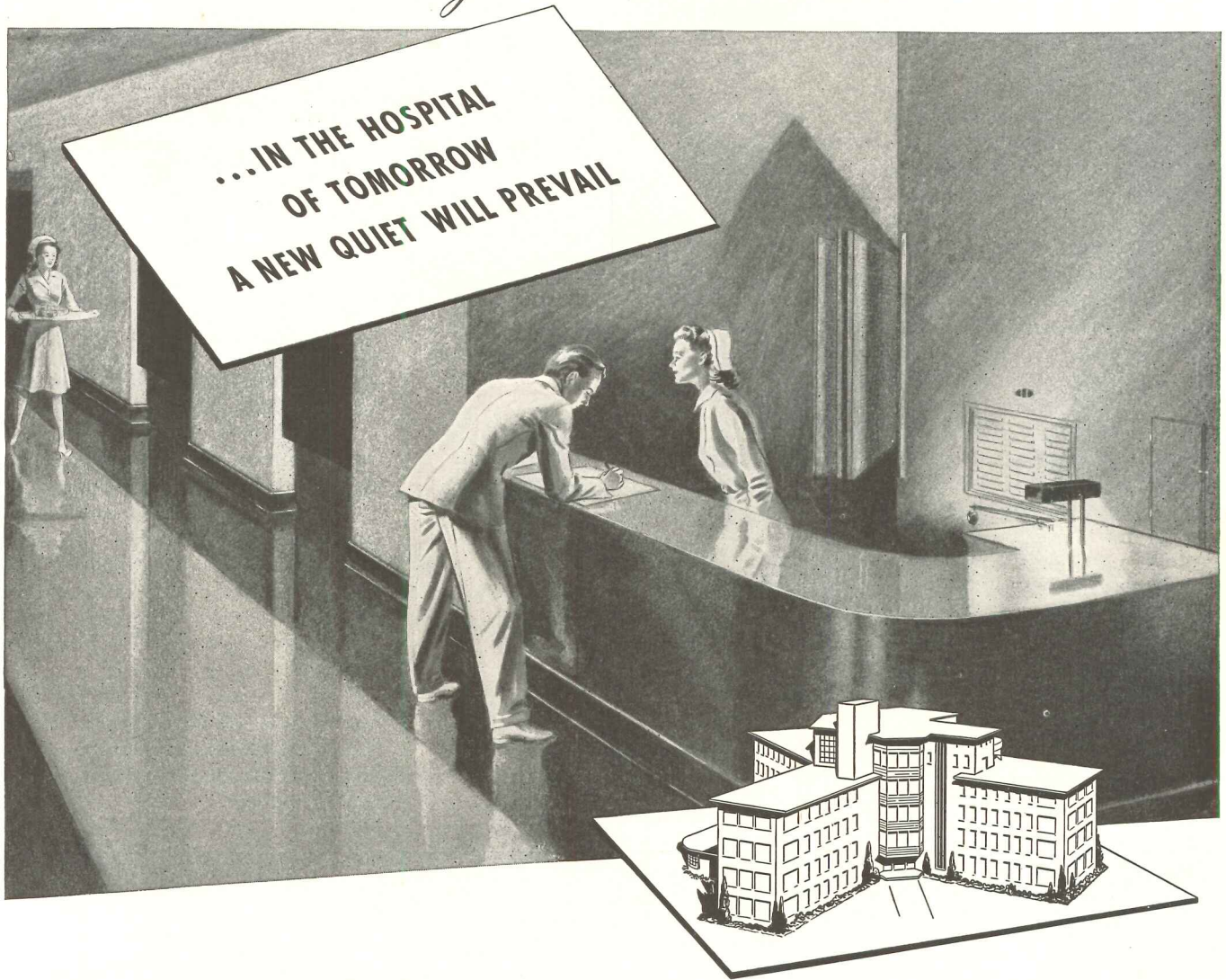


YOU OUGHT TO HAVE THE COMPLETE STORY. Write for Booklet A1A 37a1 giving details, facts, and scientific data.



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BUILDING PRODUCTS DIVISION RICHMOND, VIRGINIA

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● It takes no daring to predict a brilliant future for K&M Sprayed "Limpet" acoustical treatment in the architecture of Tomorrow.

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* * *

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Kearsbey & Mattison, America's asbestos pioneer,
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KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

Makers of

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Establishment of a *quantity* "ceiling" on metals used in some types of construction is being seriously discussed . . . but from a practical standpoint it already exists. Shortages and delayed deliveries have set up their own restrictions, and created some tough problems for heating engineers.

The problem is acute in industrial heating. Certain types of equipment ordinarily used are no longer available. Other types demand extravagant tonnages of vital materials. As a result, many engineers are giving renewed thought to Radiant Heating, as the best means of getting first-class heating results, and at the same time saving metal the Nation so badly needs.

The extent of this saving is suggested by a comparative check recently made on a small structure. For Radiant Heating, 930' of $\frac{3}{4}$ " pipe were required; total weight, 850 lbs. For a conventional hot water system of equivalent capacity, the metal required totaled 1700 lbs., and for an equivalent 2-pipe steam system, 1200 lbs. All figures exclusive of weight of boiler.

Industry is well represented in

the 400-plus Radiant Heating installations now serving. One New York concern reports 30 years of satisfactory service from a floor-type job. After several years' experience, a Wisconsin company writes, "We are well satisfied with its (Radiant Heating) operation from all angles." A Steel and Foundry Company executive calls their radiant heated building, "the most comfortable we have ever worked in," and reports a fuel consumption $\frac{1}{3}$ that estimated for conventional systems. Installations have been

recently made, are on the boards, or in process, in Illinois, Michigan, Ohio and Maryland plants.

Your own experience will explain the importance of using wrought iron for Radiant Heating. Wrought iron's unusual corrosion resistance has been repeatedly proved. Its thermal properties are excellent, as any handbook will show. (Its coefficient of expansion is practically identical to that of concrete and plaster, which helps eliminate cracked floors, and loss of bond). And it can be easily and economically formed and welded or threaded, in the shop and on the site.

You will find our 48-page technical bulletin, "Byers Wrought Iron for Radiant Heating Installations," filled with helpful information on design and installation. If you want additional assistance, we will put you in touch with some of the many engineers who have first-hand experience with Radiant Heating in all its phases.

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is helping
Industrial Plants to meet
today's Emergency

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WROUGHT IRON**



*Corrosion costs you more
than Wrought Iron*

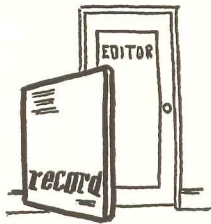
BYERS GENUINE WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS
STEEL TUBULAR PRODUCTS

APRIL 1942

record ARCHITECTURAL

COMBINED WITH AMERICAN ARCHITECT AND ARCHITECTURE

BEHIND THE RECORD



The home construction front cannot be conquered *only* in terms of housing and industrial plants. Towns and cities throughout the land need schools, hospitals, public utilities and recreational structures to assure their "health and safety" and to keep up morale for a civilian blitzkrieg of production.

In its December and January issues the RECORD dramatized this situation, and today the FWA is confirming the RECORD's surveys and forecasts by approving scores of PWA projects to provide war-workers with much needed community facilities. These PWA structures are not going to be elaborate affairs. Every one of them is going to be designed and built in conformity with the increasingly strict limitations imposed by scarce materials. But to the architectural and engineering professions, trained in all the arts of technical ingenuity, that ought to be a challenge!

So in May we are going to discuss these limitations and report the various ways in which they may affect the type, design, construction and equipment of Community War Buildings. To balance these technical stories—which will include another of the RECORD's famous Building Type Studies and more Time-Saver Standards—we are including a photographic presentation of community buildings designed for a wide variety of uses to suggest the range of opportunities.

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H. Judd Payne, Vice Pres. in charge Magazine Div.

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*“Not you, Bulwinkle, you’d be a
round peg in a square hole!”*

In planning York industrial air conditioning, you never have to take a chance in deciding which unit should do what.

So comprehensive is the range of York equipment that whether the job is a huge blackout plant (such as those York has air conditioned for Ford, Studebaker, Douglas, Consolidated Aircraft), or extreme condition test chambers (such as those for the U. S. Army, Wright Aeronautical and others), you have always on hand a square peg for a square hole, a round one for a round hole.

For example, you may select either a chilled water or

direct expansion system, reciprocating or turbo compressors, from $\frac{1}{4}$ ton to 1200 tons capacity, for steam turbine, electric motor or gas engine drive; Freon 12 or ammonia refrigerant, air-cooled or water-cooled condensers.

If there are places in your client’s plant where process air conditioning or comfort air conditioning may step up production, cut rejects, we shall be glad to place York experience and research facilities at your service. York Ice Machinery Corporation, York, Penna.

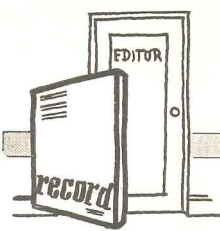


YORK REFRIGERATION AND AIR CONDITIONING

“Headquarters for Mechanical Cooling Since 1885”

“KEEP’EM FLYING!”

A FEW OF THE MANY NATIONALLY-KNOWN USERS OF YORK EQUIPMENT—American Air Lines • Armour • Bethlehem Shipbuilding • Borden Canada Dry • Coca-Cola • Curtiss-Wright • du Pont • Eastman Kodak • First National Stores • Firestone • Ford • General Baking General Foods • General Motors • Goodrich • Jones & Laughlin Steel • Montgomery Ward • Pabst Brewing • Procter & Gamble Republic Steel • Sears Roebuck • Shell Oil • Swift • Texas Company • United Fruit • U. S. Army • U. S. Navy • Woolworth



(continued from page 5)

Speaking of standards, one could dream away a lot of hours imagining what might be the future of building construction methods as a result of this current pressure for material conservation. At the very least we are in for an era of all-out technical simplification. The Bureau of Standards report on plumbing is a case in point—a case discussed in former RECORD issues.

The same sort of thing is developing in other phases of building. Take heating for example. Because of metal scarcities, heating plants must be smaller. Less heat requires more insulation to maintain heating standards. And presto!—there's a new construction *must* for designers to conjure with.

Carried to an ultimate conclusion, all our technical habits may be in for a complete revolution. Many believe that a completely new construction technique is just around the corner. We know about one chap, for example, who is working out a way to heat a house without any heating plant: you turn on both heat and cold by flicking a switch!

Who knows—maybe we'll all soon be living and working in buildings in which *everything* is controlled by push buttons. And instead of talking about the architectural profession, these pages may have to chronicle the doings of high-gear production organizations with anonymous designers as preoccupied with line assemblies, pressure points and efficiency units as architects used to be with form, function and priorities!

But that is a long way off, to judge by some of the problems that still beset us in the housing field.

Proof that we still don't know *all* the answers to current housing questions is offered by Elisabeth Coit, AIA, in the Building Type Study that begins on page 71. Developed as result of an extensive field survey, this article suggests that we are still quite a distance from the millennium where mundane matters of living will smoothly fulfill theories of housing. Tenants, Miss Coit found, do not always use their living spaces as design-

ers think they should! And in reporting what such unobliging people do and do not want, the author gives sage counsel and practical suggestions for the future benefit of all concerned.

Some such survey could well have preceded PBA's construction of its 800-house project in Portsmouth, N. H. As you may recall—from the Portsmouth "case study" that the RECORD published in December—this is the largest of several new housing developments built to shelter part of the 7,000 new industrial workers that have recently swelled this New England town's wartime population.

But only 100 families have been sufficiently attracted by PBA's good intentions to move into its new houses. And the remaining 700 units are standing forlorn and empty as a barracks-like point of emphasis to New England apathy, stubbornness, pride or you-name-it.

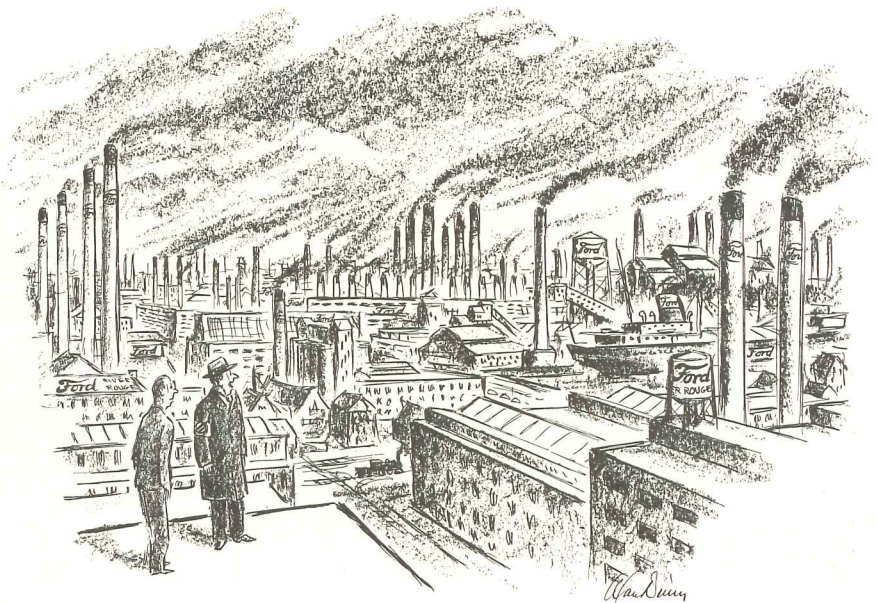
PBA officials seem puzzled about the situation. They may be pondering the fact that the project was never popular with the town fathers, who had earmarked the site for future industrial expansion. There was also some small ruckus between town and Government officials regarding in-

stallation of public utilities for the project. We understand that even today the 100 families are enjoying their 800-house estate without benefit of police protection or garbage disposal service!

We almost sawed the limb from under us last month in the lead story "On to Washington." Just as it was being completed news broke of the long-anticipated housing reorganization. In the flurry of last minute developments, we apparently didn't quite clarify the duties of the AIA's Washington minute-man Edmund Purves.

On page 39 we said "*Many Government agencies consult this file and confer with Edmund Purves in compiling lists for selecting local architects.*" Because some *might* misinterpret this sentence we hasten to say that Ed Purves has nothing to do with recommending any architects—local or otherwise—for work by any Government agency. When he is asked for information concerning architects, he impartially passes on to any inquiring agency the questionnaire data which architects themselves have furnished him.

And that's that—both for Ed Purves and the RECORD!



"Now your next problem is concealment."

—Drawn for the RECORD by Alan Dunn

A Great New Advance in Fluorescent Lighting



INTO every fluorescent lamp, just before completion, goes a little blob of mercury. Not too little, because the lamp needs a minimum amount to operate efficiently; not too much, because then, in time, the excess deposits itself on the surface in the form of dark streaks and splotches.

To make sure the quantity is accurately measured, Hygrade engineers have produced the "mercury bomb"—a tiny metal container of mercury, weighed to the thousandth of a gram. Heated to the bursting point before the lamp is sealed, the "bomb" explodes—releasing mercury vapor in the precise volume required for best results.

Thanks to this exclusive fluorescent development, Hygrade Lamps are unique in being virtually free of "mercury shadow"—they remain "bright to the last inch."

But the "mercury bomb" is only one of the reasons for the superiority of Hygrade Lamps.

They give more light—a greater output of lumens per watt.

They have a smoother coating texture—something you'll readily observe if you compare them with other lamps.

You can see, too, that they're more uniform in color—each lamp producing the same color of light.

And they last longer—a fact Hygrade users well know.

Good as these lamps are in any fixture they're even better when used in Hygrade "Miralum" fixtures—a complete "package" that's unit-engineered—lamps, fixtures and accessories made for each

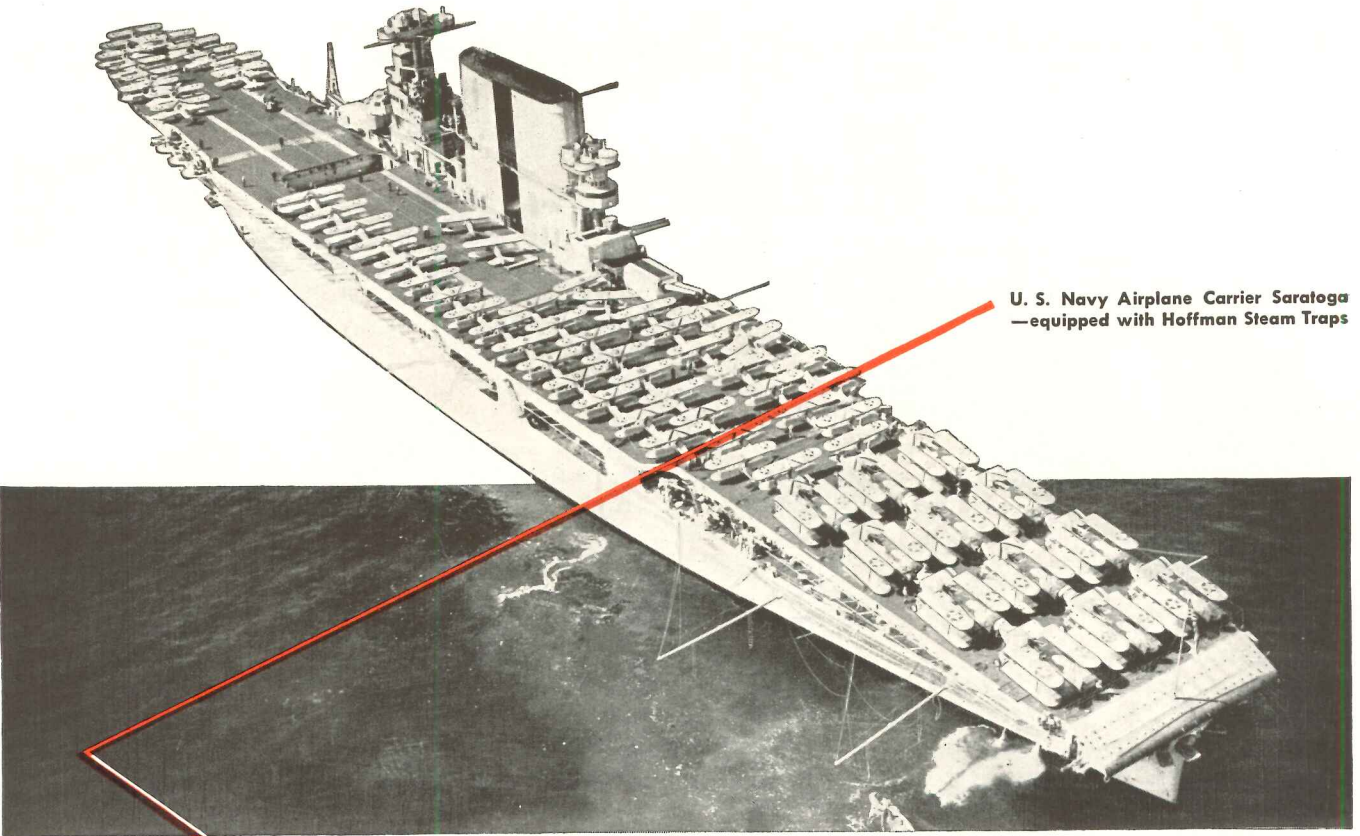
other by Hygrade—with every part performing in harmony with the rest.

So when you recommend Hygrade Fluorescent Lighting, you're not only doing right by your client—you're building your own name as well. If you haven't yet received our free file-size kit—containing catalogs, prices and complete technical specifications on all Hygrade Fluorescent Lighting Equipment—write today to Dept. AR 4.



HYGRADE SYLVANIA CORPORATION
SALEM, MASS.

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—equipped with Hoffman Steam Traps

HEATING *at Sea*

WHERE FUEL IS VITAL TO DEFENSE, HOFFMAN TRAPS CONSERVE IT

At sea, a vessel's range of usefulness is bounded strictly by its fuel supply. Full value from every ounce of steam, in these days, is a positive demand!

Any heating plant is sparing of fuel in direct proportion to the efficiency of its control equipment. That the Navy plane carrier, U. S. S. Saratoga, far-ranging unit of our first defense line, is equipped with Hoffman Steam Traps is a clue to anyone planning a new or modernized heating plant. For on land or sea, Hoffman Specialties assure full utilization of steam and conservation of precious fuel.

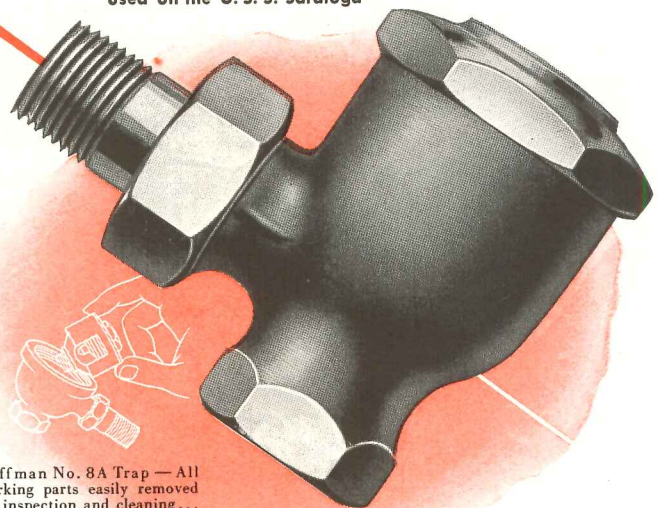
For a quarter century, heating engineers have specified Hoffman Products... because every refinement of design which adds to performance is included in them—at no greater cost!

Hoffman Valves, Traps and Pumps are thus a *quality, time-tested* line of products. Apply any standard of measurement you choose... efficient operation... dependability... service life... or what experienced heating men say of them, and you will have shown yourself why Hoffman is the choice in so many installations.

The Hoffman line is complete. From this single source you can satisfy every specialty requirement of a steam heating system... and receive that *extra* guarantee which comes only with undivided responsibility for satisfactory operation.

Write for information on Hoffman Controlled Steam or Hot Water Heating Systems and for counsel on heating problems. Hoffman Specialty Company, Dept. AR-4, Indianapolis, Ind.

Hoffman No. 8 Steam Trap as used on the U. S. S. Saratoga



Hoffman No. 8A Trap — All working parts easily removed for inspection and cleaning... replaceable without adjustment

HOFFMAN

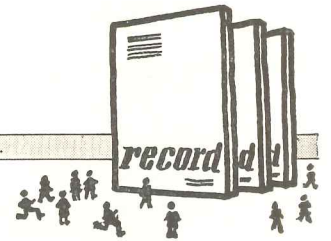
Controlled Heating

VALVES, TRAPS, VACUUM AND
CONDENSATION PUMPS, FORCED
HOT WATER HEATING SYSTEMS



STEAM / HOT WATER





Peaslee Urges Ban on Publication of Confusing ARP Information

A WAR measure to prevent the circulation of confusing misinformation on air raid protection methods is urged by *Howard W. Peaslee*, chairman of the Committee on Civilian Protection of AIA, who believes that architects and engineers should speak out frankly against published findings based on unsound assumptions.

"Why should architects and engineers defer to normal professional courtesies which stand in the way of frank speaking when loss of life may be the consequence?" Mr. Peaslee asked recently. "We haven't time to let errors find their ways to the surface. Such-and-such a book may be referred to as the 'bible' of air raid protection, but if a recognized authority knows that certain of its findings are based on assumptions that cannot be substantiated, such knowledge should be brought into the open.

"We need not discourage initiative or the desire to help," he added, "but we dare not permit errors to appear and remain uncorrected . . . We would not favor hard and fast technical censorship, but we could well support a system of clearance by which we could get the facts straight and clear on both sides of debatable questions. The technical professions entail a sweeping responsibility for life and death."

Post-war use for shelters

Mr. Peaslee's contention is that air raid shelters should be adaptable to use when the war is over. "With current experiments demonstrating the terrific effect of confined explosions," he commented, "it would seem that any discussion of underground shelters or basement retreats should be amply qualified by counterpoints which call attention to variables in soil conditions, to the need of extra heavy walls, to dangers from steam mains, oil storage tanks, electric circuits and sewer lines, and possible gas attacks."

Serious attention should be given to the erection in some cities of garage-

type shelters above ground, amortized by post-war use, this architect feels. Refuge retreats in the mountains, for evacuated populations, could be made peacetime summer camps, he suggests. "The cost of rustic camp construction would be but a fraction of the cost of buildings designed against fragments, blasts and fire. This is not a local problem nor is it one to be solved by traffic expeditors. It may be possible to evacuate expeditiously, but to receive and absorb large sections of the population is a major problem. State and interstate planning commissions should be at work on this problem and the most highly qualified planners brought into the picture."

Another category of shelters with post-war possibilities, offered by Mr. Peaslee, are shelters so designed, located and constructed that they form the ground floors of future houses.

ARP Course

DESIGN of bomb-resistant shelters, provision of protection for industrial equipment and design of industrial camouflage installations are subjects of a current lecture series provided free of charge for practicing architects and engineers at Pratt Institute, Brooklyn, N. Y. The roster of lecturers is headed by *James C. Boudreau*, director of the Pratt Art School and a former Air Corps officer, who instituted courses in aerial photography

Alumni Association of the American Academy in Rome gave first prize to this solution of the problem "A Railroad Station and Bus Terminal for Appleton, Wis."

and protective obscurement at Pratt, now an information center on the subject. The series, sponsored by the United States Office of Education, opens April 6.

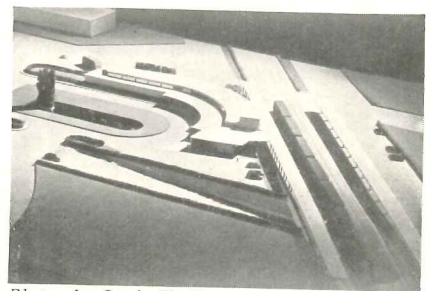
* * *

A LIMITED number of students will be accepted by the Department of Architecture, College of Fine Arts, Syracuse University, for a six-week Summer session to begin July 6. Courses to be offered include Elements of Design and Theory of Architecture, Introduction to Construction, Materials of Construction, Freehand Drawing, Architectural Design, and Shelter.

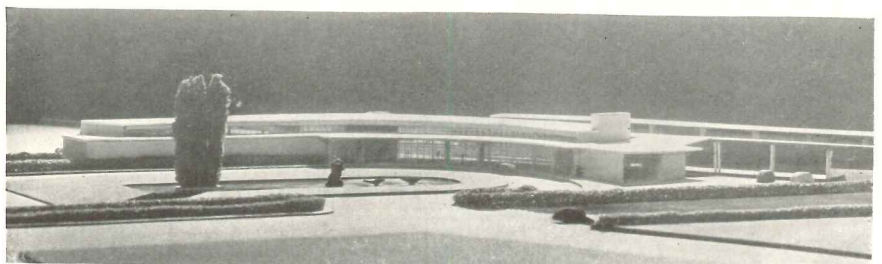
Awards

ALUMNI Association of the American Academy in Rome has announced the winners of its 16th annual collaborative competition for students of architecture, landscape architecture, painting and sculpture. The problem was "A Railroad Station and Bus Terminal for Appleton, Wis. First prize of \$200 went to a team from Cranbrook Academy of Art comprising *Ann Sirotenko* and *Stephen S. Page*, who collaborated as architect and landscape architect, *Jack Steele*, painter, and *Winslow Eaves*, sculptor. The \$100

(continued on page 12)



Photos by Louis H. Dreyer



Power generating plant of Philadelphia Electric Company, Chester, Pa. where Lupton Metal Windows are installed. Consulting Architect—Paul Cret; Engineers—United Engineers & Constructors, Inc.



In defense plants all over the country, Lupton Metal Windows and Doors provide the abundant daylighting and controlled ventilation so important in all-out production. Flexible in design, they meet every requirement of defense construction. Strong, trouble-free, weather-tight. And back of the Lupton line is an experience of more than thirty years in modern metal window design.

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Allegheny Ave. at Tulip St., Philadelphia, Pa.



LUPTON METAL WINDOWS

STEAM Heats America

Producing heat is only part of the heating job. Putting heat where you want it, when you want it is the big job—the job modern Steam Heating does best. See fact story below. For details write Warren Webster & Company, Camden, N. J.

DELAWARE HOSPITAL ENJOYS COMFORT OF MODERN STEAM HEAT

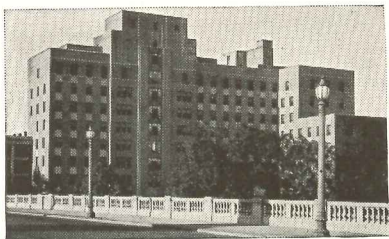
Webster Moderator System Gives Continuous, Even Heat in New 10-Story Hospital Building

MODERATE COST OF HEATING

Problem of Steam Distribution and Control Solved for Each of Three Hospital Units

Wilmington, Del.—The heating of the new Delaware Hospital presented a problem in steam distribution and control that led to the selection of a Webster Moderator System of Steam Heating for each of the three units in the beautiful U-shaped building. Carl A. Baehr, Chief Engineer, says:

"With the Webster Moderator System, we get the continuous, even heat so essential in hospital operation. Steam is produced in our oil-fired boilers. Webster Control holds steam consumption to a minimum so that the cost of this luxury heat is surprisingly low."



Unit No. 1, New Delaware Hospital
Wilmington, Delaware

Unit No. 1 of the new Delaware Hospital was occupied in 1940. It includes a 4-floor private pavilion, operating and delivery rooms, x-ray laboratory, physio-therapy department, offices and dining rooms.

Unit No. 2 of the new Delaware Hospital was occupied in 1941. It includes a 4-floor ward and clinic pavilion, emergency receiving department, business office, clinics, some private rooms, the central supply station and internes' quarters.

Unit No. 3 is the new Nurses' Home, a 6-story building, ready for occupancy in 1942.

There is a total of 17,695 sq. ft. of installed direct radiation. in Unit No. 1; 14,045 sq. ft. in Unit No. 2; and 8,500 sq. ft. in Unit No. 3.

Massena & duPont, Wilmington architects, designed the building. Jaros, Baum & Bolles, of New York, served as Consulting Engineers, designing the mechanical installation.

Turner Construction Co., of Philadelphia, was the general contractor, and Benjamin F. Shaw Co., of Wilmington, made the heating and piping installation.

WITH RECORD READERS

(continued from page 10)

second award was taken by *William D. Shay*, architect, *John Wright*, painter, and *Robert Spurgeon*, sculptor, from the Pennsylvania Academy of Fine Arts and the University of Pennsylvania.

Honorable mentions include: *Howard Cain*, architect, *Mary Lou Jones*, landscape architect, *Tony Vaiksnoras*, sculptor, and *Dean Ellis*, painter, from the Cleveland School of Architecture and Cleveland School of Art; and *George Felton*, architect, *Jean Craig*, painter, and *Stephanie Barys*, sculptor, from the Pennsylvania Academy of Fine Arts and University of Pennsylvania.

* * *

To STUDENTS from Iowa State College went first, second and third prizes in the Annual Students' Bridge Design Competition of the American Institute of Steel Construction. First prize of \$200 was awarded to *Everett Thorbrogger*, second prize of \$100 to *R. Kenneth Kendall*, and third prize, \$50, to *Carlton Mueller*. A total of 59 students submitted solutions to the problem—a steel bridge to carry a highway over a river.

Competition Deferred

IN THE INTEREST of conserving critical materials, the Airport Authority of Fitchburg, Mass., has acceded to the request of WPB and deferred for the present construction of the proposed Administration Building at the Fitchburg Airport. Competition for the building was announced in the March issue of the RECORD.

Competition

THE Liturgical Arts Society has announced to 76 American sculptors that on the basis of photographs of their work submitted last Fall they have been selected to compete for a statue of Christ. The statue is to form the main element in the architectural design of the facade of the new building, now completed, which will house the national headquarters of the National Catholic Welfare Conference in Washington, D. C. The final statue

will be of bronze, 15 feet high. In addition to a prize of \$1,500, one of \$500 and five additional prizes of \$200 each, the Society offers the winner a contract to make a finished full-size model of the statue, for which he will receive \$6,000. Judges include: *Frederick Vernon Murphy*, architect of the building, *Barry Byrne*, architect, *Lee Lawrie*, *C. Paul Jennewein*, *Gaetano Cecere*, sculptors.

* * *

AMERICAN Institute of Steel Construction, in accordance with its custom of 14 years, will award a plaque to the most beautiful steel bridges built during 1941. Designs which a jury of architects and engineers consider the most aesthetic solutions among monumental bridges, medium-sized bridges, bridges of short span and movable bridges will be selected from photographs, and builders and owners of such structures are asked to submit photographs not later than May 1 to the American Institute of Steel Construction, 101 Park Avenue, New York City.

Fellowships

UNIVERSITY of Pennsylvania School of Fine Arts announces the Theophilus Parsons Chandler Fellowships in Architecture and the Joseph V. Horn Fellowship in Architecture—to provide advanced study for graduates of approved architectural schools — and the Albert Kahn Scholarship in Industrial Architecture, a part-tuition graduate or undergraduate award. Applications must be made by letter to the Chairman of the Committee on Prizes and Scholarships by April 15.

Personal

EUGENE WESTON of Los Angeles has been elected a director of AIA succeeding *Gordon B. Kaufmann*, who resigned. Mr. Weston will direct the work of the Institute Chapters in Arizona, California, Nevada and Hawaii.

* * *

JOHN D. ROCKEFELLER, JR., has received the second Medal of Honor for City Planning, awarded jointly by

(continued on page 14)



BIRTH OF AN ENEMY

Today, even the smallest spark is a potential enemy.

For, today, once fire is born in any building, it requires but a few minutes' headway to destroy irreplaceable materials or equipment — literally to sabotage defense effort.

That is why it is all-important to equip your buildings with sprinkler fire protection systems that automatically *stop fire at its source*. Fire underwriters the country over can testify that no system will accomplish this more positively and reliably than a Grinnell Automatic Sprinkler System!

Make this vital fire protection a blended part of your original designs. Over 50 years of intensive fire

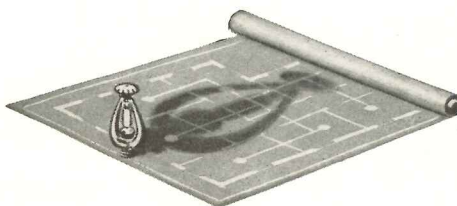
protection engineering enables Grinnell engineers to assist you with complete understanding of both your mechanical and your decorative requirements. Grinnell Systems have been installed in properties totaling over fifty billion dollars in value.

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A BLENDED PART OF YOUR BUILDING'S DESIGN



Provide **ADEQUATE WIRING**
Save **WAR MATERIALS**
Specify **THESE HAZARD WIRES**

HAZARD WATERTITE --12--RW--600V--HAZARD

FOR WET LOCATION WIRING... specify Hazard Watertite, Type RW. Its submarine rubber insulation requires no lead sheath protection and saves this vital material. Meets all code requirements. Available in all sizes. Ask for Bulletin 168A.

HAZAKROME --12--SN--600V--SYNTHETIC

FOR REWIRING . . . specify Hazard small diameter wire, Type SN. It permits more and larger capacity wires to be installed in original conduit, eliminating the need for new conduit and thus save steel. Type SN is the only small diameter wire available in sizes up to 4/0. Ask for Bulletin 200.

HAZACODE --12--R--600V--HAZARD

FOR NEW WIRING . . . for the duration use Type R - (Code Grade) instead of the higher grades, Types RP and RH, rubber insulated wire. It contains less rubber, thereby conserving this precious material. Hazacode Wire meets all requirements of the National Board of Fire Underwriters for general wiring. Available in all sizes.

All of these wires are fully approved by the National Electrical Code and are carefully built to deliver the continuous, trouble-free operation you and your clients want. Call on our experienced engineering department for assistance in planning jobs these days. It is there to help without obligation.

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HAZARD
 Building Wires for Every Purpose

WITH RECORD READERS

(continued from page 12)

the New York and Brooklyn Chapters of AIA, New York Chapter of the American Society of Landscape Architects and the Metropolitan Section of the American Society of Civil Engineers. Presenting the medal, on which was inscribed "For distinguished contribution to the Plan of the City of New York," *Harold M. Lewis* of ASCE cited specific projects in the metropolitan area which Mr. Rockefeller had "initiated or made possible." They were: Palisades Interstate Park, Fort Tryon Park, The Cloisters, Riverside Church, International House, Rockefeller Center and "several model housing developments."

* * *

JOHN SCHOFIELD has been appointed Chief Architect of the Canadian National Railways System, with headquarters in Montreal. Mr. Schofield has spent 35 years with Canadian National Railways. He was made Architect in 1923, and with formation of Trans-Canada Air Lines in 1937 was also named architect for that organization. In addition to the railway stations, erection shops and other quarters to his credit, Mr. Schofield designed the Charlottetown, P. E. I. Hotel, Jasper Park Lodge, and Minaki Lodge in the Lake of the Woods district.

Died

CLARENCE HOWARD BLACKALL, 85, in Boston. Credited with erecting the first steel frame building in Boston, Mr. Blackall specialized in theaters, hotels, office buildings. He designed Tremont Temple and the Copley Plaza. A Fellow of AIA, he was a founder and first president of the Boston Architectural Club.

Exhibitions

WARTIME HOUSING is the subject of an exhibition which will open April 22 at the Museum of Modern Art, New York City, with the collaboration of the National Committee on the Housing Emergency. The exhibition, to run through July 19, is being planned to show graphically and

dramatically "why adequate housing, designed by the foremost modern architects, is necessary to help America win the war."

Medal to Kahn

FOR the most distinguished work in defense plant design which he and his architect-engineer organization is carrying out throughout the country, *Albert Kahn* of Detroit has been awarded the Medal of the Philadelphia Chapter of AIA. Much of Mr. Kahn's work has appeared in the RECORD: one of his war plants on pages 44 and 45 last month.

Change of Address

OTTO H. LANG, pioneer architect of Dallas, Tex., announces the retirement from business of his firm, Lang & Mitchell, and his association in an advisory and consulting capacity with *Grayson Gill*, local architect and engineer. Plan files and good will of Lang & Mitchell have been transferred to Mr. Gill. Mr. Lang established his partnership with Frank O. Mitchell, now retired, in 1905. The firm designed many of the large buildings throughout the state and more than 27 office buildings on the Dallas skyline.

Correction

CARTER-HALLS-ALDINGER, builders of the all-wood Canadian aircraft plant described in the January RECORD (page 74) have called our attention to several points which need clarification:

1. Chief engineer and designer on the job was *R. C. Pybus*. Mr. *Coville* acted as consulting architect.
2. The trusses were preframed before treated, using a total of 72 wood trusses and 12 steel trusses.
3. The building was painted with one coat of pigmented synthetic resin sealer by brush and one coat of fire-retardent synthetic resinous-bound plastic paint by brush. The third coat was not applied at the time of the fire mentioned in the story.
4. Treated plywood contributed materially to retarding the fire spread.

What steels to use in defense housing

... to reduce costs ... to add durability

KITCHEN SINK, BATH-TUB, LAVATORY U-S-S Vitrenamel formed metal.

ROOFING U-S-S Terne Plate with Copper Steel base.

GUTTERS and DOWN-SPOUTS U-S-S Paintbond or Dul-Kote, Copper Steel galvanized or black (if necessary).

WINDOWS U-S-S Plain or Copper Steel Bonderized.

AREA WALLS U-S-S Galvanized Copper Steel.

COAL CHUTE U-S-S Copper Steel.

FLASHINGS U-S-S Terne Plate, Paintbond, Dul-Kote, Plain Galvanized or Copper Steel painted.

EXPANDED METAL LATH U-S-S Plain Steel.

CABINETS U-S-S Plain Steel with baked enamel finish.

DUCTS U-S-S Galvanized Copper Steel or black sheets painted.

WATER HEATER TANK U-S-S Galvanized Copper Steel or Plain Steel lined with a special cement.

FURNACE Firebox U-S-S Copper Steel. Case Plain Steel.

MANY types of steel are being made that actually double, triple, or quadruple the life of products made from them. Others permit lighter construction of sinks, lavatories, bathtubs, furnaces, and thus save much needed iron ore.

Properties and advantages of various U-S-S Steels

- 1. U-S-S Copper Steel**—2 to 3 times the corrosion resistance of plain steel. Low cost. Can be used black or galvanized for gutters, downspouts, valleys, flashings, duct work, coal chutes, garbage receptacles.
- 2. U-S-S Copper Steel for furnaces** — Saves considerable metal, has high resistance to smoke corrosion, maintains a tight fire box, gives a long, satisfactory service. Low cost.
- 3. U-S-S Copper Steel for hot water tanks** — Galvanized or

plain steel, lined with cement. The cement-lined tank is rapidly replacing alloyed metals now difficult to get.

4. U-S-S Paintbond—A galvanized Bonderized Steel. Permits immediate painting. Paint holds tighter, lasts longer. Highly recommended for all outdoor uses, such as gutters, downspouts, complete metal buildings for army camps, airplane hangars, air-raid shelters, industrial plants.

In the South and West, U-S-S Dul-Kote with similar properties to Paintbond is available. Only the method of manufacture is different.

5. U-S-S Vitrenamel — For formed bathtubs, lavatories, sinks. Takes a superior porcelain finish, decreases the amount of metal in the fixtures, makes dimensions more uniform for mass housing projects, equals the life of other porcelain enamel. Lower cost.

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Scully Steel Products Company, Chicago, Warehouse Distributors

United States Steel Export Company, New York



UNITED STATES STEEL



By RAYMOND R. DICKEY

HERBERT EMMERICH APPOINTED NEW HEAD OF FPHA

Shire Slated for New Post . . . Architect-Engineer-Contractor Mergers Encouraged . . . Cost-Plus Contractors . . . Cuts in Building Materials . . . Public Works Reserve . . . Critical List Revision

THE PRIMARY TOPIC of conversation in Washington housing circles these days is what the new National Housing Agency will look like. It is too early yet to tell what the eventual set-up of the National Housing Agency will be. However, Administrator Blandford has said privately that he will not make blanket changes in personnel or policy immediately. His technique in filling any positions will probably be to infiltrate the old organizations which NHA consolidates with hand-picked men after careful study.

So far the major move in this direction has been placing Herbert Emmerich as head of the Federal Public Housing Authority, replacing Acting Commissioner Leon Keyserling, who went to the post of General Counsel for the NHA.

Mr. Emmerich has a long career in public administration and housing. In the 1920's Mr. Emmerich was a pioneer in the development of limited dividend corporation projects in the New York area. During the earlier days of the Roosevelt administration, he was Executive Assistant to the head of the old Farm Credit Administration. Just prior to his going to the WPB as Executive Secretary, from which job he was appointed by Mr. Blandford as Federal Public Housing Authority Commissioner, Mr. Emmerich was Assistant Director of the Public Administration Clearing House. In that position he was responsible for studies and surveys in public administration, with particular emphasis on the Federal picture.

As yet no public statement as to his policy has been forthcoming from the new commissioner. However, it is safe to say that he was promised a fairly free hand by the National Housing Agency Administrator, else he would not have left the War Production Board. Donald Nelson, WPB chief, regarded Emmerich very highly and did not want to let him go until he was assured that his position as new

commissioner would benefit the war effort more than his job as top administrative officer in WPB.

Straws in the wind indicate that Mr. Blandford's next major policy move will probably be creation of an overall technical division that would cut out the overlapping of the technical divisions of the old FHA, PBA, FWA, etc., which are still functioning. If this is done there is a strong possibility that A.C. Shire, former technical director of USHA, will take a policy-making post in the new NHA. Mr. Shire and Mr. Emmerich have seen eye-to-eye on a number of occasions and it is believed in housing agency circles here that if such a move is made Mr. Emmerich may push for Mr. Shire's appointment.

The elevation of Mr. Emmerich will probably see the demountable and prefabrication picture develop toward an increased use of this type of housing. Leon Keyserling, former Acting Commissioner of the FPFA, was not a strong advocate of the prefabrication idea in housing. A former secretary to Senator Robert Wagner of New York, Mr. Keyserling apparently favored the more permanent type of dwelling which, though sometimes slower in erection, would possibly have a greater resale value after the war.

Army's new architect-engineer contract

Ever since a scathing denunciation by the Truman Committee of excessive costs in cantonment and other construction done on a cost-plus-fixed-fee basis, the War Department has been trying to reestablish a competitive bidding basis on war construction. Its latest attempt has been to break up the bigger jobs through the medium of "architect-engineer-manager contracts." The War Department has recently started to use this type of contract on practically all of its big construction jobs for depots, munitions and

plants, almost to the exclusion of every other type.

Here's the way it works: The War Department casts around for a firm capable of doing the architectural, engineering and construction works. In the majority of instances the Department has been unable to find such firms in sufficient numbers to carry out all of its needed construction. Architect-engineering firms, therefore, are now being asked by the War Department and given every encouragement to make a formal or informal merger with contractors so that they can bid on A-E-M contracts.

Reasoning behind form

The basis of the reasoning behind the new form of contract is that the Department feels costs can be estimated to a sufficient degree of accuracy on about 50 per cent of the work on any contract, no matter how big. That being true, it feels that a contractor shouldn't be getting a fixed fee for this work. So it pays a fixed fee only on that part of the job where costs cannot be estimated accurately and where, because of that fact, a contractor might come out very much in the red on a lump sum contract. Thus, under the A-E-M contract, as soon as it is awarded the architect-engineering firm handling it starts in on the difficult planning and designing part of the job immediately on a fee basis. Other sections of the firm work on other parts of the job in a piece-by-piece fashion. When any piece is completed they turn blueprints on it over to the Corps of Engineers, which immediately awards a separate lump-sum contract on each portion as it is completed. A contractor getting one of these "part-project" awards must work under the supervision and direction of the firm handling the A-E-M contract. This, in effect, makes the smaller firm a sub-contractor. Naturally, since it doesn't do all the work, the A-E-M firm gets a smaller fee.

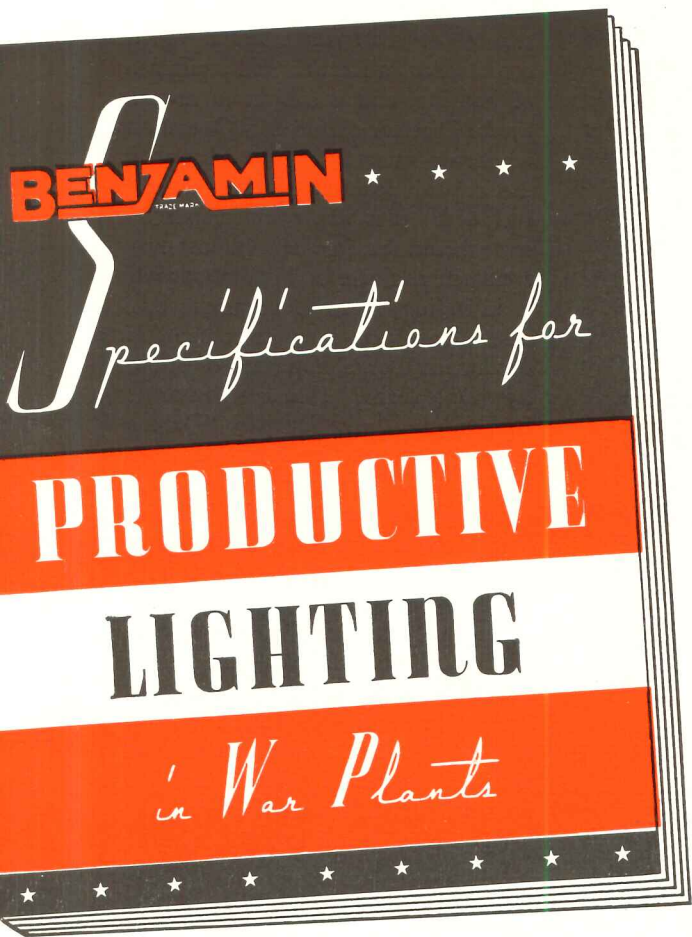
With the increase in the use of this type of contract, the work should be spread among considerably more firms and give more people an opportunity to get in on war construction.

(continued on page 18)

Ready May First!

NEW WAR EDITION

COMPILED TO MEET THE NEED FOR CONCISE, UP-TO-MINUTE DATA RELATING TO THE EMPLOYMENT OF BETTER LIGHTING AS A WAR PRODUCTION TOOL!



More Production.. Less Fatigue.. Greater Precision.. Less Rejects.. Fewer Accidents.. and Highest Employee Morale DEPEND ON GEARING THE LIGHTING TO WAR PRODUCTION!

● This new manual tells you how Benjamin Lighting Specifications can be applied today . . . under today's conditions . . . to meet today's production problems . . . today's need for greater utilization of existing floor space . . . today's problems of installation!

An Up-To-Minute Lighting Guide

Today, as never before, management must utilize lighting as a production tool. The lighting problems involved are many, but whatever they are and however they may be complicated by the problems of cost, installation, deadlines and the unavailability of certain types of lighting units, there is a way to solve each and every one of them.

How This Manual Will Help

Purpose of this manual is to provide you with up-to-the-minute information on the elements involved in securing Better Lighting for War Production . . . to show you how to analyze your lighting problems . . . and to provide you with a practical guide to their solution.

20 Ready-To-Use Solutions

In this manual are twenty typical lighting problem solutions based upon Benjamin Specifications for Productive Lighting in War Industries! These twenty problems are illustrative of the problems most frequently encountered by the Benjamin Engineering Department. The specifications given for their solution are typical of those which Benjamin Engineers are employing every day to solve similar problems on a thousand industrial war fronts . . . from the hazardous locations of a powder plant . . . to the precision inspection line of an instrument factory.

The Lighting Manual for Everyone!

This manual is written for the busy industrial executive, engineer, foreman, architect and all others concerned with the planning, purchasing and installation of industrial lighting equipment in plants engaged in essential war or civilian production. Your copy is ready for you! Just mail the coupon or address the Benjamin Electric Mfg. Co., Dept. B1, Des Plaines, Illinois.

This Manual Brings You Up-to-Date Data on the Use of Lighting as a Production Tool!

Contains pages on how to approach the lighting problem, how to analyze the seeing task, how to analyze the factors involved in proper equipment selection . . . also how to determine the proper amount of footcandles with special up-to-minute footcandle recommendation tables as guides.

Here are a few of the twenty problem solutions given in this Manual

How to Provide Efficient High Level Fluorescent Lighting for Large Areas.

General Overhead Lighting for High Bay Erecting Shops, Steel Mills, Foundries.

Protecting Material in Open Vats from Contamination in Case of Broken Lamps.

Fluorescent Lighting for Areas Requiring Moderately High Intensities.

High Level Local Lighting over Extended Areas of Inspection or Assembly Benches.

Safe Lighting in Atmospheres Containing Highly Flammable and Explosive Vapors.

Glassteel Diffuser General Lighting of Soft, Well Diffused, Glareless Quality.

Local Lighting of Spray Booths.

Lighting in Locations with Deteriorating Effects of Steam Vapors and Moisture.



WORLD LEADER IN INDUSTRIAL LIGHTING EQUIPMENT

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Please reserve and send me, upon publication May 1, without cost or obligation of any kind, a copy of Benjamin Specifications for Productive Lighting in War Plants.

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(continued from page 16)



Cost-plus contractors

The Comptroller-General on March 17 made a ruling which may seriously affect many building contractors working on Government jobs. In many cases it has been the practice for contractors working on a cost-plus-fixed-fee basis to subcontract certain technical work on a cost-plus-a-percentage-of-cost basis. The Comptroller-General has just ruled that when a prime contractor contracts on a cost-plus-percentage-of-cost basis he is violating Federal statutes which prohibit such contracts (Act of July 2, 1940) and may not be reimbursed for any funds he has paid to his subcontractor.

As an example, assume that a prime contractor on a building project subcontracted the site improvement work to a landscaping firm on a cost-plus-percentage-of-cost basis. Assume further that the landscaping firm had an actual loss of \$20,000 for site improvement and that it was working on a basis of 10 per cent of the cost. In other words, their fee would be \$2,000, making a total of \$22,000 for site improvement work. Under the Comptroller-General's ruling the Government could not reimburse the prime contractor this \$22,000 because it was done on a cost-plus-percentage-of-cost basis—despite the fact that such site improvement was necessary and was definitely a cost involved in constructing the entire project.

Cuts in building materials

Because of *L'Affaire Guthrie* there's a lot of agitation which looks as if it could be successful in sharply cutting production of building materials to go into non-defense housing. Latest furor has been the alleged action of the Plumbing and Heating Branch of WPB in failing to restrict production in the industries under its jurisdiction and instead granting wide-spread priority ratings to oil burner and coal stoker manufacturers for the first quarter of 1942 equal to about one-half of their normal production. W. Walter Timmis, head of the Plumbing Branch, has defended his action by saying that due to priorities at the raw materials level the industry has been curtailed to such a degree that priority

ratings permitting manufacturers to obtain necessary supplies have only been sufficient to equip defense housing projects. Despite this, there are several orders now in the works which will sharply curtail plumbing and heating supplies.

