FHE ARCHITECTURAL FOR RUN

MARCH 1943

NOW AVAILABLE, The Greatest Roofing Improvement in Years!

SAVE CRITICAL MATERIALS-TIME-LABOR



COMBINES SHEATHING, INSULATION, ROOFING IN ONE MATERIAL!

Approved by Army Engineers for use in many War Department Projects!

Used on Housing Projects, Barracks, Hospitals, Industrial Plants!

CELO-ROOF combines sheathing, insulation, and roofing. It consists of a vapor-sealed Celotex cane fibre core surfaced with a mineralsurfaced roofing, carrying Fire Underwriters Class C label. A beveled wedge cleat, factory-applied on the under side of each unit, provides a tight, rigid, interlocking joint. Each unit is nailed directly to the rafters and eliminates the need for wood

THE

sheathing or other types of boards or strips. It saves time, labor, and critical lumber and nails.

Buildings roofed with Celo-Roof are easy to heat, conserve fuel, keep warmer in winter and cooler in summer. And because Celo-Roof is a full inch thick at the butt, it produces a natural shadow line effect, beautiful to look at and giving a true impression of the ruggedness and durability of this new kind of roof.

THE CELOTEX CORPORATION, Chicago

Celo-Roof is now specified and being used on many important housing developments, as well as on many War Department projects. Barracks, hospitals, industrial buildings and warehouses can be completed faster when Celo-Roof is used. For the present Celo-Roof is not available for individual houses. Get complete information now!



ROOFING • INSULATING BOARD ROCK WOOL • GYPSUM WALLBOARD • LATH PLASTER • ACOUSTICAL PRODUCTS

CELOTEX CORPORATION . CHICAGO

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Name		
Address		
City		
County	State	

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MARCH 1943

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FORUM OF EVENTS



ARTS FOR RECOVERY

The value of the arts in treating the physically and mentally ill has been known for many years, and its application to disabled and convalescent members of the armed forces has already begun. The photograph above, taken in a British base hospital in the Middle East, shows one of many examples. Currently on exhibition at New York's Museum of Modern Art is perhaps the first large-scale public presentation of the whole field, a show which consists partly of the results of a nationwide competition to discover new projects suitable for patients, partly of work done in the psychiatric wards of hospitals. Both are represented in the accompanying illustrations. As the illustrations suggest, "The Arts in Therapy" exhibition has real, if unconventional, design interest. Far more significant at the present moment, however, is the forceful demonstration of the continuing validity of the work of the artist and designer in wartime, and its real usefulness in furthering the war effort.



Above, a gouache painting by a young unemployed woman, an excellent example of the highly decorative quality of much work by untrained artists. Below, two of the toys submitted in the competition. The stuffed hippopotamus was submitted by Kate Rowland, the cardboard kangaroo by Robert L. Lapper.





Right, another "primitive," painted in gouache by a 45year-old gardener, unemployed. Above, a train and cart, made by the irrepressible Alexander Calder, sculptor of "mobiles," who submitted several dozen amusing toys and gadgets which might easily be made by convalescents from scrap materials.



CRMICA added its touch of modernity and sophistication to the pre-war world, where it was used to beautify, as well as fortify, thousands of handsome public rooms in trains, ships, hotels, restaurants, and public buildings.

In the new world to come there will be available a brighter and more adaptable Formica, with new colors and patterns, new methods of application — more beautiful, more widely useful, more serviceable.

Like all other producers for the war effort Formica has been forced by circumstances to try new materials, new methods. These new techniques have suggested new lines of development for the peace-time world.

The new things in Formica will combine good looks and flexibility in design with quite unusual durability, and resistance to spotting, wearing, burning, so that its original appearance will endure indefinitely.

Watch Formica after the war!

THE FORMICA INSULATION CO. 4620 Spring Grove Avenue, Cincinnati, Ohio

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FORMICA WILL BRIGHTEN THE NEW WORLD TO COME!

THE ARCHITECTURAL

VOLUME 78

ORMIC

FORUM OF EVENTS



UNDERSEA HOUSING

If an archaeologist or engineer tried hard enough, some connection between sea shells and architecture could doubtless be found. It is likely that shells, like other natural forms, have influenced building shapes in the past (the spiraled teredo below is a good case in point). It is true that shells have often appeared as decorative motifs on buildings, and equally true that as examples of functional design they have been phenomenally successful. But these photographs are reproduced here because they rank among the finest pictures of structural forms ever made. Taken by Ruth Bernhard, top-flight New York photographer, they are part of a collection that has been eight years in the making. The models for these remarkable dramatizations of form and texture come chiefly from Florida, partly from California and the north Atlantic coast. Very "Gothic" in feeling is the Angel Wing (upper right), home of a curious marine creature which keeps its vital organs inside the shell, wraps the rest of its body around the outside. The shells at the right and below might have been designed in Cambodia or Java, but actually came from Florida's east coast.











He'd be wearing an "E" pin too...if he were home



They gave him a gun and taught him how to shoot it. No need to tell him *why!* He's an Adlake man—one of many Adams & Westlake employees in the armed forces of our country. As such, he needs no prompting to play the vital role to which a threatened nation has assigned him.

If he were home today, he, too, would proudly wear an Army-Navy "E" pin. For his former fellow workers—men, women, and management of The Adams & Westlake Company—have recently won the Army-Navy Production Award "for high achievement in the production of materials of war." They, too, need no prompting in the accomplishment of their assigned tasks!

We of Adlake look upon the "E" pins we wear—and upon the Army-Navy "E" pennant which floats above our plant—as a challenge to strive still harder to hasten Victory. We know that every Adlake man in uniform is doing his dead-level best. We, his friends at home, will not let him down!

ESTLAKE COMPANY

Adlake

ELKHART, INDIANA

MANUFACTURERS OF ADLAKE NON-FERROUS METAL WINDOWS

NEW YORK . CHICAGO

THE A

ESTABLISHED IN 1857

DAMS

Se

FROM plowshares to complete farm buildings is but a logical process of evolution in the development of steel. It illustrates how the scope and usefulness of this versatile metal have been expanded to meet man's needs.

Metamorphosis of a Plowshare

Stran-Steel is today accomplishing things with steel which were impossible a few short years ago. Under the stimulus of important war assignments, new practices and techniques have been devised . . . new systems worked out . . . new methods brought to light. Stran-Steel's engineering achievements promise a new medium of expression to the architects and designers of tomorrow.

> STEEL DIVISION OF GREAT LAKES STEEL CORPORATION 1130 PENOBSCOT BUILDING, DETROIT, MICHIGAN

STRAN

UNIT OF NATIONAL STEEL CORPORATION

Yes—the new Sloan Flush Valve will certainly be in the home-building picture after the war. It won't look like the present day Sloan Flush Valve, but will be of a new and revolutionary type-and will become a selling feature for all: architect, builder, owner.

SHIP TO

HOME OF

U. S. A.

TOMORROY

This new Sloan Flush Valve will be as quiet as a whisper-it will save waterprevent back-syphonage-reduce maintenance cost-while the fixture itself will be beautiful.

Right now our job is to win the war, and to that end the Sloan Valve Company is devoting its every effort. But in addition to helping supply Uncle Sam with needed war matériel, Sloan laboratory research has already developed a flush valve toilet that may be installed in even the most modest of homes . . . so start now to plan for Sloan-equipped homes. Remember-there are more Sloan Flush Valves sold than all other makes combined.

CAGO



"It Spoils My Fun" CRIED SOPPO THE GREMLIN

Was he a wet blanket, this Soppo!

ALCOA

ALBRON

Aided and abetted by high humidity, his special trick was sneaking moisture through the paint and into the wood surface of plywood trainer planes. The fun of that was the premature failure of paint and raising of the wood grain.

So, it was concluded that the paint with the highest moisture resistance would have to be used, even though it did take aluminum. And now that many plywood trainer planes are coated with aluminum paint, made with Alcoa Albron Paste, the humid atmosphere of southern training bases is being successfully combated.

This proves nothing new to architects and builders. To give wood extra protection against moisture has long been one of the big reasons for using aluminum paint. And it is one of the reasons why...





2166 GULF BUILDING, PITTSBURGH, PA.

MAKERS OF ALCOA ALBRON PASTE PIGMENTS, MADE UNDER PATENTS OF METALS DISINTEGRATING COMPANY, INC.

Building Reporter

Du Pont, Modern Plastics



1. Bubblfil—strands of transparent beads Celanese Celluloid



2. Lumarith floats defy dents and corrosion Westinghouse



3. Mirror glass reflectors for yardlights

TECHNICAL NEWS

Bubblfil, in essence a continuous chain of air-filled bubbles, has recently been perfected by the E. I. du Pont de Nemours & Co. (left 1). Now being tested as a substitute for Javanese kapok and sponge rubber, its unique characteristics suggest many applications for both war and peacetime purposes. The cellophane-packaged air, sealed off between bubbles by solid fibers, has high insulating properties, is as buoyant as kapok, resilient as sponge rubber, and will not collapse under high and low temperatures or pressures. Used in single or multiple strands, it may be woven or quilted into material; in layers or loose masses, used as stuffing, padding and insulation. In solid masses bonded with adhesives to retain its shape, it has already been made into mats, cushions and shockabsorbent gaskets; suggested for weather stripping and bridge pontoons.

Compreg—latest and most promising of the wood conversion products — derives its name from compression and impregnation. Actually a physical conversion of laminated wood, it consists of layers of wood impregnated with resins and compressed under great pressure before resins have set. The result is a hard, dense and beautifully grained substance of high gloss ideal for tiling and finishing surfaces due to its resistance to scratches and moisture. Bonded to impregnated wood, combined product may be used in constructions where formerly lack of dimensional stability limited the use of wood. As yet, the cost of producing Compreg forbids widespread use in housing; it is now a 100 per cent war material, mostly for plane fittings.

Lightning umbrella, a new form of lightning protection recently designed by Dr. G. D. McCann, Westinghouse engineer, substitutes 60 lbs. of steel for 250 lbs. of copper. A steel wire is strung above a building, anchored to tall wooden poles, and connected to steel rods buried in the ground. Proves an effective shield for explosive plants and oil storage centers. No danger of lightning leaping to metal sections of building as when rods are attached.

Infra-red: Draftsman in Westinghouse Manufacturing Company's lamp division has found a new use of drying lamps which speeds up drafting for war production. A 250-watt R-40 bulb reflector drying lamp, mounted on a board, dries tracings in a minute by removing moisture from ink. Even after pencil marks are erased, ink lines remain sharp and black, thus eliminating a second ink drawing.

► Same type lamp is installed in home food dehydrators, now being developed and tested by the Ohio and University of Tennessee Agricultural Stations.

► Experiments with infra-red point to its extended use for processing wood, leather, rubber, plastics and textiles.

NEW PRODUCTS

TRANSPARENT FLOAT of corrosion-proof plastic for toilet tanks (left 2).

Name: Lumarith Toilet Tank Float.

Features: Developed as a substitute for floats of copper and other critical materials, Lumarith floats are actually superior in several ways. Thin copper, used previously, dented with handling and tended to open at the seams. Lumarith floats will not dent, and cemented seams are as strong as the rest of float. Lighter in weight, they effect a saving in shipping costs. This improved product may replace copper toilet floats even after the release of critical materials.

Manufacturer: Molded by Allied Plastics Corp., 6243 So. Manhattan Pl., Los Angeles, Calif., for Kirkhill, Inc., 6828 Mc-Kinley Ave., Los Angeles, Calif.

GLASS REFLECTOR for outdoor lights (left 3). Name: Mirror Glass Reflector.

Features: By using a silver backing and cast iron hood, these mirror glass reflectors release 180,000 lbs. per year of war-needed

aluminum. Increased efficiency of 10 per cent more illumination results, not only because mirror glass reflects more light than aluminum, but also because it extends below a globe-clamping ring that formerly blocked off part of the reflected light. Reflectors have been designed to be interchangeable with aluminum units, making a return to aluminum reflectors possible without the expense of buying completely new fixtures.

Manujacturer: Westinghouse Lighting Div., Edgewater Park, Cleveland, Ohio.

IMPROVED GYPSUM BOARD combines siding and interior finish.

Name: Triple-Sealed Sheetrock Siding. Features: With edges, ends and surfaces sealed, this new panel-board is intended for duration housing. It builds, sheathes, sides and decorates in one operation. Triple seal makes it waterproof; of gypsum board, it is fireproof. Laminated boards 1 in. thick, 2 ft. wide, and 6, 8, 9, 10 ft.

(Continued on page 124)



Patent Pending.

How to put the future on ice

Can you imagine *ever* going into the kitchen to mix some drinks for your guests and not having to rassle in order to get enough ice cubes? The future refrigerator, up for discussion now, will give you all the ice cubes you want at the turn of a crank!

Furthermore, on a midnight raid for a snack, you'll be able to get at the Cheddar without having to remove or knock over the milk bottles.

Yes. Some day in the not so far off future, you'll be recommending Durez plastics and resins to Allah for getting this dream refrigerator off the blueprints and on to the production lines.

And what have Durez plastics to do with it? We'll let Mr. Arens, who has the answers, give the answer ...

"Weight reduction is the key to improving existing refrigerator design. To get better compartmentation, you need a bigger box over all. The rendering and mock-up shown here, although scaled to the average kitchen, allow for the necessary space. Yet, this size increase will not cause the weight problem to get out of hand. The lightness of the housing would see to that...made of Durez resin-bonded plywood, faced with a skin of corrosion resistant Durez plastics." Here is a fresh promise that our native industrial ingenuity which is already *out-producing* the Axis will win the peace, *too*, for America. To help you look into the future—we're listing some of the high points of your next ice-box above...

- 1. Upper half for general refrigeration.
- 2. Revolving shelves make contents 6.
- 3. Cooling locker drawers for tall bottles.
- Lower half for frozen foods-kept at 10° F. or lower.

frigera 5. Violet-ray compartment for sterilizing and tenderizing meats.

- 6. Ice cube ejector lever.
 - 7. Ice cubes drop into this drawer for easy removal.

8. Cold water faucet inside door. 9. Cooling locker.





PLASTICS THAT FIT THE JOB

no"A.W.O.L's here

WESTINGHOUSE NOFUZE BREAKERS ARE ON ACTIVE DUTY-

NOFUZE "DE-ION" BREAKERS prevent harmless overloads from interrupting war production. protect circuits from dangerous overloads and "shorts". restore service instantly with just a flip of the switch. NOFUZE

mobilized to protect war circuits

Absent? Yes. Absent for the duration from peacetime applications because the Westinghouse production of Nofuze Breakers is devoted to war requirements.

But far-reaching improvements are resulting from this wholehearted participation. For example, in the new line of "F" Frame Breakers, all ratings from 15 to 100 amperes have been redesigned into one compact frame size. Instead of 14 different models, 4 now serve the same purpose.

In a typical panel, the new breaker results in a saving of 38% of the steel and 18% of the copper over present panels. And although the new breaker is smaller and weighs less than half of some of the superseded units, it has better performance.

Westinghouse engineering facilities have been placed on a broad consulting basis to help with the job of protecting vital war circuits from unnecessary interruptions. Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania. 1-60522



CIRCUIT

EC

ON



KEEPS STEAM LINES CLEARED FOR ACTION

BETTER STEAM PLANT OPERATION BEGINS WITH EFFICIENT CONDENSATE RETURN



Hoffman-Economy Type "E" Condensation Pump with vertical pump and motor assembly.



Hoffman-Economy Type "B" Condensation Pump.

You can always bank on the Hoffman-Economy "V-V" Vacuum Pump to do a job! A marvel of compact efficiency—featuring the Jet Vacuum Producer, simplest and most effective method of removing air from steam lines.

We set the motor high above the floor to protect it from dirt and water. We bored the motor support simultaneously with the bearing seats for perfect alignment. We connected pump and motor with a *flexible compling...* so that a standard motor could be used. The numbered points in the cut-away

HOFFMAN TRAPS

It's plain good judgment and a patriotic duty to select steam specialties which give better service longer and can be repaired with little expenditure of critical material. Hoffman Traps measure up to these standards—can be easily maintained at full efficiency for years. A complete and up-to-date line, built to meet War Production Board specifications. above tell the story of mechanical excellence. (1) Heavy duty flexible coupling (2) stainless steel shaft (3) renewable bronze wearing rings (4) oil-less renewable bearing (5) enclosed bronze impeller (6) split bronze packing gland (7) shielded deepgroove ball bearing carries pump shaft independent of motor bearings. These are a few of the reasons this pump satisfies the critical engineer.

Hoffman-Economy offers all types of Vacuum and Condensation heating pumpscatalog on request.





HOFFMAN SPECIALTY CO., 1001 YORK ST., DEPT. AF3, INDIANAPOLIS, INDIANA

Makers of Hoffman Valves, Traps and Pumps — sold everywhere by leading wholesalers of Heating and Plumbing equipment.

Above is a Hoffman No. 9H Higb Pressure Trap. Body is brass and diapbragms of non-corrosive metal. Valve Seat is renewable and cage-mounted thermal unit replaceable without adjustment.

ontrolled in

STEAM | HOT WATER



The TECO Ring Connector spreads the load on a timber joint over practically the entire cross-section of the wood . . . brings the full structural strength of lumber into play.



FOR UNCLE SAM



WASHINGTON, D. C.

PORTLAND, OREGON

Designed and Pretabricated by McKeown Brothers Co., Chicago And on the home front, wood has taken over metal's peacetime tasks in thousands of heavy timber structures. This 11-foot-span municipal pier in Chicago is a typical example of how the TECO. RING Connector System has made it possible to employ timber as a heavy engineering material ... and to meet fully all requirements of speed, strength and economy. Write for our literature today

The Forest Fights on Many Fronts

• Knapp's Department Store in Lansing, Michigan, has probably the world's largest installation of porcelain enamel. 18,000 square feet were used. Architects, Bowd-Munsen, Lansing. Contractors, H. G. Christman, Lansing.



MODERN AND FOR YEARS TO COME

A store front advertises a store's personality. Architects have used porcelain enamel to give stores the smart, modern appearance that invites customers. And many architects have specified that the porcelain enamel be fused on ARMCO Ingot Iron the metal base whose qualities have made it the "world's standard enameling iron." With replacements impossible, their clients have store fronts that stimulate trade and require little maintenance. ARMCO Sheet Metals have gone to war. Improvements that normally would take *years* are being telescoped into *months* by the forced draft of wartime research. When it's all over, you will want to know just how these interesting developments and improvements can be incorporated in the "New World" structures you will design. The American Rolling Mill Company, 361 Curtis Street, Middletown, Ohio.

THE AMERICAN ROLLING MILL COMPANY





VITREOUS CHINA COMES TO War KITCHENS



Above — No. 2425 Laundry Tray is 20" x 18" x 12" (inside depth). Below — No. 2400 Sink, 20" x 18" x 7" (inside depth). Case vitreous china fixtures meet F. P. H. A. specifications.



What to do-when people need houses-and war demands many of the materials that would ordinarily go into them? The answer-to meet new problems in new ways, and as they often turn out, better ways!

One of the latest examples of this American ingenuity is the development of Case twice-fired vitreous china kitchen sinks and laundry trays now being installed in housing units throughout the country. These new Case fixtures are wholly in line with war aims, for no critical material is used in them today. Molded of vitreous china, fired

to a permanently hard, gleaming smooth finish, they will not chip, peel or rust. They are easy to clean and keep clean, acid proof, built for hard service and yet light in weight.

Get full details from the distributor of Case fixtures in your city—or write to us for his name and address. W. A. Case & Son Manufacturing Co., Buffalo, N. Y.





VITREOUS CHINA PLUMBING FIXTURES WELDED METAL PRODUCTS

RTIME EFFICIENCY

can be increased, foot fatigue reduced with this resilient floor covering

Colorful Johns-Manville Asphalt Tile Floors also provide a cheerful, morale-building place in which to work

FOOT FATIGUE *cannot* be overlooked today—because of its tendency to slow down work. That's why more and more companies engaged in war work are installing resilient J-M Asphalt Tile Flooring . . . in offices, cafeterias, employee recreation rooms, and even out in the plant where workers, especially women, must stand on their feet all day.

J-M Asphalt Tile floors are durable, easy to clean, require little if any maintenance, and contain no critical materials. They cost less than any other type of quality resilient floor covering on the market!

For Full-Color Brochure of Facts and Design Suggestions, write Johns-Manville, 22 E. 40th St., New York.

JOHNS-MANVILLE Asphalt Tile FLOORING

JM

J-M Asphalt Tile Floors—J-M Acoustical Materials and J-M Movable Transite Partitions are helping to speed up war production in offices and plants everywhere.





You'll Build Sunshine Into the Lives Of Tomorrow's Children Picture the post-war homes you will build! At no greater cost you will include many modern comforts, such as Ceco Steel Casement Windows. The children of tomorrow will enjoy the benefits of health-building sunshine and fresh air made possible only by slender, graceful muntins of stronger, metal construction. Ceco is now devoting its plants to war production . . . (supplying products which meet America's war needs) . . . so there are no Ceco Steel Windows for normal home-building. But when the last bomb is dropped, and America returns to normal life, count on Ceco to be there with even finer, even easier-to-operate Ceco Steel Windows.





PASTE OR PAINT

NATIONAL LEAD COMPANY New York, Buffalo. Chicago, Cincinnati, Cleveland, St. Louis, San Francisco, Boston (National Boston-Lead Co.) Pittsburgh (National Lead & Oil Co. of Penna.), Philadelphia (John T. Lewis & Bros. Co.).

DUTCH BOY PURE WHITE LEAD

TODAY—THE REFUGE OF THE PARTRIDGE

... tomorrow the shelter of fighting men, war industries, and civilians



• Civilization has always followed the woodman's axe. Logs gave shelter to the families of pioneers. Wood gave shelter to expanding industry. But curious man was not conrent. Just as man took a raw material such as rubber and developed it into products of many uses, so man also took wood, and from it evolved a product of wider adaptability and usefulness than wood in its natural state.



• Here is how it is done. The Northwoods logs are put into powerful machines that literally rip them to pieces—all that remains are the strong wood fibres. Each fibre is impregnated with asphalt to protect against moisture. Then the fibres are processed by a special method into panels or boards. What emerges is Insulite—a product with many more uses than wood itself.



• Insulite, manufactured from wood fibres, is known for its great structural strength. Insulite, due to the processes of manufacture, has high insulation efficiency, retarding the passage of heat, or cold. Today, in the countries of the North, American soldiers are protected against the cold in hutments built of ilnsulite; today, in the tropical countries, American soldiers are protected against the heat by Insulite.



• Insulite has many other advantages. Today, speed in building is necessary to win the war. The large panels of Insulite are rapidly applied, quickly nailed into place. The saving in man hours is apparent when you consider the large area one panel of Insulite covers. This factory for the manufacture of bombers was built in record time with Insulite.



• For the finishing of offices, commercial or industrial interiors, Insulite offers many advantages. Insulite is moisture and windproofed, offers acoustical control and is protected against rot and mold. Insulite comes factory finished in a number of designs and colors, and interiors finished with it require no plastering, papering or painting.

LOOK FOR INSULITE IN THE RED PACKAGE



• Tomorrow's home, when Victory is ours! Insulite's many advantages comes to the fore in planring a modern home. Walls constructed with Insulite are not only stronger, more durable, bu, are also weathertight, windproofed, moistureproofed and form an *effective* barrier against extremes of temperature, saving fuel in winter, providing cooler rooms in summer.



Insulite Division of Minnesota and Ontario Paper Company Minneapolis, Minnesota

THE ORIGINAL WOOD FIBRE STRUCTURAL INSULATING BOARD

PRE-TEST FOR POST-WAR

When recalling the twenties you don't especially note the introduction of asphalt tile, do you? You probably don't remember where you first used Kentile. Yet many of those floors are still perfect today —unchanged by the years of service. And now the millions and millions of feet of Kentile installed in 1942 embody improvements so startling that this material is virtually a pre-test of one type of post-war technological improvement—most dramatically exhibited by 4,000,000 square feet in The Pentagon Building.



194X – down to earth!

How far, how fantastic is 194X? For instance, will you wait long for a flooring so versatile you can design millions of patterns and color combinations with one material? No, that's Kentile TODAY. Is it dream-science to say a resilient floor can be even tougher than marble or steel? Actually, Kentile is "springy" enough underfoot to be restful and quieting - yet the Kentile made today won't crack, chip, splinter or dust and bears 1,000 lb. rolling loads without indenting or bruising. Is it remarkable that factory-waxed Kentile is perfectly smooth-surfaced yet never slippery, even when wet? Well, Kentile is a remarkable material yet it is one of today's most widely used floorings and is available NOW, without priorities. You should know ALL about this material. We've told only a few of its 15 advantages here. (Do you know it is virtually stainproof; can even be greaseproof; can be laid right on concrete that's directly on earth?) Know ALL - write today for our free, detailed, full color book - to have on hand always for reference and study.



What every Architect

(Reading time 6 minutes)

THIS IS AN ODD sort of advertisement.

Its first purpose is to unsell you on some ideas that have been oversold. In brief, it seeks to point out that plastics are *not* materials from some mysteriously scientific Never-Never land that are going to revolutionize the building industry ... singlehanded ... or overnight.

Next it aims to give you a brief, accurate, over-all picture of what these products of modern chemistry really are . . . and of how they *can* be expected to help you work out exciting new solutions to many an age-old architectural problem.



To begin with, plastics is one of those big, vague words that cover a much greater multitude of materials than the average person realizes. Even when you eliminate glass, rubber and potter's clay—which are plastics in that they can be pushed into almost any desired shape and made to hold that shape you still have a bewildering array of widely varied synthetic materials commonly accepted as plastics.

To help get an ordered picture of those materials, they can be grouped into four main classes according to their sources: (1) natural resins such as shellac, rosin, bitumen; (2) protein substances such as soy bean and casein; (3) cellulose derivatives such as cellulose nitrate and cellulose acetate; (4) synthetic resins such as the phenolics, polystyrene, the melamines and the vinyl acetals which are produced from such basic substances as coal, petroleum, air and water.

Practically all modern plastics fall within the last two groups, the most numerous, most versatile and most promising of the four.



Here is another distinction which helps bring order out of the surrealist chaos of chemical names and terms that first confronts the seeker after plastics knowledge and understanding: All plastics are divided into two classes according to their reaction to heat.

One group, the thermoplastics, are heat-softening. That is, they will soften again after they are formed into final shape if they are again exposed to sufficient heat—from 140° to over 300° F., depending on the material.

The other class, the thermosetting materials, are heat-hardening. Under heat and pressure they polymerize or harden into a dense, infusible form after which they cannot be melted or softened with further heat or pressure.

- AND THE SHAP

To the architect, this is obviously an important distinction It also has much to do with the ways in which specific materia are fabricated into usable forms.



A third way of classifying plastics is by the forms in whice they are used: (1) as sheets, rods, tubes and similar standar shapes; (2) as molding compounds; (3) as liquid or powdere resins for impregnating, bonding or coating other materials. For your purposes, as a potential user, this is probably the most informative method of discussing them.

To date all materials supplied in the first class have bee thermoplastics of limited structural strength and heat resistance Thanks to their virtually limitless color range and other engagin qualities, however, they are being used by architects for counte and table edging, moldings and other types of decorative trim



The molded plastics are supplied by the producer in powde or flake form to be shaped by custom or proprietary molders in polished steel dies under high heat and pressure. To meet a wide variety of specific needs, wide variety is possible, even between compounds of the same basic type—especially so with thermo setting materials which are commonly mixed to enhance strength or other properties, with such fillers as wood flour, mica, asbesto and even canvas chopped into half-inch shreds.

You see molded plastics every day in table model radio cabinets, adding machine housings, electrical parts—and also in hundreds of brightly colored products frankly in the gadge class. Under stress of wartime needs physical qualities of molded plastics have been greatly improved and their postwar utility in building hardware, lighting fixtures and scores of other applications of interest to the architect will be greatly enhanced.



It is in the third group of plastics, the resins for use with other materials, that the most spectacular wartime advances have been made. It is this group which shows the most promise of actually realizing the plastics automobiles, refrigerators and houses that Sunday feature writers have been dreaming up ever since the beginning of the past great decade of plastics progress.

Laminated, plastics-bonded papers, fabrics and even plywoods, of course, are not entirely new in themselves. Behind the veil of wartime censorship, however, and under the drive of wartime needs, amazing progress has been made in developing new plastics resins, new methods of combining resins and base materials and new methods of forming them into final shape.

hould know about Plastics

THINGS TO COME



Here are a few facts for your postwar building plans: A new, paper-plastics material has been developed for strucl aircraft parts equaling aluminum in mechanical strength a weight basis . . . is moisture resistant . . . extremely stable high or low temperatures . . . has a smooth, integral surface e resistant to scratching and denting than aluminum.

