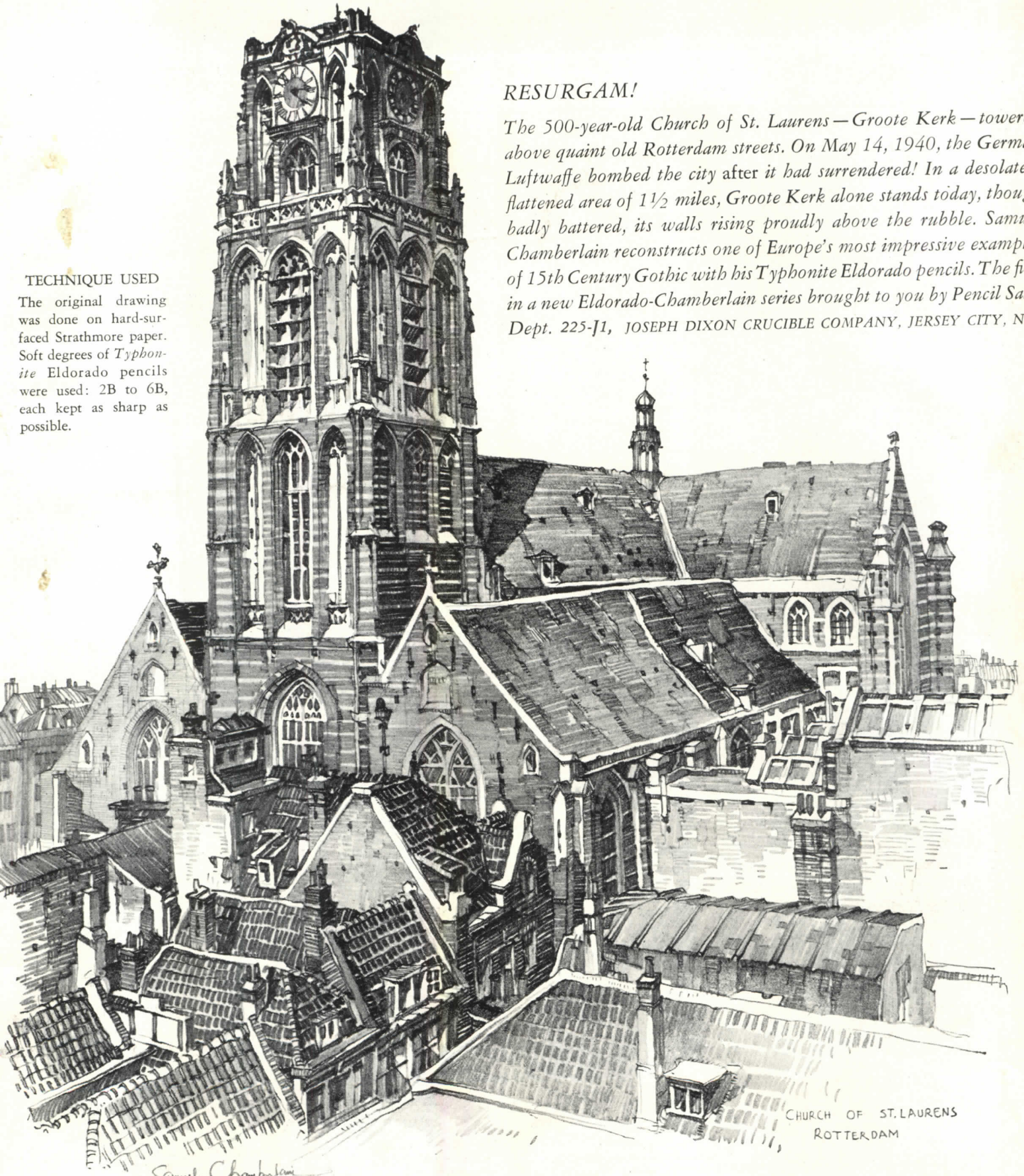
TECHNIQUE USED

The original drawing was done on hard-surfaced Strathmore paper. Soft degrees of *Typhonite* Eldorado pencils were used: 2B to 6B, each kept as sharp as possible.

RESURGAM!

The 500-year-old Church of St. Laurens — Groote Kerk — towered above quaint old Rotterdam streets. On May 14, 1940, the German Luftwaffe bombed the city after *it had surrendered! In a desolately flattened area of 1½ miles, Groote Kerk alone stands today, though badly battered, its walls rising proudly above the rubble. Samuel Chamberlain reconstructs one of Europe's most impressive examples of 15th Century Gothic with his Typhonite Eldorado pencils. The first in a new Eldorado-Chamberlain series brought to you by Pencil Sales Dept. 225-J1,* JOSEPH DIXON CRUCIBLE COMPANY, JERSEY CITY, N. J.

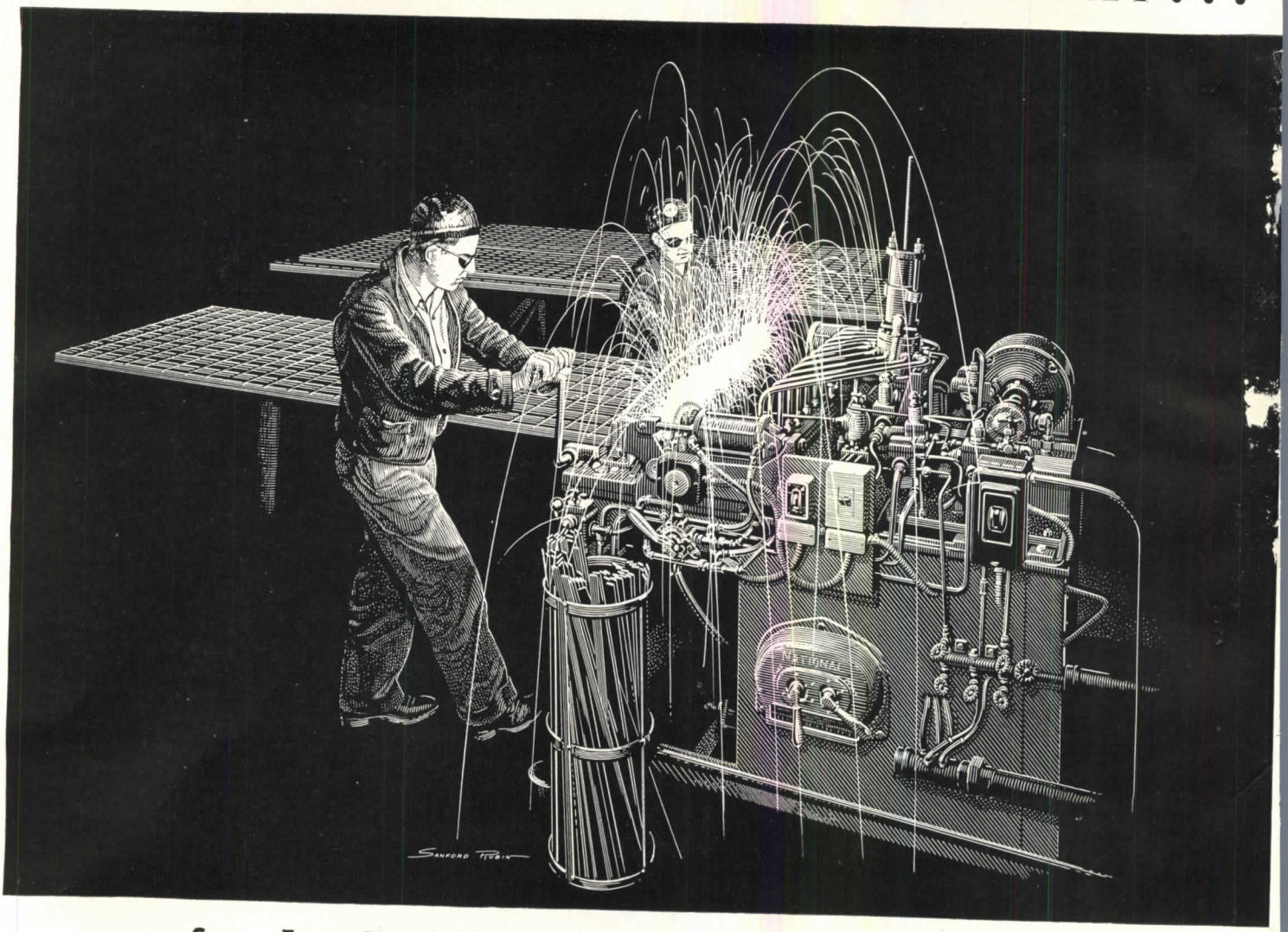


CHURCH OF ST. LAURENS
ROTTERDAM

Samuel Chamberlain
WITH DIXON'S TYPHONITE ELDORADO

TYPHONITE ELDORADO

EVERYTHING WE ARE DOING TODAY...



Some Facts We'd Like You to Know About Mesker Brothers

Founded in 1879, Mesker Brothers has always been in the construction industry. First, complete store fronts of sheet metal (the original pre-fabricated house). Then, wood windows . . . stairs, other fabricated steel products. Today . . . one of America's oldest, largest and best-known makers of metal windows. New equipment, like the Multiple Automatic Pressure Welder above, plus many new techniques, assure even better, *advanced-type* Mesker Windows tomorrow . . . for the modest bungalow or the towering skyscraper.

Mesker Engineers . . . the country over . . .

ALABAMA
Montgomery—Thomas M. Gorrie

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Miami—Lindsley Lumber Co.
Orlando—J. L. Bulmer
Tampa—A. B. Zierleyn

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Chicago—Branch-Nicoloff Co.
Decatur—Ornamental Metalworks Co.

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Evansville—International Steel Co.
Fort Wayne—Don White
Indianapolis—W. J. Holliday & Co.
South Bend—The Builders Agency

IOWA
Davenport—Builders Service Co.
Des Moines—Perkins Concrete & Lum. Ser.
Waterloo—C. M. Berkley Hdwe. Co.

KANSAS—Salina—The Lee Hardware Co.
Wichita—Watkins, Inc.

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Lexington—Faulkner Bldrs. & Sup. Co.
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MARYLAND
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MASSACHUSETTS
Boston—Stel-Wod Eng. Co.

MICHIGAN
Detroit—C. B. Moe Co.
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Joplin—General Steel Prods. Co.
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MONTANA
Great Falls—Building Service, Inc.

NEBRASKA
Hastings—R. W. Kerr Co.
Omaha—Earl S. Lewis & Co.

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YESTERDAY AND TOMORROW
CASEMENT WINDOWS • MONUMENTAL WINDOWS • INDUSTRIAL WINDOWS • SCREENS • INDUSTRIAL DOORS • DETENTION WINDOWS • REINFORCING MESH GRATING . . . plus . . . tomorrow . . . some other interesting new products!

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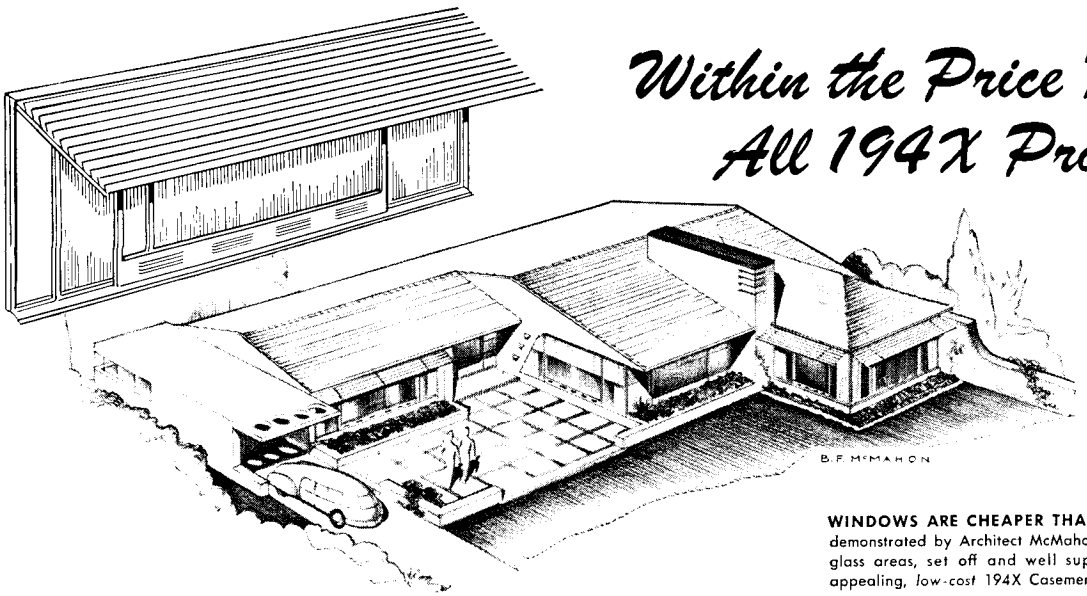
IS DESIGNED TO HELP YOU TOMORROW

Within the Price Range of All 194X Projects



WINDOWS ARE CHEAPER THAN WALLS... a fact that is strikingly demonstrated by Architect McMahon's rendering above. Note the large, glass areas, set off and well supported by unusually practical, eye-appealing, *low-cost* 194X Casements.

Mesker Metal Windows

Not many years ago, Mesker scrapped an entire manufacturing process . . . equipment, special steel shapes, tools, dies . . . because a better way had been found to produce a better product. The same process is being repeated today, on an even larger scale. America tomorrow will buy Mesker Windows that are fresh in design, even better in quality, trimmer, more attractive, easier to operate, more weather-tight. And this is very important to YOU . . . previously, Mesker METAL Windows were installed only in luxury homes . . . few being found in modest houses. But, when the war is won, they'll be priced within the reach of all. . . . not a select few! Yes, even the small home owner will enjoy the many advantages of Mesker Metal Windows. That's something we've been working toward for years; but, until now, the techniques and equipment which will make it possible had yet to be developed. By doing what we are today, you . . . tomorrow . . . will more than ever be justified in remembering: "In the future, specify the window 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 whirly-gigs . . 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!

NEW YORK
Albany—Builders Agency
Buffalo—Wm. C. Kraetz
New York City—Boorman & Co.
North Tonawanda—Rose Coal & Bldrs. Sup. Co.
Rochester—Bowerman Bldrs. Service

NORTH CAROLINA
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Goldsboro—A. W. Griffin Sales Agency
Winston-Salem—Steel Service Co.

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Cincinnati—Fred M. Cole
Cleveland—M. M. Chaney
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Toledo—Spencer Comstock

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VIRGINIA
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TODAY
STEEL AMMUNITION CASES • PRE-FABRICATED STEEL AIRPLANE RUNWAYS • OIL AND WATER STORAGE TANKS FOR MINE SWEEPERS AND SUB-CHASERS . . . other products which necessarily must remain military secrets.

Now Serving in Two New Chapels for the Armed Forces . . . RADIANT HEATING and BYERS WROUGHT IRON

In war, as in peace, Radiant Heating continues to demonstrate its adaptability and versatility. The illustration shows it being installed in one of two new chapels, built for the military forces.

The chapels are 131 feet by 50 feet. The 2½-inch supply lines, 2-inch headers, and ¾-inch coils are all wrought iron, laid on a gravel base and covered with a concrete slab 4 inches to 5 inches in thickness. The system was designed by F. E. Markel, Engineer, Mechanical Department of Robert and Company, Architects. Byers Wrought Iron Pipe was used.

Radiant Heating is receiving particular attention from active architects and engineers today, because of its economy in material requirements. A comparative check recently made on a projected job revealed that metal needed (exclusive of boiler) for a hot water system was 1425 lbs.; for a steam system, 977 lbs.; and for a Radiant Heating system, only 727 lbs. With conservation so important, the ability of Radiant Heating to do the job with *less* makes it an invaluable tool. Further, several Radiant Heating users have reported substantial reductions in comparative fuel requirements—another advantage of particular value today.

Questions of availability and delivery naturally arise in connection with all jobs today, when allocations must be made on the basis of greatest individual contribution to war effort. When you have such a question, we urge that you do not depend on rumor or hearsay, but contact a Byers Field Service Representative, the nearest District Office, or the Home Office in Pittsburgh. You can thus be sure of an authoritative answer.

If you do not have our technical bulletin, "Byers Wrought Iron for Radiant Heating Installations" . . . or if any of your associates who are concerned with heating do not have one . . . we will be glad to send you a copy or copies, on request.

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

Corrosion costs you MORE than Wrought Iron

BYERS
GENUINE WROUGHT IRON
Tubular and Hot Rolled Products
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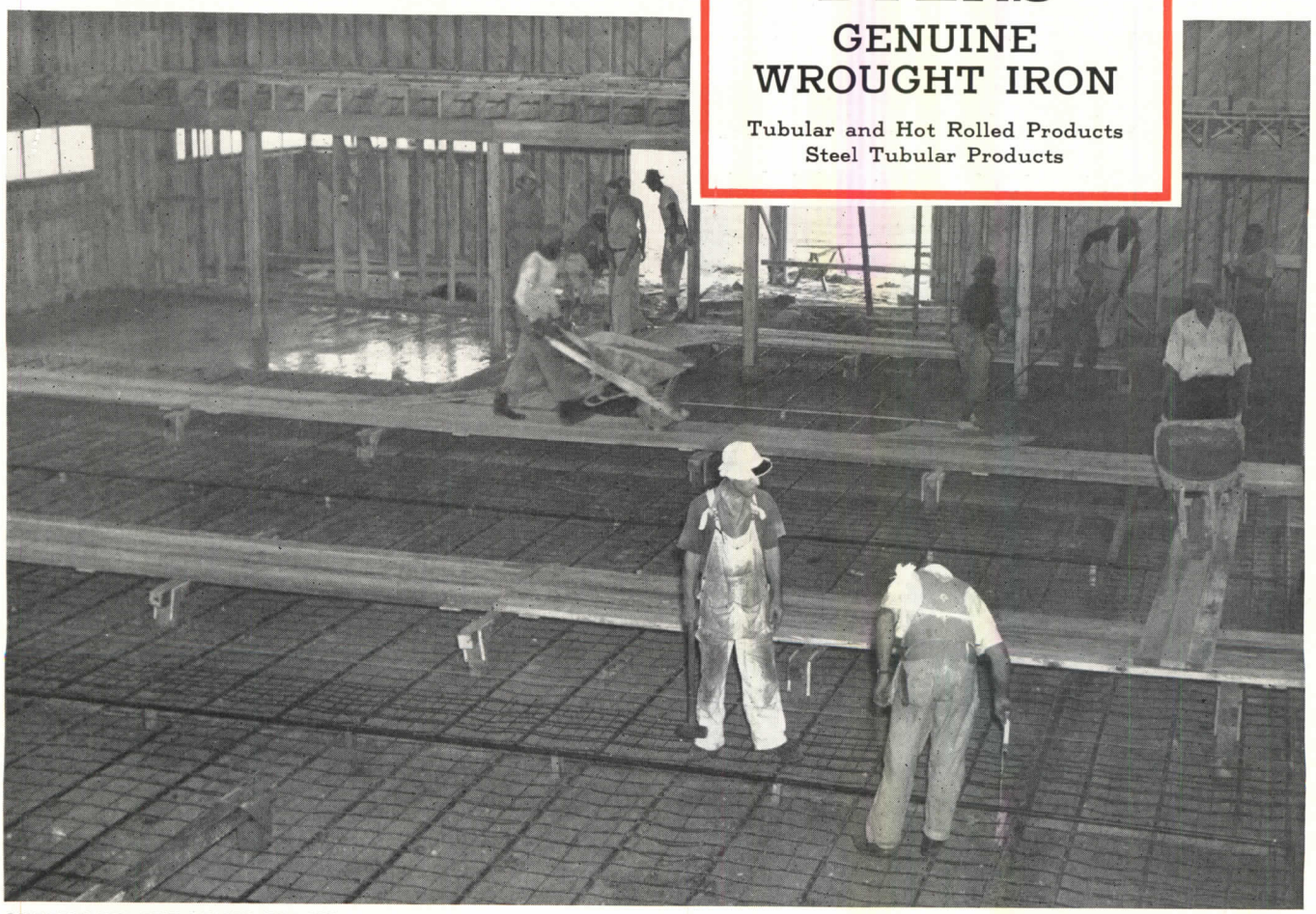

CHAPELS FOR THE ARMED FORCES

ROBERT AND COMPANY · ARCHITECTS AND ENGINEERS

ARCHITECTURAL

RECORD

COMBINED WITH AMERICAN ARCHITECT AND ARCHITECTURE

VOL. 93 **JANUARY 1943** No. 1

CONTENTS

NEXT MONTH

NEW industrial plants are still needed in the war effort, and will probably account for the expenditure of a billion and three-quarters dollars during 1943. In December, the new developments in the structure of wartime industrial plants was the subject of our Building Types Study. In February, the mechanical plant considerations of industrial building will be set forth authoritatively by men who are in the thick of producing America's wartime factories. They will discuss the architectural and engineering features of the heating and air conditioning, of lighting equipment, plumbing and sanitation, and of providing cafeterias and restaurants for 24-hour-a-day production. . . . High on the list of buildings now being planned for postwar construction are school buildings. In February, therefore, our Building Types study will be devoted to the changes and progress in the designing of schools, the new conception of the school as a cultural center for the community, for both children and adults, and the implications of these changes as related to the planning and structure and equipment of American schools. . . . Other features include presentation of the trailer house in action, and the reaction of the users to this type of dwelling. Also, several designs for community shopping centers, presenting advanced and practical ideas in the planning and design of these important neighborhood units.