On a broader scale issuance of the construction "freezing" order which has been pending for two or three months is again reported to be imminent. John L. Haynes, chief of the building materials branch of WPB, has indicated that the new order will not be as drastic as most everybody has believed. Apparently the reason is that as supplies get picked off there won't be much need for an order prohibiting non-essential construction.

In essence, all the order will do will be to formalize a system now being used informally, which forbids priority assistance on all non-essential construction, including private dwellings outside defense housing areas. The new order will permit necessary maintenance and repairs to be made and will give a special preference to farmers who need the materials for homes and barns. Under the order essential public utilities will continue to get sufficiently high allotments of materials to maintain or even increase their necessary services.

Public Works Reserve

The Public Works Reserve bill, which was voted down in the House, may be revived in the Senate. A lot of pressure is being put on senators now by the National Resources Planning Board on the theory that Public Works Reserve planning and operations are necessary to cushion a post-war economic shock. The Republican senatorial contingent will probably fight the measure almost *en bloc*. An argument that is being used by proponents to get it through is that it is merely an authorization bill—that is, a bill that would set up a division in one of the existing agencies. The proponents argue that no money would be appropriated by the bill, that is, it doesn't cost anything. Of course, in a majority of instances, after a new division in an agency has been set up, the appropriation bill follows close on

its heels. So the real fight will be whether the authorization gets through. If it does, the appropriation is almost sure to follow.

Priorities and Defense Housing Critical List Revision

The new "Defense Housing Critical List," effective February 24, is now available. The list is based upon the critical positions, at the time of issuance, of materials essential to the construction, allocation and equipment of housing, and is subject to revision by the Director of Industry Operations whenever warranted by a change in the critical position of the materials included. It is very wide in its scope and should be in the files of every architect, engineer and contractor who is intending to do Government business. To obtain it, write to the War Production Board, Division of Industry Operations, Housing Priorities Branch, and ask for the "Defense Housing Critical List, Effective February 24, 1942" and any later revisions.

Along this same line, the WPB recently granted priority assistance on an additional 350,000 defense housing units, of which 150,000 are to be Federally built and 200,000 privately financed. This doubles the original program announced last September 19. Preference ratings to enable contractors to get materials for this program will be assigned by WPB and any houses built with such priority assistance will be limited to a \$50 monthly rental and a maximum sale price of \$6,000. At least 100,000 of the privately financed dwellings will be for rent. The cost of the units will not exceed 20 per cent of the workers' income on the basis of their estimated annual earnings. Defense workers will get a "priority" on the units for at least 30 days after completion. The rental set on the houses must be kept in effect for at least one year. There are various provisions made for crediting rents against an option to buy.

Subcontractors commonly making minor changes in material which they install in defense housing projects are now allowed to extend ratings under the P-55 amended order, but suppliers who change the material they furnish

(continued on page 22)



It's up to American Industry

From all over the world, frightened, helpless eyes peer through the mists of war toward American smokestacks. *Will children die of hunger? Will rifles in men's hands have bullets? Will the air above them swarm with friendly planes . . . or hostile?* It's up to American industry.

Because Koppers cuts across the whole American industrial scene like a common denominator, every new job for American industry puts fresh responsibilities on Koppers and some Koppers product.

Ships gliding down the ways with the hopes of civilization clinging about their

bows, have been speeded into the service with bronze propellers from Koppers foundries. The plane soaring protectively above you probably has Koppers piston rings. The carriages of the anti-aircraft guns that rumble comfortingly past on their way to the coast were possibly built by Koppers.

Beneath all these, at the very roots of almost every one of the herculean tasks American industry is performing, is that great storehouse of energy—*coal*.

Koppers is mining vast quantities of coal for fuel. Koppers coke ovens are transforming much of that coal into coke, gas and the

flood of other products which eventually mean munitions, drugs, plastics, synthetics, rubber and other indispensables.

With the lives of boys from your home and our homes at stake . . . and the hopes of engulfed nations in the balance . . . every word from an American factory becomes the world's greatest news story. It's up to American industry. Koppers Company, Pittsburgh, Pa.

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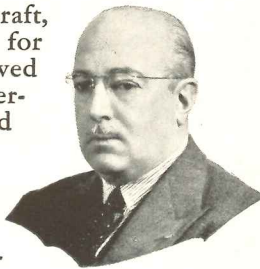
THE INDUSTRY THAT SERVES ALL INDUSTRY

FACTORY PLANNING IN ENGLAND TODAY

calls for GLASS

C. Howard Crane, Noted Architect, Gives This Authentic Answer On The Problem Of War Plant Design.

Architect Crane—who designs aircraft, munitions and other industrial plants for the British Government—recently arrived in this country for a brief visit. To American architects he brings the latest and most authoritative data on war plant design to come from the embattled British Isles. His remarks are of vital importance to every architect engaged in designing plants for war-time production—and after.



Architect Crane says: "Very few windowless buildings are being constructed. We have found them too expensive to build and operate. We keep in mind that such construction, for one thing, necessitates air ducts, fans and other mechanical equipment requiring metals that are more urgently needed for other defense purposes.

"Solid walls are particularly dangerous under bombing conditions and insofar as blackout is concerned, we have found a much more efficient method of construction.

"First of all, exterior walls to a height of eight feet are of blast-wall design, 14" thick. Above that height, regular steel sash is used in the walls. Temporarily, about one third of the sash area is being glazed, the remainder of the panes being filled in with asbestos, so that after the war these panels can be removed and glazed, and the building used in a normal manner.

"We want to use natural daylight and air as much as possible. Too, in case of bombing, such walls are more quickly repaired and, of course, less costly.

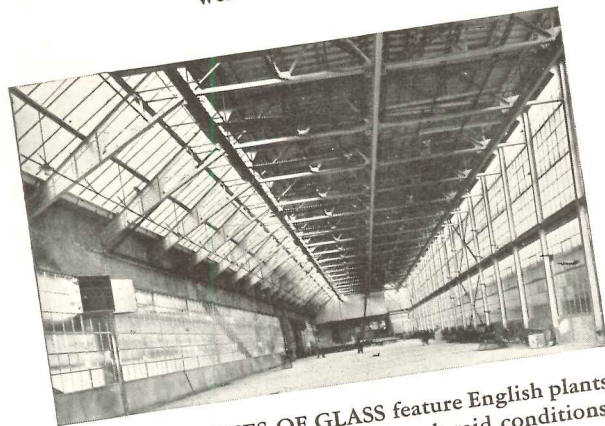
"The most effective blackout method is accomplished by painting the glass in fixed sash wall areas black. Windows, to assure light and ventilation during the day, are not painted but are provided with black curtains.

"There is a visible trend here to a type of building we feel sure is the best under all circumstances—the modern skeleton frame, either steel or concrete, with great windowed areas. . . While war is a horrible thing, it should serve to create a world of beautiful, completely utilitarian types of buildings everywhere."

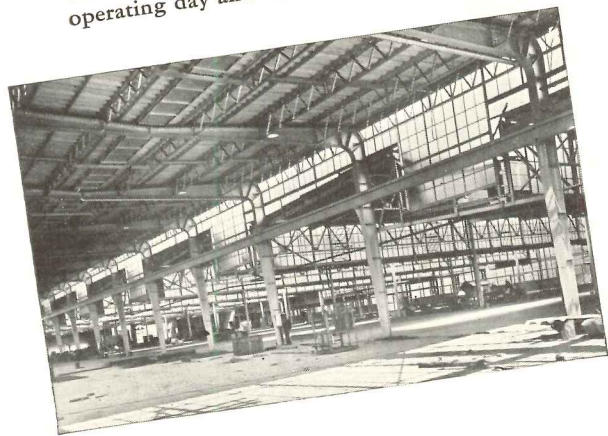
Libbey-Owens-Ford Glass Company, 1326 Nicholas Building, Toledo, Ohio.



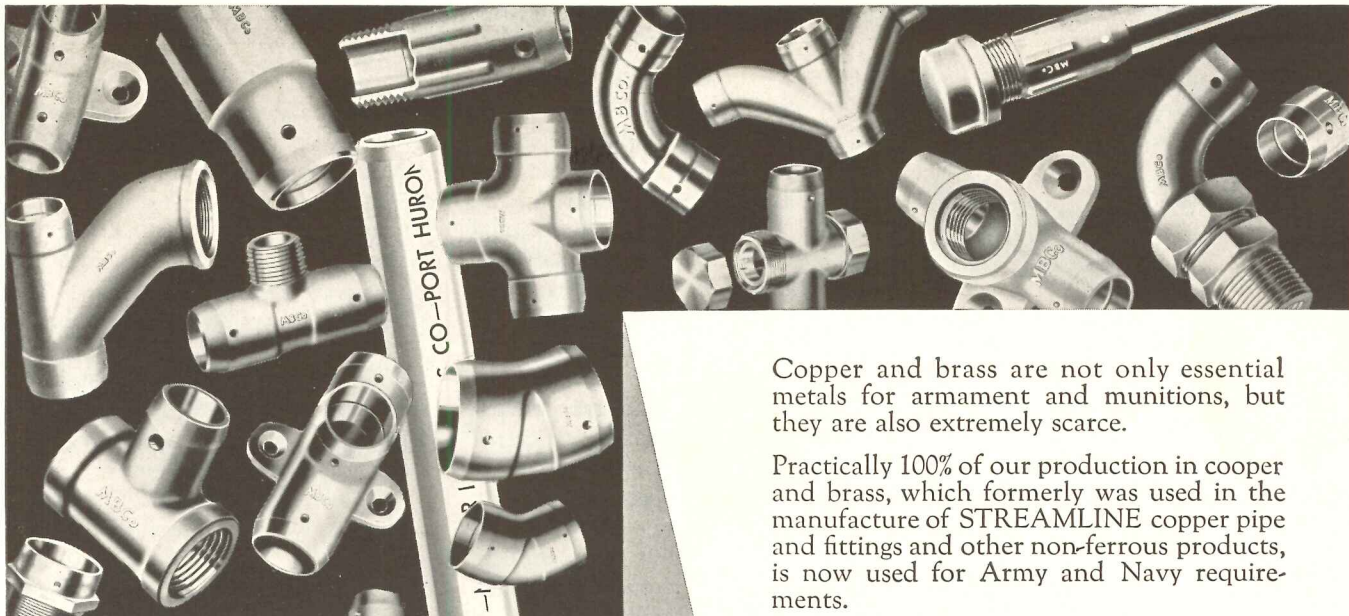
THESE NEW AIRCRAFT FACTORIES "somewhere in England" are typical, English wartime plants. All were designed by Mr. Crane.



GREAT EXPANSES OF GLASS feature English plants operating day and night under bomb-raid conditions.



LIBBEY · OWENS · FORD GLASS COMPANY
Quality Flat Glass Products



Our First Job to do

Copper and brass are not only essential metals for armament and munitions, but they are also extremely scarce.

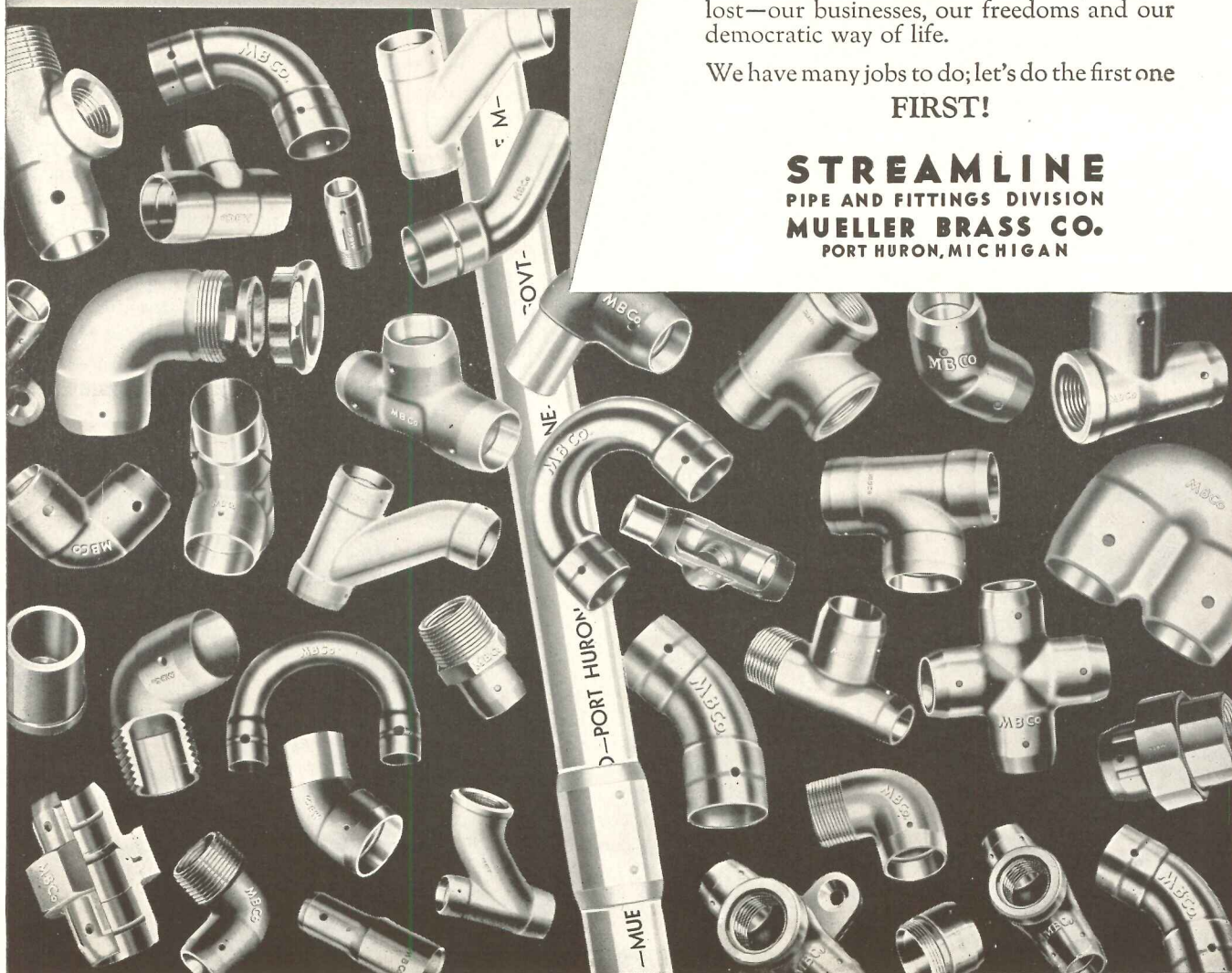
Practically 100% of our production in copper and brass, which formerly was used in the manufacture of STREAMLINE copper pipe and fittings and other non-ferrous products, is now used for Army and Navy requirements.

We Americans, no matter in what walk of life, realize that armament work must come first. IT MUST TAKE PRECEDENCE OVER EVERYTHING ELSE IF FOR NO OTHER REASON THAN THIS—THAT WE MAY PRESERVE FOR THE FUTURE THOSE VERY BUSINESSES OF WHICH WE ARE NOW TEMPORARILY DEPRIVED. If we fail, everything is lost—our businesses, our freedoms and our democratic way of life.

We have many jobs to do; let's do the first one

FIRST!

STREAMLINE
 PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
 PORT HURON, MICHIGAN



NEWS FROM WASHINGTON

(continued from page 18)

in any way cannot extend the rating under the order. Builders, subcontractors or suppliers, if they want to use the preference rating on defense housing material, should serve a copy of the order upon each subcontractor or supplier with whom they have placed contracts or purchase orders and endorse each purchase order or contract with their certifications. Builders or subcontractors can only extend the rating by having such extension countersigned by an FHA official. Suppliers entitled to extend the rating may do so without countersignature. It is important to know that suppliers and subcontractors may extend ratings even after the expiration date of a particular priorities order under which the ratings were assigned if the ratings, being extended, were applied by the builder prior to the expiration date.

On P-19-h builders may extend preference ratings by simple endorsement on their purchase orders containing the serial number of the project. Suppliers may extend preference ratings under P-19-h by the same procedure, but they must first execute and file a special acceptance with WPB. Only one filing of the acceptance is necessary; afterwards the supplier may extend any rating assigned by P-19-h regardless of the serial number. Reference to the Priorities Critical List has been eliminated, but generally only those materials which will be physically incorporated in the rated project may be secured by use of the assigned ratings under P-19-h.

Where wholesaler fits in

One of the biggest unsolved problems in priorities has been the place where the distributor, wholesaler or jobber could fit into the priorities system. Up until recently they haven't been able to get a priority because since their products were going into hands of retailers this made it impossible to show any connection between the distribution of small units to retailers and the war effort.

Now a plan has been devised that gives them a definite status in the system. Application for the new distributors' plan, which will go into effect shortly after April 1, will be made on the new form, PD-1X, which requires

information regarding sales and inventories on the type of material for which ratings are being sought, percentage of materials being shipped out of stock on rated orders during the preceding month, and other information as to the supply picture. The plan will be applicable in the building supply business only for the following type of supplies: builders' hardware, construction, plumbing and heating, refrigeration, restaurant equipment, welding and cutting.

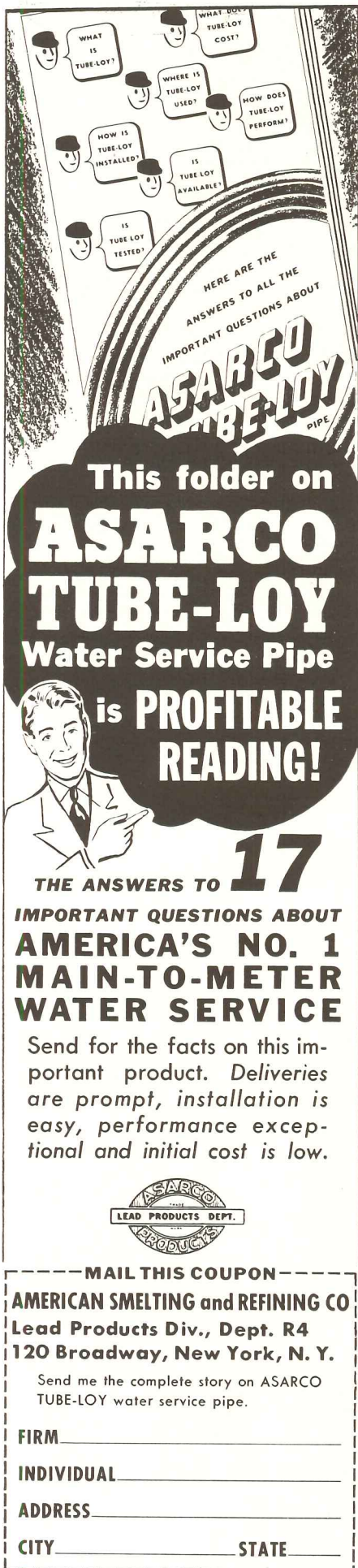
The new form won't cover all situations in which distributors may find themselves. For example, when a wholesale house fills an order from a retailer calling for a substantial amount of material of the same type, he should demand a rating from the retailer and extend that rating to his producer instead of applying for a new rating.

How it would work

Generally, here's how PD-1X would work: A distributor of hardware supplies to retailers in a defense housing critical area may receive a large number of small orders for hammers and other hand tools which will be used by workmen engaged in defense housing construction. But it would be difficult or impossible for the retailer to furnish him with a priority rating on each order. In such cases a distributor could apply for priority assistance to replenish his inventory.

As material gets shorter and shorter, the jobs of the architect, engineer and contractor get more and more difficult. All types of metal are becoming increasingly scarce. A special bulletin which the Army developed for advice of its contracting engineers lists a number of raw materials in order of their relative scarcity: rubber and tin; aluminum and magnesium; nickel and nickel alloy; chromium; copper; zinc and cadmium; lead; steel and iron.

It is equally interesting to note that the Building Materials Branch of WPB called a meeting of the industries on March 19 to discuss the curtailment of metal lath production to save sheet steel. An order is under consideration which would reduce to a substantial degree the production of metal bases in plaster or stucco construction and accessories of such bases.



WHAT IS TUBE-LOY?
 WHERE IS TUBE-LOY USED?
 HOW IS TUBE-LOY INSTALLED?
 IS TUBE-LOY TESTED?
 WHAT DOES TUBE-LOY COST?
 HOW DOES TUBE-LOY PERFORM?
 IS TUBE-LOY AVAILABLE?


HERE ARE THE ANSWERS TO ALL THE IMPORTANT QUESTIONS ABOUT ASARCO TUBE-LOY PIPE

This folder on ASARCO TUBE-LOY Water Service Pipe is PROFITABLE READING!

17
 THE ANSWERS TO

IMPORTANT QUESTIONS ABOUT AMERICA'S NO. 1 MAIN-TO-METER WATER SERVICE

Send for the facts on this important product. Deliveries are prompt, installation is easy, performance exceptional and initial cost is low.



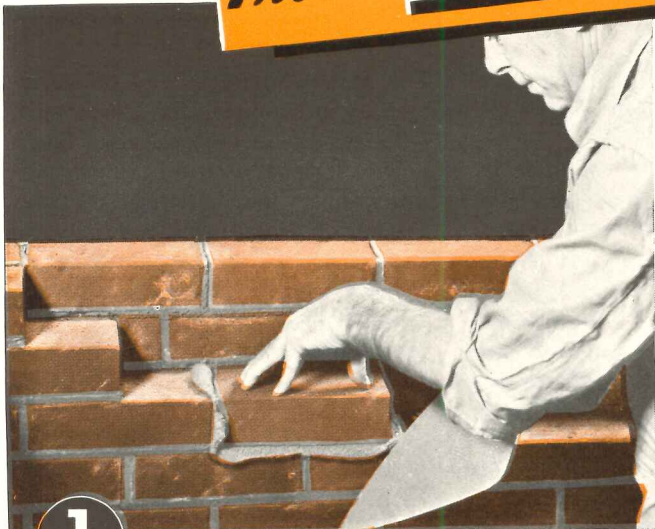
MAIL THIS COUPON

AMERICAN SMELTING and REFINING CO
 Lead Products Div., Dept. R4
 120 Broadway, New York, N. Y.

Send me the complete story on ASARCO TUBE-LOY water service pipe.

FIRM _____
 INDIVIDUAL _____
 ADDRESS _____
 CITY _____ STATE _____

MAKE THIS TEST -
Prove **BRIXMENT is BEST!**



1 Take some Brixment mortar and some 50-50 lime and cement mortar. Try shoving a full head-joint with each mortar. You'll find that with the Brixment mortar



(1), it is much easier to shove the brick accurately into place, with a full head-joint, than it is to do the same thing with the other mortar (2).

BRIXMENT *Makes a More* **PLASTIC Mortar!**

One of the most important characteristics any mortar can possess is *plasticity*. Within certain limits, plasticity is the greatest single factor not only in the *economy* of the brickwork, but also in its strength, its neatness and its resistance to the passage of water.

One of the most outstanding characteristics of Brixment mortar is its unusual plasticity. For nearly twenty-five years, bricklayers all over the United States have agreed that the working qualities of Brixment are comparable to those of straight lime putty. This exceptional plasticity makes it easy for the bricklayer to secure neat, economical brickwork, with the brick properly bedded, and

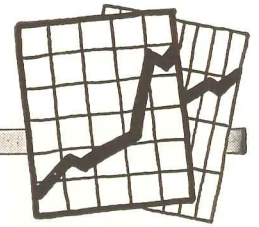
the joints well filled. And because of this unusual plasticity, a bag of Brixment will carry three full cubic feet of sand and still make an ideally workable mortar.



BRIXMENT

For Mortar and Stucco

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



PREFABRICATED BUILDINGS HOUSE U. S. TROOPS IN TROPICS OR ARCTIC

FOUR TYPES of prefabricated, demountable cantonment buildings have been developed by the Army engineers for use in the far corners of the earth, according to a recent announcement of the War Department. Designed for housing troops in various climates, they can be easily shipped and quickly assembled.

Several thousand units already have been purchased by the War Department for quartering troops where permanent construction is not necessary or feasible. Erection of prefabricated units will not replace methods of constructing large cantonments of a permanent character.

All-wood or wood and steel

The prefabricated buildings are approximately 20 feet wide, from 48 to 100 feet long, accommodate 20 to 40 men each and are made of all-wood or wood and steel construction.

Of the all-wood types, one is designed for temperate climates such as the United States, another for tropical climates, and a third for cold climates. Types designed for the tropics have insulated roofs and stand well above the ground to protect troops against reptiles and insects. Those for cold climates are well insulated and strong enough to resist a heavy gale.

A fourth type, made of steel with wood floor and heavy inside insulation, also will be used in frigid climates. It is known as the "Nissen Hut" type, named after a type of barracks built by the French at Nissen, France, during the World War. The Nissen type was redesigned by the U. S. Navy and the Army Corps of Engineers further simplified the structure using substitute materials, installing a less elaborate electrical system and effecting other economies without reducing usability.

One each of the four types of ready-made buildings has been erected at

Fort Belvoir, Virginia, for additional experimental purposes. Experiments disclosed that one of the buildings can be erected by 12 workers in less than half a day.

2 TIRES FOR 5 TRAILERS, SAYS WPB

THE TRAILER INDUSTRY will have its own war boom in spite of tire shortages, if a novel plan of the War Production Board for making one set of tires serve five trailers works out.

An output of 50,000 house trailers is scheduled for this year, for use where new war industries have caused a sudden concentration of workers. Preference ratings will be given by the WPB, with restrictions that the trailers be sold only to workers in defense areas, and that manufacturers simplify designs to save critical materials.

One of the difficult problems confronting the trailer industry is the rubber shortage, and resultant general ban on the production and sale of tires. In line with the desire of the War Production Board to keep the trailer industry effective as a provider of defense housing, 4,000 tires and tubes have been made available to manufacturers.

For delivery only

A novel procedure, however, has been worked out in order to utilize these tires to the fullest possible extent. As soon as a trailer is delivered to a defense worker, the tires are to be removed and returned to the trailer manufacturer for further "delivery" use. The trailer generally is propped up on wood blocks or timbers. An additional restriction on the use of tires on house trailers permits manufacturers to buy only one set of tires for every five trailers manufactured.

The House Trailer Section (WPB) is working with the industry to perfect a wooden tire for use on a wooden wheel, and one with a steel rim for use over an old rubber tire. If such substitutes become available, the industry plans to use them instead of

rubber tires for transporting the trailers from factory to ultimate consumer.

BULLETIN FOR PURVEYORS TO GOV'T.

FOR MANUFACTURERS and others interested in supplying the Government with any of the thousands of items now being purchased for military purposes, a new publication of the War Production Board will have especial interest. It is "WPB Contract News," published by the Production Division, Contract Distribution Branch of the War Production Board. Publication offices are in the Chanin Building, 122 West 42nd St., New York City.

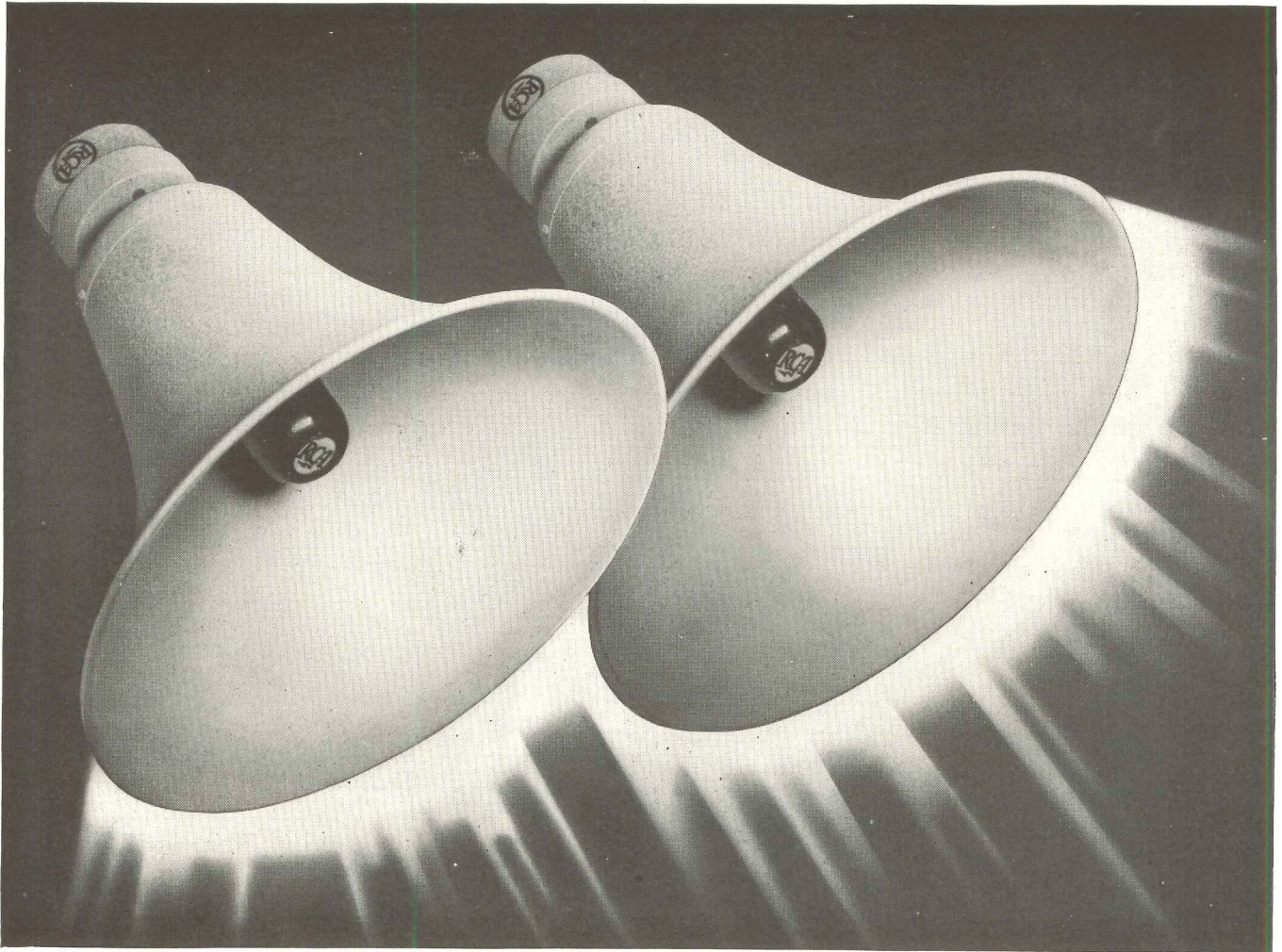
The news bulletin carries advance notices of prospective purchases, news of items for which bids are currently being taken, contracts awarded, together with lists of the many offices of the several buying agencies. There are also special descriptions of items needed, and brief articles on how other manufacturers and suppliers handle their own war conversion problems.

NON-GLASS WINDOW REPLACEMENTS

AN ANSWER to the replacement of windows smashed in London air raids has been found in a window fabric which saw wide pre-war use in this country in horticultural work, as a substitute for glass (ARCHITECTURAL RECORD April, 1939, p. 59).

The London correspondent of *Industrial and Engineering Chemistry*, publication of the American Chemical Society, reports it is general practice in the case of large broken plate glass windows to fill the window with ply in which a small glass window is inserted to permit a view of the wares inside.

The material is a loosely woven fabric with an open or network structure. Bleached and finished with starch or dextrin, it is later passed through a dope of cellulose acetate and plasticizers and given a protracted drying. The finished fabric is nailed on wooden battens and fixed in the window frame.



The Horn That Gets Things Done!

RCA Victor Sound System Speeds Communications
in Plants and Buildings!

PICTURED ABOVE is the business end of an RCA Victor Sound System—vital expeditor for defense activities.

By including it in your designs of plants and buildings, you can greatly speed the war efforts of your clients—just as important companies such as Curtiss-Wright, Botany Worsted Mills, Weston Electrical Instrument Co., and many others are doing.

For by specifying an RCA Victor Sound System you will help your clients locate execu-

tives and key men, instantly, saving valuable time. Important directions and information can be transmitted quickly to any or every department. Air raid and other emergency warnings, together with full information, reach every employee simultaneously. In addition, music can be played during lunch and rest periods and to relieve employee fatigue.

Find out all about an RCA Victor Sound System. Mail the coupon today!

RCA Mfg. Co., Inc. (Dept. 5-7)
Camden, New Jersey

Please send me full information
about RCA Victor Sound.

Name.....

Company.....

Address.....

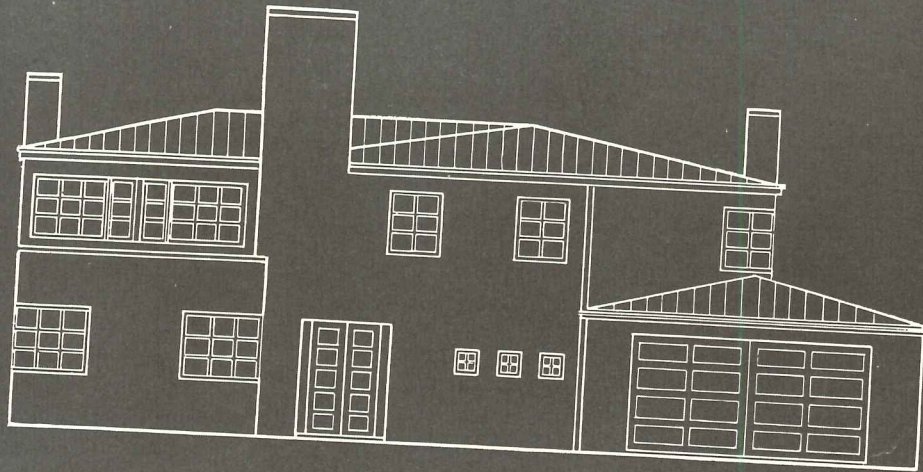
City.....

State.....

(RE-4)

RCA Victor Sound Systems

MUSIC • PAGING • COMMUNICATING



The homes that can't be built today
will be better built tomorrow because of

ANACONDA RESEARCH

FROM mines to fabricating plants, production of Anaconda Copper and Brass is devoted whole-heartedly to our country's war program.

But meanwhile, Anaconda Research carries on with redoubled effort... not only for war purposes... but looking also towards the time when—the present emergency over—copper and

brass will again be available for unrestricted use.

The future is bright for the building industry—never in our country's history has such a backlog of needed housing accumulated. One day it will be released.

Anaconda Copper and Brass—in old and new forms of usefulness—will be ready. 4211

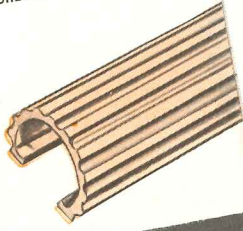


The *American Brass Company*

General Offices: Waterbury, Connecticut; Subsidiary of Anaconda Copper Mining Co.

1900 EXTRUDED SHAPES

Introduction and development of the extrusion process for architectural bronze and nickel silver.



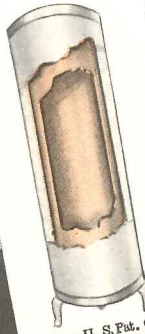
1922 ANACONDA BRASS PIPE

Introduced and promoted Brass Pipe for plumbing. Later developed Anaconda 85 Red Brass Pipe after a nationwide 10 year study of water corrosion.



1927 EVERDUR* METAL

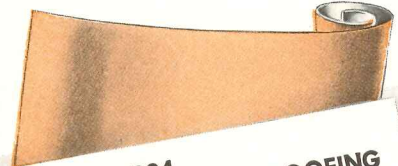
Commercial development of high-strength, weldable copper-silicon alloys leads to use for water tanks.



*Reg. U. S. Pat. Off.

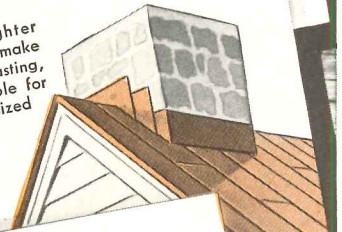
1932 "ELECTRO-SHEET" COPPER

New process makes wide, thin copper available for low-cost, lasting, damp-proofing, weather-proofing and concealed flashing.



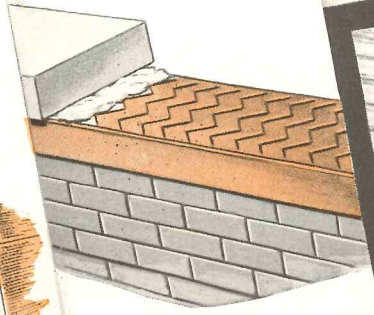
1934 10-OZ. ECONOMY COPPER ROOFING

New narrower, lighter weight roofing sheets make economical, long lasting, copper roofs available for small and medium sized homes.



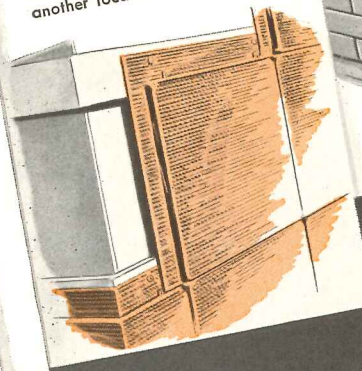
1935 THROUGH-WALL FLASHING

Patented new design provides positive protection and easier installation at reduced cost.



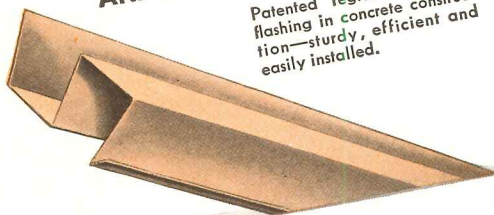
1938 COPPER WALL PANELS

A new dry-construction, patented wall facing; weather tight, non-absorptive; erected without solder or caulking compounds; allows free movement to prevent buckling. Panel walls can be dismantled and re-erected in another location.



1940 ANACONDA COPPER REGLET

Patented reglet to receive flashing in concrete construction—sturdy, efficient and easily installed.



1942 ANACONDA RESEARCH

This program of The American Brass Company is carrying on in many varied directions to improve efficiency and usefulness of existing products, and to develop new products and uses which will make building in the coming era more efficient, more lasting.

Highlights of ANACONDA SERVICE to the building industry

makers of

Anaconda Copper & Brass

In Canada: Anaconda American Brass, Ltd., New Toronto, Ontario

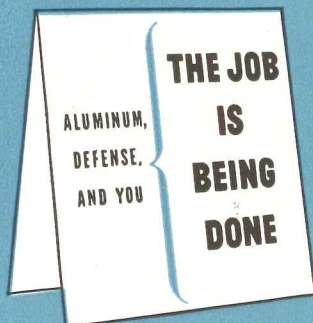
FORGET
YOUR OLD
ASSUMPTIONS

IMAGINEERING

IMAGINEERING

IMAGINEERING

IMAGINEERING



IN THESE DAYS an advertisement is no place either for hosannas or sermons about production. Every man knows how well he is doing the job that is before him. Deeds, not words, are the measure.

BUT WORDS CAN BECKON beyond the realms of immediate duty.

IMAGINEERING is such a word. We coined it to make the needs of the future a reality, here and now. It is a way of describing what a man can do about the day when. . .

HOW DO YOU DO IT? You let your imagination soar and then engineer it down to earth. You think about the things you used to make, and decide that if you don't find out some way to make them immeasurably better you may never be asked by your customers to make them again.

YOU FORGET YOUR OLD ASSUMPTIONS. For instance, you may be one who used to assume that aluminum was too expensive. Even if you were right then (and you may not have been) the price trend of aluminum knocks those assumptions into a cocked hat.

WERE YOU ONE who used to assume that structures behaved exactly the way the theory said? Have you looked into the new answers the mammoth testing machine in the Aluminum Research Laboratory has found for that one?

DID YOUR OLD PRODUCT GROW like Topsy? More than one designer is Imagineering with this point of view: My product was in a groove. I couldn't get it out, because I didn't dare get too far away from last year's model. Now's my chance to start from scratch, and let tradition be hanged.

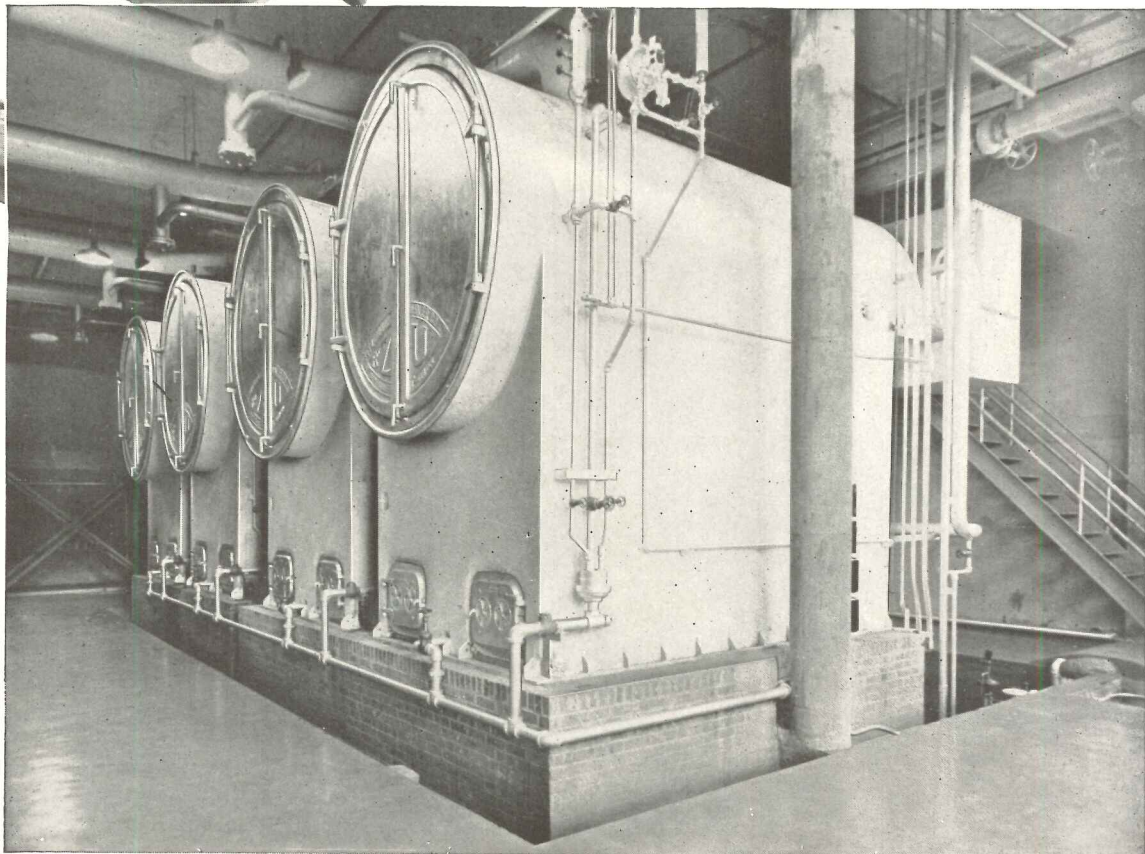
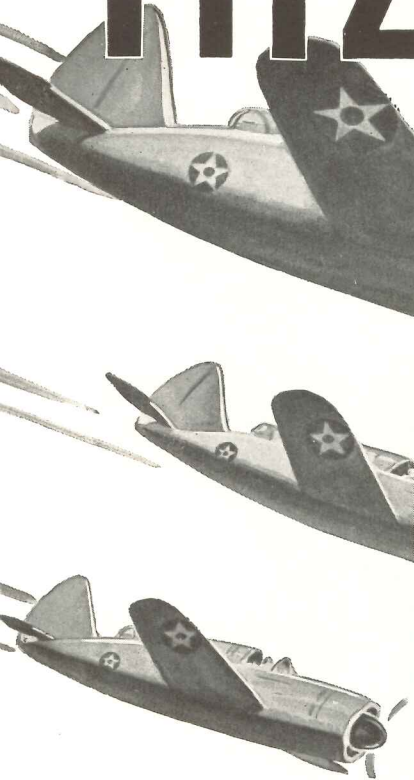
THAT IS THE KIND OF THINKING that will make jobs in the future. It is the kind we can help with: help with ideas and with know-how. Will you invite us?

Aluminum Company of America, 2167 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA ALUMINUM



FITZGIBBONS helps to *Keep 'em flying*



*This fine
Installation of*

FITZGIBBONS STEEL BOILERS

heats the equally fine new plant of the Brewster Aeronautical Corporation where the famous "Brewster Buccaneers" in ever-increasing numbers will swell the invincible total of aircraft upon which in large measure, America depends to win this war. Already nearing completion, four more identical Fitzgibbons boilers, of 304 horsepower each, will serve an addition to this plant.

At another Brewster plant, three R-Z-U Fitzgibbons boilers supply the warmth and comfort essential to the speedy construction of thousands of fast Brewster fighters and trainers for the armies and navies of the allied nations.

Naturally, in plants like these and particularly in the present critical times, only equipment of proven dependability would be selected . . . such as Fitzgibbons Steel Boilers.



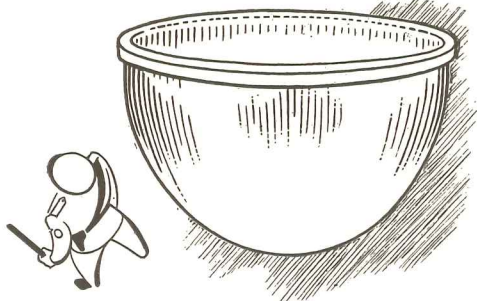
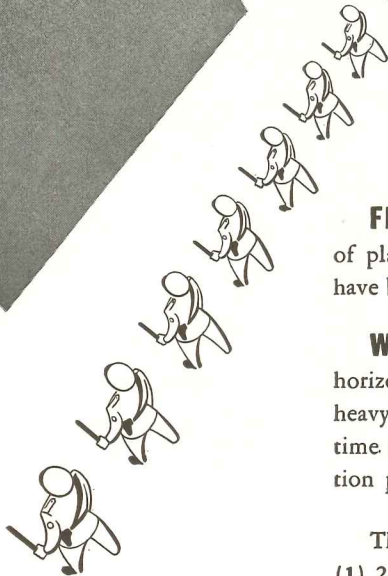
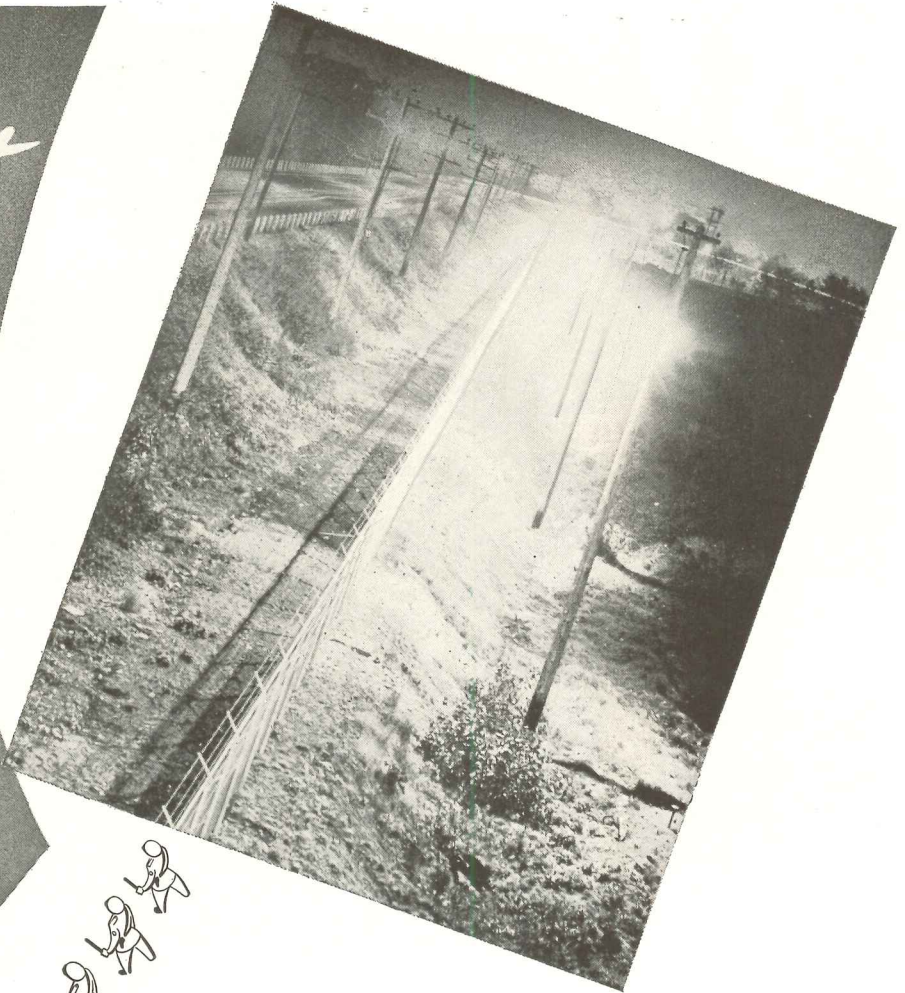
Fitzgibbons Boiler Company, Inc.

101 PARK AVENUE, NEW YORK, N. Y.

WORKS: OSWEGO, N. Y.

Branches and Representatives in Principal Cities

Protect
**YOUR FIRST
 LINE OF
 DEFENSE**
with
**HOLOPHANE
 REFRACTORS**



FENCE LIGHTING is an indispensable factor in any effective system of plant protection. Holophane Refractors, designed for this purpose, have been installed in over 350 major armament plants in recent months.

WHY REFRACTORS? . . . They control the light vertically *and* horizontally, shaping the light to the specific job needs . . . Made of heavy prismatic glass, they are durable and impervious to the effects of time and weather. Their high output efficiency and controlled distribution permit wider spacings to reduce operating and maintenance costs.

Three types of refractors are most widely used for protective lighting; (1) 2-Way asymmetric, for fence lighting; (2) C-Way asymmetric, for roadways; (3) Symmetrical, for yards and gates.

WRITE FOR COMPREHENSIVE BOOK of specifications and installation methods for protective lighting, sent without cost or obligation.

Complete units, equipped with Holophane Refractors, are made by
GENERAL ELECTRIC COMPANY PHILADELPHIA ELEC. & MFG. CO.
 Schenectady, N. Y. Philadelphia, Pa.
LINE MATERIAL COMPANY WESTINGHOUSE ELEC. & MFG. CO.
 Milwaukee, Wis. Cleveland, Ohio

HOLOPHANE CO., INC. *Lighting Authorities Since 1898* **342 MADISON AVENUE, NEW YORK**
 HOLOPHANE CO., LTD., 385 YONGE STREET, TORONTO, CAN.

YOUR PLANT IS SAFER WITH HOLOPHANE REFRACTORS



SG-10 shown in quarter-section cut-away.

How a "Wall of Light" Blocks Plant Sabotage

Here is another substantial contribution by our lighting engineers to sustain and safeguard America's 24-hour war production schedules. It's the Westinghouse Type SG-10 Refractolux Luminaire.

This new Refractolux combines a steel-protected silvered glass reflector with better methods of light control. When installed on the sides of industrial plants or on properly located poles, the units produce a protective "wall" of intense light. Trespassers are immediately revealed as they approach plant boundaries, fences, storage areas or production centers.

We've designed this high-candlepower luminaire to assure effective, night-after-night protective lighting. SG-10 is typical of Westinghouse *engineered seeing*—the combination of scientifically designed fixtures expertly applied to achieve the best visibility conditions. Full data is available in our new Protective Lighting Planning Book, B-3085. Write Westinghouse Electric & Mfg. Company, Edgewater Park, Cleveland, O.

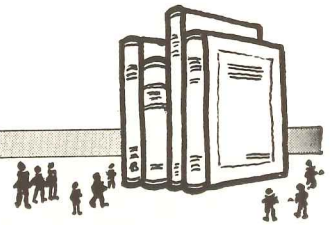


The SG-10 consists of a canopy, high or low voltage type for internal or external wiring; a socket, mogul multiple or series type; a sheet steel housing that protects the glass reflector; a silvered glass reflector, cushion-mounted to absorb shock; and either a refractor or globe. Canopies, wiring and mounting arrangements and glassware are all interchangeable. A porcelain enameled shield, with refractor type units, redirects light from the pole side, and a hand-operated toggle latch releases the hinged globe or refractor for safe, easy maintenance.

Westinghouse



Lighting Equipment



By Elisabeth Coit, AIA

TOWN AND COUNTRY PLANNING.