New methods have been perfected of molding large sections plactics-bonded plywood into intricate shapes . . . under low sures . . . on relatively simple, inexpensive molds. By these hods, strong, lightweight wing and fuselage sections for airt, complete with supporting ribs, have been molded in one ration. Plywood hulls for Army assault boats and the Navy's ous PT boats have been shaped into one tough, strong, hogenous unit that defies sea water, wear and weather.



Techniques have been worked out for molding plasticspregnated pulp into large forms... with the intricacy of contionally molded products... and the added strength of inated sheets. By varying amounts of resin in the pulp, faces can be dense, hard and finely finished, while the center pains relatively loose and porous in structure.

Keeping pace with progress of the fabricators, plastics proers have developed new resins—such as Monsanto's new mulations of melamine and formaldehyde. Like tough, heat l age-resistant phenolics most commonly used to bond or imgnate other materials, these are thermosetting. With such ability, however, they combine a practically rainbow-wide ge of colors not available with darker phenolic resins.



To the creative architect even those few brief facts should njure up visions of many a new solution to postwar problems new possibilities for the "packaged" bathroom and kitchen perhaps new, lightweight, load-bearing wall sections with egral insulation and a weather-resistant finish that can be rubbed clean with laundry soap.

Here is one further fact, however, which helps to make this odd sort of advertisement.

You will never buy these products of postwar plastics from onsanto. You may not even recognize many of them as plastics. hey will probably come to you from the same progressive ilding material manufacturers who supply your present types wall board, the same hardware, plumbing and kitchen equipent manufacturers whose products you specified for prewar ildings. MONSANTO CHEMICAL COMPANY, Plastics vision, Springfield, Massachusetts.

The Broad and Versatile Family of Monsanto Plastics

NITRON — Monsanto's tough, strong, water resistant and dimensionally stable cellulose nitrate. Supplied in a limitless range of colors in sheets, rods, tubes and special shapes largely for mechanical fabrication into finished form. Thermoplastic.

FIBESTOS—Monsanto's cellulose acetate, also tough, strong and colorful, is compounded with various plasticizers into molding compounds to be shaped by heat and pressure into final form... and is also supplied as sheets, rods, tubes, continuous rolls and special shapes. Thermoplastic.

LUSTRON — Monsanto's polystyrene molding compounds are produced from one of the newest and most promising of the synthetic resins . . . and are notable as the lightest of all commercial plastics with excellent dimensional stability, unsurpassed electrical qualities and outstanding appearance values. Thermoplastic.

RESINOX—Monsanto's phenol-formaldehyde resins are compounded with various fillers ranging from wood flour to cut fabric into strong, heat resistant molding compounds with good electrical qualities... and are also supplied in liquid or powder form for bonding other materials into sheets or simple shapes of exceptional strength and large surface area. Thermosetting.

MELAMINE — Monsanto's melamine-formaldehyde resins, are supplied, like Resinox, in powder or liquid form for bonding other materials...and are also compounded with fillers into molding compounds with equal heat resistance, even better resistance to water and chemicals, an unlimited color range and excellent electrical qualities. Thermosetting.

SAFLEX—Monsanto's rubber-like vinyl acetal resins are processed into molding compounds...supplied in transparent, translucent or opaque sheets or rolls ...compounded into special "dopes" or sheets for "rubberizing" fabric...or formulated into special bonding resins. Thermoplastic and thermosetting forms both available.



BOOKS



TRANSPARENT MODEL OF BLOWER SYSTEM



PLASTIC-PLYWOOD FUSELAGE, WEIGHT 75 LBS.



INSECT SCREEN: WOVEN SARAN FILAMENTS

PLASTICS CATALOG, 1943. Plastics Catalog Corporation, New York, 864 pp., illustrated. 9 x 12. \$5.

In the issue of THE FORUM last September, which was devoted to designs for postwar houses—"House of 194X" one of the most frequently commented-on features was the importance given to plastics. Despite the great abundance of metals of all kinds which may be anticipated, the architects suggested the use of plastics for all kinds of things: windows, walls, built-in storage units, even transparent doors for ovens. This is perhaps the clearest indication to date of the new attitude towards these materials. Having received their great impetus as substitutes for scarcer materials, plastics are nevertheless being looked at by designers as first-choice materials rather than as substitutes.

Naturally, such a situation must be highly gratifying to manufacturers, but it is also potentially embarrassing. Plastics are remarkable materials, and the great number of different types opens up a wide variety of uses. But they can't do everything, and technicians in the field are prompt to point out their many limitations. It is important to the consumer, the designer and the manufacturer that these limitations be understood, for otherwise a potentially valuable set of materials may be discredited, and the current wave of enthusiasm may swing to the other extreme. The 1943 catalog, a very complete survey of the entire field, could prove very useful in creating a better comprehension of the properties of these remarkable new materials.

This book, which tips the scales at a little better than eight pounds, is a manual of extraordinary potency in the hands of a designer with imagination. It contains a history of plastics, starting with Bracconot's experiments in 1832, going through Hyatt's invention of celluloid around 1870, to the first commercial synthetic resin, Bakelite, which appeared in 1907, and the host of materials which have been developed since then. There is a section on plastics in war, followed by a detailed presentation of the existing types—their manufacture, properties and most important uses. Supplementing this chapter are five large charts which show, in readily usable form, the general properties of the materials, the properties of plasticizers, solvents and synthetic rubbers, and chemical formulae.

Following these introductory chapters is a series of more specific studies, each written by a recognized authority in the field. One deals with molding and fabricating, with data on engineering design, manufacture and use of plastic models. Another covers techniques of finishing. A third presents plastic paints and other coatings. Perhaps the most valuable chapter is the one which covers resin-bonded plywood and other laminates. Here, obviously, is one of the most important possibilities for postwar building.

The Plastics Catalog follows the pattern customary in such books of mixing editorial and advertising matter. From the designer's viewpoint this procedure is excellent, for the advertisements show products in great profusion, again illustrating types of use and suggesting possible applications in architecture, furniture, equipment and accessories. Despite the necessary orientation to the plastics specialist, the book is a "must" reference work for the forward-looking architect or designer.

(Continued on page 90)

Plan the home of tomorrow-today



PROVED by leading builders in thousands and thousands of war housing units as the best answer to the crying need for insulated quality interiors, quickly applied.

and already being included in plans for postwar homes, Strong-Bilt Panels offer practical realization

of long-awaited advantages provided by dry-built, full wall construction. READY NOW Our architect-engineers will gladly explain adaptations of projectproved systems to your plans, whether based on conventional, semiconventional or prefabricating methods. For descriptive booklets just issued, write The Upson Company, Lockport, New York.

Upson Quality Products Are Easily Identified By The Famous Blue-Center

UPSON **STRONG-BILT** PANELS



And here's EXTRA SPEED for wartime builders ...

saves valuable installation time!

■ The tempo of building construction is on an ever-increasing scale. To meet the demand of the times, Kimberly-Clark now provides KEMSUL* Insulation in giant-size blankets that cover an entire pre-fabricated wall or floor panel in ONE OPERA-TION! This outstanding contribution to modern, efficient construction is known to drastically reduce the time formerly required to insulate prefabricated panels.

KIMSUL is now made in widths of 4 feet and wider in some specifications—and as long as 250 feet. The KIMSUL blanket is stapled direct to framing members. Sheathing, flooring or interior finish is attached right over the KIMSUL blanket. Compression holds the blanket firmly in place. KIMSUL won't sag, sift, or settle. It gives a neat, snug-fitting job of insulating, as shown in the panel at right. Many builders report as much as 1,000 sq. ft. of



construction has been insulated with the new giant size KIMSUL in as little as 13/4 hours! And once installed, KIMSUL saves fuel as effectively as it saves man hours...conductivity is .27 Btu/hrs./sq.ft./deg. F./in. (Peebles). Write for full information now!

* KIMSUL (trade-mark) means Kimberly-Clark Insulat	ion	KIMBERLY-CLARK CORPORATION Established 1872
KIMSUL SAVES EVERY W. Different from all other insulations, KIMSUL comes in rolls compressed to	AY! Uncompressed in	Building Insulation Division Neenah, Wisconsin Send a representative.
1/5th its installed length. As com- pared with all other insulations.	KINSUL KUNSU	Name
KIMSUL requires only 1/5th as much transportation space only 1/5th as much storage space only 1/5th	100 Sq. Ft. of KIMSUL Insulation	Address
as much handling.	Kinter	CityState

Miracles will be made to order Here!...

This is their birthplace, right here on your drawing board. The homes of tomorrow start here. Miracle homes, let's call them, with *better living built in*.

You'll give them good, free ground to hug, and you'll plan them sturdy and strong . . . just as you always have.

MEMO

And you'll do more, too. For you'll make these homes to be *lived in*—lived in more comfortably, more conveniently—and more economically, too—than ever before. So you will see to it that they are made undreamably livable by the amazing new electrical equipment that is going to be *designed into* homes when the war is won.

A new series of G-E advertisements (like the one shown here) are currently appearing in national magazines. To millions of eager American families, this series points the way *through War Bonds*, to the Victory Homes they dream of. And what's more, these advertisements make bright the promise of the *kind* of homes they will be . . . with *Better Living Built In*.



Look... the Smiths are building a new home!

GENERAL @ ELECTRIC

In behalf of postwar building

To stimulate public thinking about richer, more varied modes of postwar living, Revere presents the concept of George Nelson for a better shopping center. It is believed that this advertising can help to prepare public demand for the new contribution of the architect, builder, manufacturer, and financier.

In presenting various conceptions for tomorrow's living by leading architects and designers, Revere seeks only to deepen public interest in better building, confident in the knowledge that the greater use of copper and brass makes any building better to use, better to own, better to rent or sell.

To serve you more fully in postwar years Revere is constantly working to improve copper and copperbase alloys; also is developing facilities for manufacturing the light metals, and is pioneering with entirely new alloys that can mean far-reaching economies for you and the public alike.



<text><text><text><text>



where you live. Such a highway could make use of the already existing streets, just as the entire project would take in the present shops and stores without need for raring and rebuilding. In this way every town or city could be given a new center that would make even Christmas shop ing restful. And because so little would have to be torn down or built anew, the cost would be re-markably small. GEORGE NELSON

GEORGE NELSON By winning the greatest, hardest war mankind has ever fought, we can win much more than the cherished right to live in peace and freedom. For out of the techniques of war are coming new con-oreptions and inventions that can make life happier for all. Communities are already laying post-war plans that can bring us better surroundings for living, working, playing. Architects are designing Newcost homes that can enrich our way of living. Revere does not produce buildings or expect to in the future, but we know that throughout tomor-row's communities copper and its alloys will play a newly important part. Already Revere copper

gives lasting protection against weather, insures row it can bring us many new comforts and con-veniences, can make our homes and other buildings better to own, or rent, or sell. All of us now are working for Uncle Sam. No copper is available except for war. But in Rever's laboratories, research is developing new types of more after the war is won.

The chances are, Mr. Nelson's conception for tomorrow's shapping center could apply to the toom where you live now. Netwardly, he could give only the briefest outline here. But for more information about it, write to Revere for free illustrated booklet.





RESERVED FOR RESEARCH

We call it the VICTORY department

WITH ALL THE ROAR AND HUSTLE

of big-time war production, there is one little corner of the Fitzgibbons plant where veteran boiler-making experience has its eyes focused on "V-year." In this secluded corner, new and better Fitzgibbons steel boilers and air conditioners are being planned. These new boilers and air conditioners will be riding right on top of the surging wave of building which will come roaring into being when Victory opens the sluice-gates to the dammed-up flood of orders.

BUY U. S. WAR BONDS and STAMPS



Thus while much of the present effort of Fitzgibbons is to spread among our enemies discomfort, inconvenience and downright catastrophe, Fitzgibbons is set to distribute comfort, convenience and health at the call of "Cease Firing"!

Fitzgibbons Boiler Company, Inc.

IOI PARK AVENUE • NEW YORK, N. Y. WORKS: OSWEGO, N. Y. OFFICES IN PRINCIPAL CITIES





gets more than 90% of ALL particles down to 1/250,000 of an inch

There is no mystery about PRECIPITRON*—the new Westinghouse air cleaner that operates by electricity. Yet it whisks smoke, haze and dirt out of the circulating air as if by magic. Even tobacco smoke, smallest of air-borne particles, is quickly "grounded" by the Precipitron.

Electronics is the secret of Precipitron's exceptional efficiency. Sealed within the ventilating duct so that all air must pass through it, the Precipitron operates silently, effectively, with no more moving parts than a storage battery. At the front of the unit (or cell), two fine tungsten wires and three grounded rods create a strong electrostatic field. As each particle of dust or smoke passes through this field, it receives a positive charge of electricity.

A series of collector plates are located back of the electrostatic field and as the charged particles pass into this area, they are drawn to the oppositely charged plates where they are deposited and adhere. These plates are then cleaned with water and the deposit flushed harmlessly down the drain.

Precipitron's efficiency, far above that of ordinary mechanical air filters, has given a new meaning to industrial air cleaning. For full information write Westinghouse Electric & Mfg. Company, Edgewater Park, Cleveland, Ohio. Ask for folder B-3083.



A. Electrostatic field at the front of the *Precipitron*. Here all dirt and dust particles are given a positive charge of electricity.

B. Series of collector plates, to which charged dirt particles are attracted and adhere.



Your postwar hospital solariums should be FLOODED WITH SUNSHINE





MEADOWBROOK HOSPITAL, HEMPSTEAD, L. I. Architects: John Russell Pope and William F. McCulloch Architectural rendering above shows interior of solarium in this hospital

Nothing helps meet this need like combinations of metal window units. The narrow frames, muntins and mullions afford larger glass areas, which admit more daylight. Every room in the postwar hospital, including the solarium, should have liberal doses of sunshine, provided by Fenestra Hospital Windows.

And these better metal windows do more than provide healthy daylight. They assure *easier opening*—metal ventilators never warp, swell or stick; *better ventilation* with protection against severe weather and direct draft; superior *weather-tightness*—precisionfitted to stay tight; *safer washing*—both sides of glass washed from inside; *increased fire safety*—metal does not burn. And the cost will be surprisingly low.

DETROIT STEEL PRODUCTS COMPANY Now Engaged Exclusively in War Goods Manufacture

Dept. AF-3 • 2252 East Grand Boulevard • Detroit, Michigan Pacific Coast Plant: Oakland, California



WALLS THAT LIVE .



COMPLETE WOOD WINDOW UNITS

Yes, walls that live will be a part of the 194X home. Walls of spacious window areas that frame the changing seasons . . . that will make the 194X home an infinitely more enjoyable place in which to live.

To the architect or builder who today is engaged in war work, but who is looking forward to the time when normal practice will be resumed, Andersen makes this assurance. Today our research department is busy planning, testing and perfecting the window units of the future, the window units of the 194X home. Although designs may change and innovations develop, of this you may be certain . . . Andersen Complete Wood Window Units will always be designed and manufactured as a LIFE-

TIME functional part of the entire structure. Yes, in 194X Andersen will still be solving problems in modern fenestration with Andersen Lifetime Wood Window Units. Sold through regular millwork channels. See Sweet's catalog or write to address below for details.

Andersen Corporation

BAYPORT, MINNESOTA

-

. for the 194X HOME



5

SILVER LINING TO THE LUMBER SHORTAGE

UNLESS he's heard of the three new Gold Bond Building materials, the architect with plans under way is up against it these days to know what materials to specify. Fortunately, Gold Bond Roof Plank, Exterior Board and Solid Partition Panels take this worry off his mind.

Millions of feet of these amazing new gypsum boards have already been used to replace critical lumber for roofs, outside walls and interior partitions on dozens of big government jobs. Barracks, storage depots, war plants—all have been completed faster and at less cost because of these developments of Gold Bond Research. Now they are available through lumber dealers for low cost housing, factory additions and other types of necessary building and repair.

The center of each panel is of fireproof gypsum rock, unaffected by temperature or moisture. Tests prove that they're stronger than lumber—absolutely permanent. They're important additions to the building materials field!

WRITE TODAY FOR COMPLETE TECHNICAL INFORMATION



Low - Cost Housing. With Gold Bond Structural Units the only lumber required is for the framework. All the rest can be built from these strong gypsum panels. Exterior Board instead of sheathing and siding. Roof Plank instead of wood roofing. Solid Partition Panels for inside partitions.

Industrial Use. There's practically no limit to the industrial use of these new Gold Bond products. Offices, warehouses, gatehcuses, plant additions—all these and many more can be built faster, better and cheaper. And don't forget how handy they are for maintenance and repair work!



Exterior Boards. Serve as both sheathing and siding. Three outside finishes . . . (1) weatherproof asphalt roofing, as pictured at left, (2) pre-painted in attractive colors at the factory, and (3) with waterproofed fibre covering. Inside surface is a cream color—needs no decoration. 32° and 1" thick.

Roof Plank. Nails directly to wood joists. For flat or pitched roofs, provides a perfect base for the roofing material. Will neither expand nor contract. Quickly and easily applied by any carpenter. Cream underside serves as ceiling and requires no further decoration. Sizes 2' x 8', 9', $10' \dots 2'', 1\frac{1}{2}'', 1''$ thick.

Solid Partition Panels. For factories, offices, homes. Form permanent or demountable partitions in a fraction of the time usually required by means of a new simplified system of construction. When temporary partitions are removed, panels are completely salvageable. Standard thickness $1^{"}$. also $\frac{3}{4}"$, $\frac{1}{2}$ ", $\frac{1}{2}$ ".



NATIONAL GYPSUM COMPANY . . EXECUTIVE OFFICES, BUFFALO, N. Y. 21 Plants from Canada to the Gulf . . . Sales offices in principal cities
THE MONTH IN BUILDING . . NEWS

Amendments to war housing construction standards (this page)... building workers status defined (page 34) ... WPB-NHA agreement bears fruit (page 34) ... Conversion program slow starting (page 34) ... War contract renegotiation preview (page 112)... Title VI Congress sure to give FHA another \$400 million before House, Senate, sure of passage (page 35) ... Hauser predicts survival of cities (page 35) ... New Zealand Minister Nash on land values (page 36) ... Materials situation for 1943 (page 106).

BRIEF, BUSY MONTH

February was a month short on days, long on developments for Building. Manpower Director McNutt announced nondeferrable trades, only uncertainly defined the status of building workers; builders wondered whether they were caught in a subtle squeeze play. On top of these doubts came the suffocating war housing standards of October 28 which, by last month, had almost succeeded in squeezing the private builder out of business. Then at month's end the builders' pain was nominally eased by a new order freeing standards sufficiently to brighten the outlook.

Here and there builders found some solace in the announcement by FHA Commissioner Ferguson that AA-3 priority would be applied to private remodeling and conversion projects.

February was not short enough to disguise the fact that only now was the muchheralded entente cordiale between NHA and WPB (FORUM, Jan., p. 33) having any concrete results, the first of these being the publication of Blandford's administrative orders, one on methods of

END OF NRPB

The House Appropriations Committee, in a series of drastic slashes, denied the National Resources Planning Board funds for the coming fiscal year in reporting out the Independent Offices Bill. One million four hundred thousand dollars saved by the act; thus Washington's only postwar agency, never a Congressional favorite, is threatened with extinction. (The same bill sabstantially cut HOLC's appropriation, gave FHA all it had asked for).

NRPB accomplishments were measurable. Never adequately financed, this group headed by Charles W. Eliot and squired by the President's uncle, Frederic A. Delano, tried to do much with little. Best report published: "Role of the Homebuilding Industry." Question now is whether this committee action was motivated by political animus or by complete Congressional antipathy to any postwar planning. disposition of private war housing, the other on occupancy and disposition of private war housing.

The month was filled with conjectures about Lanham Act money—would there be more—and when. The low-geared conversion program moved along in its snailpaced progress, producing little apparent results, much talk and optimism, Congress began to move on specific housing money measures (Rep. Steagall was most active, most likely to succeed with his FHA amendment bill; Rep. Coffee reintroduced his perennial tax integration resolution). WPB at the same time announced figures on the amount of construction its Facilities Bureau had stopped since October.

As usual there were some appointments (Starr to FPHA, Dresser to WPB), even more usual, the customary rumors about coming unseatings.

Giant index of the shape of things to come was the announcement of the extension of the joint economic committees of the United States and Canada to postwar development of one million miles of Alaska, Northern British Columbia, and the Yukon Territory—U. S. postwar planner Alvin H. Hansen acting as Chairman of the U. S. Committee, Dr. W. A. Makintosh of the Canadian.

Amendments to War Housing Construction Standards: After a solid month of argument, John Blandford and his NHA technicians finally persuaded WPB to ease up a bit on its construction standards. Principal changes, which are of special interest to private builders, include: Increase of 10-15 per cent in permitted floor area (a 1-story structure with 1 bedroom is now allowed 650 sq. ft.; 2 bedrooms, 800; 3 bedrooms, 1,000. More than 1 story with 1 bedroom, 750; 2 bedrooms, 900; 3 bedrooms, 1,100).* Removal of ban on use of softwood lumber for flooring and subflooring, and extension of the geographic area in which wood-frame construction, begun in 1943, is now permissible to New

(Continued on page 34)

^{*}NHA says that 34 of private housing projects submitted to it for preference ratings under the Oct. 28 standards-1/2 of which were rejected-are now qualified under the revised standards.

Hampshire, Vermont, Wisconsin, Iowa, North and South Dakota. In 17 other States it is still forbidden (including New York, New Jersey, Pennsylvania, Delaware, etc.), and construction is limited to masonry types.

WPB points out that relaxation of the restrictions on the use of lumber does not mean that the critical character of the softwood lumber situation has improved "but rather that there is an indication of an increase of side cuts in logging areas where no facilities for storage are available." The armed forces need timber, and a ready market for side cuts in logging areas is necessary to continued timber production.

Manpower for Building: Answer to Builders' query about the status of their workers is "don't know." The initial list issued by War Manpower Director McNutt did not mention building workers. Later in the month McNutt declared 35 additional activities to be "essential," included construction among them. But according to the WMC officials this does not necessarily mean that workers are exempt or deferable. One plan that may affect them, however, is the Commission's projected "area deferment" action; badly-needed workers in specified occupations would be deferred in some places, not in others.

Because of the stoppage of construction this year, however, WMC estimates that about 500,000 construction workers will be out of jobs by summer, one million by years' end. It is expected that manpower needs of other industries will easily absorb them. Major concern of Building is that these workers will be lost to the industry; plans are under foot at WMC to insure the return of these workers to the building industry at war's end in time for the anticipated building boom.

AA-3. To privately financed conversion or remodeling of existing buildings for war workers' living quarters WPB has awarded an AA-3 preference rating—on a par with other housing. Dwelling units produced by private remodeling under this procedure will be charged against the war housing quota for the critical business area involved on the same basis as new construction.

FHA, announced Commissioner Ferguson last month, is ready to process all applications for preference ratings on these jobs through its field offices acting for WPB, and to provide Title I loan insurance up to \$5,000 a project.

Those NHA lawyers again: Fruit of the December 11 coalition between the housing agency and Nelson was Blandford's dual announcements (General Orders 60-2 and 60-3) last month detailing some recent procedures:

 Eligibility for occupancy of war housing is long-windedly defined as: "war worker whose in-migration from beyond the distance of feasible transportation into localities of intensive war production is indispensible to augment the local labor supply to the extent necessary for securing maximum practicable war production." The directive then defines "war workers" as workers in listed essential industries, "in-migrant" as a worker who has come within the past year from beyond daily commuting distance from place of work.

2) Methods of disposition of private war housing are described: all such housing must be held for rental to eligible war workers (defined above) at specified rentals. Rentals must not exceed \$50 per month unfurnished—in no event exceed \$3 per room per month. A dwelling unit may be purchased after four months of occupancy by a qualified war worker occupant for not more than \$6,000.

Another Lanham Act appropriation? Probably. NHA officials feel that the present program is only intended to care for in-migrant workers during the present fiscal year. Any new needs developing after July 1 will not be cared for, and, according to the WMC, they surely will develop. More money is obviously needed. Taking into account the slowness of Congressional action when a new request for housing funds is presented to them (three months is par), something must be done very soon to prevent a serious lapse between the end of the present funds and the beginning of the use of new ones. According to all indications, it will.

Conversion progress. As slow-moving as an 18th century minuet, NHA's conversion program now seems to be a clear case of

wishful thinking. The last available figures reveal 8,765 applications received (covering private homes), 3,748 rejected as unsuitable (reasons: cost of conversion too great, required too much critical materials, not enough additional space gained, etc.), only 69 leases actually signed. NHA is still optimistic for reasons unknown to outsiders. It is hoping that its new system. in operation in 12 selected areas (FORUM. Feb., p. 33), will bring better results.

First industrial building to be purchased outright for conversion was acquired last month in Newport, R. I. A 110-year old, 4-story textile building, Perry Mill (see cut) will be converted into a dormitory



PERRY MILL, R. I. goes to war.

for 175 war workers at a nearby naval station. Cost: \$10,000. Remodeling costs: approximately \$627 per unit. The obvious advantage of the conversion job over new construction lies in these figures; new construction would cost about \$1,000 per unit (dormitory construction). Partitions will



Prefabricated bathroom unit being considered for use by NHA, conceived by special assistant William V. Reed. Unit will save metals, critical materials, its compactness making for efficient use of piping. It is demountable (see corner detail), arrangeable in 4 combinations, each of which could be used separately. Precast shower base and toilet floor (see section) are raised above existing floor to provide space for pipe connections. Total cost: about \$100.

be of gypsum board, a minimum amount of critical material will be used.

Feeling about such Government purchase of real estate is divided. Most articulate was Senator Harry Byrd who scored outright purchase of hotels (see p. 106). Whatever the ultimate disposition of such purchases after the war, it is clear that immediate Government saving in dollars and cents seems easily documented.

TITLE SIX PROGRESS

Presented to the House on February 5 was the long-awaited amendment to the FHA act, extending and expanding Title VI. The donor: housing-wise Representative Henry B. Steagall (Chairman of the Acme



REP. HENRY B. STEAGALL: a bill to the House . . .

House Banking and Currency Committee; co-author of the Wagner-Steagall Housing Act). The bill is unpretentious, substitutes June 30, 1944 for the same day 1943 as expiration date, increases the present insurance ceiling of \$800 million by \$400 million more.

FHA officials long ago realized that the Title VI funds would be exhausted (FORUM, Feb., p. 34), estimated that the present ceiling would be reached by February's end. Evident, then, is the immediate need of rushing through the Steagall bill; private building's participation in the war housing program hinges upon it.

It was thought last spring, when the insurance ceiling was raised by \$500 million, that enough money was on hand for the present fiscal year (ending June 30, 1943). But with mortgage lenders increasingly anxious to seek the protection of Government insurance (FHA was handling 50 per cent of the total volume of new residential construction last spring, is now handling 85 per cent, will probably come close to 100 per cent by fiscal year's end), funds are now stretched thin.

Second, equally potent threat to the Title VI insurance fund is the increased cost of materials. The average loan under Title VI last March was \$3,800, is now \$4,300, with chances of increase very high.

Life of the new \$400 million volume of insurance, if granted, is estimated to be about 8 months. It will take care of FHA share (85 per cent) of what is left of the war housing program assigned to private construction. If FHA's share increases (to the anticipated 100 per cent), the lifespan will be considerably shorter. An estimated 90,000-100,000 new houses can be financed under the new \$1,200 million ceiling—assuming an average loan of \$4,-300. If the War Manpower Board's conviction that more housing will be needed is acted upon the insurance ceiling will again have to be jacked up.

Chances for passage of the extension bill are good, due to FHA's popularity with Washington conservatives, both Democrats and Republicans. Only doubt is on the question of time: will help come before funds are exhausted is the prime question in builders' minds.

Senate counterpart to the Steagall bill introduced by Senator George Radcliffe (Senate Banking Committee), passed with ease at month's end.

CONSTRUCTION STOP SIGNALS

After three months of applying the brakes to construction, WPB last month surveyed the situation, found the brakes had worked well. Projects costing \$1,271,195,509 had been halted by its Facility Review Committee. Charged with eliminating all "nonessential" work, the Committee in some cases revoked preference ratings; in others stopped the projects. These included:

Highways, bridges and tunnels: \$104,-968,736.

Building materials: \$270,171. Airport facilities: \$23,585,056. Army projects: \$69,772,200. Navy projects: \$113,243,858.