F. W. DODGE CORPORATION
H. JUDD PAYNE, Vice President in charge of MAGAZINE DIVISION

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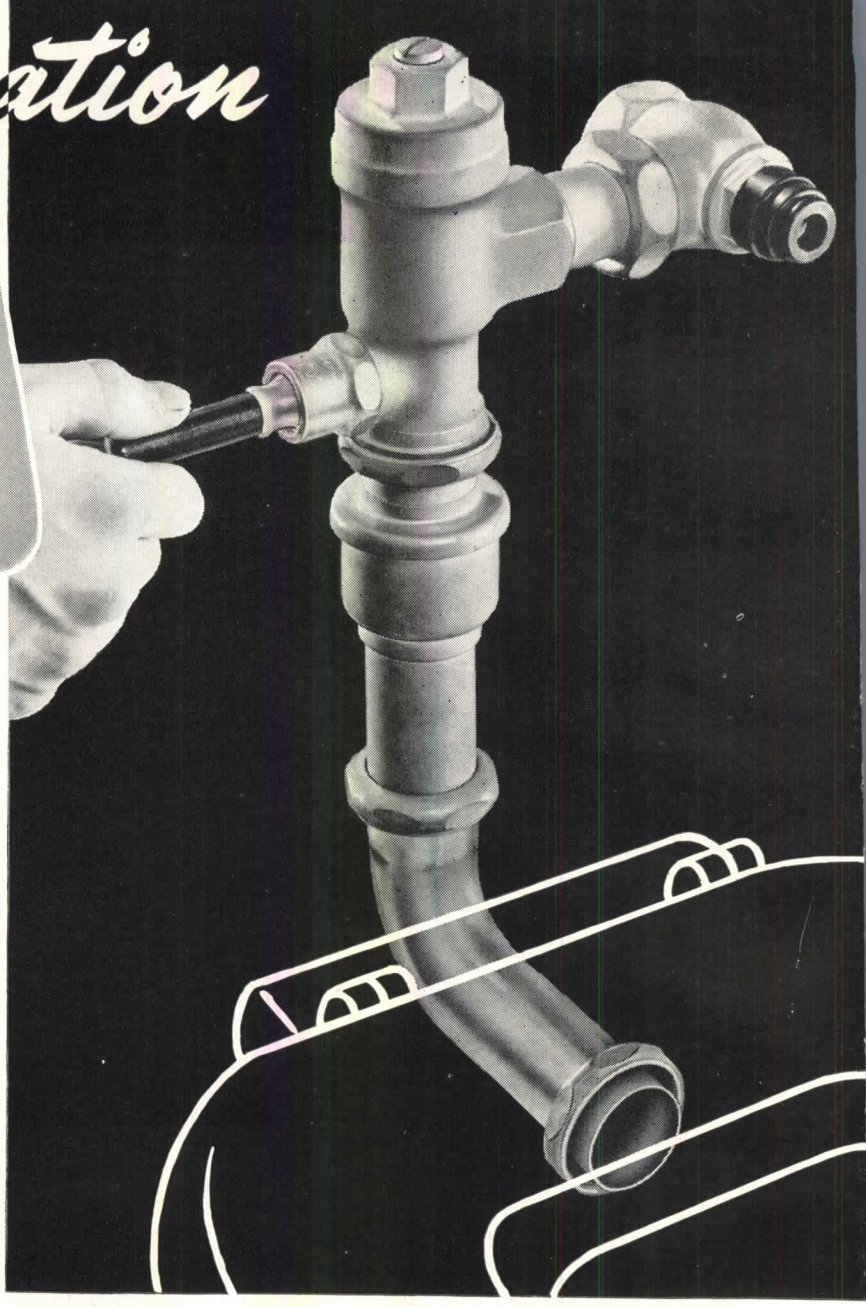
—for the Duration

THE "V" MODEL Watrous FLUSH VALVE



Conserves critical war materials . . .
Meets War Department Spec. PE-623
Built to give lasting, reliable service

• • • —

WAR projects must have flush valves that are highly dependable . . . long-lived . . . water-saving. Yet the critical materials used in the manufacture of such valves must be held to the minimum.

To meet this need, Imperial developed and is concentrating its production for the duration on Watrous "V" Flush Valves. These valves save brass, bronze and other extremely critical metals required for the war. They conform to War Department Specification PE-623 and are approved for use on government projects.

These "V" model valves retain, however, Watrous proved design and excellence of workmanship, and they will give lasting, economical service.

As will be noted from the illustration at right, Watrous "V" Flush Valves are similar in general appearance and features to the well known Watrous "Jewel" Flush Valve. The alternate materials used in place of brass and bronze in these valves have been selected with extreme care to the end that efficiency and dependability will be retained.

It is important to note that all vital working parts of the valve remain brass, a vital point in assuring long, trouble-free service.

For detailed information on Watrous "V" Flush Valves and the combinations to use to comply with War Department Specifications, write for Bulletin 858-W, or see the 1943 Sweet's Catalog File, Section 27, Catalog No. 39.

THE IMPERIAL BRASS MFG. CO.
1240 West Harrison Street, Chicago, Illinois

"V" Model retains Watrous proved design and excellence of workmanship

Like all Watrous Flush Valves, the "V" model offers a water-saver adjustment. This enables valve to be regulated to MINIMUM water requirements of fixture by a slight turn of the adjusting screw.

• • • —

Advantages of Watrous system of "Single-Step-Servicing" are fully embodied in this valve. Under this system complete operating unit may readily be lifted out. This makes possible quick, convenient replacement of worn washers, etc., if ever necessary.

• • • —

Valve is shown complete with vacuum breaker which provides positive protection against back-siphonage.

QUICK REFERENCE CHART

Showing Watrous 'V' Flush Valve combinations which correspond to various Item Nos. in War Dept. Spec. PE-623

War Dept. Spec. No.	Watrous Combination to Use	War Dept. Spec. No.	Watrous Combination to Use
Item P-1	WD-933-WVB	Item P-6A	WD-932-VB
Item P-2	WD-949	Item P-30	WD-939-VB
Item P-3	WD-949	Item P-31	WD-939-VB
Item P-4	WD-949-VBF	Item P-32	WD-941
Item P-6	WD-932-VB		

Watrous Flush Valves

WASHINGTON NEWS

By WILLIAM J. CASEY

WPB-NHA War Housing Policy • Material Use • Housing Programming Occupancy • NHA Inspectors • War Housing Manual • Construction and Essential Industry • AA-4 for Conversion • Building Funds Running Low • FHA Has Its Own Priority System • Changes in Construction Control • Builders' Hardware Simplification

THE BIG BUILDING NEWS in Washington is the joint declaration of policy on war housing, signed by Donald Nelson for WPB and John Blandford for NHA. This is the latest attempt to integrate the war housing program and the release of critical material for housing. It applies to all who are building housing, whether publicly or privately financed. There is, however, still no commitment that war housing programs, when approved, will receive from WPB materials necessary to finish them. The nearest thing to a commitment is this flexible statement made by Donald Nelson:

"When war housing programs have been approved, WPB will endeavor to provide materials necessary to carry them to completion as expeditiously as is consistent with all other elements of the war effort."

The agreement itself hedges just as heavily, using the following language:

"After determination by the War Production Board as to the availability, of critical materials for war housing, the Board will allocate the critical materials by quarters and the National Housing Agency will determine the divisions of such materials between publicly and privately financed war housing."

Material Use

On the use of critical materials, the new agreement largely formalizes existing practices. The new war housing standards and the latest war housing critical list continue to control the use of materials. These restrictions apply to all materials used, whether taken from stock, secured without priority assistance, secured with priority assistance or by gift or loan. WPB and NHA join in a policy of standardizing utility and equipment installations, size of units, etc. Where NHA finds that an established quota for a "Housing Critical Area" is excessive, it will revise or cancel the quota and WPB will similarly revise or cancel the authorizations and preference ratings. Wherever a project requires further formal action by WPB, such as authentication of purchase orders, rerating or extension of the expiration date of the applicable preference rating order, NHA will see that any practical changes are made to effect the conservation of materials and put the project in conformity with the war housing construction standards and the latest war housing critical list. NHA gets a delegation of authority from WPB to enforce authentication of purchase orders.

Housing Programming

NHA will do the programming—after consulting other agencies. NHA will submit to WPB each quarter a complete breakdown of materials requirements and types of units proposed. The breakdown will be by location and number of the units which it programs for construction in each of the following categories: permanent family housing, temporary family housing, dormitory apartments and dormitories. WPB will act within thirty days; pending definite action, interim allocations may be made. WPB will determine the availability of critical materials for housing, allocate the critical materials by quarters and NHA will determine how materials allotted ought to be divided between publicly and privately financed war housing.

Two programming conditions are imposed on NHA.

1. All war housing is to be so located as to be accessible to the industry it is intended to serve and with due consideration to the need for conserving critical materials in the construction and utility extensions.

2. NHA will continue to provide a large proportion of its total program in the form of temporary housing, including family dwelling units, dormitory apartments, and dormitories.

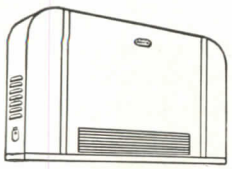
Occupancy

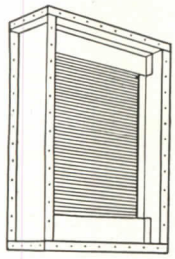
The agreement provides that occupancy is to be limited to eligible war workers, as defined by NHA in consultation with WPB and the War Manpower Commission. NHA reaffirms its policy of making maximum

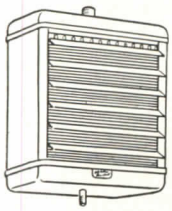
(continued on page 10)

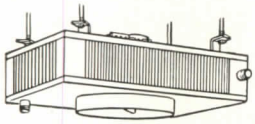
"It was a little white envelope and it contained the directions and the front-door key!"
—Drawn for the RECORD by Alan Dunn

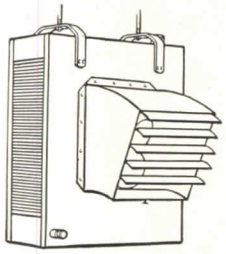
TOMORROW is well

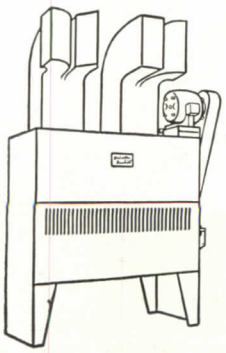










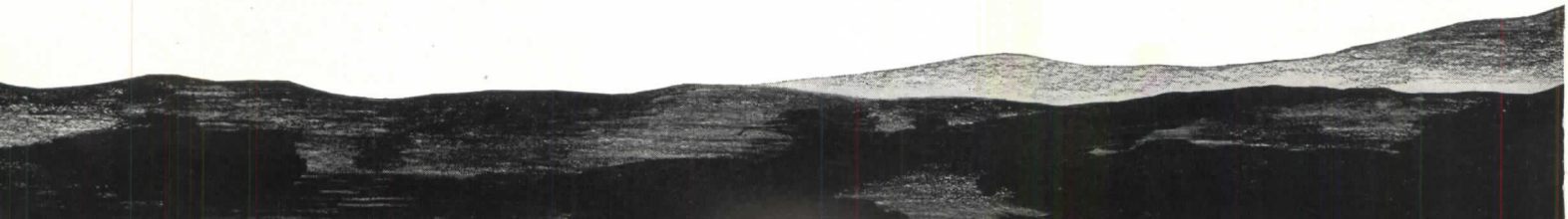


The bright Tomorrow about which so many people are talking and writing will not come to us on a silver platter . . . We make our *tomorrow* as we face CHANGE *today!* In a comparatively short time, as history goes, this war will end. As you go into the "new era" that will follow it you may wish the help of an organization that knows how to harness air for comfort, health, or processing. When you choose such an organization to match tomorrow, pick one which has proved itself today: NESBITT. ☆ You can judge NESBITT by the achievements of yesterday. To mention just a few: NESBITT was *first* to give *syncretized* ventilation for schoolrooms, offices, and public buildings . . . *first* to use dual steam-distributing tubes inside the condensing tubes of heating elements and heat transfer surface . . . *first* to introduce cooling surface with a special drain feature . . . *first* to meet wartime necessity by converting from copper to steel for radiators and fins . . . and *first* to develop non-metallic casings for unit ventilators and heaters. ☆ The real Tomorrow is all about us in the babble of little children whose world Tomorrow will be. To their good future NESBITT is committed. Come on, Tomorrow . . . NESBITT is ready!

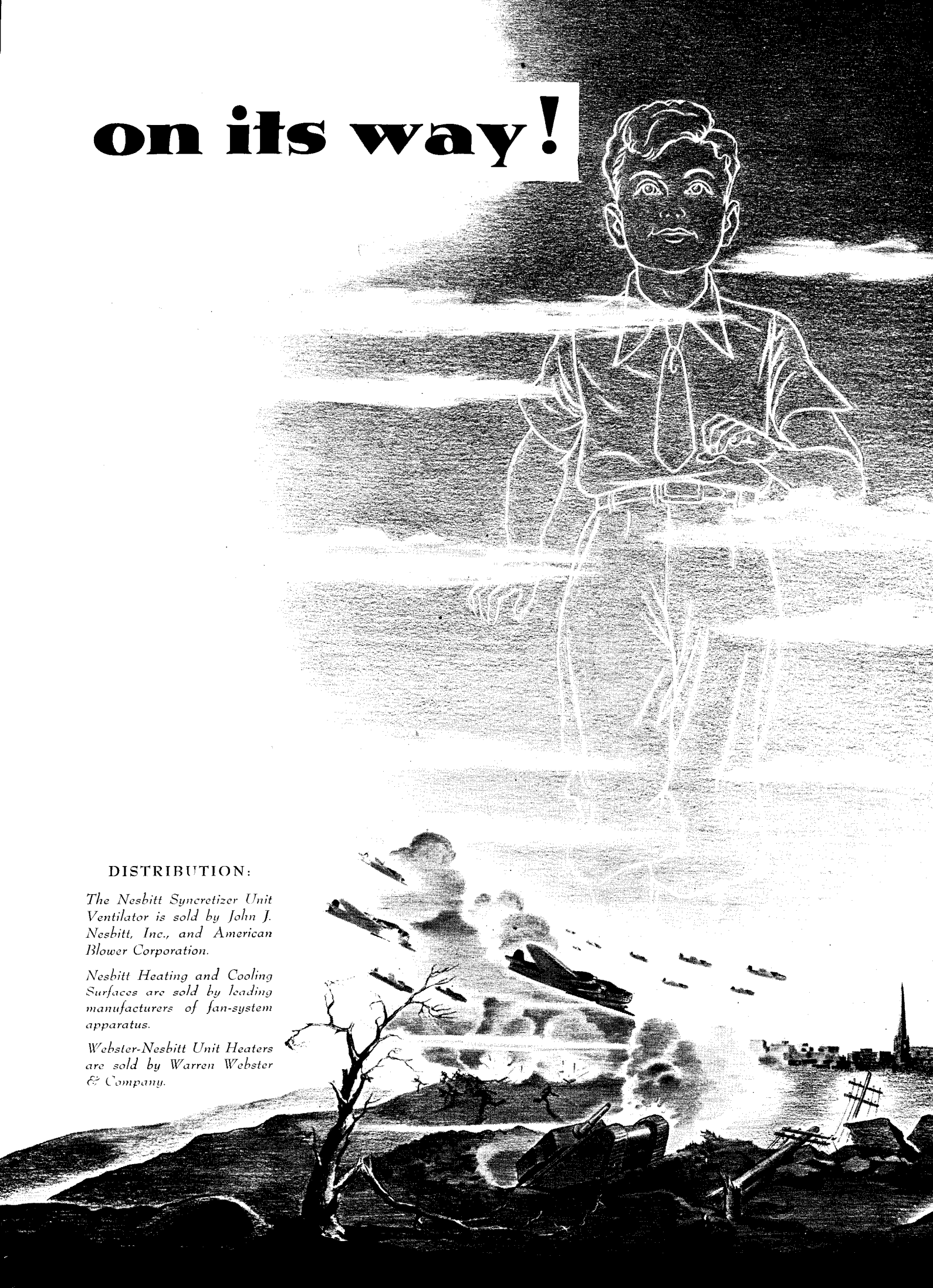
NESBITT

Manufacturers of the Nesbitt Syncretizer Heating and Ventilating Unit, Nesbitt Heating and Cooling Surfaces, and Webster-Nesbitt Unit Heaters

John J. Nesbitt, Inc., Holmesburg, Philadelphia, Pa.



on its way!



DISTRIBUTION:

The Nesbitt Syncretizer Unit Ventilator is sold by John J. Nesbitt, Inc., and American Blower Corporation.

Nesbitt Heating and Cooling Surfaces are sold by leading manufacturers of fan-system apparatus.

Webster-Nesbitt Unit Heaters are sold by Warren Webster & Company.

(continued from page 7)

use of existing property to house eligible war workers. Emphasis will continue on securing the use for housing war workers of the maximum number of rooms and family accommodations in existing constructions and on the conversion of existing space in the apartments and rooms for housing accommodations.

For the duration, war housing projects will be on a rental basis with the proviso that after four months of occupancy a privately financed housing unit may be purchased by the occupant.

NHA Inspectors

NHA will send out inspectors to insure that all housing conforms to rules, regulations, and orders of NHA and WPB. WPB will enforce compliance by:

1. Revoking authorizations or preference rating orders and otherwise penalizing any builder guilty of violating any provision of any application to, or any order or regulation of, the War Production Board affecting housing.
2. Promptly investigating every charge of violation brought up by the National Housing Agency.
3. Requesting the Department of Justice, in appropriate cases, to institute civil or criminal proceedings.
4. Instructing its Compliance Division to make inspections to supplement the inspection service of the National Housing Agency.

War Housing Manual

The Housing Branch of the Construction Bureau of the WPB has just issued a War Housing Manual. This Manual lists the "L" and "M" orders, contains WPB Housing Utility Standards and the War Housing Critical List, and lays out the procedures necessary to obtain preference rating orders. It is an extremely helpful job and every person who has to deal with construction restrictions should get a copy.

Construction and Essential Industry

Manpower is a big pinch ahead. Federal control over hiring and at least an informal job freeze is only a matter of months away. Meanwhile, construction of war facilities is one of the industries considered essential by the War Manpower Commission. This will aid in getting deferments from Selective Service for key workers and recruiting new labor through local U. S. Employment Service Offices.

Manpower Boss McNutt has just ruled that lack of adequate housing constitutes a valid reason for war workers to quit their jobs. Under McNutt's freezing orders, workers are not allowed to leave their jobs unless they can show a good reason. If they can show that health, family, or similar factors would work severe hardship if they don't change jobs, the transfer will be permitted. The U. S. Employment Offices will regard poor housing as a sufficient reason for authorizing a change of job. This ties in war housing with war production more closely than ever.

AA-4 for Conversion

Both privately financed conversion of houses and buildings and publicly financed conversion projects will get AA-4 rating for use in obtaining necessary materials. AA-4 is the highest rating granted for housing construction of any type. WPB assures that AA-4 ratings are sufficient to obtain all building materials from the stocks already allocated to housing under the NHA-WPB agreement.

Building Funds Running Low

There will have to be more appropriations for public housing and an additional authorization for FHA. Lanham Act Funds are scraping bottom. Almost the entire $600,000,000 appropriation has been earmarked for specific projects. FHA is now handling about 80 per cent of the nation's mortgage business and is getting close to its limit on Title VI. Present funds will not last until spring. The new Congress will be asked to authorize an additional amount of insurance and to appropriate additional funds for public housing.

FHA Has Its Own Priority System

From now on FHA will account first on those applications which show the most economical use of lumber and methods and which compose the least burden upon the public transportation systems in carrying war workers from residence to war plants. To put this into effect, FHA is rating all applications on this basis:

1. Access to nearest designated place of war employment requiring housing—up to 24 points.
2. Economy of consumption of critical lumber—up to 100 points.
3. Economy of consumption of critical metals—up to 100 points. Local FHA offices can tell you the details of this new method.

Changes in Construction Control

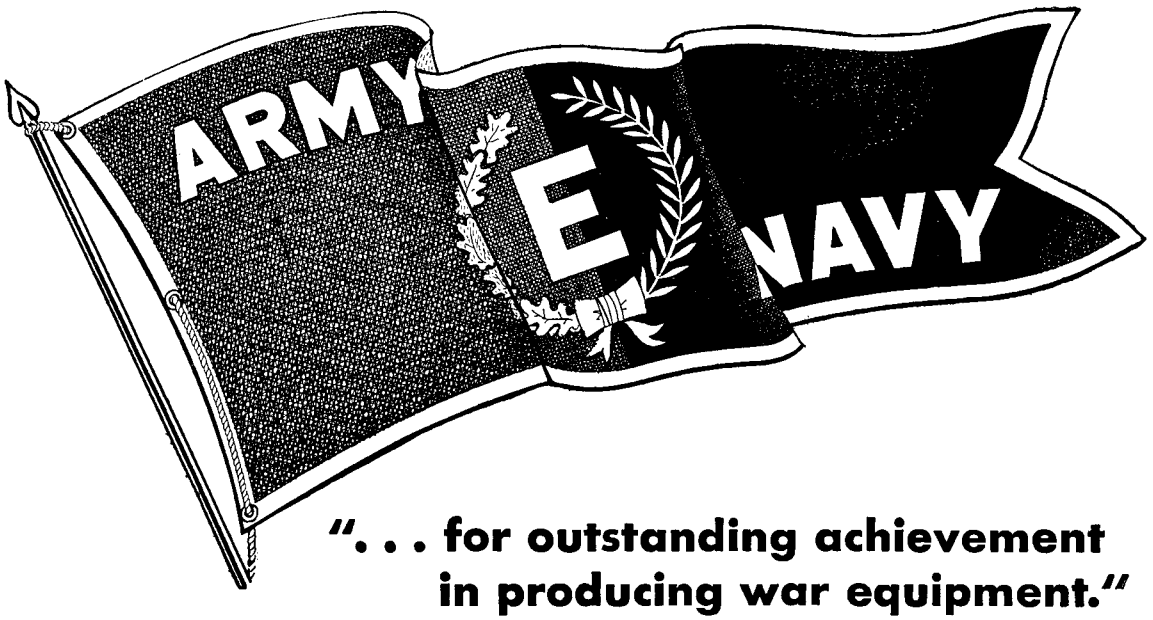
By virtue of major amendments made to conservation order L-41 several changes were made in construction control. The amendments include the following changes: (1) construction of railroad tracks is exempt from L-41; (2) agricultural construction incident to the erection or installation of machinery or equipment which is now controlled by L-170, is exempted; (3) construction of communication facilities, such as telephone, telegraph, is exempted. The assignment of a preference rating by PD 1, PD 1A, or other certificate or by any order other than those listed in the new amendment, shall not constitute authorization to begin construction.

Builders' Hardware Simplification

In an extensive simplification program, WPB has reduced builders' hardware lines from a present total of 27,000 to approximately 3,500 items. As a result of Schedule I of Limitation Order L-26, producers will be prohibited after January 15, 1943 from putting into process any builders' finishing hardware which does not conform to the permitted sizes, types, grades, finishes, weights and standards. Materials that may be used in the manufacture of approved items after January 15 are restricted to ferrous metals and antimonial lead for most purposes. Some items such as trim and fittings for doors and cabinet hardware may be of plastic, wood, or pottery. Merchandise lines covered by the order include lock sets, door trim, hinges of various kinds, window and transom hardware, etc.

(continued on page 12)

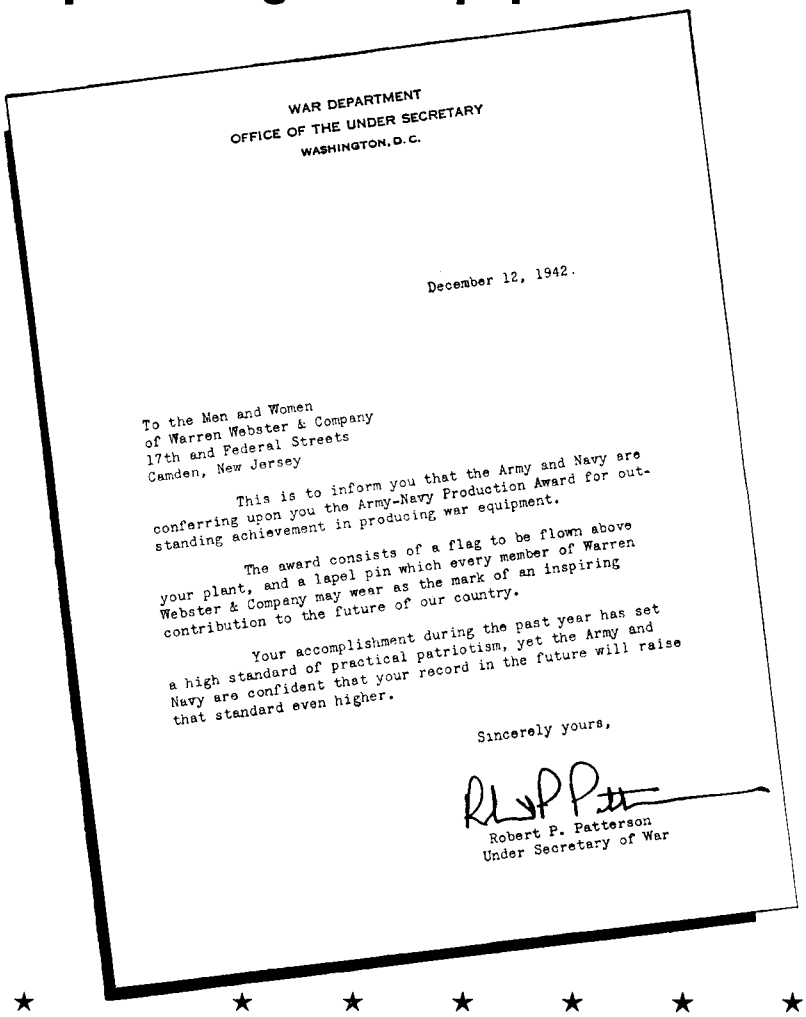
HONORING THE MEN AND WOMEN OF WARREN WEBSTER & COMPANY



"... for outstanding achievement in producing war equipment."