By Gilbert and Elizabeth Glen McAlister. London, Faber and Faber [1941]. 176 pp., 5½ by 8 in. 12 s. 6 d.

THE AUTHORS, the editor of the quarterly *Town and Country Planning* and his journalist wife, distinguish clearly between mere dormitory housing developments and the essentials of planning real towns, with sympathy decidedly on the side of the garden city and the cottage with garden as against the large city and the flat.

The matter is compactly presented with many useful statistical items. The style is vivid and the argument vigorous, if sometimes short of convincing. The reader will look in vain for authorities and statistics to support many of the statements made.

Sickness and mortality figures, for instance, for six old industrial cities compare in no useful way with those for three newish garden cities, the populations of which are necessarily selected in more senses than one. Again, slum poor health and low mental development are not the result of poor housing alone, but of forty-seven-eleven poverty-born factors; and similar factors doubtless produce similar results among the rural poor for whom no figures are given. Metropolitan time and cost figures for workers' transportation to and from work show appalling waste; but even garden cities such as Letchworth and Welwyn import 42 and 23 per cent respectively of their labor, or a third of the whole for the two.

The flat may be "an admission of defeat," and perhaps "anyone who continues to pursue a policy of tenement development is deliberately sinning against the light"; but flats have for generations in many countries sheltered healthy happy home life. And even low-rental flats are not necessarily vermin-infested. Neither do flats inevitably make sunless congested areas. Furthermore the reduction of housework which is "the chief attraction" of flats for business, professional and "luxury" income women, is much appreciated also by many a homemaker who has no paid help. Again not all families include a very young or a very old member needing access on

the same level to a "private garden space"; and even in cottages some stair climbing is usually necessary.

The assumption is that good housing in small communities "in the heart of the English scene" makes for the good life, at least for the middle and lower-income family. But post-war planning must take into consideration that cities must also lodge, in addition to those who operate their industries and services, the many unadventurous, hard-working, law-abiding souls of all classes, whether somewhat non-conforming or not, who stifle no less fatally in a small-town atmosphere because your small town is called a garden city.

HILLS BEYOND MANHATTAN. By Guido D'Agostino. New York, Doubleday, 1942. 297 pp., 5½ by 8 in., \$2.50

TIME: the present; place: somewhere not far north of the Buttermilk Range—the author does not say that place and scenes are imaginary and one is free to use the time and route information supplied; dramatis personae: a few suburbanites and some villagers—from the lumber dealer, one of a family generations-long resident, to the Italian master-mason and the laborer. The hero is a French architect, who, after six years' apparently successful experience of American metropolitan life finds at last in this village, where he is the working guest of his client, the sense of American life. An unusual story with a solution logical enough and yet so untypical as well as so satisfying to all concerned that it may prove Mr. D'Agostino not only the inventor of a new fiction plot-plan but a prophet of architectural things to come.

THE AIR RAID SAFETY MANUAL. By Burr Leyson. New York, Dutton, 1942. 92 pp., 5 by 7½ in., illus. \$1.00

FIRE FROM THE AIR. By J. Enrique Zanetti. New York, Columbia Univ. Press, 1941. 55 pp., 4 by 6½ in., illus. \$0.50

THESE TWO little books have much to say on the behaviour of building materials and construction types under gas, fire, and explosion. The second

explains the nature of modern incendiaries, their use, and protection against them, while the "Manual," on the assumption that we can function rationally only when we understand, explains in terms unforgettably clear the many effects of fire and explosion, with velocities, resistances and the logical precautions and remedies with which to meet these effects. Architect and builder will find adequate the information on various types of shelters, with information on thicknesses of various materials which will completely resist attack.

A HANDBOOK OF URBAN REDEVELOPMENT FOR CITIES IN THE UNITED STATES. Washington, Govt. Prtg. Off., 1941. 105 pp., 6 by 9 in. (FHA No. 2389). 15 c.

A COMPILATION of suggested reasonable procedures for a long-term broad view program by which public and private enterprise may together work to reclaim existing blighted areas and prevent the blighting of others. Powers and responsibilities of typical local authorities are described and explained, pitfalls are charted, and routes and routines indicated for escape from costly and hazardous maladjustments which, if they interest the FHA to the tune of some \$3¼ billion of insured loans, cost the communities concerned many times that amount.

HEATING VENTILATING AIR CONDITIONING GUIDE. V. 20. New York, A.S.H.V.E., 1942. XXIII, 1160, 91 pp., 6 by 9¼ in., illus. \$5.00; with thumb index \$5.50

FROM its first edition 20 years ago of 360 pages, limited to technical discussion and equipment data, the "Guide" has expanded to a 10,000 copy edition of 1,274 pages covering every phase of the industry.

The main addition to the last volume is a chapter on Fundamentals of Heat Transfer; but a dozen other chapters have either been revised or rewritten to bring them up to date.

I WISH I COULD DRAW. By Percy V. Bradshaw. New York, Studios Pubns., 1941. 96 pp., illus. \$3.50. (How To Do It Series)

(continued on page 34)

Electrical failures barred...

FROM WAR-VITAL PLANTS



Faithful, research-built Anaconda wires and cables keep uninterrupted pace with 3-shift operation.

THERE'S more to war than the equipping of bombers and battleships. The plants and shipyards that make them, the factories and mills turning out thousands of large and small parts, must be powered through wires and cables that can stand the pace of 3-shift operation.

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REVIEWS OF CURRENT LITERATURE

(continued from page 32)

PENCIL DRAWING. By Ernest W. Watson. New York, Watson-Guption Pubns., 1941. 70 pp., illus. \$2.50

BETWEEN Mr. Bradshaw's "system of art teaching by natural methods" and Mr. Watson's book designed to show some effects which can be produced with various lead pencils, with stumps, and with combined pencil and wash,

one learns much about how to draw. Mr. Watson's book, a second and enlarged edition of his well-known earlier book, assumes that one has been taught how to see; whereas Mr. Bradshaw's work tells the student how to observe. Seeing is partly visual observation, partly understanding the functions of the lines he sees, or thinks he

sees, or ought to see, in plant, beast, man, landscape and miscellaneous objects. Useful hints abound on qualities of line, on types of paper, on how to use a model or to substitute for one; and some masterpieces of drawing are analyzed.

OLD ADOBES OF FORGOTTEN FORT TEJON. By Clarence Cullimore. Bakersfield, Calif., Kern County Historical Society, 1941. 88 pp., 6 by 9 in., illus.

THE RUINS of Fort Tejon, established in 1854 and abandoned 10 years later, stand in the pass connecting Los Angeles with the San Joaquin Valley, through which drive nearly two million cars each year.

The history of this fort, which was built to guard the pass and to control neighboring Indians, is here preserved in a little book whose value for architects lies in the fact that the description of the fort, illustrated with construction details, perspectives and photographs, is a thoroughly good job done by a colleague, a member of the Southern California AIA Chapter, who knows his adobe as he does his local history.

ENGLISH COUNTRY HOUSES. By V. Sackville-West. New York, Chanticleer Press, 1942. 48 pp., 6 1/4 by 8 3/4., illus. (Britain in Pictures. 10 v., \$18.50 the set)

THIS IS one of the set forming the first publication of the Chanticleer Press. The aim of the series is to match the value of its pictures with its text; and for this volume truly the pictures are worthy of Mrs. Sackville-West's well known acquaintance with English country life and her mastery of prose. Many of the pictures reproduced in the set have never before been photographed, others are now reproduced for the first time in color. Each volume has 12 colored plates and about 20 in monochrome. The houses shown are great and small; some give architectural detail, others appear merely as the center of the landscape which is their setting. A beautiful book, sold only as part of the set which comes in a rack made of timber from bombed historic buildings,

(continued on page 36)



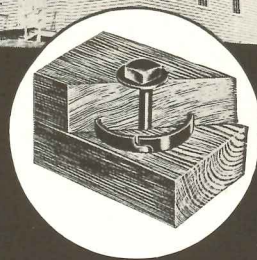
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REVIEWS OF CURRENT LITERATURE

(continued from page 34)

PERIODICAL LITERATURE

OUR SUMMER RESORT ARCHITECTURE. By Roger Hale Newton. Art Quarterly, Detroit, V. 4, No. 4., 1941., pp. 297-322., illus.

A RECORD of ideas resulting from the exhibit "A Century of Summer Architecture in the United States" arranged

last summer by Professor Hamlin at Columbia University.

A capital summary of successive and co-incidental trends: Romanticism 1830-65, with Saratoga's Congress Hotel and Rockaway's Marine Pavilion . . . Eclecticism from 1850 onwards bringing Greek revival, Italian renaiss-

sance, rustic Anglo-Bavarian-Swiss, Gothic. . . Victorian grandeur. . . through the whole range to the garden cities of today.

ARCHITECTURAL GIMCRACKS. By McClure Capps. California Arts and Architecture. Los Angeles, Jan., 1942, pp. 18-19, illus.

SOME of the "architectural horrors of the American '80's from the recently released film 'Ball of Fire,'" assembled for "conclusive proof that this was the lowest of low points of our architecture."

DIARY. Architectural Journal. Cheam, England. Jan. 15, 1941

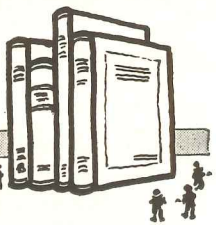
IN SPITE of strict paper rationing the *Journal* allots itself more than double the average number of pages of recent issues for a well presented review of 1941's achievements in architecture and allied arts, including election of an architect to the presidency of an author's society and our own Mildred Godfrey of Flatbush who "set a light to her parents' furniture 'because it was so ugly.'"

NOTES HISPANIC. New York, Hispanic Society of America, 1941. 124 pp., 6 by 9 in., illus. \$1.00

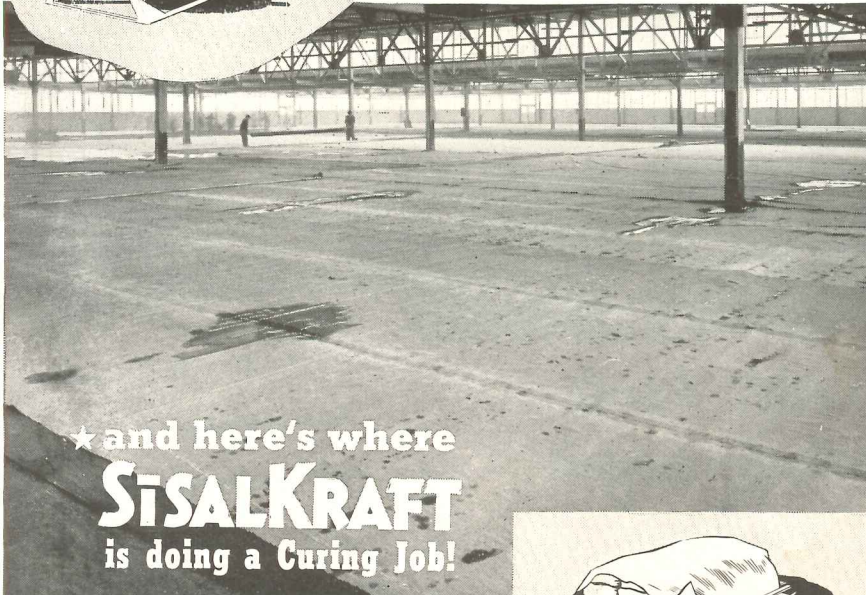
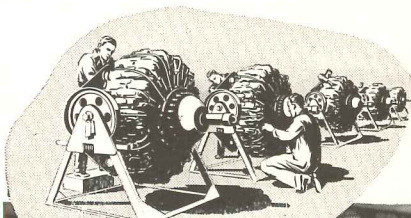
PLANNED as an annual, consisting of papers on the arts and crafts of Spain and Portugal written by the staff and members of the Society, publication "if found advisable may be continued in the future." Of the four well written, fully documented papers, illustrated with almost a hundred cuts, the "Custodias for the Processionals of Corpus Christi" and the "Apothecaries' Shops in Spain" will be of first interest to most architects.

ARCHITECTURAL EDUCATION TOMORROW. By Michael Goodman. Architect and Engineer. San Francisco, Feb. 1942, pp. 38-9

AMERICAN colleges in early days were vocational schools operated mostly under grants. . . . In all major sciences colleges today get men well started toward jobs in industry. . . . No such thing is happening with graduates of architectural schools. A liberal education is a preparation for life; architects need also preparation for making a living. Wanted, ideas for post-war curricula for schools of architecture.



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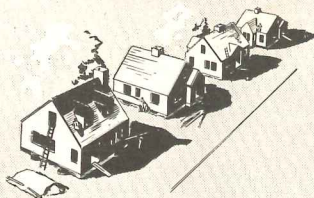
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• Wm. H. Block Department Store, Indianapolis. Architects, Vonnegut, Bohn & Mueller, Indianapolis; Contractor, American Mosaic & Tile Co., Inc., Louisville.



...as White portland cement used in Terrazzo floors of Sebastian County Court House, Fort Smith, Ark. Architects, Bassham & Wheeler and E. Lester Nelson, Fort Smith; Contractor, Manhattan Construction Company, Muskogee; Terrazzo contractor, Taylor Marble & Tile Co., Oklahoma City. Owners' representative, County Judge R. P. Strozier

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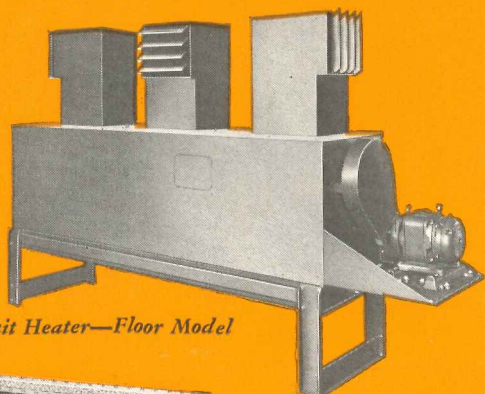


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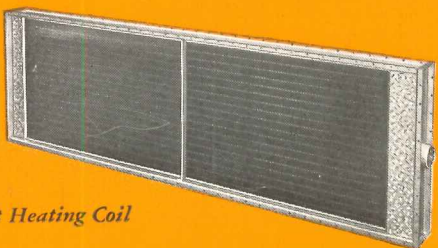
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Another of a series of advertisements depicting the part of McQuay, Inc. in the defense program

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CLEARER PERSPECTIVE

WE ARE SO CLOSE TO THINGS NOW, so much in the midst of things, that our vision is naturally limited to the problems we are up against, both literally and figuratively. And it's difficult to get away from them far enough to make a fair appraisal of their real importance and of our relationship to and attitude toward them. Priorities and allocations, critical materials, conservation, vanished clients, Government agencies, speed-up, red-tape, active service, disturbing news — they crowd in on us, we can't escape them, their impact is continuous — and confusing. To see things clearly, and in true perspective, we must get far enough away to get a comprehensive view.

We are faced with conditions we did not make and can change but little. The war has forced inevitable limitations on our accustomed activities to align them with the production for war. We are not alone in that predicament, nor is our position unique. Most other professions and industries are forced to make the trying adjustments to a war economy. Knowing the necessity for concentrating on war building exclusively in order to save materials and labor for the machines of war, it is unthinkable to complain, to be resentful, or to indulge in self-pity—*we must do the adjusting*, adjusting ourselves to the best of our ability and intelligence. We might profit in this by the philosophy of the happy negro handyman, who, when asked why he was always smiling and cheerful, explained, "Well, you see, I've learned to cooperate wid de inevitable." A sound philosophy if we are careful to make sure "the inevitable" is genuine.

We need a "station point" from which to see in its true perspective the changing picture — the detail in relation to the pattern as a whole, the light and shade and color, the form and function. No one can claim to see it whole or with absolute clarity. But we can in our minds step back to a point far enough away to see it at least in outline.

AS a "station point" we may well take our faith in the future — faith in the enduring ideals of democracy, in the growing need of and place for the planners and creators of buildings, faith in ourselves to function efficiently and cooperatively when opportunity offers.

This is natural and not too difficult for the many architectural firms throughout the country that are already working at top speed producing the nation's factories, housing and facilities of war. They have made the adjustment. But in non-defense areas this may seem a big order for a man — talented, sensitive, capable, now faced with the necessity of finding a place, for a time, where his abilities can be made to count in winning the war. Yet in facing that immediate problem there is strength to be gained from the clearer perspective one has from that station point of basic faith in one's country, one's profession and one's self. We see that the situation we are in is temporary, if protracted, out-of-joint, and frustrating. We can — and must — look beyond the present, and in so doing there comes to every one of us a new determination, not only to carry on in whatever capacity now, but to keep abreast of trends, informed of techniques, ready to adjust ourselves, to collaborate with others now and to take a vital part in the work that will be necessary when armed conflict is over and the building of a better world begins in earnest.

In clearer perspective, we see beyond the dark foreground of immediate war necessities the sunnier form of the planning and the building that inevitably will follow and for which we must prepare.



EDITOR-IN-CHIEF



Acme

HOUSING

By DOROTHY ROSENMAN



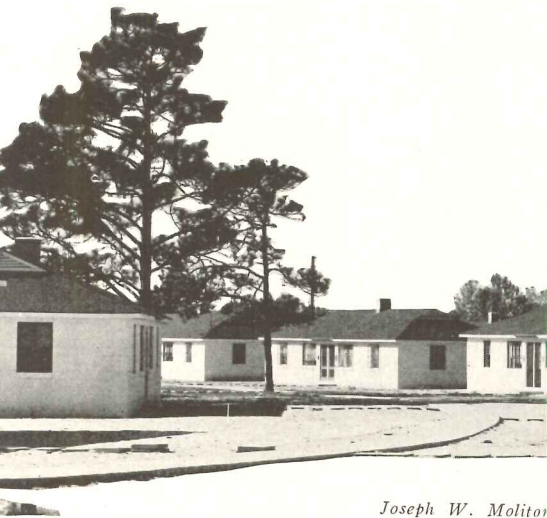
Photo by G. E. Kidder Smith

"Men and women cannot work at the top efficiency our situation demands if they are not housed . . ."

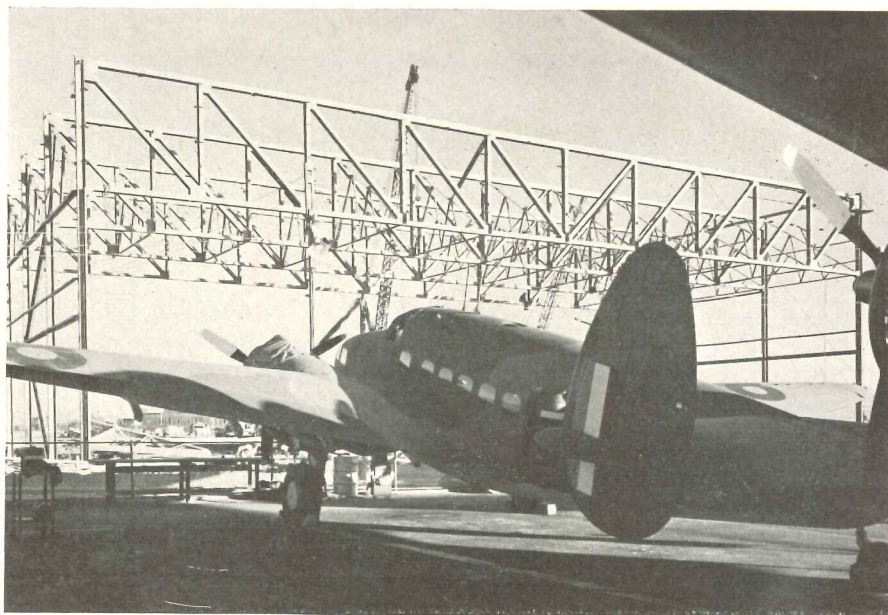
WHAT WE ARE ALL SEEKING just now is Victory—and future Peace. This is a war of civilians as well as of armies and navies, in which cooperation on the home front is equally as important as military advances. Yet in the face of this, too much "business as usual" thinking persists.

This may seem a blunt statement. But the facts justify it. In the construction of industrial buildings no effort has been spared to expand our production capacity; and all our technical skill and resources have been focused on the job of quickly developing new plants fully adequate to carry our war load. But in housing the record is far from satisfactory.

This is particularly unfortunate, because housing today is a vitally necessary complement to the industrial part of our war program. Victory depends on production; production depends on the manpower behind production machines; and men and women cannot



Joseph W. Molitor



to speed PRODUCTION

work at the top efficiency our situation demands if they are not housed under circumstances that will assure their continuing ability to stay on the job.

Thus, adequate housing for war workers becomes truly a part of our national assembly line. And it must be made progressively available as new war-production plants near completion. It must be timed to mesh with every cog in our gigantic wheel of preparation for victory. Housing needs must be anticipated. Housing shortages have blocked progress in the past; today we cannot afford to tolerate that condition. We cannot allow production to be hampered by a dearth of adequate housing.

Nor can we look with favor on an unplanned program of jerry-building which will only result in creation of vast suburban and rural slums in the immediate post-war future. Common sense and energy coupled with an understanding of the job to be done *must* provide the full housing equipment necessary to keep our war production geared to top speed.

How extensive is this housing job? And to what extent are needs now being met?

Housing is not needed with equal urgency in all industrial sections of

the country; nor are the requirements constant even in those areas where war production activity is most concentrated. The extent of the housing job to be done can really be discovered only as a result of local investigation. It is just as true that local needs can be adequately met only by providing the type of housing that will best conform to the industrial and civic character of the locality.

It is certainly true that many thousands of houses have recently been built—with both Government and private funds. But many more thousands are urgently needed. Travel along the highways of the nation and you can see men building their homes of roofing paper and old boards. You can observe families living in shelters that seem hardly sufficient to keep the rain out. You come upon dreary-looking trailer camps where cramped living quarters are mired in undeveloped lots and serviced by home-made privies. You can pass through hundreds of towns and cities in which there exists not one empty dwelling fit to house a human being. And on every side you hear of men—skilled artisans urgently needed in war industry—who have left town because they could not find a place in which an American workman might live.

And yet, along these same highways and in these same towns and cities, new factories are being rushed to completion. In Fort Wayne, for example, one of our great electrical companies is building a plant to employ thousands. But Fort Wayne is already crowded beyond its present capacity. Where will the new workers live?

At Detroit mammoth new factories are nearing completion that will need more than 100,000 new workers to keep them running on the 24-hour schedule that our war-production program demands. And at South Bend—where three large war housing projects have already been built in addition to a great many private houses—the airport staff searched three months to find housing for extra personnel pressed into service to carry a rapidly increasing transportation load.

Consider the housing situation in the light of conditions that exist in Fort Wayne, in Detroit, in Buffalo, Kansas City and San Diego—to name only a few—and you get some conception of how really acute is the shortage of decent living quarters that war has suddenly imposed upon us.

If this problem were just one of quantity it would still be difficult enough to find a timely solution. But it is complicated by other factors.

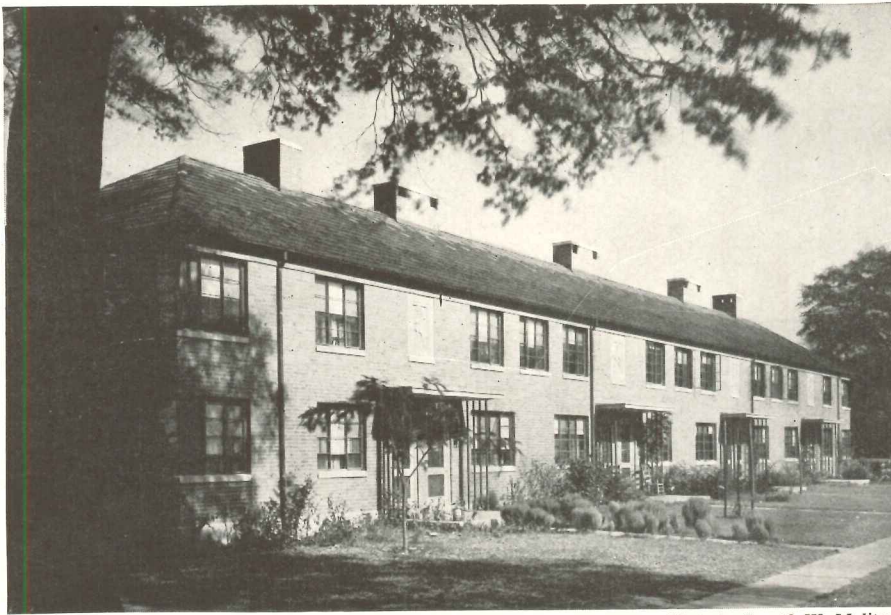


Photo by Joseph W. Molitor

“Whole new communities will be needed—and needed soon”

Many of these new war factories are springing up in open country, miles from a town or city or in towns which do not contain a labor supply sufficient to man them. They depend upon a supply of labor accustomed to roll to work, but less and less able to do so as the rubber shortage becomes more acute and tires wear out. Thus, transportation of vitally necessary workers looms importantly as a part of the housing problem. With the required number of busses unavailable and the widespread development of commuting trains a practical impossibility, more and more labor must be housed within walking distance of the plant.

This suggests that in several instances whole new communities will be needed—and needed soon.

Many, of course, will be temporary. But it is fair to say that a number of our great new industrial plants represent a permanent investment in money, brains and effort; and that housing for workers will be needed for years to come as such plants swing over from present wartime to future peacetime activity.

In any case the necessity for quick action on the housing front is now paramount. And it must be based on thorough-going local surveys, bold and far-sighted planning, the quick intelligence to meet and solve current problems and a constant, energetic drive for maximum production.

On whom should responsibility for this dwelling-production be placed?

Attempts to find an answer to this

question—an answer to please everybody—have consumed too much time in every community. The promoters and developers, real estate men and builders, architects, contractors and chambers of commerce that represent private enterprise have offered to see the job through. And to their credit many of these individuals have built great numbers of houses throughout the country and are now even beginning to produce rental units in appreciable quantity.

But “business as usual” efforts have completely failed to meet the most urgent needs of a wartime housing emergency. Government, viewing the problem in the round, seems to have bent over backward to help private enterprise to build. Today it can no longer do so. Active war has telescoped our timetable for passive defense. And after frittering away precious weeks and months waiting for private enterprise to produce, Government can hold off no longer. Today this nation is under increasing pressure—pressure for action, not propositions; results, not conversation. Speculation no longer has a valid place in the housing segment of the country’s war effort. Too much is at stake; and now we can only deal with sure things.

In view of all this a simple formula can easily be applied to produce an ample supply of housing in every locality. *First*, let private enterprise promptly build all the rental units that can be *soundly* financed. *Second*, let Government take on the responsibility for just as promptly producing all re-

maining types according to the overall needs of the moment. *Third*, let private enterprise and Government cooperate in all instances so that present confusion will be avoided and future waste minimized.

The necessity for such a formula can be illustrated by two examples. In Buffalo, construction of new factories created an acute housing shortage. Early last September private enterprise undertook the responsibility of providing some 5,000 dwelling units. But the program lagged so woefully that by March first of this year only 1,100 of these units were under construction. The result is that many war factories in the Buffalo area cannot yet operate at full efficiency. And to make mat-



“Speculation no longer has a valid place in the

ters even worse, sponsors of the private building program have been actively fighting a plan by which the remaining 4,600 units can be made immediately available as a Government construction project.

In Indianapolis a group of realty men and home builders agreed to erect 6,000 privately financed units in 1942. A substantial proportion of these will be necessary to meet a large labor demand which will obviously develop by July first. But by March 10th permits for less than 500 units had been filed by private builders in the Indianapolis area; and this record of progress to date does not indicate completion of

the promised program to keep pace with production schedules of new industrial plants.

In fairness it should be said that these "business as usual" promoters do not realize that their tenacious hold on conventional procedures is seriously impeding our war progress. Many able leaders in the private construction field *do* recognize the necessity for cooperation in this war effort. But they are having trouble with their flock. Indianapolis developers, for example, have recently agreed to push the rapid development of a combined private and public construction program. But can they make their associates see the vital urgency of such a cooperative combination?

who understandably cannot forecast the duration of their stay in a community on their future ability to meet the financial obligations of home ownership.

It seems obvious, then, that it is unwise from both the social and financial viewpoints to urge or even encourage such workers to buy houses. The old pattern of the speculative, wholesale development of houses-for-sale as an alternative for construction of adequate rental units should have no place in our thinking for the duration of this war emergency period. Experience has shown that factory workers themselves agree with this statement. Many have frankly admitted that when their jobs end in a locality where lack of rental facilities has made home ownership necessary they have no choice but to leave town and dump their properties.

The result of this general situation is not only psychologically disastrous in killing the sense of personal responsibility. It is disastrous economically, for it may well force widespread foreclosure of properties which have been poorly maintained because the owner was not owner by choice.

In view of such a possibility it is not too visionary to contemplate a future situation in which thousands of run-down dwellings will be inherited by a Governmental insuring agency and necessarily offered to new buyers or renters at prices substantially under the market. Thus, it is reasonable to draw a conclusion that "for-sale" developments not only are out of line with

current housing requirements, but also tend to work an ultimate hardship on the very ones who have been responsible for their creation.

Proof that even workers have a keen sense of this general situation is offered by the fact that more and more they are refusing to go through the motions of home ownership. This explains at least in part why the FHA has finally instituted an active campaign for the privately-financed construction of large-scale rental units.

This campaign has, so far, not been rousing successful. It has bogged down chiefly because of the unfortunate pattern of speculation that runs through our real estate customs. The in-and-out-with-quick-profits technique is stereotyped. But it is out of place in the war housing situation, first because few entrepreneurs will stay with a rental project and thus offer assurance of stable and responsible management. Second, in many localities builders are either unacquainted with mass-production building methods or are unable to finance or to organize large-scale construction programs. And large-scale projects—dwellings by the hundreds and by the thousands—are what we most need today.

If such large-scale projects are to become worthwhile additions to our industrial communities they must be sponsored by responsible capital willing to *invest*—not speculate—in a long-term program. Responsible capital is that willing to initiate, plan, operate and maintain rental housing. Such capital is abundant today in the

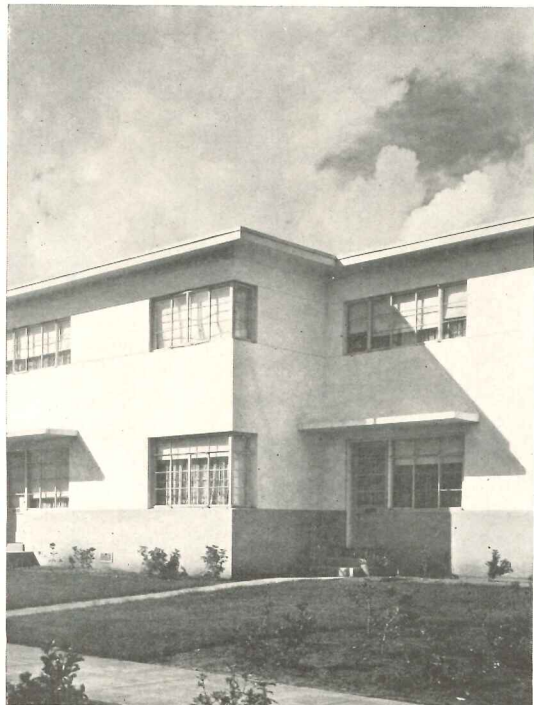


Photo by Waters & Hainlin Studios housing segment of the country's war effort"

How long will it take private enterprise to appreciate fully the glaringly apparent fact that war *demand*s all-out effort and that wartime housing *now* represents one of the home front's major contributions to the ultimate attainment of victory and peace?

Granting an eventual recognition of this fact, what can private enterprise be expected to produce?

Certainly not what speculative developments have made available in the past. By and large it is futile to build houses for sale today. War housing is necessarily built for war workers. And many war workers are migrants



Photo by USHA "Wartime housing *now* represents one of the home front's major contributions to victory"

hands of insurance companies, savings banks and conservative, far-sighted operators. It should be immediately channelled into the rental housing field. Legitimate investment opportunities await development in many war-active areas which give evidence of a stable population core. Particularly is this true in towns and cities containing areas of sub-standard housing that could, and should, be demolished after the war.

Properly located, planned, constructed and maintained rental projects would constitute an excellent social and economic investment as well as a conservatively satisfactory financial one. Their very existence would tend to raise or maintain local standards of living, and if past experience is any indication would serve to stabilize rents and realty values at levels adequate to the character of the locality.

Rental housing developments of this character are at once an immediate opportunity and a challenge to responsible capital and responsible developers, architects, and builders. If no such legitimate sponsors can be enlisted, the alternative is extensive investment by Government. Private enterprise can be a boon to the war housing effort if it will accept its responsibility to put patriotism on a par with profits—if it will actually invest substantial equity funds and allow full play to the inherently American genius for achievement and able management.

What kind of housing should be built?

If we are to profit at all by experiences of the past and if we are justified in thinking of future redevelopment within our cities, we have an obligation now to design our housing projects as well-planned, self-contained neighborhood units that fulfill the requirements of a modern urban community. This means low land coverage with generous open areas for recreation and gardens. It means living quarters that are built away from traffic ways, street crossings and play spaces that are safe, parking and service areas that are adequate and well located.

This is the sort of housing we need to build now—for both today and tomorrow. The Lanham Act provides that Government-financed homes must be disposed of to private enterprise when the war is over. It is hoped that the new National Housing Agency will interpret this provision intelli-

gently and develop the type of project that will make it possible to sell houses in groups. Formerly the Act was interpreted to mean that all Government-financed housing should be planned in such a way that each house could be sold individually. So literal an application of the law would not only tend to create undesirable housing conditions, but also would wreck the entire real estate market were it carried to a logical conclusion by offering some half a million separate houses for sale at the same time.

It should be obvious that *if* the former interpretation is to rule, there is economic as well as social justification for good planning, sound construction and careful management. Wise realty operators will wish to acquire properties developed as self-contained neighborhoods complete with gardens and play spaces. Projects constructed under the Mutual Home Ownership Plan, for example, are among the best of those developed with Lanham Act funds. Planned for a continuing population and built in the way that people today wish to live, they will continue to be attractive, valuable neighborhoods long after this war is over. Their financial set-up—and probably value—will never be impaired because of their physical layout.

This matter of future value has occasioned some pretty heated arguments that center largely on the pros and cons of "demountable" houses. The question of whether or not these should be used cannot be answered categorically. Where future usefulness of emergency housing is questionable, demountable units of sturdy construction may well be used. But there is no law which requires a demountable

house to fold up and go away; and a good guess would be that not ten per cent of them will ever be moved.

Thus it is reasonable to urge that even demountable houses be located on sites planned for *permanent* use so that if a need for them at the present location continues the project may be an asset instead of a liability to the community. The alternative to the use of demountables in this fashion is frankly temporary construction that—at least in theory—can be torn down after the war.

Pressure for use of such temporary houses comes mostly from real estate interests that are worried at the thought of competition after the war. But the record has shown that temporary buildings mean shacks that, once built, stand to plague us for years to come. Some of our worst slums today are the "temporary" shacks of the last war. In view of the great opportunity now at hand of planning a constructive program for post-war urban rehabilitation, the use of temporary buildings—as an alternative to demountable construction—ought to be ruled out of our thinking for the general benefit of all concerned.

The magnitude and complexity of our current "housing problem" tends to obscure questions of the future. But everything we do now will unquestionably have a bearing on the shape of things to come. So during the present tremendous building program we are justified in exploring every practical suggestion. We ought to try out every device and experiment with every method in order to gain knowledge and experience in a field that is vital to the core of living.

Because housing will help us win the war, let us push through programs that involve both large public projects and private projects developed with responsible private funds. We need both *at once*. On the part of private enterprise we need a more complete understanding of both the housing need and opportunity. And for the public part we need more funds. The present appropriation under the Lanham Act is about exhausted. An addition should be authorized *soon*; and we need quick and cooperative action from Congress no less than from private enterprise.

Let us adopt for housing Mr. Donald Nelson's slogan—"Time is Short!" And using every sound approach, with speed and efficiency let us build, *build*, BUILD.



Photo by FWA

... for both today and tomorrow ...

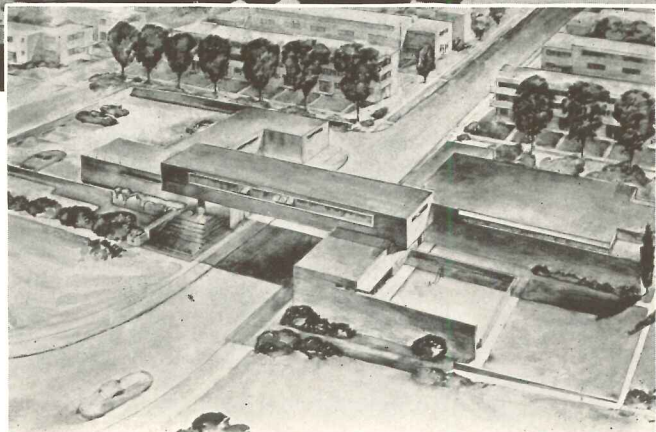
WAR NEEDS



HOUSING



St. Thomas Photo



Design Committee: MacKie & Kamrath; Claude E. Hooton; Eugene Werlin. **Executive Committee:** Hiram A. Salisbury; Joseph Finger; H. Edward Maddox, Jr. **Site Planner:** C. A. Johnson. **General Contractors:** R. F. Ball Construction Company

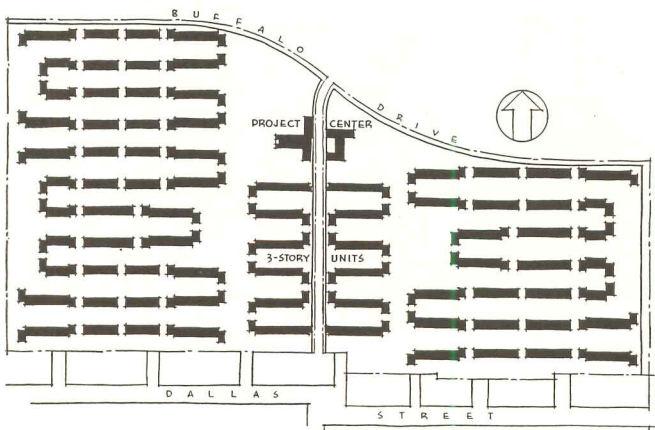
HOUSTON, TEXAS

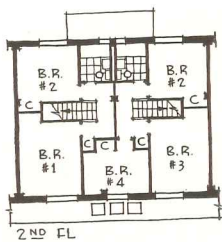
"SAN FELIPE COURTS." In both design and structure, this 1,000-unit low-rent housing project merits special study. Particularly noteworthy elements are the unit plans (see next page), integration of units of differing size into row houses, and the three-story blocks which occupy the central area (see page 50). The remarkable Project Center Building spanning the internal thoroughfare (shown in the rendering at left) will be analyzed in detail in the May RECORD. The 80 row houses, 12 of which are three stories in height, are oriented to face north or south, providing maximum ventilation from prevailing breezes. Circulation throughout the project involves crossing but the single transverse street.

**HOUSING AUTHORITY OF THE CITY OF HOUSTON, TEXAS
ASSOCIATED HOUSING ARCHITECTS OF HOUSTON, TEXAS**

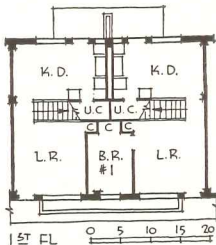
James Ruskin Bailey; Cameron Fairchild; Joseph Finger, Inc.; Hedrick & Lindsley, Inc.; Claude E. Hooton; MacKie & Kamrath; H. Edward Maddox, Jr.; Hiram A. Salisbury; R. G. Schneider & Co., Inc.; Bailey A. Swenson; Eugene Werlin

Coordinating Architect: C. A. Johnson

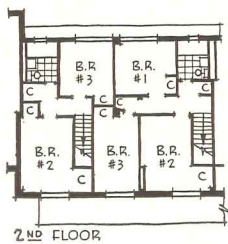




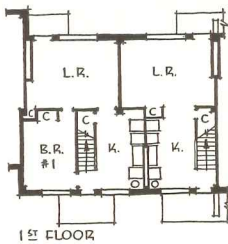
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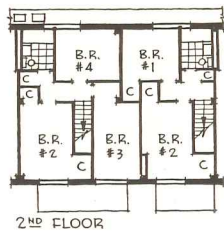
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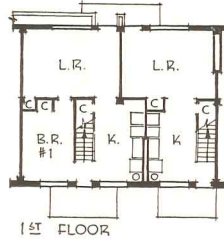
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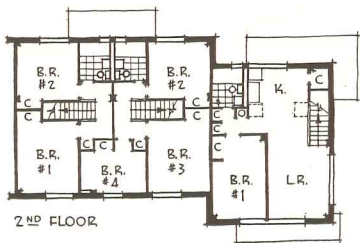
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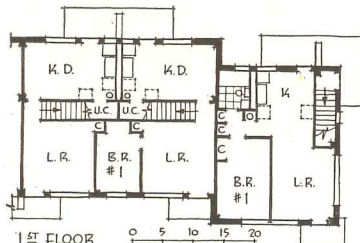
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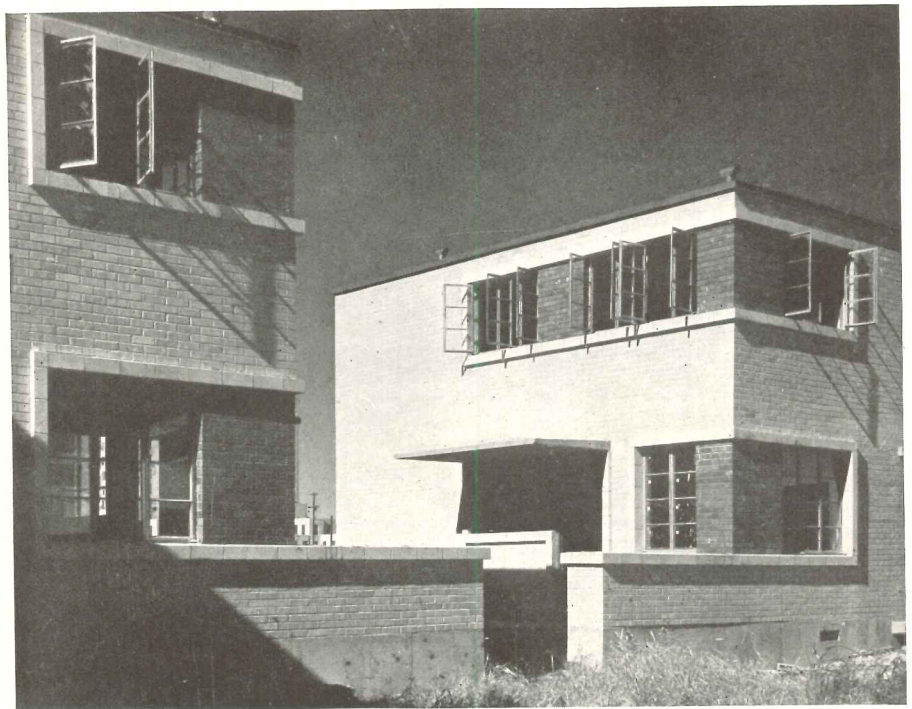
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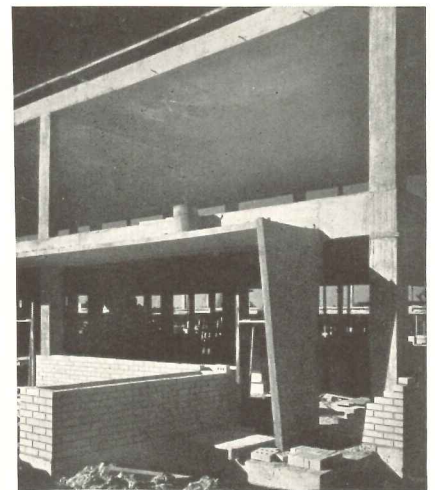
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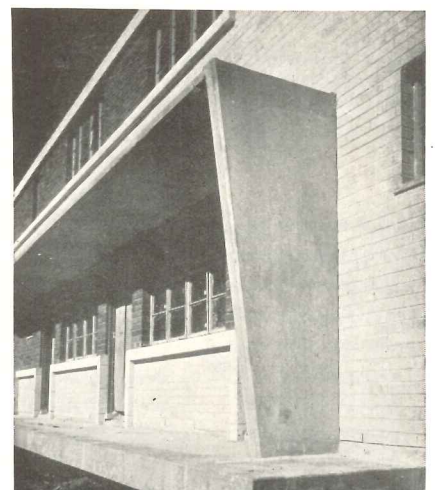
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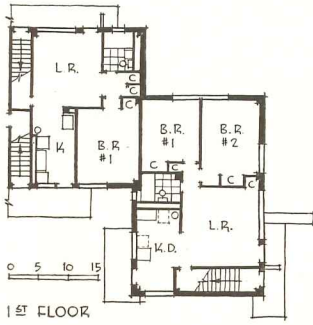
OF THE 1000 dwelling units, 440 are on one floor; the remainder are two-story apartments. Figuring the kitchen and dining space as $1\frac{1}{2}$ rooms, units are 3, 4, $4\frac{1}{2}$, $5\frac{1}{2}$ and $6\frac{1}{2}$ rooms (see typical plans at left). In the two-story buildings, all apartments have both front and rear entrances, with the exception of end units which have ventilation on three sides. All rooms are planned to obtain cross ventilation. The buildings are of fireproof construction with reinforced concrete frame. First floors are of pan and joist construction; other floors are solid slab poured on forms lined with hard-surfaced construction board to form smooth ceilings. Walls (see section opposite) are cavity type, with exterior face of 4-in. brick; interior, 3-in. hollow tile plastered. Interior partitions are 2-in. metal lath and plaster, except between units, where 4-in. hollow tile plastered partitions are used. The project is heated by natural gas circulating heaters in each apartment.



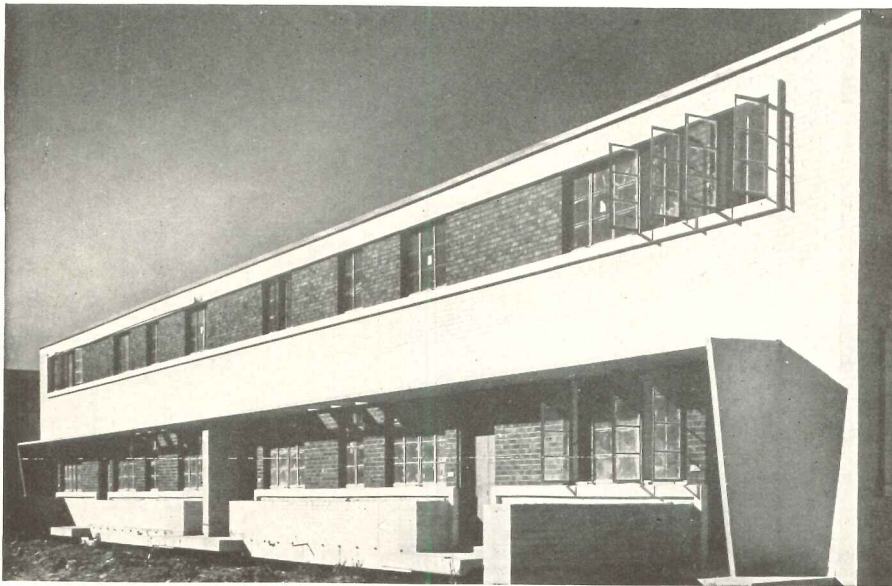
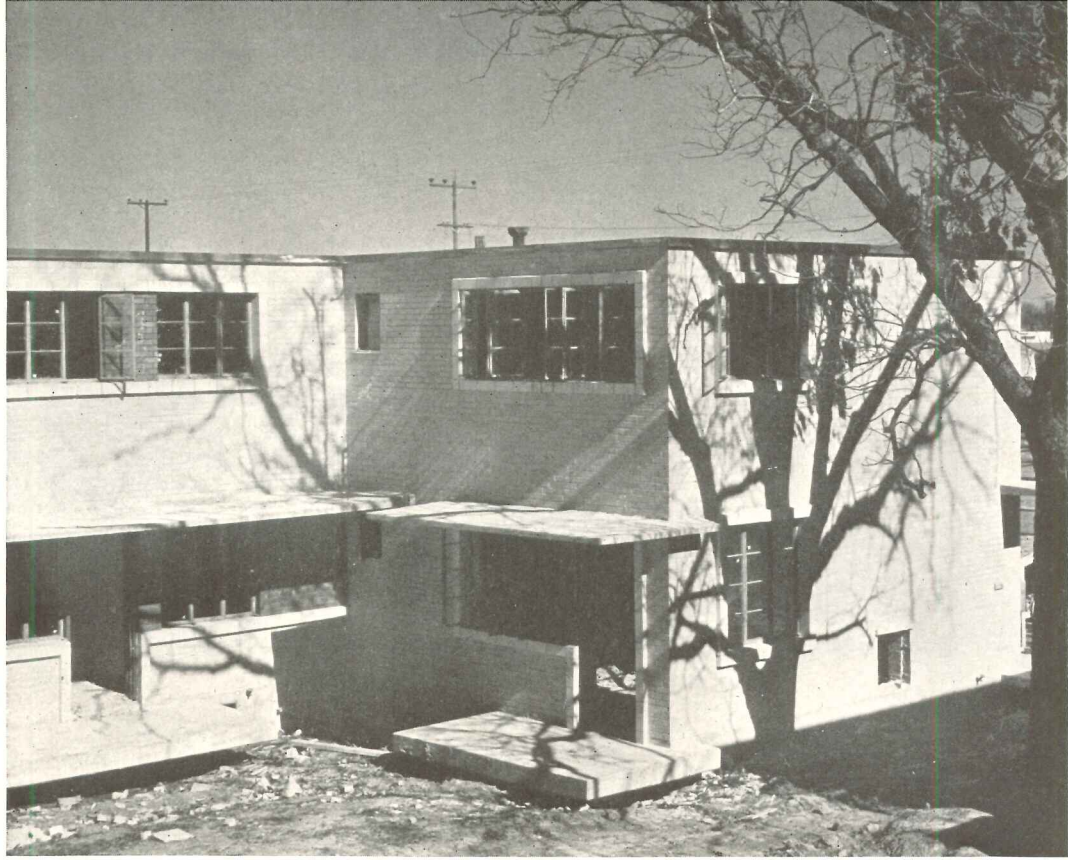
Concrete canopy returns to floor slab . . .