Schools: \$2,048,623.

Transportation: \$580,000.

Reclamation: \$129,400,000.

Housing: \$1,370,000.

That number of such cancellations is rapidly decreasing was apparent in figures for total cost of stopped projects during the week ending January 29: \$193,800 —the smallest weekly total since the Committee's creation in October (figure for week of January 15: \$19.026,956).

SURVIVAL OF CITIES

To the Wartime Marketing Conference of the American Management Association last month Assistant Director of the Bureau of Census Philip M. Hauser (see cut) described the future of postwar cities. Using an original method for his crystalgazing, he noted the difference between 1920-30, 1930-40 census figures for 137 metropolitan counties and OPA's sugarregistration figures (May 1942). Observing the population shifts, he then classified cities on this basis: ► Areas that are called Class A are those whose wartime growth has been rapid and which may be expected to retain their population growth (these are broken down into 1) "Best prospects" 2) "superior" 3) "excellent" 4) "good" and 5) "fair"):

1)	Corpus	Christi,	Tex.
	Dallas,	Tex.	
	Jackson	, Miss.	

...

3)

- 2) Charleston, S. C. Columbia, S. C. Columbus, Ga.
 - Atlanta, Ga. Austin, Tex. Beaumont-Port Arthur, Tex. Chattanooga, Tenn. Detroit, Mich.

Jacksonville, Fla. San Antonio, Tex. San Diego, Calif.

Mobile, Ala. Washington, D. C. Galveston, Tex.

Knoxville, Tenn. Little Rock, Ark. Los Angeles, Calif. New Orleans, La. Nashville, Tenn. Sacramento, Calif.



SEN. GEORGE RADCLIFFE: . . . ditto to the Senate.

		Fort Worth, Tex. Houston, Tex.	San Francisco, Calif.
		Kalamazoo, Mich.	Shreveport, La.
	4)	Augusta, Ga.	Norfolk-Portsmouth-
		Baltimore, Md.	Newport News, Va.
		Davenport-Rock	Portland, Me.
		Island - Moline	Richmond, Va.
		(Io. and Ill.)	Salt Lake City, Utah
		Denver, Colo.	Savannah, Ga.
		Evansville, Ind.	Seattle, Wash.
		Indianapolis, Ind.	Tacoma, Wash.
		Macon, Ga.	Wilmington, Del.
5	5)	Canton, Ohio	Hamilton-Middle-
		Chicago, Ill.	town, Ohio
		Cincinnati, Ohio	Portland, Ore.
		Columbus, Ohio	Pueblo, Colo.
,		Decatur, Ill.	St. Louis, Mo.
a.		Fort Wayne, Ind.	Springfield, Ohio

► Areas that are called Class B are those which grew rapidly during the war but whose growth may be transient unless their wartime activities are successfully converted to normal peacetime functions:

Birmingham, Ala.	New Britain, Conn
Dayton, Ohio	Rockford, Ill.
El Paso, Tex.	Tulsa, Okla,
Hartford, Conn.	Wichita, Kans.

Subclass of B includes those areas which may be relatively difficult to convert to normal peacetime activities:

Bridgeport, Conn.	New Haven, Conn.
Johnstown, Pa.	Akron, Ohio
Louisville, Ky.	Waco, Tex.
(Continued or	nage 36)

► Areas that are called Class C are those which lost population during the war or which bare'y held their own, but which in the light of past performances may be expected to "come back" in the postwar period (these are broken down into 1) "excellent prospects" 2) slightly less than excellent 3) "fair prospects"):

1)	Amarillo, Tex.	Oklahoma City, Okla.
	Asheville, N. C.	Peoria, Ill.
	Binghamton, N. Y.	Stockton, Calif.
	Charleston, W. Va.	Winston-Salem, N. C.
	Charlotte, N. C.	Miami, Fla.
	Lansing, Mich.	
2)	Durham, N. C.	San José, Calif.
	Madison, Wis.	Tampa-St. Peters-
	Memphis, Tenn.	burg, Fla.
	Phoenix, Ariz.	Waterloo, Iowa
3)	Cedar, Rapids, Iowa	New York-North-
-	Des Moines, Iowa	eastern New
	Flint, Mich.	Jersey
	Fresno, Calif.	Roanoke, Va.
	Huntington - Ashland	Spokane, Wash.
	(W. Va. and Ky.)	Springfield, Mo.
	Minneapolis-	Topeka, Kan.
	St. Paul. Minn.	Youngstown, Ohio

► Areas that are called Class D are those which decreased during the war or gained very little and which, in the light of past performance seem to be relatively stable —that is, cannot be expected to gain rapidly in the immediate future. (These are broken down into 1) losing population or growing very little—difficult to Harris & Ewing



PHILIP HAUSER: Census Bureau seer

evaluate, 2) losing population or growing very little—little prospects of rapid postwar growth, 3) losing population with little chance of recouping:

1)	Atlantic City, N. J. Cleveland, Ohio Grand Rapids, Mich.	Kansas City (Mo. and Kan.) South Bend, Ind.
2)	Allentown-Bethle- hem-Easton, Pa. Buffalo-Niagara, N. Y. Erie, Pa. Harrisburg, Pa. Omaha-Council Bluffs (Neb. and Io.)	Philadelphia, Pa. Providence, R. I. Springfield - Holyoke Mass. Terre Haute, Ind. Trenton, N. J. Vork, Pa.
3)	Albany-Schenectady- Troy, N. Y. Altoona, Pa. Boston, Mass. Duluth-Superior (Minn, and Wis.) Fall River-New Bedford, Mass.	Reading, Pa. Rochester, N. Y. Saginaw-Bay City, Mich. St. Joseph, Mo. Synanton-Wilkes- Barre, Pa. Sioux City, Ia.

Lancaster, Pa. Lincoln, Neb. Manchester, N. H. Pittsburgh, Pa. Racine-Kenosha, Wis Springfield Ill. Syracuse. N. Y. Toledo, Ohio Utica-Rome, N. Y. Wheeling, W. Va. Worcester, Mass.

▶ Percentages for these classes are interesting. Of the 137 areas surveyed, 40% are Class A, 9% are Class B, 22% are C, 28% are D. Most Class A cities are in the South and West. Most Class D areas (38 out of 39) are in the North.

While relatively certain that, in general, his predictions are accurate, Dr. Hauser warned that past growth may not always be an indication of future growth. Unpredictable technological changes make any predictions of postwar population distribution hazardous. The value of even so uncertain a prediction, however, lies in the directional use it may have for manufacturers, businessmen, marketeers:

"An analysis of the relative permanence or transiency of wartime population shifts, even on the crude basis attempted, is in order for many purposes. It is clear, to the extent that marketing agencies and business and industrial enterprises in general have effected adjustments in their activities to the population changes which characterized the intercensal decade from 1930 to 1940, that there is need for considerable modification in current wartime and postwar practices."

RENT CONTROL NOTES

► Recently - appointed OPAdministrator Prentiss M. Brown, early in his public utterances last month, dealt decisively with rent control rights, upheld the freeze-date method of controlling residential rents as opposed to the method of fair-return or fair value.

Three Chicago landlords had complained that "it (the freeze-date method) is not generally fair and equitable because it does not provide a fair and reasonable gross return, based on a fair market valuation to all efficiently operated housing accommodations within the Defense Rental Area."

Decided Brown: "The primary purpose of the Emergency Price Control Act is to prevent inflation resulting from price and rent increases caused by war activities. It is clear that Congress may validly control rents under its war powers which permit harnessing the entire energies of the people in a supreme cooperative effort . . .

"The rent date method is a reasonable means of accomplishing the statutory purpose to combat inflation . . . In enacting the Emergency Price Control Act, Congress did not intend that landlords be permitted to utilize the demand for housing accommodations created by war activities to equalize any such differences or to increase rents upon properties with small profit margins and thereby improve their relative position as against properties of a more favorable economic situation. Nor is the Administrator required to endanger public interest in preventing inflation by permitting all rents to be high enough to assure a return on every housing accommodation, however unsatisfactory its previous economic position."

▶ Revealed by OPA were eye-opening statistics on effect of rent control on last year's rental income. Despite stabilization, in the 13 communities surveyed, the net operating income of landlords today is larger in absolute dollars than it was in 1939-40. Reason offered: widespread decrease in vacancy loss (90-95% in 1939, almost 100% today). Other factors: almost complete disappearance of collection delinquencies, decrease in competitive decorating, generally stable expenses.

Less prejudiced to the whole picture of whether rent control imposes hardships on some landlord groups would have been statistics from *all* controlled areas (at present: 356). By choosing only the 13 most critical (where housing demand is greatest: Bridgeport, Baltimore, Seattle, Detroit, etc.) the factor of vacancy loss was thus diminished.

NASH ON LAND VALUES

"When we commence to plan for housing, on any national scale, we are in effect planning for the future of the nation." Harris & Ewing



HON. WALTER NASH: "... we are planning for the future of the nation."

In words as clear and straight to the point as these, last month the Honorable Walter Nash, New Zealand's minister to the U. S. (see cut) addressed a joint meeting of the American Institute of Planners and New York's Citizens' Housing Council. Saving the complex details of New Zealand's land-value taxation system for the brethren, Mr. Nash's remarks were pointed:

"I feel myself that by far the most fundamental of the many problems which, for want of a more adequate description, are broad.y encompassed by the term Social Planning, is the provision of housing for the people. It is an issue in which (Continued on page 100)



THE TOWN OF WILLOW RUN

The town of Willow Run, illustrated and described in detail in these eighteen pages, does not exist and is not being built. What is more, it is not going to be built. Why then, does THE ARCHITECTURAL FORUM devote eighteen pages to it? Because Willow Run deals with the dwelling in its largest aspect, and because it accepts in a realistic and economical manner the existence of the automobile. And most significantly, because the plan establishes the level on which planners, builders, realtors and investors will have to compete in the postwar period. With every indication that conservative capital is looking to Building as an investment outlet, the single house or even a baker's dozen of them cannot match for safety the planned—or replanned—community which offers the maximum guarantee against premature obsolescence.

Willow Run was conceived as a model American community, designed to house the families of 6,000 aircraft workers. Located northeast of the town of Ypsilanti, and within easy reach of the giant bomber plant being operated by Ford, Willow Run was to have been more than a model city. It was to have been a force in the war production effort, providing workers for a plant desperately in need of them. Why the project ended up a total failure (unless the building of 2,500 temporary units could be called success) with the backing of the Union of Automobile Workers and the Federal Public Housing Authority, is a long and very involved story, one told so often it is not repeated here.

Willow Run was almost unique in that it was a city planned from scratch. Five groups of architects were given a large tract in the country on which to build five neighborhoods, each complete with houses, shops and a school. A sixth firm was appointed to design a town center, properly arranged for the convenience of both pedestrians and motorists. Thus the project became a proving ground for the most advanced ideas on housing and city planning, and these ideas were subjected to endless critical scrutiny until an integrated pattern emerged.

These pages show the civic center and three of the proposed neighborhood units. They offer the best guide to postwar planning we have yet produced. Like the architects who designed the five residential neighborhoods, the firm of Saarinen and Swanson, in its plan for a town center, had to provide facilities for the community to be built at once and space for future additions as the otwn to its maximum population of 6,000 families. Due to the number of factors involved in the planning of Willow Run, these town center plans were in a continual state of change until the day the project was abandoned. Consequently it is not always possible to relate a given scheme for the center to any of the plans for the community as a whole.

During most of the stages of the design, the complete town center contained roughly the same number of elements. There was to be a commercial group, providing food, variety merchandise, drugs, barber and beauty shop service. a tailorcleaner, shoe repair shop, clothing, furniture, hardware, etc. In the initial stage of the town's growth many of these facilities were to have been provided by near-by Ypsilanti. There was to have been a municipal center, with a city hall. post office and fire and police station. Other services included a bus station, utilities office and hotel. The high school was planned for use as a fully developed community center.

The basic feature of the town center, far more important than the detailed provisions for one type of service or another, is the separation of the pedestrian and automobile traffic. Each group of buildings has its own parking field immediately adjacent. The commercial area, as shown in the facing plan and the related perspective sketches, would have presented an appearance vastly different from and superior to the usual congested shopping street. A real advantage of such a scheme, apart from the obvious amenities, would have been stable tax and rental values, since there is no possibility of undesirable encroachment.



PRELIMINARY STUDY



The preliminary study above was one of the last made while the town still had five residential units. This stage can be seen in the plan on page 40. The later study (opposite page and sketches) shows a plan for the ultimate development of the center after two of the neighborhoods had been eliminated. The perspective sketches relate fairly closely to this scheme.



TOWN OF WILLOW RUN



The plan above shows the final stage of the five-neighborhood town, and illustrates very clearly its essential characteristics. The five communities sprawl loosely around the town center and are connected with it by a series of peripheral roads. Each community is a self-contained unit, with an ultimate population of 1,200 families, provided with its own school and with shops for daily necessities. A greenbelt surrounds the entire town, and most of the architects worked out some method of allowing the main greenbelt to filter through their housing groups to the small community centers. The schools, which provided a social as well as architectural center for each community, were designed to serve the needs of adults as well as children. In fact, during the wartime stage of the project

FIVE-NEIGHBORHOOD TOWN PLAN



each school was to be a meeting hall, entertainment center, church, and anything else the inhabitants might require. There was ample room in each neighborhood center for additions to the school and for new, special purpose buildings.

A glance at both town plans shows that a fairly close agreement on basic features of the site layout was reached by the different architects. The cul-de-sac is present in almost all of the schemes, but it has been subordinated in favor of the long loop which is split down the middle by a connecting road. This road generally hooks into the peripheral road so that the traffic requirements of each community are taken care of without disrupting the important routes of pedestrian circulation.

In the final stage of the town of Willow Run two of the communities-those farthest from the main town centerwere eliminated. The center was shifted to the southeast to bring it closer to the middle of the town, and some modifications in the community plans were produced by this shift. In the community at the west end of the town, for instance, the circular common was reoriented so that it no longer opened to the town center.

Even in its reduced state, the town might still have approached the original objectives. It retained the protective greenbelt, the excellent circulation system with its attendant safety features and the attractively arranged houses. But even the reduced town went by the boards. Whether the hundreds of thousands of dollars spent on the drawings were wasted will depend to a large extent on the postwar planner, for the town of Willow Run is the most workable and most human guide to the integrated community produced to date. This page introduces the final studies of the site plans and housing for the three Willow Run neighborhood units. Descriptions of these projects have been provided by the architects.

- 1. Mayer and Whittlesey. Architects pages 42-46
- 2. Skidmore, Owings, Merrill and Andrews, Architects and Engineers pages 47-51
- 3. Stonorov and Kahn, Architects

NEIGHBORHOOD UNIT 1.



pages 52-54

"S'TE PLAN LIMITATIONS

1. Total cost of site development not to exceed \$900 per dwelling unit.

2. Length of water mains not to exceed 50 feet per family, including site and approach mains.

3. House Connections. Structures served by main in right of way may not be set back more than 25 feet. Houses served by mains elsewhere may not be more than 50 feet from them.

4. Building Schedule. Present development: 700 families, housed approximately as follows:

85 one-story twin houses. 18 one-story rows. 143 two-story twins. 43 two-story rows.

Future development: 500 families in 362 one-story, single-family units. 138 one-story, single-family units.

All the above dwelling units, both immediate and future, to be so planned that 6% have one bedroom, 56.5% have two bedrooms and 37.5% have three bedrooms.

"MEETING THE SITE PLAN LIMITATIONS

"Land cost was not a factor in developing the site, but grading and landscaping were. The decisive factors, however, were the utilities, roads and sidewalks. To assemble these into the most desirable living pattern and still keep within the budget, was the problem.

"This is the procedure followed in arriving at the desired pattern: first, the houses were laid out in a ribbon, obviously the most economical as regards both roads and utilities. This worked out to an average length of 19 feet per family. The ribbon plan, of course, was merely a preliminary yardstick, since it had no application to the site problem. Next the houses were arranged in long loops: at this stage the minimum possible road length was increased by 20 per cent.

"Moreover, when these loops were assembled into a community pattern, the road length again had to be increased, this time to 42 per cent over the original ribbon. There were several reasons for this loss in efficiency: street intersections accounted for about half, and the balance was caused by circulating roads, by unused frontage facing the common, and by openings between houses for group parking, for pedestrian walks and to let the greenbelt come through. It was found that whatever the manner in which the loops were combined, if the above amenities were maintained, there was apparently no way of reducing the loss of 42 per cent. In consequence this figure was used as a base for evaluating the economy of the final site plan designs.

"Our decision to use the long loop rather than the culde-sac was very largely based on economy of the former, established after a long series of comparisons. These were among the most significant findings:

1. Road surfacing and length of utilities were not necessarily a direct function of lot frontage.

2. The short cul-de-sac, say 250 to 350 feet, caused an efficiency loss of more than 20 per cent. Under the budget it was not possible to pay for the added road and utilities and still afford amenities considered necessary.

3. Therefore, length was a requisite. We had to work deeply into the site wherever possible. As soon as lengths went over 350 feet, the loop showed advantages over

the cul-de-sac. The road width on a long cul-de-sac has to be greater than that of a comparable loop, and the loop showed similar savings in the water mains.

4. Where streets were under 350 feet, the cul-de-sac was generally selected, as it is more economical than the short loop. The cul-de-sac head had to be studied carefully, as added expenses could creep in. A head serving eight lots, for instance, was found to require 50 per cent more road surface per family than one with but four.

"SITE PLAN OBJECTIVES

1. Pedestrian Safety. The UAW was strongly in favor of a 100 per cent "Radburn plan," i.e., the superblock system by which pedestrian and vehicular circulation are entirely separated, with kitchens facing the service roads and living rooms facing lawns and pedestrian paths. We were in agreement with the safety objectives, but not the method, and these arguments were finally accepted: (a) neither side of the house enjoys privacy, (b) visitors by car must enter through the service side and kitchen, (c) mothers control children from the kitchen, hence children in the "Radburn plan" tend to play in the service streets, (d) some people favor the living roomon-street scheme, favoring the social rather than purely service development of the street, (e) the 100 per cent cul-de-sac system produces a giant superblock, complicating vehicular circulation, and (f) this system is less economical than the long loop achieved by connecting the heads of each pair of culs-de sac.

"The developed site plan had elements of both systems. There were no service roads or culs-de-sac used purely as such. Long loops stemming from the main roads create blocks free of through traffic. Pedestrians can safely cross these loop streets to the common greenways leading from all parts of the site to its center and to the main town center. The greenways filter in through long loops. Driveways do not back out on intersections or main roads. Where houses do face a main road, their driveways enter around the corner from the side street. The final design was one which would prepare a child to some extent for the safety problems inherent in older community plans.

2. Lot Layout The requirement that lots be arranged to permit their ultimate sale presented no serious problems. Careful arrangement of drying yards, parking spaces and driveways was needed to observe possible future property rights and to provide reasonable lot sizes at corners.

3. Coal delivery by chute brought up plenty of problems, since utility rooms adjoin kitchens, which were often placed at the rear. It was necessary to study each yard type at large scale to develop the required solutions. 4. The objective of 100 per cent parking included a 40-foot stub for each house, the theory being that garages or carports might someday be built on the rear half of the stubs. One consequence was that the laundry yards, originally designed to fit between the houses, were pushed to the rear. The requirement also seemed unwise because of the dust problems it created, since concrete was too expensive to use and bituminous soil stabilizers were not available.

TOWN OF WILLOW RUN: NEIGHBORHOOD UNIT 1.

5. Laundry Drying Yards. This has already been discussed above. Placing the yards between buildings would have given accessibility without interference with gardens and view.

6. Greenbelt Infiltration. A superblock surrounded by a greenbelt, and composed entirely of cul-de-sac streets, permits full penetration of residential areas by the greenbelt. Our plan developed three major entries for the greenbelt, carrying it through to the community center, with minor infiltrations providing rear path circulation between the loops. Ease of vehicular circulation is maintained by drawing the various sections of the

community to a main circulation loop surrounding the common.

7. Location of Community Center. Ease of pedestrian traffic between the community center and the main town center was considered of paramount importance. The original site plan solution opened the main circulation loop towards the town center rather than to the greenbelt. This can be seen on page 40. When later reduced to three communities, the town center was shifted radically. At the same time, the belated announcement of the flight course of the Willow Run cargo planes made it necessary to move a great many houses out of the



THE ARCHITECTURAL FORUM

northeast corner of the site. This meant reversing the main circulation loop to give free pedestrian access to the community center from a majority of the houses. Parking at the community center is so arranged that movement on foot between the buildings is not obstructed. These buildings include a grade school, a nursery, a clinic, small play yard and offices for the management.

UNIT PLANS

"Minimum room sizes were fixed: the area for the main bedroom was about 130 sq. ft. Living room areas were 160 sq. ft. for the one-bedroom unit, 180 and 195 sq. ft. for the two- and three-bedroom dwellings. Utility rooms had to be large enough for storage and a well-lighted laundry. Coal delivery and ash removal had to work directly to the outside. It was considered desirable to keep the dining space out of the living room—which meant putting it in the kitchen. The kitchen was not to be used for through circulation. Garbage containers out of doors were to be easily reached from the kitchen, and concealed from view.

"To these requirements we added a number of our own. We tried to arrange living rooms to eliminate through circulation to bedrooms. It was also considered desirable to provide a number of central front entrances to the houses. Porches, related to the front entrance and the yard, were put in wherever possible. Several of the ways in which these porches were used can be seen in the illustration below."



A number of simple amenities were incorporated in the common areas by the architects. A typical example is the children's theater, an open platform with a back wall and two wing walls, located at the edge of the woods. Behind the back wall is picnic fireplace.



An important feature of the plan was the arrangement of private parking stubs in relation to the houses and drying yards. The inconspicuous but convenient placing of the drying yards is excellent. For additional comments on this feature see pages 43 and 44.



A. One-story, two-bedroom twin. Main

entrance from porch, which is related

to the rear yard. Utility room adjoins

side (laundry) yard. Front plumbing

stack connected to utility mains in street. B. One-story, two-bedroom twin. Front

main entrance. Rear plumbing stack

C. Two-story, three-bedroom twin. Ac-

cess to bedrooms without passing through living room. Shelter over corner entrance. Rear plumbing stack to

D. Two-story, three-bedroom twin. Center front entrance. Access to bedrooms without passing through living room. Rear plumbing to rear utilities.

E. & F. Two-story, rows. Rear living

room, front entrance hall and front

kitchen. Front service only in center of

units. Smaller families in center of

row. End units are also used as twins

G. One-story, one-bedroom row. Onebedroom units occur only in this type.

connected to rear utility lines.

UNIT PLANS

rear utilities.

(not illustrated).

MAYER & WHITTLESEY, ARCHITECTS









2" FLOOR



















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ARCHITECTS AND ENGINEERS

"Our office was assigned the central lower neighborhood area, with Stonorov and Kahn's group on the east and Mayer and Whittlesey's project on the west. The town center lay to the north and there was a circumferential boulevard on the south. The fixed area which was allotted to us was larger than was absolutely necessary for the required 1,200 units, and it consequently permitted the development of a very open site plan.

"Our program, like that of the other architects, allowed ten percent for one-bedroom units in rows, 60 percent for two-bedroom dwellings in twin houses and singles, and 30 percent to be single houses only, with

three bedrooms. The site layout was controlled to a certain extent by the existing contours, but since the project was to have been a permanent development, we considered additional expenditures for grading justified in certain cases in order to produce a more consistent site layout.

"The fundamental approach to the problem was to keep our scheme as broad and simple as possible. We felt that the culde-sac, in a development of this scale, should be used sparingly. We felt equally strongly that the continuous loop, which was used principally throughout, has many advantages from the standpoint of convenience to the families living in the homes, and also from the service angle (mail, coal, milk, etc.). The reason for these advantages, obviously, is that the continuous loop eliminates the dead end which is the fundamental characteristic of a cul-de-sac. At the same time, the relatively short loops with their sharp curves tend to eliminate the dangers of fast-moving traffic; in consequence the safety features inherent in the cul-de-sac type of solution are retained.

"There was much discussion among the five groups of architects about the orientation of the dwelling units in relation to convenient service; with ample land available we went all out for the principle of

facing the service side of the house to the street, with the living side opening on the common garden or park area. The question of the unsightliness of laundry, etc., was argued pro and con, but we felt that at the worst the laundry was much less objectionable if located on the service street side than if it were placed in the common park.

"Our basic scheme made use of the county highway which borders the site on the west as a collector street, with the two boulevards used for the same purpose. No houses were placed on these collector streets since it was believed that both pedestrians and motorists wou'd receive a more favorable impression of the development if the vistas were clear, extending down through the garden areas. The problem of children-keeping them off the streets and putting a minimum number of traffic roads between their houses and the school-was accomplished by placing the proposed school in the center of the group, as shown on the site plan. In this way a child would not cross more than one collector road, and this could take place at some control point with a signal light.

"There was no necessity of varying the continuous loop pattern to a great extent, since one section of the loop is, in a sense, a community by itself. It was felt that variations in the designs for the individual units and their location in relation to the service drives would offset any possibility of monotony.

"The allowance for landscaping, under a permanent setup, was at a minimum; in general, our approach was to make use of the largest specimens we could afford rather than spend the allowance on shrubs and small plants. We also selected and placed plant material to create a casual and intimate rather than formal atmosphere."

BEDRI



SKIDMORE, OWINGS, MERRILL & ANDREWS, ARCHITECTS AND ENGINEERS



Three of the two-bedroom schemes are shown here. On the facing page is a one-story twin house with access to the bedrooms from a small vestibule off the living room. Coal is kept in an outside bin, recessed within the main mass of the house, and placed directly adjoining the service door. Note that both the living room and the larger bedroom overlook the rear garden space, and that even the dining space in the kitchen has a view through the corner window. The two schemes at the right vary only in nonessentials. In both the utility room is used as a service passage to the kitchen, which has been placed to face the rear.













UNITS

"The solution of the design of the units was a long and difficult task, complicated by the fact that, although the project was theoretically a permanent one, agencies such as the War Production Board, the Federal Public Housing Authority and its standards, and the C.I.O. all had an influence on the design, and their rules and regulations changed radically from time to time.

"There was a fixed top average cost of \$4,200 for all the units, whether one-, two-, or three-bedroom dwellings. In the middle of the design work we were required to change from wood to less critical materials, which meant the introduction of masonry, Cemesto board, etc. We had fixed requirements as to the number of pieces of furniture for each room; for instance, the master bedroom required twin beds, a dresser and a crib, as well as a fixed amount of closet space. No basements were allowed: this required provision of a utility room, laundry and coal storage space in a minimum area.

"In general, an attempt was made to locate the living room and dining section of the kitchen so that they faced the garden areas; very little exterior embellishment was possible. Porches, for instance,









were not within the limits of the budget. The houses were designed so that carports or garages could be added at a later date. "The ideas of the five architects on the units were frequently pooled after each firm had arrived at its own solutions independently. This procedure tended to assure the future tenants a generally high standard as far as room arrangement was concerned. Over and above these collaborative efforts, however, there remained a considerable amount of individual character in each of the five neighborhood projects."











NEIGHBORHOOD UNIT 3.

"There were no preconceived notions about Willow Run housing other than a definite desire upon the part of the workers' committee to have the houses oriented informally to the garden side, thus reversing completely the orthodox idea of living on a street. This stipulation was the source of considerable argument among the Government planners and the architects. The workers' education in housing had led them to feel strongly in favor of super-blocks up to 80 or 100 acres. A few of the very early solutions reflect this desire. A later compromise solution destroyed much of the character that such solutions might have given to the town, had it ever been built.

"To fully understand the scheme developed by our office, one should appreciate the difficult conditions imposed by the site, which is bordered by low land and the main access road, and forms, more or less, a drainage basin for the entire town with three definite streams of flow. Vast apple orchards cover a large area and there is a magnificent stand of timber. These factors, and the location of the neighborhood center to the south (to serve the future enlarged community) had a strong influence on the final plan. From a strict pattern of culs-de-sac, the final plan evolved, containing various expressions of living habits.

"A good many of the houses are of the 'ground-freed' type (living on the second floor, utility and garage spaces on the first floor) offering a pattern which is economical for grading, road construction and utilities. A major advantage is that it is possible to pass under the house rather than through it, so that the upstairs living quarters may be oriented in any way that seem desirable.

"We believe that the town of Willow Run, taken as a whole, illustrated planning principles which are sound, and which will be valid for postwar work. Treatment of the neighborhood as a unit, determined by an elementary school, a nursery unit and a small shopping center, is an advanced and reasonable conception. The character of the town is neither urban nor suburban; its safety, spaciousness and convenience would have offered a powerful inducement to permanent settlement."