This badge of honor will be worn proudly by every employee of Warren Webster & Company. It is a daily reminder that their production at high rate and quality is urgently needed for Victory ... production of Ordnance materials for our fighting men ... production of Webster Steam Heating Equipment for Army and Navy buildings, war plants, ships and other essential uses.

since 1888
Webster
Systems of Steam Heating



WAR DEPARTMENT
OFFICE OF THE UNDER SECRETARY
WASHINGTON, D.C.

December 12, 1942.

To the Men and Women
of Warren Webster & Company
17th and Federal Streets
Camden, New Jersey

This is to inform you that the Army and Navy are conferring upon you the Army-Navy Production Award for outstanding achievement in producing war equipment.

The award consists of a flag to be flown above your plant, and a lapel pin which every member of Warren Webster & Company may wear as the mark of an inspiring contribution to the future of our country.

Your accomplishment during the past year has set a high standard of practical patriotism, yet the Army and Navy are confident that your record in the future will raise that standard even higher.

Sincerely yours,

Robert P. Patterson
Under Secretary of War

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

WARREN WEBSTER & COMPANY, CAMDEN, N. J.

Pioneers of the Vacuum System of Steam Heating, Representatives in principal U. S. Cities

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

(continued from page 10)

ART AND THE WAR

What the artist can do both to aid the war effort and to function effectively in the postwar period will be the central topic for discussion in two leading courses scheduled to open at the New School for Social Research, 66 West 12th Street, New York, early in February.

Members of the Art Faculty, headed by Camilo Egas, are offering a 16-week cooperative course for which no fee will be charged which is in the nature of a preliminary survey of the function of the various arts in wartime. The course, entitled "Plastic Arts and the War," will be both theoretical and practical, and will attempt to give students some idea of the nature of the contributions of each particular field to the war effort. Two lectures will be given by each member of the Art Faculty, and experts in particular fields will be called in as guest lecturers.

In a 15-week course beginning February 2, Dr. Josef Frank, well-known Viennese architect, will discuss such fundamental and vital problems of the postwar era as the relationship between different forms of society and its architecture, city planning and the past and future of non-objective art. An exhibit of drawings and architectural designs by Dr. Frank will be held at the New School from January 18 to February 9.

NEW FPHA TECHNICAL HEAD

Gilbert L. Rodier, formerly director of war housing in metropolitan Washington, has been named Acting Director of the Technical Division of the FPHA. He succeeds A. C. Shire, who resigned to accept a position with the Board of Economic Warfare.

RURAL LAND USE

Comprehensive programs of postwar public construction to conserve and improve rural lands are outlined in "Public Works and Rural Land Use," a report compiled by the National Resources Planning Board. Forming a part of the Board's program of postwar planning, this report was prepared by representatives of construction agencies in the Department of Agriculture and the Department of the Interior. It consists of 5 statements covering public construction on agricultural, grazing, forest, recreational and wildlife lands. Each statement outlines the general objectives of the program of land conservation, development and economic use in the field covered, indicates the types of public works which contribute toward accomplishment of this program and sets forth certain standards for evaluating individual works projects of various types.

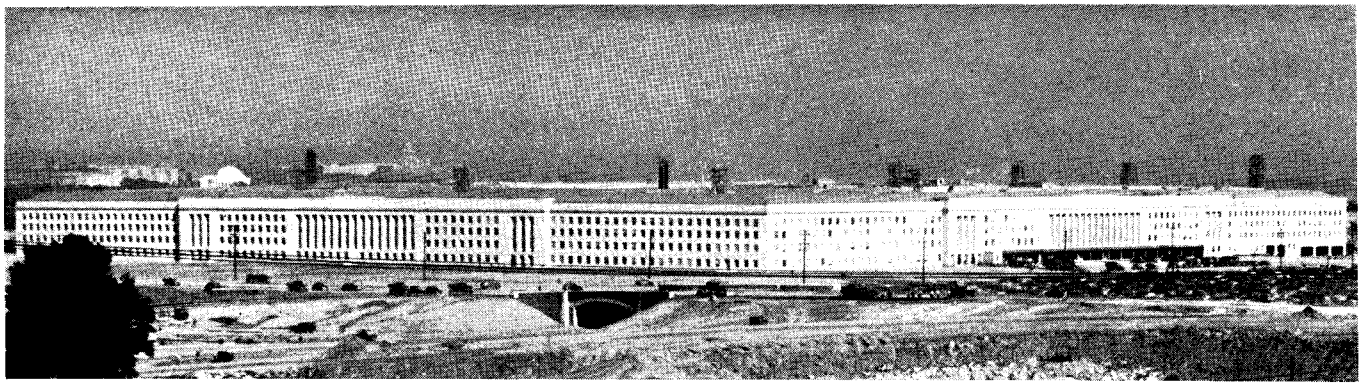
* * *

ERRATA

The editors regret the misspelling of the names of Alice Morgan Carson and her associate, Mr. Kilham, on pp. 63 and 64 of the November issue.

PENTAGON BUILDING

Arlington, Virginia



RAYMOND installed the pile foundations for the above structure for which over forty-one thousand concrete piles were placed aggregating over 1,100,000 lineal feet. The general contractors were John McShain, Inc., Doyle & Russell and Wise Contracting Co., Inc. The work was done under the Direction of the Corps of Engineers, Arlington District. The project is described in this issue.

Raymond Concrete Pile Company

Branch Offices in Principal Cities

140 CEDAR STREET, NEW YORK, N. Y.

Hedrich-Blessing Studio

ALBERT KAHN
ARCHITECT
1869-1942

WITH THE PASSING of Albert Kahn on December 8 the world lost its foremost industrial architect. His is a remarkable record: buildings of his design stand on five continents; in Russia alone over 500 factories were built by his engineers in three short years.

Almost all his life was devoted to architecture. Born in Rhaunen, Germany, on March 21, 1869, he came to this country with his family when he was 11 and settled in Detroit. An enterprising youngster, he soon found a job as errand boy in an architect's office in that city and won the interest of Julius Melchers, sculptor and father of Gari Melchers, the artist. Melchers took him into his drawing school free of charge, and later found him a place with George D. Mason, another Detroit architect, in whose office young Kahn spent 14 years of hard work and study.

With a small scholarship awarded him by *American Architect* when he was 21, Mr. Kahn went to Europe for two years of further study. Upon his return he set up an office in Detroit with two other architects, one of whom died shortly afterward, the other turning to teaching.

Left alone, Mr. Kahn subsequently took three of his brothers—Julius, Louis and Moritz—in with him. His rise was rapid. Commissioned by the Packard Motor Car Company in 1903 to design his first factory, he broke away from traditional design and, using reinforced concrete frame and steel sash, introduced a new form of industrial architecture that combined beauty with utility. He it was who inaugurated the "all-under-one-roof" type of factory, following it with the still more revolutionary "all-on-one-floor" design. He it was who designed the majority of the Army air fields and a great many Naval bases, cantonments and other military and naval buildings in the last war. It was to him that the Bureau of Yards and Docks turned for designs for the Naval bases at Midway Island, Honolulu, Alaska, Puerto Rico, Jacksonville and other points.

In 1928 Mr. Kahn was awarded a commission by the Soviet government to build a $20,000,000 tractor plant. The 25 architects and engineers whom he sent to Russia, headed by his brother Moritz, so impressed the Soviet authorities with the excellence of their work that the firm was given full charge of the huge industrial building program of the first Five-Year Plan. In less than three years the firm not only built some 521 factories in 25 Soviet cities, but trained 4,000 Soviet engineers to carry on the work.

With war once again on the horizon Albert Kahn was plunged into the greatest program he ever had undertaken —that of making America in reality the "arsenal of democracy." On speed of construction and large-scale manufacturing would depend the future of the country. Kahn could do the job—and did. The Detroit (Chrysler) Tank Arsenal, Wright Aeronautical plants, Ford Bomber plant (Willow Run), Glenn L. Martin, Curtiss-Wright and Pratt and Whitney plants are among the many war plants built by his firm since the present emergency arose. And almost without exception, the completion of each such undertaking has marked a new world record for speed in steel and concrete construction.

The number of buildings designed by Albert Kahn and his firm is phenomenal: plans for more than 1,000 factories and buildings for Henry Ford; 127 major buildings for General Motors; the half-thousand and more Russian factories mentioned above; hundreds of other structures both here and abroad, including hospitals, university and office buildings and newspaper plants. The erection of industrial structures alone supervised by his firm in 40 years amounted to $2,000,000,000.

His foresight often was considered almost uncanny, but perhaps he was correct in attributing it to nothing more than logical inference based on close observation. Having noticed that successful firms built on the reputation of one individual often tend to disintegrate after their leader is lost, he early took steps to guarantee for his own firm a future as enduring as the building which it designed.

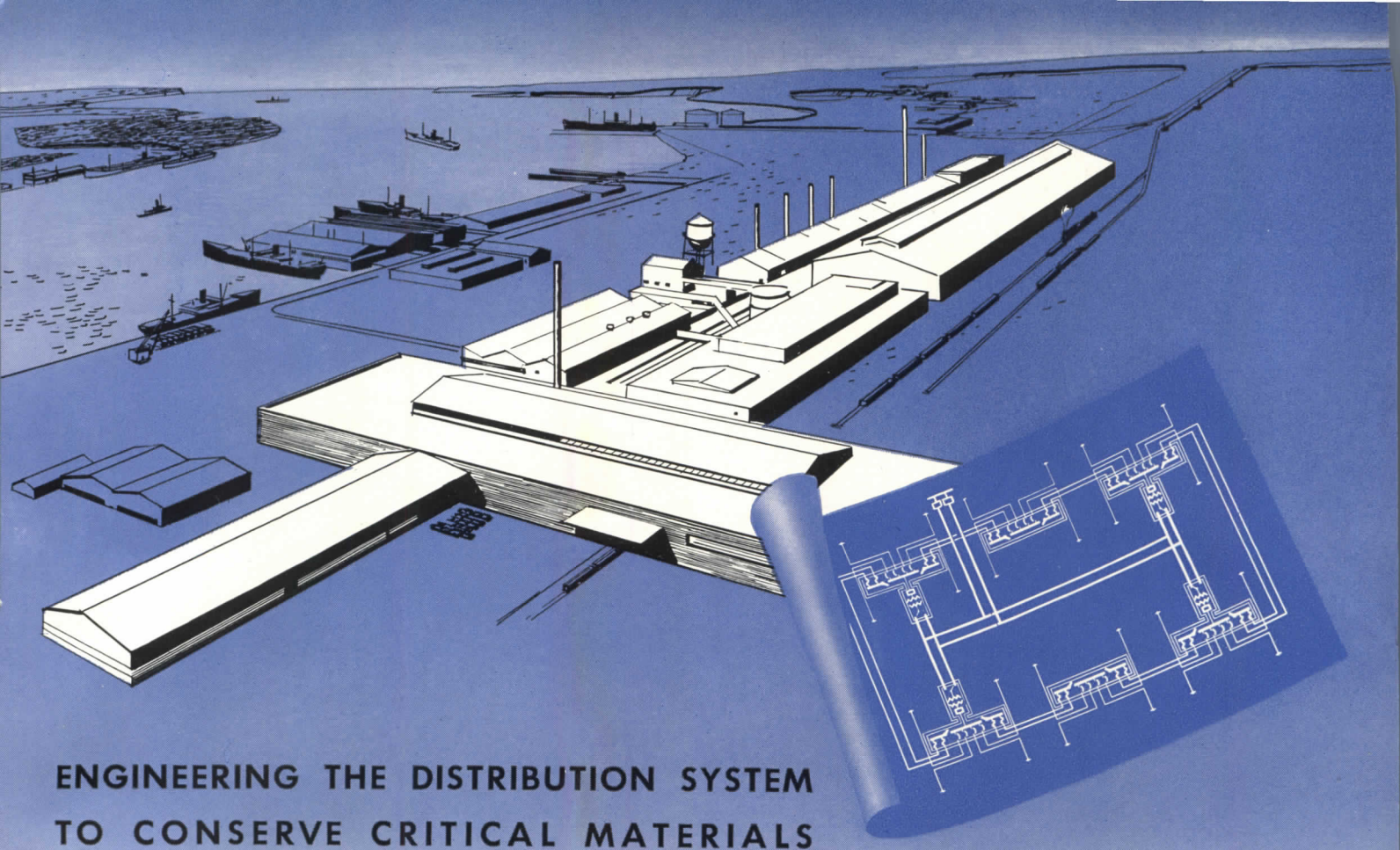
As many as twenty years ago Albert Kahn called in the key men of his organization, gave each of them an interest in the business and a chair at the conference table, and began to train them to carry on after he was gone. This policy was continued without interruption until about two years ago when the incorporation of the firm was changed and the name Albert Kahn Associated Architects and Engineers was assumed.

Then in 1942, evidently foreseeing the approaching end, he and Louis Kahn, his brother and long-time associate in the firm, signed a foreword of a book in which their associates were presented as the nucleus of the Albert Kahn organization. This foreword stated the facts simply:

"It is with much pride that we present in this booklet the men who direct the work of the organization of Albert Kahn Associated Architects and Engineers, Inc.

"Several years ago, the 25 men whose pictures appear on these pages were asked to become partners in the firm. To

(continued on page 16)



ENGINEERING THE DISTRIBUTION SYSTEM TO CONSERVE CRITICAL MATERIALS

Saved 11 tons of copper

HOW WESTINGHOUSE CAN HELP YOU SAVE TIME • CRITICAL MATERIALS

• **Selecting the Right System**—Wide application experience in all types of industries enables Westinghouse engineers to recommend the distribution system best fitted to your plant.

• **Air-Cooled Transformers**—permit location close to load centers with maximum safety, eliminate expensive vaults.

• **Hipersil**—an exclusive Westinghouse development with ⅓ more flux-carrying capacity than ordinary silicon steel. Reduces transformer size and weight.

• **Loading by Copper Temperature**—permits use of *all* the transformer capacity, with complete protection against burnouts.

• **Improving Power Factor**—through use of capacitors, can often save installation of new feeder lines. Westinghouse engineers are in a position to make such practical recommendations.

A vital war plant faced the problem of providing reliable power supply. The distribution system originally planned required 70,600 pounds of copper.

By recommending a plant network system custom-fitted to the job, Westinghouse engineers were able to provide greater flexibility with increased sabotage protection—using *only* 48,400 pounds of copper. Result: 22,200 pounds of critical material saved—more than 11 tons.

Westinghouse plans and builds *all* types of distribution systems. Thus broad engineering experience is brought to bear on your particular problem. The final recommendation is based on nature, density and location of load—and critical material saved. All systems recommended are designed to use standard distribution equipment. No time is lost in building special apparatus.

For prompt action, call our local office. Or send for the helpful booklet below. Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

J-94534

UP-TO-DATE FACTS ABOUT DISTRIBUTION SYSTEMS

Keep up-to-date on latest plant distribution systems. Send for this 24-page Book, B-3152, which briefly describes different plant distribution systems, and points out the advantages of each.

Westinghouse **PLANT DISTRIBUTION SYSTEMS**

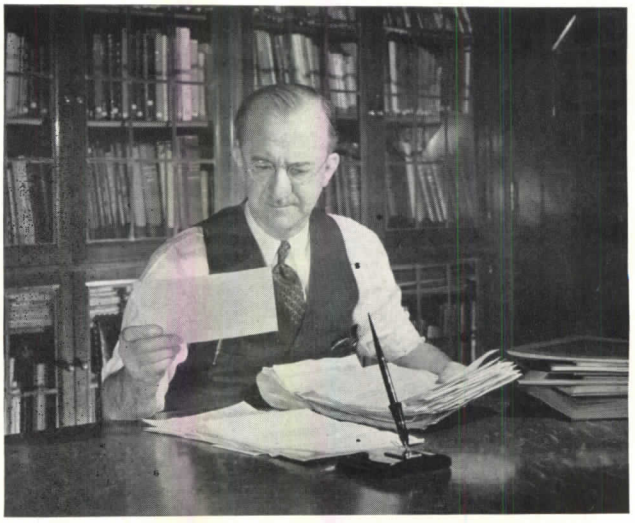
PLANTS IN 25 CITIES... OFFICES EVERYWHERE

ALBERT KAHN

(continued from page 14)

them can be attributed much of the strength of the entire organization and its ability to execute important architectural and engineering assignments.

"The partnership will assure the permanency of the organization which will carry on even after the retirement of the present administrators."

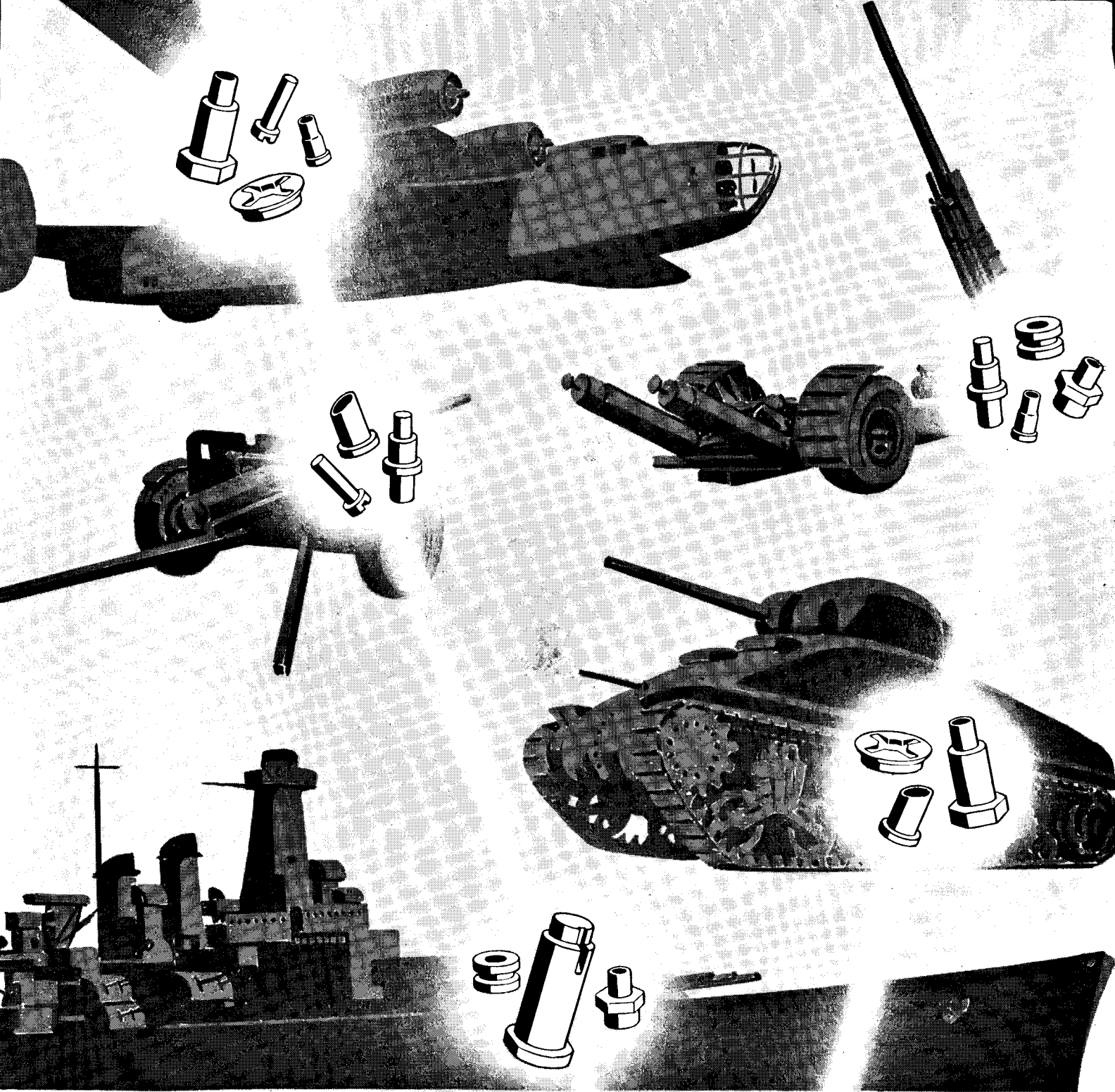


LOUIS KAHN

Albert Kahn, Chief Administrator, has retired. Louis Kahn, Assistant Administrator, steps into his place. Otherwise the organization continues as before. (For an interesting chart showing the careful integration of the Kahn firm, see the ARCHITECTURAL RECORD, June, 1942, p. 41.)

The 25 associate members of the firm are: Henry F. Altmiks, architect and coordinator; Frederick K. Boomhower, chief engineer, mechanical and electrical departments; William C. Bunce, architect and chief of drafting room; O. L. Canfield, chief estimator and manager of projects; Edwin Huston Eardley, structural engineer and coordinator; Frederick A. Fairbrother, architect and associated chief of drafting room; David Fettes, chief superintendent of construction, architectural division; Joseph N. French, architect and coordinator; John T. N. Hoyt, chief structural engineer; Robert W. Hubel, chief designer; Le Roy Lewis, Jr., chief of specifications department; Robert E. Linton, structural engineer and manager of projects; Sheldon Marston, mechanical and civil engineer and manager of projects; Joseph Matte, Jr., assistant chief structural engineer; George H. Miehls, structural engineer and manager of projects; Offer Preuthun, structural engineer and coordinator; Paul Preuthun, mechanical engineer in charge of power plants; Norman A. Robinson, architect and coordinator; Chester T. Roe, mechanical engineer specializing in sanitation and fire prevention; Saul Saulson, associate chief engineer, mechanical departments; John Schurman, architect and coordinator; George K. Scrymgeour, architect and coordinator; Hubert E. Sloman, mechanical engineer specializing in refrigeration and kitchen equipment; G. S. Whittaker, mechanical engineer specializing in heating; Herbert E. Ziel, mechanical engineer specializing in ventilating and air-conditioning.

The personnel of the organization today totals more than 600.



LCN

DOOR CLOSERS

NOW 100% SMALL PARTS PRODUCTION FOR VICTORY

How Consolidated Aircraft GETS 61% MORE LIGHT...

RIGHT HERE

...AND 20% MORE LIGHT HERE

How you can help war plants speed production this same way—*with light-reflecting floors*

THESE pictures tell a story that many plant owners would like to know today. The riveter is getting maximum light on the under side of an aircraft wing on the Consolidated Aircraft Corporation production line at Ft. Worth. His work is faster... surer, because he sees more clearly. He's standing on *a white concrete floor* made with Atlas White Cement. And this floor, according to light measurement tests by General Electric lighting engineers, reflects 61% more light on these under-side surfaces than do the gray concrete floors in the same plant.