. . . making integral section cast in place

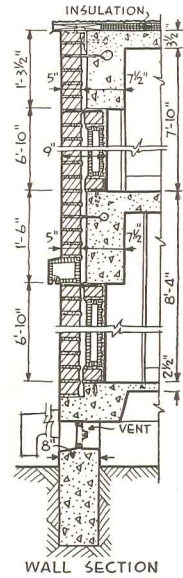


Treatment of end unit of a two-story row house. The second floor plan repeats the first



Photos by St. Thomas

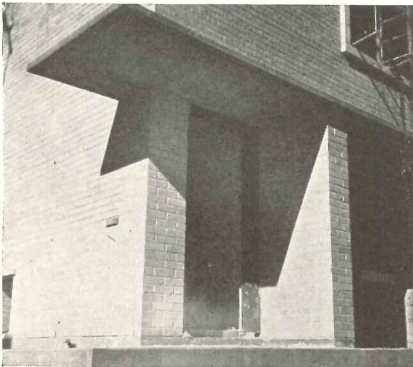
Burgundy brown brick and black mortar between windows; elsewhere reddish buff



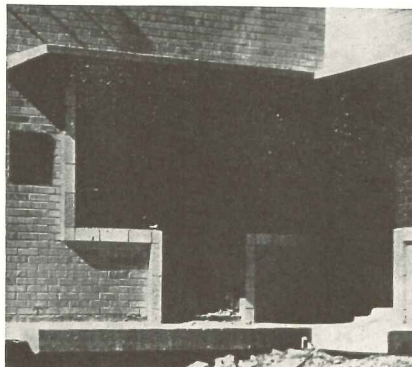
WALL SECTION

Note doorstep slab integral with wall structure, earth filled beneath after completion

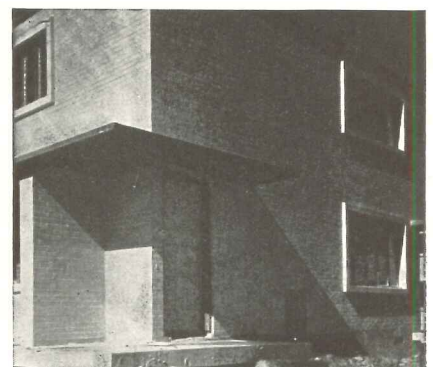
DOORWAYS



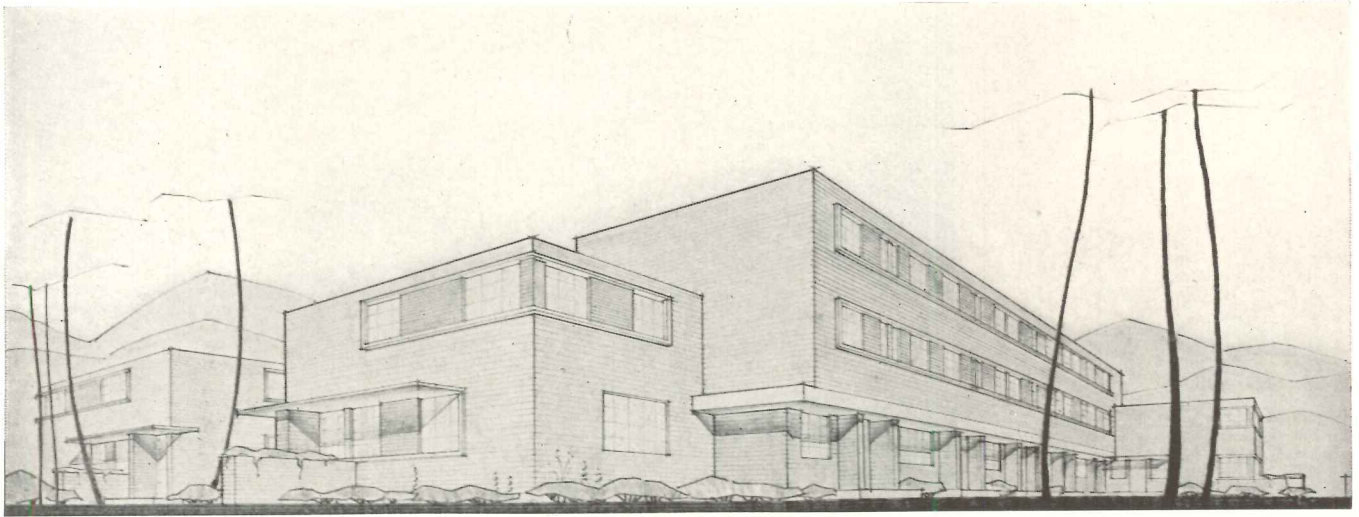
Adjacent entrances separated by a fin



Openings bordered by projecting tile



Entrance shielded by concrete canopy



THREE-STORY UNITS

IN THE CENTER of the plot, bordering the internal thoroughfare, are the 12 three-story row houses. Planned so that all dwelling units have front and back exterior openings, flats are located on the ground floor, living quarters of two-story apartments are on the second, and bedrooms and baths of these apartments occupy the top floor. Similar in construction to the two-story units (reinforced concrete frame and floors, cavity type walls), the taller buildings are a welcome visual contrast to the monotony of so large an area of buildings of similar height. Within the project are three large playgrounds, and park areas are provided between the fronts of row houses. All buildings are serviced either from the cross street or from service drives projected from the east and west boundary drives.

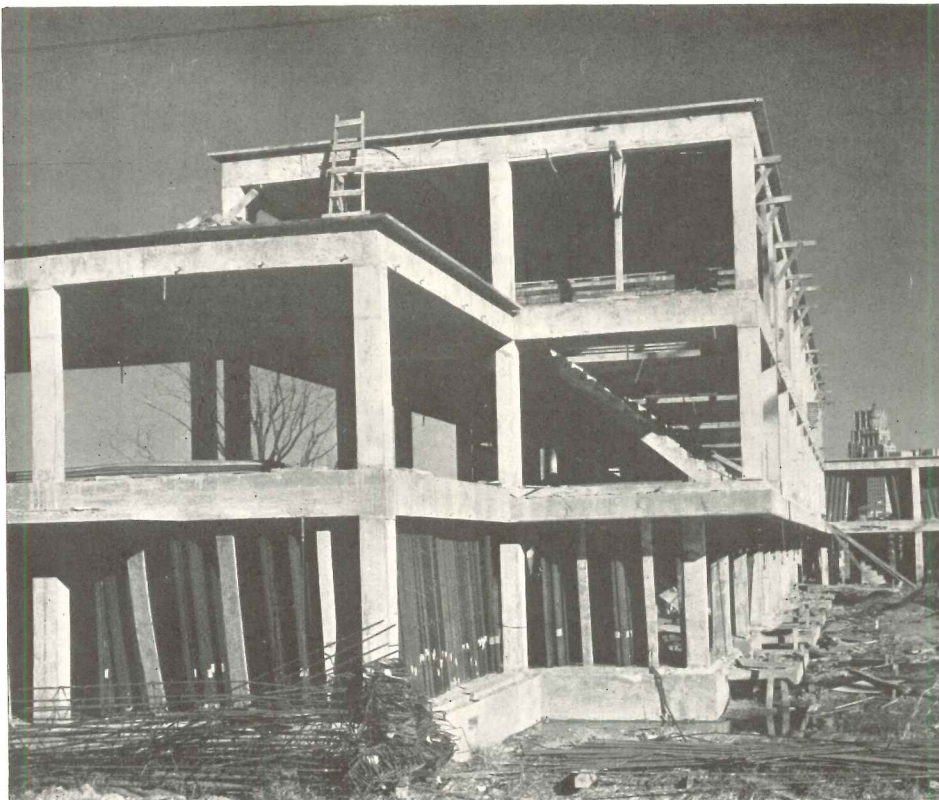
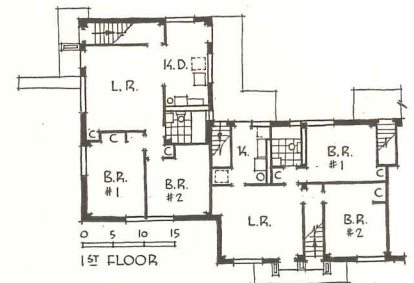
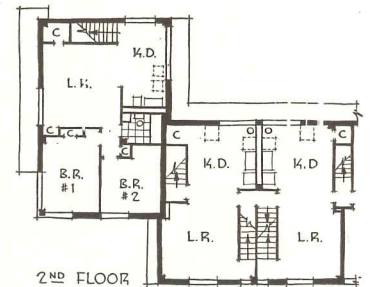
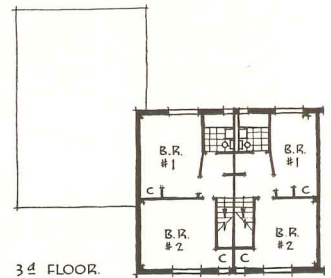
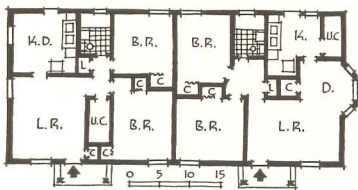


Photo by St. Thomas



ALAMEDA, CALIFORNIA

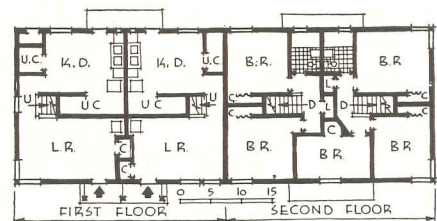


Typical one-story house, with two dwelling units

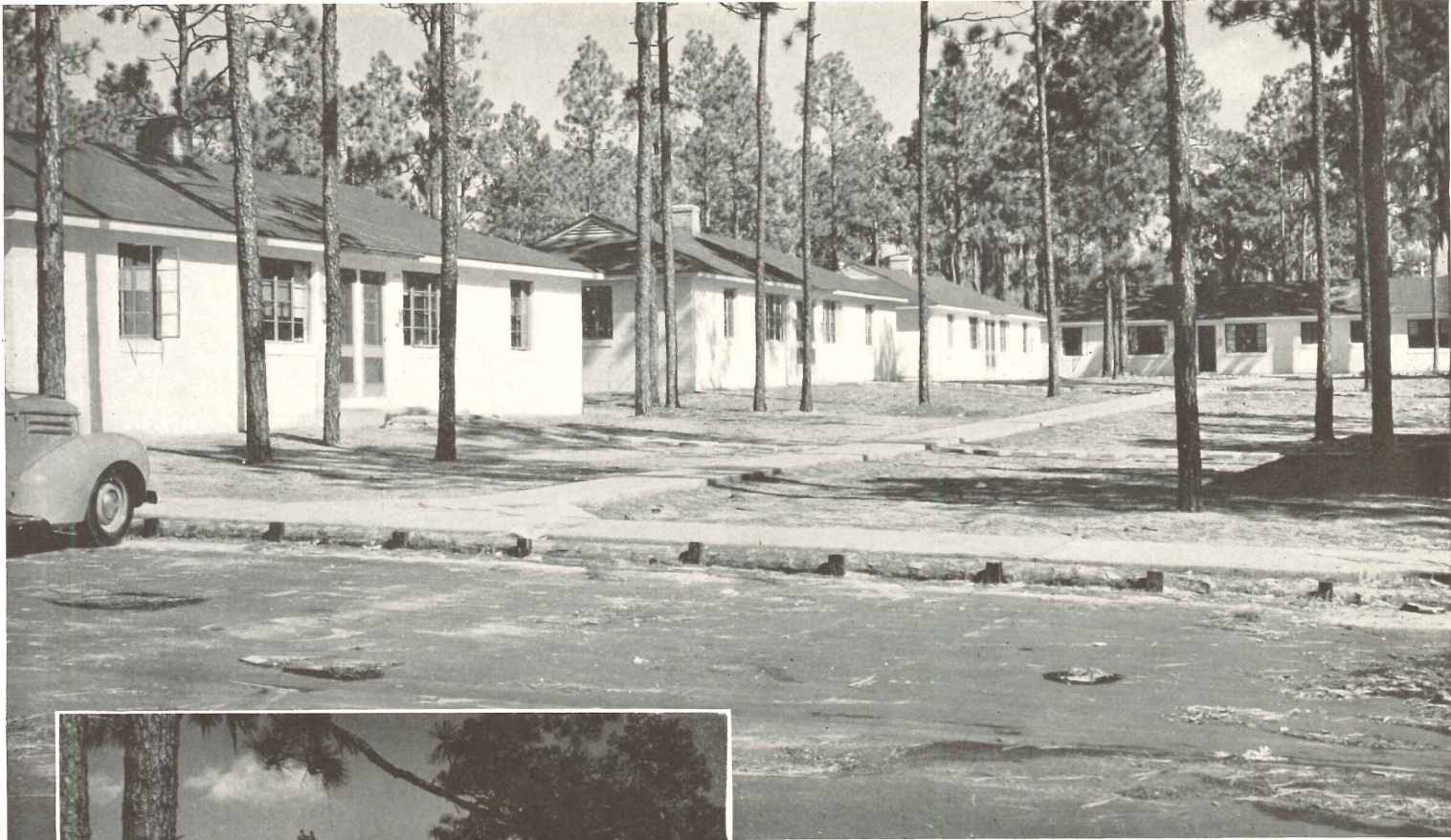
"WOODSTOCK." HOUSING AUTHORITY OF THE CITY OF ALAMEDA. ANDREW T. HASS, ARCHITECT; CARL I. WARNECKE, ASSOCIATE ARCHITECT. A victory housing project for Naval personnel and Navy workers, this West Coast development contains 200 dwelling units. Located on a flat site in the midst of an established residential area, the project is laid out on curving streets, with indented, off-street parking space. Construction of all dwellings consists of poured-in-place concrete foundations, wood frame, redwood siding, and wood shingle roofs. It is noteworthy that all plans, specifications and contract documents for the project were completed in less than one month's time.



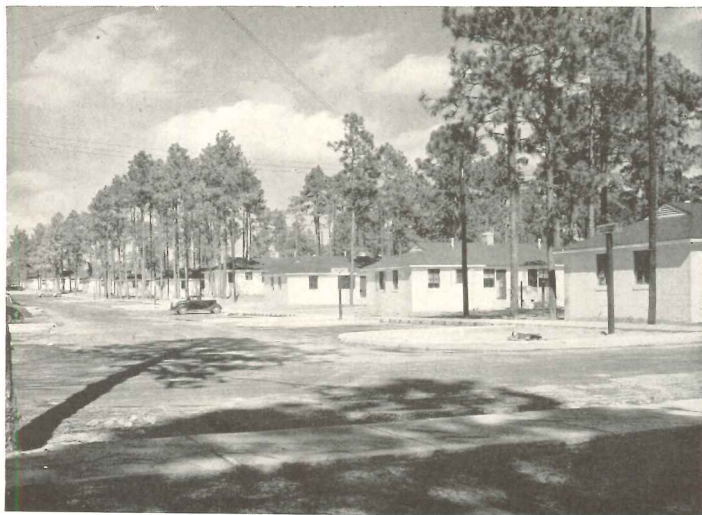
Photos by Waters & Hamlin Studios



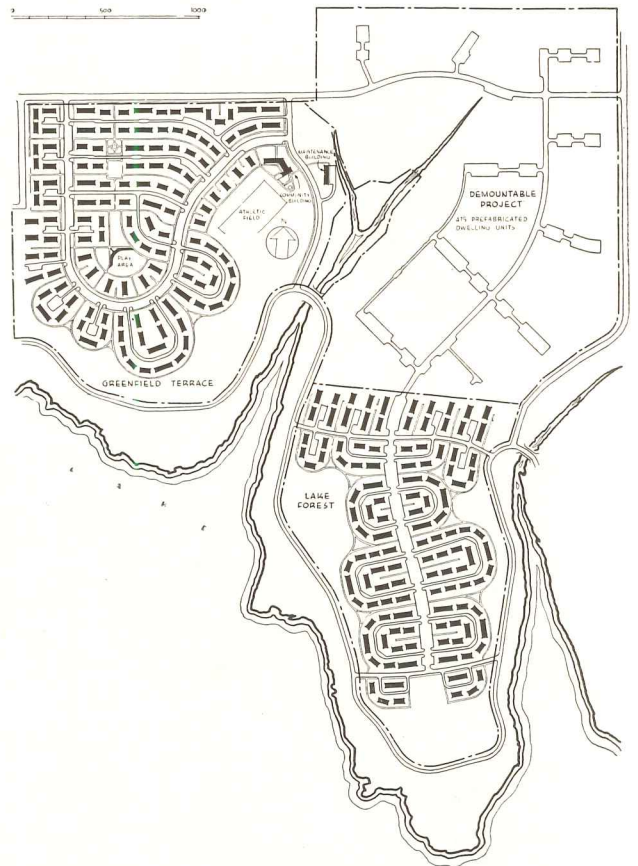
Combined drawing showing plans of typical two-story structure



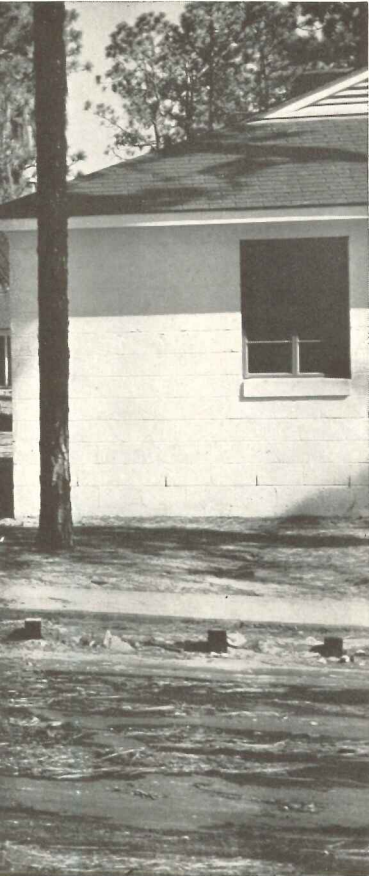
In both "Lake Forest" (at top) and "Greenfield Terrace" (above) the one-story buildings are placed to form intimate groupings or courts



Setback curb lines form parking areas



The lakeside site is organized so that as many units as possible face the lake. All houses front on circulation walks and are serviced from the rear with drives



Photos by Joseph W. Maitor

WILMINGTON, NORTH CAROLINA

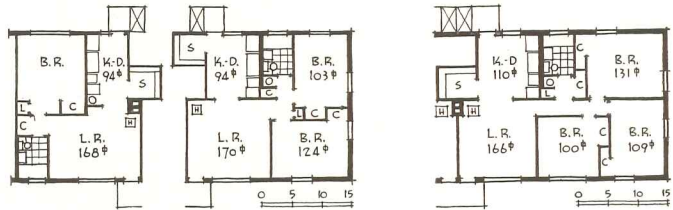
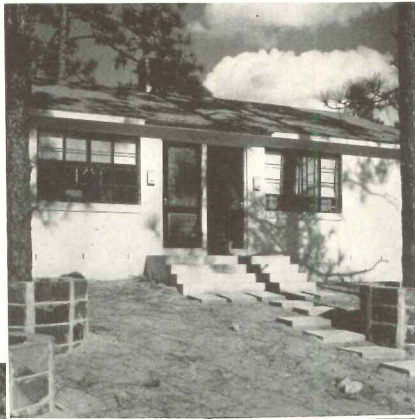
HOUSING AUTHORITY OF THE CITY OF WILMINGTON

"LAKE FOREST." LESLIE N. BONEY, PRINCIPAL ARCHITECT; LYNCH & FOARD, ASSOCIATE ARCHITECTS; WM. HENLEY DEITRICK, COORDINATING ARCHITECT

"GREENFIELD TERRACE" AND THE DEMOUNTABLE PROJECT. LYNCH & FOARD, PRINCIPAL ARCHITECTS; WM. HENLEY DEITRICK, COORDINATING ARCHITECT

THREE WAR HOUSING PROJECTS, located on adjoining sites, form one large project with an eventual total of 1,059 dwelling units. On these two pages the typical housing units used in both "Lake Forest" and "Greenfield Terrace" are analyzed. The slightly plot for the projects overlooks a landscaped drive and lake. As far as possible natural elements have been preserved. In "Lake Forest" there are 284 dwelling units—42 three-room, 170 four-room and 72 five-room apartments—in 121 two- and four-family buildings. In "Greenfield Terrace" there are 300 dwelling units—44 three-room, 180 four-room and 76 five-room units—in 128 two- and four-family buildings.

The houses are built of cinder block on footings and foundation walls of concrete-filled cinder block. Floors are dampproofed, reinforced concrete slab construction on sand fill. Roof framing is of trussed wood rafters and wood sheathing; the roof surface is asphalt shingles; interior partitions are of 2-in. solid plaster on 3/4-in. channel studs supporting board-type lath.



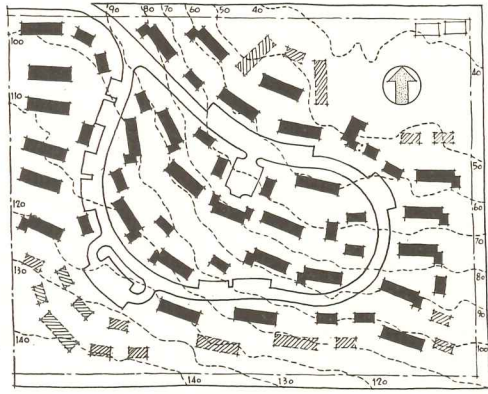
Interlocking units of three, four and five rooms form the various building types



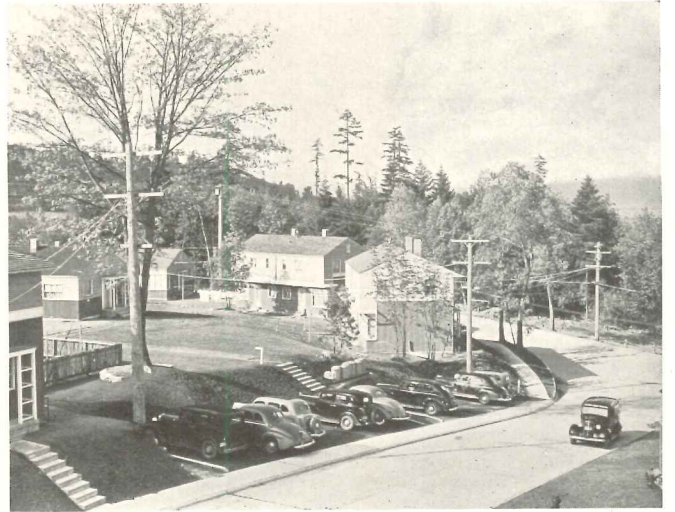
Entrance detail, and typical two-apartment block



Rear service entrance of a typical house block



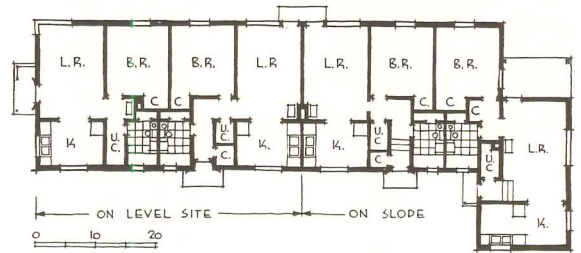
The plot plan capitalizes a sloping terrain



Ample off-street parking occurs at several points

SEATTLE, WASHINGTON

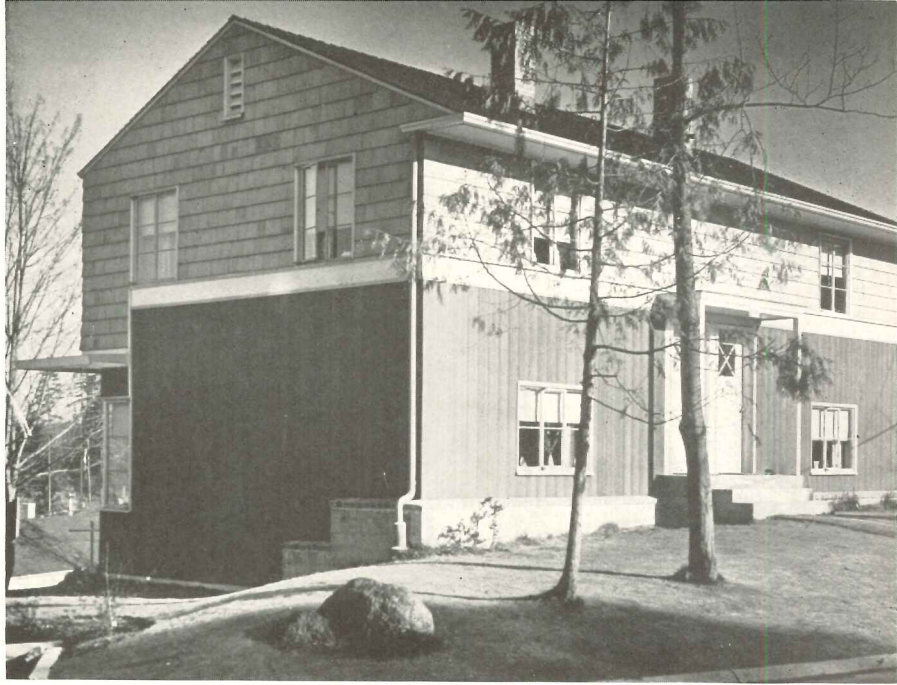
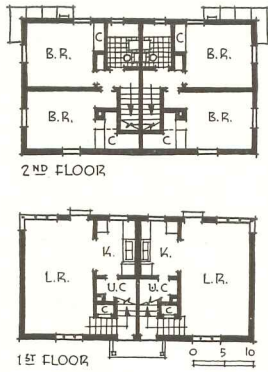
"SAND POINT HOMES." HOUSING AUTHORITY OF THE CITY OF SEATTLE. JOHN GRAHAM AND B. MARCUS PRITECA, ASSOCIATED ARCHITECTS. Situated on a rugged hillside with widespread views, this war housing project respects regional preferences, site amenities and the qualities of local materials to an unusually high degree. Built for the use of married enlisted Naval personnel, the project provides homes for 150 families—112 3-room units; 38 with 4 rooms. The two-bedroom homes are grouped in short two-story buildings allowing cross ventilation of each room. Standard frame construction employs native woods, left natural or stained in rich colors. Sash are of steel.



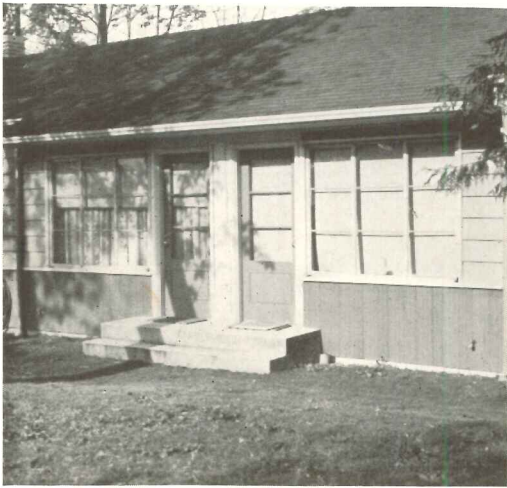
Composite plan of typical single-floor units



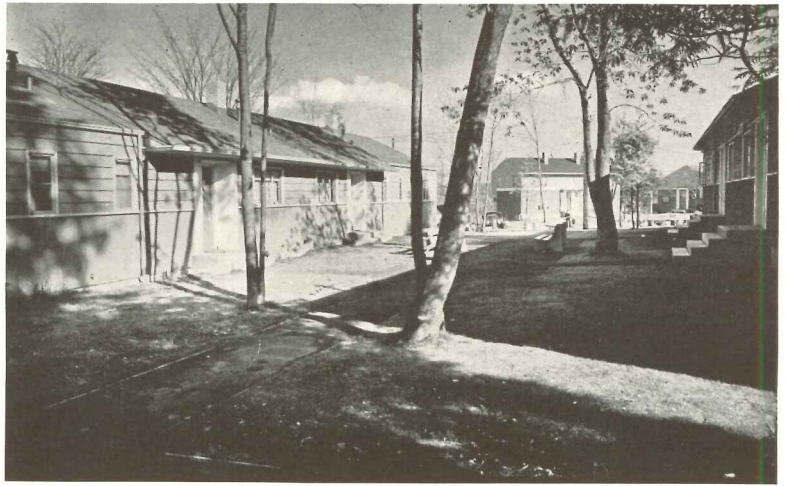
Photos by Ernst Kassowitz



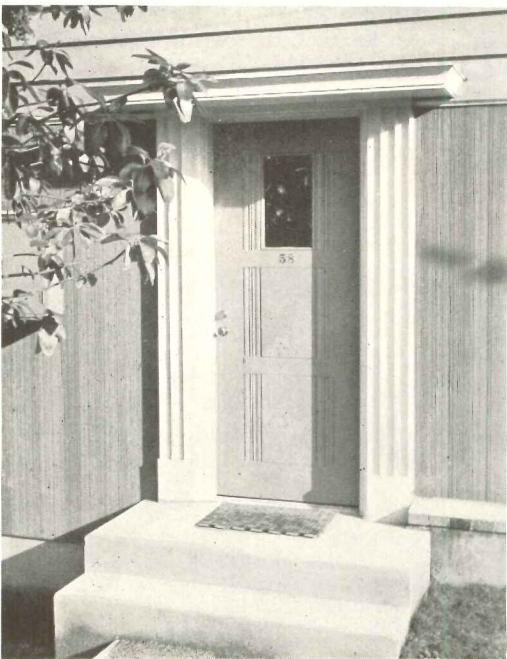
Two-story hillside unit, with entrance between floors



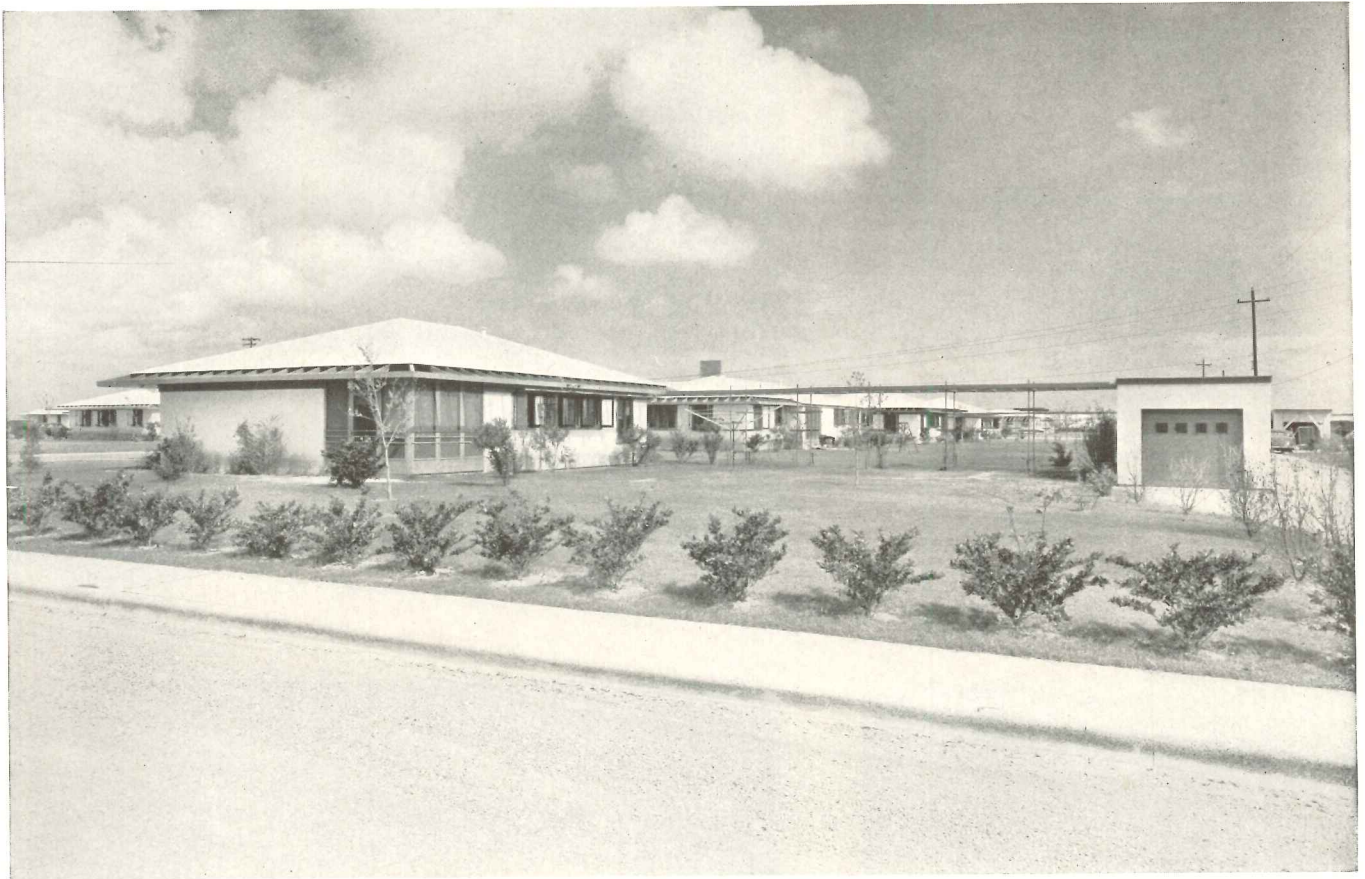
Rear doors of one-story units



Houses grouped around a court



Photos by Seattle Housing Authority



FREEPORT, TEXAS

HOUSES FOR INDUSTRY. ALDEN B. DOW, ARCHITECT.
Unlike the other projects in this study, the group of houses shown on this and the next five pages are separate one-family units, designed for personnel of an important war industry, and they are built on available street sites rather than as a separate project planned from scratch. In structure, most of these frame houses were built with poured ring foundations and concrete piers supporting a termite-proofed

wood platform. Alternate systems are wood floors on wood sleepers over a concrete mat, and asphalt tile laid directly on the mat. Exterior surfacings are stucco, asbestos siding or wood. Roofs are white asbestos shingles, felt, matched roof boards and wood rafters. Hurricane-proofing consists of metal ties between studs and wall sills and—in some cases—dual purpose shutters which, in sunny weather, raise to form canopies.





Photos by Elwood M. Payne-Paralta Studios



TYPE A

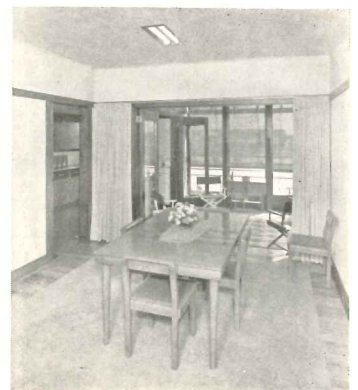
A PERFECTLY SQUARE plan distinguishes this compact, three-bedroom house. Partitioning is at a minimum, with closet areas simply recesses—of the bedrooms. Note the ample closet provided for general storage.



TYPE B

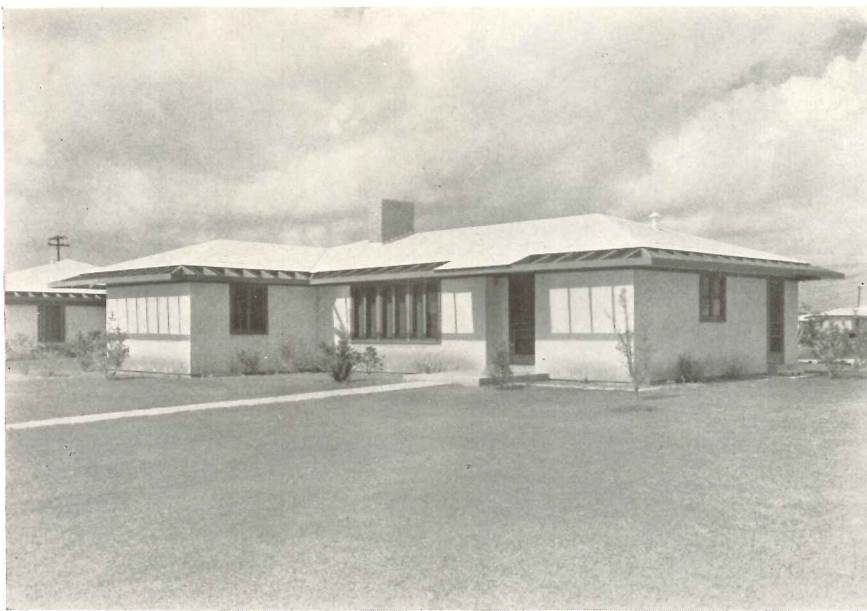
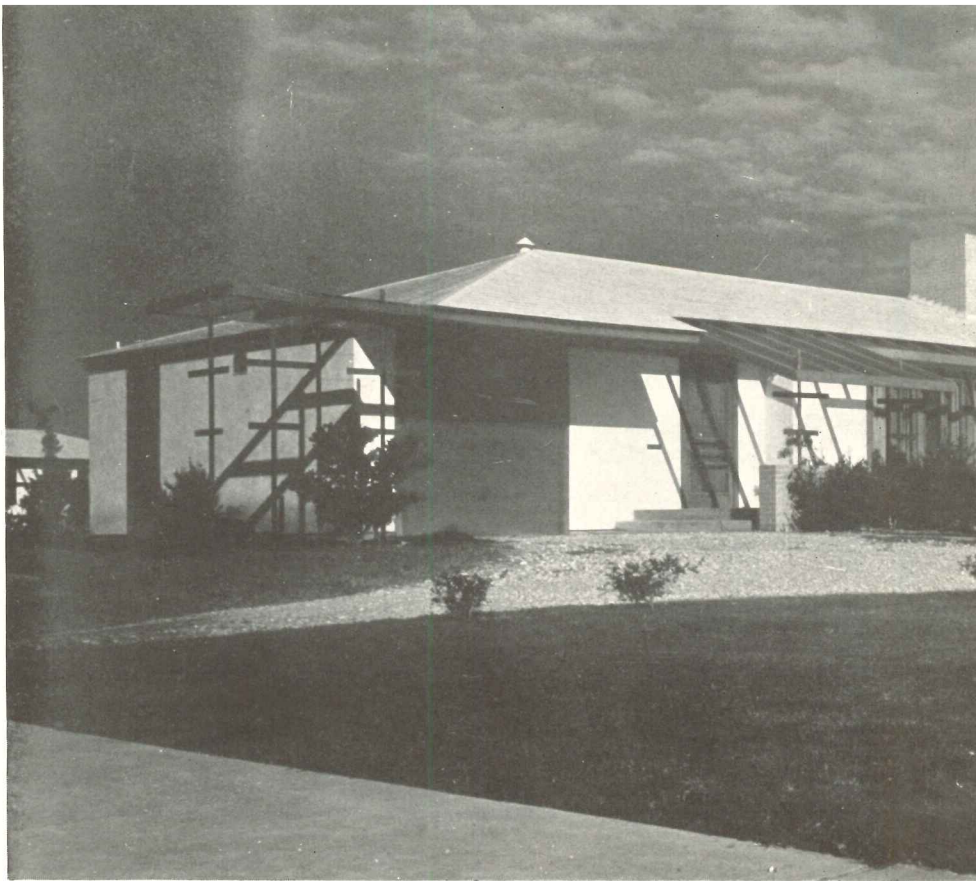
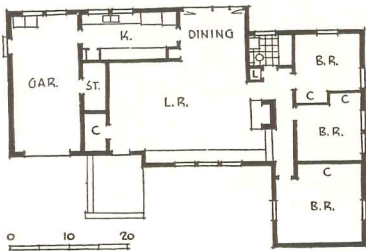
AN EXTENSION of the Type A plan, this rectangular house provides a larger living room plus a dining area. Both of the houses are of frame, diagonally sheathed and stucco-surfaced. House shown is reverse of plan.

Features of the living room are a broad window band and wall surfaces of large-size fiber wallboard. One entire wall of the dining area opens onto the porch



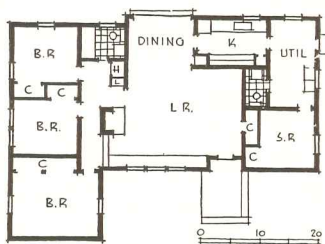
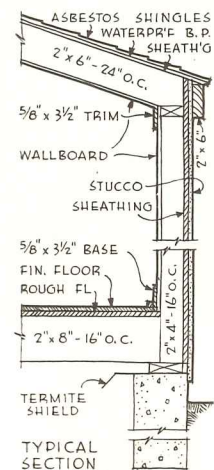
TYPE D

THIS HOUSE and the one below illustrate variations in similar basic plans and the construction of units in reverse. The integrated organization of garage, storage closet, kitchen and dining room is particularly efficient.



TYPE E

THE OPEN PLANNING of living and dining areas is similar to that of Type D. Planned for a family affording a servant, the scheme includes a generous utility room-laundry.



Dining area is ell of living room

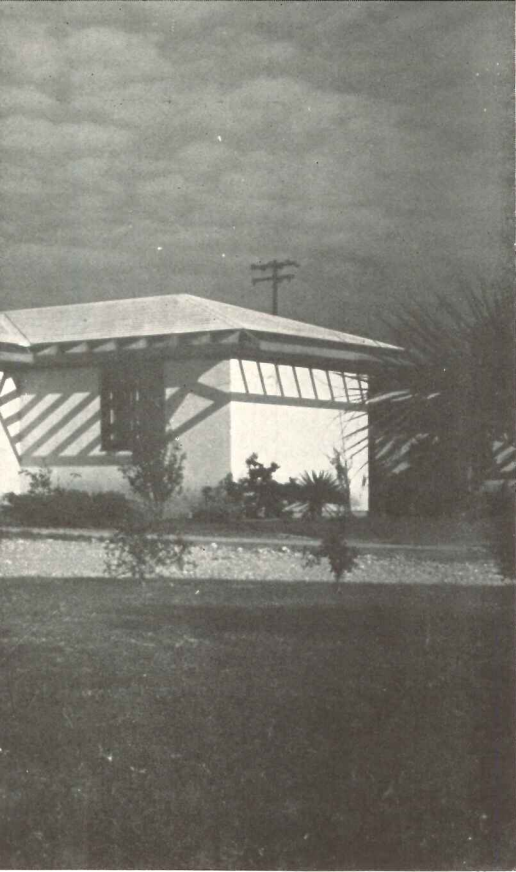
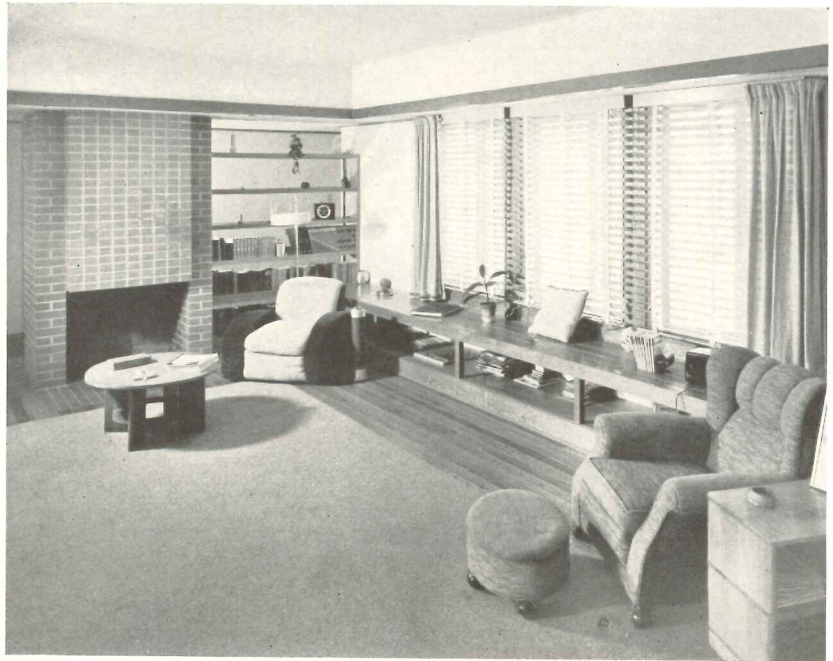
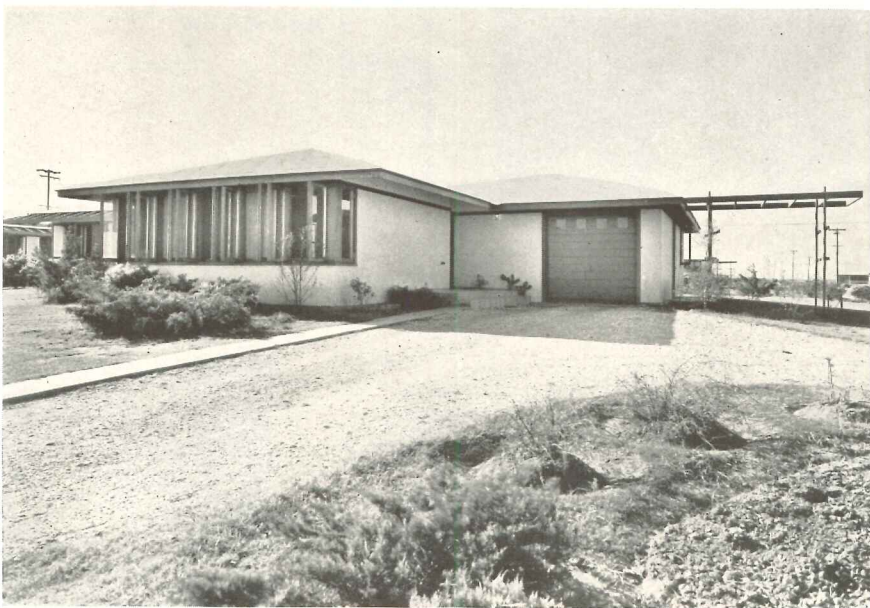


Photo by St. Thomas



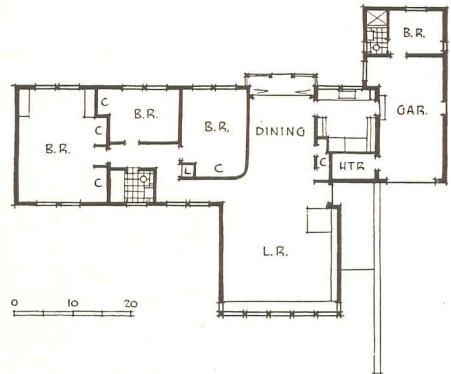
Living room has a wall-length window seat



Photos by Etta Wood M. Payne-Paralta Studios

TYPE G

ONE of the larger houses, this plan includes a dramatic front-to-back living-dining room. The broad overhang of eaves shields the window areas from sun glare.



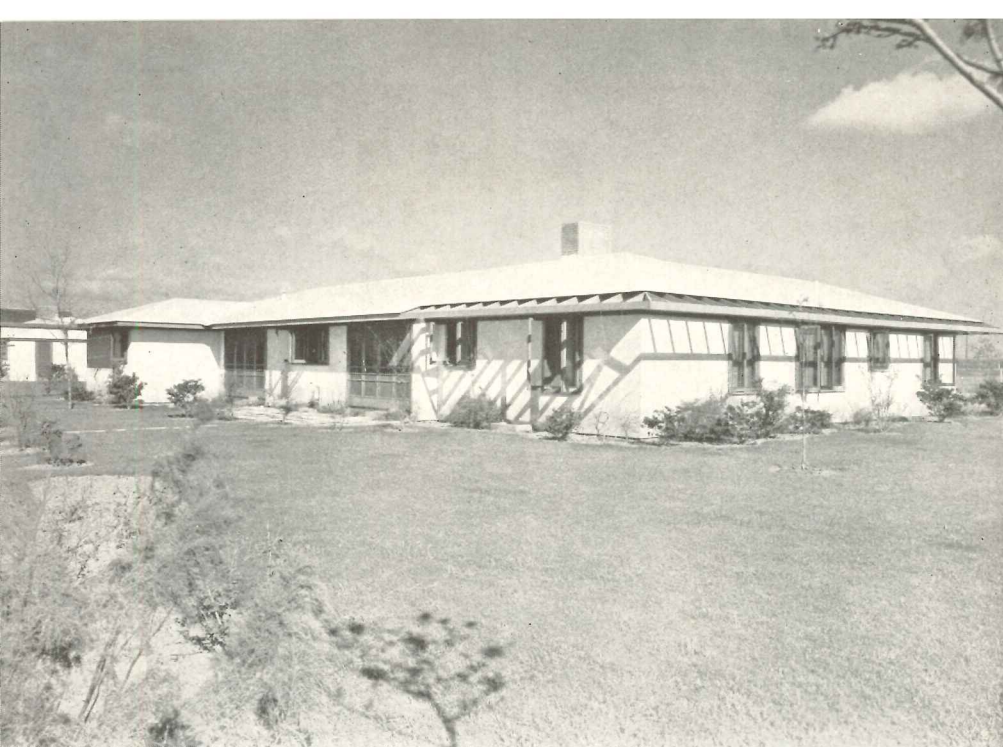
Living room, with window wall at end



Bookshelves border the main entrance

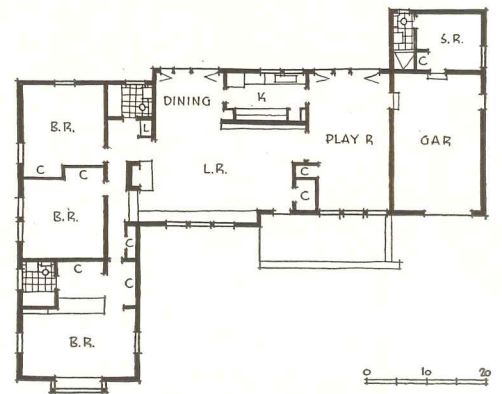
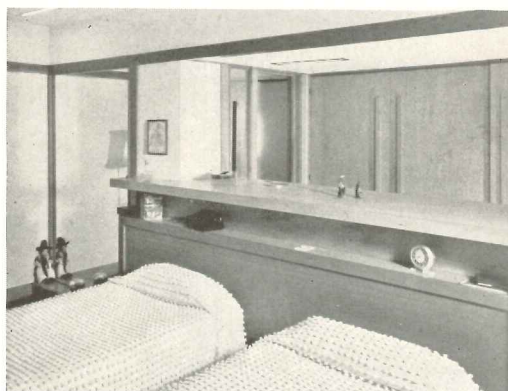
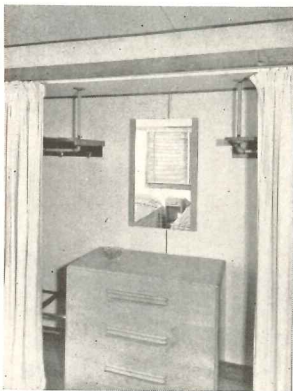


Bedroom showing closet detail

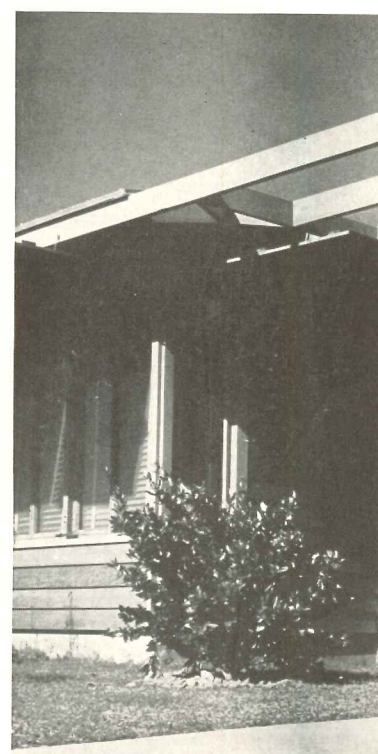
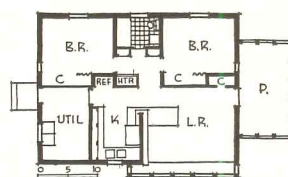


TYPE H

ALTHOUGH a sizable house, this type follows the same forthright, economical planning and structural procedure as the others—closets banked in partition walls, wide overhang of eaves, a single, large area for living and dining space, and simple detailing. Livability in the Texas climate is enhanced by large window areas and cross ventilation in the majority of rooms. In plan, Type H is another variation and extension of the basic scheme that was used for house Types D and E.



Photos by Elwood M. Payne-Paralta Studios



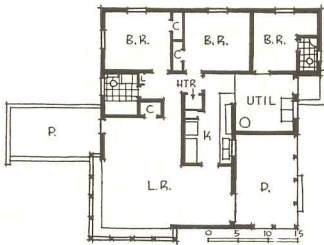
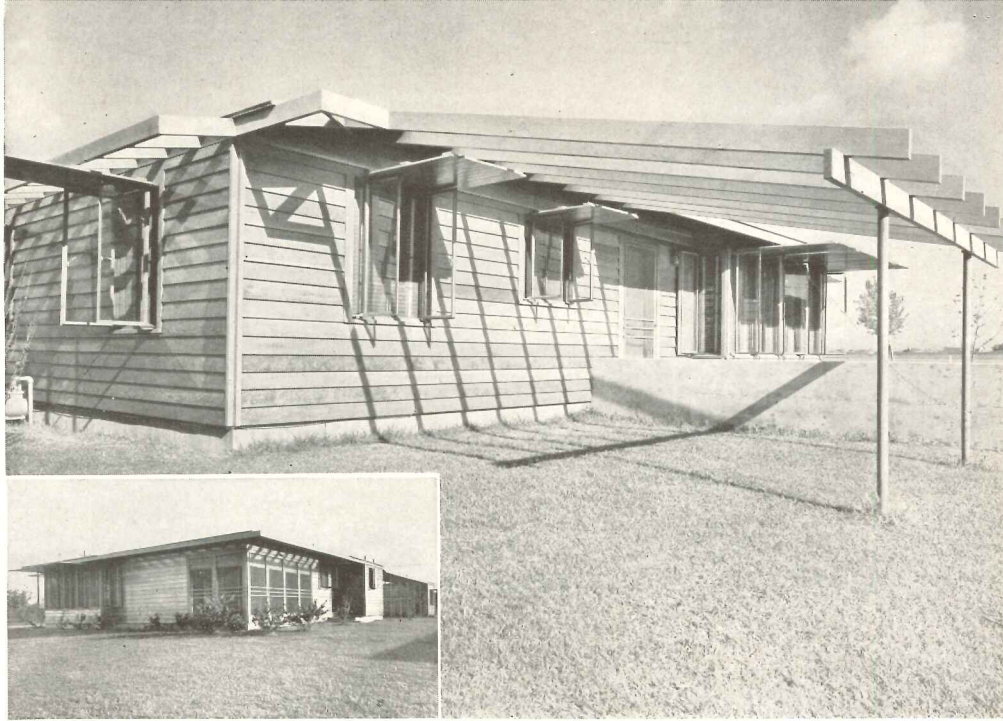
The screened porch projecting

TYPE J

ONE OF THE MOST RECENT of the house types to be built at Freeport, this compact and efficient little plan further develops open planning to include the kitchen as a partitioned area off the living room. Extensive use of functional built-ins and shelving, and a carefully studied organization of storage spaces are highlights of the house design. At far right on opposite page are interior photographs showing a few built-ins and storage units.