STONOROV & KAHN, ARCHITECTS









Most unusual of all house types in the entire town was the "ground-freed" house, illustrated here in two sets of plans and a perspective sketch. The ground floor, as shown, contains only an open carport, stairs and large utility room. Upstairs, except for the stairs, is a one-story house plan, provided in this instance with either two or three bedrooms. The other plans, for twin or row houses, show a much less radical departure from the units commonly accepted.







1ST FLOOR 2 STORY-1 BEDROOM





BEDRM



1st FLOOR 2-STORY-3 BEDROOMS





"GROUND-FREED"-3 BEDROOMS





"GROUND-FREED"-2 BEDROOMS





WELFARE BUILDING NAVAL TRAINING STATION, GREAT LAKES, ILL.





The Welfare Building adjoins and supplements the previously erected Recreation Building at the main gate of the Training Station. As both were designed by the same architect (see August, 1942 issue), the matter of harmonizing the two structures was reduced to its simplest possible terms. The main problem was to provide, on a long and narrow site, a building where service men might meet visitors, with facilities consisting of a reading and writing room, a reception room, a lounging room and terrace, offices for the Public Relations Department. an apartment for the hostess and a number of services. Many of these elements were grouped in a large hall whose unusual WELFARE BUILDING, NAVAL TRAINING STATION



LOUNGE LOOKING SOUTH

structural features also provide its main decoration. This hall, as shown above, is one story in height, and sufficiently long and flexible to handle as many as 3,000 visitors per day. Walls are all glass on the east and are provided with a long, high ribbon on the west; the ribbon occurs on the entrance wall, while the other side of the room opens on an attractive wooded ravine. To give warmth to the large interior, wood was used extensively. Wall surfaces are of vertical fir boarding, treated with a light oil stain and flat varnish. Exposed wood in the ceiling was similarly treated, and the laminated wood trusses were factory-finished to match. All sash and doors were painted white to accentuate the warmth of the fir walls and the red floor. Exposed columns, piping, grilles, conduit, downspouts are gray, this color being used whether these elements occur inside or outside. The furniture is in excellent character with the interior as a whole and provides the only important color accents; all of the pieces were either designed or selected by the architects. The small second-floor unit, which appears in the facing photographs, contains the Public Relations office and an apartment for the hostess.



ENTRANCE SIDE



WELFARE BUILDING, NAVAL TRAINING STATION, GREAT LAKES, ILL.













The most remarkable single feature of the Welfare building is the roof construction, a series of unusual wood trusses which are supported at both ends on inside steel columns, as shown in the section. The walls in such a system are merely curtains, designed only to resist wind loads and mechanical damage. Equally free in treatment is the large fireplace, which serves to provide a degree of separation between the reception space and the lounge. The heating of this large room is accomplished by convection. Warm air is introduced at the bottom of the all-glass east wall through continuous grilles between the door openings. The grilles are connected to an underfloor duct of concrete (see basement plan) served by the warm air blower system. The locations of both supply and return tunnels and ducts are shown on the section.



SKIDMORE, OWINGS & MERRILL, ARCHITECTS



CONSTRUCTION OUTLINE

FOUNDATIONS: Concrete.

STRUCTURE: Exterior walls—Douglas fir plywood. Columns—steel pipe, Harrison Iron Works Co. Roof trusses—laminated wood, Unit Structures, Inc. Flooring—Thomas Moulding Floor Co.

Moulding Floor Co. SHEET METAL WORK: Flashing and coping—L. H. Sohn & Co.

WEATHERSTRIPPING: Ceco Steel Products Co.

HARDWARE: Yale & Towne, Oscar C. Rixson Co., Payson Mfg. Co.

PAINTS: Sherwin-Williams Paint Co.

ELECTRICAL SWITCHES: Square D Co. PLUMBING: Flush valves—Sloan Valve Co. HEATING: Indirect air system. Fans and blowers—Bishop & Babcock Mfg. Co. Air filters—American Air Filter Co. Steam traps —Sarco Co., Inc. Pumps—Chicago Pump Co. Hot water heater—Patterson-Kelley Co., Inc. Temperature controls—Powers Regulator Co.

HENRY ERICSSON CO., GENERAL CONTRACTOR

SOUTH ELEVATION





HOUSES

HOUSE IN CHAPPAQUA, N. Y. JOSEPH DOUGLAS WEISS, ARCHITECT





MARCH 1943

HOUSE IN CHAPPAQUA, N. Y.

JOSEPH DOUGLAS WEISS, ARCHITECT



LIVING ROOM

Like many of the more recent contemporary house designs this example uses the modern idiom with discrimination, relying heavily on natural materials to create an informal atmosphere of warmth and intimacy. The owner is an industrial architect who used his knowledge of factory design and equipment to provide the utmost in convenience and low maintenance. The large windows, for instance, not only open on a pleasant view, but function as part of the heating system: they admit enough solar radiation to cut off the heating plant during the larger part of a sunny winter day. Every duct line has separate registers for heating and cooling, the cooling being accomplished by running well water at 51° through a coil in the main duct. After passing through the coil the water goes into a lawn sprinkler system. A further refinement is the use of a special booster fan to heat the bathrooms quickly. Complete insulation, storm sash, plus the use of solar heat, have made the house comfortable despite oil rationing.







SECT. AT ROOF (East - Brick)



The section drawings illustrate one of the most successful innovations in the house, a series of one-inch air spaces in the walls and under the roof, which serve to ventilate these spaces without impairing the efficiency of the insulation. As the walls get warm, convection currents are set up in the air spaces, carrying off much heat that might otherwise be conducted to the inside of the house. The effect has been to reduce materially the load on the cooling system. A large attic fan was installed in the upper part of the second-floor linen closet, and is used for ventilation and cooling, mainly on evenings when the humidity is low.







CONSTRUCTION OUTLINE

FOUNDATION: Concrete blocks. Waterproofing —The Barrett Co.

STRUCTURE: Exterior walls—t. & g. redwood, Red Top batt insulation, U. S. Gypsum Co., studs, 1 layer Vaporseal, Sisalcraft Co.; inside lath and plaster; living room—cypress. Floors oak.

ROOF: 20-yr. built-up, The Barrett Co. Insulation—1 in. Celotex, The Celotex Co., 4 in. U. S. Gypsum Co. Red Top batts.

FIREPLACE: Damper-H. W. Covert Co.

SHEET METAL WORK: Ducts-galvanized iron, U. S. Steel Co. Remainder-copper.

WINDOWS: Sash—gliding, Andersen Frame Corp.; double hung, Silentite, Curtis Co.'s Weatherstripping—Chamberlin Metal Weather Strip Co. Glass—plate, Pittsburgh Plate Glass Co. Screen—Magnalite, Mississippi Glass Co.

FLOOR COVERINGS: Kitchen and bathroomslinoleum, Congoleum-Nairn, Inc.

PAINTS: U. S. Gutta Percha Paint Co. and Breinig Bros., Inc.

DOORS: Paine Lumber Co., Ltd. and Morgan Woodworking Co. Garage doors—Rowe Mfg. Co. HARDWARE: Russel & Erwin Mfg. Co.

ELECTRICAL SWITCHES: Hart & Hegeman Co.

KITCHEN EQUIPMENT: Range—General Electric Co. Refrigerator—Frigidaire Sales Corp. Ventilating fan—Pryne & Co.

BATHROOM EQUIPMENT: American Radiator-Standard Sanitary Corp. Cabinets—G. M. Ketcham Mfg. Co. PLUMBING: Water pipes—copper tubing, Ana-

PLUMBING: Water pipes—copper tubing, Anaconda Brass Co. Remainder—cast or galvanized iron.

HEATING AND AIR CONDITIONING: Forced hot air system, filtering, humidifying, cooling, Carrier Corp. Oil burner—Timken Mfg. Co. Valves—American Brass Co. Thermostat— Minneapolis-Honeywell Regulator Co. Water heater—Carrier Corp. Pump—H. D. Cook Mfg. Co. Fan—Herman Nelson Mfg. Co.



Due to a slight change in levels, it was found economical to put the garage under the house. The rest of the space (see plan above) is used for a large playroom and studio-workshop, with comparatively small areas set aside for storage and the mechanical equipment. The screened porch which appears in the upper photograph is used as a summer dining room, and is served from the kitchen. The overhang at second-floor level was designed so that in summer the direct rays of the sun are kept off the living room windows and porch until 4 p.m. In the winter, however, the same spaces are flooded with sunlight from 11 a.m. until evening. The kitchen gets morning sun throughout the year.



HOUSE FOR JOHN B. NESBITT RICHARD J. NEUTRA, ARCHITECT





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VIEW 1.
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Described by the architect as marking "the last of an era," this house was built from noncritical materials after wartime restrictions had almost stopped nondefense construction. As such, it may well be rated by future historians of the California School as fitting climax for this half-functional, half-romantic and wholly individualistic movement—a movement that was the major architectural achievement of the prewar period. Certainly the imaginative plan represents a high point in the development of the free organization of living space according to function rather than set room designations, the brick-and-redwood structure the ultimate in the utilization of handicraft materials in accord with advanced engineering technique.

Shrewdly located in the midst of a well-planted site, the house has an attenuated plan divided into two sections by a sheltered terrace. One section contains a garage, a studio, guestroom and bath. The other comprises the regular living rooms and another bath-bedroom unit. While the plan is open on both sides, most of the rooms requiring outlook have been grouped around the generous lawn at the rear. Approach is by a diagonal walk leading from a paved parking recess adjoining the driveway at one corner of the plot, thence along a covered terrace stretching across the front of the house (shown in the two views on the preceding page) to the entrance doorway. Views on this and the following page are identified by numbered station-points on the large plot and floor plan.



HOUSE FOR JOHN B. NESBITT





VIEW 3.





VIEW 1.



VIEW 3.


HOUSE FOR JOHN B. NESBITT





VIEW 4.

An important feature of the plan is the manner in which the entrance hall and living area have been combined to form a free space running from wall to wall through the center of the house and opening on the rear lawn through large, sliding doors. The effect of this arrangement is excellently shown in the large picture on the facing page, taken from a point on the front terrace alongside the entrance door (station points for the pictures on these pages are shown on the key plan above). In this view, note the interesting use of the mirrored wall and the lily pool extending from the terrace to the inside of the living room under the plate glass window. Lower pictures on the facing page show the service yard, separated from the rear lawn and dining terrace by a Jeffersonian serpentine wall of brick, 4 inches thick, and the dining-living area, as viewed from the dining terrace. The study, shown above at the right, occupies a rear corner overlooking the heavilyplanted area shown in picture 5, and is thus somewhat cut off, for privacy, from the balance of the living rooms. The round pool in the lower picture is one of a number formed from sections of brewery vats sunk in the ground and rimmed with brick curbs.



HOUSE FOR JOHN B. NESBITT RICHARD J. NEUTRA, ARCHITECT



VIEW 1.



View of the master bedroom, above, shows in its most striking form the free fenestration made possible by the unusual structural system used throughout the house. In this system a site-fabricated girder, forming a sort of valance over the windows, spans between widely-spaced columns and supports the roof, including cantilevered sections which project beyond the ends of the building.



PREFABRICATION

To inaugurate this new department, THE FORUM is presenting a series of six articles on the history of prefabrication in America, based on research by the John B. Pierce Foundation. The first article in this series, entitled "A Movement Emerges," appeared in the December issue. Tracing the beginning of prefabrication as a widespread movement to the extensive publicity for factory-produced houses in the early Thirties, this article reviewed the contributions of nonprofit foundations and Government agencies such as the Forest Products Laboratory, the Purdue Research Foundation, the Bemis Foundation, John B. Pierce Foundation and other agencies which have exercised a continuous influence on its subsequent development. The second article, published in January under the heading: "Ideas -The Stimulus to Change," covered various radi-cal proposals for "mast" houses, "eggshell" houses, the "mechanical core," etc., which were the initial impetus behind many prefabrication developments and have in certain instances suggested practical solutions of prefabrication problems. The third article, which appeared last month, "Concrete-Forerunner to the Movement," began a house-by-house and system-bysystem review of significant prefabrication developments dating back to the beginning of the century. In the article below, this review is continued to cover those systems in which steel was the principal material used.

THE PREFABRICATED HOUSE

- 1. A MOVEMENT EMERGES published December 1942
- 2. IDEAS published January 1943
- CONCRETE published February 1943
- 4. STEEL

prominent in early experiments

5. WOOD

material of realization

6. "REENGINEERING"

the measure of progress

4. STEEL - prominent in early experiments

DURING THE YEARS when prefabrication first attained the status of a widespread movement -1933-37—the terms "prefabricated house" and "steel house" were considered almost synonymous. Developments of the preceding decade had associated metals and mass production in the mass mind. "All steel" was a symbol of progress applied equally to railroad coaches and filing cases, car bodies and kitchen cabinets. Machine fabricating techniques, based largely on sheet metals, had brought about a shift from wood to steel in hundreds of articles of common use. With this shift came improved design, greater utility, and at the same time, lowered cost. To the early exponents of prefabrication, a similar shift from wood to metal in housing seemed not only likely and desirable, but inevitable.

Result was, virtually all of the experimental work during the active period of prefabrication's early development was dominated by the use of steel. Looking backward from the vantage point of the present, it is easy to see that in some ways the movement as a whole was retarded by this exaggerated emphasis of a particular material. In certain instances, steel was used for purposes for which it was not particularly suited; for example, as an interior or exterior finish for walls. In still others, the main thought seemed to be to produce an all-steel structure without regard for functional requirements, such as the need for insulation. More important than either of these failings, however, was the fact that inventors and designers tended to think in terms of structural units which could be economically produced only in very large quantities, without recognizing that in order to achieve mass production, it would first be necessary to develop a construction which could profitably be produced on a smaller-scale basis.



The McClintic-Marshall system of steel framing (above) and the Walter Bates system (below), were developed in the late Twenties as an improvement on wood framing. While prefabrication was not the objective of these systems, framing members were necessarily precut and assembled on a semimodular basis,



Whatever faults are revealed by a critical reexamination of this period, by far the most striking impression which emerges is a renewed appreciation of the volume and variety of the experimentation which took place. If the early Thirties failed to produce a marketable prefabricated house, they succeeded in producing a number of highly imaginative technical solutions of the problem of house manufacture. The fact that none of these systems achieved commercial success does not necessarily prove that none of them will ever do so. On the contrary, many were excellent, and failed not for technical reasons, but because of merchandising and financial difficulties. Once these are eliminated, and peacetime house manufacture on a volume basis has become a fact rather than an idea, it is highly probable that a number will be revived with considerable success.

EVOLUTIONARY TRENDS

Any use of steel for houses—whether or not prefabrication is the objective—enters the prefabrication picture because steel, unlike wood, is not adapted to cutting and fitting at the site. Thus virtually every system of steel framing is at least as much a matter of prefabrication as the "precut" wood frame. Nevertheless, most such systems have been introduced, not for this reason but in order to exploit the qualities of steel as a material. They did not attempt to reduce costs by taking advantage of the structural possibilities of metal, but rather claimed a better frame at the same or higher cost: one that would not warp, shrink or burn, and would provide a more stable base for traditional finishes. Chronologically, the development of these systems took place largely in the period before the prefabrication movement crystallized.

As early as 1907, *Iron Age* reported the use of such "metal lumber" in the Naugle House built for the Tuxedo Park Association. In the years between 1925-30, before prefabrication received its real impetus, a number of companies undertook this use of steel as a substitute for lumber, in otherwise traditional construction.

One such system was developed by the Steel Frame House Co., a subsidiary of McClintic-Marshall Corp. This system employed steel studs, spaced as in wood framing, punched at regular intervals and attached to one another with bolts. The resulting frame resembled a child's Meccano set, and was assembled in much the same way. Finish materials were hooked to the frame with clips or wires placed in the perforations in the studs.

Another company in this field was the Walter Bates Steel Corporation, set up in 1928, which employed a somewhat similar system. There were others; but those that continued in business after the prefabrication movement gained momentum nearly all modified their systems to take greater advantage of the qualities of steel. Features were introduced that offered special advantages beyond the mere use of steel as a substitute for lumber.

The Stran Steel Division of the Great Lakes Steel Corp., for instance, began its operations in the building field by offering for sale a line of prefabricated steel members to be bolted together to replace wood in a traditional frame. As its operations developed, it gradually evolved special methods for the use of its product that were based upon the structural nature of the metal. First of these improvements was the development of special studs and beams to which finishes could be nailed in the ordinary fashion. This was achieved by the use of two convoluted channels joined back to back to form the studs, and similar treatment of the flanges of beams. Nails driven into the groove between the two sections were bent by convolutions and held wedged in place. Some houses were

THE PREFABRICATED HOUSE





Gilbert and Varker, builders of Colonial Village, a subdivision for Carnegie-Illinois workers near Pittsburgh, Pa., used steel as an auxiliary for wood framing, as well as for prefabricated closets, stairs,



Inhuston & Johnston

exterior trim and shutters. Exterior steelwork was finished in porcelain enamel, and such items as porch roofs were fabricated and installed as complete units.



Stran Steel framing (above), developed by the Stran Steel Division of the Great Lakes Steel Corp., uses patented framing members formed with a convoluted slot to receive and hold ordinary nails. While Stran



Steel has made composite panels using this type of frame, this work was experimental in character, and the panel method is not now regarded as the best use of the framing members.



spacing of the studs in a welded structure suitable for all types of residence construction. Trusslike framing members permit free passage of pipes and conduit through walls and floors.

GIRTH 4"STUD IO"JOIST

THE PREFABRICATED HOUSE





Architect Robert Tappan, of Forest Hills, L. I., developed the steel framing system shown above in 1927. I-beam studs were placed on 4 ft, centers, thus exploiting the structural possibilities of steel more fully than in those systems which merely imitated wood framing. In a modern house built about the same time (below) Richard J. Neutra used a similar frame together with continuous steel windows set between the framing members and an exterior finish of stucco on metal lath. built prior to 1933, but the system had its send-off at the Chicago Century of Progress Exposition, when a Stran Steel House at the Fair was sponsored by *Good Housekeeping* magazine. The style of the Fair house was neither traditional nor modern but what at that time was called "modernistic."

Still another evolutionary trend of this type, of somewhat more recent origin, was represented by various efforts to use steel in conjunction with the conventional wood frame. This trend is illustrated by a number of scattered projects. Among these the one which attracted the most attention was a 300-unit subdivision called Colonial Village, built for workers of Carnegie-Illinois Corp. at Clairton, Pa. Royce W. Gilbert and William M. Varker, the builders, used steel for such items as sills with spacer tabs as guides for the wooden framing. In two-story houses, steel was also used for stringers at the second-floor level where a wooden stringer might introduce problems of uneven shrinkage. In addition, special items and trim such as shutters, stairs and closets were of metal.

STEEL FRAME

With the introduction of steel into home building, the possibility of using its superior strength to widen the spacing between the members of the frame was obvious. There was structural precedent in the work that had been done with bridges and other structures, among them the American skyscraper. In home building practice, the application of this structural principle was carried out in two ways. First, steel studs and other members were fabricated for site assembly at extended spacing. Second, sectional steel frames were delivered to the site and bolted or welded together to form the frame for a wall, a roof or a floor.

The first type, where the spacing between individual studs assembled on the site was increased over that used in wood, is sometimes referred to as skyscraper framing. In actual practice it tended to represent only a modified form of this construction. The spans between members were usually 3 or 4 ft., instead of the conventional 16 in. spacing used with wood studding, but did not approach the spans used in skyscraper construction. From the technical viewpoint, an early house of this type with historical interest was the Niels Poulson house built in Brooklyn, N. Y., in 1890. In this house, steel framing, based on a modular system with 30 in. spacing, was used. The exterior was stucco on brick set between the members of the frame, and the interior finish was plaster. A particularly interesting feature of the Poulson house was the construction of the floors, which were supported by an arrangement of interlaced steel bands,









The Niels Poulson house, built in Brooklyn, N. Y. in 1890, and demolished in 1930, was probably the first steel-frame house built in the U. S. Walls between steel columns were brick filled, and stuccoed. Floors were flat concrete domes, reenforced with interlaced steel bands.

in the form of a flat dome. The thrust of this dome was absorbed by the supporting beams, which formed an eight-sided ring around its circumference.

In 1927, a house built by Robert Tappan at Forest Hills, N. Y., utilized a form of modified skyscraper design. The frame was of 4 in. I-beams spaced 4 ft. apart. They were assembled on the ground and bolted to a sill and top plate to form the walls which were then raised into position in sections. Sidewall members were two stories high. Endwall sections were put up a story at a time with the joist-ends of the second floor extending between the two portions of the wall. The house had a conventional brick exterior and plaster interior finish applied over mesh hung on the metal frame.

About the same time (1927-1928), Richard J. Neutra, California architect, built the Lovell House, a large steel-framed structure with standardized steel columns spaced about 5 ft. apart. Windows were continuous around the house with Gunite above and below for an exterior finish, and the standard casement used for the windows was the module for the entire house.

The extensive use of modified skyscraper framing, as an approach to mass scale housing, however, came during the period when prefabrication was beginning to crystallize as a movement. In 1932, American Houses, Inc., began its operations with a house framed in steel. (ARCH. FORUM, Apr., '33). Hollow steel uprights 21/4 in. sq. were spaced 4 ft. apart and bolted to a steel sill and bottom plate. In addition to the basic 4 ft. module, there was a half unit, 2 ft. wide, to be used where needed. Vertical sheets of fiber insulating board, surfaced on each side with asbestos cement, formed panels 21/4 in. thick for the walls.

The first house of this type was built under the sponsorship of Donald Markle, President of the Jeddo Highland Coal Co., at Hazleton, Pa. Some twenty others were subsequently built and sold at prices ranging from \$3,500 to \$7,200 without the cost of land or erection. Later, in 1935, a small house built in a modification of this system, with a self-contained utilities unit between the kitchen and bath, was offered by the company and marked the introduction of its Moto-Home principle. This was the first commercial application of the idea of combining the plumbing, heating and other services in a unit independent of the rest of the structure.

Almost simultaneously with the appearance of the Moto-Home unit. General Houses, Inc., under the direction of Howard Fisher, architect, devised a parallel system of steel framing in a house priced at \$3,500 to



The Ferrocon System, a method of steel panel construction which provided a frame and the support for finish materials in a single unit, used cold-rolled corrugated structural members in conjunction with sheet metal and metal lath to form boxlike panels. Below is American Houses' early Moto-Home unit, which used a steel frame and wall panels of insulating board surfaced with cement asbestos.







Pictures above and on facing page show manufacture and assembly of the Harnischfeger Corp.'s steel-frame panel house, developed in 1935. Frames were covered on both sides at the factory. Later, before the use of steel was restricted, Harnischfeger changed to a sectional steel frame capable of receiving any exterior or interior finish.

\$4,000 without erection (ARCH. FORUM, Feb., '36). The chief difference between this house and American Houses' model was in the construction of the walls. Hollow steel T-shaped uprights of 16-gauge steel spaced at 3 ft. intervals were bolted to a bottom plate and a top plate or beam that carried the roof. The wall surface consisted of wood framed panels 3×7 ft. covered on the exterior side with $\frac{1}{4}$ in. asbestos board, and on the interior by $\frac{1}{4}$ in. plywood, with a sheet of aluminum foil insulation in the middle of the air space. These prebuilt wall panels were wedged between the T-shaped uprights and held in place by a steel batten.

Earlier in 1932, the John B. Pierce Foundation, in a house built for test purposes, used an extended steel frame with $121/_2$ ft. spans between steel columns, closely approaching skyscraper construction. Welded steel lattice trusses, encased in an insulating material of magnesite cement and wood shavings and surfaced with magnesite cement, formed the wall and carried the weight of roof and floor beams. In 1935 the Foundation built another house, in which skeleton steel framing was used with precast units of Microporite for walls, floors, roof and partitions. Units were cast in sizes up to $121/_2$ ft. long and had prestressed steel reenforcement. The house was a one-story flat roof unit, but because of the fire-resistant qualities of Microporite (calcium hydrosilicate), this construction was also suited to multi-story buildings.

The second type of steel frame house developed for the market carried the work of prefabrication one step further by pre-assembly of the frame in panel sections. In this second type, the horizontal and vertical members of the frame were factory-fabricated to form rectangular units a story in height and 3 to 4 ft. wide. Placed side by side, these rectangular units formed the frame for a wall, a roof or a floor.

An example of this type of construction in its most elementary form was offered in the prefabricated frame produced by the Berger Mfg. Co., a subsidiary of Republic Steel Corp. (ARCH. FORUM, Dec., '35). The spacing of the uprights in these frames was not extended and was similar to that used for wood studs. By 1935 this company was offering 3 ft. wide, story-high, sectional frames that could be used in individually designed houses. The frames weighed about 42 lbs, and were joined together at their outer edges by splice plate between the adjoining channel sections. Both the exterior and interior surface was punched at regular intervals to permit attachment of finish wall materials with clips or wires.





Prefabricated, sectional steel frame developed by the Berger Mig. Co. in 1935 used storyheight units about 3 ft. wide, connected with continuous splice plates. Demonstration units near Washington, D. C., designed by Architects Kastner and Stonorov, employed circulating hot air in floors for panel heating.



Photos, Sarra, In

The Harnischfeger Corp. of Milwaukee, Wis., developed a somewhat similar panel frame as the basis for a panel wall unit. In this instance, the frames were sheathed at the factory with insulation board on the exterior and with plaster board for an interior finish. The company, manufacturers of heavy machinery, set aside a seven and a half acre factory for the manufacture of these panels in 1935, and has continued active in the prefabrication field to the present time.

In 1936, American Houses also adopted a rectangular metal frame as the basis for a new house which had a conventional wood exterior instead of the insulating board used in its first structure. It developed an interlocking rectangular frame 2 ft. wide and a story high in which two hooked-shaped, horizontal steel pieces were riveted to the interior face of 2 in. convoluted 16-gauge uprights at top and bottom. In assembly the convolutions in the uprights fitted into one another on adjoining frames, and interlocked. Sheathing and a finish of shingles or siding was nailed on at the site. An interior wall surface of 3/8 in. plywood was preassembled on the frame.

One company, the Tennessee Coal, Iron & Railroad Co. (a subsidiary of the U. S. Steel Corp.) developed a steel frame house with a steel exterior wall. After first designing a house with a wood frame and galvanized steel siding on the exterior, in 1936, the company developed a steel frame two years later, using ribbed or corrugated sheet steel for the exterior. The houses were designed primarily for farm use, and the second house was developed for the Farm Security Administration. The frame





The Tennessee Coal, Iron and Railroad Co. introduced the construction shown below in 1938, using a prefabricated steel frame and corrugated steel sheets, applied at the job, as an exterior finish. Walls and roof were vented through the ridge. Picture, left, shows steel frame for an experimental system of construction developed by the Pierce Foundation for use in multi-story apartments.

THE PREFABRICATED HOUSE







Palmer Steel Buildings, Inc., of Los Angeles, developed the construction system shown above in 1934, using as a basis Robertson cellular steel flooring. Pictures at the bottom of the page show assembly of a special shelter for power-line workers built by Palmer.



units were 4 ft. wide and 8 ft. high with two 14-gauge channel uprights in each panel and with seven horizontal headers welded into the channel uprights. For an interior finish, fiber insulating board was clipped to the frames on the site. The price for a five-building unit (dwelling, small barn, chicken house, store house, privy) was \$3,119 delivered to the farmer ready to erect.

One of the most interesting of the steel frame systems was that developed by the Arcy Corp. in 1936. This system employed a machine-welded combination of square 16-gauge sheets bent along the diagonal to form two triangles and arranged to create a "two-dimensional truss." Pipes and wires, as well as special, triangular ducts for air conditioning, could be run through the units in both directions.

PAN, OR FRAMELESS STEEL

Frameless steel, a name that has been applied to the pan type of house construction, is somewhat misleading. Frequently the pans (or formed sheets of steel) were used to create what might be described as a continuous sheet frame that supported a covering of other material both on the exterior or interior, but did not itself form the wall surface.

In such houses, the rectangular framing units of the steel frame house were replaced by sheets of light gauge steel. Usually, the sheets were flanged or corrugated both for convenience in joining and to increase their strength. The bent steel provided a third dimensional quality that in effect provided its own framing. A variety of different corrugations were used, from small V- or U-shaped grooves, to corrugations a foot or more in width stamped in special shapes. Some systems used pans assembled so that one sheet overlapped another with the corrugations forming complete boxes or box-like girders, a method that resulted in what was called cellular construction.