The tests in this plant show that the white cement floor also produces 20% more illumination on vertical work surfaces than does the gray cement floor. Given these two increases in light, you can imagine the satisfactory effect on work efficiency and plant production.

This new development in lighting brings many other advantages to new structures or old. You can learn about them by writing for "LIGHT FROM FLOORS," a new, 24-page manual checked by leaders in the lighting field. It contains photographs of installations, charts, studies of light-measurement tests, chapters on the importance of better lighting in industry, and recommended practice for laying white concrete floors. This book will help you show clients that floors can now be a valuable aid to lighting efficiency. Mail the coupon. Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, N. Y.

* * *

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

ATLAS WHITE PORTLAND CEMENT

ATLAS WHITE CEMENT

FOR LIGHT-REFLECTING FLOORS

Universal Atlas
Cement Company
Chrysler Building,
New York, N. Y.

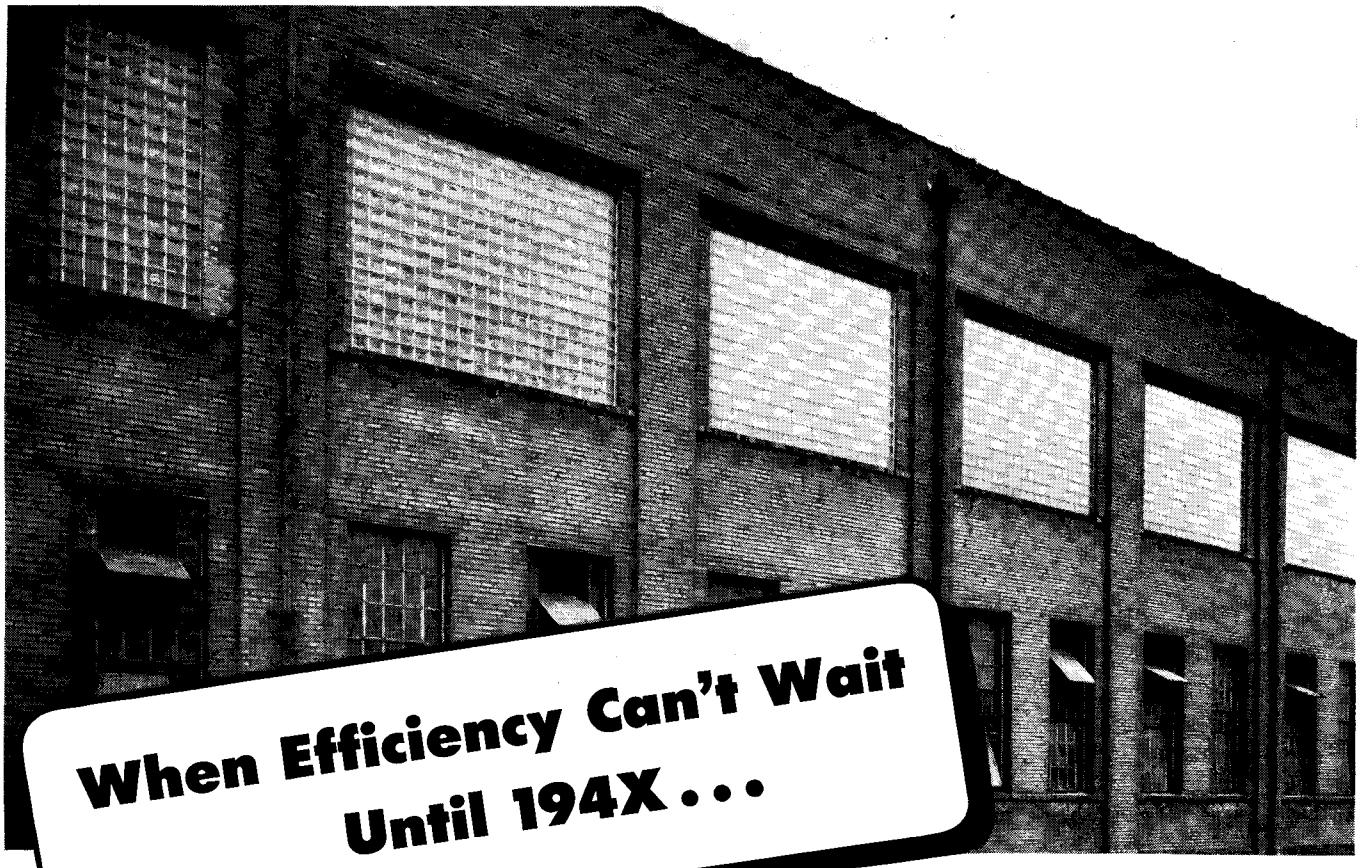
Please send me copy of new book, "Light from Floors." AR-F-8

Name_____

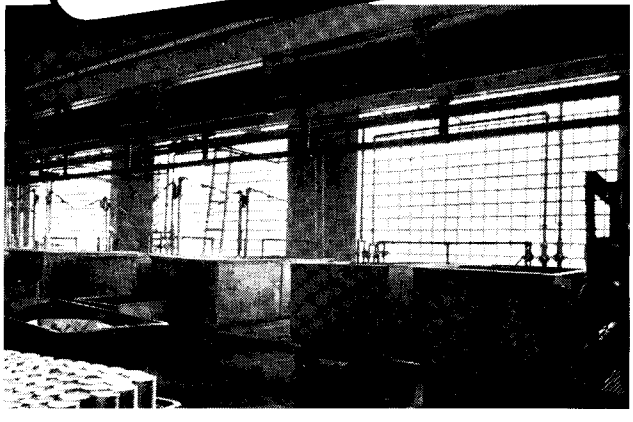
Position_____

Company_____

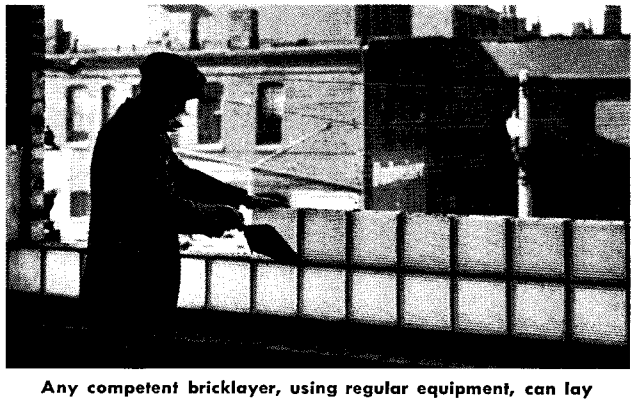
Address_____



When Efficiency Can't Wait Until 194X...



The St. Louis Independent Packing Company, St. Louis, Mo. Despite steam rising adjacent to panels during all weather extremes, the block continue to retain their original efficiency.



Any competent bricklayer, using regular equipment, can lay up INSULUX Glass Block panels. Little or no metal is needed for replacement panels like this one.

INSULUX GLASS BLOCK ARE AVAILABLE FOR IMMEDIATE SASH REPLACEMENT

— No Priority Materials Needed

Today, when production is vital, industrial plants need protection against the inefficiency of faulty windows.

When worn-out windows are replaced with panels of INSULUX Glass Block, the plant is prepared for more efficient production now and after the war. INSULUX panels transmit ample daylight; have high insulating value; insure low maintenance; are fireproof, noncombustible.

If you have a job that requires window replacement, specify INSULUX Glass Block. They can be easily installed without critical materials. Our book, "Alternate Construction Details", contains full details on construction. Owens-Illinois Glass Company, INSULUX Products Division, Toledo, Ohio.

OWENS-ILLINOIS

INSULUX

GLASS BLOCK

How GOLD BOND can help you HOUSE WAR WORKERS IN A HURRY!

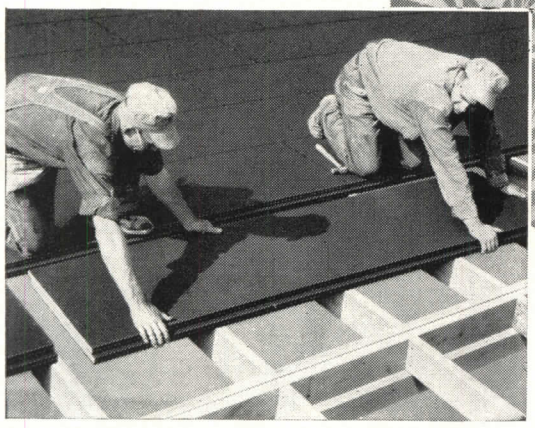
FROM all reports we're over the hump in emergency military and industrial building. The next big job is adequate housing for war workers. Already plans are being made to lick it. Remodeling existing structures is the first step. Unused space in homes will be put to work. Warehouses, idle factories and stores will be made into living quarters. Then, as present material shortages let up, new construction will again take the lead.

In designing wartime housing remember that you get better construction at lower cost with Gold Bond materials. Advanced Gold Bond research has provided "everything for walls and ceilings"—materials which go on faster because they're easier and more efficient to use. Here are some Gold Bond products to help you design better housing for war workers—all are ready for shipment.

Gold Bond Exterior Board—is an extra thick gypsum board with a durable overcoat of asphalt roofing. A combination sheathing and siding which comes in large sizes covering up to 20 square feet in one operation—really saving workers' time—sturdy, rigid, permanent finish.

Gold Bond Sunflex DeLuxe Wall Paint—dries in one hour with no painty odor. Immediate occupancy the moment the job's finished. Covers any surface, even wallpaper with one coat.

Gold Bond 1″ Solid Partition Panels—save lumber—save time—build solid, rigid construction. No nails are used except to hold wooden mouldings, and panels can be completely salvaged when temporary structures are torn down.



Gold Bond Gypsum Roof Plank—permanent, weatherproof, fireproof roofing for either remodeling or new construction. Quickly applied by any carpenter. Nails directly to wood joists. Perfect base for built-up roofing—1½″ and 2″ thick, 24″ wide and 8′, 9′ and 10′ long.

WRITE FOR DETAILS AND SPECIFICATIONS

BUILD BETTER WITH

Gold Bond

Everything - for walls & ceilings

More than 150 different products for
MODERN CONSTRUCTION
AND WAR PRODUCTION

WALLBOARD...LATH...PLASTER...LIME...METAL PRODUCTS...WALL PAINT...INSULATION...SOUND CONTROL

NATIONAL GYPSUM COMPANY . . EXECUTIVE OFFICES, BUFFALO, N. Y.

21 Plants from Canada to the Gulf . . . Sales offices in principal cities

KENTILE
Asphalt Tile
Trade Mark Reg

The new floor that checks on every point!

Combines
GREATEST ECONOMY
with
MAXIMUM DURABILITY
with
GENUINE BEAUTY

Perfect even in problem areas

(for instance, directly on concrete which is in contact with earth)

MOISTURE PROOF — Unaffected by moisture; can't rot, mould, disintegrate, curl or buckle.

AVAILABLE — A non-critical material. And there are installers everywhere ready to serve instantly.

DURABLE—Virtually proof against traffic—even in factories. 15 year old installations still perfect.

UNDERFOOT SAFETY — Never slippery, even when wet; favorite in schools, hospitals.

SIMPLE MAINTENANCE — Mild soap and mopping only. Waxed occasionally if desired.

LOWEST COST—Lowest cost type of long wearing resilient flooring sold.

NON-STAINING—No ordinary staining substances can penetrate surface; wash right off. GREASE-PROOF KENTILE is even proof against greases (animal, vegetable or mineral) that stain almost any other type of floor.

RESILIENT—Though super-tough Kentile is resilient and comfortable underfoot.

QUIET—Muffles footsteps, reduces ordinary traffic noises.

ALTERABLE — Separate tile installation permits altering in part any time.

ODORLESS — Has no odor; so close-textured it can't retain odors.

FIRE SAFETY— Meets every fire underwriting board's requirements in any part of country.

LIMITLESS PATTERNS— Made in 15 different sizes of loose tiles that are available in 44 colors. No one knows how many patterns are possible; every floor can be different.

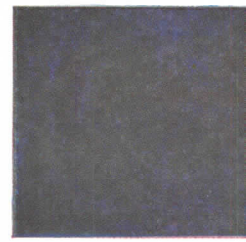
IMPERISHABLE COLORS— The pure, bright, non-fading colors of Kentile go right through to the back—*can't* be "worn off."

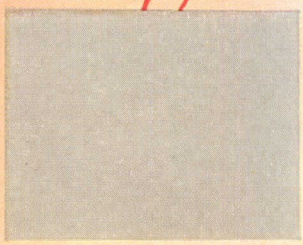
K-28
A pattern of 6" x 6" tiles in White, Peacock Blue and the marbleized Fleecy Cerulean — with a border and 6" base of Peacock Blue. Could be made with many other sizes of tile — for instance: 4" x 4", 9" x 9" or 12" x 12".

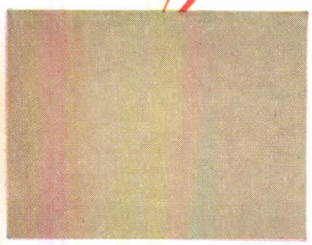
BASEMENT PLAY ROOMS

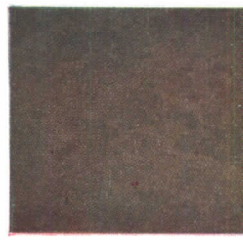
***for* STORES — OFFICES — RESTAURANTS — SCHOOLS — HOSPITALS**

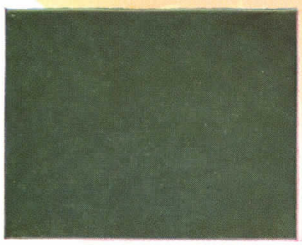
44 COLORS for Design

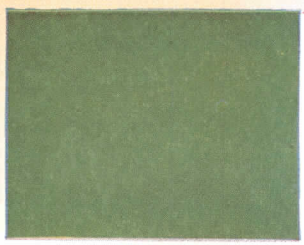

Azure Blue (D-128)


White (D-132)

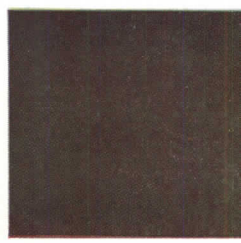

Dove Gray (C-125)

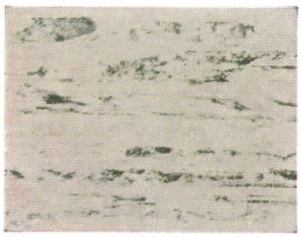

*Battleship Gray (C-1

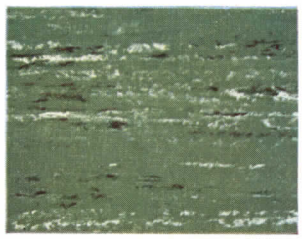

Emerald Green (C-130)

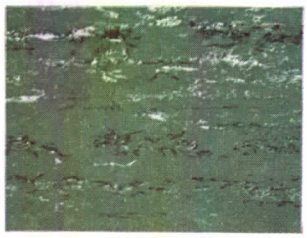

Aspen Green (C-136)

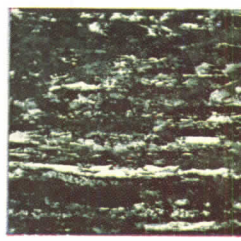

*Oak Green (C-105)

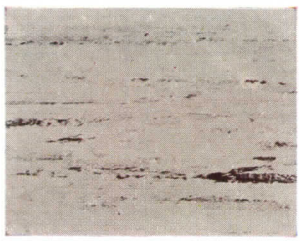

Morena Green (B-131

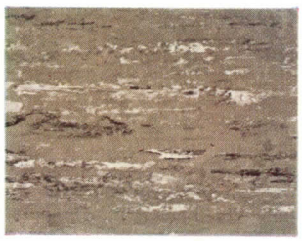

Gardenia (D-234)

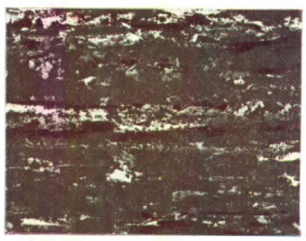

Genoa Green (C-244)


Sea Green (C-228)

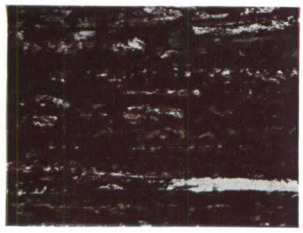

*Cippolino (C-214)

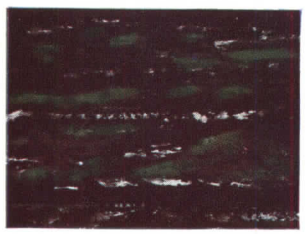

Travertine (D-247)

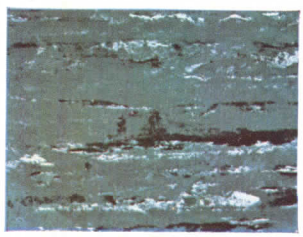

Napoleon Gray (C-222)

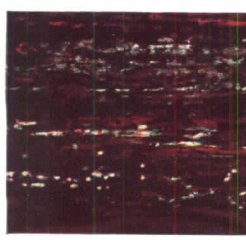

*Bardilla (C-238)


Serpentine (B-229)


*Grand Antique (B-204)


Verde Antique (B-209)

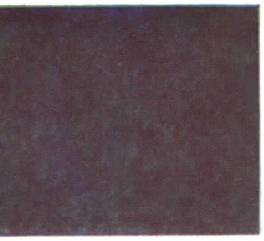

Fleecy Cerulean (D-225)

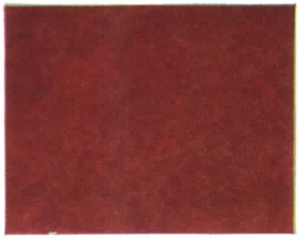

Griotte (B-246)

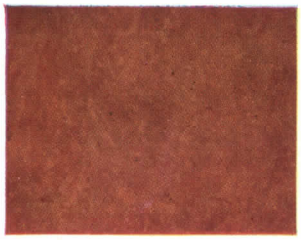
Letters before identifying numbers indicate price groups, "A" group being lowest priced, "B" slightly more, etc.

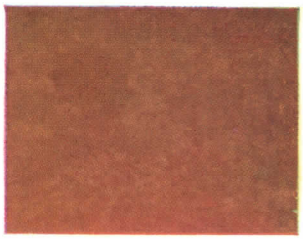
E: These color reproductions are as faithful as printing processes permit. To appreci- y the richness of Kentile colors ask your con- to show you the actual samples or write us. cheerfully send samples to anyone requesting.

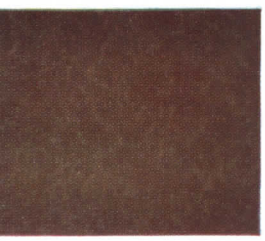
. . . . . KENTILE

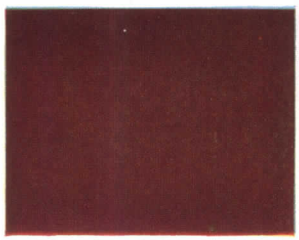

Peacock Blue (D-122)

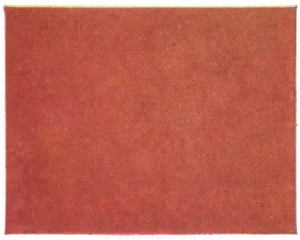

*Toledo Red (C-109)

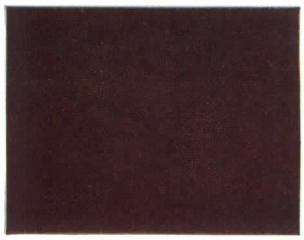

*Andorra Tan (C-110)

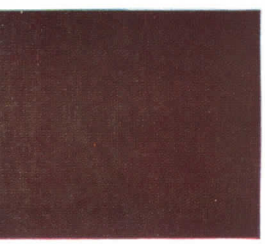

Buff (C-127)


Scotch Gray (B-108)

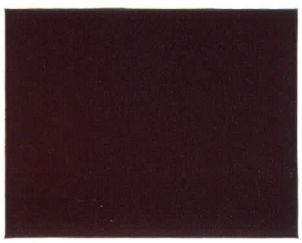

*Sumac Red (B-129)

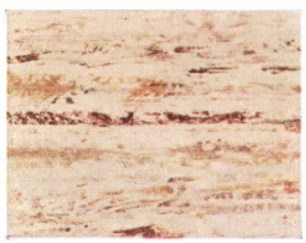

Tangerine (D-134)

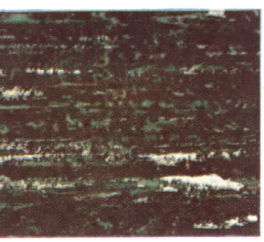

*Morocco Brown (A-104)


Leather Tan (B-103)

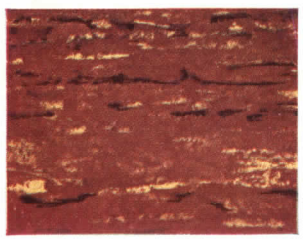

*Quarry Red (A-106)


*Black (A-102)

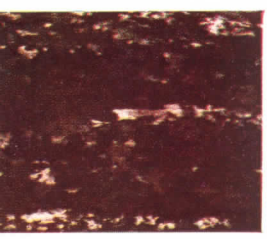

Istrian (D-253)


Gray Bardiglio (B-230)

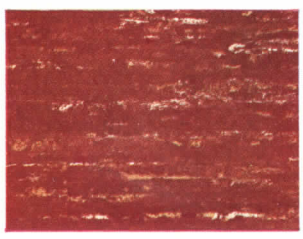

Waulsort (B-241)

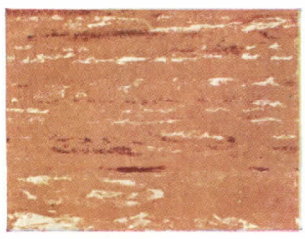

Russet (C-239)

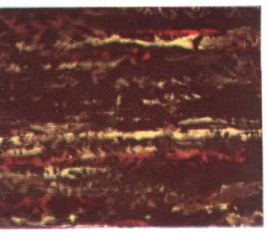

Rose Tweed (D-232)

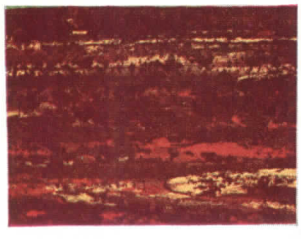

Penmon (B-252)


*Draycot (B-242)


*Veined Carnelian (C-206)


Medoux (C-243)


gyptian Porphyry (B-203)


*Breccia (B-245)


*Light Algeria (C-223)


Greek Skyros (C-221)

* indicates "Also available in **GREASEPROOF** Kentile"

KENTILE
Asphalt Tile
Trade Mark Reg

EASY INSTALLATION:

In every part of the United States there are Kennedy contractors ready to install Kentile floors—instantly. The material is plentiful and stocked in warehouses strategically located. And no flooring of equal resilience and durability can be installed as speedily and economically as asphalt tile. Kentile can be installed directly over any hard, smooth, firm surface—cement, steel, terazzo, tile, concrete. Over these underfloors it requires no underlayment. It needs no special protection against moisture or alkali. The tiles are simply fastened to the underfloor by an adhesive. Even concrete on ground, below level, is perfect, and rough concrete need only be smoothed by an asphalt underlay or cement finish. Expansion joints should be filled but paint need not be removed except when the floor is in contact with earth.