TYPE K

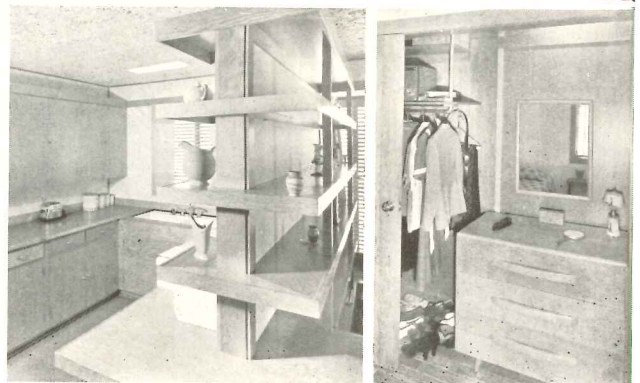
IN THIS HOUSE, the living room bay projects on two sides to obtain maximum of air and ventilation. As in several of the later houses, this one is surfaced in wood instead of stucco. The openness of living room and porch areas is well illustrated in the photographs at right. Other notable plan features include a centrally located heater closet, isolation of bedrooms from the living areas of the house and provision of a utility-laundry room.



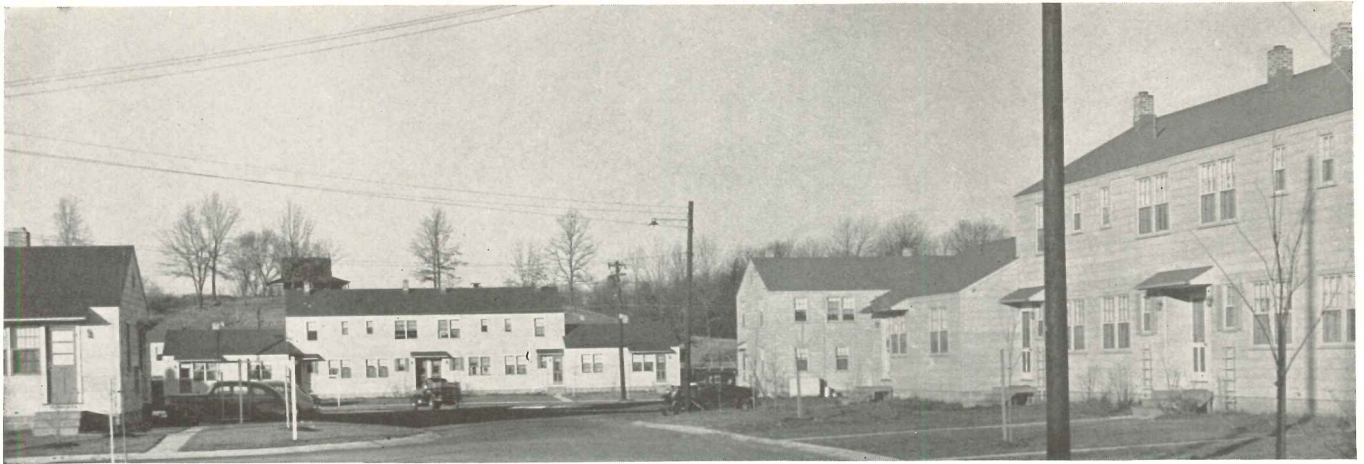
TYPE J (continued)



Photo by St. Thomas

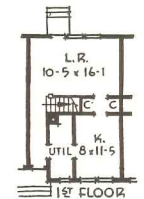
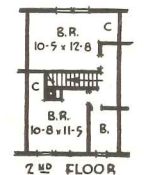
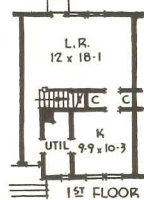
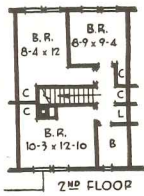


from the house is sheltered by the broad roof overhang

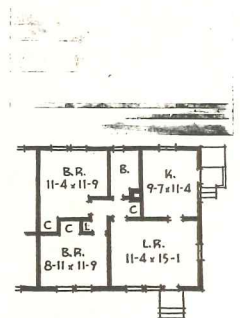


CHICOPEE, MASSACHUSETTS

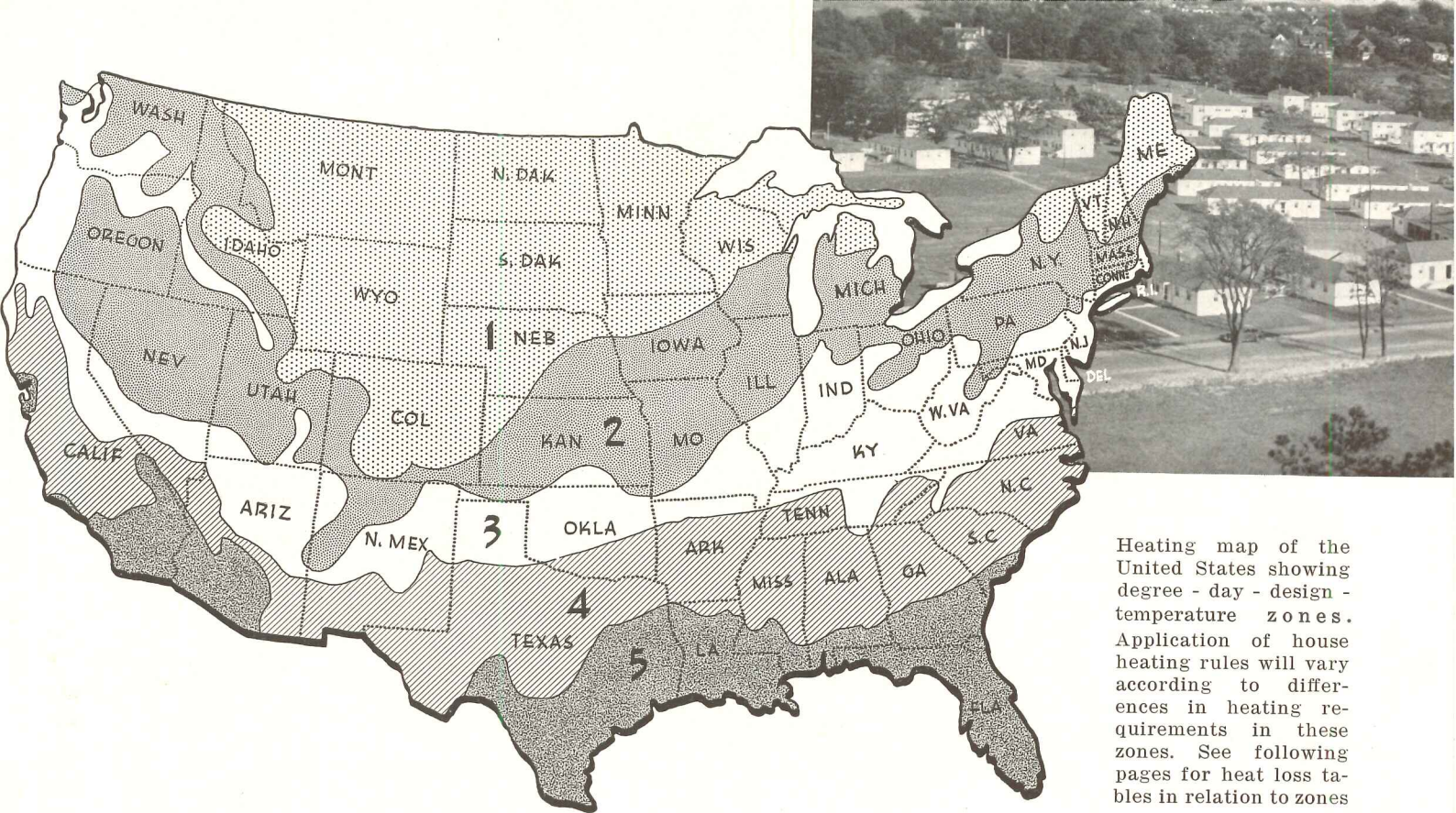
"SHERIDAN CIRCLE." DESIGNED AND CONSTRUCTED BY THE PUBLIC BUILDINGS ADMINISTRATION. Made up of dwellings for 2, 4 and 6 families respectively, this New England housing project has a total of 200 dwelling units for Army enlisted and civilian personnel. The different structures consist of varying alignments of the one- and two-story unit plans shown. Curved streets feature the site layout and create a pleasing residential character. There are 15 buildings with 6 apartments each; 7 houses of the 4-family type and 41 of the one-story houses containing two dwelling units each.



Photos by FWA



The plan of the one-story house is repeated for the end units of the 6-family houses.



Heating map of the United States showing degree-day-design-temperature zones. Application of house heating rules will vary according to differences in heating requirements in these zones. See following pages for heat loss tables in relation to zones

WPB ISSUES

WARTIME RULES FOR HOUSE HEATING

PROVISIONS of the new "Defense Housing Critical List," which became effective on February 24, set performance standards for house heating which may ultimately effect permanent changes in residential design and building practice.

The first objective of the new WPB ruling is, of course, to effect a substantial saving of the metal used in heating systems by reducing the weight of the systems themselves. But instead of specifying arbitrary weight criteria, it limits the size of the heating plant that may be used in any "Victory House."

This limitation is phrased in terms of a maximum net hourly capacity and sets this capacity in Btu per hr. at 66 times the total square foot area of the dwelling. In addition, the new ruling specifies that houses in which such limited heating equipment is used must be so constructed that the maximum hourly heat loss does not exceed the heat-generating capacity of the equipment. As to type, warm air plants may be used in all Victory Houses; but

boiler installations are restricted to buildings containing two or more dwelling units or to extensions of existing plants to service additional living areas.

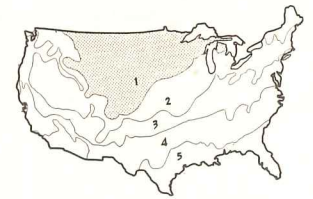
These provisions point directly to the necessity of employing one or more forms of insulation in house construction in nearly every section of the country. As another result, basements may now be regarded as more important than formerly. Aside from the extra space (for coal storage, etc.) they would provide in a small house, basements have an insulating value from a heating point of view.

To quote from Robert Thulman, heating engineer of FHA's Technical Division, "Check calculations on typical houses show that floor losses are not only of major proportion, but are one of the primary causes of unsatisfactory heating. With tightening restrictions on motors, controls and metals generally, the fan-furnace unit may have to give way to the gravity furnace, the proper operation of which requires a basement."

Check calculations have also shown that it will be difficult to follow provisions of the new ruling if unusually large windows or masonry walls are used—particularly in a house without a basement. Though heat losses through large window areas can, of course, be substantially reduced by using storm sash—or some other means of double-glazing—added costs would probably be prohibitive. And it is generally true that masonry walls cannot be insulated as efficiently as those of wood construction.

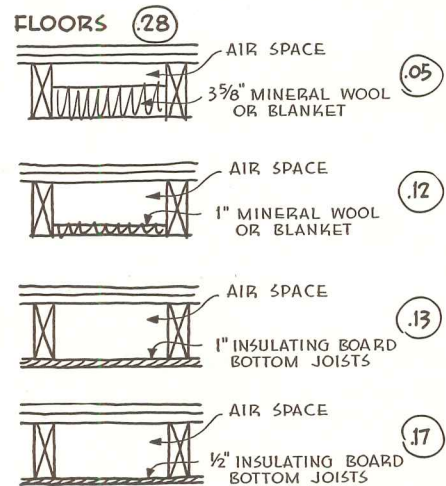
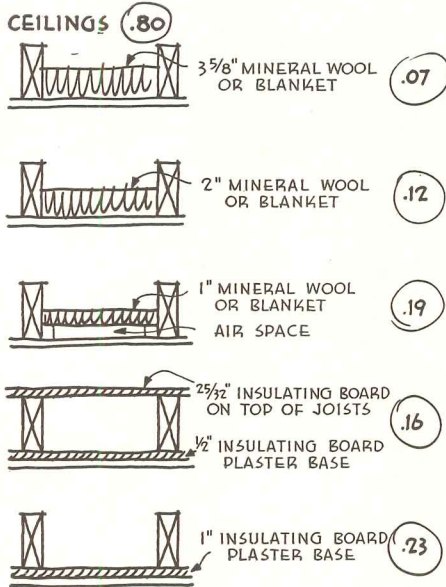
Thus over-all results of the new "Critical List" heating requirements may operate to effect a rigid standardization in residential construction at least so far as the single-family "Victory House" is concerned. This statement applies to "prefabricated" houses as well as those built in the traditional fashion. Designers will have more leeway, of course, in the case of multi-family dwellings. But even here limitations are strict and will produce the same general results.

(Continued on page 66)



ZONE 1: Temperature below -10° F; degree-days over 8000

CHARTS on these pages show heat losses for five floor areas in four degree-day-design-temperature zones.



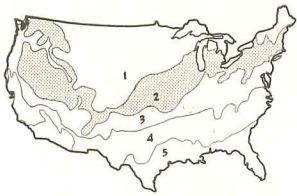
ONE-STORY HOUSE

METHOD OF INSULATING	BTU/SQ. FT. AREA				
	500	700	900	1100	1300
CEILING\$—Plaster on Lath—No Insulation	.80	72.0	72.0	72.0	72.0
3 5/8" Mineral Wool or Blanket	.07	6.3	6.3	6.3	6.3
2" Mineral Wool or Blanket	.12	10.8	10.8	10.8	10.8
1" Mineral Wool or Blanket Plus One Air Space	.19	17.1	17.1	17.1	17.1
1/2" Insulating Board Plaster Base—25/32" Ins. Board, Top Joists	.16	12.4	12.4	12.4	12.4
1" Insulating Board Plaster Base	.23	20.7	20.7	20.7	20.7
FLOORS—Double	.28	25.2	25.2	25.2	25.2
BASEMENT		0.0	0.0	0.0	0.0
3 5/8" Mineral Wool or Blanket Plus One Air Space	.05	4.5	4.5	4.5	4.5
1" Mineral Wool or Blanket Plus One Air Space	.12	10.8	10.8	10.8	10.8
1" Insulating Board Bottom Joists	.13	11.7	11.7	11.7	11.7
1/2" Insulating Board Bottom Joists	.17	15.3	15.3	15.3	15.3
WALLS—Standard Frame	.26	27.0	22.8	19.9	17.7
3 5/8" Mineral Wool or Blanket	.06	6.2	5.3	4.6	4.1
2" Mineral Wool or Blanket	.08	8.3	7.0	6.1	5.4
1" Mineral Wool or Blanket Plus Two Air Spaces	.12	12.5	10.5	9.2	8.2
1/2" Insulating Board Plaster Base—25/32" Ins. Board Sheathing	.15	15.6	13.1	11.5	10.2
25/32" Insulating Board Sheathing	.20	20.8	17.5	15.3	13.6
1/2" Insulating Board Plaster Base	.19	19.7	16.6	14.5	12.1
WALLS—Furred Brick	.29	30.1	25.3	23.2	19.8
1/2" Flexible Mineral Wool or Blanket—One Air Space	.19	19.7	16.6	14.5	13.0
1" Insulating Board Plaster Base	.15	15.5	13.1	11.5	10.2
1/2" Insulating Board Plaster Base	.20	20.8	17.4	15.3	13.6
WINDOWS & DOORS—Single	1.13	31.5	26.9	24.3	22.7
Double	.45	12.5	10.7	9.7	9.0
INFILTRATION	Cx .27	19.4	19.4	19.4	19.4

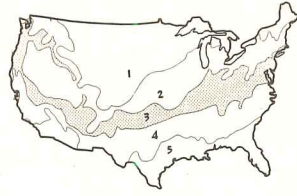
TWO-STORY HOUSE

METHOD OF INSULATING	BTU/SQ. FT. AREA				
	500	700	900	1100	1300
CEILING\$—Plaster on Lath—No Insulation	.80	36.0	36.0	36.0	36.0
3 5/8" Mineral Wool or Blanket	.07	3.2	3.2	3.2	3.2
2" Mineral Wool or Blanket	.12	5.4	5.4	5.4	5.4
1" Mineral Wool or Blanket Plus One Air Space	.19	8.6	8.6	8.6	8.6
1/2" Insulating Board Plaster Base—25/32" Ins. Board, Top Joists	.16	7.2	7.2	7.2	7.2
1" Insulating Board Plaster Base	.23	10.4	10.4	10.4	10.4
FLOORS—Double	.28	12.6	12.6	12.6	12.6
BASEMENT		0.0	0.0	0.0	0.0
3 5/8" Mineral Wool or Blanket Plus One Air Space	.05	2.3	2.3	2.3	2.3
1" Mineral Wool or Blanket Plus One Air Space	.12	5.4	5.4	5.4	5.4
1" Insulating Board Bottom Joists	.13	5.8	5.8	5.8	5.8
1/2" Insulating Board Bottom Joists	.17	7.6	7.6	7.6	7.6
WALLS—Standard Frame	.26	40.7	34.1	30.1	26.9
3 5/8" Mineral Wool or Blanket	.06	9.4	7.9	6.9	6.2
2" Mineral Wool or Blanket	.08	12.6	10.5	9.2	8.3
1" Mineral Wool or Blanket Plus Two Air Spaces	.12	18.8	15.7	13.9	12.4
1/2" Insulating Board Plaster Base—25/32" Ins. Board Sheathing	.15	23.5	19.6	17.3	15.5
25/32" Insulating Board Sheathing	.20	31.4	26.2	23.2	20.7
1/2" Insulating Board Plaster Base	.19	29.8	24.9	22.0	19.7
WALLS—Furred Brick	.29	45.4	38.0	33.6	30.1
1/2" Flexible Mineral Wool or Blanket—One Air Space	.19	29.7	24.9	22.0	19.7
1" Insulating Board Plaster Base	.15	23.4	19.7	17.4	15.6
1/2" Insulating Board Plaster Base	.20	31.3	26.2	23.2	20.7
WINDOWS & DOORS—Single	1.13	31.5	26.9	24.3	22.7
Double	.45	12.5	10.7	9.7	9.0
INFILTRATION	Cx .27	19.4	19.4	19.4	19.4

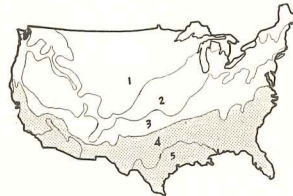
Heat loss reductions as a result of insulation are reasonable averages resulting from a great number of check calculations. Figures can be used to determine over-all heat loss reduction as a basis for selecting type and capacity of heating plant according to provisions of the "Defense Housing Critical List"—provided that structural elements and insulation types follow those described and sketched here. There are many other possible combinations. These were chosen as representing the most usual type of "Victory House" construction.



ZONE 2: Temperature from -10° to 0° F; degree-days from 7999 to 6000



ZONE 3: Temperature from above 0° to 10° F; degree-days from 5999 to 4000

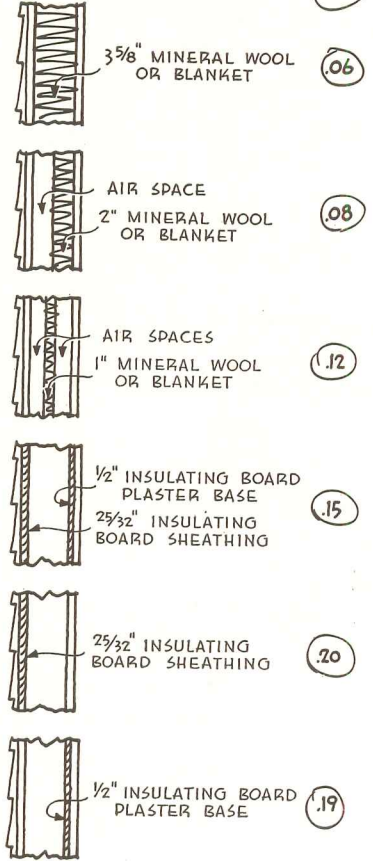


ZONES 4 and 5: Temperature from 10° to 20° F and above; degree-days from 3999 to 2000 and below

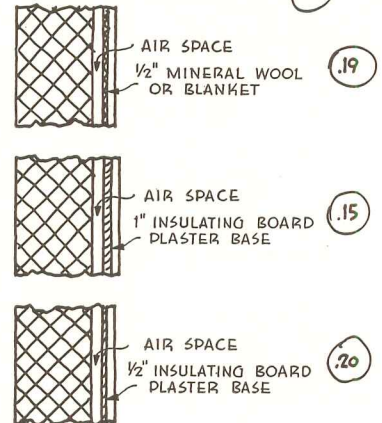
BTU/SQ. FT. AREA					BTU/SQ. FT. AREA					BTU/SQ. FT. AREA				
500	700	900	1100	1300	500	700	900	1100	1300	500	700	900	1100	1300
64.0	64.0	64.0	64.0	64.0	56.0	56.0	56.0	56.0	56.0	48.0	48.0	48.0	48.0	48.0
5.6	5.6	5.6	5.6	5.6	4.9	4.9	4.9	4.9	4.9	4.2	4.2	4.2	4.2	4.2
9.6	9.6	9.6	9.6	9.6	8.4	8.4	8.4	8.4	8.4	7.2	7.2	7.2	7.2	7.2
15.2	15.2	15.2	15.2	15.2	13.3	13.3	13.3	13.3	13.3	11.4	11.4	11.4	11.4	11.4
12.8	12.8	12.8	12.8	12.8	11.2	11.2	11.2	11.2	11.2	9.6	9.6	9.6	9.6	9.6
18.4	18.4	18.4	18.4	18.4	16.1	16.1	16.1	16.1	16.1	13.8	13.8	13.8	13.8	13.8
22.4	22.4	22.4	22.4	22.4	19.6	19.6	19.6	19.6	19.6	16.8	16.8	16.8	16.8	16.8
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	3.0
9.6	9.6	9.6	9.6	9.6	8.4	8.4	8.4	8.4	8.4	7.2	7.2	7.2	7.2	7.2
10.4	10.4	10.4	10.4	10.4	9.1	9.1	9.1	9.1	9.1	7.8	7.8	7.8	7.8	7.8
13.6	13.6	13.6	13.6	13.6	11.9	11.9	11.9	11.9	11.9	10.2	10.2	10.2	10.2	10.2
24.0	20.2	17.7	15.8	14.4	21.0	17.7	15.5	13.8	12.6	18.0	15.2	13.3	11.8	10.8
5.6	4.7	4.1	3.7	3.3	4.9	4.1	3.6	3.2	2.8	4.2	3.5	3.1	2.7	2.5
7.4	6.2	5.5	4.8	4.4	6.5	5.5	4.8	4.3	3.9	5.6	4.7	4.1	3.6	3.8
11.1	9.3	8.2	7.3	6.7	9.7	8.2	7.2	6.4	5.8	8.3	7.0	6.2	5.5	5.0
13.8	11.6	10.2	9.1	8.3	12.1	10.2	8.9	8.0	7.3	10.4	8.8	7.7	6.8	6.2
18.5	15.5	13.6	12.2	11.1	16.2	13.6	11.9	10.6	9.7	13.9	11.7	10.2	9.1	8.3
17.5	14.8	12.9	11.6	10.5	15.4	12.9	11.3	10.1	9.2	13.2	11.1	9.7	8.6	7.9
26.8	22.7	19.7	17.6	16.1	23.4	19.7	17.3	15.4	14.1	20.0	16.9	14.8	13.2	12.0
17.6	14.9	12.9	11.5	10.5	15.3	12.9	11.3	10.1	9.2	13.1	11.1	9.7	8.6	7.9
13.9	11.7	10.3	9.1	8.3	12.1	10.2	9.0	7.9	7.3	10.3	8.8	7.7	6.8	6.2
18.5	15.7	13.6	12.2	11.1	16.1	13.6	11.9	10.6	9.7	13.8	11.7	10.2	9.1	8.3
28.0	23.9	21.6	20.1	19.1	24.5	20.9	18.7	17.6	16.8	21.0	17.9	16.2	15.1	14.4
11.2	9.5	8.6	8.0	7.6	9.8	8.3	7.5	7.0	6.7	8.3	7.1	6.5	6.0	5.7
17.3	17.3	17.3	17.3	17.3	15.1	15.1	15.1	15.1	15.1	12.9	12.9	12.9	12.9	12.9

BTU/SQ. FT. AREA					BTU/SQ. FT. AREA					BTU/SQ. FT. AREA				
500	700	900	1100	1300	500	700	900	1100	1300	500	700	900	1100	1300
32.0	32.0	32.0	32.0	32.0	28.0	28.0	28.0	28.0	28.0	24.0	24.0	24.0	24.0	24.0
2.8	2.8	2.8	2.8	2.8	2.5	2.5	2.5	2.5	2.5	2.1	2.1	2.1	2.1	2.1
4.8	4.8	4.8	4.8	4.8	4.2	4.2	4.2	4.2	4.2	3.6	3.6	3.6	3.6	3.6
7.6	7.6	7.6	7.6	7.6	6.7	6.7	6.7	6.7	6.7	5.7	5.7	5.7	5.7	5.7
6.4	6.4	6.4	6.4	6.4	5.6	5.6	5.6	5.6	5.6	4.8	4.8	4.8	4.8	4.8
9.2	9.2	9.2	9.2	9.2	8.1	8.1	8.1	8.1	8.1	6.9	6.9	6.9	6.9	6.9
11.2	11.2	11.2	11.2	11.2	9.8	9.8	9.8	9.8	9.8	8.4	8.4	8.4	8.4	8.4
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.0	2.0	2.0	2.0	2.0	1.8	1.8	1.8	1.8	1.8	1.5	1.5	1.5	1.5	1.5
4.8	4.8	4.8	4.8	4.8	4.2	4.2	4.2	4.2	4.2	3.6	3.6	3.6	3.6	3.6
5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	3.9	3.9	3.9	3.9	3.9
6.8	6.8	6.8	6.8	6.8	6.0	6.0	6.0	6.0	6.0	5.1	5.1	5.1	5.1	5.1
36.2	31.1	26.8	24.0	21.1	31.7	26.5	23.4	21.0	18.4	27.1	22.7	20.1	17.6	15.6
8.4	7.2	6.2	5.6	4.8	7.3	6.1	5.4	4.9	4.2	6.3	5.2	4.6	4.1	3.6
11.1	9.6	8.3	7.4	6.5	9.8	8.2	7.2	6.5	5.7	8.4	7.0	6.2	5.4	4.8
16.7	14.3	12.4	11.1	9.7	14.6	12.2	10.8	9.7	8.5	12.5	10.5	9.3	8.1	7.2
20.9	17.9	15.4	13.0	12.2	18.3	15.3	13.5	12.1	10.6	15.6	13.1	11.6	10.2	9.0
27.8	23.9	20.6	18.5	16.2	24.4	20.4	18.0	16.2	14.2	20.8	17.5	15.5	13.8	12.0
26.4	22.8	19.6	17.5	15.4	23.2	19.4	17.1	15.4	13.5	19.8	16.6	14.7	12.9	11.4
40.4	33.8	29.8	26.7	24.4	35.3	29.5	26.1	23.4	21.3	30.3	25.3	22.4	20.0	18.3
26.4	22.1	19.6	17.5	16.0	23.1	19.4	17.1	15.4	14.0	19.9	16.6	14.7	13.1	12.0
20.9	17.5	15.4	13.8	12.6	18.1	15.2	13.5	12.1	11.0	15.7	13.1	11.6	10.3	9.5
27.8	23.3	20.5	18.4	16.8	24.4	20.4	17.9	16.1	14.7	20.9	17.5	15.4	13.8	12.6
28.0	23.9	21.6	20.1	19.1	24.5	20.9	18.7	17.6	16.8	21.0	17.9	16.2	15.1	14.4
11.2	9.5	8.6	8.0	7.6	9.8	8.3	7.5	7.0	6.7	8.3	7.1	6.5	6.0	5.7
17.3	17.3	17.3	17.3	17.3	15.1	15.1	15.1	15.1	15.1	12.9	12.9	12.9	12.9	12.9

WALLS - STANDARD FRAME (.26)



WALLS - FURRED BRICK (.29)



In general masonry walls, though desirably fireproof, lose heat faster than walls of wood construction; application of insulation is also more difficult.

NEW WPB RULING ON HEATING issued February 24 as part of the "Defense Housing Critical List." It is subject to revision according to possible changes in the present critical position of materials.

511 The maximum net hourly output capacity of the heating unit or system as determined in 514 or 515 hereof is the capacity—after deductions have been made for piping and pickup, attached domestic water heaters, and non-dwelling heating loads—available to provide for the total hourly heat loss of the dwelling it heats. Such maximum net hourly output capacity in B. t. u. shall not exceed 66 times the dwelling area in square feet or 80,000 B. t. u. per dwelling unit, whichever is the smaller.

512 The total hourly heat loss of a dwelling shall not exceed such maximum net output capacity and shall be determined in accordance with the data and methods described in the current edition of the "Guide" of the American Society of Heating and Ventilating Engineers or by an alternate method which results in not less than the amount determined by the "Guide" method. Such total hourly heat loss shall be based on maintaining 70° F. inside the dwelling when the outside temperature is at the design temperature for the locality. (Spaces such as unheated garages, attics and basementless spaces shall be calculated at outside design temperature.) Storm windows and doors furnished shall be credited with the heat loss reduction they effect.

513 Dwelling area is the total area used for dwelling purposes contained within the exterior walls at each principal floor level excluding garage and unfinished storage space but including only the finished area of any living, sleeping, dining or kitchen space located in the basement or attic.

514 Prior to sixty days after the effective date of this Defense Housing Critical List, the maximum net hourly output capacity shall be determined from catalog ratings in effect on said effective date. On or after sixty days after the effective date of this Defense Housing Critical List only equipment rated in accordance with 515 hereof shall be eligible. Equipment may be rated within a range of specified firing rates selected by the manufacturer if at any firing rate within that range its performance certified by the manufacturer to have been determined by test is within the limitation of the applicable code or standard specified in 515.

515 Except as provided in 514 hereof, the maximum net hourly output capacity is determined as follows:

5151 Floor furnace:

Gas-fired—90 percent of published, listed, or labeled output rating determined in accordance with the current "Commercial Standard" or "Recommended Commercial Standard for Gas Floor Furnace—Gravity Circulating Type," or 90 percent of the A. G. A. output rating.

Oil-fired—90 percent of the manufacturer's certified output rating at 70 percent or higher efficiency.

5152 Space heater:

Hand-fired coal or wood—90 percent of manufacturer's certified output rating at 60 percent or higher efficiency.

Gas-fired—90 percent of A. G. A. output rating.

Oil-fired—100 percent of the published, listed, or

labeled rating determined in accordance with the current "Commercial Standard" or "Proposed Commercial Standard for Flue Connected Oil Burning Space Heater Equipped with Vaporizing Pot Type Burners."

5153 Pipeless gravity furnace:

Hand-fired coal—90 percent of the manufacturer's certified register output at 55 percent or higher efficiency.

Oil-fired—90 percent of the manufacturer's certified register output at 70 percent or higher efficiency.

5154 Gravity furnace:

Hand-fired coal—110 percent of the manufacturer's certified "Standard Gravity Code" rating in square inches leader area times 136 B. t. u.

Mechanically fired (conversion installations) same as for hand-fired.

Gas-fired (furnace-burner unit) 75 percent of A. G. A. bonnet output rating.

Oil-fired (furnace-burner unit) 75 percent of the manufacturer's certified bonnet output at 70 percent or higher efficiency.

5155 Forced warm air furnace:

Hand or mechanically fired coal (gravity rated furnace with fan conversion) 100 percent of the manufacturer's certified "Standard Gravity Code" leader pipe area in square inches times 180 B. t. u.

Gas-fired (fan-burner-furnace unit) 85 percent of A. G. A. output rating.

Oil-fired (fan-burner-furnace unit) 85 percent of the output rating as determined by the "Recommended Code of the N. W. A. H. & A. C. A. for Testing and Rating Oil-Fired, Fan-Furnace Combinations."

Stoker-fired (fan-burner-furnace unit) 85 percent of manufacturer's certified output rating at 70 percent or greater bonnet efficiency.

5156 Boiler (only for heating systems serving two or more dwelling units or for extensions of existing plants to service additional living accommodations.)

Gas-fired—65 percent of A. G. A. output rating.

Hand-fired or mechanically fired (all fuels) 100 percent of current I. B. R. net rating for cast iron boilers, or 100 percent of net rating certified by the manufacturer to have been obtained by test procedure in accordance with the I. B. R. Testing and Rating Code less (in each case) 12,000 net B. t. u. per dwelling unit for domestic hot water heated indirectly by the heating boiler.

516 Limitation on gas-fired equipment: The use of gas-fired equipment for heating space is subject to the availability of natural or mixed natural and manufactured gas from the utility company servicing the project. In addition, in areas where prohibitions or restrictions on deliveries of such gas for gas-fired equipment for heating space are imposed by the War Production Board, proof must be submitted establishing exemption from such prohibitions or restrictions.

The "Critical List" requirements will prove particularly important as an insulation yardstick. They should effectively settle the long-standing controversy over how extensively a house should be insulated, for they specify insulation where it is most necessary on the basis of technical performance.

As a corollary value, the new ruling will make reduction in fuel consumption almost automatic in proportion to the amount of reduction in the total hourly heat loss.

It is conceivable that much will ultimately result from such wartime restrictions as these. Certainly they pre-

sage development of construction techniques that emphasize efficiency and economies of various sorts. Designers and manufacturers alike will more and more be forced to discard traditional methods in search of those which will more effectively meet the conditions of new technical problems.

WARM AIR HEATING FOR DEFENSE HOUSING: 1—TYPES OF SYSTEMS

ARCHITECTURAL RECORD
TIME-SAVER
STANDARDS

APRIL, 1942

This series of two Time-Saver Standards sheets contains data on selecting heating systems and furnaces for small single-family dwellings of types at present authorized for "Defense Housing." The War Production Board's "Defense Housing Critical List" (Feb. 24, 1942) restricts heating systems for new single-family dwellings to various types of warm air heat. Since, in many areas, oil and gas fuel are now unavailable, these sheets are further restricted to coal-fired equipment, except for general specifications.

Sources include the aforementioned "Critical List"; also publications of the Nat'l. Warm Air Heating and Air Conditioning Assn. and the Nat'l. Bd. Fire Underwriters; Anthracite Industries Bureau; Special Research Asst. Professor S. Konzo, U. of Illinois. Data were prepared for publication by Frank G. Lopez, Jr.

SELECTING FURNACES

It is assumed in these sheets that insulation requirements and Btu heat loss calculations have been completed, and that requirements of the "Critical List" in these respects have been met.

General considerations include the following: Temperature of circulated air should not ordinarily exceed 175F; should never exceed 200F. Units must not be fire hazards. Flue gas temperatures must be kept within reasonable limits; this entails proper controls and adequate heating surface to extract heat from combustion gases. Ratings for all types of fuel (oil, gas, coal) should be accurately determined according to standards of the appropriate trade associations, or certified by the manufacturer. Special considerations are listed below and in notes at right.

W.P.B. HEATER UNIT SELECTION DATA		
SYSTEM and TYPE OF FUEL (1)	Efficiency (per cent) (2)	Percentage After Deduction (3)
FLOOR FURNACES		
Gas-fired	100	90
Oil-fired	70+	90
SPACE HEATERS		
Coal or Wood	60+	90
Gas-fired	100	90
Oil-fired	100	100
PIPELESS FURNACES		
Coal-fired	55+	90
Oil-fired	70+	90
GRAVITY WARM AIR		
Coal, hand or converted mechanical *		110
Gas-fired	100	75
Oil-fired	70+	75
FORCED WARM AIR		
Coal, hand or converted mechanical *		100
Coal, stoker-fired (fan-stoker-furnace unit)	70	85
Gas-fired	100	85
Oil-fired	100	85

TYPES OF SYSTEMS

General considerations include the following: Whatever the system, it should be capable of heating every room to an air temperature of 70F at breathing level when outdoor temperature is at design value. Types defined as "low-temperature" by the Nat'l. Bd. Fire Underwriters are preferable, because the low air temperatures (175F usual, 200F max.) required not only reduce fire hazards, but also (1) eliminate danger of burns from hot registers in the somewhat restricted defense-house quarters, and (2) produce smaller temperature differences, floor to ceiling.

Floor furnaces and space heaters, originally developed as auxiliary units for seasonal use, are satisfactory as the sole heating means in warmer portions of the country. For maximum efficiency, dwellings have to be planned so that there is adequate natural circulation of air from the heater location to parts of the house not directly heated.

Pipeless furnace is in essence a gravity warm air furnace which discharges heated air through a floor register directly above the heater. Planning requirements are, in the main, similar to those for space heaters.

Gravity warm air systems employ the difference in weight of heated and cooled air to produce a flow of heated air from the furnace to warm air supply registers, through spaces to be heated, into return air registers and so back to the furnace. Fans may be used.

Horizontal warm air ducts (usually in basements), leading to vertical wall ducts, are called **leaders**. Vertical warm air ducts, preferably in partitions, are **stacks**. Returns are **return air ducts**, and may carry: (1) wholly recirculated air, (2) wholly fresh (outside) air, (3) predetermined proportions of each.

Design procedure for gravity warm

Notes: Values subject to revision by the War Production Board.

* For Gravity systems, rating in sq. in. of leader area times 136 Btu. For Forced systems, rating in sq. in. of leader area times 180 Btu.

Example: Required: to determine whether a given furnace meets WPB requirements for a given dwelling.

Given: a one-story, one-family dwelling 23.5 ft. by 27 ft. in floor area (measured to inside faces of walls); an 80,000 Btu stoker-fired furnace-fan unit for a forced warm air system. **WPB requires that net furnace output not exceed either 66 times the floor area or 80,000 Btu.**

Given furnace output without deductions equals the maximum allowable by the latter method of checking. By the former method,

$$1. \text{Area} = 23.5 \times 27 = 634.5 \text{ sq. ft.}$$

$$2. \text{Max. Btu allowable} = 66 \times 634.5 = 41,877 \text{ Btu.}$$

$$3. \text{Furnace output efficiency (from Col. 2 in table)} = .70 \times 80,000 = 56,000 \text{ Btu.}$$

$$4. \text{Deductions for piping, pick-up, etc. (from Col. 3)} = .85 \times 56,000 = 47,600 \text{ Btu.}$$

This figure exceeds the allowable Btu in step 3 above; consequently a smaller unit must be employed.

air systems without booster fans is outlined in simplified tabular form on subsequent pages.

Forced warm air systems, also called "mechanical warm air systems," may consist of a fan-furnace unit only, if hand-fired coal; a fan-furnace-burner unit if oil- or gas-fired; or a fan-furnace-burner unit for stoker-fired coal. All these may be equipped with filters and humidifiers, and may be so installed that they may be used for circulating unheated or cooled air.

Design procedure is fairly complex, and should be according to the "Technical Code" or the "Practical Code" of the National Warm Air Heating and Air Conditioning Association.

- Determine heat loss per room in Btu per hr.
- Locate warm air and return registers on house plans, beginning with top story.
- Determine tentative duct layout.
- Determine equivalent duct length, making allowances for elbows.
- Select assumed air temperature at furnace bonnet.
- Determine approximate value of temperature reduction per duct caused by heat loss from ductwork.
- Subtract 6 from 5 to obtain air temperature for each register.
- Determine required warm air volume per room.
- Determine warm air register sizes.
- Select either a "trunk" or "individual" duct system, and size ducts to maintain desired air flow despite changes in size, frictional resistance, etc. Return duct systems are similarly designed.
- Determine total frictional resistance and select fan accordingly.
- Select furnace according to total Btu required, taking into account type of fuel, method of firing, and heating procedure (intermittent or continuous).
- Determine location and type of dampers for supplies and returns; select controls.

Controls. Warm air furnaces of all types require controls which limit flue gas temperatures. For coal-fired furnaces, an automatic regulating damper in the smoke-pipe will limit maximum draft, and hence flue gas temperature. High limit controls should be provided to stop combustion when bonnet air temperature exceeds 200F. Room thermostat, check and draft damper motor, bonnet fan switch (to operate blower when bonnet air temperature reaches the desired level), are all necessary for safely operating any type of forced warm air system. For stokers, a control to stop stoker if fire goes out is desirable, though not essential; an automatic device to hold the fire in mild weather is desirable. Special combustion controls are essential for gas- and oil-fired furnaces.

BIBLIOGRAPHY

Available from the National Warm Air Heating and Air Conditioning Association, 145 Public Square, Cleveland, Ohio:

GRAVITY WARM AIR SYSTEMS

Gravity Manual (40¢)
Gravity Standard Code (25¢)

FORCED WARM AIR SYSTEMS

Technical Code (25¢)
Yardstick (for evaluating) (25¢)
Winter Air Conditioning—Forced Warm Air Heating, by S. Konzo (\$3.00)

WARM AIR HEATING FOR DEFENSE HOUSING: 2—GRAVITY WARM AIR SYSTEM DESIGN

APRIL, 1942

TABLE 1 — RETURN AIR CARRYING CAPACITY — B. t. u. SERVICED PER HR.

Unit No.	Type A	Types B and C	Type D	Type E
31	11,300	9,500	7,800	5,000
32	16,300	13,700	11,300	7,200
33	22,200	18,700	15,300	9,800
34	29,000	24,400	20,000	12,800
35	36,700	30,800	25,300	16,200
36	45,300	38,000	31,300	20,000
37	54,800	46,000	37,800	24,100
38	65,200	54,800	45,000	28,700

EXAMPLE: SELECTING RETURN AIR RUN ACCORDING TO CARRYING CAPACITY, B. t. u. SERVICED

The following example will show how Tables 1 and 2 are used.

Given: Return duct in hall — See diagrams of types A, B, C, D, and E below.

Type C to be used — See Table 1, third column, marked "Types B and C."

B. t. u. serviced assumed to be 30,000 B. t. u. per hour — Next largest value shown is 30,800. Follow horizontally to left to get

Unit No. 35. See Table 2, below, for recommended sizes for Unit No. 35.

TABLE 2 — Units 31 to 38 — RETURN AIR DUCTS

Unit No.	Duct Dia. In.	Area at Shoe Connection, Sq. In.	Metal Grille Sizes			When joist lining is used*		When duct is used	
			Choose one			No. of joists lined	Minimum depth, inches**	Choose one	
			a	b	c				
31	10					1	7	14 x 6	12 x 8
32	12		6 x 30	8 x 14	10 x 12	1	9	22 x 6	16 x 8
33	14	170	8 x 30	8 x 24	12 x 14	1	12	28 x 6	22 x 8
34	16	220	10 x 30	10 x 24	14 x 16	2	8	28 x 8	22 x 10
35	18	280	12 x 30	12 x 24		2	10	36 x 8	28 x 10
36	20	340	14 x 30	14 x 24		2	12.5	36 x 10	30 x 12
37	22	420	18 x 30	18 x 24		2	15.0	42 x 10	36 x 12
						3	10.0	42 x 10	36 x 12
38	24	500	20 x 30			2	18.0	42 x 12	36 x 14
						3	12.0	42 x 12	36 x 14

*Based on 14" space between joists. See details on sheet 4.

**Use full depth of joist except when joist depth is less than minimum depth required, when pan must be used. Data based on publications of the National Warm Air Heating and Air Conditioning Association.

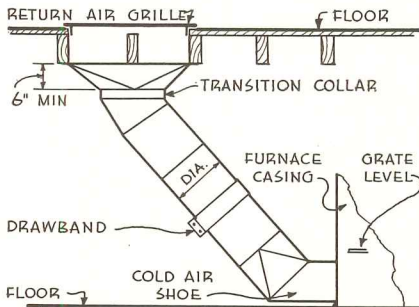
PROCEDURE

- Determine heat loss** from each room in Btu per hr., following any approved method;
- Make tentative basement or first-floor layout**, to scale locating:
 - Furnace, chimney and smokepipe
 - Warm air (supply) registers (indicate as wall, floor or baseboard)
 - Return air grilles;
- Indicate on each warm air run:**
 - Whether room supplied is first or second floor
 - Approx. length of leader (usually basement)
 - Number of 90° elbows, including elbow at return air boot to furnace. (Each 45° elbow equals 1/2 a 90° elbow; two sharp 90° elbows in a crossover equal three 90° elbows);
- Determine sizes** of suitable combinations of warm air and return leaders, ducts, fittings, registers and grilles, designated as "Units" in the accompanying Tables 1 to 7;
- Indicate on plan** number and location of return air grilles, and type of return duct system (see Table 1);
- In determining size of return air ducts** sum of heat capacities of return air ducts should equal total heat loss of entire structure;
- Select furnace** having capacity rating, in sq. in. of leader area times 136 Btu (or Btu per hr.), equal to total heat loss from structure;
- Install system** according to recommended practice as shown on sheet No. 4 of this series.

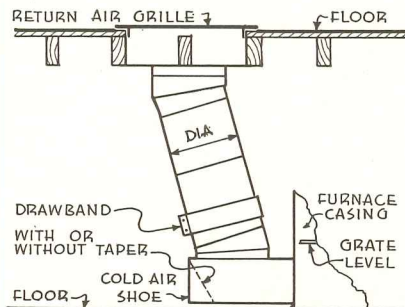
RETURN AIR TYPES

FULL AREA TO BE MAINTAINED FROM GRILLE TO FURNACE

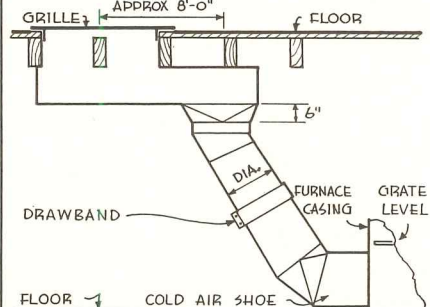
TYPE A — RETURN AIR IS DIRECT FROM GRILLE TO CASING, USING TRANSITION COLLAR AND TRANSITION TYPE COLD AIR SHOE



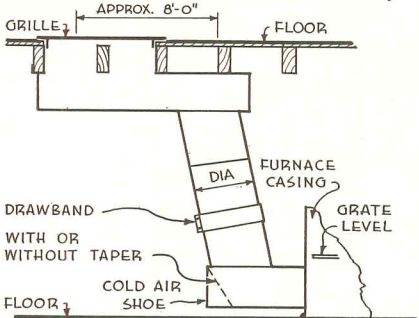
TYPE B — SAME AS "A" BUT WITHOUT TRANSITION FITTINGS (CAPACITY FOR SAME SIZE GRILLE AND PIPE 84% OF "A")



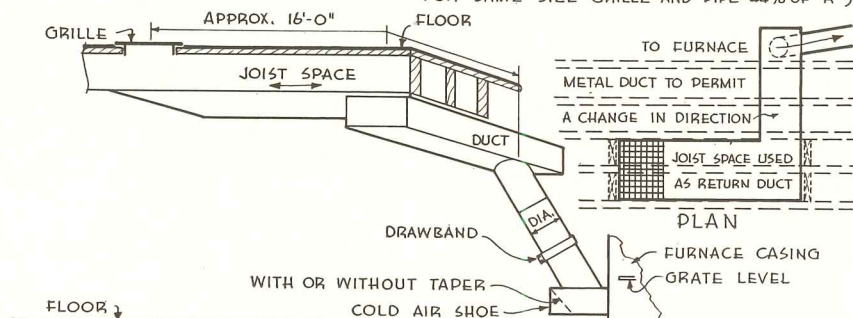
TYPE C — USES JOIST SPACE OR SQUARE DUCT AND TRANSITION FITTINGS, (CAPACITY FOR SAME SIZE GRILLE AND PIPE 84% OF "A")



TYPE D — SAME AS "C", BUT WITHOUT TRANSITION FITTINGS (CAPACITY FOR SAME SIZE GRILLE AND PIPE 69% OF "A")



TYPE E — USES BOTH JOIST SPACE AND SQUARE DUCT, WITHOUT TRANSITION FITTINGS (CAPACITY FOR SAME SIZE GRILLE AND PIPE 44% OF "A")



WARM AIR HEATING FOR DEFENSE HOUSING: 3—GRAVITY WARM AIR SYSTEM DESIGN

APRIL, 1942

**TABLE 3 — FIRST STORY REGISTERS —
WARM AIR CARRYING CAPACITY B. t. u. DELIVERED**
Length of leader pipe — in feet

Unit No.	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'
B. t. u. delivery with ONE ELBOW											
1	6020	5850	5680	5510	5340	5170	5000	4830	4660	4490	4320
2	7620	7400	7180	6970	6760	6540	6320	6110	5890	5680	5460
3	9400	9140	8870	8600	8340	8070	7810	7540	7270	7010	6740
4	13350	12970	12590	12210	11830	11450	11080	10700	10320	9950	9580
5	17520	17020	16530	16040	15550	15050	14550	14050	13560	13060	12560
B. t. u. delivery with TWO ELBOWS											
1	5850	5660	5490	5330	5160	5000	4840	4670	4510	4340	4180
2	7360	7150	6940	6730	6520	6320	6110	5910	5700	5500	5290
3	9090	8840	8580	8320	8060	7800	7550	7290	7040	6780	6520
4	12910	12540	12170	11800	11430	11060	10690	10320	9950	9580	9210
5	16940	16450	15960	15470	14980	14490	14000	13510	13120	12630	12140
B. t. u. delivery with THREE ELBOWS											
1	5620	5460	5310	5150	4990	4830	4670	4510	4350	4190	4030
2	7120	6910	6710	6510	6310	6110	5900	5700	5500	5300	5100
3	8780	8530	8280	8030	7780	7530	7290	7040	6800	6550	6300
4	12450	12100	11750	11400	11050	10700	10350	10000	9650	9300	8950
5	16360	15900	15440	14970	14510	14050	13600	13130	12660	12200	11750
B. t. u. delivery with FOUR ELBOWS											
1	5420	5260	5110	4960	4800	4650	4500	4350	4190	4040	3890
2	6860	6660	6460	6270	6080	5890	5690	5500	5300	5110	4910
3	8460	8220	7980	7740	7500	7260	7020	6780	6550	6310	6070
4	12010	11670	11330	10990	10650	10310	9970	9630	9290	8950	8610
5	15770	15320	14880	14420	13990	13540	13100	12650	12200	11750	11310
B. t. u. delivery with FIVE ELBOWS											
1	5240	5090	4940	4790	4640	4500	4350	4200	4050	3910	3760
2	6630	6440	6250	6060	5880	5690	5500	5320	5130	4940	4750
3	8180	7950	7720	7490	7260	7030	6800	6560	6330	6100	5860
4	11610	11290	10950	10620	10300	9970	9640	9320	8990	8660	8320
5	15250	14800	14380	13950	13520	13090	12650	12220	11800	11370	10940

Notes: Table 5 applies to baseboard and floor locations of warm air registers. Consider each 45 degree elbow as equal to one-half of a 90 degree elbow.
Consider each 90 degree offset between boot and stackhead equal to one 90 degree round elbow.