A system whereby these pans could be used for the walls of individually designed houses was evolved by New York Architect Harrie T. Lindeberg





in 1933, and later approved by the Institute of Steel Construction. Lindeberg's method of construction used Robertson steel sections for floors, walls and roof. The sections used were of a variety of forms with different types of corrugations. For a house that Lindeberg built in Virginia, with F. H. Frankland, consulting engineer, he used steel sections that were 18 to 24 in. wide and stamped in a series of reverse channels in the shape of a keystone.

To form the wall, Lindeberg stood those sections on end, side by side, and field-welded them to a base plate that was grouted into a concrete foundation. The flat sheeting on the exterior of the Virginia house was covered with a finish material of special precast slabs. Insulation was placed in the corrugations of the sections, and fiber board was attached to the panels for an interior finish. Floor sections were covered with insulation and composition flooring. A pitched roof was formed from the same sections covered with insulation and sheeting.

In 1934, one year before Lindeberg erected his Virginia house, Palmer Steel Buildings, Inc., headed by Vincent Palmer, architect, had been formed in California to fabricate the Robertson type units especially for use in houses (ARCH. FORUM, Dec., '35). Sections 12 in, wide and story high, corrugated in the shape of a reverse keystone, were fabricated of light copper bearing steel, with a steel plate welded on one surface of the sections. To form the wall of the house, the sections were placed side by side and grouted into a slot in a concrete foundation with the flat steel plate on the exterior side. Adjoining sections were interlocked with tounge and groove joints running their full length, and the corrugations were punched along their length with holes at 4 in. intervals. Steel rods passed through these holes supported open web joists that carried a precast concrete sub-floor, or conventional wood flooring could be used. For an interior finish, plaster was applied over plaster board nailed to the steel sections with case-hardened barbed nails. Pitched roofs were of conventional construction. An exterior finish of any material could be applied or the steel plate on the exterior side of the sections could be painted.

At about the same time Richard J. Neutra used the same Robertson sections for individual houses together with concrete slab floors and roofs carried on open-truss steel joists. For an exterior finish, he painted the steel plate on the outer surface of the corrugated sections.

In the simplest form of pan type house, the sheet steel was bent along the two vertical edges to form flanges that could be used in attaching the pans one to the other. Before it designed its extended steel frame house, General Houses, Inc., of Chicago, in 1932 created a house of this type, with steel used as the surface of both the exterior and interior walls. In

Richard J. Neutra also used Robertson floor sections for wall panels in a number of houses, including the two shown above.

The Wheeling Corrugating Co., a subsidiary of the Wheeling Steel Co., developed the system of pan construction shown below in 1933, using a separate layer of insulated, porcelain-enamel sheets as an exterior finish. Walls were mineral wool filled, inside finish was plaster.



THE PREFABRICATED HOUSE



General Houses, Inc., of Chicago, entered the prefabrication business in 1932 with this system of steel panel construction which used steel as the finish material for both inside and outside walls. Later, General switched to the use of a separate steel frame and nonmetallic panels surfaced with cement asbestos.



Another steel panel system was that introduced by National Houses, which used steel as an exterior material and conventional finishes on the inside. Panels were channelshaped units formed from sheet steel with the flanges joined to form studs.



this construction pans of steel 4 ft. wide and 8 ft. high with flanges on each side were bolted together through a T-shaped wooded block, with a second set of pans attached to the head of the T-block to form the interior wall. Bat type insulation was inserted between the two surfaces, and stiffeners attached to the interior wall held this insulation in place and provided an air space.

Similar flanged pans were used by Steel Buildings, Inc., of Middletown, Ohio, in a system known as Steelox, that featured an interlocking arrangement of the pans with an interior finish of plywood or fiber board. This company, a subsidiary of American Rolling Mills Co., used pans that were 16 in. wide and 8 ft. high. Panels were interlocked with special flanges. A 3 in. flange running the length of the panel was returned twice, away from the pan, on one edge, to form a U. On the other edge of the pan a 3 in. flange was returned three times, with the last return short, forming an incomplete square. In erection, the square was slipped into the U and a hook bolt that fastened the pans to a plate top and bottom was caught over the inner or incomplete side of the square to draw the joints tight.

Another subsidiary of the American Rolling Mills Co., the Insulated Steel Construction Co. of Solon, Ohio, developed a series of houses in two of which metal sheets or pans were welded together on the site. The first of the houses, designed in 1932 under the direction of Mills Clark, engineer, used wall-height pans 16 in. wide, rolled in the shape of an elongated, square-cornered S. The pans were erected by partially overlapping the sections and welding them together at the flanges, forming boxlike channels where two pans overlapped. The pans could be overlapped to varying degrees to alter the length of the wall. In production, a series of pans was partially preassembled in sections, and windows and doors were formed into these preassembled wall sections. On the site, after erection, fiber insulating board was attached with threaded nails to the exterior as sheathing and covered with a siding of enameled steel sheets. On the interior insulating board was attached with threaded nails as a base for a plaster finish.

Floors were of steel pans stamped in the shape of two L's placed back to back with one "L" upside down. The pans were overlapped so that an upside down L overlapped an upright L and welded. Insulating board and finish flooring were then placed over the pans. A flat roof was formed of sections similar to those used for the floors. Continuous steel channels welded to the walls carried the roof, and the floor was carried on a steel sill grouted into the foundation.





In 1934, in an attempt to reduce the cost of a house to around \$2,000, a second house was designed in which shallow pans similar to those used for the floors in the first house were used for the walls (ARCH. FORUM, Dec., '35). There was a slight depression on the edge or base of each L, where the L from the next pan overlapped it, for welding. A smooth wall was provided in this way, and the surface was painted for both exterior and interior walls. Mineral wood insulation was placed in the cells formed by the overlapping panels.

By 1936 the company had developed a third house in which sheets of 18-gauge steel were welded to 3 in. uprights about 10 in. on center forming a stress skin box-girder panel similar to those that were developed in this same period for prefabrication in wood. The sections were built in varying sizes from 16 in. to over 4 ft. in width and were of story height. They were fastened with screws to a metal channel sill grouted into the concrete foundation and were built so the skin or surface sheets on one unit overlapped those on the next. In this way the units could be screwed together with self tapping screws.

Roofs were similar to those in the other two houses and rested on an angle plate screwed to the wall. A concrete slab sub-floor was covered with finish wood flooring over wood sleepers. A house of this type was one of the five demonstration homes erected at Purdue University by the University's Housing Research Foundation in 1936.

MOBILE HOUSES

Still another kind of steel house that was tried out in a number of cases was the so-called mobile type, that is, a house completely assembled in the factory and trucked to the site in one or more cubical sections. This method was used in one of the earliest systems of steel framing, the Mc-Clintic-Marshall system. In the first application of this system, houses were assembled from a number of truckable sections which could be combined in various ways to produce a variety of plans. In 1937 a steel frame house of the mobile type was built by John J. Whelan, Washington architect, and a number of all-steel houses were produced by R. G. Le-Tourneau of Peoria, Ill., and the Hobart Welded Steel House Co., of Troy, Ohio.

Whelan's house, which employed a system of steel framing similar to that developed by the Berger Manufacturing Co., was sheathed with copper crimped to resemble wood siding. Of conventional "Cape Cod" design, it was divided along the line of the ridge into two sections, each 11 x 281/2 ft., for convenience in trucking. Whelan also worked out a number of alternative designs for various combinations of flat-roofed units, and showed how two or three such standardized sections could be combined The construction system above, known as Steelox, was based on interlocking steel pans which formed the walls and frame in a single unit. It was marketed by Steel Buildings, Inc., an American Rolling Mills subsidiary.



The Insulated Steel Construction Co., another Armco subsidiary, introduced the construction shown above and below in 1934. Boxlike units provided unusual flexibility in planning, since they could be telescoped as required to produce any width of panel.



THE PREFABRICATED HOUSE



LeTourneau's welded, all-steel houses, developed in 1937, were built as one-piece units, including even the garage. Some of the houses were moved by water, floating on their own bottoms, from plant to site. Heavy tractor cranes were used to lift the houses onto their foundations.

The Hobart Welded Steel House Co., of Troy, Ohio, built a number of all-steel, onepiece houses similar to the one shown below in 1937-38. The two-story houses were probably the largest mobile units ever produced, taking advantage of the exceptional strength of the construction which simplified handling. to produce a variety of one- and two-story houses (Arch. Forum, July, '37).

The LeTourneau house, which was developed about the same time, was of all-steel, welded construction, and included three bedrooms and a garage in a single unit. The resulting house, which measured 32×44 ft. was moved on special dollies, and lifted in place on the foundation with a heavy crane. The floor of the house consisted of four bands of sheet steel, 8 ft. wide and 44 ft. long carried on 6 in. lightweight beams. Floors were assembled upside-down and then inverted for the construction of the walls. Both inside and outside finish was steel.

Employing substantially the same method of construction the Hobart Co. built a number of all-steel, one-piece houses, many of which were two stories high. The Hobart houses were of conventional Cape Cod and Georgian design, and were offered for sale at \$4,500 for a six-room unit, which was estimated to cost \$6,000 with foundation, garage and lot.

Both Hobart and LeTourneau entered the prefabrication picture somewhat later than most of the other manufacturers of steel houses, and continued to be active up to the time that wartime demands on their plant facilities, together with restrictions on the use of steel, made this type of construction no longer feasible. As was true in general of all of the systems of steel construction, their operations never achieved the volume later reached by the manufacturers of wooden houses, but this does not necessarily indicate that steel will not be used extensively in prefabrication when it is again available for the purpose.

Actually, while much of the experiments with steel construction represent development work that has run far ahead of the merchandising of prefabricated houses, there is reason to believe that it may be of greater value later on, when mass production of houses is achieved on a normal basis. The steel structure has many virtues which would make this both natural and desirable. In the meantime, however, it still remains to review the one classification of prefabrication which has already achieved a mass basis, and which has received an enormous impetus from the war: the wooden house. This will be covered in April, in the chapter, "Wood—Material of Realization."

(To any reader who is interested in studying particular aspects of the subject further THE FORUM will supply without charge a complete bibliography of 85 FORUM articles on prefabrication that have been published since 1932.)





TWO STATIONS FOR THE PENNSYLVANIA R. R.

RAYMOND LOEWY, DESIGNER

LESTER C. TICHY, ARCHITECT

RAILROAD STATION IN EDGEWOOD, MD.



OLD STATION IN EDGEWOOD



Few building types are more in need of a complete postwar revamping than passenger stations. These structures, most of which are reaching the proverbial retirement age of threescore and ten, are community eyesores, and inadequate for their purpose as well. These two small stations, recently built for the Pennsylvania Railroad, show a real change for the better. This change is less a matter of exchanging one style of architecture for another than a different approach to the problems of housing passengers during the waits for trains. These problems, it will be noted, have been met in a very direct and inexpensive manner. The station at Edgewood, for instance, is built of brick and natural redwood, with a flat roof of wood joists. There is a large expanse of window,



RAYMOND LOEWY, DESIGNER

LESTER C. TICHY, ARCHITECT

1. WAITING ROOM 2. TICKET OFFICE 3. BAGGAGE ROOM

SHELTER

giving a better view of approaching trains than is customarily provided. The question of maintenance, probably the most serious problem to be met in the design of passenger stations, has been solved by the use of materials which require no costly servicing. The generally shabby appearance of stations the country over in the later years of the depression was due in large part to the fact that they were painted buildings, and the railroads, during that period, simply did not repaint them. Here, and even more pointedly in the case of the Ridley Park station, there will be a minimum of painting required, and most of the materials will improve in appearance as they age. From the design viewpoint these two buildings seem admirably adapted to their purpose: they meet the simple plan requirements more than adequately, and the low, strongly horizontal shapes are in excellent character with their settings.



RAYMOND LOEWY, DESIGNER; LESTER C. TICHY, ARCHITECT



Damora

Inside as well as out, materials have been selected with a careful eye to maintenance. Floors are terrazzo, and walls are covered with a prefinished sheet asbestos which requires, at the most, an occasional waxing. The usual radiators under the windows, the worst of all possible dustcatchers, have been eliminated in favor of unit heaters connected to a small steam plant. These heaters, similar to those used in garages and factories, are concealed in closets and other spaces. Another innovation is the omission of the usual grille in front of the ticket seller: instead there is an open counter, with a roll-up



Photos C. V. D. Hubbard



metal screen which can be pulled down when the ticket office is closed. Lighting fixtures are simple glass bowls; due to the manner in which the ceiling is carried out flush with the underside of the overhang the same type of fixtures was used for both. The ceiling, incidentally, is also finished with sheet materials instead of plaster. Both the Ridley Park and Edgewood stations were built to replace existing structures; in one case the condemnation of a bridge made it necessary to tear down the old building, and in the other a new station was required to handle a large increase in passenger traffic. 1. WAITING ROOM 2. TICKET OFFICE





RAILROAD STATION IN RIDLEY PARK, PA.



C. V. D. Hubbard

TICKET OFFICE



The section drawing above shows that the "flat" roof is in actuality slightly pitched from front to rear. This slope is maintained inside as well, as can be seen from the intersection of the rolling steel door and the ceiling in the photograph at the left. The cabinets in the ticket office were specially designed. Note the open space between the bottom of the cabinets and the floor to facilitate cleaning.

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls (Edgewood) --frame on brick bearing wall to plate, redwood siding; (Ridley Park)--stone bearing wall furred on interior; inside-studs, Johns-Manville Flexboard finish. Floors--terrazzo.

ROOF: 5-Ply, Barrett Co.

SHEET METAL WORK: Flashing and gutters—lead-coated copper.

INSULATION: Roofs—4 in. rockwool. WINDOWS: Sash (Edgewood)—cypress pivoted; (Ridley Park)—steel, Hope's Windows, Inc. Glass—Pittsburgh Plate

Glass Co. WALL COVERINGS: Flexboard, Johns-Manville. Toilets—tile, Franklin Tile Co. DOORS: Baggage room—J. G. Wilson Corp.

HARDWARE: Schlage Lock Co. and Elmer T. Hebert.

PAINTS: Breinig Bros. and E. I. Du Pont de Nemours, Inc.

ELECTRICAL INSTALLATION: Wiring system—BX. Switches—General Electric Co. Fixtures—Kurt Versen Co.

PLUMBING: Fixtures—American Radiator-Standard Sanitary Corp. Water pipes —red brass.

HEATING: Steam system. Boiler — American Radiator Corp. Stoker—Iron Fireman Mfg. Co. Unit heaters—American Blower Corp. Grilles—Diamond Grille Mfg. Co. Regulators—Minneapolis-Honeywell Regulator Co.

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Showing a portion of Armories equipped with 54 Ro-Way Doors.

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Bomber Plants Submarine Bases Marine Bases Army Proving Grounds



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Mobility — five complete huts to a truck and ten to a freight car — is just one of the reasons why these Texas Pre-Fab products are being used by the armed forces. Mighty important, too, is the Air-Space insulation that keeps the men of our armed forces warm in cold climates, cooler in tropical temperatures . . . the solid, weather resistant plywood construction . . . designed to minimize the insect nuisance . . . and an economy which is reflected in a saving by government of \$30 to \$50 per man housed.

To the men who live in them and to a government that must meet the expense, Victory Huts are an answer to one of the most important aspects of war — housing our fighting forces well, efficiently and economically.



B 0 0 K S

(Continued from page 22)

NEW YORK PLANS FOR THE FUTURE, by Cleveland Rodgers. Harper & Brothers, New York. 293 pp., illustrated. 6 x 8¹/₂. \$3.

Mr. Rodgers' title for his stimulating book is a little misleading: his story is not New York's plans for the future so much as a comprehensive account of its history, its problems—past and present as well as future—with a great deal of discussion of not only New York, but municipalities in general.

There are many things about New York which are unique, even among the very large cities, and many others which reflect trends in towns of all sizes. The outstanding fact about New York, perhaps, is its remarkably favored location, which assures a tremendous volume of ocean- and rail-borne freight and the trade which goes with them. In connection with this Mr. Rodgers makes a point which is not often considered: "It was not a mere coincidence that the development of New York and the United States paralleled the expansion of the British Empire. New York was the London of the West To all intents and purposes America was a partner in a vast enterprise based on British finance and the British Navy. This arrangement, unacknowledged by treaties or otherwise but highly profitable to both nations . . . was not seriously disturbed until 1914. Because of the close link between New York and the international system controlled by Britain, New York suffered less than other communities during recurring American depressions before 1929. One reason for this was that her principal functions, centering in the port and finance, continued while local and regional activities slackened during hard times . . . There was no necromancy in the expansion and multiplication of New York's activities . . . New methods of transport and communication, of producing and distributing goods, had come into being, and, so far as the New World was concerned, these activities were concentrated more and more in New York."

The discussion of the city's history is equally stimulating. Here Mr. Rodgers tells the fascinating and little known story of how the community lost control of its land. This regrettable (from the planner's viewpoint) series of events went on for decades, and the process had a great deal to do with the city as it exists today. In 1686 New York City owned practically all of what is now Manhattan. Rich in land, the city was very poor in actual cash, and from time to time, parcels which had been received under the Donegan Charter of 1686 were disposed of to private buyers.

(Continued on page 92)

How steel-framed buildings stand up under bombings

THE bomb exploded right at the corner of this building. Two of the main steel columns were sheared off—but the structure did not collapse. Most of the damage was localized in the first floor. This shows how fully steel-framed buildings resist the wholly unpredictable stresses resulting from bomb blasts —even under direct hits.

The photographs shown here are only two of 47 similar ones received from England which show steelframed buildings hit by bombs, but not demolished. Note also how the steel window sash has withstood the blast of the bomb, most of it remaining intact.

Here is a quotation from the report of the British Steelwork Assn., which collaborated with the British Government authorities in studying this modern structural problem:

"The fully steel-framed building has suf fered only to a very minor extent and has shown remarkable resilience, which has tended to localize the damage. This local damage, in many cases, has been subject to rapid repair."

These results indicate that the American type of skyscraper is a very safe structure. London authorities wish they had more of them.

Attention is called to the value of soundly jointed structures which are able to resist both the inward pressure of the explosion and the outward pull of the suction. This is particularly recommended in the case of main beams in single-story factory construction where prevention of "spreading collapse" is desired.

Lessons learned from this war point to a greater use of steel for all types of structures in the future.



1. Steel-framed structures have the ability to withstand severe punishment from bombing without disintegrating as is the case with plain masoury structures.

2. Close-up view shows how bomb struck the corner of the joundation of this steel-framed apartment building. Two main columns were blasted away but the damage was localized in the first floor.



CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago COLUMBIA STEEL COMPANY, San Francisco TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham United States Steel Supply Company, Chicago, Warehouse Distributors United States Steel Export Company, New York

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MIAMI MIRRORS in six sizes.



(Continued from page 90)

In 1701 more land was sold to meet municipal expenses. More selling went on at intervals, as the city needed cash, and in 1789 some 85 acres of midtown Manhattan were sold for farms, at about \$70 per acre. Shortly afterwards a new policy was instituted: the common lands remaining in the city's hands were laid out in regular lot patterns, and it was decided to sell alternate lots rather than large parcels. In this way, it was felt, the city could also profit from the increased values resulting from the growth of population. The first sales of this kind were made in 1796, but the city lost heavily, because the subdivisions created were premature, and a great deal more was lost in opening new streets than was taken in from sales. By 1835 the city was again in financial difficulties, with a debt of \$13,000,000, and an ordinance was passed in 1844 which permitted the sale of most of the remaining lands in the city's possession; twenty years later they were gone. The sales apparently failed to solve any of the financial difficulties, for the debt had risen to \$36,000,000 by 1869.

At this point the story shifts to the period of rapid growth, with a description of the various factors, such as radically improved transport, which contributed to it. By 1910 the island of Manhattan had reached its peak population of 2,330,000. Greater New York, including Brooklyn and other boroughs had been in existence over ten years, Manhattan had one of the world's worst collections of disease- and crimebreeding slums, and landowners were looking forward to a city with 10,000,000 or 15,000,000-or even 25,000,000 inhabitants. "It is not surprising," says the author, "that unparalleled growth, continuing under such conditions for decades, produced immense disorder in city building. Greater New York, like the lesser city which outgrew the bounds of Manhattan, failed to direct or control the forces of 'progress' which had earlier proved so destructive. The Greater City did not own the new land incorporated within the expanded boundaries, and could not sell or give it away, as had been done with the common lands of Manhattan Island, but it did provide facilities which made the new areas accessible and gave the new land its enhanced value. Through increased assessments and taxes the city expected to pay its way, as previously it had hoped to keep going by selling and leasing land, but there was little control or direction as to how the land was to be used, and little thought was given to the effects on the city as a whole of unregulated de-

(Continued on page 94)

RILCO Laminated Wood BOWSTRING TRUSSES speed construction of essential building!







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Light Gauge Linoflor has a wearing surface of linoleum composition. In line with the modest cost of the product, this wearing surface is, of course, thinner than that of other Armstrong Floorings. For this reason, Light Gauge Linoflor is proving most satisfactory when used in wartime housing, temporary quarters, rented properties, and in many other similar types of low-cost construction.

Armstrong's Light Gauge Linoflor is manufactured on a sturdy felt back. It is available in Marbelle and Straight Line Inlaid patterns. Installation is quick and inexpensivefor this product can be satisfactorily laid over wood or above-grade concrete subfloors without the use of lining felt.

For more information on Armstrong's Light Gauge Linoflor, see the 1943 Sweet's, File 11-46, or write directly to us for samples and filesized specifications. Address Armstrong Cork Company, Floor Division, 2303 State St., Lancaster, Pa.



The Army-Navy "E" has been awarded to the men and women of Armstrong's Lancaster plants for excellence in the production of munitions as well as many other vital war materials.



R S \cap \bigcirc K

(Continued from page 92)

velopment. In so far as the city had a policy, it seemed directed toward hastening the inevitable collapse."

The difficulties which have beset New York in recent times are different only in degree from those which have harrassed other municipalities. The power of taxing real estate can go only so far; taxes on productive enterprises, such as industries, are ineffective, as the industries can always move away. Cities must perform certain functions, under state laws, but their taxing powers are not increased in a manner commensurate with their added responsibilities. The Federal subsidies, which, under the New Deal, were handed out in the form of housing, public works, etc., are not to be considered entirely as gifts. but may, with some justice, be interpreted as payments of tax money to which cities are entitled, but have no way of collecting. This point is stated very clearly: "It is not merely that the city contributes more to the state and the nation than it receives in return; both state and federal governments are so administered as to prevent cities and metropolitan districts from helping themselves. Between them they monopolize practically all important sources of taxation other than that on real estate." One solution approved by the author is the putting of federal aid on a permanent basis - "without hindrance from the states." Also, "if a city's credit is good enough to enable it to sell bonds carrying high rates of interest, it should be able to get credit from the federal government at low rates of interest-or no interest at all-for certain needed capital projects. This would be better and cheaper than 'grants-in-aid' and outright gifts." A further proposal is that cities should be encouraged, "with all due consideration to the sovereign states", to deal with many of their problems on a regional basis.

The second part of the book-roughly half of it-is concerned with problems now in existence or due to come up after the war, and with the methods developed so far to cope with them. Here is the account of the creation of the New York City Planning Commission (1936), whose primary function is "to guide and to influence the city in its development and future growth." The powers and responsibilities of the Commission are outlined. It is now custodian of the City Map; by conforming with certain legal requirements, the Commission may amend the Zoning Resolution; it is required by the City Charter to prepared proposed capital budgets and capital programs for successive five-year periods. It is encouraging to

(Continued on page 96)



Amazing new "Stonewall" board replaces gone-to-war building materials

• Uncle Sam was in a spot. Plywood, fiber-board, sheet metal had gone to war. A new building material was needed. Not only for government but for other essential building.

So Ruberoid engineers went to work and came up with an amazing new material that could immediately swing into mass production-and at low cost . . . STONEWALL Asbestos-Cement Board.

Stonewall is today's BIG NEWS in building materials:

- 1. It's Available-You can really get it.
- 2. Ruberoid Quality-In many respects surpasses materials it replaces.
- 3. All-purpose Material-Uses almost unlimited. Can be sawed or scored, nailed and drilled.
- 4. Low Price-Does not upset estimates.

Stonewall, on pure performance, has already earned widespread acceptance as the preferred board for a vast number of uses ... on farms, in factories, for war housing... inside and outside walls, ceilings, partitions ... from chicken coops to government office buildings.

Investigate Stonewall. It's tomorrow's building material, available to you today!

The RUBEROID Co. **Executive** Offices 500 Fifth Avenue, New York, N. Y. Address: Department AF 3



Strong, Durable Low Cost

Fireproof Rotproof Vermin-proof Termite-proof Ratproof Rustproof

Dapple Grey Needs No Painting

Can Be Nailed Sawed, Drilled

Easy To Clean Can Be Hosed

Smooth, Flexible

And It's

Available

STONEWALL A Product of The RUBEROID Co.



Here's Another Task this WOOD Does Well

SEWAGE PLANTS are notoriously tough on the materials that go into their construction. Corrosive fumes and high humidities soon prove the master of most metals and ordinary wood. But Wolmanized Lumber* has proved equal to the demands placed on it here.

WOLMANIZED LUMBER, serving as covers and walkways over outdoor tanks, and as baffles, gates, roof structures and planking, has given an excellent account of itself. Service records covering millions of feet of Wolmanized Lumber, at work in sewage plants and in equally tough spots elsewhere in industry, confirm this.

WOLMANIZED LUMBER is ordinary wood to which an "alloy" has been added, making it highly resistant to decay and termite attack. Vacuum-pressure impregnation with Wolman Salts* preservative does the trick. Strict laboratory control of processes in the various Wolmanizing plants throughout the country assures uniformity of product.

THE USE OF THIS long-lived lumber introduces no unusual problems. Construction goes up easily and fast. All of the advantages of working with wood are retained—low cost, light weight, strength, resilience. Wolmanized Lumber is clean, odorless, and it can be painted. Upkeep costs are low, making money ordinarily needed for maintenance available for other purposes. American Lumber & Treating Company, 1647 McCormick Building, Chicago, Illinois.

*Registered Trade Mark



 \cap R \bigcirc

(Continued from page 94)

note that the author, a member of the Planning Commission, brings up points much more intelligibly related to the public welfare: "In a broad sense, city planning is only a phase of the larger task of improving the common lot of humanity. Many phases of this problem are beyond the scope or power of cities or their official agencies. But city planning starts with a direct concern in the welfare of individuals and families, of workers, mothers, children, of the home, the block and the neighborhood, where citizenship begins."

It is unfortunate that a review, however lengthy, cannot do more than barely suggest the extraordinary richness of the content of this book. Facts are piled upon facts, statistics of all kinds are strewn through its pages, and yet the author is somehow able to relate these facts and figures to people, and to keep his story thoroughly readable. In one of the later chapters, for example, there is a discussion of real estate values on Manhattan and some of the reasons for their decline. A good part of the chapter deals with babies. "Mothers," says Mr. Rodgers, "should be able to explain why blighted areas are being deserted and real estate depressed as people move from one section of the city to another. There is nothing mysterious about it. It is because mothers place the welfare of babies and children above other considerations.

This insistence upon looking at city problems in terms of people, upon presenting abstractions in terms of what people earn and how they want to live, gives the book its remarkable quality of reality and interest. And yet the job has been done without serious over-simplification, and more important, without presenting some pet solution to a small problem as a complete panacea. Obviously, the author in the course of his activities has acquired opinions, and some of these opinions may be controversial, but he has presented his material with an objectivity which gives real substance to his arguments. While he frequently cites instances of "special interests" acting in opposition to the public interest, there is no wholesale indictment of any group, nor, on the basis of the evidence he presents, is there reason for blanket condemnation. New York Plans for the Future is probably the first book which presents the problems of American cities in all their complexity, and still does so in a manner intelligible to the layman. The fact of its emphasis on one city does not in any way detract from the very valuable service the author has performed.

(Continued on page 98)

How you made thousands of homes more livable, more economical



RESULT: Owners were saved the inconvenience and expense of pipe repairs and replacements caused by rust. And at the same time they have piping that will deliver a full, rust-free flow of water.





EVERDUR* METAL HOT WATER STORAGE TANKS

*Reg. U. S. Pat. Off.

RESULT: Owners will never experience the unpleasantness of $\frac{1}{2}$ hotwater discolored with tankgenerated rust. And they have strong, welded, non-rust tanks to give unexcelled service year after year.