On double wood floors with top floor boards Kentile has been proven by years of wear to be an excellent covering provided a lining of 15 lb. saturated felt paper is used. Even on wood floors with wide boards Kentile has been most successfully used providing a firm base is made for the tiles with Plywood or an asphalt underlayment.

15 SIZES:

REGULAR SIZES — 9" x 9" 12" x 12" 9" x 18"
6" x 12" 18" x 24" 12" x 24"

EXTRA COST SIZES — (A) 6" x 6", 12" octagon, 6" x 12" hexagon
"A" Group lowest, (B) 4¼" x 4¼", 4½" x 4½", 4½" x 9"
"B" next, etc. (C) 3" x 3", 3" x 6", 4" x 4"

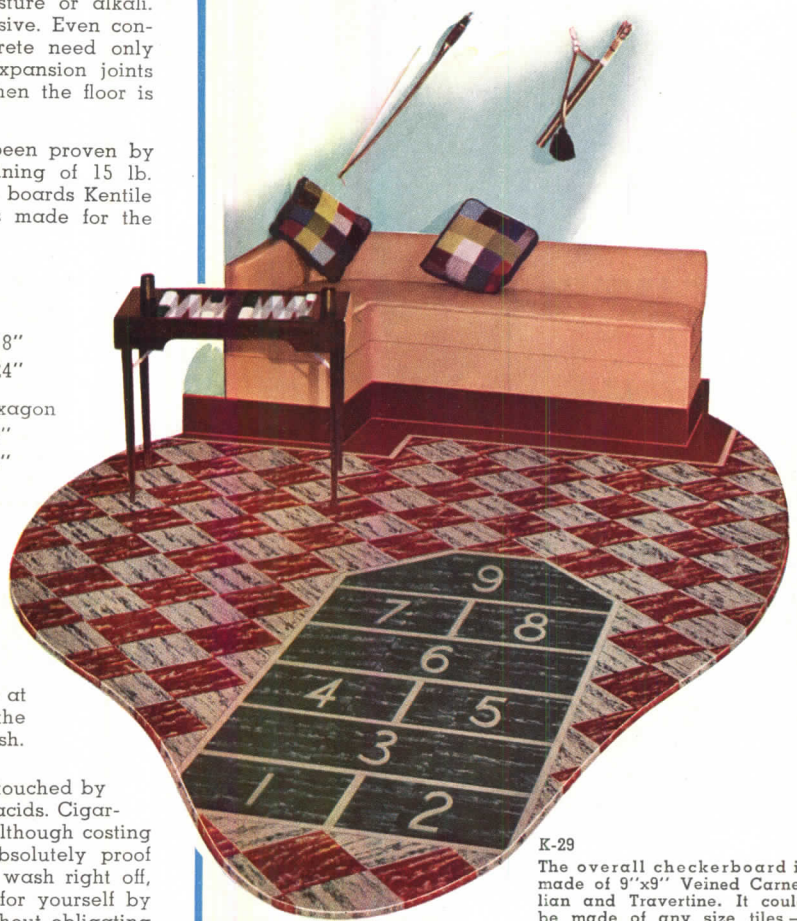
HALF Tile (for diagonal installations)
6" x 6", 9" x 9", 12" x 12"

FEATURE STRIPS: available in 18" lengths from ½" to 4" widths in multiples of ½".

3 THICKNESSES: ⅛" — ¼" — $\frac{3}{16}$"

FACTORY WAXED: burnished right into the tile at the factory — saving an operation at the job — protecting the tile immediately — providing a stronger, better original finish.

GREASEPROOF TILES: Standard Kentile is untouched by every ordinary staining material—even common alkalis and acids. Cigarettes and matches leave no scar. And Greaseproof Kentile, although costing slightly more, is a definitely low cost material that is absolutely proof against any animal, vegetable or mineral fat or oils. They wash right off, even after being on for days. We urge you to prove this for yourself by sending for our grease testing kit. Just mail a post card. Without obligating you in any way we will gladly send the kit—an interesting laboratory experiment anyone can make. And notice, on our color chart, the sixteen Kentile colors available in both Standard and Greaseproof Tiles—to be used as needed.



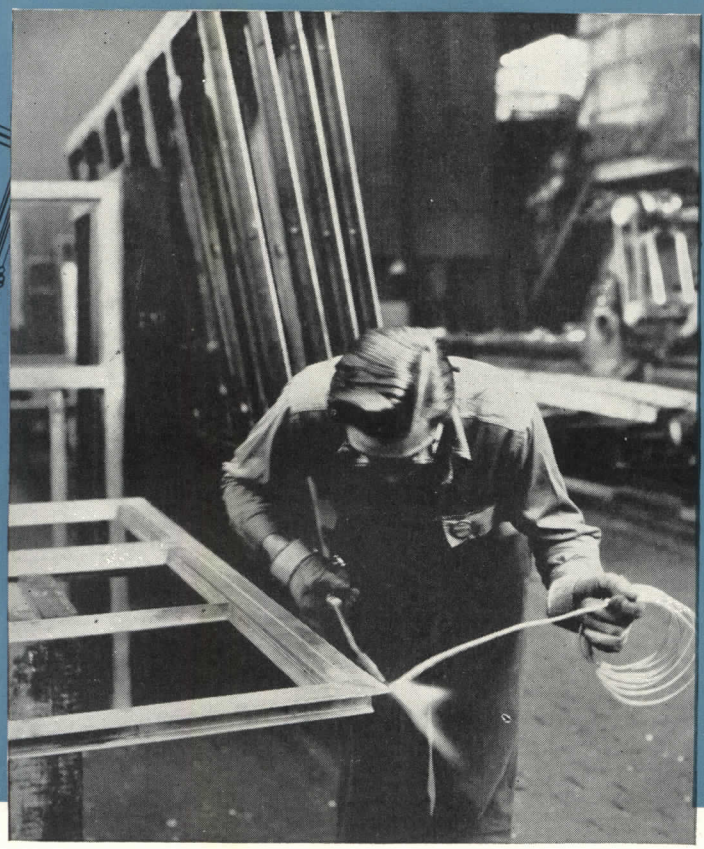
K-29
The overall checkerboard is made of 9"x9" Veined Carnelian and Travertine. It could be made of any size tiles—such as 4"x4", 6"x6", 12"x12". A 1" White feature strip was used with the Toledo Red border and 6" wall base. The set in hop-scotch game was made of 12"x12" Cippolino tiles with the lines and numbers of 1" White strips.

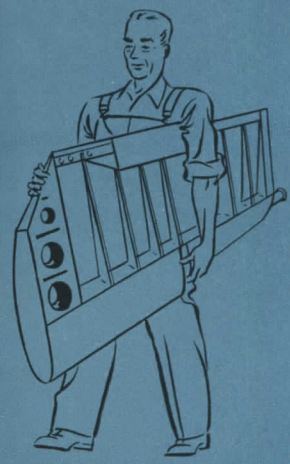
MR. BUILDER – you can develop business by showing owners the advantages of modernizing and improving interiors — today, without using critical materials. Think how much freshness and beauty can be created with simple wood, paint, and a colorful Kentile floor. We will help you. Over 1,000 Kennedy dealers, located in every part of the country, will gladly cooperate; inspect interiors, show samples or lend them to you, furnish quotations, etc. They will work with you or for you. Call on your local Kentile dealer for cooperation now (without any obligation.) If he is not known to you, write our nearest office.

David E.
KENNEDY, INC.

BROOKLYN, N. Y. — 58 Second Ave., Phone SOuth 8-7040
LOS ANGELES, CAL.—1815 W. 11th St., Phone Exposition 1189
ATLANTA, GA.—208 Bona Allen Bldg., Phone Main 1488
CHICAGO, ILL. — 30 N. Michigan Ave., Phone Central 6817
CLEVELAND, OHIO — 815 Superior Ave., Phone Main 0623
BOSTON, MASS. — 40 Partridge St., Watertown, Phone Watertown 9149

IT GOT THEM READY FOR WAR; IT'S PREPARING THEM FOR PEACE





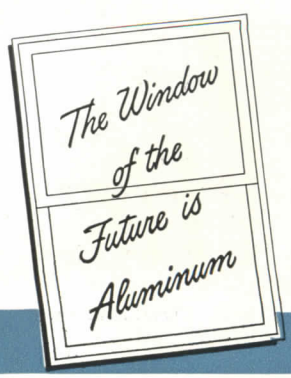
Manufacturers of Aluminum architectural products were readying themselves for this war, unknowingly of course, for years past. The fabricating methods they had developed, the skilled workers they had trained, enabled them to swing over quickly to war production.

Substitute some part of a combat plane for the Aluminum window frame that's under the welder's torch in the above before-the-war photograph. Now you have a scene today in any one of the plants that were formerly manufacturing Aluminum windows.

The war effort has caused development work to go on at a greatly accelerated pace. New problems are being encountered and solved. Methods of forming and assembling Aluminum parts are being simplified, speeded up, improved. Additional thousands of workers are being trained in these arts.

Vital to the war effort, this fact also has an important bearing on the products you will be offered in the future. The advantages of Aluminum Alloys gained in making materials of war will be the same for the new products at your command; light weight, high strength, fine appearance, resistance to corrosion.

Aluminum windows and sills, storefronts, skylights, coping will be better than ever, lower in cost, readily available from many sources. ALUMINUM COMPANY OF AMERICA, 2167 Gulf Building, Pittsburgh, Pennsylvania.



ALCOA ALUMINUM

ALCOA
Reg. U. S. ALUMINUM Pat. Off.

REQUIRED READING

By ELISABETH COIT, AIA

Jacket Design by Herbert Bayer for "Can Our Cities Survive?"

CAN OUR CITIES SURVIVE? By José Luis Sert. Cambridge, Mass. (38 Quincy St.), Harvard Univ. Press, 1942. 259 pp. 12 by 9 in. illus. $5.00.

THIS MAY WELL prove to be an epoch-making book in the history of city planning in America and Britain. For while in our several ways we are often thoroughly dissatisfied with our cities, administratively, economically, aesthetically and so on, our several discontents have been for the most part recorded in public documents, in books for specialists and journals reaching only limited groups. Now, when large scale destruction is forcibly in the public mind with prospect of reconstruction only at some distant date, comes Mr. Sert's report in a form calculated to reach a wide general public and work powerfully toward forming that public opinion without which the most enlightened recommendations of experts are powerless.

Mr. Sert, an architect, and vice-president of the C.I.A.M., subtitles his book "an ABC of urban problems, their analysis, their solutions, based on proposals formulated by the C.I.A.M.," that is on the "chart" of the International Congresses for Modern Architecture.

The format is striking, the short wide page lending itself admirably to the almost poster-like popular presentations of the "chart" or manifesto or confession of faith adopted at the C.I.A.M. congresses of 1933 and 1937. Well selected large types and variety of page arrangement make for easy reading. Over 300 illustrations —plans, tables, diagrams, modern photographs, old prints—help to hold even the most casual reader, and the very jerkiness of the text is effective in a way lacking in a smoother, suaver, fuller and more unified statement.

C.I.A.M.'s analysis of problems and its statement of aims in planning for human needs are in agreement with those of most modern authorities and with some of the outstanding experts of antiquity and of the Renaissance; and this is the stronger part of the work. Even a brief summary of the work done by other congresses and conferences—national and international—by public bodies and by leading private organizations and individual experts would have given further support to these as well as definiteness to the solutions proposed. Some of those solutions have been already realized in part, thousands of projects are under consideration by planning bodies of which there were almost 1500 in the U.S.A. and Britain alone even a decade ago. Details of the how and how much of the new type towns planned, proposed or built, and of extensive legislative, engineering and financing problems involved in extensive replanning achieved would help. So too would mention of solutions differing from those of C.I.A.M. which, for example, has no mention of allotments, uses "garden" as applied to urban life mainly in the sense of public gardens, and would house city dwellers mainly in apartments with communal green spaces, whereas the great majority of families at least in Britain and the U.S.A. prefer individual houses with private ground space.

A list of citations would have had many uses quite apart from simplifying the somewhat erratic index. That is not an essential. Not utterly detrimental either are the vagaries of the translation with sequences and constructions awkward sometimes to the extent of being obscure and renderings often dictionary-true but of dubious value in conveying an idea.

The test of a book's value is how much it is read. And this one will be read by the many in club, library and school as well as by the relatively few who can own copies of a book even as moderately priced as this.

I REMEMBER THAT. New York (Fifth Ave. at 82nd St.), Metropolitan Museum, 1942. 24 pp. 5¼ by 7½ in. illus. $0.25.

ARCHITECTURAL MODELS: English and French Miniature Rooms. By Mrs. James Ward Thorne. Newark, N. J. (Washington Park W.), Newark Museum, 1942. 32 pp. 7½ by 10 in. illus. $0.25.

"THE RECORD of an exhibition of interiors of a generation ago" recently held at the Metropolitan, "I Remember That" shows in careful documentary watercolors the full range: from the salon where "provided there is space to move about . . . there is hardly likely to be too much in a room," to dining room, kitchen, dentist's waiting and consulting rooms, grocery, soda fountain, saloon, pullman. The watercolors are reproduced from the informing Index of American Design compiled by the New York City Art project of the WPA.

Alike for those who have seen Mrs. Thorne's miniature rooms in the several centers where they have been ex-

(continued on page 28)

REQUIRED READING

(continued from page 26)

hibited and to those who have not, this beautiful catalog prepared for the showing just concluded at the Newark Museum will have value. Each page is illustrated, the concise informative text well matches the fine research and craftsmanship that went into the making of the collection, and the understanding of architecture is not a little helped by the accompanying selected list of books on the life and manners of the times here presented in architectural microcosm.

FROM PLAN TO REALITY: THREE. New York (400 Madison Ave.), Regional Plan Assoc., 1942. v.p. 8½ by 11 in. illus. $1.50.

THE THIRD report of progress to date and statement of problems ahead in the development of metropolitan New Jersey - New York - Connecticut. The first two reports covered the years 1929-37, following publication in 1929 of the basic "Regional Plan of New York and Its Environs." The present work continues the record to the end of 1941. Some of the material has already appeared in the Association's *Bulletin,* there is some new matter, and the variously paged book of some 4 score large well packed pages is at once the record of achievement, almost a text book on some aspects of planning in a region composed of 22 counties including 495 municipalities in 3 states, and a readable guide to the new region in the making.

PLANNING FOR PRODUCTIVITY. By K. Lonberg-Holm and C. Theodore Larson. New York (130 East 22nd St.), International Industrial Relations Institute, 1940. 43 pp. 7½ by 9¾. $0.50.

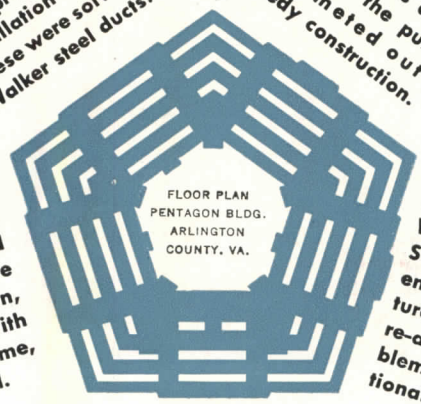
THIS GUIDE to planning, the work of two architects, is "offered as a tool in the constructive social task of increasing productivity for higher standards of living," with reference especially to building, considered from conception, design, construction, use, and on to elimination. For various types of buildings designed for various types of human endeavor it analyzes trends and standards, and suggests means looking to new and improved standards of performance.

Planning, even large scale planning, can be shortsighted and irrational. This short analysis is at once an outline to philosophy of planning, a guide to how to plan, and a check on ill-considered plans.

5 REASONS WHY

1. Best Suited to Design of Floor Construction. The Pentagon Building of the U. S. War Department presented special installation problems. These were solved with Walker steel ducts.

2. Rugged in Construction. The Walker System, being made of steel ducts, provides a continuous ground and is able to withstand the punishment meted out in speedy construction.



3. Convenient and Practical. Connections to light, telephone and bell circuits can be made at any location, quickly and easily, with a minimum of time, labor and material.

4. Economical in Use. The Walker "Alsteel-Preset" System is flexible enough to meet all future "change-over" and re-arrangement problems at small additional cost.

5. Safe — Time-Proven. The Walker System of Underfloor Distribution has universal acceptance today among leading architects, engineers and electrical contractors.

The World's Largest Office Building Uses

WALKER SYSTEM

OF UNDERFLOOR DISTRIBUTION

The Walker organization is proud of the fact that the Walker System of Underfloor Distribution was used in the new War Department Building at Arlington County, Va. For this huge, pentagon-shaped building is "tops" in office buildings!

Walker Brothers supplied all underfloor materials. Harry Alexander, Inc. installed the electrical work.

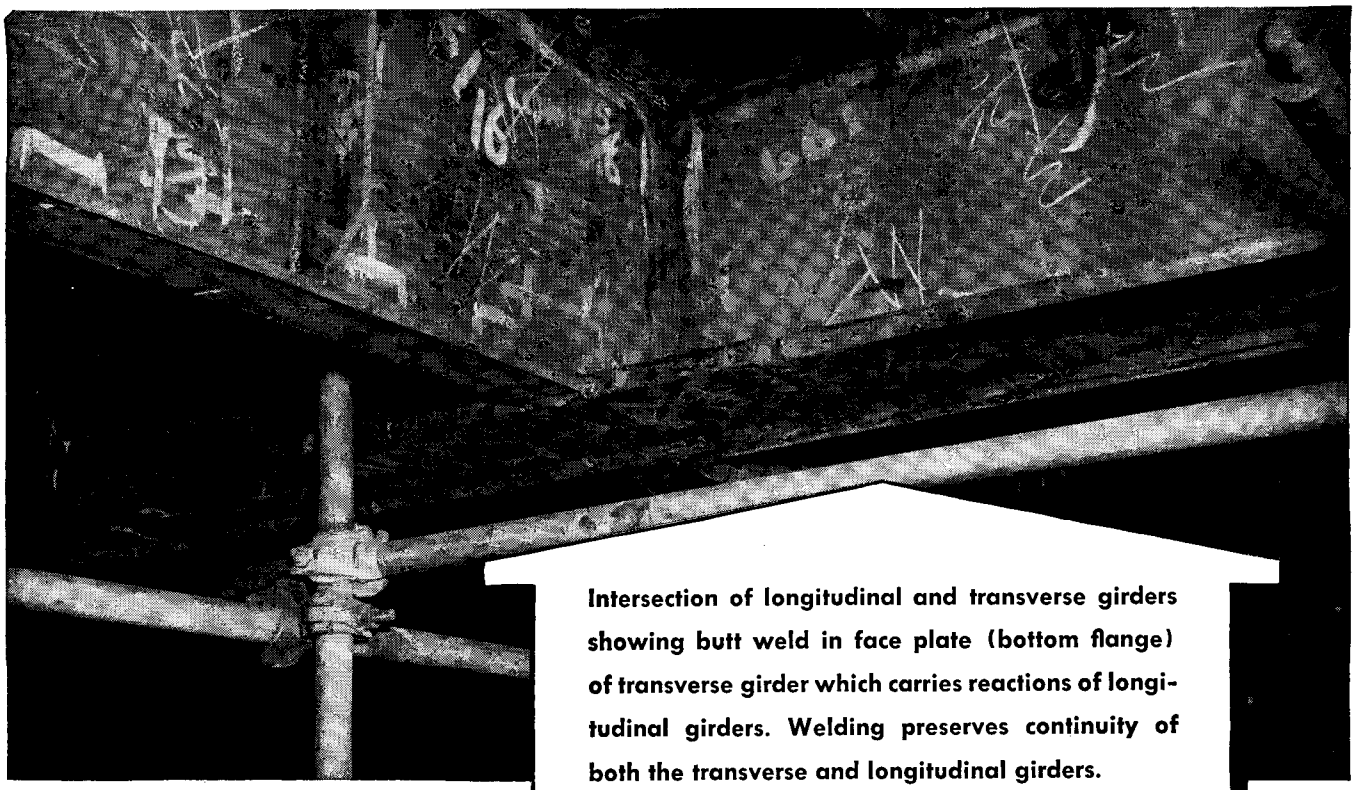
Approximately 550,000 feet of steel underfloor duct were installed. *More than 100 miles of it!* In addition—Walker Brothers supplied thousands and thousands of junction boxes, preset inserts and service fittings.

And—we are pleased to report: *This record job was completed in record time!*

Talk with your electrical contractor about the Walker System of Underfloor Distribution or write us direct. Walker Brothers, 30 Rockefeller Plaza, New York City.

WALKER of Conshohocken

Manufacturers of: UNDERFLOOR DISTRIBUTION SYSTEMS; RIGID STEEL, FLEXIBLE AND *THIN-WALL* CONDUITS, RUBBER, RUBBER AND LEAD, AND SYNTHETIC WIRES AND CABLES; SERVICE ENTRANCE AND NON-METALLIC CABLES



Intersection of longitudinal and transverse girders showing butt weld in face plate (bottom flange) of transverse girder which carries reactions of longitudinal girders. Welding preserves continuity of both the transverse and longitudinal girders.

PARALLEL WELDING METHODS

FOR MARINE AND BUILDING CONSTRUCTION

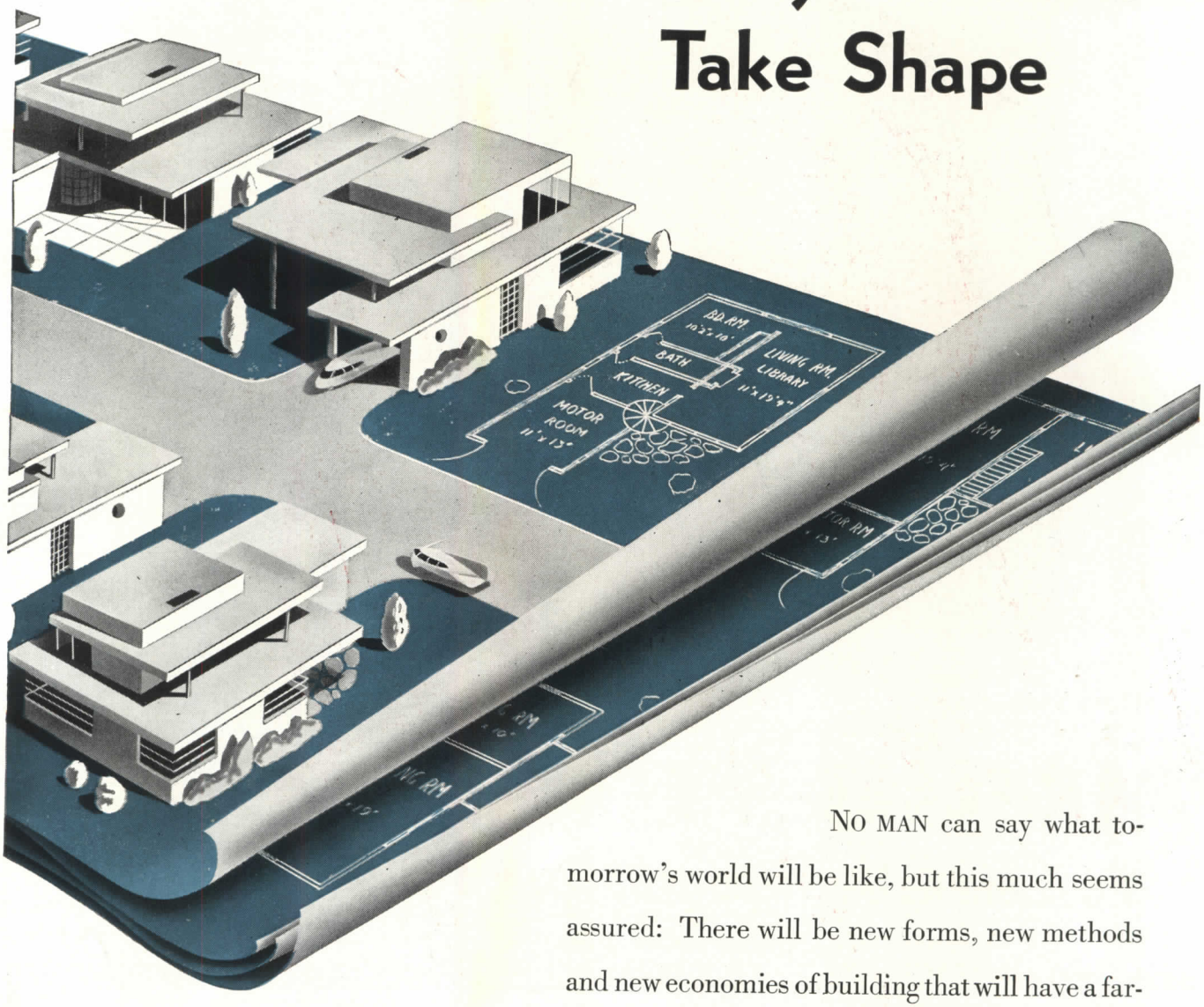
Arc welding has become the accepted method of building merchant ships because of its demonstrated superiority and its economy in the use of steel. In most respects welding methods employed in the marine field are applicable to steel building construction, since the structural engineering problems are similar, and the materials used, as well as the fundamental welding problems are virtually identical.