**TABLE 4 — SECOND STORY REGISTERS —
WARM AIR CARRYING CAPACITY B. t. u. DELIVERED**
Length of leader pipe — in feet

Unit No.	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'
B. t. u. delivered with ONE ELBOW											
11-22	8370	8140	7900	7670	7430	7190	6950	6710	6470	6240	6000
12-24	10040	9760	9470	9190	8900	8620	8330	8050	7770	7480	7200
13	10880	10570	10260	9960	9650	9340	9030	8730	8420	8110	7800
14	11710	11380	11050	10720	10390	10060	9720	9390	9060	8730	8400
15	16200	15750	15300	14840	14380	13920	13460	13000	12550	12100	11640
16	18920	18390	17850	17310	16780	16240	15710	15180	14640	14100	13570
B. t. u. delivery with TWO ELBOWS											
11-22	7940	7720	7500	7280	7050	6830	6600	6370	6150	5930	5700
12-24	9540	9270	9000	8730	8460	8190	7920	7650	7380	7110	6840
13	10340	10050	9750	9460	9170	8880	8580	8290	8000	7700	7410
14	11120	10810	10500	10180	9870	9550	9230	8920	8610	8290	7980
15	15400	14970	14530	14100	13670	13230	12800	12360	11930	11500	11070
16	17980	17470	16960	16450	15950	15430	14830	14420	13910	13400	12890
B. t. u. delivery with THREE ELBOWS											
11-22	7530	7320	7110	6900	6680	6470	6250	6040	5830	5620	5400
12-24	9030	8780	8520	8270	8010	7750	7500	7240	6990	6730	6470
13	9680	9520	9240	8960	8690	8410	8130	7850	7580	7300	7020
14	10530	10240	9940	9650	9350	9050	8750	8450	8150	7860	7560
15	14580	14180	13780	13370	12950	12530	12120	11710	11300	10890	10480
16	17040	16550	16070	15580	15110	14620	14140	13660	13180	12700	12210
B. t. u. delivery with FOUR ELBOWS											
11-22	7120	6920	6720	6520	6310	6110	5900	5700	5500	5300	5100
12-24	8530	8290	8050	7810	7570	7330	7080	6840	6600	6360	6120
13	9250	8990	8720	8460	8200	7940	7680	7410	7150	6890	6630
14	9950	9670	9390	9110	8830	8550	8260	7980	7700	7420	7140
15	13780	13390	13000	12610	12220	11830	11440	11050	10670	10280	9890
16	16080	15620	15170	14710	14260	13810	13350	12900	12440	11980	11530
B. t. u. delivery with FIVE ELBOWS											
11-22	6700	6510	6320	6130	5940	5750	5560	5370	5180	4990	4800
12-24	8040	7810	7580	7350	7130	6900	6670	6440	6220	5990	5760
13	8710	8460	8210	7970	7720	7470	7230	6980	6730	6490	6240
14	9370	9110	8850	8580	8310	8050	7780	7510	7250	6980	6720
15	12970	12600	12240	11870	11500	11140	10770	10400	10040	9680	9310
16	15140	14710	14280	13850	13420	13000	12570	12140	11710	11280	10850

No. 21 For B. t. u. values multiply 11-22 values by .83
No. 23 For B. t. u. values multiply 12-24 values by .83

Notes: "B. t. u. deliveries" shown in Table 4 apply only to baseboard locations of warm air registers. When floor registers are used deduct 15% from the "B. t. u. deliveries."
Consider each 45 degree elbow as equal to one-half of a 90 degree elbow.
Consider the two sharp elbows in a cross-over connection as equivalent to three 90 degree round elbows.
Consider each 90 degree offset between boot and stackhead equal to one 90 degree round elbow.

EXAMPLE: Selecting Duct and Register Sizes

The following example will serve to show how Tables 3 and 5 can be used. See also Tables 4, 6, 7 below.

Given: Sun room on first story — use Table 3.

Two 90 degree elbows in leader — See second group marked "B. t. u. delivery with two elbows."
Leader length about 8 ft. — See fourth column marked "8."

B. t. u. room loss is 16,896 B. t. u. per hr. — **Unit No. 3** has B. t. u. delivery of 8,580 B. t. u. per hr. Hence, two No. 3 units will deliver 17,160 B. t. u. and are adequate.

Sizes — See Table No. 5 for recommended sizes for Unit No. 3.

TABLE 5
Units 1 to 5 — FIRST STORY WARM AIR DUCTS

Unit No.	Leader Pipe Diameter, Inches	Register Size, inches		
		a Floor	b Baseboard	
			Size	Extension
1	8	8 x 10	10 x 8	2 1/4
2	9	9 x 12	12 x 8	2 1/4
3	10	10 x 12	12 x 9	3 1/4
4	12	12 x 14	12 x 11	5 1/4
5	14	14 x 16	.....	.....

When the calculations indicate a requirement for a given room greater than unit number 4, two or more smaller units totalling the required capacity are recommended.

Tables are based on boots and fittings in which free area is maintained throughout.

TABLE 6
Units 11 to 16 — SECOND STORY WARM AIR DUCTS,
SINGLE WALL STACKS AND FITTINGS

Unit No.	Leader Pipe Diameter, Inches	Stack* Size Inches	Register Size, Inches			
			a Floor	b Baseboard		c Sidewall
				Size	Extension	
11	8	10 x 3 1/4	8 x 10	10 x 8	2 1/4	10 x 8
12	9	12 x 3 1/4	8 x 12	12 x 8	2 1/4	12 x 8
13	9	13 x 3 1/4	8 x 14	12 x 8	2 1/4	12 x 8
14	10	14 x 3 1/4	8 x 14	12 x 8	2 1/4	12 x 8
15	12	12 x 5 1/4	.....	12 x 10	3 1/4	.....
16	12	14 x 5 1/4	.....	13 x 11	3 1/4	.....

Note: *Recommended stack sizes. Tables may also be applied to 3" and 3 1/2" stack depths.

TABLE 7
Units 21 to 24 — SECOND STORY WARM AIR DUCTS,
DOUBLE WALL STACKS AND FITTINGS

Unit No.	Leader Pipe Diameter, Inches	Stack Size, Inches		Register Size, Inches			
		Internal	External	a Floor	b Baseboard		c Sidewall
					Size	Extension	
21	8	2 1/2" x 10	3 1/8" x 10 5/8"	8 x 10	10 x 8	2 1/4	10 x 8
22	8	3" x 10	3 5/8" x 10 5/8"	8 x 10	10 x 8	2 1/4	10 x 8
23	9	2 1/2" x 12	3 1/8" x 12 5/8"	8 x 12	12 x 8	2 1/4	12 x 8
24	9	3" x 12	3 5/8" x 12 5/8"	8 x 12	12 x 8	2 1/4	12 x 8

Note: *Commercial sizes vary 1/8 inch from values shown. Sheet metal double-wall ducts are not permitted under the "Defense Housing Critical List" (Feb. 24, 1942).

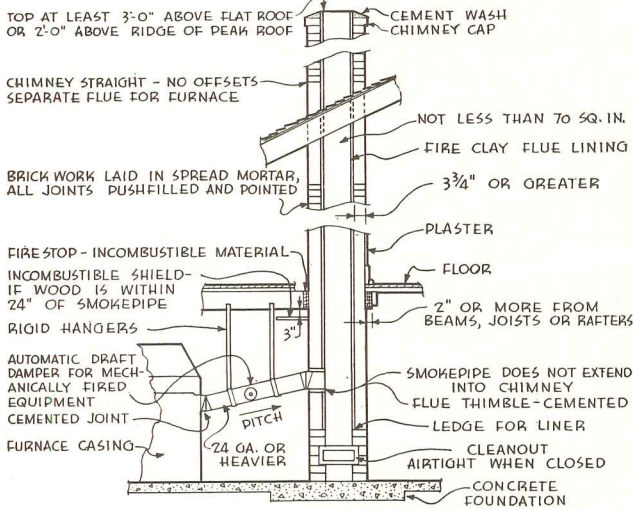
All tables are condensed from publications of The National Warm Air Heating and Air Conditioning Association.

WARM AIR HEATING FOR DEFENSE HOUSING: 4-CON- STRUCTION DETAILS GRAVITY & FORCED WARM AIR

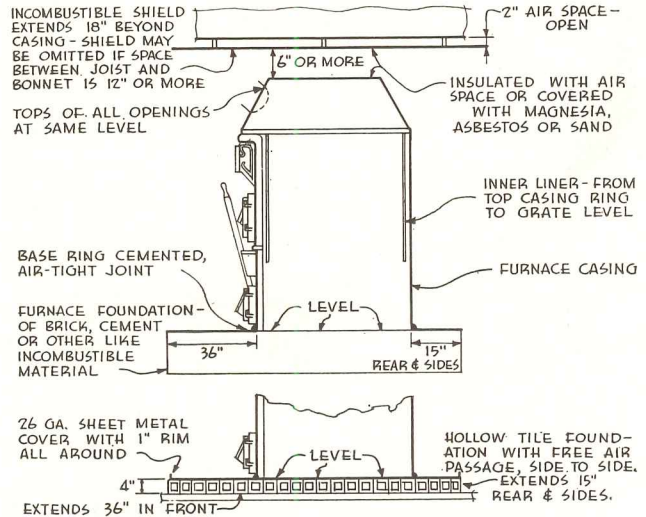
APRIL, 1942

Drawings on this sheet are prepared from information provided by the National Warm Air Heating and Air Conditioning Association, and from Bulletin No. 90, Nat'l. Bd.

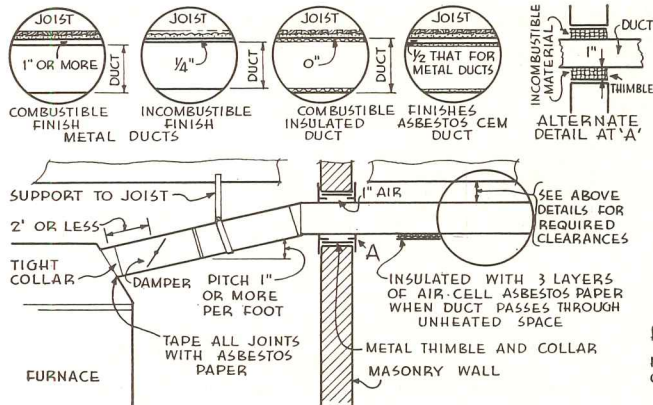
Fire Underwriters. The requirements of the War Production Board's "Defense Housing Critical List" (Feb. 24, 1942) are also complied with.



CHIMNEY AND SMOKE-PIPE CONSTRUCTION

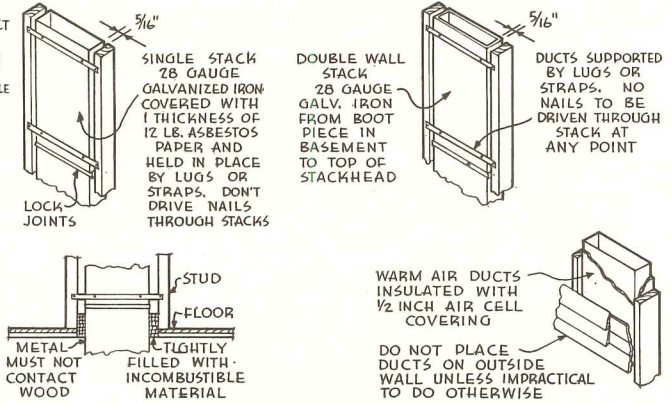


FURNACE INSTALLATION

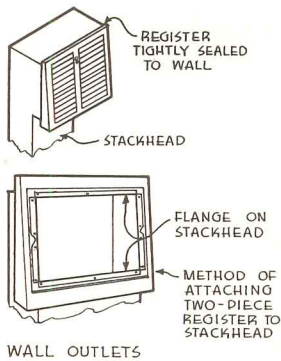


SUPPLY LEADERS

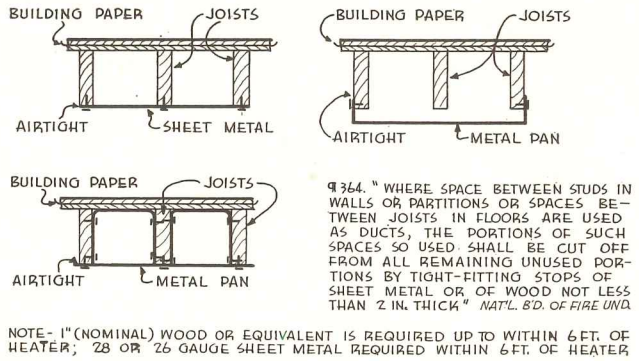
SUPPLY DUCTS AND LEADERS, IF NOT OVER 14" WIDE, MAY BE OF 30 GAUGE SHEET METAL; IF OVER 14" WIDE, USE 28 GAUGE SHEET METAL OR ITS EQUIVALENT IN INCOMBUSTIBLE MATERIAL.



SUPPLY DUCTS



SUPPLY REGISTERS



RETURN AIR DUCTS

HOUSING FROM THE TENANT'S VIEWPOINT

. . . Or, how has housing passed the test of actual use by low-income families? That was the subject of a two-year study by ELISABETH COIT, AIA, on an Edward Langley Scholarship award. She subjected to scrutiny some six score housing projects, and any number of published and unpublished reports, always checking the planning theory against the actual living habits and desires of the occupants. Her voluminous report, already abstracted in text form in the "Octagon," is here done graphically, to summarize as quickly as possible the principal points in her conclusions.

THERE ARE MANY SURPRISES in store for one who would learn how the tenant views a low-rent housing project. And some of them would be humbling surprises. The low-income family has been much less articulate about its needs and desires than the planning theorists and social workers, but it can speak pretty positively after a few months of actual occupancy. And for all the inconsistencies, its reactions contain something both incontrovertible and illuminating.

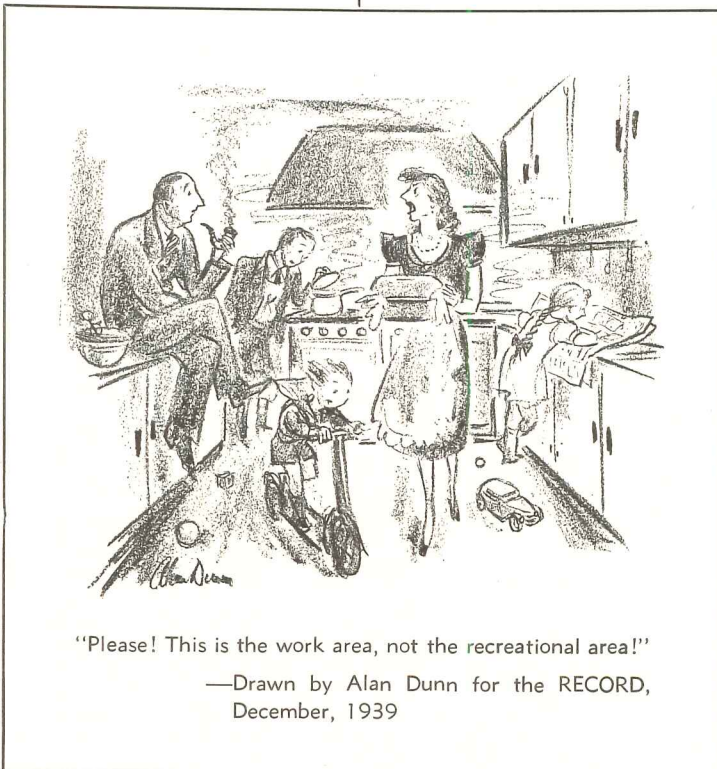
So Miss Coit, architect and housing consultant, spent two years scrutinizing housing from the strictly practical side. Her study has a very timely element. Housing low-income families is definitely established as big business. And the years that have elapsed since Government began to dot the urban scene with large-scale multiple-family buildings have given time for the testing of earlier theories of sponsors and designers.

"I have tried," writes Miss Coit, "to learn what the low-income client thinks he needs or would like to have, and what architects and other experts in the more architectural aspects of home-making think he ought to have, or can have, and how this or that solution works out in practice; collating and comparing, rather than criticizing, the opinions expressed, but keeping in mind always the necessity of reconciling as far as possible expressed desires with the present-day procedure as to cost, design, construction."

The results are here reduced to a largely graphic report. With no intention of making another addition to the mass of housing theory, the report does contain several graphic planning suggestions that came naturally out of complaints frequently voiced by tenants. Plans are shown that did not work out well, along with some that did. Then, drawn in plan and elevation, there are some common-sense but perhaps somewhat radical ideas for making limited space more effective for the low-income family.

A BUILDING TYPES STUDY

Floor plans in this section are reproduced at $\frac{1}{8}$ inch, unless another scale is shown



"Please! This is the work area, not the recreational area!"

—Drawn by Alan Dunn for the RECORD,
December, 1939

WHERE TENANTS AND TENETS DON'T AGREE

MORE IN SORROW than in anger, one housing project manager remarks, "They use their kitchen for things they ought to use their living room for." And thus he voices, in one sentence, the difficulties forever hounding the planner of low-cost housing. What rooms were designed for and what they are actually used for are frequently quite different things. Thus does the nicest theory fall before the fact.

If cost were no object, a great many of the complaints uncovered in Miss Coit's study could probably be obviated simply by making rooms both plentiful and large. And to a certain extent many of the tenants' complaints do come down to the simple matter of more area. But, costs being inexorable, the problem remains one of designing the various areas for maximum utility to the families who are actually to occupy the units, not for some theoretical and more tractable family which the architect might like to visualize.

Principal complaints of tenants deal with congestion in two areas in the apartment: the living room and the kitchen. There is "too much living in the living room." Homework suffers. The breadwinner becomes inefficient for want of rest at home. Or, as tenants phrase it: "Too close companionship when we are in one room." "No place for children to play without bothering their father who wants to rest." "The radio disturbs study." "We have no playroom, no workshop."

As for the living room, there is also the fact that few low-income families can take the time and trouble to use the living room for its intended purposes. "The congestion then occurs in the kitchen," writes Miss Coit, "where there is even greater discomfort, as well as a certain stigma attaching to having only one room for washing, cooking, eating, dishwashing, drying, steaming linen, ironing, bathing the baby, changing him, handling his daily quota of diapers, homework, recreation, and the informal entertaining which is all the lower-income family can ordinarily manage. Homework is done there because there light has to be maintained, and because in the poorest home that is the warmest room in winter, says one large group reporting. And over 80 per cent in the same group eat meals there, not only

because it is too much trouble to serve meals in the living room, but also because one room must be kept neat, and not 'mussed up' two or three times a day. The farm family naturally eats in the kitchen; but tries to keep washing and other major operations out of it, although ironing is approved because it is a clean job. Preparation of food, eating and clearing away make some nine fixed items on the day's schedule for that room; and laundry work alone is endless. It is not done once a week, but three or four times a week, or daily. Few, if any, working-class families can pile up a week's supply of dresses, play frocks and suits, mechanics' overalls, etc., to say nothing of underwear."

"On the other hand there are great unused spaces, which must be paid for by some one, whether entirely by personally earned wage or salary, or with the aid of public subsidy. The living room is idle most of the day, as is the bathroom. Bedrooms are used only for one-third to one-half of the less productive hours of the 24, for sleeping and for the storage of beds, bureaus, a chair or two, and thus equipped, useless for any other purpose.

"The teen-age girl, meanwhile, longs for some practicable low-cost version of the Hollywood boudoir; often all she is looking for is a quiet place for her homework. Equally the boy, of whatever class or income bracket, needs some place for his own

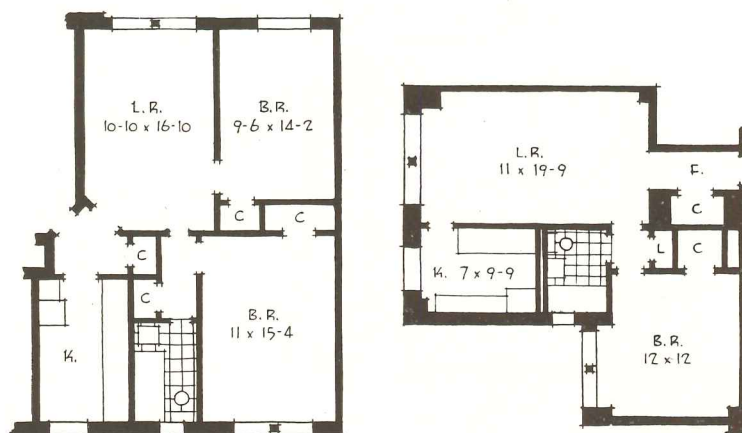
affairs and room for discussing them with his peers—who are ordinarily not his parents and sisters. Fathers, too, have hobbies, and, like other people, sometimes need quiet and solitude.

"A new nomenclature, combined with changes in plan and detail neither radical nor costly, would restore to use these areas, increasing the efficiency of the shelter, and at the same time embellishing the small-scale family scene." Miss Coit delineates some suggestions along this line on page 83.

Insufficient closet space is another frequent complaint. The low-income family may not worship beauty, or at least may not expect to indulge its worship, but it does demand convenience and order.

"Do we," asked a speaker at a housing conference, "need closets in these dwellings? I am not at all sure of their relation to health and delinquency. . . Every family has a right to. . . the essentials of decent, happy living, but we can't afford to give any extras." "And the affirmative to this question," says Miss Coit, "is undoubtedly the most unanimous demand in housing today. Broom closets, wrap closets, in the hall and near the back door, cool storage closets, bedroom closets, toy closets. . . are demanded almost vociferously by a people still rather inarticulate as regards most of its housing needs."

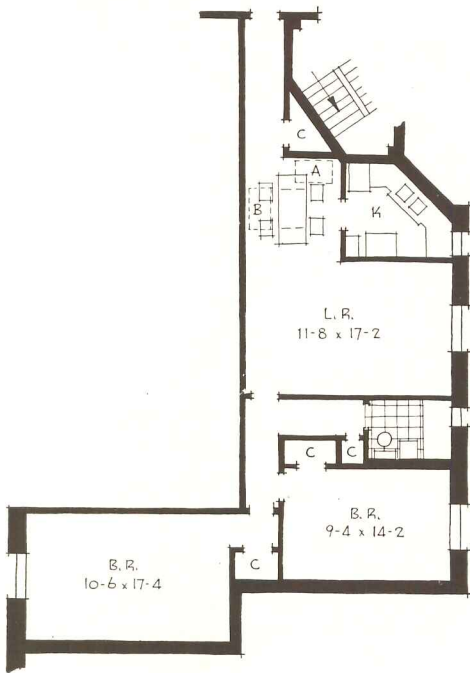
And again, "convenience, labor saving, possibility of ease and rest in a



While the living rooms of these two units (they are actual plans in two large New York apartment developments) might be considered to fulfill the normal requirements of living rooms, they fail to provide any of the tenants' requirements as listed above. In both cases entrance to other rooms is through the living room, making it difficult to keep it neat. There is no possibility of privacy for sleeping in the living room. All dining must be accommodated in these rooms since neither kitchen has dining space

strenuous domestic life seem to dominate tenant requests."

There is little room here for generalities about what they do want, but a few might serve to explain some seemingly odd reactions of tenants. "Especially striking is the record of how little apparently some of the not so very poorly housed, as well as the slum dweller, care about modern housing and about the major comforts, conveniences, and safeguards considered their right by safety, hygiene and other welfare organizations, while valuing highly a feeling of freedom, of independence, and of opportunity for self-expression. . . Some families will not bridge the distance between the new development and the old neighborhood where friends live. . . Possibly one explanation is that of the London County tenant who disliked the social 'coldness' of the new neighborhood, and moved back to the slum where friends lived. Possibly a soft drink parlor and beer garden, in addition to adult education facilities, would prove a help to both tenant and manager, more especially in projects housing many tenants who do domestic work, for most of whom physical weariness and lack of prospect of any social or economic advantage combine to make organized evening education rather pointless."



The combination foyer and dining alcove so often seen does not work out well in use. When the dining table (stored at A or B) is set out for use by four persons, it effectively blocks the passage. And the space is poorly lighted and ventilated

ROOMS AS TENANTS USE THEM

Where the strenuous activities of family life must be compacted into a few not-too-large rooms, "normal" room uses get sadly confused. Under such circumstances, the tenant's most urgent desires as to room types might be summarized thus:

Living Rooms, little used as such by low-income families, are best designed if they serve these purposes:

1. Reception room, kept neat for callers.
2. Bedroom, (a) frequently as regular sleeping place for child or adult; (b) occasionally for a child with illness or "symptoms."
3. Occasionally as dining room, but not as the only dining space.

Dining Space, whatever its location, should fulfill three requirements:

1. Convenient place for frequent "staggered" meals.
2. Space for whole family and guests.
3. Light and ventilation.

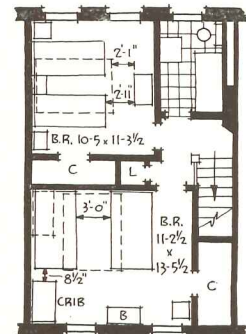
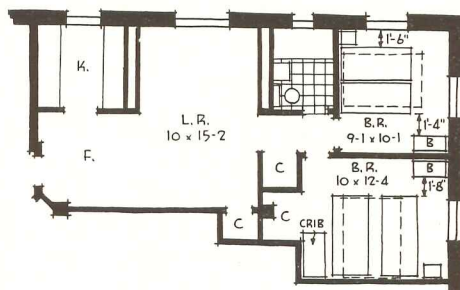
Bedrooms, too often suitable only for sleeping, would be more effective if also useful for:

1. Quiet space for homework or hobbies, for both adults and children.
2. Secondary living room space where club-age boys or girls can discuss their own affairs with their own friends.

Bathrooms are often called upon to relieve the over-used kitchen, particularly for laundry work, and might well be arranged and equipped for light laundering.

Kitchens, usually the busiest room by far in the whole dwelling, are called upon to accommodate several functions besides that for which they were designed:

1. Some of the bathroom uses overflow into the kitchen; babies and small children are often bathed in the laundry tray, as the bathtub is too low.
2. Even the "laboratory" type of kitchen has to be the small child's play space, and the family assembles where the mother is working.
3. Kitchen is used for snacks, homework, sewing, mending, etc., and for many small tasks done while the stove is watched.



Chatham Village, Pittsburgh, Pa.
Ingham & Boyd, architects

So many bedrooms, while adequate for the strictly essential furniture, leave no space for other activities. While obviously the answer is not simply a matter of additional area, these bedrooms become simply "passage-plus-furniture" rooms

Illustrating the increased usefulness of bedrooms just a little bit larger. Here the same furniture is accommodated, plus a few pieces more, but the added space still leaves room for some daytime activities, such as home study or children's games

STANDARDS FOR ROOM SIZES

MUCH VARIATION in size and shape of room is shown not only in existing housing surveyed, but also in recommendations of Government authorities and other experts.

A survey of lower- and low-rent developments made by the Housing Study Guild shows the effect of adequate size on rentability: the apartment with an average net room area of

168 sq. ft. proved satisfactory, while that with a net room average of 113 sq. ft. was "very difficult to rent, the bedrooms especially proving too small." USHA minimum areas of 1938 for 3-bedroom units (Figure 1) would give averages of the kind very difficult to rent to lower-income families in New York even in depression years. The National Association of Housing

Officials at about the same time advised similar minimum areas. Naturally they do not recommend that minimum dimensions obtain throughout. Neither does USHA, but its "unit plans" show average room areas of 114 sq. ft.

The 1939 revision of USHA recommended areas increases the sizes of second and third bedrooms and suggests more generous areas all along the line. Nevertheless, the recommendations would give little space beyond that necessary for circulation around the usual furniture. It is therefore a

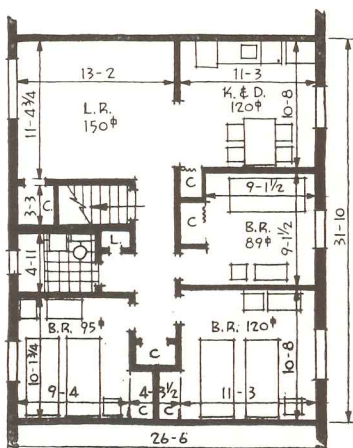


Figure 1. A graphic presentation of room size standards given by USHA in 1938. They call for: Living room 150 sq. ft.; kitchen 60; dining alcove 60; or an aggregate net of not less than 260 for those three; first bedroom 120; secondary bedrooms 90 for two persons, 80 for one

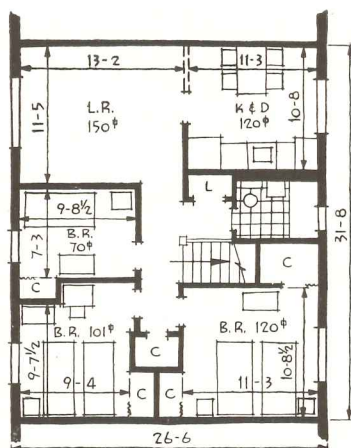


Figure 2. Minimum recommendations of USHA check list of 1939: Living room 150 sq. ft.; kitchen 70, with aggregate of these and dining space of not less than 260; first bedroom 120; secondary bedrooms 100 for two persons, 65 for one. And 20 sq. ft. of storage space

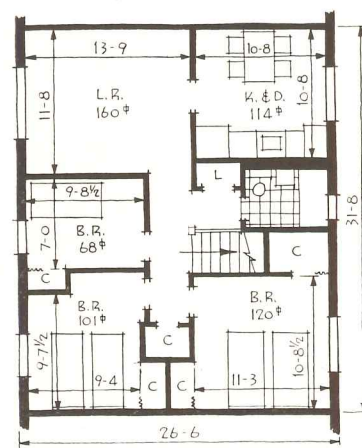


Figure 3. Minimums by USHA for Lanham Act projects (1941): Living room 160 sq. ft.; kitchen 70, with 270 for living-dining-kitchen area; first bedroom 120; secondary bedroom 100 for two people, 65 for one. And they ask 30 sq. ft. of general storage space

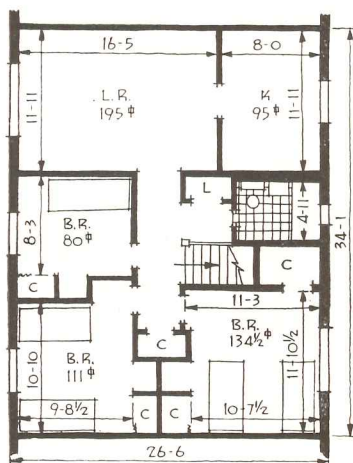


Figure 4. Maximums by USHA for Lanham Act projects: Living room 210 sq. ft.; kitchens 120, with aggregate of 290 for the two areas. First bedroom 130; 110 for two-person secondary bedroom, for one person 80

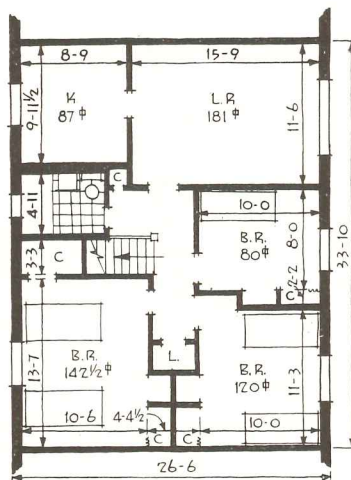


Figure 5. The New York State Board of Housing recommended (1938) simply 180 sq. ft. for living rooms, bedrooms 140, kitchens 70, using "reasonable flexibility" in application. The present regime recommends bedrooms of 120 sq. ft. for two persons, 80 for one

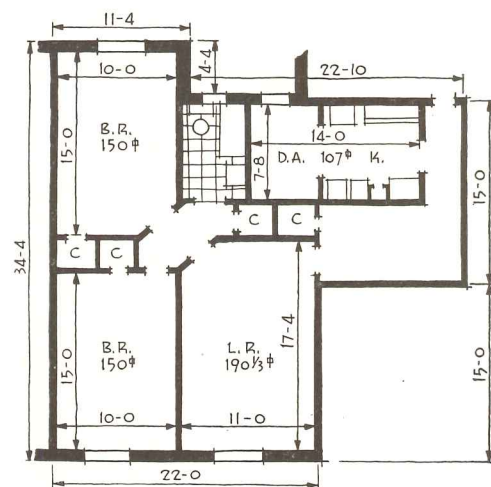


Figure 6. From the tenant's standpoint this plan of Academy Housing Corporation shows very desirable areas. It happens to check quite closely the averages of 14 projects in New York City built "for workers by workers," and is more generous than any "standards"

matter of congratulation that, as the list points out, "there will be cases . . . where the exigencies of the plan impose a greater aggregate area."

In recommending larger room areas, (asking gross areas averaging 237 sq. ft. per room) the Women's City Club of New York explains in its report, "While it may not now be possible to build such apartments for the lowest-income groups . . . the additional area makes for housing which is good and not really extravagant. Such apartments should withstand obsolescence, even if new methods of construction enable us a few years hence to build more cheaply."

An unpublished survey of 23 New York workers' and small "white collar" projects, built from 1904 to 1933, including prosperous and depression years, shows gross apartment areas as 253, 235, 233, 229 sq. ft. and down, while net areas per room in sq. ft. run 182, 171, 169, 165, and down, with an average of 133.7. Eliminating a few non-typical ones of the group, however, gives averages of 190 for the gross and 142.9 for the net.

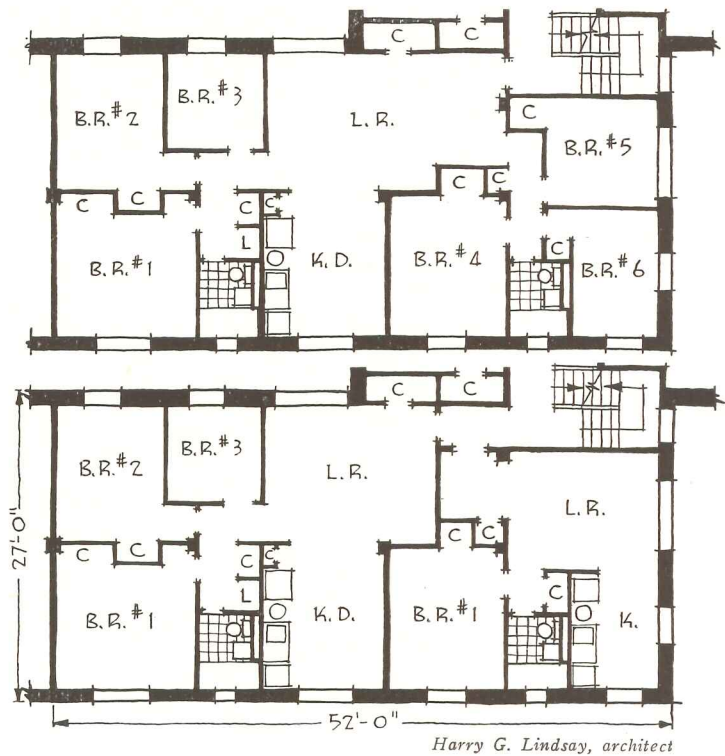
"Similar areas," concludes Miss Coit, "are found in the 14 projects built in the same city under the state housing law of 1926. Average living room areas are here shown (Figure 6) to be 192.8 sq. ft. and average bedrooms 145.7. The averages of the projects in this group are significant because many of them were built for workers by workers, some in the boom years, some in depression times."

FOR THE NON-TYPICAL FAMILY

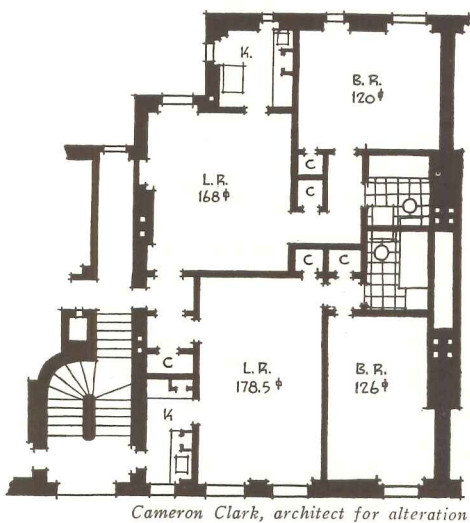
NON-TYPICAL LAYOUTS are much appreciated in housing projects, for the unattached and the non-typical family group, if for no other reason than to prevent a development from becoming "a too purely parent-and-child community."

Even the typical family has changing housing requirements as it progresses from married couple to family group to aged couple whose children have left the home.

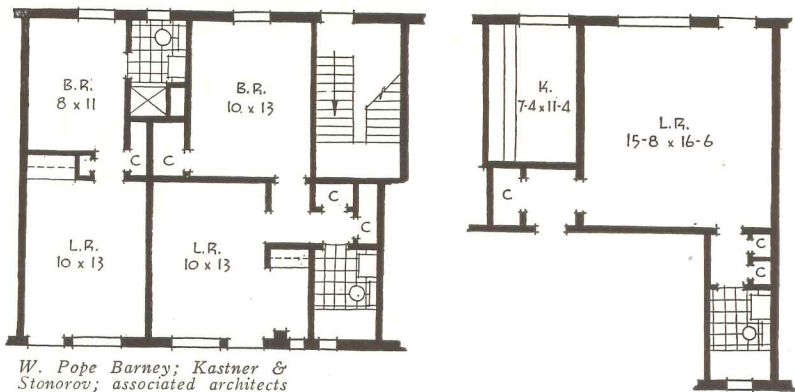
From the standpoint of management, too, the non-typical groups ease certain problems—they use play areas and community facilities at hours different from those of mothers and children. Again, they don't need the sunnier exposures, the minimum of stairs to climb; they can use units that "normal" tenants would not like.



Combining two apartments was necessary to provide for big families in Yellow Mill Village, Bridgeport, Conn. A three- and a five-room apartment (upper plan) became an eight-room unit. Considered to be the first public housing to provide for a family of 12 children, this project can quickly and inexpensively reconvert the space

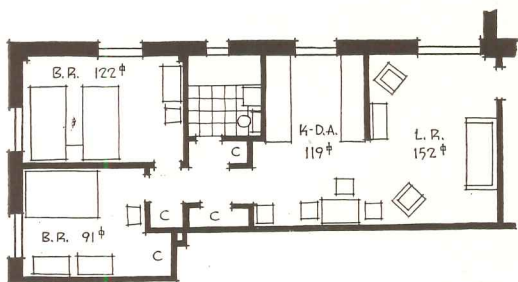


Because its rooms were generously proportioned when it was originally built, back in 1877, the Tower and Homes development in Brooklyn has had a long and useful life. While it lacked modern layouts and equipment, it was possible to modernize it after half a century

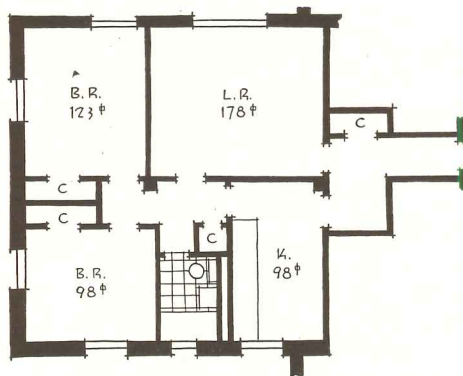


For the very small family or for individuals the Hillside project (New York City) offers tiny ground-floor units (right) and the Carl Mackley development (Philadelphia) provides ground-floor two-room units. With entrances from outdoors, not from the hall, these units give privacy for old people or others who need quiet

WHAT TENANTS WANT IN THE LIVING ROOM

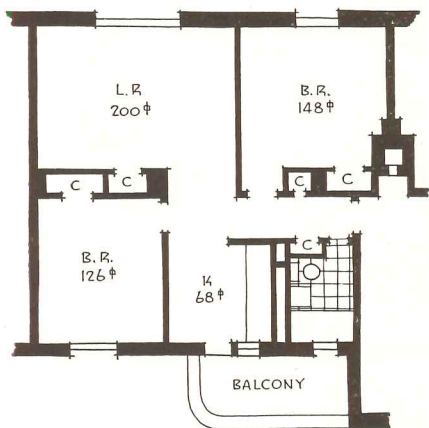


Here is a prime example of a living room that suffers from circulation difficulties. The only possible circulation is through the center of the room. Low-income tenants would also complain that it has no privacy for use as a bedroom

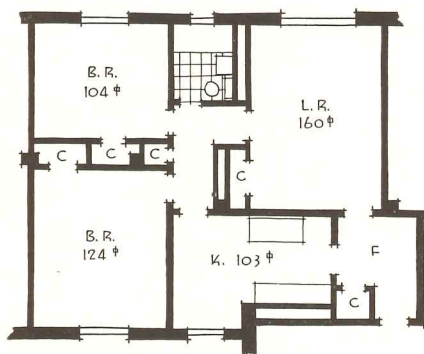


Julia C. Lathrop Homes, Chicago. Robert S. De Golyer and associated architects

Ideal from the tenant's viewpoint is this living room in a large Chicago low-rent building. There is an alternate route from entrance to bedrooms; the living room offers quiet or sleeping privacy, and is nicely removed from the kitchen

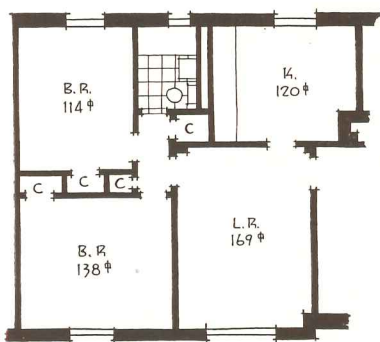


This living room fulfills most of the oft-voiced requirements, except that the omission of a little partitioning and a door spoil the privacy part, and leave the living room too directly open into the kitchen workshop

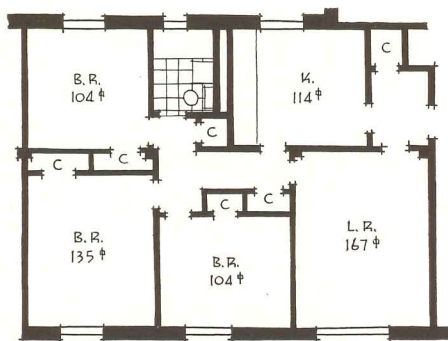


Harlem River Houses, New York. Archibald Manning Brown and associated architects

Here is another living room that serves well the functions most wanted by the low-income tenant. It could serve as spare bedroom complete with closet; it need not be a hallway; and it can be shut off and "kept neat" for guests



A further example of a living room that must handle too much traffic; in this case virtually all of the circulation is directly through this room. Lively teen-age offspring would soon drive a weary father either to bed or to the corner saloon



New Towne Court, Cambridge. Henry C. Robbins and associated architects

A much pleasanter living room all around is this one. Father can read his paper undisturbed, by insisting that the youngsters go through the kitchen. And the room can be completely isolated. It has good size, too, and good wall spaces

IF, as Miss Coit's study indicates, there is "too much living in the living room," what does that mean? It means, at least for the lower-income family, that apartments are designed to leave too many functions for this central room, too few for other rooms. What it amounts to is that the less fortunate family has little time or means for using a living room for its rightful purposes, but at the same time it lives too strenuously and too compactly to crowd its family life into the living room.

Does that mean, then, still larger living rooms, to accommodate other functions? Rather the other way around, it appears to Miss Coit. Be sure the living room fulfills the demands that will really be made on it, but decentralize the family activities in other rooms of the apartment.

"Allowing as much space as possible for the bedrooms, and that somewhat at the expense of the living room area, might better serve a great variety of families especially as the progressively shorter working week and seasonal unemployment are gradually more and more compensated for by intensive recreation and adult education activities requiring some isolation and a little space for use without interruption. The living room, nowadays no longer used as a rule for weddings or funerals, and only occasionally for a formal meal, if treated frankly for what it is, namely a sleeping room and a reception room, can have more, rather than less, charm than has the present wasteful, often little-used omnibus living room. And that would apply particularly to the many recent dwellings in which the living room is merely a kind of lounge extension of the passage from the public hall to bedrooms and bath, with no lights except tenant-supplied lamps."

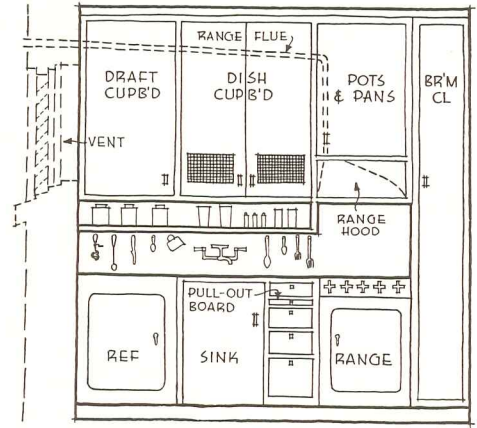
What tenants particularly ask of living rooms are:

1. That circulation space not interfere with living space.
2. That privacy be possible for bedroom use, perhaps during an illness, or just for quiet. In many urban low-cost housing developments it is assumed that the living room doubles as a bedroom.
3. That it be separated from kitchen work space.

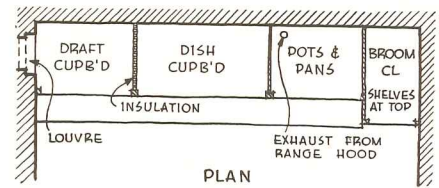
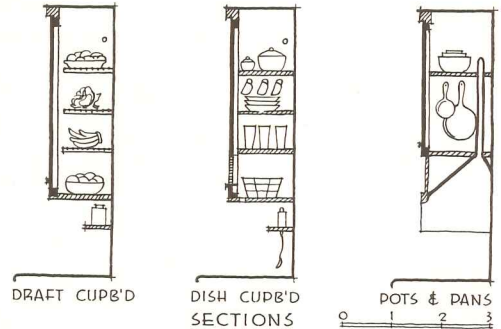
IN THE KITCHEN

MOST OVERLOADED of all the areas in the low-income family's dwelling is the "kitchen," so much so that even the nomenclature is misleading. Miss Coit suggests the term "meal center" as being more descriptive of its true functions. And she has here delineated (below) in plan and elevation what might be taken to represent the ideal meal center; this, for the single-family house, should indeed simplify life for the housewife. It satisfies four tenant requirements most often demanded: more counter shelf space, more storage space, eating space not in living room but out of sight of work area (it is separated from it by head-high cupboards), and usefulness of dining space for other purposes. The work functions are arranged in sequence, according to scientific kitchen planning. There is about two and a half times the usual dresser space below 69 inches from the floor, with corresponding increase in work surface. The "draft closet" may look like the old fashioned pantry, but it is really important to the low-income family—allowing for quantity purchases, for much home canning, and for economy in refrigeration. The back porch entry would be highly prized, for comfort, for summer meals; and the hanging space for wet outer garments would be appreciated. There is no provision for laundering. That, says Miss Coit, is better taken care of in a utility room or basement, in the one-family house, or in the apartments day-to-day washing can be done in a "bath-utility" room (see page 78) or in the communal laundry. Whereas 36 in. is normal height for work surfaces, the wheel table is 32 in., giving a good height for beating and mixing, besides providing useful extra work space where needed. The dining space, not fully separated from kitchen area, would prove useful at non-meal-times, for play space or for hobbies.

For the crowded apartment the elevations (upper right) show a compact one-wall kitchen. Special features which Miss Coit has given it include: draft cupboard vented through louvres to outside to save refrigeration, range hood and flue, ventilated dish-drying cupboard so dishes may be put out of sight, and a shelf for the most used kitchen gadgets.

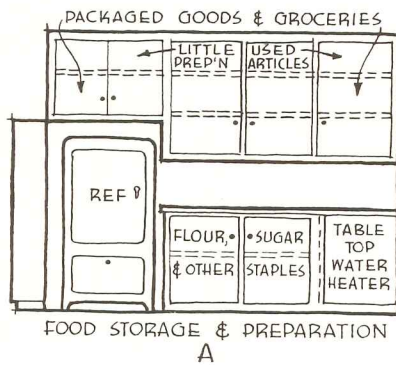
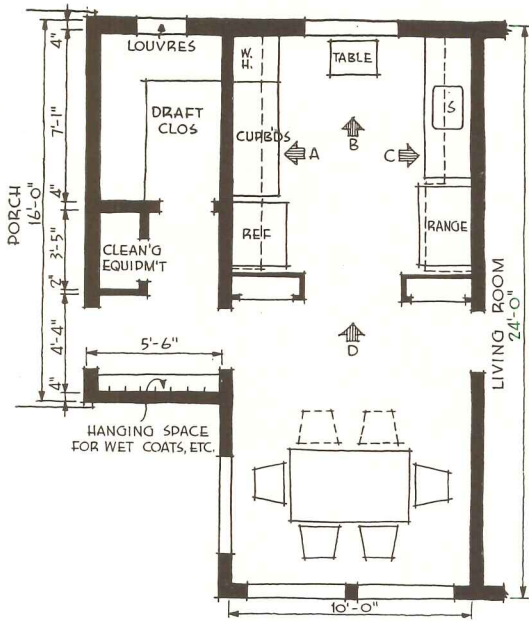


ELEVATION

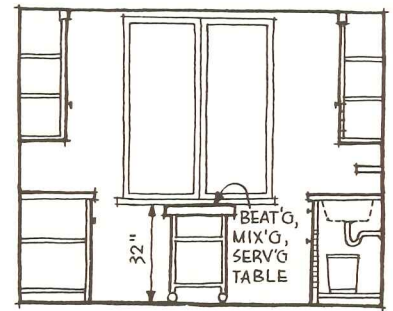


PLAN

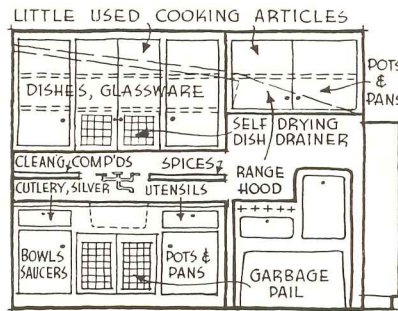
A ONE-WALL APARTMENT KITCHEN



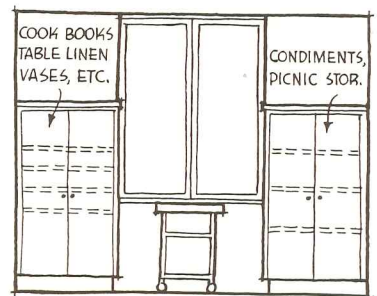
A



B



C



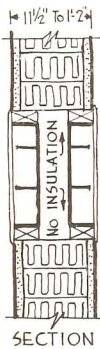
D

IDEAL "MEAL CENTER" FOR A ONE-FAMILY HOUSE

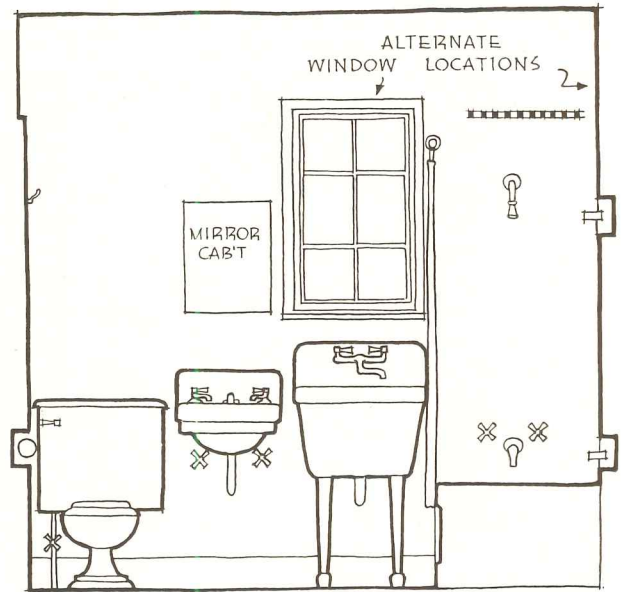
BATHROOMS AND THEIR EQUIPMENT

COMPLAINTS about bathroom layout are many and varied, but in general they are the same complaints that almost any family could register against the typical small bath: never enough storage space, can't open the window without standing in the tub, poor regulation of the shower flow, inconvenient placing of soap trays, towel racks, etc., no locked medicine cabinet, and so on.

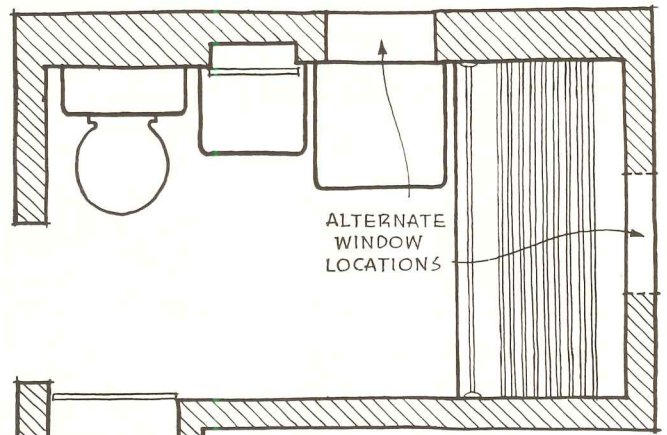
A particular trouble in cramped quarters of a public housing project is that tenants must often use the bathroom for additional functions, such as light laundering. Miss Coit suggests a "bath-utility" room (right) which by the simple addition of a single laundry tray and an overhead drying rack, will serve as a combination bathroom and laundry room.