ANACONDA COPPER FLASHINGS AND VALLEYS

RESULT: There can be none of the water damage to a home's interior that rusted metal work so often causes. And, with copper gutters and leaders, the owners have lasting, economical rain disposal systems.



PRODUCT DEVELOPMENTS which promote efficiency and reduce upkeep will always be the aim of the Anaconda Organization.

Although we are now engaged entirely in war production, we are looking also toward the time when Anaconda Copper and Brass... in old and new forms of usefulness... will be ready for a booming building industry.

THE AMERICAN BRASS COMPANY General Offices: Waterbury, Conn. Subsidiary of Anaconda Copper Mining Company In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

ANACONDA Anaconda Copper & Brass



wartime duplication

Doors that SAVE STEEL for WAR NEEDS Write Bulletin

today for 37 alant the second KINNEAR Wood Rolling DOOR VING WAYS DOORWAYS



(Continued from page 96)

TASK. Issue No. 3, 834 x 11, 53 pages, illustrated. 50 cents.

Published originally by a student group at Harvard School of Architecture, Task has moved to New York with some of its former editors, at least for the duration of the war. Beset with all the difficulties faced by amateurs, and lacking the support of advertising, the magazine has somehow managed to arrive at its third issue and is preparing a fourth. Having begun as a sprightly student publication, not unlike Smudges, put out in Australia, Task has turned from esthetics to a growing insistence on planning and its backgrounds. There are many who will not enjoy or approve of the opinions expressed, but they are at least indicative of a position, and the articles are both well



UZBEK PAVILION, MOSCOW

written and provocative. The current issue contains an article "When Britain Plans . . .", by the British landscape architect, Christopher Tunnard, an article on planning problems in the U.S. by Henry Reed, an editorial on housing and production, and two articles on architecture and city planning in the Soviet Union. The last two are by far the most important, for they are first comprehensive studies to appear in the American technical press. The authors, Hannes Meyer and Hans Blumenfeld, have written with authority, for both occupied responsible positions in the U.S.S.R. for many years. U. S. planners will find in these articles a great deal of valuable, specific information on procedures and techniques.

PLANE TRIGONOMETRY MADE PLAIN. by Albert B. Carson. The American Technical Society, Chicago. 389 pp., illustrated. 51/2 x 8. \$2.75.

A new textbook, differing from others on the same subject in a number of important particulars. The author emphasizes practical applications throughout and includes an unusually large number of illustrative examples. Because of the clear treatment and wealth of detail the book is suitable for home study.



FILLS AN URGENT WARTIME NEED Destined to continue

as a permanent system

TIMBEAM offers a solution to the serious problem occasioned by the placing of many of the conventional structural materials on the critical list. It is an I-shaped wood fabrication, constructed of standard plywood and standard dimension lumber, the materials being readily available.

TIMBEAM reduces the load of the beams and columns up to 50%, with the equivalent strength obtained from steel or solid wood members. This makes for economy in foundation design and fast and easy erection.

TIMBEAM is fire safe . . . affords minimum shrinkage and offers lasting qualities. It is a practical structural system, WPB approved, and is recognized as an accomplished advancement in engineering. WRITE FOR CATALOG.

TIMBEAM, INC. 4086 Michigan Ave., DETROIT, MICH.

AVAILABILITY STRENGTH ECONOMY

WOOD PLATE GIRDERS BEAMS . . . PURLINS . . . JOISTS AND COLUMNS





MANPOWER XXXXXX

Ric-wil Insulated Pipe Units are factory prefabricated (except at the joints). The installation is speedily accomplished, skilled mechanics and man hours required are reduced to an absolute minimum. The result is a permanent, low maintenance system the best you can get. TRANSPORTATION FACILITIES

product and are definitely aiding America's

war effort. They are relieving Three war-

time shortages-manpower-transportation

-critical materials and currently speeding to

completion many urgently needed products.



Ric-wiL Insulated Pipe Units are designed to occupy absolute minimum space. They are shipped in gondola cars of which there is no shortage. Their uniform shape and lighter weight permit compact loading and require only smallest amount of critical transportation equipment.

Sound engineering holds critical materials to an absolute minimum—only 15% to 20% of total weight—used only where substitute materials cannot give the necessary mechanical strength required for a distribution system connecting vital operating units. Efficiency is not sacrificed,

When planning distribution systems for steam, hot water, oil, hot or refrigerated process liquids, take advantage of the speed and economies of Ric-wiL construction.

When makeshifts won't da **Ric-wil** If you desire a copy of the Ric-wil Engineering Data Book, simply write on your letterhead.



MONTH IN BUILDING

(Continued from page 36)

everyone has a vital stake—layman and expert, soldier and civilian, young and old. It is an issue which goes to the very roots of our national life.

"I desire to emphasize the fact that postwar planning must be on a national scale and must provide for a scientific tax procedure, effective land utilization, cessation of exploitation, and limitation of speculation, if it is to serve the ends we have in view ...

"If there is one immediate task that justifies attention more than the other, I would say that task is the building of more and better homes on a scale infinitely vaster than ever in the past.

"My own feeling is that the magnitude of the task which awaits us is such that it will offer ample scope for private enterprise to make the maximum contribution that it is capable of making. More and more, however, we are being compelled to accept the need for a more direct and positive role on the part of the Government in matters which so vitally concern the welfare of the community.

"We simply cannot afford to pay the tremendous price we have paid in the past by leaving such matters in the hands of those who acknowledge no social responsibility. We cannot afford to leave the way clear in the future for the predatory activities of the speculator, with the repetition of the muddle and the waste that must always result from unplanned development . . .

"To mention one further issue that is probably as fundamental as any, control over the use of land must always be the key to effective planning. Without such control, we can only proceed haphazardly.

"With all the definiteness that might be required, I affirm that benefits received should be based on services rendered, and the payment should be made to that person or body which renders the service.

"Values should belong to those who create them. Expenditure of taxes collected from the community should be reflected in services for or benefits to the whole of the community.

"This objective, I suggest, can best be achieved through a system of rating on the unimproved value of land. In the light of our experience, I am convinced that the taxation of land values in accordance with this principle secures the best results.

COFFEE RESOLUTION

John M. Coffee (D., Wash., see cut, p. 102) is the House of Representative's angry man. At various times, for righteous reasons, he has been angry at Vichy, \$1-a-year men, oil companies, Franco, the Tacoma bridge collapse, the narcotic evil. And, like a connecting thread through much of this ire has run his feelings on (Continued on page 102)

This 1st class fighting man wears the Army-Navy

He's out there in the thick of things. Flying high in bombers. Helping to house troops in the snows of Alaska and the tropic heat of the South Seas. Racing over the water in swift patrol craft.

He's the Masonite^{*} Man . . . symbol of Masonite Presdwoods^{*} . . . the modern and versatile ligno-cellulose hardboards that have more than 500 different uses in America's vast War Program.

Recently, at the huge Masonite plant in Laurel, Mississippi, Masonite workers were awarded the Army-Navy "E" for outstanding production.

The major proportion of all Masonite production today goes to war uses. And so it will remain until the war is won. We are sure that you now will have a full understanding of just why Masonite products cannot be made readily available to you at this time. The Army-Navy "E" is an honor, but even more it is a responsibility which Masonite accepts in the full spirit of loyalty to victory.... Masonite Corporation, 111 W. Washington St., Chicago.



*TRADE-MARK REG. U. S. PAT. OFF. "MASONITE" IDENTIFIES ALL PRODUCTS MARKETED BY MASONITE CORPORATION. COPYRIGHT 1943, MASONITE CORP.





The famous "Quonset" and "Pacific" huts owe many of their "durability" qualities to Masonite Presdwoods.



This sturdy Signal Corps Communications Trailer is built with Tempered Presdwood exterior.



Masonite Products are used extensively in the construction of speedy U. S. Army Patrol Boats.



Numerous parts of the fast Grumman F-4-F Fighter Planes are formed on Masonite Die Stock Dies.



Many thousands of Army tanks are lined with two types of Masonite Products.



Many of the Army and Navy barracks here and abroad use Masonite Products for walls and ceilings.



Many parachute inspection tables are surfaced with splinter-free Masonite Die Stock.



A non-conductor of electricity, Presdwoods have been found ideal for Medical Corps X-ray tables.

Nothing in this advertisement is meant to imply that Masomite Presducods are endorsed over other products by the Army, Navy or WPB.



based on total pressure up to 5,000,000 lbs. 300K.V.A., 540,000 B.T.U.'s perhour

Here is a brand new wood alloy that can be made to your order

• The most powerful press in the plywood industry, plus the largest high frequency electrostatic generating unit ever applied to wood for this purpose, combine to make Pluswood—a resin impregnated high density plywood of new wonders. A non-conductor, it has amazing properties of density and hardness. In addition, it has excellent qualities of resistance to abrasion, moisture, swelling, shrinking and corrosion. To your order, Pluswood can be made thick or thin, pliable or brittle to predetermined strength-and you can have it all of the way from little pieces to the full capacity of the press platen, 7' x 18' with 2' opening. • A dependable, responsible organization stands behind Pluswood from forest through saw mills, veneer mills and factory-established by the Lullabye Furniture Corporation, since 1897 America's foremost manufacturer of juvenile furniture. Write now for data that may help your thinking on the product improvement you want to have ready when the war is won. There is no obligation.



WOOD Select northern birch or maple-cut from vast tracts of timber reserves in northern Wisconsin and Canada.

- **RESIN** Impregnated in freshly cut + complete diffusion of the resin.
- HEAT 300 K.V.A. high frequency electrostatic generating unitlargest in the country for this purpose - delivering 540,000 B.T.U.'s per hour.
- PRESSURE Largest and most powerful press in the plywood industry-with total pressing capacity up to 5,000,000 pounds.



MONTH IN BUILDING

(Continued from page 100)

tax integration. Last month, for the third time, he submitted to the House his Joint Resolution, H. J. Res. 56.

Intended to create a Commission on Tax Integration, made necessary by new tax levies, new Federal tax policies which threaten "the very existence of local Governmental units," the resolution instructs the Commission "to make a study of the tax structures and laws of the various State and local governments . . . to assemble available statistics and facts concerning their interrelationship . . . to suggest ways and means to integrate the various tax structures to the end that inequitable burdens be avoided and the financial stability of the various governmental units assured."



JOHN M. COFFEE: . . . a very angry man.

Fourteen members (representatives of the Treasury, State and local Governments, labor, urban real estate, commerce and education, the House and Senate) would comprise the Commission, which would serve without pay, would receive \$150,000 for its use.

Firm support to the resolution "in principle" was offered by New York's Building Congress, which pointed out that "the need for a comprehensive and objective study of the unsystematic and confused pattern of taxation in the United States was widely recognized even before the present war greatly aggravated tax burdens and tax problems."

Thoroughly intelligent, hardboiled, determined John Coffee is one of the few legislators who sees the postwar world and the problems of urban land taxes (see p. 36) in terms of specific legislation now.

4 E 15

First architectural firm in the United States to receive the Army-Navy "E" is Holabird and Root. The award is especially significant since architectural firms

(Continued on page 104)



DECORATED FOR EFFICIENCY. . IN ACTION!

You have seen many Ilg advertisements during the past 37 years . . . most of them dealing with the high quality of Ilg products. In *this* ad, we'd like to tell you about Ilg-*Men* and Ilg-*Women* . . . the workers in our plant who with patriotic zeal . . . with a minimum of plant expansion . . . have *doubled*, then *tripled* their production of vital heating and ventilating apparatus for our armed forces and essential war plants. Fighting their *second* World War on the factory front, these serious-purposed Americans proudly wear their cherished "E" emblems . . . tributes gratefully paid for their efforts by the Army and the Navy!

Gree Brochure!

Colorfully pictures Ilg contributions to World War II. Free . . . send coupon or phone nearby Ilg Branch Office . . . today!





2899 NORTH CRAWFORD AVE., CHICAGO, ILLINOIS Send free copy new IIg War Work Brochure

Individual

Address_____

State



White lead, notes the *Britannica*, has greater covering properties, is more durable than any other paint base. Pre-Christian builders and painters esteemed it. Those comparative moderns, Michelangelo and Titian, used it with enduring effect.

Coming closer home, since 1843 generations of American architects have proved and *approved* Eagle White Lead for its maintained purity (100% pure white lead)... its superbly beautiful finish... its tough, elastic, wear-andweather defying properties.

We've learned a lot of things, making Eagle White Lead for a century. And your clients benefit from this experience every time you recommend this fool-proof paint. It wears stubbornly and slowly. Its flexible film does not crack or scale ... leaves a perfect surface when repainting time finally comes.

Now more than ever before, buildings should be preserved against time and the elements. Ample supplies of *pure* Eagle White Lead are available. And Eagle White Lead costs no more than other paints. We invite you to recommend it.

THE EAGLE-PICHER LEAD COMPANY, CINCINNATI, OHIO Member of the Lead Industries Association



MONTH IN BUILDING

(Continued from page 102)

are not eligible for an "E" for design work alone. John A. Holabird and John W. Root, Chicago architects in partnership for sixteen years, were responsible for site planning, surveying, engineering, supervision and assistance in planning the construction of a midwestern plant, in collaboration with the Hunkin-Conkey Construction Company. They have just put finishing touches on Washington's new super Statler hotel.

Declared dapper architect Root: "We feel that as architects we have thus met the competition of the contractor and of the construction engineer."

"HONEST" BURTON

Into New York's swank Racquet and Tennis Club one noon last month trooped a bewildered company of newspaper real estate editors. Their host was a fabulous gaffer, John Howes Burton (*see cut*) who, decades back, had single-handedly saved Fifth Avenue from the threatened encroachment of the garment trade. To veteran newsmen "Mike" Casey and J. P. Lohman, "Honest" Burton was an old story and a good one.



JOHN BURTON: "I believe in real estate . . . "

They remembered his effective promotion of the Midtown Tunnel. Now at 74 Burton popped up with a new idea-a gigantic new terminal to be postwar-built in the heart of New York on the site of the old 71st Regiment Armory. Reason: to make Long Island more accessible to high income East Siders. Explained planner Burton: "The terminal will be a perfectly plain building, no towers, perfectly plain." Architects-to-be, Starrett and Van Vleck ("my brother-in-law's firm"). "Gentlemen," declared prescient Mr. Burton, "I believe in real estate more than anything else in the world."

Several hours later, as the newsmen, propped up by a succession of toasts drunk in champagne, left the Racquet Club, little Mr. Burton entrained for Florida, content for the moment with having dropped a new block buster.

(Continued on page 106)


The next three miles are on Mr. and Mrs. Ivar L. Stone

THE STONES live in the pleasant town of West Roxbury, a suburb of Boston.

And offhand, their connection with the destroyer pictured above would seem pretty remote.

Yet, the next three miles which this destroyer will travel are on Mr. and Mrs. Ivar L. Stone. Why?

Well, the Stones heat their house with fuel oil. Two years ago, they had their house insulated with Fiberglas.* As a result of using this superior insulation, they burned 500 gallons *less* oil last year than the year before. The amount they saved will run a destroyer about three miles at 33 knots an hour.

There are about 265,000 families like the Stones in this country with Fiberglasinsulated houses. This year, these families will use much less oil than they

would if their houses were uninsulated—about 132¹/₂ million gallons less on the basis of the Stones' experience. Or enough torun 100 destroyers 7950 miles.

The amount of fuel saved by

Fiberglas house insulation—whether in the attic alone or in attic and side walls —has always been considerable. But in time of war and in terms of fuel for destroyers it becomes highly dramatic.

Less dramatic but very satisfying are the benefits in comfort and health of a Fiberglas-insulated house in wartime. For cold inside-wall surfaces take heat away from the human body. Even when the thermometer is over 70° you feel chilly if the walls are cold.

And with fuel rationed as it is, these warmer walls make a house much more comfortable and healthful at the lower temperatures we must now live in.

Besides, Fiberglas house insulation acts as a fire barrier. For this and all the other reasons, you can see why so many houses were Fiberglas-insulated before

the war... why so many more will be similarly insulated after the war.

We are making every effort to supply Fiberglas House Insulation (1) to aid even more in the fuel-saving program on the home front. However, the needs of the Army, Navy, and Merchant Marine, for insulating barracks, ships, and cold-storage units come first.

We are determined to supply Fiberglas in increasing quantities for wartime uses where it is the only material suitable for the job to be done. Owens-Corning Fiberglas Corporation, Toledo, Ohio. In Canada, Fiberglas Canada, Ltd., Oshawa, Ontario.

(1) Fiberglas building insulation is distributed exclusively as "Red Top" insulating wool by U. S. Gypsum Company and their dealers everywhere in the U. S. A.



SERVING BY CONSERVING No. 2

BETTER WHITE = BETTER LIGHT = BETTER SIGHT = BETTER FIGHT



'HE smooth white brilliance of Arco Rays-the Mill White with Fog Control-conserves man-hours by improving the working light. Its protective coat preserves and conserves the factory wall surfaces. And the "Fog Control" feature minimizes shutdown time for painting, and cleanup time when painting is through. ARCO RAYS is but one of Arco's long list of maintenance specialties -floor treatments, metal protectives, wall paints, concrete and masonry coatings-products that have played an important conservation role in three generations of American industry. Write for full details.

THE ARCO COMPANY CLEVELAND, OHIO · LOS ANGELES, CALIF.



MONTH IN BUILDING

(Continued from page 104)

MATERIALS: 1942-1943

Early in the 1942 Building game, material shortages cropped up, became, as the years progressed, a major snag in the rapid building of war houses. Aided and abetted by labor difficulties, as well as a slackening in the available supply of raw materials, these shortages were the crux of many of Building's major migraines which the original priorities system did nothing to alleviate.

The prospect for 1943, to a greater extend, pleaseth. With the substitution of WPB's Controlled Materials Plan for this

What was used in 1942

- STEEL: Record-breaking production total of 86,200,000 net tons of ingots. Alloy steel: 12 million tons. (Scrap drive brought in more than 3½ million tons.) Pig iron: 59 million tons. Iron Ore: 106 million tons. USED FOR BUILDING: 12,200,000 tons.
- LUMBER: Record-breaking consumption of 38.5 billion bd. ft. (12% greater than 1941). USED FOR BUILDING: 21 billion

bd. ft.

- **COPPER:** No spectacular gains in production due to capacity operations of the Industry in 1940-1. Probable production; more than 1,200,000 tons. USED FOR BUILDING: 157,502 short tons.
- ZINC: "Not far off past performances." (Average for 4 years: 589,988 short tons.) USED FOR BUILDING: 73,092 short tons.

Asphalt: 3,986,000 short tons Brick and Tile: 5,125 million bricks Cement: 178,116,000 barrels Glass, Window: 15,535,000 boxes Gypsum Board: 2,348 million hd. ft. Gypsum, crude: 5,360,000 tons Insulation Board: 1,605 million sq. ft. Lead: 187,821 short tons ('WPB estimates that 2,500 million board for year, a new supplying mechanism has been provided, one which promises to control the flow of vital materials so that they will arrive at the right time, in the right amounts. With the admission of NHA into the select society of "Claimant Agencies" for these materials, the chances of the Building industry getting what it needs, within the limits of approved programs and available funds (see p. 34) seem to be improving.

Following is a summary of the 1942 materials year, and some indication of what to expect in 1943:

What will be needed in 1943

Estimated annual rate of production: 143 million tons.

ESTIMATED REQUIREMENTS FOR BUILDING: 5,44,000 tons (drop due to completion of most big industrial plants).

ESTIMATED REQUIREMENTS FOR BUILDING: 11.5 billion bd. ft. Estimated requirements:* 31,100 million bd. ft.

No available figures. Estimated need will not differ widely from 1942.

ESTIMATED REQUIREMENTS FOR BUILDING: 74,591 short tons.

Figures unavailable. Estimated to be slightly below 1942.

ESTIMATED NEED FOR BUILDING: 35,541.

2,002, short tons
3,400 million bricks or brick equivalent
114,260,000 barrels
11,500,000 boxes
2,688 million bd. ft.
5,016,000 tons
1,700 million sq. ft.
92,670 short tons.

(*WPB estimates that 2,500 million board feet of lumber could be saved in Building "if maximum use were made of existing substitutes.")

ARMY PURCHASES OF HOTELS

Senator Harry F. Byrd (Dem.-Va., see cut) thought the Government had been gypped when it purchased (for \$6 million) early in January, Chicago's Stevens Hotel, and said so in certain terms to the U. S. Undersecretary of War Patterson. His letter, carefully phrased, fully informed, laid bare the real arguments against Government purchase of property in wartime.

Said the Senator to the Undersecretary: "You justify this purchase on the basis that it was a sound business venture. When we give consideration to the fact that occupancy by the Government of the Stevens Hotel should be only for the duration of the emergency, I can see no justification for the direct purchase of real (Continued on page 110)

(Continued on page 110)

NEWS ABOUT GLASS from "Pittsburgh"



PITTSBURGH SANDAIRE PROCESS

now makes possible the fabrication of intricate glass lettering and designs, all in one piece. This special cutting process permits you actually to "paint a picture" with structural glass in its many colors. The lettering and central figure on this front were fabricated by the Sandaire Process of wine Carrara, and laminated to the white Carrara background.

OUTSTANDING HOUSING PROJECT

by the San Francisco Housing Authority is typical of the many developments where Pennvernon Window Glass is used to provide good lighting, good vision and good looks. Architects for housing projects are providing generous window areas to assure light, airy apartments that contribute to enjoyable living.



SENSATIONAL GLASS TANKS by "Pittsburgh" are impervious to acids, alkalis, chemicals, liquids of almost any sort. Glass tanks by "Pittsburgh" are strong, non-porous, sanitary, non-absorptive. They can be made of opaque Carrara Structural Glass, or transparent plate glass. These glass tanks are among the newest developments of Pittsburgh Plate Glass Company and offer new possibilities to architects in industrial, public building or commercial work.



PITTSBURGH PLATE GLASS COMPANY · PITTSBURGH, PA. "PITTSBURGH" stands for Quality Glass and Paint





Some Facts We'd Like You to Know **About Mesker's New Facilities:**

Portable Grinders are used to "smooth up" unfinished sash. To meet the war's demand for more speed, Mesker converted from 60 to 180-cycle current. Result: grinders have been speeded up to a two-mile-a-minute pace ... for smoother finishes, in less time. Important in making airplane runways today...windows tomorrow!

Mesker Engineers...the country over...

424 SOUTH SEVENTH STREET

YESTERDAY AND TOMORROW

CASEMENT WINDOWS · MONUMENTAL WINDOWS · INDUS-TRIAL WINDOWS · SCREENS · INDUSTRIAL DOORS · DE-TENTION WINDOWS · REINFORCING MESH GRATING ... plus ... tomorrow some other interesting new products!

S DESIGNED TO HELP YOU TOMORROW



MESKER METAL WINDOWS

Windows ARE cheaper than walls. Architect McMahon recognized this when he designed for us his Hospital of the Future, illustrated above. Properly weather-conditioned, good windows insulate just as efficiently as walls. In addition, properly distributed... in the designing stage... they provide abundant natural light and *low-cost* ventilation. Hospital administrators tell us they want a *maximum* of these advantages in future windows. It's no secret that for some months we have been working toward these very things. Today, all-out on war production, we are very mindful of the future... ours and *yours*. What's more, we are trying to DO something about it. New facilities, new IDEAS are being born at Mesker Brothers much, much faster than we can tell you about them. This much we do want to suggest: for the Windows Of The Future, watch "the windows WITH a future"... Mesker Metal Windows.

Do You Have Your "Red Book of Steel Sash?"

If not, write for this comprehensive volume, personalized with your name. Covers metal windows from A to Z... ideal to have at your elbow when working up specifications, details, etc., on post-war projects. No obligation.

Consult Your Mesker Engineer Now!

His job is to help you with your war-time construction problems...involving windows or whistles or whirligigs ... to assist on post-war projects requiring the kind of windows only Mesker can produce. Consult him NOW.

In War and Peace...at your service!

ST. LOUIS, MISSOURI, U. S. A.

TODAY

STEEL AMMUNITION CASES · PRE-FABRICATED STEEL AIRPLANE RUNWAYS · OIL AND WATER STORAGE TANKS FOR THE NAVY'S FIGHTING SHIPS... other products which necessarily must remain military secrets.

MONTH IN BUILDING

(Continued from page 106)

estate and other property, when such property could be leased for a fair rental . . . After the conclusion of this war, the rights and status of private property will be questions of the utmost importance in the postwar world. Increasing unnecessarily the direct ownership of physical properties by the Government will add very greatly to the tremendous problem of liquidation of Government-owned properties, which will follow the war.

"I want to emphasize that it is far better to rent at a fair price than to purchase." "You have only to look at the experience of the Government in the ownership and operation of private property. It has been disastrous and costly in every single instance. I have never known the Government to operate any business enterprise on a comparative basis of efficiency with private industry. In the Resettlement projects many millions of dollars were lost, and even now those projects not yet sold are costing the Government \$1,600,-000 yearly in losses in operation and expenses."

*The Stevens was originally leased—as 475 other hotels have been. Eight have been purchased for use as hospitals, 3 more for troop housing (the Stevens, the Shark River Hotel, Neptune, N. J., the Casa Loma, Coral Gables, Fla.).



FIRE WON'T WAIT!

War and its camp followers—overcrowding, poor upkeep, inadequate manpower—provide the conditions under which fire thrives.

Factories, schools and amusement spots in a hundred war-plant areas are crowded as never before.

The demand for safe, sure, instantaneous exit—for Von Duprin devices—is tremendous and insistent. Fire won't wait!

And, strive as we may, we can supply only a small part of that demand, so we make these three suggestions, earnestly hoping that they have your serious consideration:

- 1. See that every Von Duprin on any building over which you have supervision is in perfect operating condition.
- Have the Von Duprins carefully removed from any building which is to be abondoned or destroyed, for use on the doors of the new building.
- 3. When a new building necessitates the ordering of new Von Duprin devices, have them ordered just as early as possible, regardless of whether the order carries a high or low preference rating. Thank You!

VONNEGUT HARDWARE CO., INDIANAPOLIS

Said the Undersecretary to the Senator, in reply: "I can assure you that we have absolutely no intention of engaging in the hotel business after the war. I concur fully in your views that it is generally much better for the Government to rent property. But there are valid exceptions to this policy in cases where in our opinion a financial saving to the Government would result from purchasing property. The Stevens Hotel is such an exception ...

"Hotel representatives refused to accept a rental of less than \$875,000 per year. In addition to this rental, the lease arrangement, in accordance with usual practice, would have provided for the restoration and rehabilitation of the property on termination of the lease. The estimate of the Corps of Engineers on the cost of such restoration was \$1,500,000 . . .

"It is believed that at the termination of the Army occupancy the hotel can be sold for at least \$3,000,000. If this sale should not materialize, there is the possibility of using this property as an office building to house Federal agencies now located in Chicago and occupying even in peace time an equivalent amount of rented office space . . .

"The decision to purchase the Stevens Hotel was a sound one. I made this decision only after a careful evaluation of all the factors and after receiving assurance from expertly qualified people that there was an excellent prospect of disposing of this property at a good price after the termination of our occupancy." The program of leasing or purchasing hotels is expected to continue well into this year with the War Department discouraging too much talk on the subject for fear that prices will be jacked up.

ADD NEW FACES

► To direct the shaky conversion program (see page 34) Col. F. Chas. Starr



COL. F. CHAS. STARR: More shot at than shooting

has been called in by FPHA. Like an experienced player sent into a tough game (Continued on page 112)



You might throw a party for the BLITZ-BOYS UNDER THESE CIRCUMSTANCES



(But You Wouldn't Knowingly Invite Your Friends)

Modern sanitation demands protection against the danger of water contamination created by back syphonage, just as Quarantine-precautions are designed to prevent the spread of contagion. That's why the Federal Government specifies that every toilet fixture with a jet, be equipped with approved Back-flow Preventer.

The DELANY No. 50 Vacuum Breaker solves the problem of water contamination wherever flush valves are used. It is the only Back-flow Preventer that can successfully prevent back syphonage, even though the unit be maliciously sabotaged. It telltales breakdown—it's self policing.

The DELANY No. 50 Vacuum Breaker is non-mechanical in operation and fits any flushometer, old or new. Help maintain and protect civilian health, investigate the Delany No. 50—it's 20 years ahead of any flush valve vacuum breaker on the market.



MONTH IN BUILDING

(Continued from page 110)

in the last quarter, architectural-engineer Starr is well prepared for the conversion melee. He has been in Government housing since 1935 (with PWA, USHA, FWA), worked for a time as Regional director for FPHA in Detroit, involved in the Willow Run housing mess.