In addition, many structural steel fabricators are today acquiring broad experience in welding fabricating steel for welded ships and other war construction.

Air Reduction's Applied Engineering Department will supply detailed information on structural welding methods. We will be glad to assist you in working out any problems of design for welded structures.

Hatch end beam supported by main pillar carries longitudinal stringers and girders, which in turn support deck beams.

When Today's Visions Take Shape



NO MAN can say what tomorrow's world will be like, but this much seems assured: There will be new forms, new methods and new economies of building that will have a far-reaching effect on the way of life in this country.

Today, Stran-Steel is doing things with steel that enlarge its scope and create new fields of usefulness. Traditional limitations of design have been overthrown, old practices revised, and a vast fund of engineering knowledge acquired as a reservoir for peacetime problems. Stran-Steel is a progressive organization, well qualified to serve the men whose visions will shape the future.

STRAN STEEL

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

UNIT OF NATIONAL STEEL CORPORATION

1944?

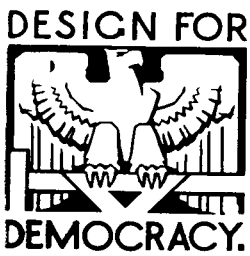
We'll be ready

SIDE BY SIDE in the plants of Minneapolis-Honeywell and its subsidiary, The Brown Instrument Company of Philadelphia, control research for war and control research for peace go on twenty-four hours a day. Our present job is to provide the nation with the necessary equipment for combat, for military and defense housing and for essential war industry. Out of this experience are coming developments in automatic controls for American industry and American homes that will provide an effortless, scientific comfort and efficiency, for post-war living and working. To all who own or sell heating and air conditioning equipment, or who use industrial instruments, we say: "M-H and Brown Engineers are building, every day, every hour, for the war and for the future." Minneapolis-Honeywell Regulator Co., 2804 Fourth Ave. S., Minneapolis, Minn. In Canada: Toronto, Ontario. In Europe: London, England and Stockholm, Sweden.

MINNEAPOLIS-HONEYWELL

CONTROL *Systems*

AND NOW FOR 1943



In looking ahead at this year and the years to follow, we can learn much from the experience of 1942. And the future looks much brighter than the year just past.

✦ After a period of the most violent readjustment, of drastic changes in occupation, in type of work, in location, in all business relationships, most architects and engineers of the country are now "converted" perforce to war work. They have found, as best they could, the places where they can be of greatest service for the immediate future.

✦ Wherever they are, they are making good, their adaptability to new tasks is proved; their ingenuity, combined with common sense, is now more widely recognized than ever. Every branch of the armed services has its quota of the profession—some in specialized services, some in combat divisions, some in civilian capacities. Many others are in various government services where design, administration, and construction ability are needed, or they are serving war-production industries directly. Others are engaged in postwar planning. Further readjustments are indicated in 1943 as the war construction program changes. Every architect we know of has done his utmost to find the place where his abilities would count for most in the war effort.

✦ In spite of this effort three significant mistakes mark the 1942 conversion effort. First was the failure of government agencies and departments, with but few notable exceptions, to take advantage of the architects' abilities immediately, and to the full, in their building programs. Buildings better suited to their purposes, better planned, using less critical material, costing less and built faster, would have been possible if the best architectural talent had been called in at the inception of the building programs, and had their advice been followed. Antiquated types of building and outmoded standards could have been changed to measure up to immediate needs. The rigidity of routine minds, ignorance of the abilities and functions of competent architects, pride and prejudice, self-protection and justification of entrenched bureaucracies were in part responsible for this mistake. Men were picked on the basis of some or any "engineering" degree rather than on the basis of proved ability in the construction field.

✦ The second error was on the part of the profession itself in not recognizing the situation, in being taken by surprise by the attitude of those in charge of war building. And the third mistake was in not taking any effective action as an organized group to correct the situation. True, individual firms did get government work for themselves but on the whole the profession was not effective in selling its services to aid the war effort in its professional capacities.

✦ Now what have we learned from this experience that we can profit by in 1943 and the years that follow, especially looking toward postwar reconstruction?

✦ First—we need to correct the misconception of both government and the general public regarding the abilities and functions of the profession. This is possible in two ways—one, by offering more completely integrated and efficient services on a more rational business basis; and two, by more effectively selling such service through group publicity and individual firm activity. An extension, rather than a contraction of architectural functions, is necessary. And now is the time for architects to plan to enlarge this sphere of action, to formulate their plans for creating new technical teams, new firms offering more complete services. It is time to devise means for selling such service, and for setting up business procedures that will correct the erroneous impression that both government and the public have held. The future place of the architect-engineer depends on the profession itself, on the individual and collective plans of its members, and its aggressiveness in carrying out those plans. Opportunities for service will not be lacking in the postwar period, competition will be keen and the profession must be prepared to meet it on the firm footing of sound business methods.

Kenneth K. Stowell

EDITOR-IN-CHIEF

CHURCH OF SAO FRANCISCO de ASSIS

At Ouro Preto, Minas Gerais, built 1772-1794. One of Brazil's finest Colonial north-of-Portugal-Baroque churches showing typical single door, twin round towers, elaborate doorway and medallion. Carving by El Aleijadinho, the famed crippled mulatto sculptor of Ouro Preto.

FOREWORD

In the interests of closer relations with our good neighbors of South America and of better understanding of their architecture, Philip Goodwin, AIA, representing both the American Institute of Architects and the Museum of Modern Art, made a flying trip to Brazil. G. E. Kidder-Smith, AIA, accompanied him and recorded their findings in the superb photographs here reproduced. Still more of his pictures, many in color, are displayed at the current exhibition "Bazil Builds" at the Museum of Modern Art, from January 13 to February 28, 1943, and are also included in the book published in connection with the exhibition.

ARCHITECTURE OF BRAZIL

BRILLIANT contrasts give character to Brazilian life and Brazilian architecture—sunlight and shadow, broad sea and rugged hills, lazy siestas and progressive activity—and, in architecture, picturesque, traditional Colonial, of Portugal, and the most modern of Twentieth Century design. Some of the modern work is brilliant, some distinguished, some exotic, but all is interesting. Through all the building of Brazil, ancient or modern, one finds the imprint of the character of the country, the climate, and its people.

The hot sun, the humidity, the heavy rainfall in some districts, are—and have been—major factors in designing buildings. The answer to the problem of protection from torrid elements was traditionally thick walls of masonry, with small openings. The answer in this century is a wide variety of large louvers used as permanent or movable "brise soleil" (sun breakers). These range all the way from ordinary Venetian blinds to great vertical or horizontal fins set to the proper angle to shut out the direct rays of the sun while still permitting an abundance of diffused, refleced light, and providing for the circulation of air. Many of these sun shades are fixed but others are ingeniously arranged for adjustment for various times of day or seasons.

In addition to the climate, other natural factors have played their part in the development of Brazil. The ruggedness of the terrain and, in many portions, the almost impenetrable density of the verdure of the jungle—these have discouraged the building of roads, for torrential rains, intense heat, and encroaching vegetation play havoc with the roads and their maintenance. The airplane may be the answer to transportation.

While the dense hardwood forests may discourage road building, they might provide some beautiful woods if commercial growing were possible. Lumber, however, has not been universally adopted because masonry is not only preferred traditionally, as the usual building material of old Portugal, but because masonry also withstands the rigors of the climate and is not subject to either dry rot or termites. In addition, Brazil provides its own cement and manufactures its own reinforcing rods although, as yet, rolled shapes of steel are not manufactured locally. Reinforced concrete is a natural successor, therefore, to the traditional stone masonry and the architects and engineers of Brazil are making increasing use of the versatility of this material. Brick is both plentiful and cheap.

Three other major factors have influenced the development of Brazilian architecture, from the founding of the first Portuguese settlement in 1520. These are the established Roman Catholic Church, the discovery of gold at the end of the Seventeenth Century, and the extensive use of slave labor of the feudal system which existed in the earlier days.

Development of style and taste in architecture has followed European trends—Portuguese and Spanish, at first, and later, in the Nineteenth Century, the influence of the Beaux Arts architects. In the latter part of the Nineteenth Century, L'Art Nouveau played a brief and minor part.

Modern architecture took hold in Brazil with a vengeance when the Vargas government came into power in 1930. Young Brazilian architects adopted the philosophy of Le Corbusier and, naturally, adapted his form as well. They were also influenced by the work of the Bauhaus architecture of Germany and by the more monumental modern models of Italy. The contribution of the United States came largely through the influence of the skyscraper, with its elevators, its modern plumbing, and efficient lighting rather than through any design clichés.

The government has had much to do with the development of modern

architecture and many competitions have been held for the designs for government buildings. They have boldly accepted the new architectural concepts and have neither reverted to ancient Rome for their monumental buildings, nor adopted the lavish Baroque of Portugal or Spain. The educational and cultural institutions are likewise advanced in architectural concept. Hospitals, commercial buildings and, naturally, airports, are modern almost without exception.

Some modern housing is being provided, although it may take time to educate the poorer people away from the mud huts with thatched roofs which perch on the mountainsides. There are some excellent examples of modern residential design and many excellent apartment houses which have sprung up recently. Only a few owners and architects take advantage of the almost infinite variety of plant material in planning their gardens and patios.

Modern architecture in Brazil is vigorous, stimulating, vital, reflecting the character of the country and its peoples—a country where contrast heightens the values of both the new and the old.

FORT SANTA MARIA

A splendid example of one of the old forts guarding the harbor of Salvador, capital of Baia. Simple in its architecture and picturesque in its setting, and in its use of materials, it remains as a monument whose military usefulness has passed. The photograph makes an interesting contrast with the picture opposite, though they are far apart from each other in point of time and place

Kidder-Smith

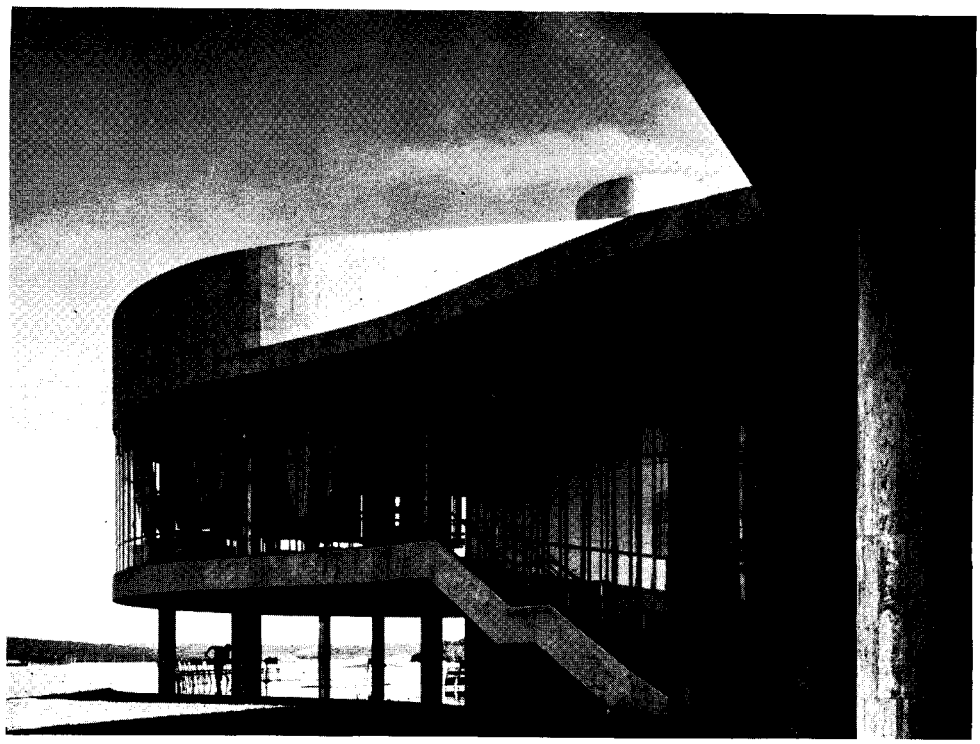
CASINO PAMPULHA

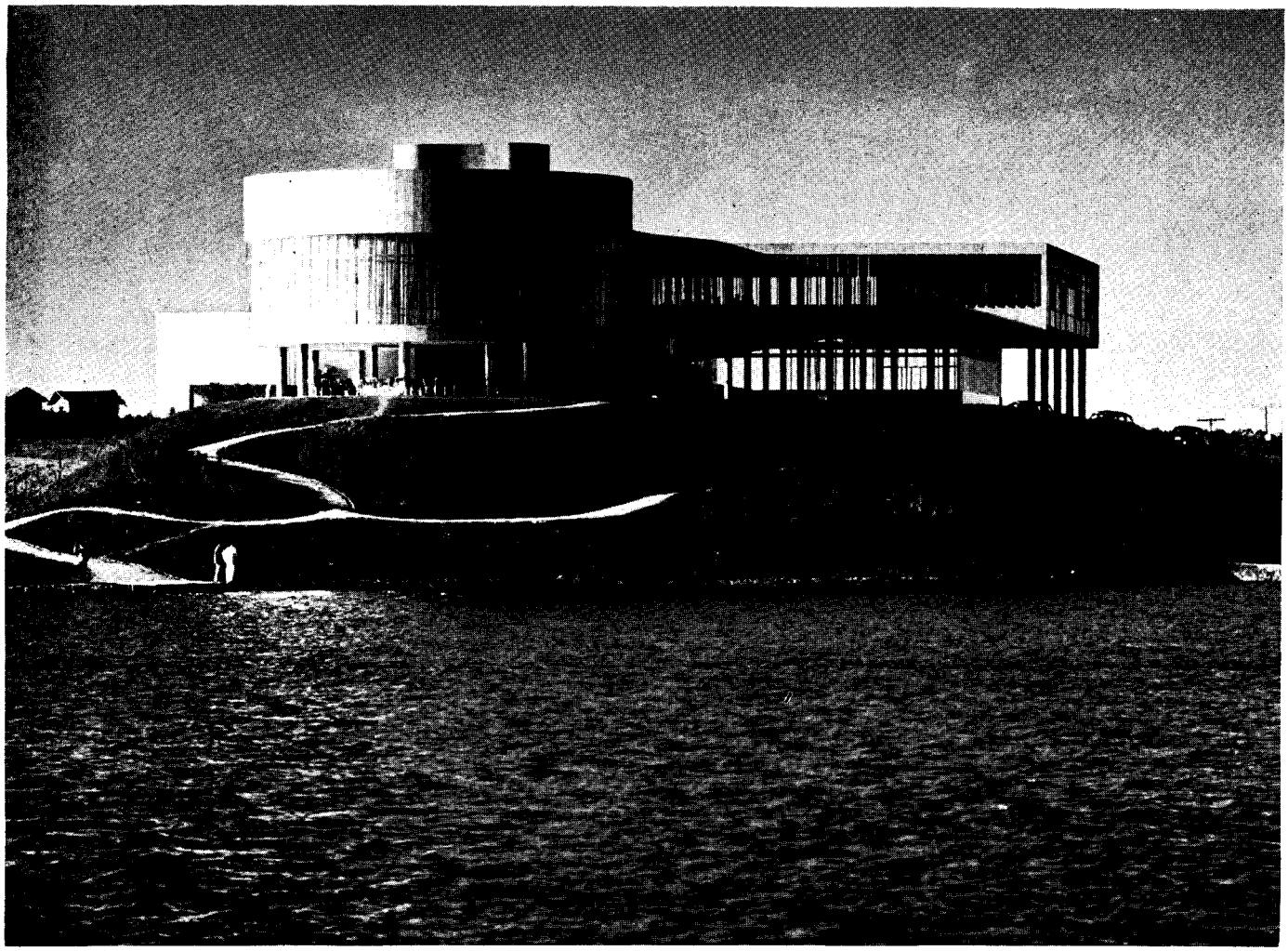
Near Belo Horizonte

Oscar Neimeyer, Architect

The Casino is one type of building little known in the United States but a center of entertainment and conviviality in most South American cities, as well as in Portugal, Spain, and France. Dancing, floor shows, restaurants, movies and theatres, are often parts of the Casino which caters to the pleasure-loving public.

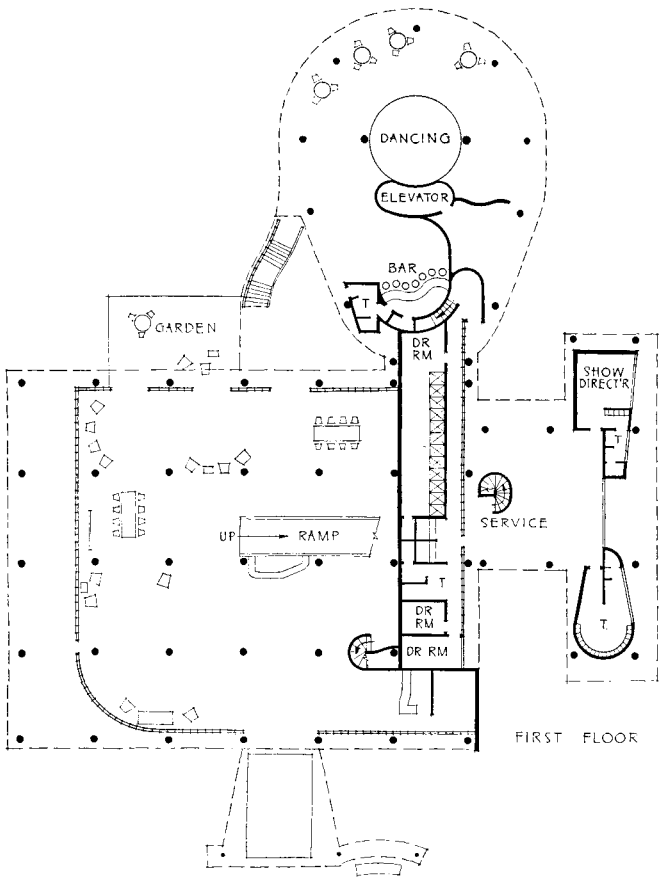
The Casino is beautifully located on the shore of an artificial lake at Pampulha, the new development of the vigorous city of Belo Horizonte. The spendid views of the lake form a natural, continuous and changing mural through the glazed walls.