A common error in planning is to put medicine cabinets back to back in a party partition, with no insulation between them. "Insulation between the back-to-back medicine cabinets . . . would not only cut off much of the neighbor's plumbing noise, but would also render his conversation inaudible—and designers of hotels, clubs, and expensive apartments may one day become aware of that simple device and adopt it"

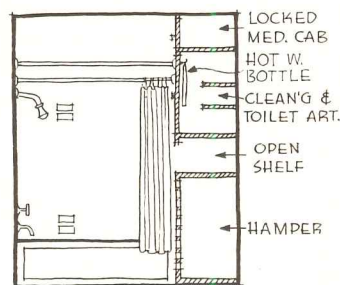


ELEVATION

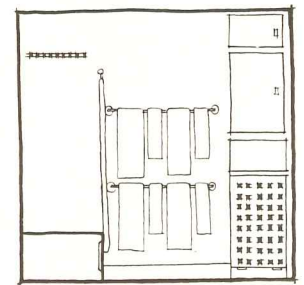


ALTERNATE WINDOW LOCATIONS

PLAN



ELEVATION



ELEVATION

CHECK LIST OF ESSENTIAL BATHROOM EQUIPMENT

The storage problem in the bathroom is one that seems to plague every housewife, whether in the one-family house or in the crowded apartment. Here is Miss Coit's check list of essential items for which space must be provided in every bathroom, for a family assumed to include four people:

In Convenient Locations

- | | |
|---------------------------|--------------------------------|
| 4 wash cloths | nail brush |
| 4 hand towels | shoe buffer |
| 4 bath towels | clothes brush |
| hooks for 2 bath robes | w. c. brush |
| 2 bathing caps (at least) | bath brush or cloth |
| 4 tooth brushes | soiled-clothes hamper |
| | and perhaps a weighing machine |

In Mirror Cabinet

- cosmetics, including nail buffer, etc.
- shaving equipment
- tooth paste
- mouth washes

Stored Out of Sight

- | | |
|--------------------|--|
| hot water bottle | shoe polishes and cloths |
| enema equipment | cleaning and wiping cloths |
| extra toilet paper | facial tissues |
| extra soaps | cleaning compounds |
| extra towels | household remedies, including sodium bicarbonate, mineral oil, mild medicines, liniments, bandages, gauze, Red Cross kit, etc. |

In Locked Cabinet

- strong medicines and poisons

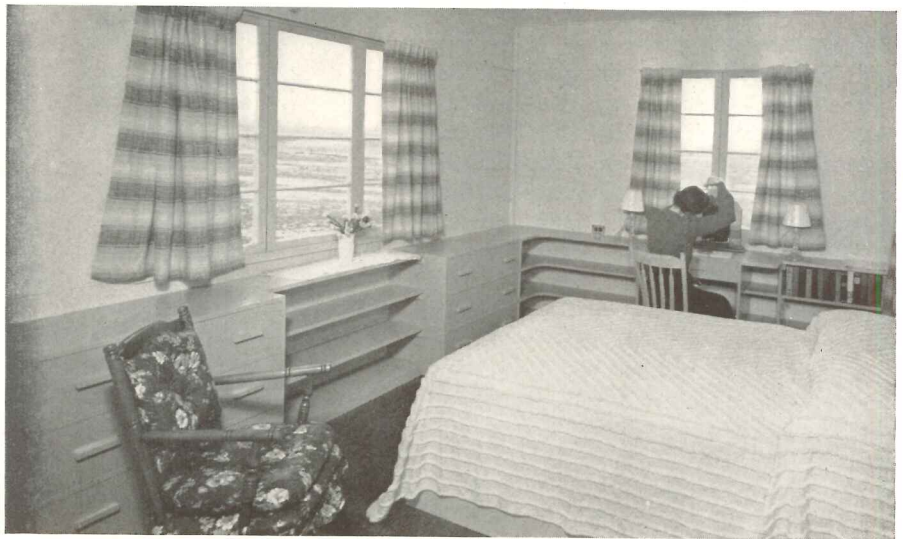
In the typical bathroom there should also be space for drying stockings or light underwear.

Plan and elevation for a "bath-utility" room that should solve many problems for the low-income family, delineated by Miss Coit. A single laundry tray provides a place for doing the light but continual washing of stockings, underwear, children's things, and so on, which the harassed mother must do almost daily. And, as Miss Coit points out, a laundry tray is a fine place for bathing baby. "Apart from the advantage of eliminating from the kitchen the discomforts of steam, dripping clothes and a wet floor . . . such an arrangement would enable the washing to be done at a pace suited to the washer, without interrupting processes at awkward times to fit the meal schedule"

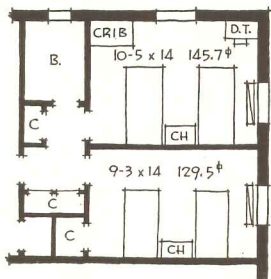
BEDROOM UTILITY CAN BE INCREASED

GREATEST TROUBLE found with bedrooms is that they are commonly just rooms for sleeping and for storing beds and chests—they have little or no daytime utility. With the usual furniture, most bedrooms leave room only for passage, not for play or homework or even sewing. Larger rooms would help, of course, but increased area is not the only answer. Often it is a matter of choice of furniture and its placement. Biggest requirement, says Miss Coit, is a new conception of the purpose of bedrooms. She suggests a new nomenclature, such as: "parents' room," "children's room," etc.

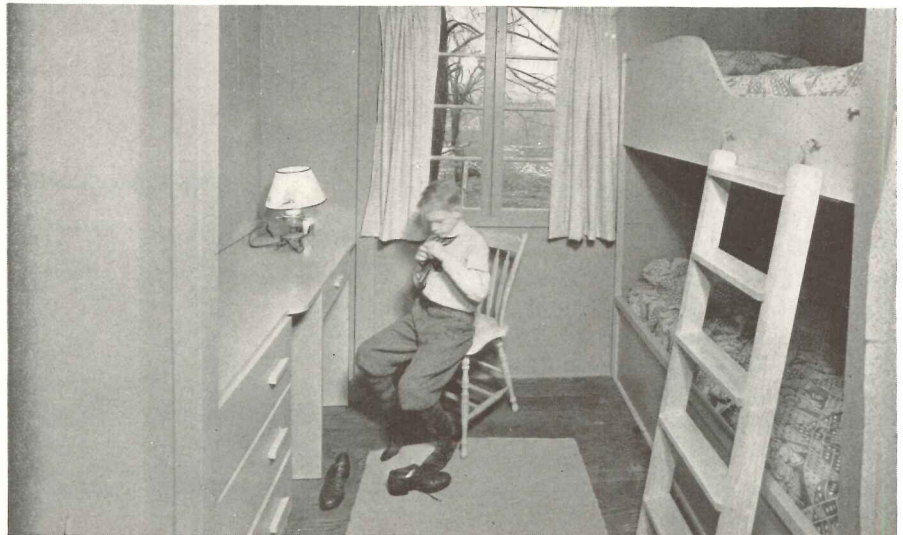
Thinking in these terms, designers would probably use more built-ins. "A girl's room, or a boy's room. . . could contain one or two cots or bunks. But instead of the tenant-supplied bureau, expensive to buy, especially on the instalment plan, soon dated and sooner shabby, a simple set of shelves and a few inexpensive trays built into a closet to store clothing."



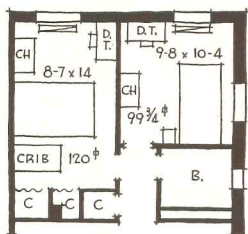
Photos by Eric J. Baker



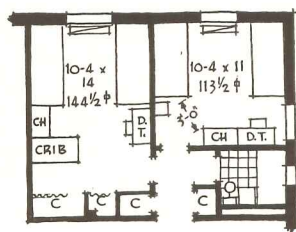
Here are two fairly large bedrooms, with suggested furniture arrangement to meet certain standards—twin beds 3 ft. apart as A.P.H.A. recommends, and larger bedroom to accommodate a crib. To save space the chest is put between beds. But still it is "passage-plus-furniture"



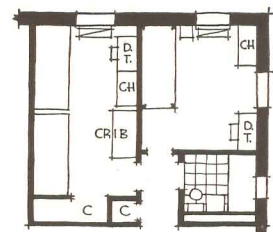
Built-in furniture has greatly improved the usefulness of both of these bedrooms, in a house planned by the John B. Pierce Foundation and Skidmore, Owings & Merrill, architects. The boy's room is really a small bedroom, but the built-in bunks and shelf spaces leave good room for study or hobbies or just conversation



An actual and fairly representative plan of two bedrooms, with the furniture arrangement suggested by the architect. Note 1 ft. 9 in. between bed and wall in the larger room. In neither room would there be space or equipment for any daytime activity, or for homework



The plan at the left is here redrawn to show how much area would need to be increased for reasonable passage between furniture and to allow 3 ft. at least between beds and crib. (Assuming twin beds 3 ft. by 6 ft. 10 in., and junior beds 2 ft. 9 in. by 6 ft.)



Here the same plan (far left) is again redrawn, this time to same size but with different furniture arrangement. There are built-in beds in principal bedroom, built-in bunks in the other. Linen is stored in drawers under beds and under lower bunk. Usable space is increased

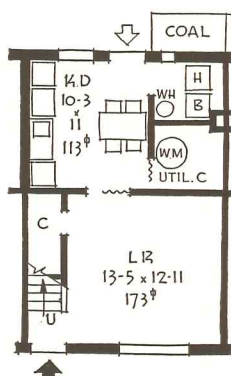
THEY ALL WANT MORE STORAGE SPACE

BROOM CLOSETS, wrap closets, in the hall and near the back door, cool storage closets, kitchen closets near the stove and near the work surfaces, linen closets, bedroom closets, toy closets . . . "are demanded almost vociferously by a people still rather inarticulate as regards its housing needs."

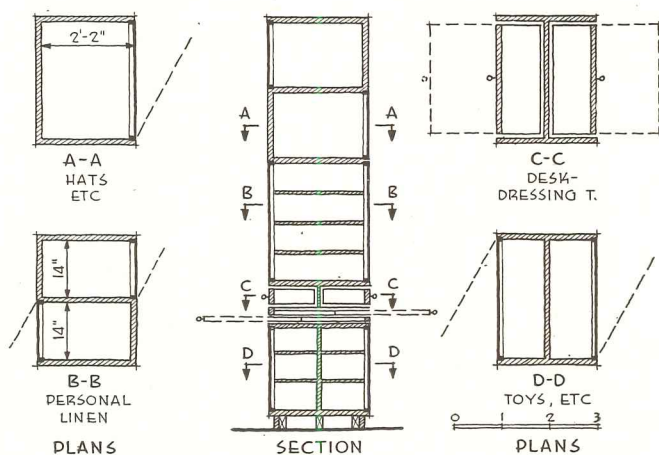
"And when the layman rests the expert takes up the tale. The National Safety Research Institute points out the frequency of serious falls caused by keeping household equipment on the cellar stairs for lack of closet space, of falls by people climbing on flimsy furniture because they have no closet in which to keep a step ladder, of children's falls when climbing to a high shelf for toys which ought to be kept in a low toy closet. . . Not to mention one of the most successful manufacturers of prefabricated houses who . . . brackets together 'closets and a knowledge of the amount due monthly on the house' as forming the foundation of 'that order and security which are at the base of a successful home.'"

"Convenience, labor saving, possibility of ease and rest in a strenuous domestic life seem to dominate tenant requests. . . And convenience seems to be arrived at by the relatively simple recipe calling for adequate work and storage spaces. . ."

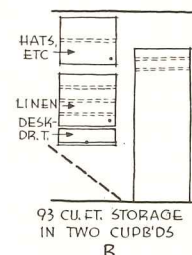
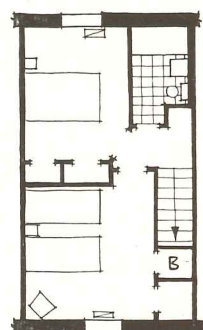
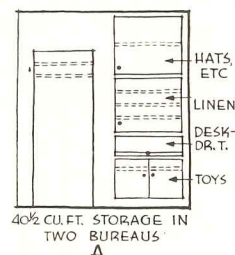
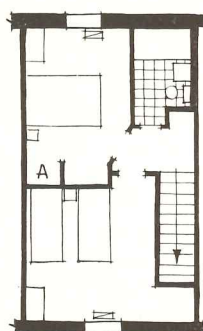
For the one-family house the utility closet is coming into wide use. "One serves in the atticless, cellarless house as storage place for articles which cannot find a place in closets. USHA recommends in the row house a 'utility room and a small laundry with each unit: this is a vestibule, storage room, laundry and pantry combined,' and this recommendation tends to speed its more general adoption."



A USHA plan suggestion showing the now-popular "utility" closet, which besides providing a much-needed space for the washing machine, will also accommodate a great variety of wheel toys and household equipment. It is separate from heater room



A favorite idea of Miss Coit's is this space-saving storage unit for bedrooms, combining bureau, desk and cupboards in one built-in closet. It has pull-out leaves for desk or dressing table use and drawers and cabinets for toys, clothes, linen, hats, etc. While it could be made for a single bedroom, this particular unit is designed for adjoining rooms, half of it facing one room, half the other. The space can be divided in any desired way (see sections)



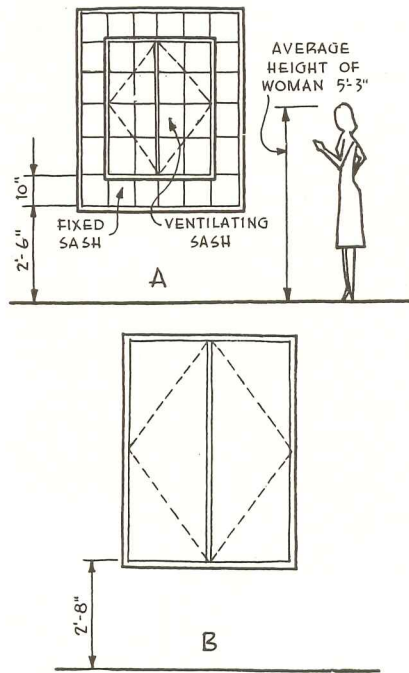
Here is Miss Coit's desk-bureau-closet combination as it would add storage space to an actual plan. The space at "A" in the upper plan would ordinarily be used for a dresser or chest, but could have almost three times the storage space with the built-in combination, as in the section (upper right). The space at "B" in the lower plan is almost just waste space, but the combination closet (section, right), makes the space very useful

PLANNING DETAILS DESERVE ATTENTION

HOUSING PROJECT MANAGERS and tenants can offer many practical design suggestions on details of finish and equipment. While they don't always agree, many of their remarks come up often enough to deserve attention.

Windows and window heights are of especial importance in the livability of a room. "Current practice . . . for window sills at least 30 in. above the floor has several advantages. It avoids glare, it keeps children and toys on the right side of the barrier, and, provided one is fairly close to the window, permits a person in a sitting position to supervise the children's play and enjoy the passing scene. . . The 30-in. sill height has the distinct disadvantage, however, of giving less air movement, and thus less comfort during hot weather, especially where humidity is high, than does a lower sill. The lack of air circulation is sometimes painfully noticeable when the entire body is below the sill level, as in the case of a person lying in a bed."

"Regarding air and light, for which architects are at pains to secure the best orientation possible, it is sometimes difficult to gauge the tenant-consumer viewpoint. . . Blazing sunlight, a southern exposure and drawn shades, wherever found, are easily understood. But just how does the 'white-collar' family in a small apartment use a suite with rooms facing north or south or east or west . . . when most windows—especially living room windows—have a sash curtain covering one-half of the glass area, a drape covering about three-quarters, a shade drawn half way, and perhaps a screen?"



The type of casement window found in a number of housing projects (above) gives little air circulation for children or seated adults, or for anybody lying in bed. A sill height of 2 ft. 8 in. is recommended for safety (ARCHITECTURAL RECORD May, 1941, p. 79), but if the actual sash opening starts at that height air circulation is much improved. In the sash (above) there are 288 corners to wash (outside and inside); the sash in the lower sketch has but 16

The widespread use in housing projects of living rooms for sleeping suggests a wider use of built-in or dual-purpose furniture (ARCHITECTURAL RECORD August, 1941, p. 68), Where beds are used as couches in daytime, the combination end table and chest (lower left) provides useful storage space. Two views at right show daytime and night use of a combination couch-bed

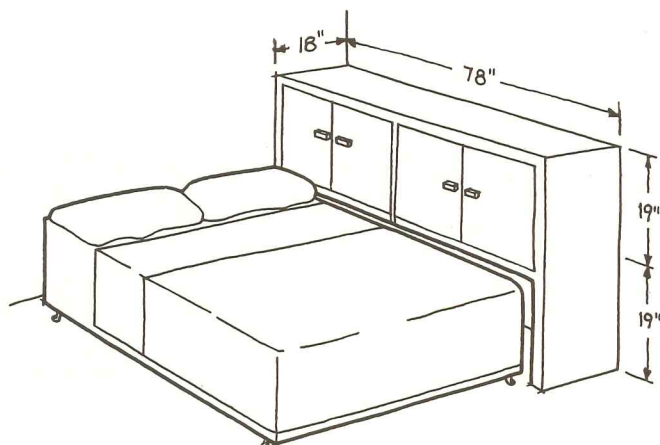
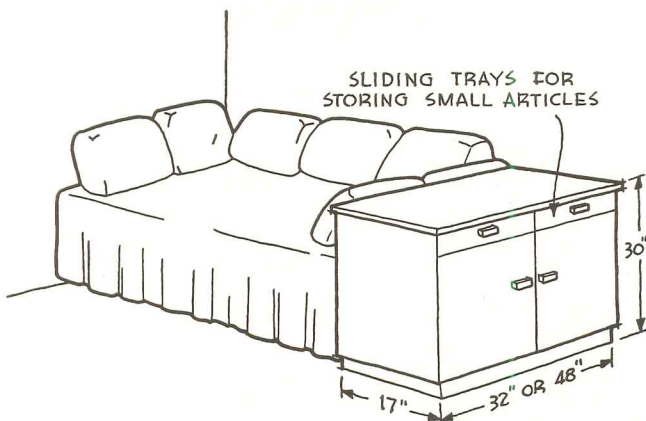
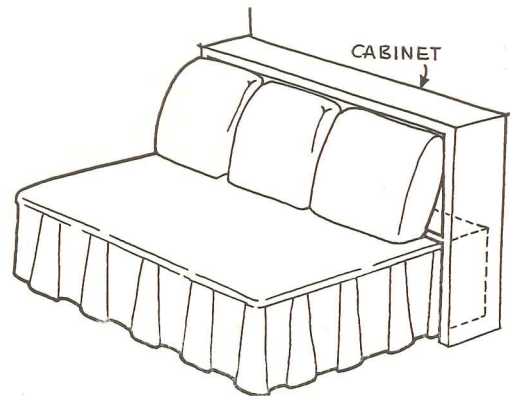
"Casements occasion heat loss; but when open permit of more ultra-violet ray penetration. . . I believe the added advantage of a feeling of being almost in the open air, which the casement affords, has much value in making for contentment. . ."

"The use of non-transparent glass in some kitchens and bathrooms makes frequent cleaning unnecessary; and gives for that reason a slovenly appearance. For stair hall windows in apartment houses, however, easily fingermarked by everyone passing, a rippled glass is almost a necessity. . ."

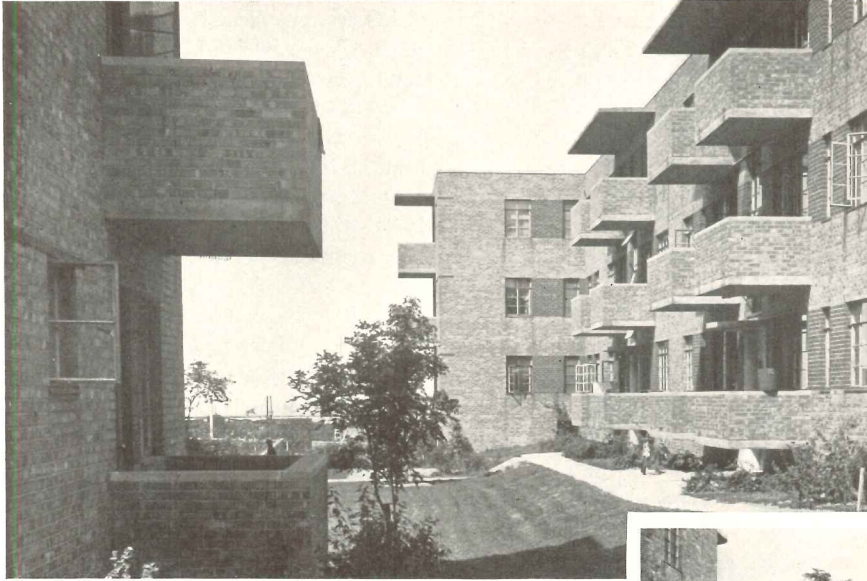
"Lack of proper curtain rods for corner window has occasioned some pitiful makeshifts. . ."

"A high degree of year-round comfort, combined with saving in heating costs, might be secured by use of the solid shutters frequently used in Continental Europe. Closed after dark in winter, they prevent heat loss by radiation, and diminish street noise. . ."

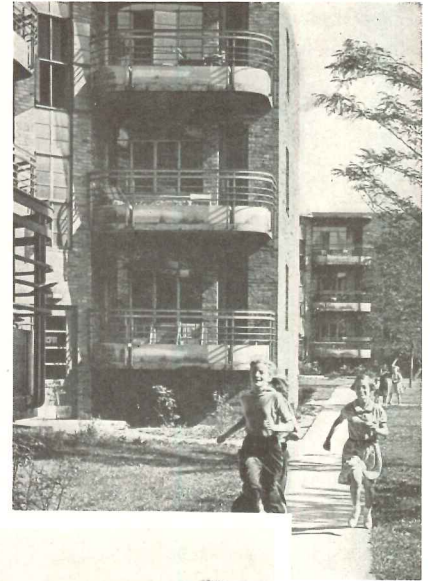
"Cooking ranges should be located at least one foot from the window jambs, according to safety experts, for many fires start when window curtains are blown across the stove."



USEFUL ROOFS AND BALCONIES



Joseph L. Weinberg and associated architects

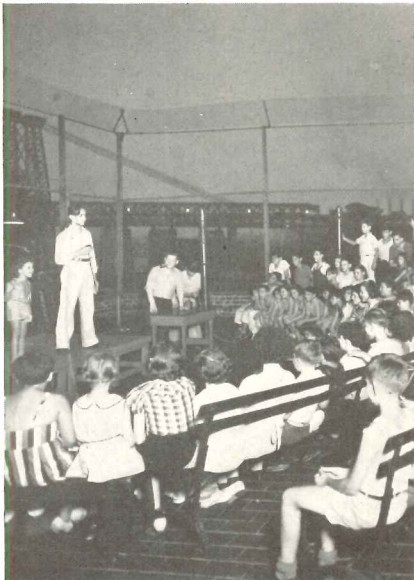


Tenants do appreciate balconies; under certain conditions they will give them intensive use. The balconies at Lakeview Terrace, Cleveland, don't give tenants quite the desired feeling of privacy. Those at Cedar Central, Cleveland, get intensive use, particularly where a projecting stair well gives them separation and thus privacy

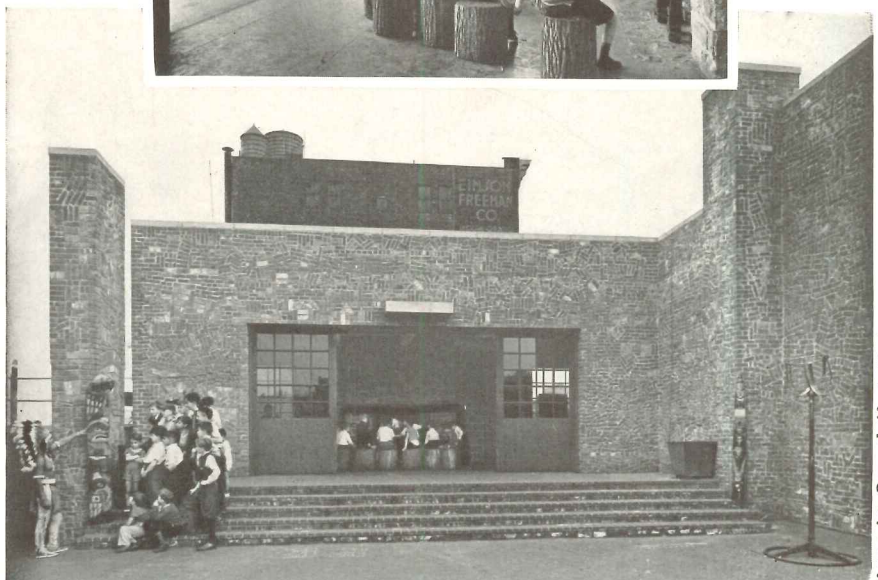


Walter R. MacCormack, architect

Similarly roof areas prove very useful, if properly utilized. At the Madison Square Boys' Club, New York (right), the boys find many uses for the club room on roof, and the terrace effect outside the room stage makes a fine stage for summer shows. At Lavanburg Houses, New York (below), the children enjoy activities on the roof

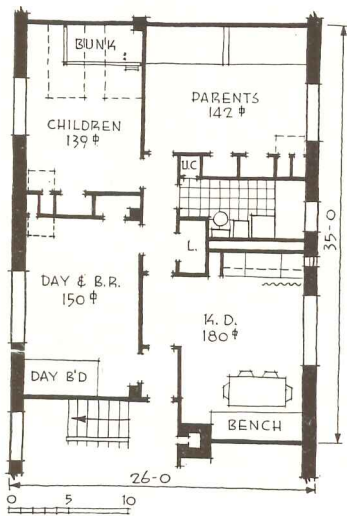


William Sommerfeld, architect

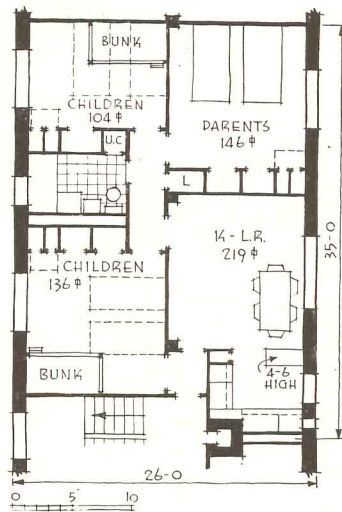


Hoiden, McLaughlin & Associates, architects

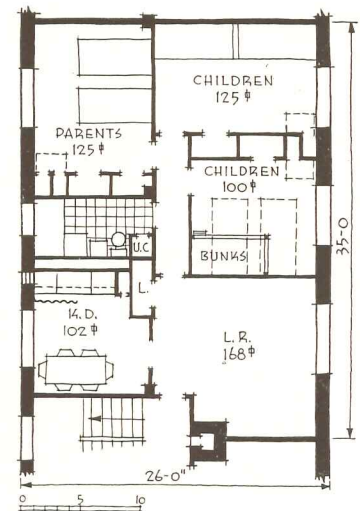
SOME PLANNING SUGGESTIONS



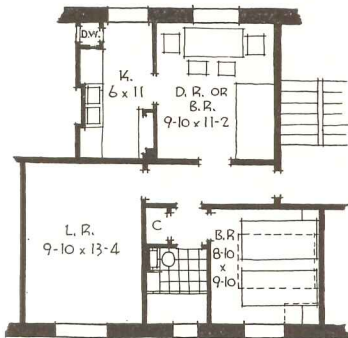
Dual-purpose rooms in a conventional over-all plan. Here living room activities can be divided between the "kitchen-dining" room and the "day and bedroom," with the foyer permitting full privacy in either. Increased usefulness of "parents'" and "children's" rooms further relieves kitchen and living areas



Here kitchen, living and dining room functions are frankly combined in one large room. The kitchen has its own wing, screened from the room itself by shoulder-high cabinets. Still the room can be by-passed through the children's room in case father and mother want some quiet in the evening



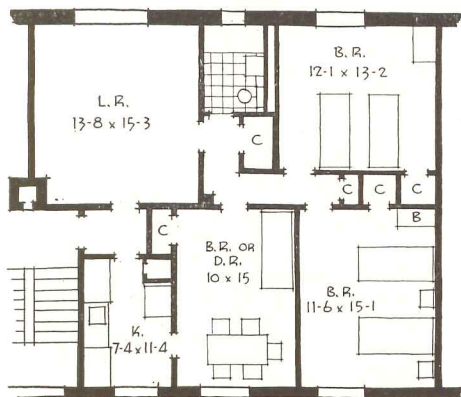
A more conventional arrangement of dual-purpose rooms. Here living room is definitely separated from kitchen-dining room. But the latter area is large, with compact kitchen equipment leaving space for sitting without getting in mother's way. Thus the room relieves the living room in many ways



Brooklyn Garden Apartments, Brooklyn.
Andrew J. Thomas, architect

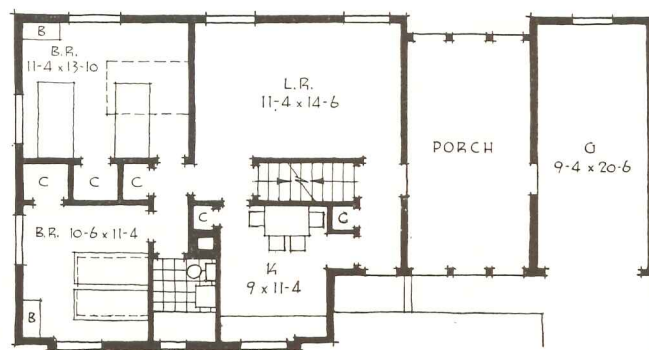
It is unusual in apartment layouts to find the living room so far removed from the entrance, but it gives an ideal living room—out of all traffic areas, and offering complete privacy for sleeping, or for a wage-earner who wants evening rest. The dining room doubles as bedroom

IF ANY ONE CONCLUSION stands out in Miss Coit's study of low-income families and their housing needs, it is that apartment rooms should be designed for multiple uses, to relieve pressure on the over-used kitchens and inefficient living rooms. Above she has drawn three suggested plans containing dual-purpose rooms. By no means intended to be "perfect" plans, they do illustrate how rooms might be given extra usefulness within economical over-all areas. Essential furniture is concentrated with built-in bunks and combination closet-bureau-desks (see page 80) to leave areas clear for activities which too often are concentrated in kitchens and living rooms. They have the "utility-bathroom" (see page 78) to relieve the kitchen of light laundering. And, emerging from the isolation as "bedrooms," these areas are now designated as "parents' room," "children's room," or "day and bedroom." Kitchen equipment is compact, but kitchens themselves are large, to be "kitchen-living" rooms, or "kitchen-dining" rooms; at any rate to contain the multitudinous activities that commonly go on in this area. Also on this page are three plans from actual projects, selected by Miss Coit as having exceptionally good points from the tenant's standpoint.



Hillside Homes, New York.
Clarence Stein, architect

An excellent plan for a public housing development. Living room can be by-passed for sleeping privacy; the dining room also can serve as a bedroom, permanently if desired, and the bedrooms are uncommonly large, leaving usable space around the furniture



Greenhills, Cincinnati. Roland Wank; G. Frank Cordner; architects

A single-house type of plan particularly good for a southern climate, where complete separation is desired between kitchen and living room. Here, too, the bedrooms are large enough to serve other purposes, and to give plenty of air in hot weather. Closets are large. If the rear position of living room is a bit advanced for low-income families, it does give good cross ventilation through the entrance hall. Stairs lead to two bedrooms and bath on the second floor. The high sash, used in combination with normal windows, gives extra furniture space without interfering with ventilation

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compiled by Elisabeth Coit, AIA

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Three words in
ANY
EMERGENCY
 FOR THE
ARCHITECTS and BUILDERS
 OF
DEFENSE PROJECTS

1 2 3 BARRETT SPECIFICATION ROOFS

With wartime plant construction involving many new and complex problems that must be solved fast *and right the first time*, those three words have the significance today of sound information to the architects and builders of defense projects.

Written into the specification for any type of flat roof project, **BARRETT SPECIFICATION ROOF** means that one of your difficult problems has been solved immediately and completely, in all details of materials and installation.

It means that you have specified a roof

of *proven* quality, made of Barrett Specification coal-tar pitch and felt with fire-safe gravel or slag wearing surface.

It means that this roof will be applied according to Barrett Specifications by a Barrett Approved Roofer, selected for his proven experience, integrity and workmanship.

It means that the roof you've specified will be "delivered" to you, installed, bonded, and inspected by Barrett experts.

In short, it means that your entire roofing problem has been solved . . . fast, *and right the first time!*

THE BARRETT DIVISION

ALLIED CHEMICAL & DYE CORPORATION
 40 RECTOR STREET, NEW YORK

2800 SO. SACRAMENTO AVE., CHICAGO, ILL.

BIRMINGHAM, ALA.

BUILT-UP ROOFS.. SHINGLES AND SIDINGS.. ROLL ROOFINGS.. ROCK WOOL INSULATION.. WATERPROOFING.. BLACKOUT PRODUCTS



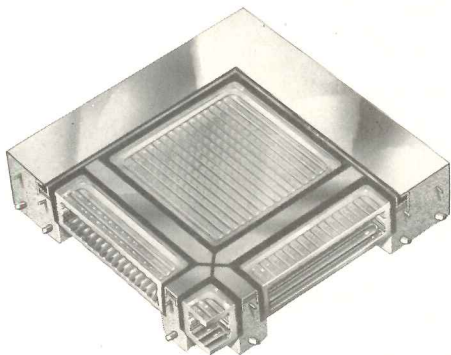
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 ONE OF
 AMERICA'S
 GREAT BASIC
 BUSINESSES

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DAYLIGHTING *plus Insulation*

● THERMAG semi-vacuum glass blocks, with "Magnalite" lenses give complete 4-way light diffusion through an entire room. Total solar heat transmission per square foot of skylight area is under 50% by test. Airtight construction virtually eliminates thermal heat loss. 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!



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

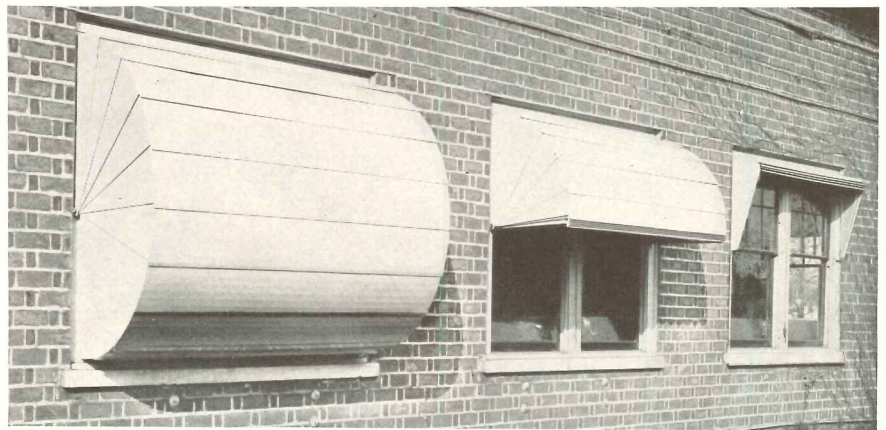


Fig. 1

Metal Blackout Awnings

A DIFFERENT answer to the blackout problem for industrial, commercial and residential buildings comes with the introduction of a metal blackout awning which is installed on the outside and operated like a roll-top desk, for either sunlight or blackout protection. The segments telescope together when closed, and the awning is said to be rust-proof and fire-proof. The manufacturer claims nighttime reflections are eliminated. Acklin Stamping Company, Toledo, Ohio. (See fig. 1.)

Asbestos-Cement Board

AN asbestos-cement board of the type being used in army cantonments, naval bases, ordnance plants, etc., has been added to a well known line. This is a hard, rigid, non-combustible product with smooth finish, in thicknesses of 1/8, 3/16, 1/4 in. Standard sizes 4 by 4 ft., 4 by 8 ft. It is applied with nails or screws direct to wood sheathing. Celotex Corp., 919 N. Michigan Ave., Chicago, Ill.

Non-Priorities Flashing

A FLASHING that is said to require no priorities has been designed as a substitute for metal flashings. It consists of a felt core bonded on both sides to asphalt-saturated fabric by means of a ductile mastic. This flash-

ing, the manufacturer says, though tough and durable is flexible enough to be formed by hand on the job. For use as through-wall, cap, base and valley flashing; also as a water-proofing for spandrel beams, heads and sills and as a siding material. Shipped in rolls 24 ft. long and 36 in. wide. Wasco Flashing Company, 86 Broadway, Cambridge, Mass.

Underfloor Electrical Fittings

A LINE of electrical fittings and accessories, for underfloor distribution systems used with cellular steel floors, has been announced. They include distribution fittings or header ducts which feed wires to the individual floor cells; outlet fittings for high and low tension outlets; accessories. General Electric Company, Bridgeport, Conn. (Fig. 2.)

(continued on page 88)



Fig. 2

"Me too, son!"



ANOTHER FIRST FOR CARRIER...THE NAVY "E"

The men and management of Carrier deeply appreciate the Navy's reward for the work we've been doing for defense. We're human enough to feel proud that Carrier is first in the air conditioning industry to earn the Navy "E".

In the submarine, life depends on huge storage batteries preserved by Carrier Air Conditioning. On board many Liberty Fleet ships, ship's food is like home food, thanks to Carrier Refrigeration.

In the sky and on land, Carrier is earning its letter, too. Instruments and bombsights of unmatched accuracy... motors that climb higher, fly faster, stay in action longer... and a thousand more triumphs of American industry depend on Carrier developments... on the microscopic accuracy made possible by controlling temperature, humidity, and circulation of air.

Today, air conditioning is a mighty weapon. Tomorrow, it will be an even more potent force in building a world

of greater abundance for everyone.

Architects Pace The Victory Drive

Across the continent, architects are drawing plans to help speed industrial production. In much of this new, modernizing construction, air conditioning is being incorporated to control essential manufacturing processes.

The value of Carrier Air Conditioning and Refrigeration in America's

victory drive is shown by its priority ratings in today's war-time construction.

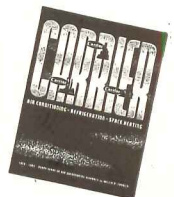
Typical examples are: the "dry-blast" furnaces—one stepped up steel production an extra 27%; the air conditioned black-out plants where even temperature, correct humidity and freedom from dust are essential to fast precision machining; the telephone, gunnery, and other military nerve centers which must be guarded against gas attack; the parachute, food and plywood storage spaces which must provide protection against deterioration.

Carrier with its 40 years of air conditioning development offers the cooperation of its engineers and dealers. We offer our experience in serving Army, Navy and war industries with Carrier Air Conditioning, Refrigeration and Heating. You will find complete Carrier data in your Sweets Catalogue, cover shown here.



The Navy "E", one of the U. S. Navy's most coveted honors, has been awarded to Carrier Corporation for excellence in war production.

Carrier Corporation, Syracuse, New York
WEATHERMAKERS TO THE WORLD



(continued from page 86)



Cement-Asbestos Pipe

A CEMENT-ASBESTOS pipe is now being offered which is manufactured by a patented high-pressure process said to give it extremely high density and great mechanical strength. A patented method of coupling, it is

claimed, does away with special treatment or threading of the ends. The standard pipe is designed for handling mildly corrosive solutions, transporting water which must be kept free of metallic contamination, etc., handling fumes and gases in ventilating ducts and stacks, etc. For highly cor-

rosive conditions the pipe is available with impregnated or synthetic coating. United States Stoneware Company, Akron, Ohio.

Simplified Kitchen Cabinetry

A LINE of condensed and simplified kitchen cabinetry, suitable for low-cost housing, has been added to a well-known higher-priced kitchen line. Units may be used singly or in assemblages. Kitchen Maid Corporation, Andrews, Ind. (See fig. 3.)



Fig. 3

Protective Lighting for Industry

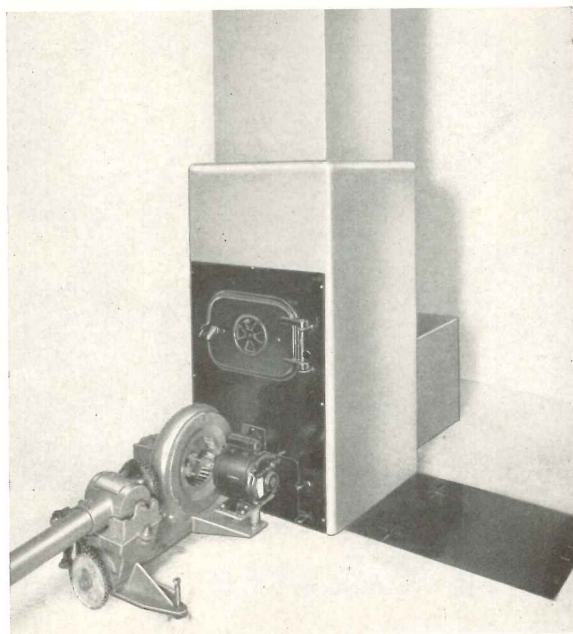
ANNOUNCEMENT is made of a new fixture for protective illumination surrounding industrial plants. The fixture provides a wide lateral distribution of light. With proper spacing of fixtures a brilliant light barrier is created around property lines without illuminating buildings and grounds. With a low mounting height lamps of 300 to 500 watts deliver a high intensity of illumination. Goodrich Electric Company, 4600 Belle Plaine Ave., Chicago, Ill.

Invisible Sash Balance Improved

AN INVISIBLE balance has been refined, according to its manufacturer, by the following improvements: top fastener simplified; a new flexible steel bearing arm takes up play; and a new guide bracket machined to close tolerance gives a snug fit without binding. The balance, the manufacturer says, is easier to install and smoother and quieter in operation. Grand Rapids Hardware Company, Grand Rapids, Mich.

(continued on page 90)

AUTOMATIC COAL HEAT for DEFENSE HOMES . . .



The Builders' Heating Unit

With the growing importance of coal heating in low cost Defense Housing, these Cooper Stoker-fired 64,000 and 80,000 B.T.U. Air Conditioners are becoming more and more popular with architects, builders and owners everywhere. Designed to meet today's special need for an inexpensive but efficient automatic heating plant, they have proved themselves in service in hundreds of homes throughout the East, in sections noted for severe winters.

The Cooper Stoker-fired Air Conditioner arrives on the job as a packaged unit, ready to set up. It consists of an improved Cooper Anthracite Stoker complete with motor-operated fan and bin-feed attachment; Retort of improved design; heavy, welded fume-tight steel Combustion Chamber; steel Jacket with inner lining; large Plenum Chamber; oversized Air-circulating Fan and motor with Air Filter. Stoker and fan are controlled automatically. Instal-

lation can be handled by one semi-skilled man within a few hours. No valves or fittings required.

The Cooper Anthracite Stoker used in this unit is approved by the Anthracite Industries Laboratory, Primos, Pa. The furnace is designed in accordance with specifications set up by the Procurement Division of the United States Treasury Department, and meets the requirements of the Federal Housing Authority for Defense Housing.

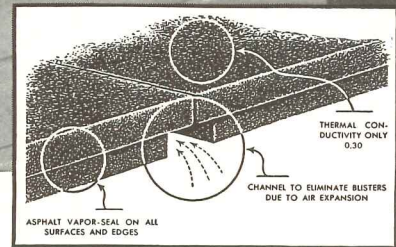
Your request for further information will receive prompt attention. Full cooperation will be extended to architects and builders. Write today.

Cooper & Cooper, Inc.
Pittsfield, Massachusetts

**COOPER STOKER-FIRED
64,000 and 80,000 B. T. U. AIR CONDITIONERS**



"From the Board of Directors
to Architect Ambrose"



... "Because he specified the
CELOTEX VAPOR-SEAL ROOF INSULATION
which has helped accelerate our war production"

THIS ORCHID might have been presented to any one of many architects—by any one of many boards of directors up and down the land. Because this photograph shows *only one of many vast war industry plants* where Celotex Vapor-seal Roof Insulation is accelerating production—through temperature and humidity control.

Records show radically *reduced air-conditioning costs* in plants using Celotex Vapor-seal Roof Insulation. And, in the northern states, it aids amaz-

ingly in fuel conservation, important in war time.

If industrial atmospheric control forms any part of your current problems, let us send you latest specifications on this thoroughly tested roof insulation which is (1) *readily available NOW*, (2) able to compete in efficiency with any other type of rigid roof insulation, since its thermal conductivity is 0.30 Btu, (3) permanently protected against termites and dry rot by the exclusive, patented Ferox Process. Write today!

CELOTEX

REG. U.S. PAT. OFF.

VAPOR-SEAL ROOF INSULATION

The word Celotex is a brand name identifying a group of products marketed by The Celotex Corporation

Sales Distributors Throughout the World

THE CELOTEX CORPORATION • CHICAGO

(continued from page 88)



Maple Frame Double Glazing

TO CONSERVE aluminum, hard maple is now being used to make wood frame removable double glazing panels for casement windows. Engineering tests are said to indicate that the new panel is as efficient as the alumi-

num formerly used. Andersen Corporation, Bayport, Minn.

Heaters For Defense Housing

THE FOLLOWING LIST of heating unit manufacturers and their products, though necessarily incomplete, should provide the designer of defense hous-

ing with a wide range of suitable heating equipment. Names of manufacturers and products were for the most part supplied by Anthracite Industries, Inc. As additional data are received they will be published.

The designer should note that products must be checked against the War Production Board's "Defense Housing Critical List," as outlined in Time-Saver Standards appearing in this issue.

HAND-FIRED COAL FORCED WARM AIR FURNACES

- Fitzgibbons Boiler Company, Inc.
101 Park Avenue, New York City
"Fitzgibbons 80-FWA"
- Williamson Heater Company
Cincinnati, Ohio
"Williamson Model D-18"
- Michigan Tank and Furnace Corp.
14101 Prairie Avenue
Detroit, Michigan
"Comfort Zone, Models HB-20, SB-20"
- C. A. Olsen Manufacturing Company
Elyria, Ohio
"Luxaire No. 720-S Forced Air Furnace"
- Lennox Furnace Company
Marshalltown, Iowa
Columbus, Ohio
Syracuse, New York
"QH2-20" "QC2-20"
- Ingersoll Steel and Disc Division, Borg-Warner Corp.
Kalamazoo, Michigan
"Ingersoll Steel Furnace, Model No. G-1418"
- Knox Stove Works
Knoxville, Tennessee
"Knox Model KF-818"
- Thatcher Furnace Company
Newark, New Jersey
"Thatcher Unit No. C-174"

STOKER-FIRED COAL FORCED WARM AIR FURNACES

- Cooper and Cooper, Inc.
Pittsfield, Mass.
"Cooper Stoker-Fired Warm Air Furnace." 80,000 and 64,000 Btu.

COAL-FIRED WARM AIR SPACE HEATERS

- Kol-Gas Heater Company
Nashville, Tennessee
"Kol-Gas Self-feed Heater"
- Locke Stove Company
Kansas City, Missouri
"Warm Morning Coal Heater"
Models 420, 120A, 24A, 24B
- Self-stoking Stove and Furnace Corporation
120 South LaSalle Street
Chicago, Illinois
"Self-Stoker Space Heater"

ASBESTOS DUCTWORK FOR WARM AIR SYSTEMS

- Philip Carey Manufacturing Company
Lockland, Cincinnati, Ohio
"Careyduct"

**It fits into your
low-cost
housing plans**



HERE'S GOOD NEWS! You can give your low-cost defense housing and rehabilitation homes the great convenience of a shower cabinet made of ARMCO Galvanized PAINTGRIP Metal. It is moderate in cost and will give long, satisfactory service.

Shower cabinets made of this galvanized sheet have a special bonderized coating that tightly grips the smooth baked-enamel finish. The PAINTGRIP

coating insulates the enamel from the galvanizing and preserves the life and appearance of the finish.

Shower cabinets made of ARMCO PAINTGRIP Metal are approved in the latest defense housing critical list. We shall be glad to put you in touch with reliable manufacturers. Just write to The American Rolling Mill Company, 581 Curtis Street, Middletown, Ohio.





"The man is here to talk about that washroom traffic problem"

The traffic cop doesn't know it yet, but he's going to be completely stymied by that traffic problem.

Actually, it's a job for the Scott Washroom Advisory Service.

That's because this helpful service offers the architect complete technical data on traffic requirements in all types of industrial, institutional and public washrooms. Trained staff members are

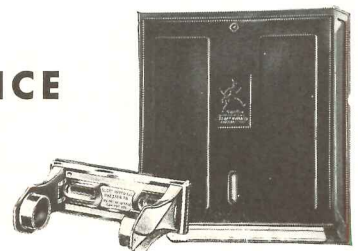
always available for consultation. And because the Scott Washroom Advisory Service also provides specification material on sanitary needs, fixtures and their arrangements, it is decidedly helpful in planning any washroom for continued efficiency and economy.

For details, and for a set of Don Graf Data Sheets on washroom planning, write Scott Paper Company, Chester, Pa.

See our listing in
Sweet's Catalog

SCOTT WASHROOM ADVISORY SERVICE

offered by the makers of the famous
new "Soft-Tuff" ScotTissue Towel and ScotTissue Service Roll



Trade Marks "Soft-Tuff," "ScotTissue," "Washroom Advisory Service" Reg. U. S. Pat. Off.

SPECIFICATION STANDARDS FOR GOVERNMENT WORK

PART 4

By HAROLD R. SLEEPER, AIA

This installment concludes the list of specifications often involved in work for the Federal Government. Parts 1, 2 and 3 appeared in the January, February and March issues of ARCHITECTURAL RECORD.

DIVISION 15. SCREENS

FED. SPEC., EXCEPT AS NOTED

Cloth, wire, screen FED. SPEC. RR-C-451a
Specify Type, and mesh per sq. in.
Type A—Copper
Type B—Commercial bronze (brass)
Type C—Bronze
Type D—Iron or Steel, galvanized
Type E—Copper-nickel-alloy
Type F—Corrosion-resisting steel
Type G—Aluminum alloy

Type H—Iron or steel, Japanned or painted
Type I—Chromium-nickel alloy
Fed. Spec. E-RR-C-451a, Oct. 20, '41 modifies and limits wire as follows: Use only Types B, D, E, or H.

SIMPLIFIED PRACTICE REC.

Wire insect screen cloth
Simplified Practice Recommendation R 122

DIVISION 16. WINDOW SHADES & VENETIAN BLINDS

FED. SPEC.

Cloth; shade FED. SPEC. CCC-C-521a
Shades, window; roller, slats, cords and accessories FED. SPEC. DDD-S-251
Specify: Type of rollers, type a, wooden; type b, metal.
Specify slats: $\frac{7}{8}$ " or $1\frac{1}{4}$ " wide for lengths up to 54".
Specify Type shade cloth: Type I cambric.
Type II Holland.
Type III Pyroxylin.
Specify color of shade: dark ecru, light ecru, white, medium green, dark green; Type I and III may have dark color one side and light on other.
Specify whether pulls or cords are to be used.

Specify whether inside or outside brackets.
(Opaque shade cloth not included herein.)

Shades, window; wood slats FED. SPEC. ILL-S-256
If near seacoast specify all brass or bronze hardware.

Blinds; Venetian; wood-slats FED. SPEC. LLL-B-441
(Commercial Standard CS 6137)
Specify: If slider side guides are required and whether these are surface or recessed type; color of wood parts; color of tapes; color of cords; limitation of head box, materials or design.

DIVISION 17. INSULATION & ACOUSTIC MATERIAL

FED. SPEC.

Insulation; (vegetable or wood fiber), blanket, felt and loose fill. FED. SPEC. HH-1-571
Specify Grade A, medium or Grade B, hard. Thickness $\frac{1}{8}$ ", $\frac{1}{4}$ " or $\frac{1}{2}$ ".
Millboard; asbestos FED. SPEC. HH-M-351
Mineral-wool; impregnated blanket, block, and pipe covering (molded) (for low temperatures) FED. SPEC. HH-M-371
Acoustic-materials; (for) plastic-application FED. SPEC. SS-A-111
Fiber-board; insulating FED. SPEC. LLL-F-321
Cork; granulated, insulating FED. SPEC. HH-C-571a
Cork; compressed (corkboard) (for thermal insulation) FED. SPEC. HH-C-561b
Insulation; bat or strip-form and loose-fill FED. SPEC. HH-I-521b

Type I Bat or strip form.
(Class A Lightweight (.30 B.T.U.)
(Class B Medium weight (.50 B.T.U.)

Type II Loose fill form.
(Class (A) Lightweight (.30 B.T.U.)
(Class (B) Medium weight (.50 B.T.U.)
(Class (C) Heavyweight (.50 B.T.U.)

Material Form: Fibrous, granular, modulated fibrous, powdered forms mixed with cellulose fibre, or bat form.

Thickness: 4", $3\frac{5}{8}$ ", 3" and 2".

COMMERCIAL STANDARD

Board; fiber insulating (second edition) CS 42-35

DIVISION 18. EQUIPMENT & FURNISHINGS

FED. SPEC.