► To direct WPB's Construction Division (succeeding William V. Kahler), Ferdinand J. C. Dresser. Formerly a Colonel in charge of the Engineering Section of the Army Specialist Corps (now disbanded), an associate director of PWA housing, Mr. Dresser's is an old face in a new job. And one, by the way, with considerably limited duties since the Facilities Bureau of WPB took over all the planning work.

RENEGOTIATION OF WAR CONTRACTS

Builders, engineers and architects, whose aggregate contracts or subcontracts with the Army, Navy, Maritime Commission and Treasury Department exceed \$100.-000 annually, await their turn at being "renegotiated" with apprehension. Bewith apprehension. Bewildered by the amendments to section 403 of Public Law 528 that defined excessive profits as those which are excessive and by an equally vague declaration of the price adjustment administrators, defining an excess profit as "an amount which when our soldiers come home



TROUBLE-FREE SWITCH OPERATION IMPROVED APPEARANCE

Series 150 Heavy Duty Line Voltage Room Thermostat — will handle multiple unit coolers or heaters — available with locked dial and "on," "automatic" and "off" dial positions to serve as manual control.



metal bar.

1292C CASS AVENUE . ST. LOUIS, MO. Controls for Heating . Refrigeration . Air-Conditioning

WHITE-BODGERS ELECTRIC CO.

neither business nor government would desire to defend." Building's professionals are fearful that they are in for a military haircut rather than a light trim.

Part of their jitters has been caused by a fear of the unknown, since only a handful of the industry's contractors have passed through the Army mill and none through the Navy. Some of those who have feel their treatment has been very fair. Early in February, the Undersecretaries of War and Navy who had previously avoided any specific formula because of "the wide variation among contractors in investment, efficiency, past earnings, Government assistance, turnover and incentive contributions" announced the first general yardstick.

"The margin of profit which a company makes on its expanded war sales may be limited to 1/2 or 1/3 the margin of profit on peacetime sales." This is based on the tenet "that with an unprecedented volume of business, a substantial reduction in profit margins below peacetime levels will usually leave contractors with an adequate dollar amount of profits on war work." While this theory will be hard to apply to construction contractors, whom the Government does not consider as repeating producers, the construction industry can expect a scaling of fees in inverse ratio to the size of their contracts.

Navy Thinking

Here is the top-of-the-Navy thinking about the construction industry as revealed to a N. Y. Building Congress delegation. In determining excess profits, the Navy, like the Army, will carefully consider quality of work, performance time, saving to the Government in construction and the effectiveness of the specific contractor. Generally, excess profits will be related to total volume rather than to the contractor's capital. A builder who has an initial costplus-fixed-fee contract with the Navy and who later received contracts from the Army can expect a readjustment of the initial fixed fee in line with the curve of profits on subsequent contracts. While information is required about the contractor's net earnings over previous years, it will merely be used as a contributing factor in determining a reasonable income.

Proper weight will be given to the fact that a contractor had to carry part of his organization over lean years. No maximum fee is to be established, each renegotiation to be based entirely on its own conditions. It is the Navy's intent to keep procedure fluid so that special circumstances can be properly weighted.

As to architects and engineers there will be no limit to the ratio of fee to reimbursable expenses; these may be low due to good management. No allowances will be made for expenses necessary to maintain offices before and after the formal date at the start and termination of the contract. (Continued on page 114)

what's beyond the darkness?

All over America, great numbers of planes are being wheeled out through Truscon Steel Hangar Doors, to fight through the darkness of battle into the light of peace.

And through the haze of world-wide social and economic changes, American business is looking to an inspired future.

In the field of aviation particularly, Truscon Steel Company is ready with the solution to terminal and hangar problems that will come with the great Air Age of tomorrow. As the world's largest builder of straight-slide and canopy-type hangar doors, Truscon has engineering and fabricating facilities unexcelled in the industry.

The lights of research and development burn brightly in the Truscon engineering laboratories. From this technical research will come revolutionary advancements for tomorrow's commercial, residential and industrial construction. Keep in touch with Truscon to be a step ahead in your peacetime building plans.



BE

YOUNGSTOWN • OHIO Subsidiary of Republic Steel Corporation

MONTH IN BUILDING

(Continued from page 112)

No special consideration will be given to the contractors engineers and architects engaged in war work who are now experiencing a sharp curtailment in activity and who are in danger of becoming war casualties. Building professionals face a further depletion of their current funds already subject in many cases to an 80% tax (because of the small working capital necessary). The end results, either a dismissal of valuable personnel or a diminution of working funds, may cripple an industry vitally important to the postwar program.

Joint Ventures

Under Navy policy, the renegotiation of a joint venture contract is to be conducted by the joint adventurers as a group, and only by those members who actually executed the contract. In an overall renegotiation by an individual contractor neither profits nor losses of a joint-venture contract can be used as an offset against the losses or profits of his individual contract. While the Army permits a contractor to include his share of any joint venture in an overall renegotiation, its Engineering Corps will not permit an individual to offset losses on individual contracts against his profit in a joint venture. However consideration will be given in the



WE WANT TO HELP-

War-time needs call for unusual demands in the handling of loads between different levels. Sedgwick has been called upon to meet many problems afloat and ashore—with equipment to do the job faster, better.

War is on a time basis. Every day, every hour, every minute counts. A Sedgwick Hoist, specially designed to handle the load more efficiently, can do much to speed materials and munitions on the road to Victory.

* OFFER FULLEST COOPERATION. *



ELEVATORS * HOISTS * DUMB WAITERS

overall picture if losses are sustained in a joint venture.

Forward Prices

Recently the Army took cognizance of the fact that cost-plus-fixed-fee contracts combined with renegotiation proceedings dulled the incentive of the competent contractor. The old idea of competitive bidding was reinjected. The purpose was clear: Keep costs down and make more money. It adopted "forward pricing," taking advantage of a hitherto ignored clause in the renegotiation amendment that provided "for exemption from renegotiation for prescribed periods when profits could be determined with reasonable certainty." This type of contract is available to Building's professionals for such easily determinable cost units as excavation, roads and uncomplicated plant structures where building conditions are predictable.

It is generally felt in business circles that war contractors, engineers and architects should accept renegotiation with good grace, for the industry must come through the war period with a clean record if building is to remain in private hands.

Success in renegotiation will depend in large part on the completeness of the contractor's cost information and his ability to key this data to the working policies of the administrators. Fortunately the chairmen of the Army and Navy Price Administration boards are business men who are determined that the profit incentive be maintained.

Standard Cost System

The importance of adopting a standardcost system of accounting in fixed-price contracts and of adding this system to the job-cost system required for cost-plusfixed-fee work cannot be stressed too strongly. The standard-cost system will prove of inestimable value in obtaining the Army "forward pricing" and the Navy fixed-price contracts. The firms that have gotten along with vest pocket or cost estimate records will experience many difficulties in renegotiation.

A few of the contractors who are in the process of being "renegotiated" advise going directly to the key administrators, who have authority to treat the directives elastically. They further advise delaying renegotiating proceedings pending an expected drastic revision of the act due after the passing of the next tax bill. A usually dependable source advises against delaying renegotiation, since negotiators intent on treating all competitors in a given industry alike want to renegotiate 1942 business on the same basis employed in settling completed cases. These were disposed of before the recently announced yardstick of the Undersecretaries limiting profit margins. As the war proceeds and casualty lists increase the realist will appreciate that profit expectations will diminish.



This famous trademark identifies products of United States Gypsum Company —where for 40 years research has developed better, safer building materials.



FORUM OF EVENTS

(Continued from page 4)

MODELS GO TO WAR

► Asked to cooperate in the bond and stamp drive, the Colgate-Palmolive-Peet Company commissioned Gilbert Hall of Holabird and Root to design an attractive sales booth for the lobby of their Chicago Palmolive Building. Mr. Hall, one of the designers of the Palmolive building, designed a booth which utilized a miniature

for

WAR

HOUSING!

STREAMLINE



blacked out for the duration).
Effect of the new model was a 100 per cent rise in bond sales the first month after the model was completed.
Efficient control rooms in report centers are among the most important links in

ters are among the most important links in the whole civilian defense chain of volunteer services. Here, during a raid, reports of damage are received, and equipment and

replica of the building (see cut), realistic

in every detail, even to the Palmolive beacon on the top (the real beacon is



BURROWS AND DIRKS

other essential aids are allocated.

This model (see cut), built at a scale of one inch to the foot, was the brain child of Robert Burrows, Controller of Cleveland Heights Civilian Defense, who conceived it as a means of establishing a better understanding of the proper way to plan control rooms. Controller Burrows took his idea to Robert Dirks, Assistant Director of Civilian Defense. An enthusiastic builder of miniature trains, Dirks took over the construction job, and after 150 hours of working time, delivered a model which was complete to the furniture, tele-



NERVE CENTER

phones and maps on the walls. With walls that can be taken down and furniture that can be arranged in any way desired, the model is ideal for instruction, as it can be shipped in a small crate or photographed from any angle. Latest report on the Burrows-Dirks project is that it has been demonstrated all over northern Ohio, is now being considered for use on a national scale.

(Continued on page 118)

Save Time! Save Money! With Bruce FACTORY-FINISHED STREAMLINE FLOORING!

LOW COST FLOORS

No wonder leading architects and contractors everywhere are enthusiastic about this amazing factoryfinished flooring for war housing! *It's ready for use the instant it's laid!* Requires no sanding or finishing on the job. The 3¹/₄" wide strips lay fast, too! Streamline Flooring saves days of time—expedites the work of other trades—helps avoid penalties. Costs no more, usually less, than ordinary flooring finished on the job. Widely used on large war housing projects from coast to coast. Write now for further information and your free copy of our booklet, "Low Cost Floors for War Housing."

E. L. BRUCE CO., 1606 Thomas St., Memphis, Tenn.





FLINTKOTE COLD PROCESS ROOFING ... a complete, tested system for cold-applied Roof Maintenance and Re-roofing

Wartime conditions demand conservation and economy. Roofs must be kept in tip-top shape to protect buildings and costly...often irreplaceable...equipment. Proper roof maintenance is a wartime must.

Thousands...literally thousands... of "flat" roofs in all parts of the country are in *immediate* need of repair or replacement.

Flintkote Cold Process Roofing provides a complete, tested system for the cold application of proven materials in roof maintenance, re-roofing and new built-up roof construction.

Flintkote Cold Process Materials are applied cold! No fuel oil...no heating...no fire hazard. Save time and labor.

The weathering surface of a Flintkote Cold Process Roof is *Static Asphalt*...bitumen in its most usable, most protective form. It will not slip or flow under heat, crack at low temperature nor carbonize through aging.

A free booklet for anyone interested in "flat" roofs describes repairs, renewal and re-roofing by the exclusive Flintkote Cold Process . . . and gives specifications for 10 to 20 year bonded roofs.

This illustrated booklet tells about Cold Process Materials...Static Asphalt. Cold Process Felt, Reinforcing Fabric, Roof Saturant, Col-Ply Cement and Fibrex Cement. For your copy, please write The Flintkote Company, 30 Rockefeller Plaza, New York, N. Y. **COVERS** wood, concrete, gypsum and steel decks, with or without insulation.

PROTECTIVE COATING for metal roofs and buildings. Prevents rust, saves irreplaceable steel.







New York - Atianta - Boston - Chicago Heights - Detroit - East Rutherford - Los Angeles - New Orleans - Waco

FORUM OF EVENTS

(Continued from page 116)

DIED

EDWARD BRUCE (see cut), 63, artist, lawyer, banker, publisher and silver expert, in Hollywood. Son of a Baptist minister who conducted a mission for poor Italians in New York's lower East side, Bruce showed an early aptitude for drawing, studied for a time under Arthur Parton and J. Francis Murphy. He said later, "I thought I was

to be a painter, but gradually, as my technical equipment increased, I came to feel that I had nothing to say that seemed worth saying. So I gave up the idea of making it my profession, went to college and law school (Columbia)." Graduating in 1904 he became associated with the great Manhattan law firm of Cravath, de Gersdorff, Swaine and Wood, left after four years to set up an independent practice in the Philippines. While in Manila. he bought and operated the Manila Times, organized the Pacific Development Co., which advised and organized American enterprises in the East. Not content with



ARTIST BRUCE

International Ne

these activities, big, genial Bruce went into foreign trade in China, became an expert on silver and monetary problems in the Orient, collected Chinese landscape paintings, and did some sketching on his own. In 1922 he decided to devote all his time to painting and moved to Italy to study under his friend, Maurice Sterne. Tackling art in as methodical and energetic a fashion as he had business, Bruce worked eight hours a day, lived in Sterne's 41-room castle in the little hill town of Anticoli Corrada. Three years of this regime made Edward Bruce into an artist. In 1934 he was made Chief of the new Section of Fine Arts of the Treasury Department. While commissioning murals for Government buildings, he discovered and aided so many unknown American artists that he was said to be responsible for a renaissance of American art.

WHITNEY WARREN (see cut), 78, architect, in New York City. Artist, Francophile, socialite eccentric, Mr. Warren's interests were wide (the excise tax, Beaux-Arts balls, politics, Theodore Roosevelt), his personal convictions strong. Last of the



ARCHITECT WARREN

Victorian architect-titans, he, together with his partner, Charles D. Wetmore. designed Manhattan's Grand Central Terminal, the Ritz, Biltmore, Vanderbilt (Continued on page 120)



Above: "Unit" glued laminated beams in ma-chine tool plant, Defense Plant Corporation.

Below: One of many airplane hangars built with "Unit" glued lam-inated arches.

Copyright 1943, Unit Structures, Inc.



... shop-fabricated for permanence, by scientific UNIT (ALLED process

There is a vast difference between gluing on the job site by haphazard methods, and advanced techniques whereby "Unit" laminated arches and beams are gluewelded under rigid shop-control ... Practical for spans of 200 feet and over. "Unit" special equipment, trained personnel, and proved methods (US Patents Nos. 177395 and 2172093) are now

serving leading war construction firms. Ample facilities for quick deliveries. Simpler detailing, faster erection save additional time. Engineering service available . . . For quick action and permanence, work with established specialists (since 1934). Write, phone or wire STRUCTURES, UNIT INC. PESHTIGO, WIS. Plants at Peshtigo and at Sayville, L. I., N. Y.

New 12-page 2-color catalog ...

(also included in 1943 Sweet's), just off the press, illustrates every conceivable application. Deals with glued laminated construction ex-clusively. Functional designs and beautiful finishes, facts on fire-resistance are eye-openers. Ask for free copy on your letterhead.





Pittsburgh Scientists Develop "VITOLIZED OILS" Making Possible LIVE-PAINT PROTECTION

Test No. I

Ordinary linseed oil (left) does not level out well, leaves "hills and valleys" or brush marks. In Pittsburgh "Vitolized Oil" Paint (right), brush marks are rounded-with no sign of deep valleys. This uniform film of protection is better able to withstand weather wear.

LIVE-PAINT PROTECTION

Pittsburgh Paints enriched with exclusive "Vitolized Oils" which keep the paint film LIVE and elastic-resulting in improved protection for wood, brick, stone, concrete or metal surfaces

O^{RDINARY} oils used in paintmaking tend to be "escapists". They leave the paint film . . . soak into the surface beneath. A number of years ago, Pittsburgh laboratory men tackled this problem. After extensive research they developed "Vitolized Oils."

Test No. 2, at right, shows how these "Vitolized Oils" remain in the paint film. Because their high oil content is retained, Pittsburgh Paints stay young, elastic, *live*. Thus they are better able to resist cracking and peeling caused by the expansion or contraction of the surface to which they are applied.

Other Advantages

"Vitolized Oil" paints level out smoothly (see Test No. 1), give wider coverage and are easy to apply. Chalking is controlled through pigment selection and color changes minimized.

In the maintenance jobs you may now be supervising—and in the structures you will design when the war is over—give your clients the "plus" of *live-paint protection*. Specify Pittsburgh Paints, made with "Vitolized Oil".

Pittsburgh's 148-page "Maintenance and Buying Guide" is just off the press. It contains a 48-page maintenance guide and other information useful to architects. The coupon will bring you a free copy.

PITTSBURGH

Test No. 2

Note how ordinary oil (left) is absorbed into the surface below. "Vitolized Oil" (right) as used in the Pittsburgh Wallhide System remains in the paint film, keeping it elastic-live... enabling it to expand and contract with the surface over which it is applied.

PITTSBURGH PLATE GLASS COMPANY Dept. AF-3, Pittsburgh, Pa. Please send me, postpaid, a free copy of your "Maintenance and Buying Guide".

State.

Name_

IRG

Address _

GLASS COMPANY

PENNA.

City____

PITTSBURGH PLATE

FORUM OF EVENTS

(Continued from page 118)

and Commodore hotels in New York, was architect for the New York Central, Michigan Central Erie and Canada Northern Railroads.

Major tempest in his career occurred during the nineteen twenties when Warren wished to adorn his reconstruction of the Louvain Library (Belgium) with the words: "Furore Teutonica Diruta; Dono Americano Restituta" (Destroyed by German fury; Restored by American generosity). Pacifists who did not permit the inscription "because it was a legend of hate" were to see the library again destroyed by the Germans in 1940.

ANNOUNCEMENTS

To civilians, soldiers and sailors, the Engineer School at Fort Belvoir, Virginia, sends out an urgent call for ideas—on camouflage, construction, design, drafting, maintenance, materials, specifications and other fields. Since the suggestion system was instituted, more than a year ago, more than eleven per cent of the suggestions received have been put to use.



Made by makers of Pella Rolscreens, Venetian Blinds, Casement Units

Cautions the School's publicity release: "No useful idea is too small to report." The Illinois Department of Registration and Education announces a change in the requirements for admission to the State Architects' Examination. Beginning in Spring, 1943, a four-day, 36-hour examination will be substituted for the present three-day, 24-hour junior examination. Purpose: to conform to standards set by other colleges. This will enable Illinois licensees to be registered by reciprocity in other states without further examination.

Recently established by MIT's City Planning Division is an Urban Redevelopment Field Station, under the direction of Professor Frederick J. Adams, head of the Technology City Planning Division, Philip H. Cornick of New York City's Institute of Public Administration, and Edwin H. Spengler, Associate Professor of Economics at Brooklyn College and consultant to the NRPB. Purpose: "to analyze various methods of urban redevelopment which are now receiving consideration, with the object of determining their relative value in terms of present-day social and economic conditions."

Financial backing: from the Albert Farwell Bemis Foundation. Problems to be studied: "the rehabilitation of urban residential areas where the existing buildings are in sound structural and sanitary condition but where the neighborhood is obsolete-with the preparation of careful estimates of capital and operating costs of bringing the environmental conditions in such areas up to a standard in line with modern needs and habits of living, particularly in respect to the planning of the local street system and the adequacy of parks, playgrounds and other community facilities;" the study of changes in the fiscal and administrative policies necessary if the contemplated programs were carried out on a city-wide basis. Cooperating agencies: the City Planning Board of Boston, which has made available its file of data on physical, economic and social conditions in Boston, and the American Public Health Association's Committee on the Hygiene of Housing.

COMPETITION

The Detroit Steel Products Company peacetime manufacturer of Fenestra steel windows and doors—is sponsoring the Fenestra Architectural competitions. The two problems: to design a basic window unit for a private room in a postwar hospital, or for the living room of a postwar small house costing less than \$5,000. Total prize money to be awarded: \$2,000. Further information may be obtained by writing to the Detroit Steel Products Company, 2250 East Grand Boulevard, Detroit.

PERSONAL

LORIMER RICH, architect and city-planner, announces the opening of an office at 215 Montague Street, Brooklyn, New York.



If this war housing project comprising up to 100 or more houses were in your hands, you probably could complete it faster with Atlas High-Early cement — and save time in wartime.

STAN CHEKOVSKI and thousands of others enrolled in our industrial "army" must have new homes so that war production can be increased in nearby plants. But how soon? Uncle Sam wants war production on the double-quick. New housing for war workers was needed yesterday.

You know an answer to the question. Atlas High-Early cement.

Despite cold weather, this speedy cement will help hurry up completion of war housing. This cement has had an important role in helping to place



this country on an all-out war basis not only in housing, but in factories, airports, naval bases, cantonments, access roads.

Check the facts in the adjoining box. Use Atlas High-Early cement whenever you need durable, serviceable concrete—*in a hurry*. Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York City.

OFFICES: New York, Chicago, Albany, Boston, Philadelphia, Pittsburgh, Minneapolis, Duluth, Cleveland, St. Louis, Kansas City, Des Moines, Birmingham, Waco.

CHECK ON ATLAS HIGH-EARLY for Wartime Construction

Atlas High-Early cement gains strength rapidly —produces serviceable concrete in one-fifth the usual time on some jobs. So it— 1. Permits earlier use of concrete, and thus gives owner earlier occupancy. 2. Saves manpower when such conservation is needed most-releases men for new jobs more quickly. 3. Conserves lumber. Forms may be stripped sooner-often in 24 hours instead of from 3 to 5 days-and re-used. Hence fewer sets of forms may be needed, saving time, labor, and lumber.

4. Shortens time required for protection and curing as much as 70%. This saves fuel and releases tarpaulins and salamanders for other work.

5. Reduces overhead by saving time, manpower and equipment. AF-H-52

Atlas High-Early Cement

MARCH 1943

An irrepressible high standard of living was at

BUILDING . PLUMBING . DRAINAGE PRODUCT

AURD



and is active today . . . influencing the rebuilding of towns and cities

New Era for Building Only Marking Time

It is this irrepressible urge that compels one generation to progress beyond the living standard of a previous generation. Nothing can retard or impede the influence of this irrepressible urge that is common in some degree to all classes and groups of population.

A comparison of the living standard of the Gay Nineties with the living standard of today reveals the potency of this everactive irrepressible urge to compel a continual rebuilding of towns and cities. Although adjusted to the restrictions of a wartime economy, this irrepressible urge continues to permeate the thoughts of millions of people, strengthening their resolve and invigorating their effort to win the war as quickly as possible and reach out for a brighter future. To ignore it would be to neglect an unprecedented opportunity confronting you and your talented fellow citizens-the opportunity of planning for the rebuilding of your community.

No one questions that the future must be prepared for. Yet, preparation for piecemeal rebuilding is certain to be inadequate according to today's standards of accomplishment. Piecemeal rebuilding of our towns and cities, while practiced by a previous generation, is not the method by which the demands of an irrepressible urge will express itself under the conditions of the postwar period. No longer will it be possible to consider building as isolated projects, because the blight of obsolescence has been no respecter of cities, nor localities within cities, nor classes nor groups of population. New building developments must be considered in their inevitable relationship to the welfare and the progress of different classes and groups of people.

The requirements of a higher and improved living standard will be met only by preparing and controlling the plans for the rebuilding of whole communities, and whole areas, including such communities. This is a hometown task for hometown citizens to work out. It is your task, and the time in which to prepare actual rebuilding projects to provide employment in the postwar period grows shorter day by day. Not until you and your fellow citizens have prepared definite building plans, and established the means for making them active projects immediately upon the close of the war, will you have made it possible for government agencies, private industry, and organized labor to cooperate in producing postwar prosperity and security.

Factual information on the many different phases involved in replanning and rebuilding may be obtained from many sources, among which are these: The National Resources Planning Board, National Planning Association, American Society of Planning Officials, Federal Housing Administration, which offers "A Handbook on Urban Redevelopment of Cities in the West," Federal Works Agency, and many others.

Our motive is to stimulate activity among professional and civic groups by pointing out the necessity of planning now a brighter future for your city. And through continuous research and engineering activity, we are doing our part to make it easier to build the city of the future. Perhaps, with the aid of information that we have acquired from organizations, commissions and agencies that are active in this work, you may be able to inaugurate a rebuilding program. Such assistance is available to you. Perhaps our portfolio entitled "A New Era for Building is Only Marking Time" may be helpful.

ENGINEERS in their specialized field are on the alert, researching, inventing, designing to meet new needs that urban reconstruction will require. They are making and testing one device after another in a continuous endeavor to improve building and plumbing drainage systems. Their job is to supply Engineered Protection for human health and modern structures. Not for one moment are they in any way neglecting the performance of a vital service to the winning of the war. Indeed, they are helping to speed the construction of war production plants and housing for war workers and ships to solve our transportation problem. But to neglect the development of new devices for a new era of building would be unthinkable. While at war, we should prepare for peace.

	J.	A.	ZURN	MFG	. co.	
ales	Office	and	Factory:	ERIE, F	A., U.	S. A.

-Zurn Engineered Carriers afford 4-Point Protection for wall fixture installations.

- B-Zurn Roof Drains are available for every type of roof construction.
- C-Zurn Floor Drains and Accessories meet every floor drainage requirement.

D-Zurn Plumbing Drainage Fittings include every item required for the installation of plumbing drainage systems.

ROOF TO BASEMENT

J. A. ZURN MFG. CO., ERIE, PA., U. S. A.

Please register my name and the names of individuals and organizations attached, to receive a copy of the portfolio entitled, "A New Era For Building is Only Marking Time." of which I understand a limited number will be available when printed.

Name	
Company	
Address	
City and State	
Form No. 43-15 P. S. Please attach to your business letterhead	

Building Reporter

(Continued from page 10)

long are applied horizontally with overlapping "drip cap" edges on lower side of panels making joints weatherproof. Predecorated in camouflage green on the outside and manila on the inside, Sheetrock siding requires no painting or further treatment. It claims to save up to 30 per cent in the cost of duration buildings. Manufacturer: U.S. Gypsum Co., 300 West Adams St., Chicago, Ill.

LARGEST PLANT

IN THE WORLD

by ELJER

WOOD **ROOF VENTILATOR** for industrial

buildings replaces sheet metal type.

Name: Breidert B-W Air-X-Hauster. Features: Constructed of kiln-dried redwood with only 8 per cent moisture content, the B-W ventilator equals in performance the sheet metal type and surpasses it in durability under severe weather and chemical conditions. Meets specifications for Government buildings, maintains high exhaust capacity under varying wind conditions and blocks down drafts in high or turbulent winds. This is true even where several Air-X-Hausters are used. Manufacturer: G. C. Breidert Co., 3328 South Central Ave., Los Angeles, Calif.



THERE ARE OVER 5 MILLION ELJER FIXTURES IN USE

VITREOUS CHINA plumbing fixtures for wartime uses.



Name: Canton Lavatory; Crystal Drinking Fountain.

Features: Continuing its development of special vitreous china fixtures to conserve vital materials for war needs, the Elier Co., has developed a new lavatory, the Canton, and a new drinking fountain, the Crystal, for Army and Navy cantonments, industrial plants and wartime housing. Instead of a cast-iron or pressed-steel base with enamel finish, vitreous china is used throughout; traps and unit fittings are of cast iron rather than brass; and valve handles are plastic. Advances in manufacture have cut the cost of vitreous china so that it is available for popular items. Well known for its high gloss surface, it is impervious to all stains and ordinary acids and will not chip or peel. Size of Canton lavatory is 15x18 in. with a 2 in. back. Crystal drinking fountain introduces the features of sanitary bubbler and automatic regulator; width 11 in.; projection 111/2 in. Manufacturer: Eljer Co., Ford City, Pa.

RAPID STEAM GENERATION with automatic feed-water control in compact unit.

Name: Lodi Steam Generator.

Features: Ideally adaptable for all installations stationary, mobile or marine - this small generator incorporates Jet Control, which automatically maintains an accurate heat and water balance at all Designed times. as a single unit with only three



moving parts, it eliminates the firebox, pit and electrical connections. Generator operates with fuel and water; throttle valve regulates volume of steam generated; and Jet Control automatically furnishes feed water in direct proportion to amount drawn off as steam. Ten hp. model develops 150 lbs. pressure from a cold start in less than five minutes. Claimed to be explosion-proof because steam is carried entirely in overlapping continuous coil, it has been tested to 1,000 lbs. Other models are to be produced up to 70 hp. Manufacturer: Super Mold Corp., 408 North Sacramento St., Lodi, Calif. (Continued on page 126)

in the world.

in this field.



STUDY THEM WITH AN EYE TO THE FUTURE!

There is more to these charts than meets the eye. Not seen, but clearly projected into the future, is the sales curve of tomorrow. Here is the thrilling story of over 25,000,000 American workers who are today voluntarily saving close to FOUR AND A HALF BILLION DOLLARS per year in War Bonds through the Payroll Savings Plan.

Think what this money will buy in the way of guns and tanks and planes for Victory today—and mountains of brand new consumer goods tomorrow. Remember, too, that War Bond money grows in value every year it is saved, until at maturity it returns \$4 for every \$3 invested! Here indeed is a solid foundation for the peace-time business that will follow victory. At the same time, it is a real tribute to the voluntary American way of meeting emergencies that has seen us through every crisis in our history.