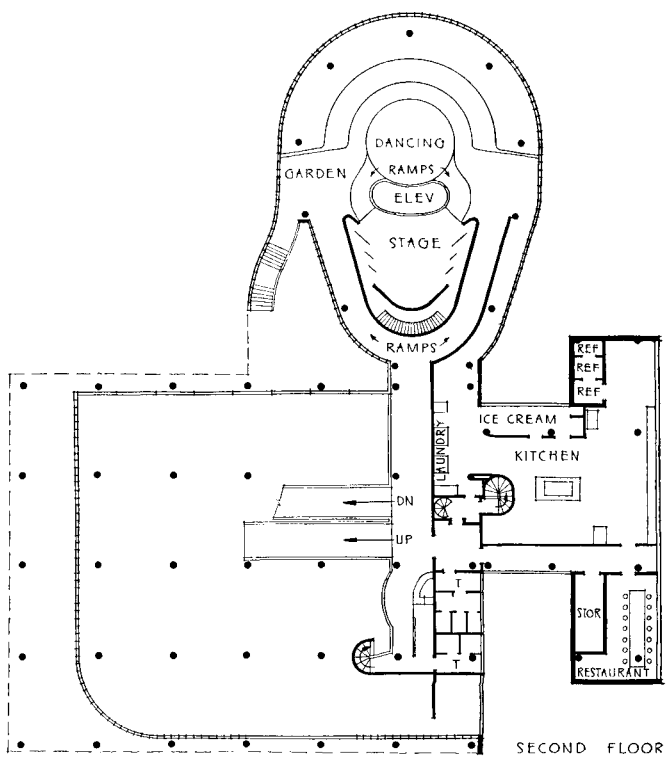


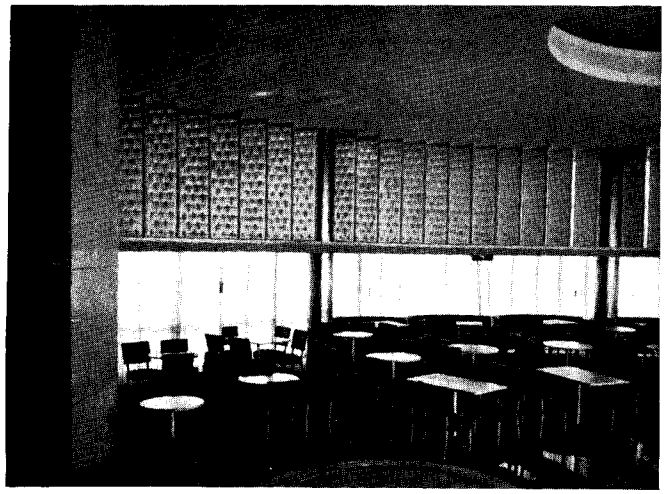


ARCHITECTURE OF BRAZIL

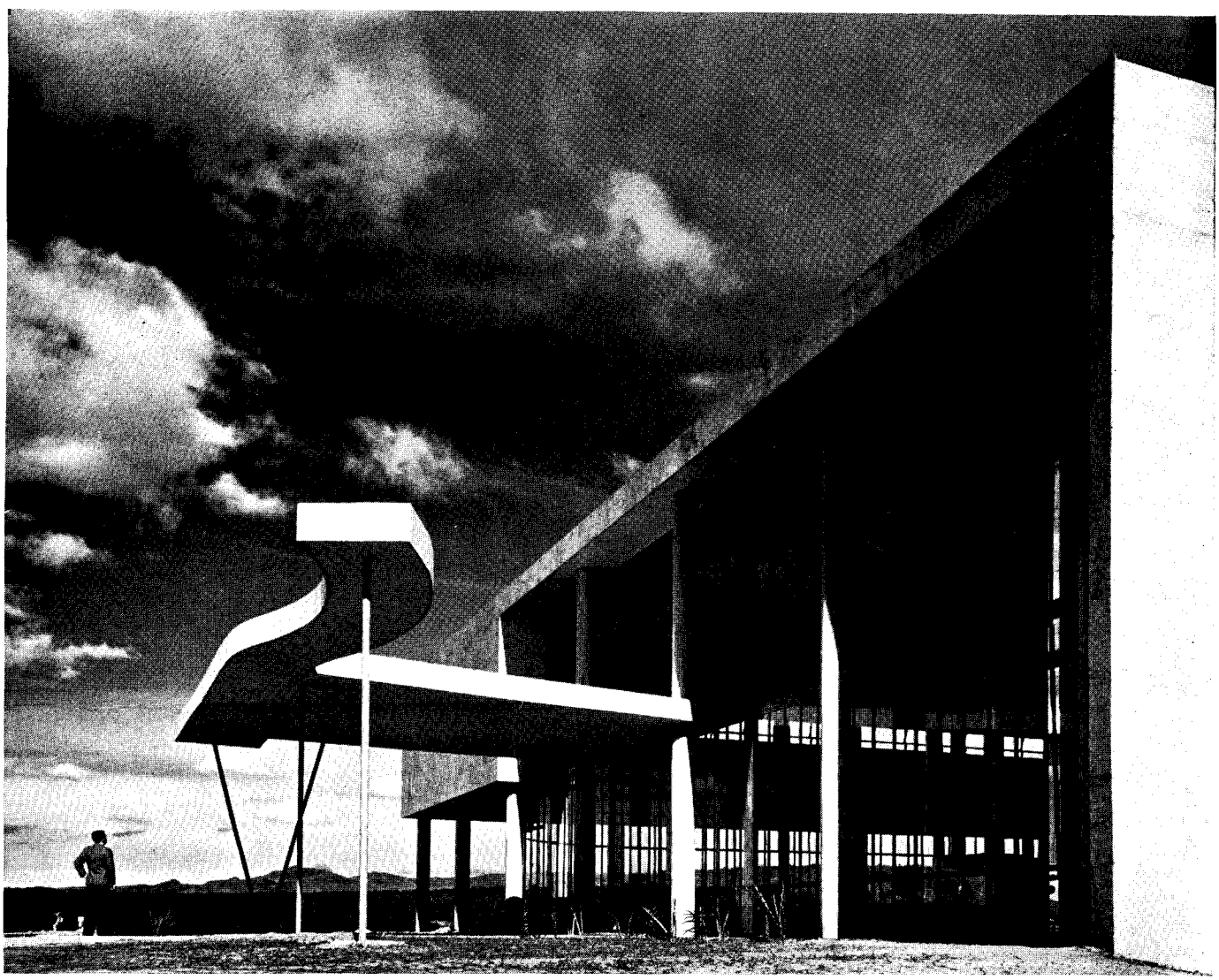
CASINO PAMPULHA, Oscar Neimeyer, Architect **Entrance Front, above; Plans, below**





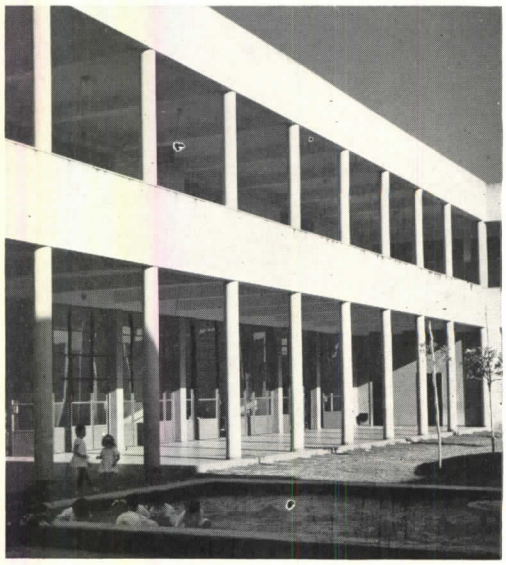


The plans show the openness, the freedom of form and the functional separation of the three parts. The kitchen and service wing is well segregated from the public portions of the Casino. From the large main hall ramps run to the second floor and serve the dining, dancing and entertainment portion of the Casino. One wall of the main room is made of small pink-toned mirrors. Many of the floors are of deep yellow Portuguese marble. The ramps are faced with onyx. The glass floor of the dancing portion of the restaurant is lighted from below. In this portion of the building, the walls of the alcoves are made of tufted satin. Vertical vanes, covered with tufted satin, are arranged to keep out the glare and heat of the sun and yet to permit reflected light to enter. The peculiar projecting canopy at the entrance, which is seen in the illustration below, is not as arbitrary as it might seem for it was designed to serve as an architectural setting for a Maillolesque statue which was soon to be placed



Kidder-Smith

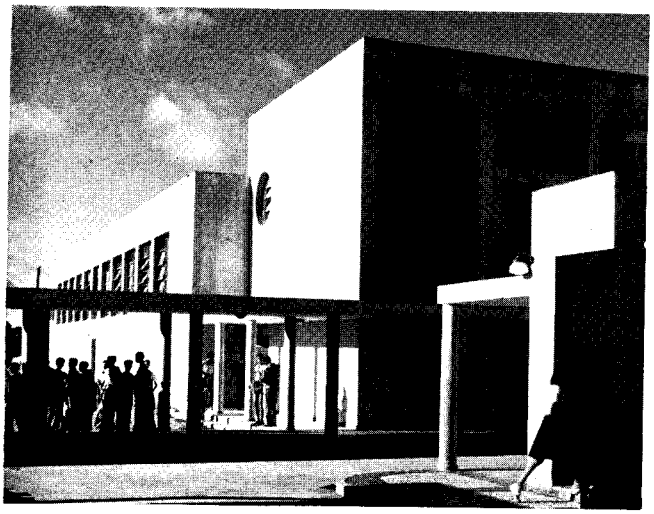
ARCHITECTURE OF BRAZIL



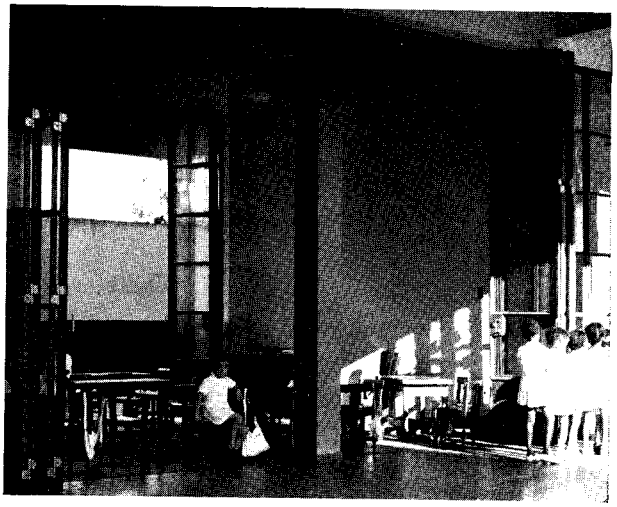
NORMAL SCHOOL, SALVADOR, BAIA

This large Normal School is designed in simple rectangular masses, and gains interest by the variation of fenestration. Long vertical windows, grouped in tiers, contrast with broad wall spaces and smaller horizontal rectangular windows. A two-story colonnade is utterly simple in form, and is as pleasing in its proportions as it is functional in its purpose. The swimming pool is an asset both functionally and aesthetically. The reflections in the pool of the light and shade of the surroundings add life and movement to the views of the court. The simplicity and directness of the design is characteristic of much of the recent public building in Brazil

Kidder-Smith



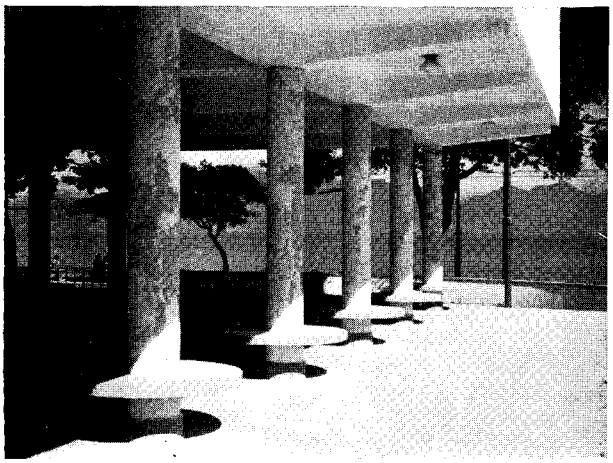
The light and shade of colonnades relieve the plane surfaces

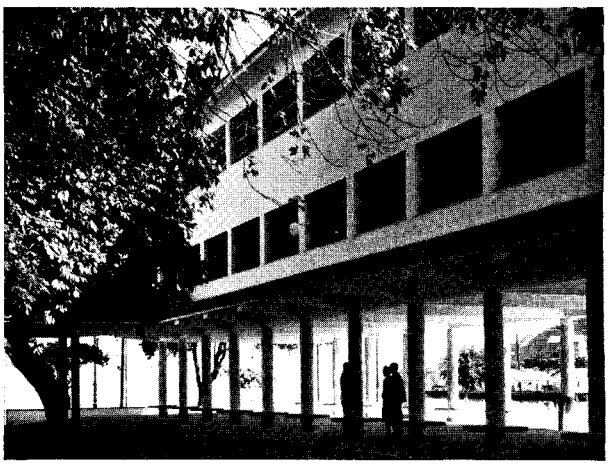


High glazed doors fold back for light, air and ventilation

Wide covered porches serve both for circulation and for outdoor activities in inclement weather

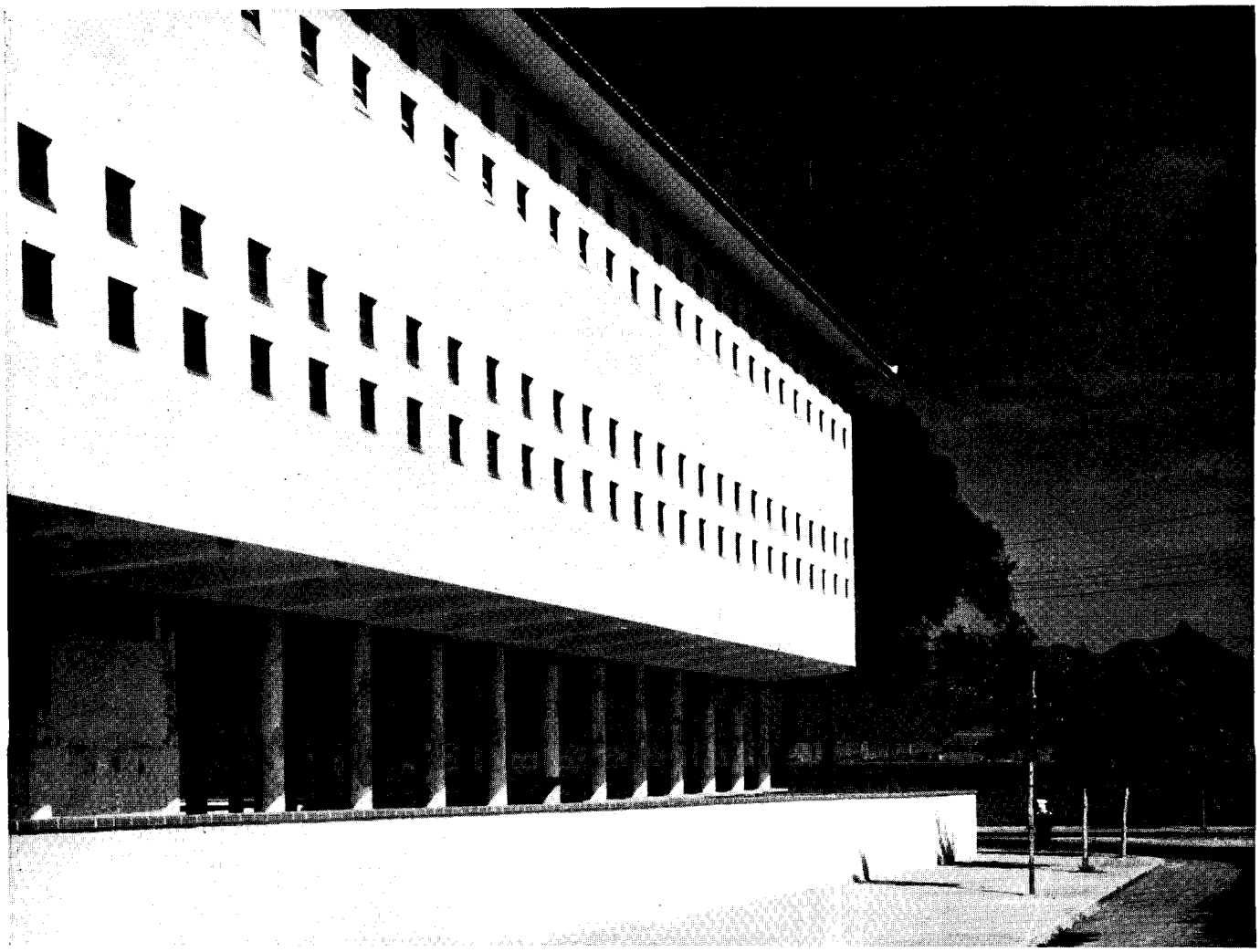
ARCHITECTURE OF BRAZIL





The open ground floor provides shade for outdoor activities. Benches around the columns are pleasant adjuncts to the design and to the comfort of the students. The small windows of the outer facade light and ventilate the corridors but still provide a baffle against the hot sun. The classroom windows, as shown above, open horizontally. The building makes the most of the beautiful view across Rio bay.

ELEMENTARY SCHOOL, Niteroi, Rio de Janeiro



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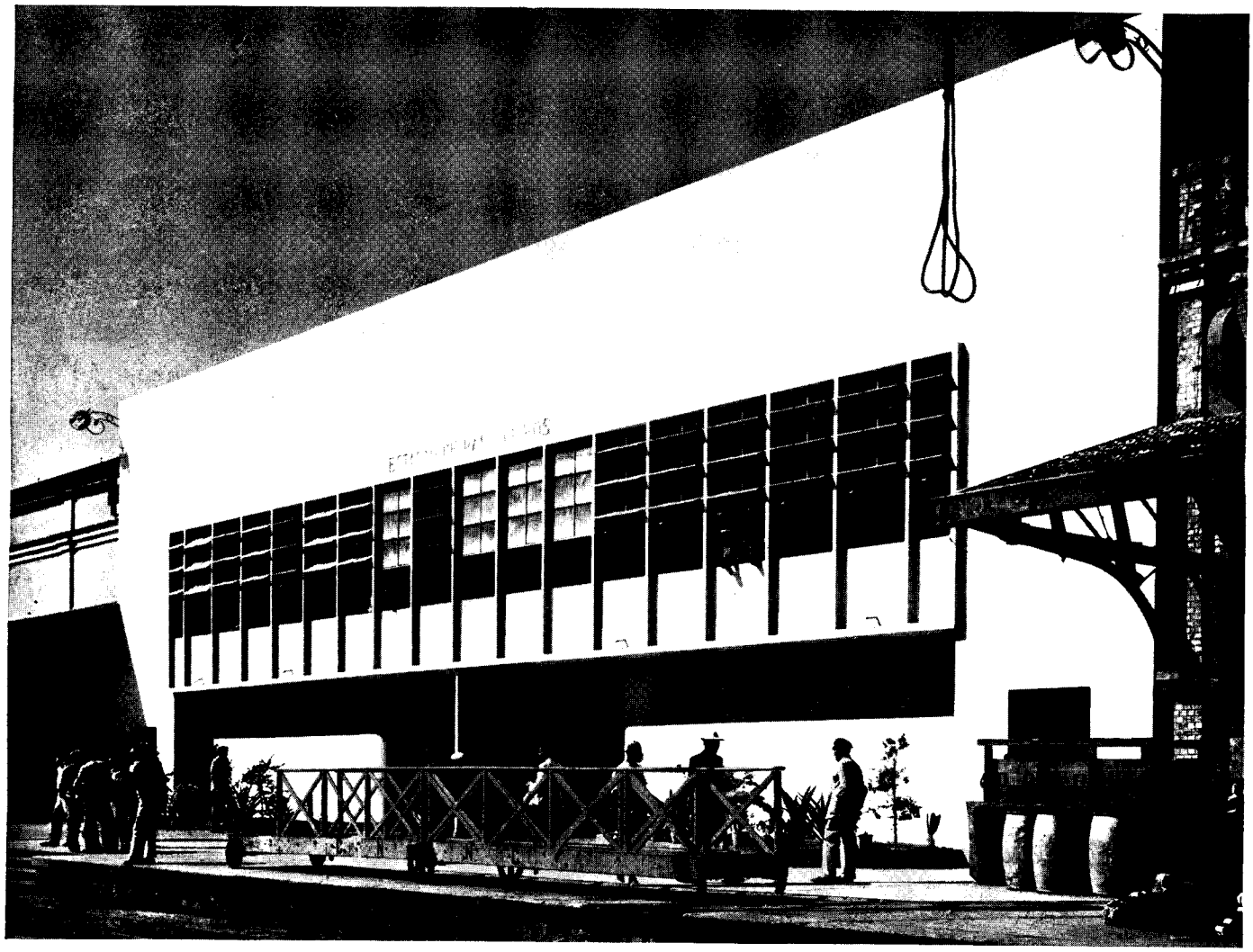
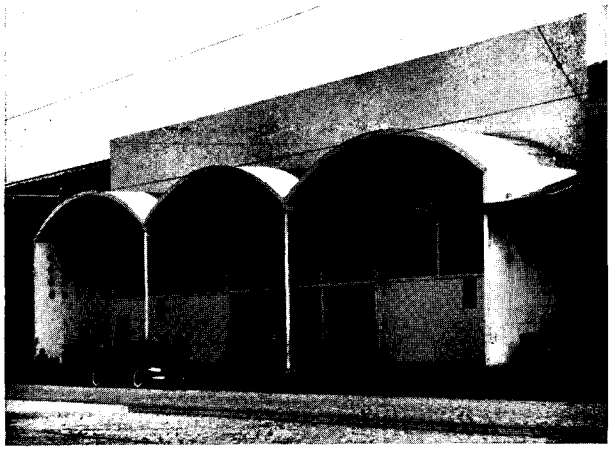
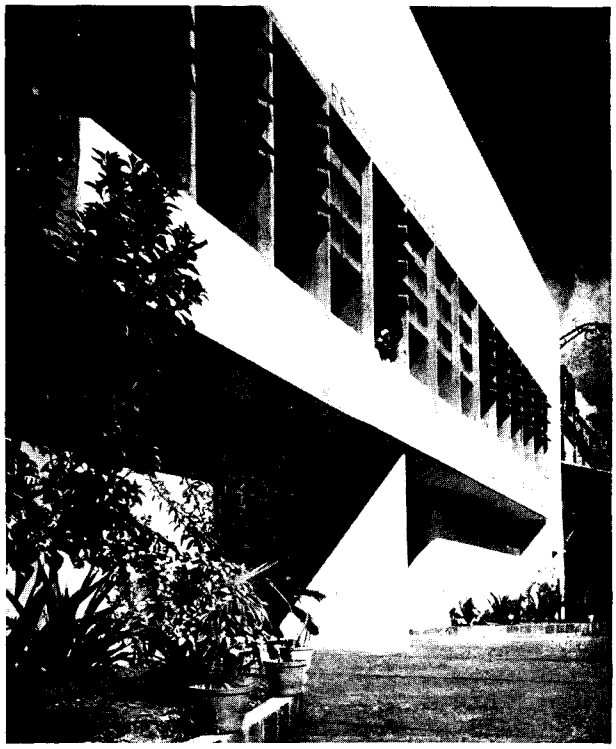


PASSENGER STATION FOR COASTAL BOATS, Rio de Janeiro

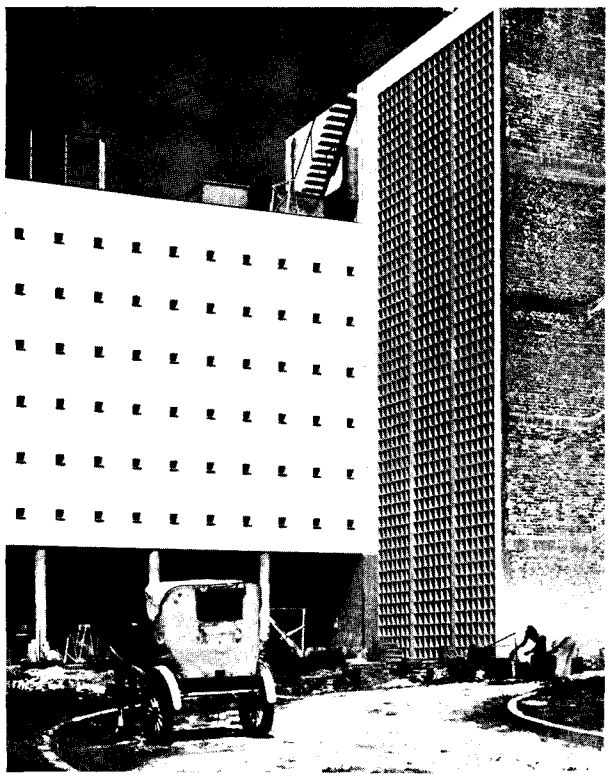
Atilio Correa Lima, Architect

A design which achieves distinction with the simplest possible means, through the use of slight projections and careful proportioning of plane surface and fenestration. The horizontal vanes of the windows are adjustable and fend off the hot sun while still permitting through ventilation. The windows near the ceiling of the first floor are well shielded from glare by the projection caused by the nicely calculated setback of the first floor wall, as seen in the illustrations