Furniture and cabinets; office, sectional, steel FED. SPEC. AA-F-791b
Furniture and cabinets; office, sectional, wood FED. SPEC. AA-F-801
Lockers; clothes, steel FED. SPEC. AA-L-486
Safes; burglar-resisting FED. SPEC. AA-S-71
Safes; insulated FED. SPEC. AA-S-81
Shelving; steel, storage FED. SPEC. AA-S-271
Matting; rubber FED. SPEC. ZZ-M-71
Mats, floor; rubber, link-type FED. SPEC. ZZ-M-46
Cloth; awning FED. SPEC. CCC-C-406
Lining; carpet FED. SPEC. DDD-L-416
Mats; door, fiber FED. SPEC. DDD-M-156a

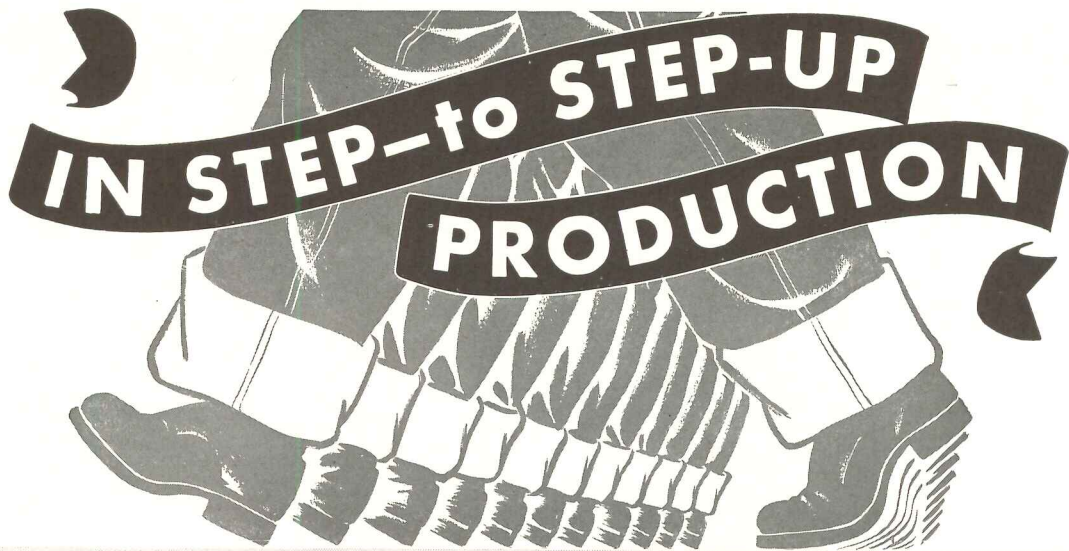
Cans, corrugated; ash and garbage FED. SPEC. RR-C-81
Fed. Spec. E-RR-C-81, April 30, '41, eliminates all zinc-coating ((galvanizing) and substitutes metallic painted, lacquered or enamelled corrosion protective coating. Specify size: A—5 gals., B—10 gals., C—17.5 gals., D—20.5 gals., F—33 gals. (Type A and B are pails, others are cans.)

Fire-extinguishers; chemical, hand, carbon-tetra-chloride type FED. SPEC. O-F-351
(1 quart size; use liquid as specified in Fed. Spec. O-F-380.)

Fire-extinguishers; chemical, hand (soda-and-acid type) FED. SPEC. O-F-355a

Fire-extinguishers; hand, portable, foam-type FED. SPEC. O-F-361

Fire-extinguishing-liquid; carbon-tetra-chloride base (For use with extinguisher O-F-351.) FED. SPEC. O-F-380



modine

UNIT HEATERS

● WARS ARE WON not only on the battle line but on the production line. On each, both equipment and man power must be superior!

In new industrial plants, or governmental buildings, heating must be planned strategically.

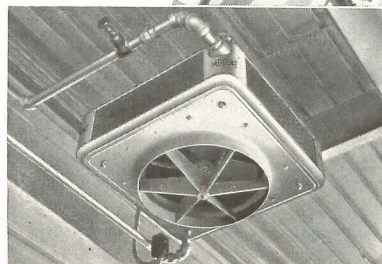
For heating equipment—to get *proved* automatic, fast, effective plant heating, with greater fuel savings and lower maintenance and operating costs—specify Modine Unit Heaters.

And for more productive man power—specify Modine Unit Heaters. Modines deliver heat down to the working level; give circulation without cold drafts or hot blasts; maintain even temperatures. There's less illness; fewer man-hours are lost. Working comfort increases worker co-operation. With everybody "in step," production goes steadily on . . . *and up!*

You can get Modines just as soon as you can any unit heaters. And Modines can be installed faster.



Horizontal Delivery Model



Vertical Delivery Model

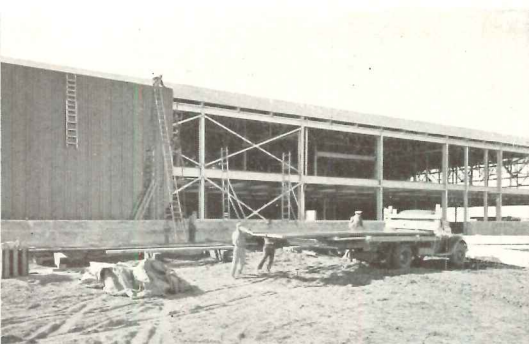
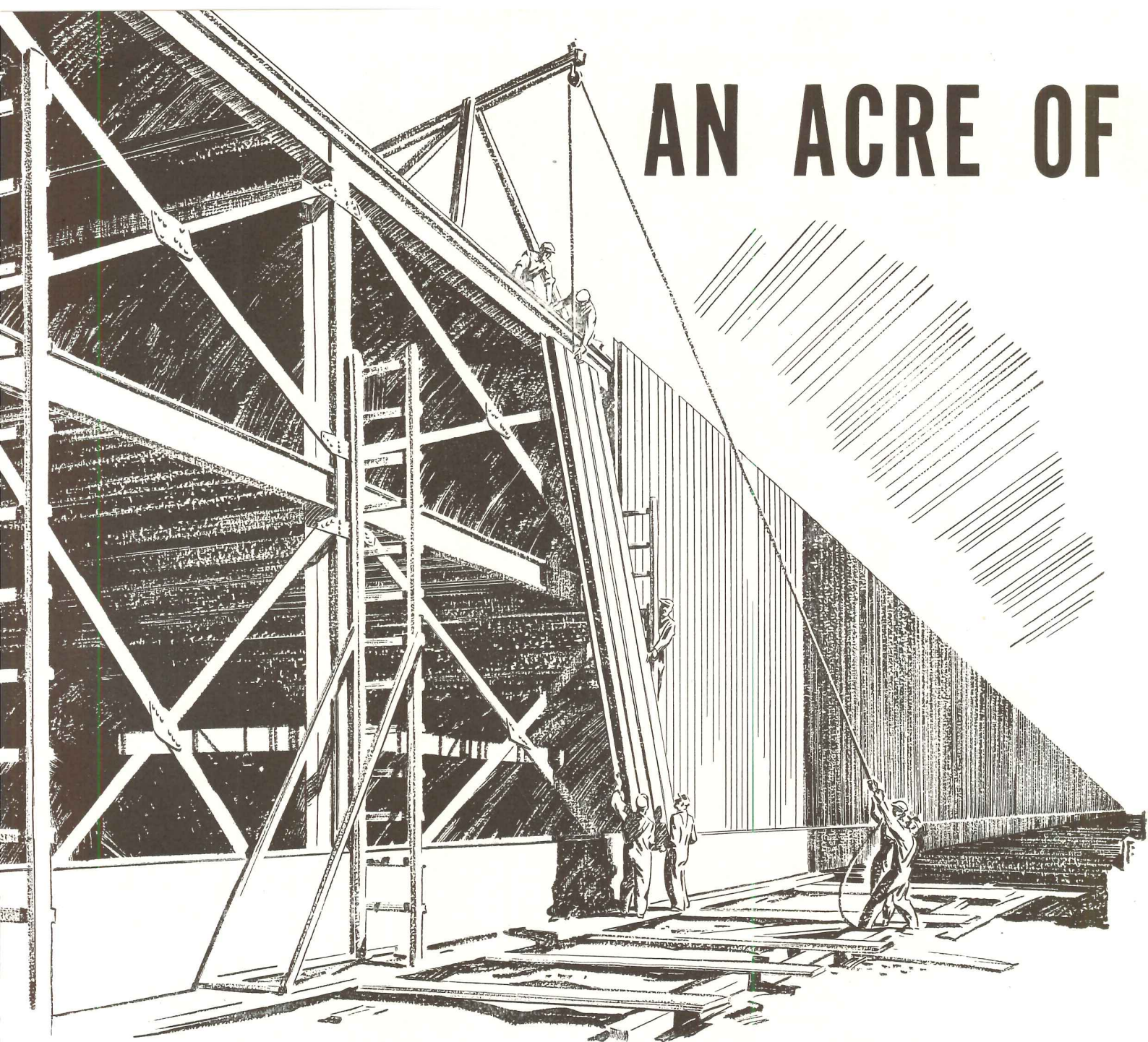


Look in your phone book for Modine representative's name—"Where to Buy It" section under heating apparatus.

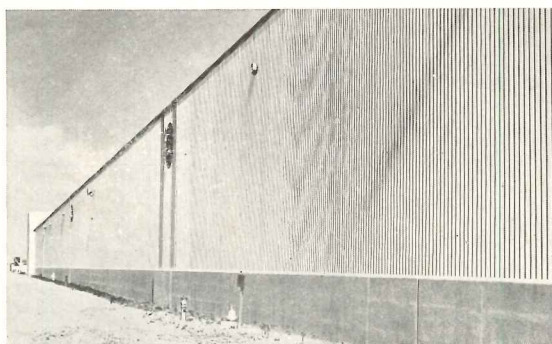
GET THE LATEST CATALOGS

MODINE MANUFACTURING COMPANY, 1773 RACINE ST., RACINE, WIS.

AN ACRE OF



Speed With Prefabricated Units — Units (up to 50 square feet of wall area) arrive at the job site in a truck . . . ready to be erected at the rate of one every nine minutes. No delays because of weather; no waiting for wet materials to set.

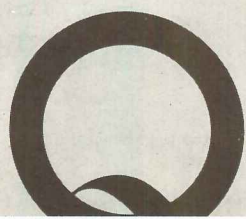


Fine Architectural Appearance — Q-Panels offer a wide variety of designs. They consist of flat and fluted steel plates (either surface may be used outside) with insulating board sandwiched between. With $1\frac{1}{2}$ -inch of insulation, these panels have an insulating value of .14 Btu's per square foot, per degree temperature difference, per hour.



Good-looking, Easily Cleaned Interior Walls — are provided by the flat plate of the Q-Panel. Nothing needs to be added except paint. Architectural relief may be had where desirable, by turning the fluted side of the unit to the interior.

ROBERTSON



FACTORY WALL IN 3 DAYS

That's Quick

YES, but none too quick to meet the "All-Out" production demands of American Industry today. Because Q-Panels can be quickly delivered and quickly erected, they are being specified and used in one urgent plant project after another. Although they are ideal for "Blackout" plants and additions, they also meet the design and engineering needs of Daylighted Structures.

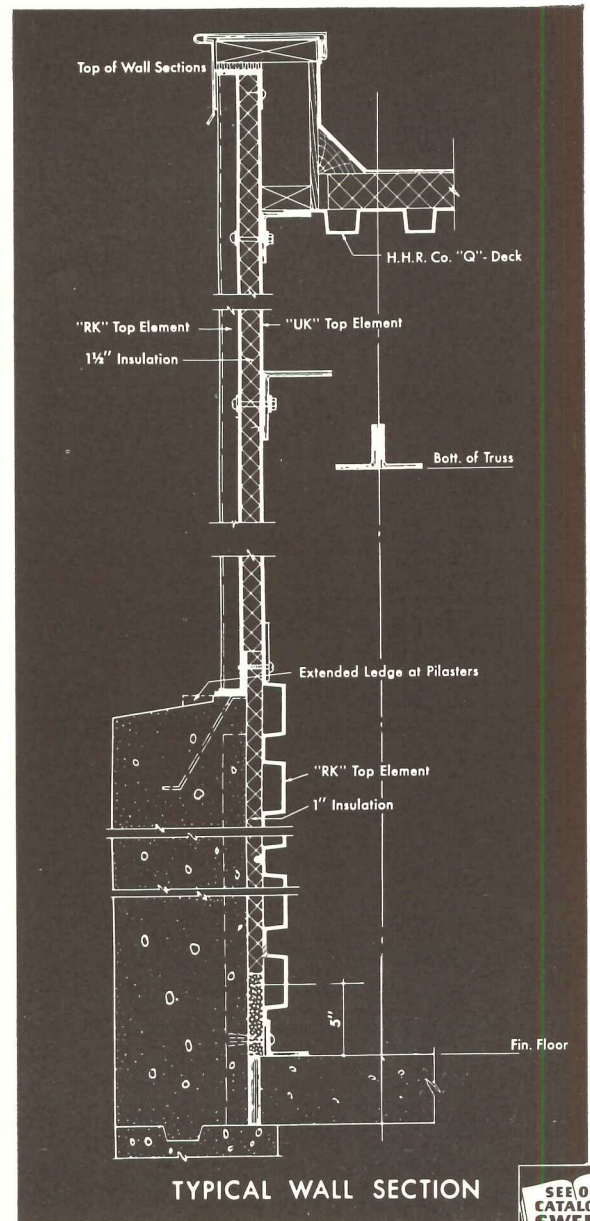
Every Q-Panel section is a complete insulated structural unit for wall or partition. It is provided in standard two-foot widths and in any length up to 25 feet. Thus, one section (which can be placed in 9 minutes) is equal to 50 square feet of wall. Interlocking joints at the edges of the units are caulked to make airtight, weathertight walls.

SPEED characterizes Q-Panel construction from the very beginning. The units arrive at the job site, prefabricated, ready to take off the truck and erect. Only six bolts are necessary to fasten a unit to the structural frame. Q-Panels constitute "dry" construction . . . which facilitates winter building. There is no waiting for wet materials to set, no hazards from combustible forms. It is a permanent form of construction; yet, Q-Panels may be salvaged and used again, an important factor for peacetime adaptations of war production plants.

The cross section at the right indicates the salient features of Q-Panel wall construction. Further details, estimates, etc., will be gladly furnished. Usually, plants incorporating Q-Panels for walls and partitions also use Q-Floors and Q-Roof Decks.

Versatility of Use—Q-Panel construction is well suited to use in a wide variety of structures . . . aircraft buildings, munitions plants, warehouses, powerhouses and other types of manufacturing buildings.

H. H. ROBERTSON COMPANY
FARMERS BANK BUILDING . . . PITTSBURGH, PA.



-PANELS

H. H. Robertson Company,
Farmers Bank Building, Pittsburgh, Pa.

- () Please send me literature regarding Q-Panels and Q-Units for Walls, Roofs and Floors.
- () Have a Robertson Field Engineer give me Engineering Data.

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—or ask for free advice on your own water problem. The Permutit Company, Dept. AR, 330 West 42nd St., New York, N. Y.

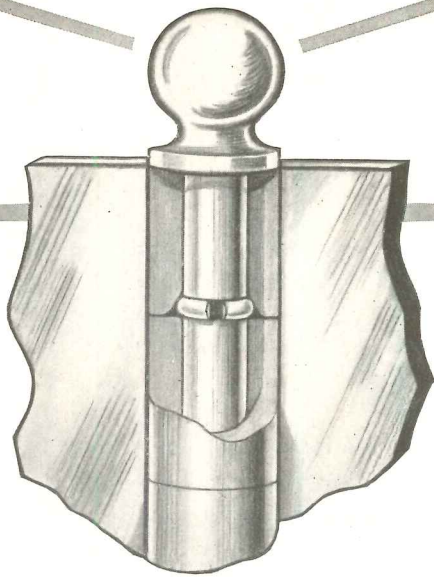
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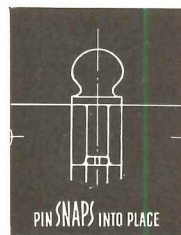
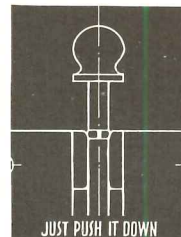
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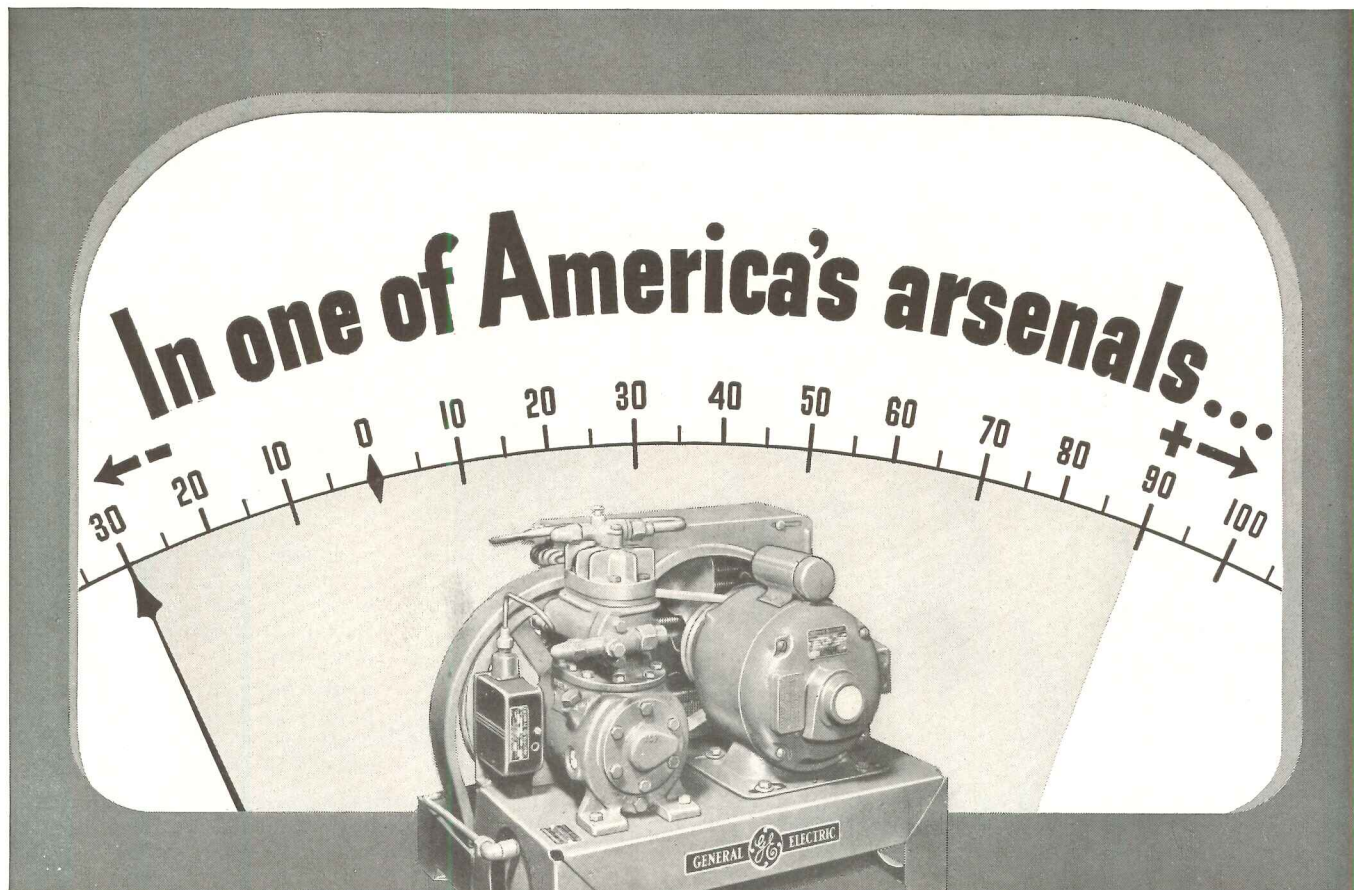


Catalog No. 61, showing all the many hardware types and lines available from Stanley, will be invaluable as a reference book. Write for a copy, and use it as your guide to good hardware. The Stanley Works, New Britain, Connecticut.

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from +90° F to -30° F in 15 minutes!

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In one of America's arsenals, this G-E "Scotch Giant" condensing unit provides the refrigeration for a special enclosure in which instruments may be tested at temperatures as low as -30° F. A temperature tolerance of plus or minus 1/2° F is also maintained.

For Army and Navy needs...for special industrial processes...for essential air condition-

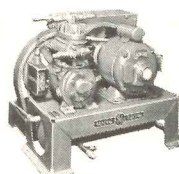
ing of war industry plants...engineers are turning to General Electric equipment. The wide range of General Electric products in the refrigeration field—together with G-E research and experience—assures that whatever your war needs, General Electric can meet them.

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G-E Condensing Units ("Scotch Giant"), water or air cooled, are available from 1/4 to 125 hp. May be used in multiple when a larger cooling effect is required.



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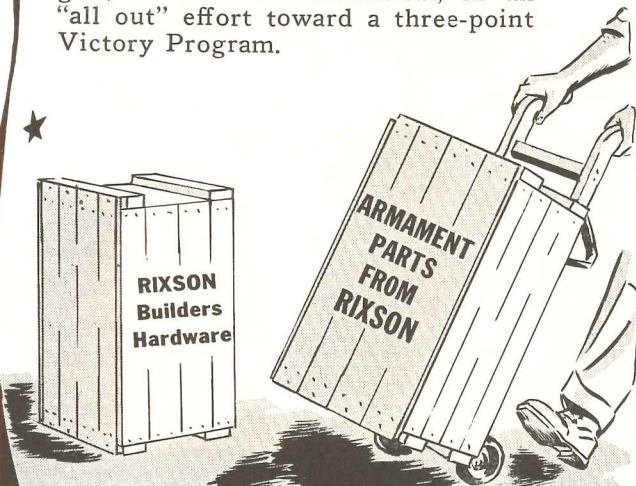


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2. For the civilian building industry we will continue to manufacture and stock all the essential Builders' Hardware permitted by National Defense needs. And if we must build fewer units, there will still be no compromise with Rixson quality!
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"Why take 12 ounces when you can have a pound?"



Can you expect more from one type of floor material than from another? Just consider that Nairn linoleum alone meets *all four* of the basic specifications for the modern floor:

1. EYE APPEAL—Unequaled beauty and wide variety of color offer unlimited freedom of design. Patterns that are Color Correlated—with each other and other decorating materials.

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Valuable facts to keep in mind when you buy floor-covering—especially in these times. Why take less than full value—a floor that lacks *any* of the four musts of the modern floor? *Nairn linoleum has "all four"—gives you 100% value.*

AND WHEN IT COMES TO WALLS, it's likewise valuable to know why the swing is to Nairn wall linoleum. It lasts as long as the building, and will never fade, stain or dent. Wide range of patterns and colors! Nairn floor and wall linoleum have full guarantee when installed according to specifications.

CONGOLEUM-NAIRN INC., KEARNY, N. J.



An ideal setting here for the Home Economics class of Calboun Junior High School at Homestead, Pa. The floor and the wainscot are colorful, easy-to-clean Nairn linoleum.

Nairn linoleum
—the floor that
gives you "all 4!"





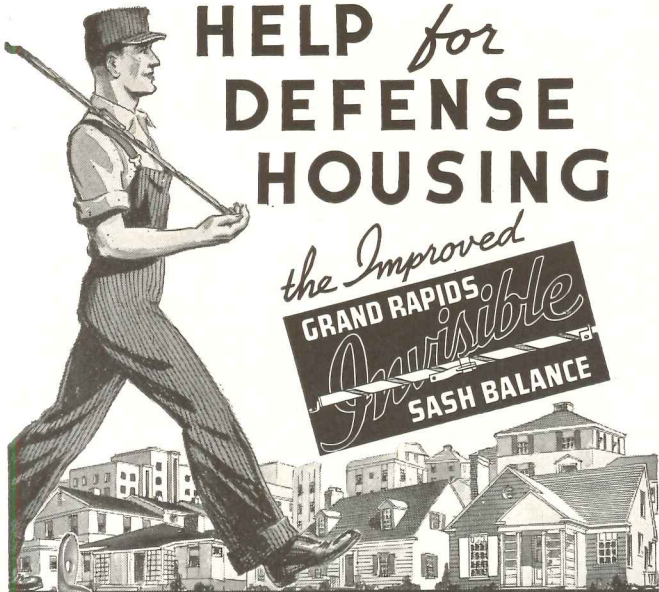
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 . . . NOT JUST "WINDOW GLASS"

There are varying degrees of quality in window glass, as in almost everything else. That's why the name "Pennvernion" has come to mean so much. It stands for uniformly high quality in window glass. It assures a freedom from distorting defects rare in sheet glass making. It identifies a glass that gives good vision, that is bright and reflective of surface on both sides of the sheet. And it marks a glass which is nationally known and nationally available through our many branches and thousands of dealers. Pittsburgh Plate Glass Company, Grant Bldg., Pittsburgh, Pa.

PENNVERNON WINDOW GLASS
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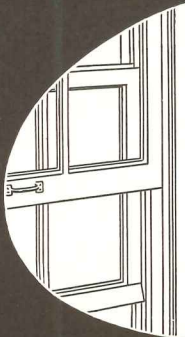
"PITTSBURGH" stands for Quality Glass and Paint





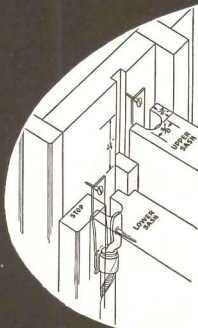
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the Improved
GRAND RAPIDS
Invisible
SASH BALANCE



NO TAPES OR CABLES, NO EXPOSED TUBES

Entire balance moves with sash. Always invisible regardless of window position. Tapes and cables eliminated. No interference with neat painting job. No screws or trim to remove for tension adjustment.



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Only 6 simple steps. Frames require no machining. No cuts in sash, except full height, round-bottom groove in sash stiles. No blocks to fasten on jambs.



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NEW 1942 CATALOG No. 42-SB-2

GRAND RAPIDS HARDWARE COMPANY
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Check THESE FEATURES of Evans School Wardrobes

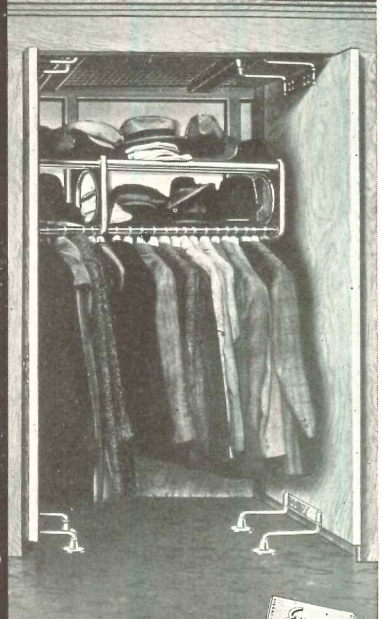
They Save Space. Set flush with wall. Doors swing back into wardrobe without blocking aisles.

They Are Simple. Patented trouble-free hardware gives silent, carefree operation for life of building.

They Are Practical. Time-tested wood construction harmonizes with classroom and corridor trim.

They Are Proved. Thousands of schools, throughout the entire country, are equipped with Evans Wardrobes.

They Are Low Cost. Amazingly simple construction results in surprisingly low price. Variety of sizes.



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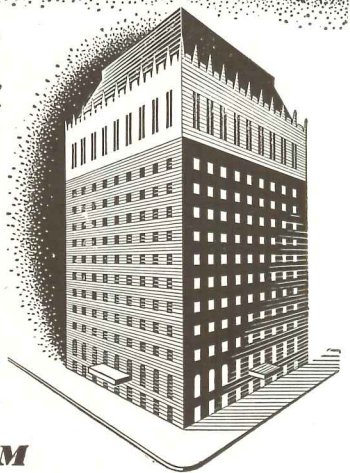


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The Fontenelle today establishes the standard of hotel excellence for 1952. The new guest rooms, smart lobbies and beautiful dining rooms reflect this modern trend. Hotel Fontenelle is the address of satisfaction.

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- AMBER ROOM**
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OMAHA'S

WELCOME TO THE WORLD

Planning a *Community center* ?

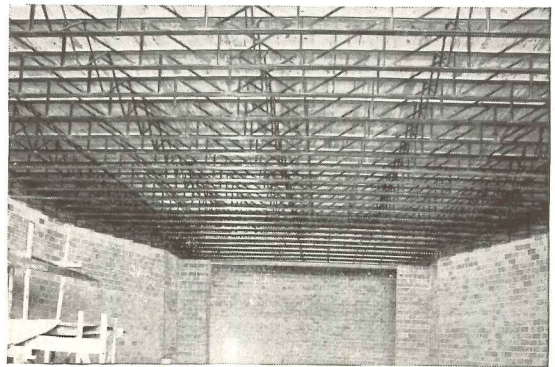
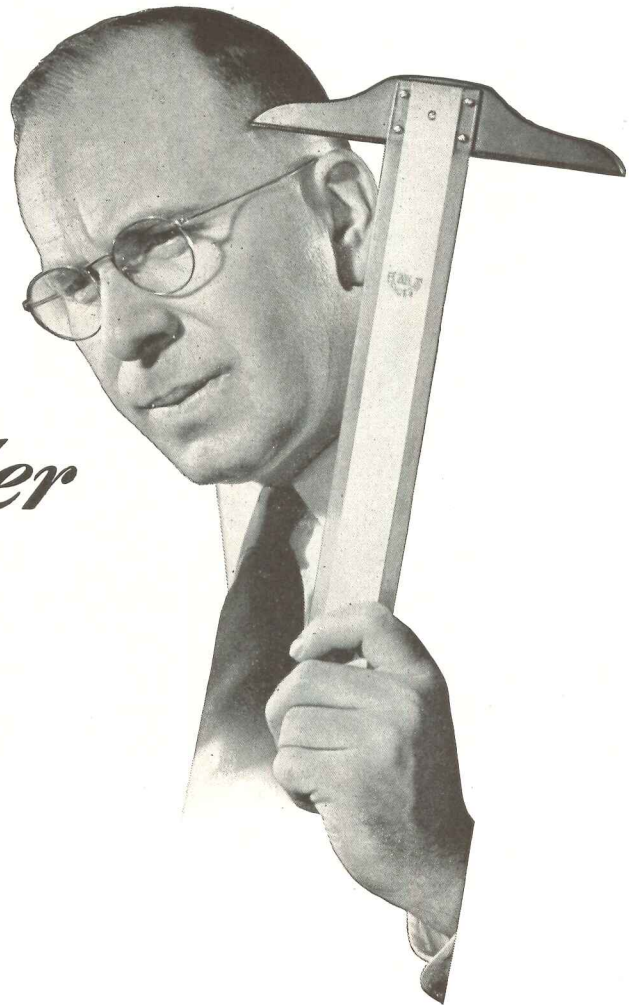


Large, clear floor areas readily attained
by use of Bethlehem Longspan Joists.

Many localities, suddenly over-populated because of war-production, are greatly in need of such facilities as community centers, hospitals, apartment houses, schools. When you are planning structures such as these, you can provide large floor areas unobstructed by columns, as well as fire-safety and other advantages, with economy in construction costs, by specifying Bethlehem Longspan Joists.

These joists make possible column-less spans of up to 64 feet in light-occupancy buildings. As they can be placed directly on walls, they do away with the need for pilasters or other reinforcements, and can be used regardless of whether or not the building is of steel-frame construction.

When used in combination with a concrete floor slab and plaster ceiling, Bethlehem Longspan Joists provide excellent sound resistance and as much as 2½-hour fire safety. And because Longspans do not sag or shrink, they prevent many a crack, open baseboard and squeaky floor.



Note absence of columns and pilasters in this store-theatre in which Longspan Joists were used.

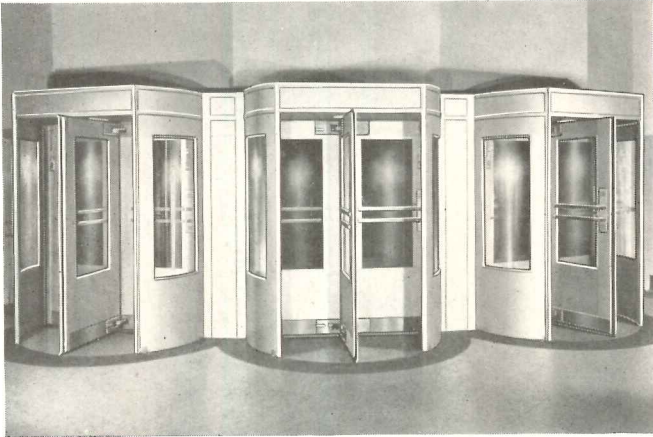
Moreover, Longspans speed construction. They are completely shop-fabricated, clearly marked for quick erection, and can be placed with the aid of only a light gin pole.

Investigate fully the possibilities of using Bethlehem Longspan Joists for floors and roofs of all types of light-occupancy buildings. Send today for copy of booklet giving complete facts about these joists. Address: Bethlehem Steel Company, Bethlehem, Pa.



BETHLEHEM STEEL COMPANY

Show your clients this simple way to
**SAVE MONEY ON
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Summer heat and street dust are sealed out of this air-conditioned building with the help of three draft-proof Revolving Doors. Low-cost stock wood doors can be interestingly arranged and architecturally individualized by the addition of mouldings, enamel, lacquer or special matching finishes.

★ Help your clients cut their air conditioning costs to a minimum—by specifying Revolving Doors.

Scientific tests prove that Revolving Doors protect air-conditioned buildings from hot blasts of dust-laden air, and reduce the load on cooling equipment. Even in buildings that are not air-conditioned, Revolving Doors shut out heat, dust, dirt and noise—and provide greater comfort for customers and employees.

War-time priorities won't permit Revolving Doors of bronze, copper or aluminum. But we can furnish doors of furniture steel, colorful Formica, and most fine cabinet woods.

Phone your local Revolving Door representative for full technical data. Or write to the factory for a free A. I. A. Data Folder, containing photographs and descriptions of new installations in banks, office buildings, restaurants, hotels, and stores.



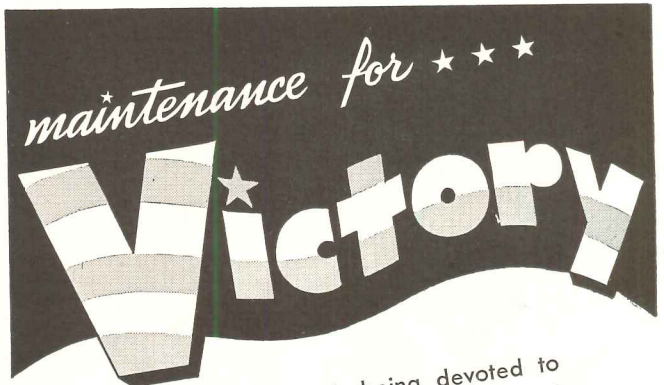
**5 Ways a Revolving Door
 Pays for Itself—**

- 1—Cuts heating and cooling costs.
- 2—Increases usable floor space.
- 3—Reduces damage from dust and dirt.
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- 5—Safeguards employees' health.

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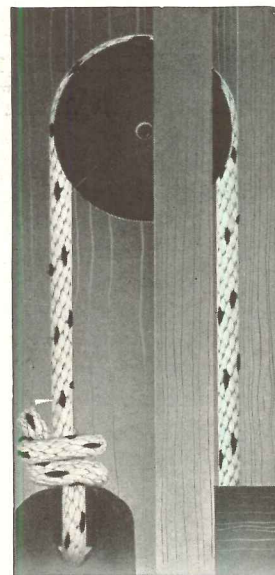
DIVISION of
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While our production is being devoted to National Defense and Defense Housing, we are vitally concerned with the maintenance of Speakman installations.

Our organization is pledged to the full extent of our ability, to help keep Speakman installations in service and repair, unless we are restricted in the use of essential materials for this purpose.

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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.



ANSWER: The roof in the foreground is a Johns-Manville ASBESTOS Roof



Starting in the building at the right, fire gutted the next two structures (see photo below), but a J-M Asbestos Roof saved the bank on the corner.



Although the low fire wall of the bank offered little protection, the flames were stopped by the J-M Asbestos Roof.

A STRONG WEST WIND was blowing through the town of Chelsea, Oklahoma, when fire broke out in a tavern in the business district. Breaking through the roof of the two-story structure, the flames quickly spread to a theatre next door, then to an auto-parts store. Both buildings were completely gutted.

Next building in the row, the First National Bank, was protected by a J-M Asbestos Built-Up Roof. Though the low fire wall (see photo) offered practically no protection from the roaring blaze, the asbestos roof resisted the fierce heat and the bank was saved.

This is a striking example of the effective fire protection offered by J-M Asbestos Built-Up Roofs—protection which is more important today than ever before. And because asbestos has the durability of stone, long exposure to sun, rain and weather has little effect on these roofs. Rotproof, they need no periodic coating—require little if any maintenance.

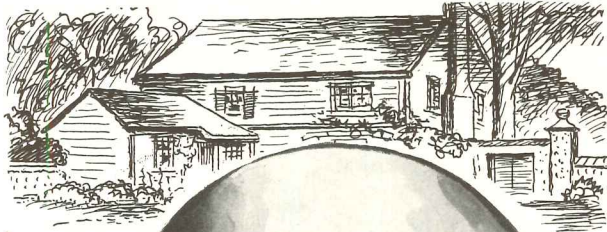
For further details and specifications write Johns-Manville, 22 East 40th Street, New York, N. Y.



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Smooth-Surfaced
ASBESTOS BUILT-UP ROOFS

**THE ROOF
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A Home Worth FIGHTING for is Worth PLANNING for NOW!



F. W. Dodge Corporation
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New York, N. Y.

Gentlemen:

After the war is over, we intend to build a six room brick Dutch Colonial home with a two car attached garage for a cost of about \$6,500 or \$7,000. It will either be in Middletown, Conn., or Farmington, Conn., for we own property in both places. As yet, we have not selected either architect or builder.

I hope that I am qualified to receive a copy of Home Owners' Catalogs.

PEOPLE are planning now for homes they expect to build after the war is over, and priorities on materials and equipment have been lifted. The above letter is but one piece of evidence. There will be a \$25,000 brick residence in the Chicago area after the war—eight rooms, three baths, two car garage—architect not selected . . . Another owner is planning a \$12,000 house in Virginia—architect not selected . . . Others, taken at random from current Dodge Reports, reveal widespread intention to build when conditions permit . . . There's an \$8,000 home planned for Upper Arlington, Ohio; a \$6,500 house in McKeesport, Pa.; and another in Bryn Mawr, Pa.—probably of stone, two and one-half stories and basement.

Many more such verified examples could be quoted, And in all cases, these owners are gathering ideas and information about materials and equipment for their new homes. They find Home Owners' Catalogs a wonderful aid.

If you have clients who have postponed their building plans, or if you know people who are thinking of building at a later date, ask us to send them copies of this comprehensive, beautifully illustrated book. There is no cost or obligation—just the necessity of complying with the restrictions in the coupon below. Home Owners' Catalogs will help to keep the home building idea alive—and make for speedy action when these potential owners are ready to proceed with their plans.

Home Owners'

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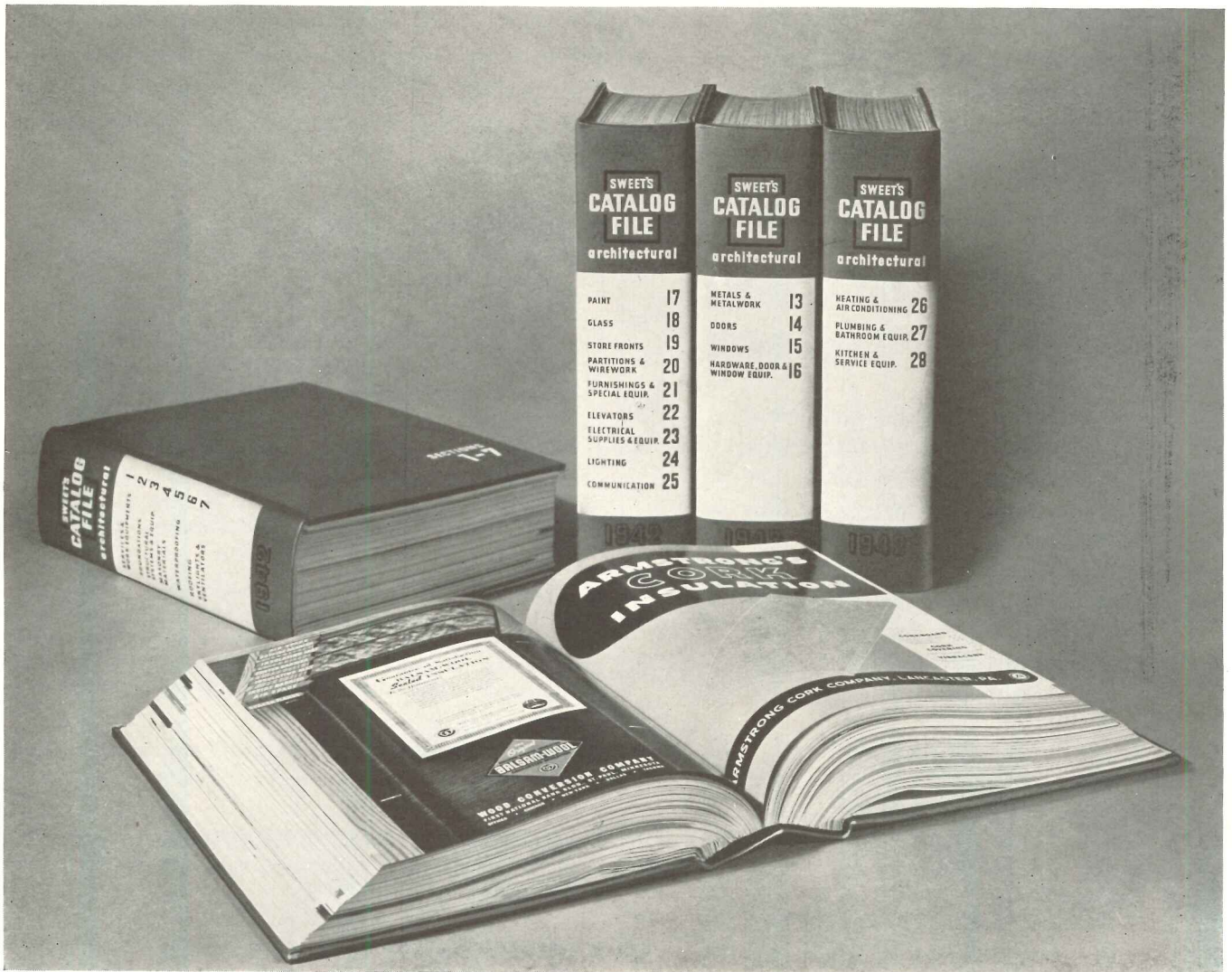
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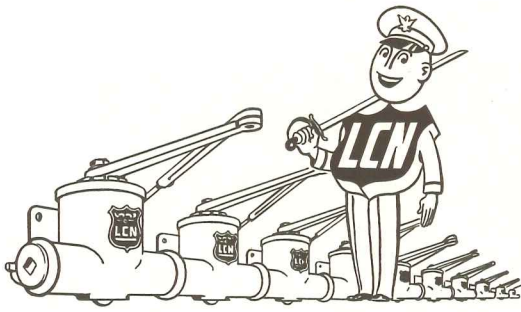
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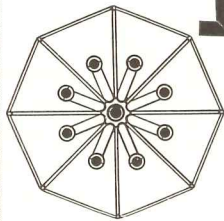
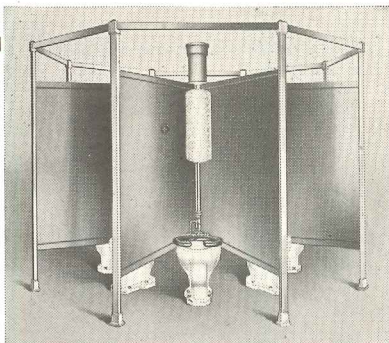
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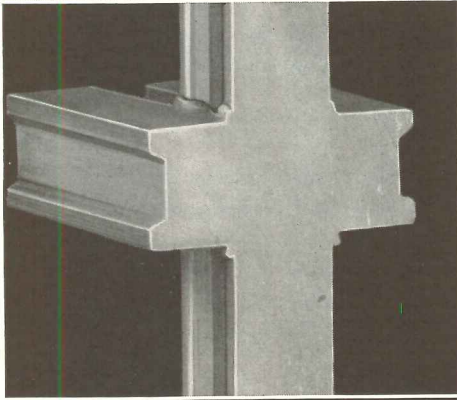
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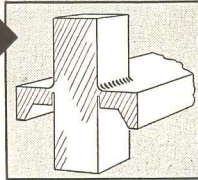
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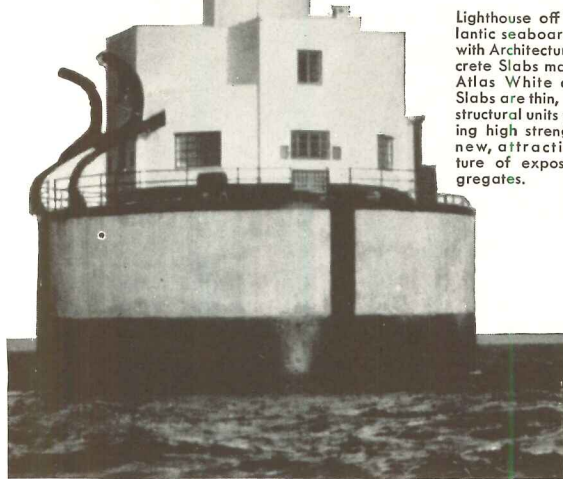
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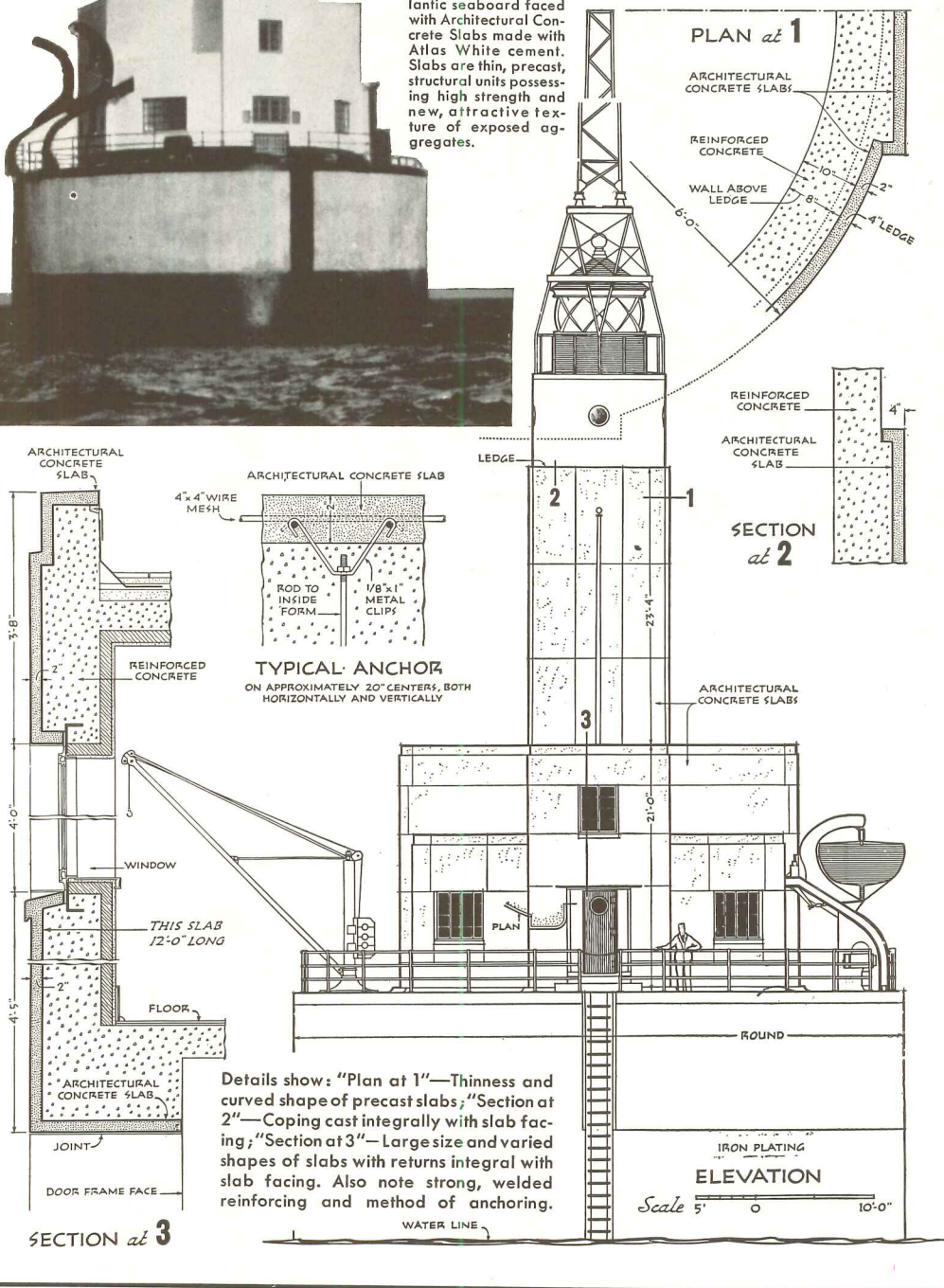
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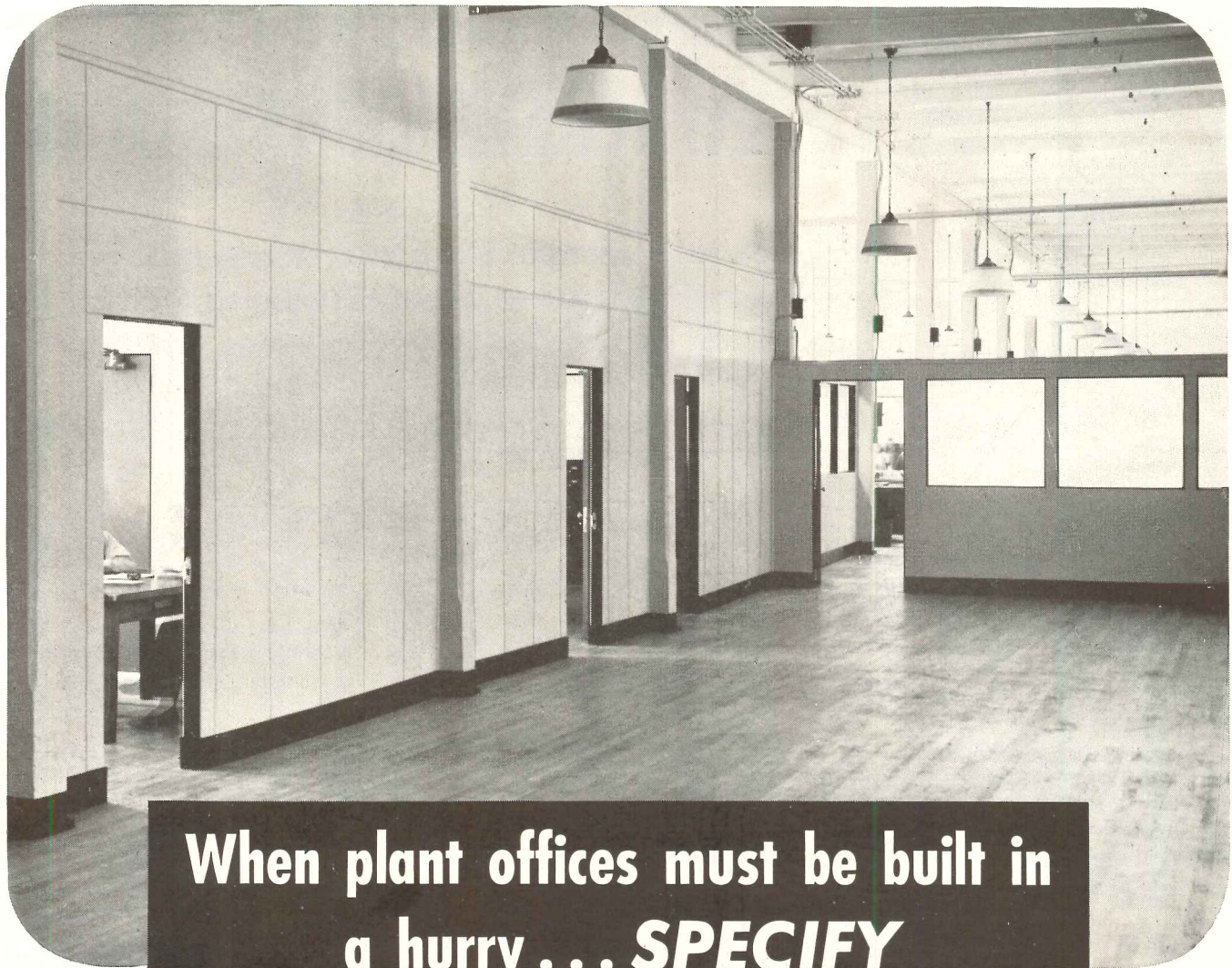
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