But there is still more to be done. As our armed forces continue to press the attack in all quarters of the globe, as war costs mount, so must the record of our savings keep pace.

Clearly, on charts like these, tomorrow's Victory — and tomorrow's sales curves—are being plotted today by 50,000,000 Americans who now hold WAR BONDS.



This space is a contribution to America's all-out war effort by

THE ARCHITECTURAL FORUM



(Continued from page 124)

SHEET BOARD DUCTS save 80 per cent sheet metal in air-conditioning installations. Name: Sheet Board Duct.

Features: A proved substitute for sheet metal in duct system installation, sheet board retains all the features of metal except for slightly greater resistance to air flow, but adds advantages of greater rigidity and higher insulation. Square elbows and some fittings can be made of



sheet board; corners and seams are formed with metal strips. Layout is similar to ordinary ductwork with band-iron or rod, trapeze-type hangers on same centers, but supports are somewhat heavier to hold the greater weight of the substitute material. In air-conditioning systems up to 50,000



Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Bldg., N. Y.

PORTLAND CEMENT STUCCO CONSERVES STRATEGIC WAR MATERIALS

Provides Crisp Good Looks and Lasting Protection

Portland cement stucco is durable. It goes up fast. It conserves critical materials. Those are three reasons why stucco was chosen for these Spanish-type officers' quarters built at an unspecified Army base.

Stucco made with Atlas White portland cement may be applied directly over concrete block, concrete cinder block, or hollow tile. No reinforcing mesh and no lead and zinc for paint are necessary. Also, with stucco and concrete block,transportation is conserved as most materials generally are available locally.

Keep these facts in mind and plan on stucco, made with Atlas White portland cement, for housing, factories, and other wartime and post-war construction.

* *

Factory prepared stucco is preferable



Stucco made with Atlas White portland cement and no reinforcing was applied directly over concrete block.

Non-Staining Mortar of any desired tint or color

For backing, setting, and pointing natural building stone, Atlas White non-staining portland cement produces a mortar which is full strength and durable, and which will not stain or discolor the stone.

In addition, Atlas White portland cement may be utilized as a base for creating the exact coloring best suited to the stone. Being clear white, it blends perfectly with any coloring to produce delicate shades, fine tints, or rich warm colors.

To get a non-staining mortar in any tint or color desired, use Atlas White non-staining portland cement.

Send for helpful information about these and other uses of Atlas White portland cement . . . Fine Terrazzo Floors, Light-Reflecting White Cement Floors, Portland Cement Paint, Tile-Grout Mortar, Face-Brick Mortar also. (See Sweets' Catalog.) Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York City.

AF-C 2

cfm., 3/16 in. sheet board may be used; over that, $\frac{1}{4}$ in. board is advisable. Company believes the use of sheet board ducts will continue after metal shortage is alleviated because of proven value of substitute.

Manujacturer: Carrier Corp., South Geddes St., Syracuse, N. Y.

LEAD CALKING FERRULES use minimum of critical materials.

Name: Lead Calking Ferrules.

Features: Since lead is unrestricted for plumbing uses, these ferrules not only conserve critical materials but expedite war construction. Can be combined with hard lead closet flanges and drum trap covers previously announced (see FORUM, December 1942, p. 122), and with lead pipe, traps and bends. Ferrules can be welded or wiped to lead pipe; are amply strong and rigid to stand calking into cast-iron pipe; are made in 2, 3 and 4 in. sizes; have been tested and found satisfactory at pressures exceeding requirements.

Manufacturer: Lead Industries Assn., 420 Lexington Ave., New York, N. Y.

FLUORESCENT unit eliminates delayed start and flicker.

Name: Insta-Lite Fluorescent Fixture. Features: Fixture incorporates Insta-Lite feature which combines the ballast and starting switch and requires no additional starters, thereby reducing maintenance cost. Lighting is instantaneous at a lower voltage and temperature, has additional advantages of lower power loss, minimum stroboscopic effect, stable performance at maximum illumination intensity. Made for two 40-watt tubes for 110-125 Volt AC. Available with nonmetallic reflector for industrial and commercial installation. Manujacturer: The Spero Electric Corp., 18220 Lanken Ave., Cleveland, Ohio.

COMPASS for metal workers, draftsmen and other precisionists.

Name: Toolmaker's Compass Model TC3.

Purpose: For scribing and drawing accurate small circles from a few thousands to 5% in. radius.

Features: Interchangeable scribing needle or pencil adapter revolves around a combination center point and index finger

rest. Clamp nut locks worm gear after setting radius. Comes in durable case complete with scribing needle, pencil adapter and supply of leads. Price: \$10. *Manujacturer:* Ithaca Scientific Instrument Co., Ithaca, N. Y.

(Continued on page 128)







Inspiration and inventive genius, when translated into workable plans, spell progress. And, progress is the onward march of ideas which make for higher standards.

The Grand Rapids Invisible Sash Balance, for example, was a definitely progressive step in the development of window sash hardware. It was conceived and designed to operate smoothly and dependably under varying climatic conditions, to be quickly and easily installed, and to save time and money. That it represented marked advancement and filled a definite need has been proved by its use in thousands of homes and extensive defense housing projects.

Sold now only on priority, prompt delivery assured, the Grand Rapids Invisible Sash Balance will not be available for widespread civilian use as long as the Grand Rapids Hardware Company is engaged in war work.

When the restrictions are removed, the product then offered will incorporate further engineering developments—progressive steps toward an even better mechanism.

Send for Illustrated Catalog

Full information concerning the Grand Rapids Invisible Sash Balance is contained in our well illustrated catalog. Send for it.



RAPIDS

MICHIGAN



"PRIORITIES, YOU KNOW"

Top priority goes to the pencil that produces perfect blueprints direct from drawings.

That's why draftsmen, architects and engineers like the Venus Tracing Pencil. Specially made for a special job, Venus Tracing gives intense, opaque black lines on any kind of tracing paper or cloth. Result: sharp, clear white lines on the blueprints.

And Venus Tracing does not smear. It erases cleanly and completely-hence blueprints are free from ghosts.

> The Venus Tracing Pencil comes in four degrees of hardness-from t1 (medium) for smoothest surfaces to t4(hardest) for hard-tooth surfaces.

> May we send you free samples of all four degrees? Just mail us the coupon below.

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Tracing

PENCILS American Pencil Company Dept. 122, 500 Willow Ave., Hoboken, N. J. In Canada: Venus Pencil Company, Ltd., Toronto Please send FREE samples of Venus Tracing Pencils in all four degrees. NAME and title ____ FIRM NAME ADDRESS

STATE ____

CITY

GRAND RAPIDS HARDWARE COMPANY GRAND

FRACING

-venus



(Continued from page 126)

INSULATION in new, wider form speeds prefabricated construction.

Name: Kimsul.

Purpose: Great widths accelerate installation; compressed form saves storage and transportation space.

Features: Wide widths (4 to 7 ft.) of blanket, when expanded, cover entire wall or floor sections and are held securely under compression at all points between framing members and finishes (either interior or exterior). For off-site semifinished wall panel assembly, 4-ft. wide Kimsul is expanded and spread over exterior side of frame in one continuous blanket with waterproof paper side of blanket facing warm side of panel. Sheathing is then laid over panels, nailed to framing members through the insulation, thus securely fastening material at all points. Wall panel then is ready for shipment to erection site, with insulation protected from damage, permanently in place and out of the way for installation of piping, wiring, etc., on the job.

Manufacturer: Kimberly - Clark Corp., Neenah, Wis.

Name: Super-Kompak.



PORTABLE TURNSTILES for war plant service.



Purpose: To provide for employe inspection at roadway entrances.

Features: A turnstile, baseplate and guide railing are mounted together as a portable unit that can be quickly and easily moved into place when needed for employe inspection, and taken away again until the next shift, leaving the roadway open for trucks as before. Does not have to be fastened to the pavement. Removable chains close the gaps compelling passage through the arms of the turnstiles. Available with foot-pedal control for gate guard, or in token-controlled models operated by employes' time discs. Can be supplied for two-way operation (both entrance and exit through the same machine) or for one-way passage only. Can also be equipped with automatic registers for counting employes passing in one or both directions. Manufacturer: Perey Mfg. Co., Inc., 101 Park Ave., New York, N. Y.

WELDED WATER HEATER for extra heavy service succeeds riveted heater.

Name: Kewanee All-Tweed Tabasco

Features: Of new design with improved construction, Kewanee heaters are stocked in for ten sizes both domestic and commercial use. A high proportion of priheating mary surface increases the rate of heat absorption, effecting a 50° F. rise per hour. Will safely with-



stand pressures up to 100 lbs. per sq. in. Shell is formed from full gauge steel plate with heads, mud ring and framings accurately formed, fitted and welded all around. Shell rests on an improved base with heavy rocking grate. Heater utilizes any fuel, can be fired with ordinary skill.

Manufacturer: Kewanee Boiler Corp., Kewanee, Ill.

(Continued on page 130)





Engineers . . .

A number of interesting, well paid positions open with Fairchild Aircraft

T HIS LONG ESTABLISHED major aircraft company now has many positions in its Engineering Department open to engineers with previous aeronautical experience and to engineers who may not have had such experience.

Fairchild needs aeronautical, structural, mechanical and electrical engineers.

It needs architects, draftsmen, machine designers and others similarly qualified.

These positions are highly interesting, confidential, have to do with the unique development of military cargo-carrying aircraft. They offer splendid chances for advancement, financially and otherwise.

Candidates should have at least a high school education and 5 years of actual engineering or drafting experience. Age range 28 to 50. They must be American citizens. Those now employed at their highest skills in war work will not be considered.

In replying please send photo (any kind) and give details of experience, education and general background. Replies will be treated confidentially.

Address: Engineering Department B, Fairchild Aircraft, Hagerstown, Md.



(Continued from page 128)

METER makes simultaneous related records. Name: Two-Pen Electric Flow Meter. Purpose: For use where panel space is at a premium, or where it is desired to have two related flow records on the same chart for ready comparison.

Features: Actually two complete flowmeter receivers mounted within one double depth case. Both receiver mechanisms can be swung out and operated in



ACCURACY in MANUFACTURE is an e s s e n t i a l of successful

 PREFABRICATION

 WITHOUT the appliance of extreme limits of accuracy in manufacture, many advantages of factory prefabrication would be entirely lost. To attain this accuracy, Stewart & Bennett perfected a "sizer" which has been so successful that its design is on loan to other prefab

Thus you are assured of accuracy in production as well as quality, quantity and speed when you specify Stewart & Bennett ! Inquiry invited at National City or Washington, D. C. offices.

ricators for war-contract use.



the swung-out position. The connection between the rear receiving mechanism and its pen arm must necessarily be detachable and is arranged with a self-aligning Vnotch junction. Where two related measurements are involved, the operator has often sufficient guidance by observing the coincidence (or lack of it) of the two pens. For cases where continual reference must be made to this relationship, ratio-indicating pointer can be incorporated. The clearly visible red target moves to right or left from the center point on the scale and thus shows at a glance whether there is an excess or deficiency of one of the quantities with respect to the other. The pointer movement, moreover, is two and one-half times greater than the difference between the two recording pens and is thus much more readily noted. Integrating feature can be furnished on both mechanisms, but reading of rear mechanism integrator requires opening case and swinging front mechanism forward.

Manufacturer: Cochrane Corp., Seventeenth & Allegheny Ave., Philadelphia, Pa.

SOLDERING kit for electrical connections.



Name: Jiggers.

Features: Self-contained soldering unit has correct amount of solder and flux hermetically sealed in a waterproof, heatgenerating outer shell. When ignited, it produces the proper temperature to flow the solder into the splice. Burnt shell then drops off and a smoothly soldered splice is revealed. Prices range from \$1.85 a single box of 100 to \$1.11 per box in carton of 10 boxes.

Manufacturer: Jiggers, Inc., 215 West Illinois St., Chicago, Ill.

FIRE FIGHTING engine for industrial use. Name: Alfite 100 Lb. Carbon Dioxide

Name: Allife 100 Lb. Carbon Dioxide Engine. Purpose: For combating fires in flam.

Purpose: For combating fires in flammable liquids and electrical machinery. Features: Recommended for fires in flammable liquids, alcohol storage, electrical machinery and for other class "B" and "C" fires. Smothers fire instantly with carbon dioxide gas which expands upon discharge to 450 times its stored volume and is noncorrosive, nonpoisonous, odorless. Equipped with a horn to protect the operator from the static charge. Designed for perfect balance at wheeling height, it has a third swivel wheel for easy maneuvering, and a retaining latch which releases horn instantly, yet holds it firmly in place when not in use.

Manufacturer: American-LaFrance-Foamite Corp., Elmira, N. Y.

(Continued on page 132)



Now they're building BUSSES of Douglas Fir Plywood

But this is just one of Douglas Fir Plywood's startling wartime applications. Because of its versatility, this Miracle Wood is being used in ways undreamed of even a short time ago. And after Victory — thanks to these unique war jobs — Douglas Fir Plywood is going to serve you better and in more ways than ever before! Keep it in mind!





Sal-Mo Supply Duct, because of its low conductivity

cooling systems. Friction loss is low because of smooth interior surfaces. Air tight construction prevents heat Fabrication and packaging at the factory brings

labor costs, shipping, trucking and storage expense to a minimum.



APPROVED and LISTED BY UNDERWRITERS' LABORATORIES, INC.

Sal-Mo Supply Duct is Tested For: Fire Hazard Classification; Inflammability; Fire Retardant Classification; Fire Spread; Moisture Absorption.

Write For Information Regarding These Tests

SALL MOUNTAIN COMPANY 176 W. Adams St. Dept. E-3 Chicago



(Continued from page 130)

NEW PRODUCTS LITERATURE

PUMPS. Handbook for Wartime Care of Centrifugal Pumps, 28 pp., 5x7. Part of a series of maintenance manuals which already includes handbooks on wartime care of motors and V-belts. Specific recommendations for putting pump care on a wartime basis, since many pumps are working four times their peacetime rate. Attractive drawings clearly illustrate the construction of pumps along with maintenance rules for each function. Applies to all makes of pumps. Allis-Chalmers Mfg. Co., 1126 South 70th St., Milwaukee, Wis. SYNTHETICS. Bulletin #498, 12 pp., 8½x11. Description of laboratory equipment available in chemical stoneware, a well-vitrified and dense-bodied ceramic product. Includes illustrations, features and specifications of sinks, pipes, tanks, drains and miscellaneous equipment.

Bulletin 1620, 14 pp., 8½x11. Sets forth features and uses of Tygon synthetics, a group of materials introduced four years ago, possessing both the corrosion-resistant qualities of chemical stoneware and the desirable physical characteristics of rubber. Generously illustrated. The U, S. Stoneware Co., Akron, Ohio.

FIBER BOARD. Fir-Tex Insulating Board, 28 pp., 8½x10¾. Colorful and attractively illustrated catalog describes this wood fiber board used for many purposes—sheathing, insulating and color paneling. Includes a history of Fir-Tex, chart of types, and sizes for different uses. Fir-Tex Insulating Board Co., Porter Bldg., Portland, Ore-



RIGHT: Brushing Laucks Construction Glue on studding before applying Wallboard. LEFT: Frank Stepanek, "expediter" of glue and plasterboard walls, for world's largest housing project.

THAT 4-DAY SHIP that Kaiser built is no greater speed miracle than the 10,000-unit housing project for the Kaiser shipyard workers...where glue and plasterboard formed a new dry-wall partnership to speed this world's largest housing job.*

Working with Laucks glue specialists and U. S. Gypsum Co., Frank Stepanek, sub-contractor in charge of this work, developed the technique of applying USG's predecorated Sheetrock for walls. By using Laucks Construction Glue in place of nails he was able to erect completely finished walls quickly, economically, without defacing the surface... saving critical steel nails at the rate of 17,500 lbs. per 5 million sq. ft. of plasterboard!

*Wolff and Phillips, Architects.

Perhaps Laucks glue knowledge can help you... whether it's arches, beams, prefabricated houses, or something else you're building. Our 20 years' experience provide us with the "know how" to guarantee the right use of the right glue. (Wire, write or phone if you're interested in facts and figures on this Vanport job.)

I. F. LAUCKS, Inc. Lauxite Resins – Lauxein Glues In U. S. Address Inquiries to– SEATTLE-911 Western Avenue LOS ANGELES-859 E. 60th Street CHICAGD-6 North Michingn Avenue

CHICAGO-6 North Michigan Avenue Factories: Seattle, Los Angeles, Portsmouth, Va., Lockport, N. Y. In Canada Address Inquiries to—

In Canada Address Inquiries to— I. F. LAUCKS, Ltd., Granville Island, Vancouver, B. C. HERCULES-LAUX-MERRITT, Ltd., Stanbridge, Quebec • Don't forget, LAUX REZ, the pioneer resin sealer and primer, protects wood as rust-proofing protects metal.

Consult LAUCKS—America's Glue Headquarters

GYPSUM BOARD. Gold Bond Solid Partition Panels, 8 pp., 8½x11. Specifications and construction details are given for demountable interior 4 ft. wide panels for frame buildings. Photographs and clear elevation and section drawings illustrate the folder. National Gypsum Co., Buffalo, N. Y.

DECORATION. Formica Plastic Surfaces, 12 pp., 8%x11. Complete information on Formica (phenolic and urea resinoid sheet) and Formica Realwood (wood veneer under Formica sheet). Describedand illustrated as a decorating finishing surface for panels, inlays, table tops, doors, etc. Samples of the large range of colors and details of construction are given. The Formica Insulation Co., 4613 Spring Grove Ave., Cincinnati, Ohio.

GYPSUM BOARD with "Millerized" asphalt roofing surface. Bestwall Exterior Board and Certain-teed Laminated Roof Decking, 6 pp., 8½x11. Folder describes and illustrates two new noncritical materials for speeding wartime construction; gives engineering data, specifications and construction details. Certain-teed Products Corp., 120 South La Salle St., Chicago, Ill.

WINDOW. The Phenix All Season Window for Defense Housing, Catalog Supp. No. 8, 4 pp., 8½x11. Brief description, pictures and price list of combination window with screen and storm sash inserts which are operated from the inside. Phenix Mfg. Co., Inc., 2684 North Humboldt Ave., Milwaukee, Wis.

PREFABRICATION. Homasote Precision-Built Homes, 16 pp., 8½x11. Development of "engineered housing," plan of operation, flexibility of design, speed and quality of construction, and demountability are fully discussed and illustrated with step-by-step photographs in Homasote's most recent publication. Homasote Co., Trenton, N. J.

PREFABRICATION. "Victory" Huts and Homes, 29 pp., 8½x11. Booklet gives specifications and detailed drawings of temporary and demountable housing units, besides sketches showing ways in which huts can be and are used for housing troops at home and abroad, and homes for war workers. Liberally illustrated. Texas Pre-Fabricated House and Tent Co., Dallas, Tex.

LIGHTING. Red Spot Lighting for Combat Operations and War Production, Catalog 43-8, 16 pp., 8%x11. Listing of emergency lights for ships; fluorescent fixtures for war plants with metal or Masonite reflectors with enamel finish; and indirect lighting units with Plaskon (urea-formaldehyde molding compound) reflectors. Illustrations, specifications and features of each type are detailed. The F. W. Wakefield Brass Co., Vermilion, Ohio.

LIGHTING. War Time Lighting, 4 pp., 8½x11. This edition describes six indirect lighting, ceiling fixtures with standard bowl-silvered lamps and sealed-in reflectors for high-level lighting without glare and shadows, for use in war plants, laboratories and offices. Illustrations include three interiors of Pentagon Bldg., where two types of Versen fixtures have been installed. Kurt Versen Co., 709 Sip St., Union City, N. J.

HOT WATER HEATERS. Standard Code for Testing Hot Water Unit Heaters, 12 pp., 8½x11. Standard code booklet, devised to assure public of uniform practices throughout the unit heater industry, comprises definition of terms; rating; outline, equipment and procedure for testing; computation of results; and addenda for steam unit heaters. Industrial Unit Heater Assn., 5-208 General Motors Bldg., Detroit, Mich.

COMBUSTION CONTROLS. Selecting Controls for Fuel Conservation, 16 pp., 8½x11. Explanation of fundamental rules and formulae governing proper burning of fuel and utilization of heat with five types of installation. Suggestions for selection of equipment with an analysis of use and value of combustion instruments. Prepared by M. W. Crew, Combustion Equipment Division, The Hotstream Heater Co., 8007 Grand Ave., Cleveland, Ohio. "Your BATHE-RITE Showers were simpler to install and cost considerably less to erect"

this comment . .

from ONE Plumber is typical of the experience of Plumbers everywhere. And that's why MORE BATHE-RITE Shower Cabinets are going to work for our war effort everyday — thousands have already been installed in factories, training camps, air bases, war housing, and Government building projects.

Attractive, modern BATHE-RITE SHOWER CABINETS have been designed for QUICK ASSEMBLY. There are few pieces to handle, and parts fit together so easily that even unskilled labor can do the job quickly and efficiently — at substantial savings both in time and money . . . And you have a finished Shower installation you can be proud of. Showers that meet the highest wartime standards of quality, convenience, health, and appearance.

Bathe-Rite.

SHOWER CABINETS...

MILWAUKEE STAMPING COMPANY

Built in two standard models to meet all wartime needs . . . Of materials to comply with U. S. War Department, and Federal Public Housing Authority specifications. Packed for easy handling.

WRITE OR WIRE FOR

DETAILS AND PRICES!

Give name of project and quantity required. Delivery assured on any quantity, when and where needed.

Quality-Built by BATHE-RITE

8275 South 72nd Street .



Milwaukee, Wisconsin



88 LEXINGTON AVENUE

NEW YORK, N.Y.



Long before the war, ventilation was becoming more than a matter of opening and closing a window. It is inevitable then that truly modern ventilation will be expected and demanded in the homes that will be your post war business.

The time has not yet come when we can show you a picture and say—"this is the ventilator of the future". We **can** assure you, as the largest producers of electrical home ventilators, that the name "V-Line" will represent the best for homes of every size and cost.



For an air-minded nation — V-Line Buy War Bonds ventilation. and Stamps

VICTOR ELECTRIC PRODUCTS, Inc. 3250 Robertson Rd. Cincinnati, Ohio



Our planning department occasionally finds a breathing spell from other war work to try designs applicable to the postwar world.

We intend to be ready for adequately housing the great number of workers who want homes, when peace comes to America.

ILLINOIS LUMBER MANUFACTURING COMPANY

Cairo, Illinois



HIS is more than a war of mechanical monsters clashing in the night . . . more than a war of production.

It is a war for markets—your markets! The Axis wants your business—wants to destroy it once and for all.

With so much at stake, there is no doubt you will want to do everything you can to meet this Axis threat. Two ways are open: Speed production and put 10 percent of your income into WAR BONDS! The only answer to enemy tanks and planes is *more* American tanks and planes—and your regular, month-bymonth purchases of War Bonds will help supply them. Buy now and keep buying.

THE GOAL: 10% OF EVERYONE'S INCOME IN WAR BONDS

When you install the Pay-Roll War Savings Plan (approved by organized labor), you not only perform a service for your country but for your *employees*. Simple to install, the Plan provides for regular purchases of War Bonds through voluntary pay-roll allotments.

Write for details today! Treasury Department, Section R, 709 12th St. NW., Washington, D. C.



War Savings Bonds

This space is a contribution to Winning the War by THE ARCHITECTURAL FORUM





"For Distinguished 4 SERVICE"

They don't award Army or Navy "E's" to a wood finish. If they did, MINWAX would be right out in front.

For example, an Ordnance Plant in Texas faced the problem of finishing wood work and floors in cafeterias, dormitories, etc. They wanted a mate-rial that would apply quickly and economically and give a satisfactory protective finish.

From their years of experience, the architects knew that MINWAX Flat Finish met the require-ments ideally. Result—MINWAX was used with com-plete satisfaction to all concerned.

This is merely one of hundreds of examples to prove that the use of MINWAX to solve "today's" problems is the result of "yesterday's" experience with this product.

You, too, can profit by the many years of success behind MINWAX-the original penetrative stainwax finish for wood floors, paneling and trim. By soaking into the grain instead of remaining on the surface, MINWAX Flat Finish becomes part of the wood itself, It seals, protects and preserves the natural beauty of the wood, Write for complete information to the MINWAX Company, Inc., 11 West 42nd Street, New York.

FACTS ABOUT MINWAX FLAT FINISH

- the original penetrative finish seals, protects and pre-
- can be applied with steel wool machine or by hand wiping
- · finish does not mar. scratch or powder

serves

· in clear and 10 nonlapping colors

Specified by architects for more than 30 years BUY WAR STAMPS AND BONDS





"home of Tomorrow"

A miracle of beauty and utility! Modern-fold Doors are being earmarked by hundreds of homeowners and architects for a role in their postwar plans. As modern as tomorrow — yet they are never at odds with traditional architectural settings.

Modernfold provides economical and

New Castle, Ind.

effective room division — eliminate swing area. With a host of colorful fabrics, it will be possible to match any decorative scheme. Include Modernfold in your plans for tomorrow — write today for full information.

NEW CASTLE PRODUCTS

Modernfold Doors, 424 Madison Ave., New York City

1613 | Street



36-30 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

The New Swartwout NCM Line Provides Tested and Approved Ventilator Designs in Non-Metallic Materials



For Industrial and Other War-Use Buildings



NCM UNIT Heat Valve



FOR YOUR CLIENTS requiring roof ventilators of non-critical materials, Swartwout has developed a complete line of "NCM" ventilators. They are patterned after standard designs in the regular Swartwout line — perform with the same high efficiency. Steel Swartwout Ventilators are available for essential applications where non-critical materials would be unsuitable.



Today, send for your copy of this new bulletin ~ No. 217 ~ on the NCM Line



THE SWARTWOUT CO., 18617 Euclid Ave. Cleveland, Ohio

Swartwout VENTILATION SPECIALISTS

Let's Hasten the Day

EACH day brings us nearer to that happy day when the boys come home and to the victory that will usher in a new era of peaceful living—an era of new comfort for millions who have lived on the border line of "haves" and "have nots."

This expanded, untouched market, will furnish a tremendous opportunity for the architect who is able to put the most convenience into the home at the most reasonable cost.

TODAY-Invest in Victory by buying War Bonds and PLAN for your Post War business.





When Youngstown Pressed Steel returns to the manufacture of kitchen equipment, it will have new features for added kitchen convenience. In the meantime, if you want to be put on the mailing list to receive information on Youngstown Pressed Steel post war kitchens, just send your name to YOUNGSTOWN PRESSED STEEL DIVISION DEPT. AF343 MULLINS MANUFACTURING CORPORATION WARREN, OHIO

It's OUR WAR let's fight it NOW!

SPECIFICATION AND BUYING INDEX

The advertising pages of THE ARCHITECTURAL FORUM are the recognized market place for architects and all others engaged in building. A house or any other building could be built completely of products advertised in THE FORUM. While it is not possible to certify building products, it is possible to open these pages only to those manufacturers whose reputation merits confidence. This THE FORUM does.

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Overhearing our conversation these days might cause almost anyone to drop his arithmetic and start to draw pictures. We at LCN *are* tremendously proud of our part in the war, and when the story can be told we predict that our friends will be, too.





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COLBY COLLEGE

JENS FREDRICK LARSON, Architect, Hanover, N.H. HEGEMAN-HARRIS CO., INC., General Contractor, N.Y. City FRANK J. LOGAN, Painting Contractor, Portland, Me.

(Upper left) Women's Union, Social and Recreational Center. (Upper right) Detail of entrance, Louise Coburn Hall, girls' dormitory. (Center) Mary Low Hall (left) and Louise Coburn Hall. At lower left (top to bottom) Dormitory Lounge in Memory of Gertrude B. Lane, famous Maine-born editor; Women's Union Lounge; Private dining room, Women's Union.

HAT are said to be the last college buildings in this country to be finished until after the war, are the women's dormitory, union and gymnasium opened last fall on the new Mayflower Hill campus of Colby College, Waterville, Maine. Completion of five other partially-built structures on the 640acre campus must await the coming of peace.

All buildings are Colonial in design, with harmonious furnishings and modern equipment. Colby College, founded in 1813, and co-educational since 1871, is now co-operating in an Army Air Force Pre-Flight academic training program. The architectural charm of its interiors will be long preserved through the use of Pratt & Lambert Paint and Varnish. Whatever the project, college or cathedral, war housing or industrial plant, the P&L

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