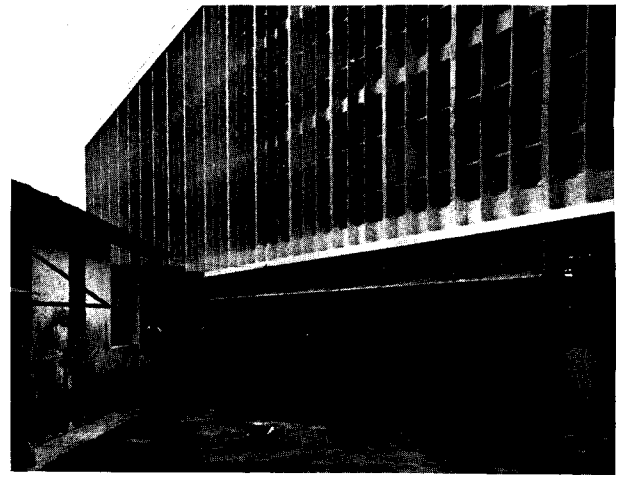


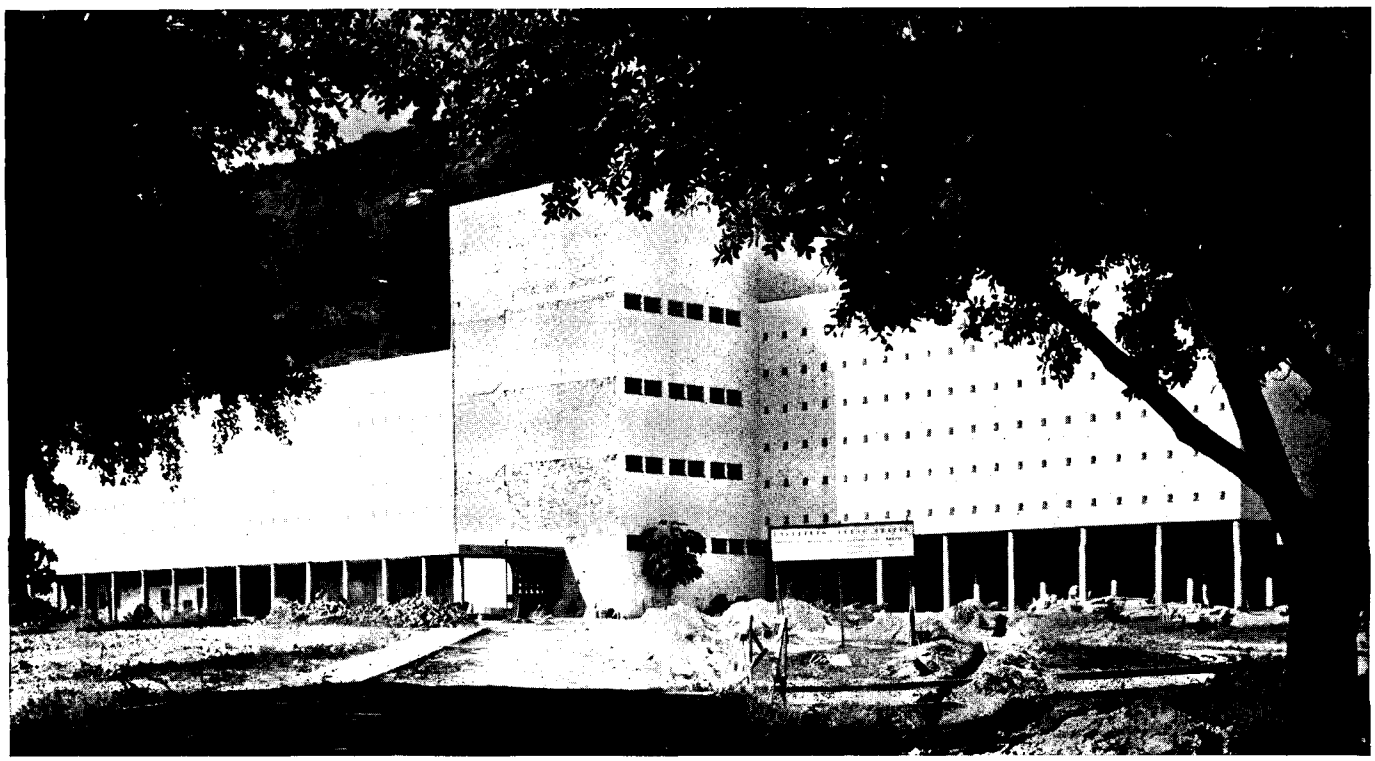
VITAL BRAZIL INSTITUTE, Rio de Janeiro,



Alvaro Vital Brazil and Adhemar Marinho, Architects

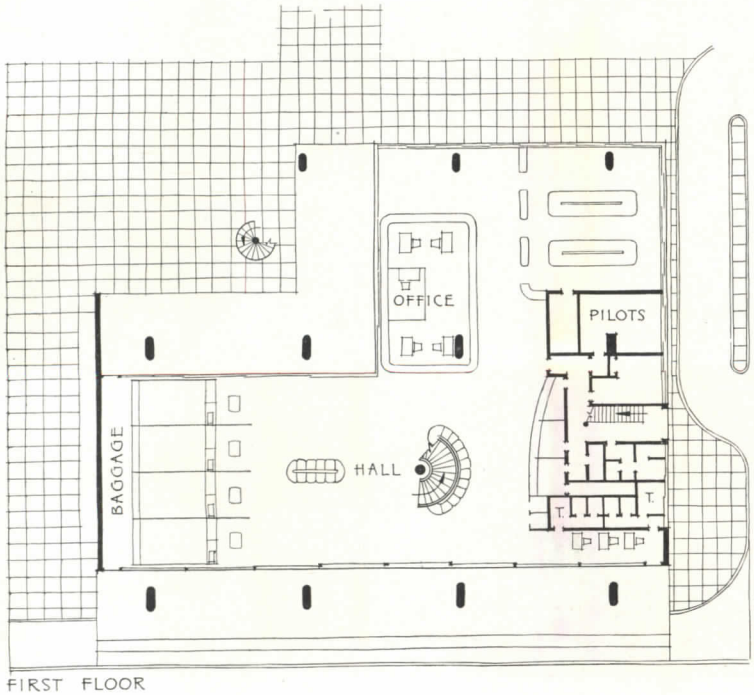
One of the architects is the son of the scientist for whom the building is named. The building is a laboratory for the preparation of anti-snake-bite serum. The small windows open on the corridors of the north, or sunny side of the building. The photograph below shows the south, or shaded side, with its large vertical banks of windows. The stair tower has one unfinished wall to take future additions



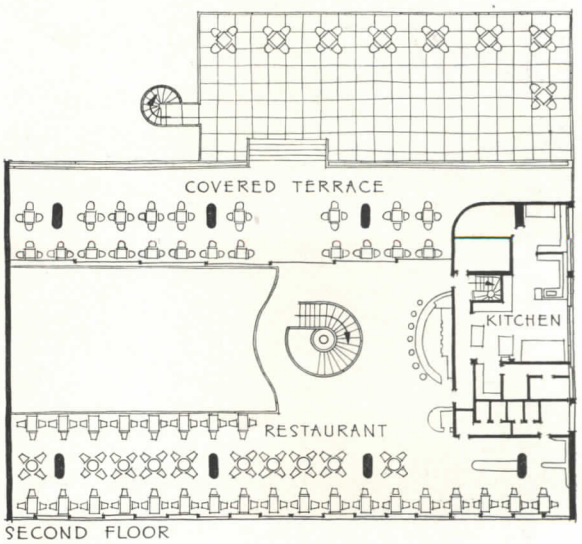


SEAPLANE STATION, SANTOS DUMONT AIRPORT, Rio de Janeiro

Atilio Correa Lima, Architect



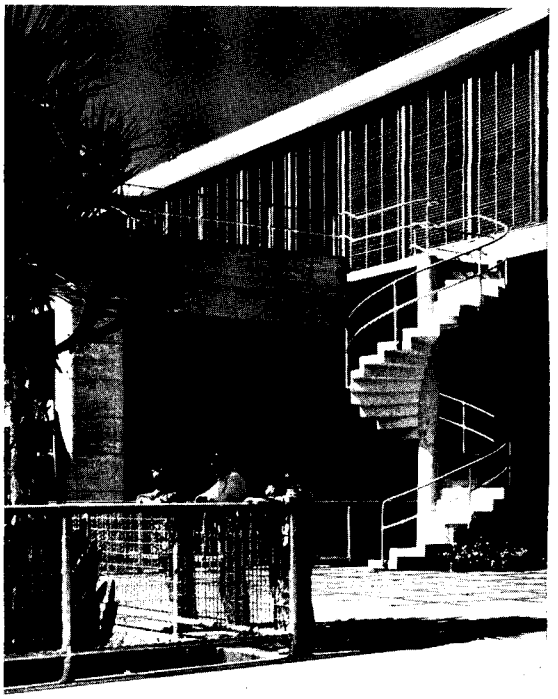
FIRST FLOOR



SECOND FLOOR

THE SEAPLANE STATION
SANTOS DUMONT AIRPORT

Atilio Correa Lima, Architect

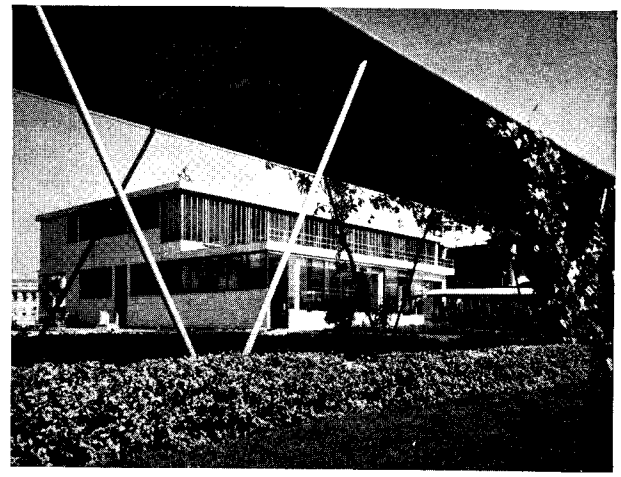


This passenger station now serves both the land and seaplanes, as the landplane station, designed by the brothers Roberto, has not yet been built. The design is utterly simple but unusually attractive. Probably one reason for this is the interesting contrast of the spiral stairs, which are prominent in both the exterior and interior design, with the simple, rectangular masses and plane surfaces of the building itself. The extension of the lower floor, to provide the observation platform above, contributes to the interest in the disposition of masses, as well as serving entirely utilitarian purposes. The contrast of light and shade of plane surface and void—of thin, vertical mullions with dark, glazed areas, contributes to the effectiveness of the design. Planting has been very well carried out as a foil for the architecture, and adds much to the pleasure of passengers.

The building is of reinforced concrete covered with yellow travertine from the Argentine. The very attractive spiral stairs are also of reinforced concrete.

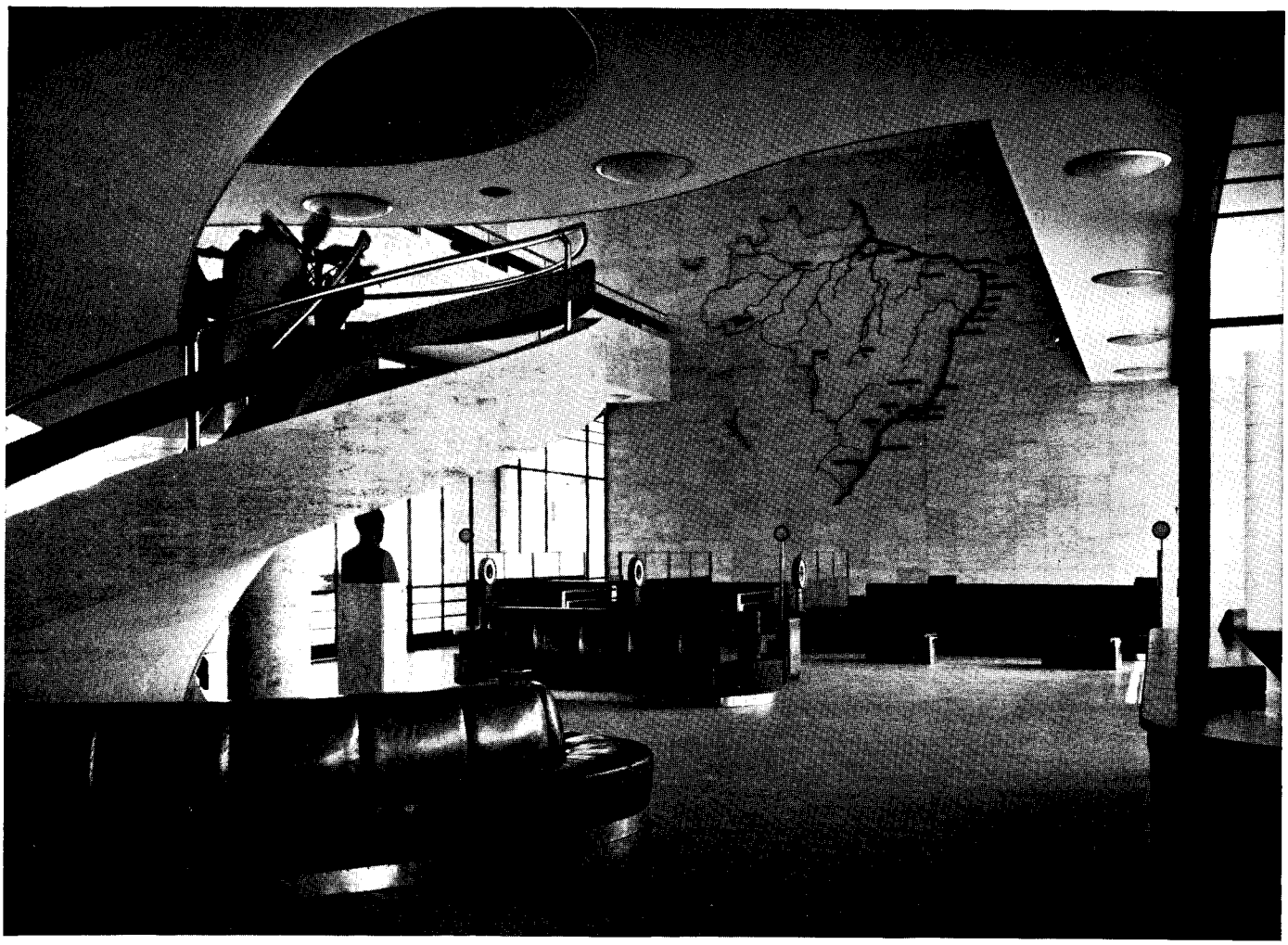
Kidder-Smith

Looking down into the station from the mezzanine. The upper floor with its glazed-in restaurant looks out over the embarkation pier and opens on the observation platform. The spiral stair is seen at the right below the second floor



An attractive covered passage connects the station with the embarkation pier. The roof over the passenger walk is supported by diagonal steel struts which form a pleasing contrast with the rectangular lines of the building from which it leads

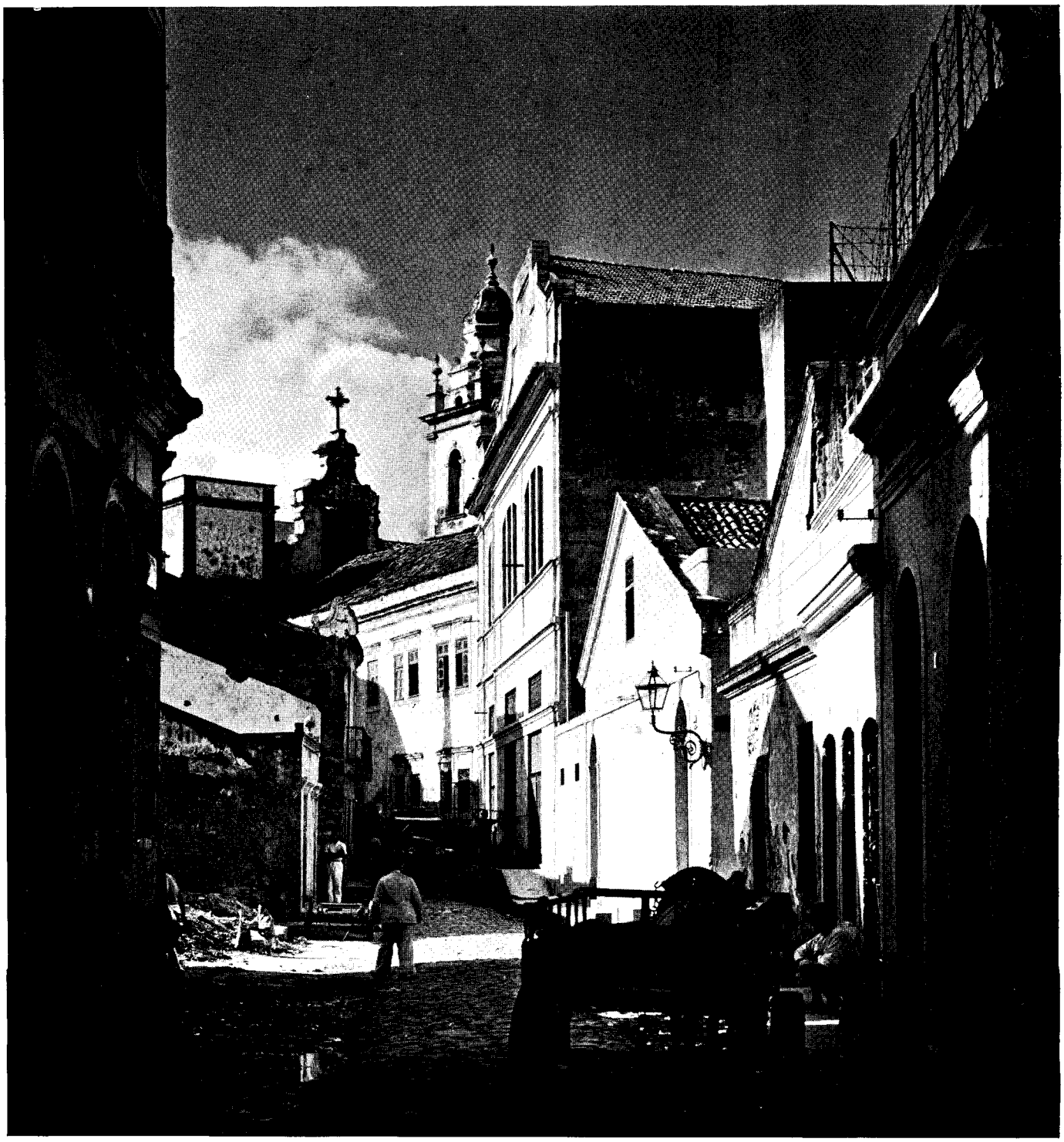
A prominent feature of the interior is the spiral stair, of an unusual design, the central support of which terminates at the landing. The raised-outline wall map at the far end of the waiting room is both decorative and informative

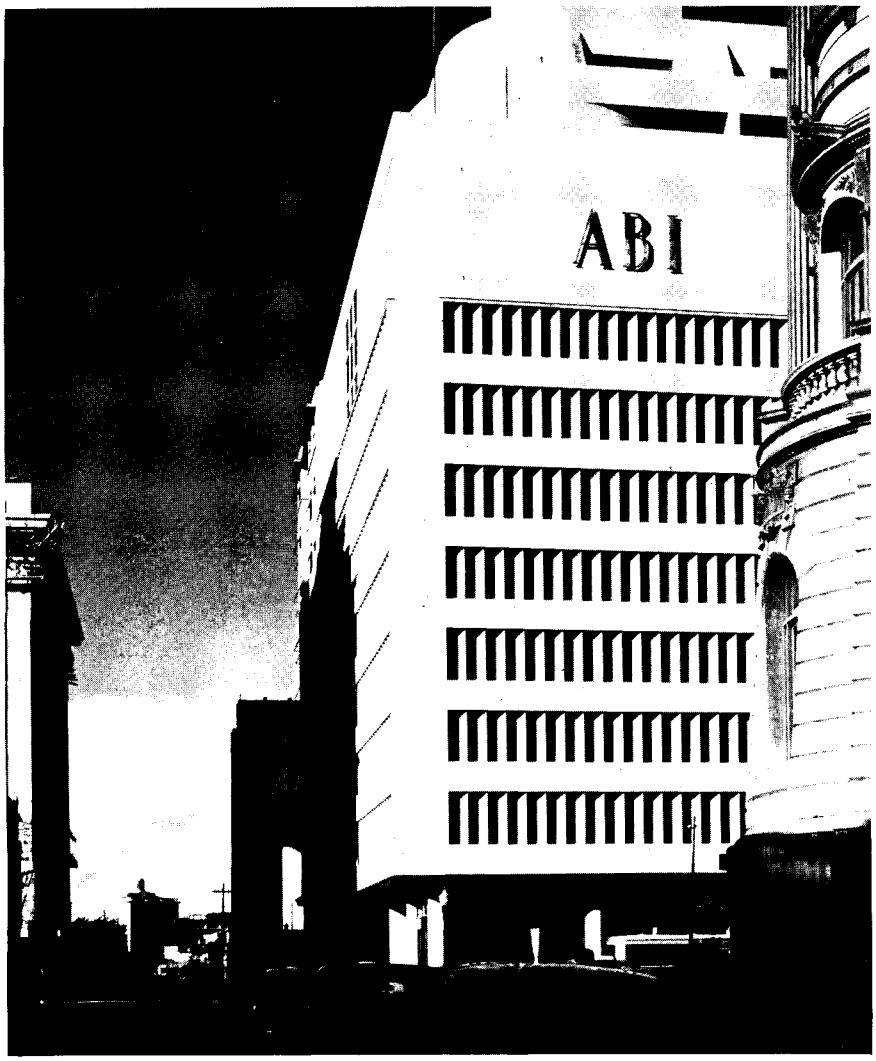


ARCHITECTURE OF BRAZIL

STREET SCENE IN RECIFE

A picturesque, winding street in the capital of the state of Pernambuco, which was founded in 1548. Recife was occupied by the Dutch from 1630-1654 but few traces of this period remain. Brazil established, in 1936, its SPHAN which has charge of the preservation of the more important monuments of old Brazil





ABI BUILDING

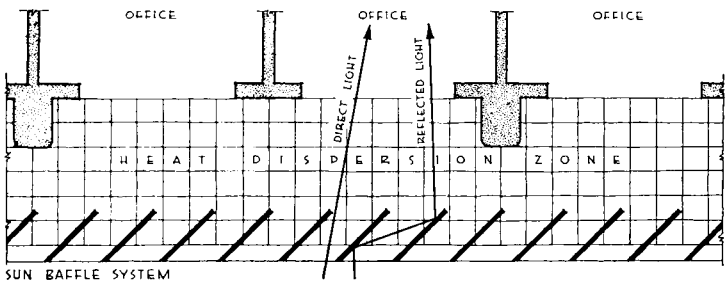
Rio de Janeiro

Marcelo and Milton Roberto, Architects

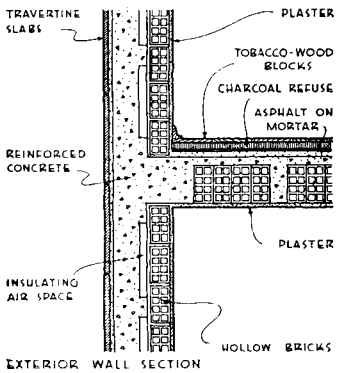
One of the most famous modern buildings in Brazil is probably best known for its use of permanent vertical louvers which give character to the facade. The architects provided in this building many different types of space, ranging from the usual business offices to club rooms, restaurants, a theater, and an exhibition hall. The building is of reinforced concrete faced with Tijuca granite and travertine. The sun baffles are faced with white cement and Alba sand. Thermal insulation is provided by an air space between the concrete exterior walls and the inner lining of hollow brick. This building was published fully, with photographs, plans, details and description in ARCHITECTURAL RECORD for December, 1940, pages 73-79 inclusive.

Below, the terrace of the restaurant and roof garden from which there is a splendid view over the city and Guanabara Bay. The planting is both colorful and cooling, as the many specimens of Brazil's exotic plant life add color and prevent the undue glare which would be reflected from an ordinary terrace

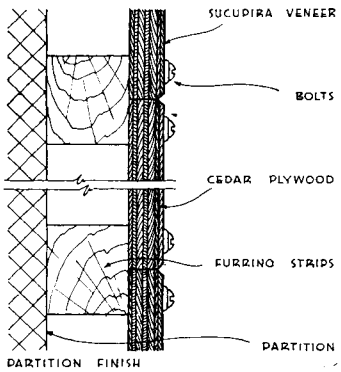
DETAILS OF CONSTRUCTION



SUN BAFFLE SYSTEM



EXTERIOR WALL SECTION



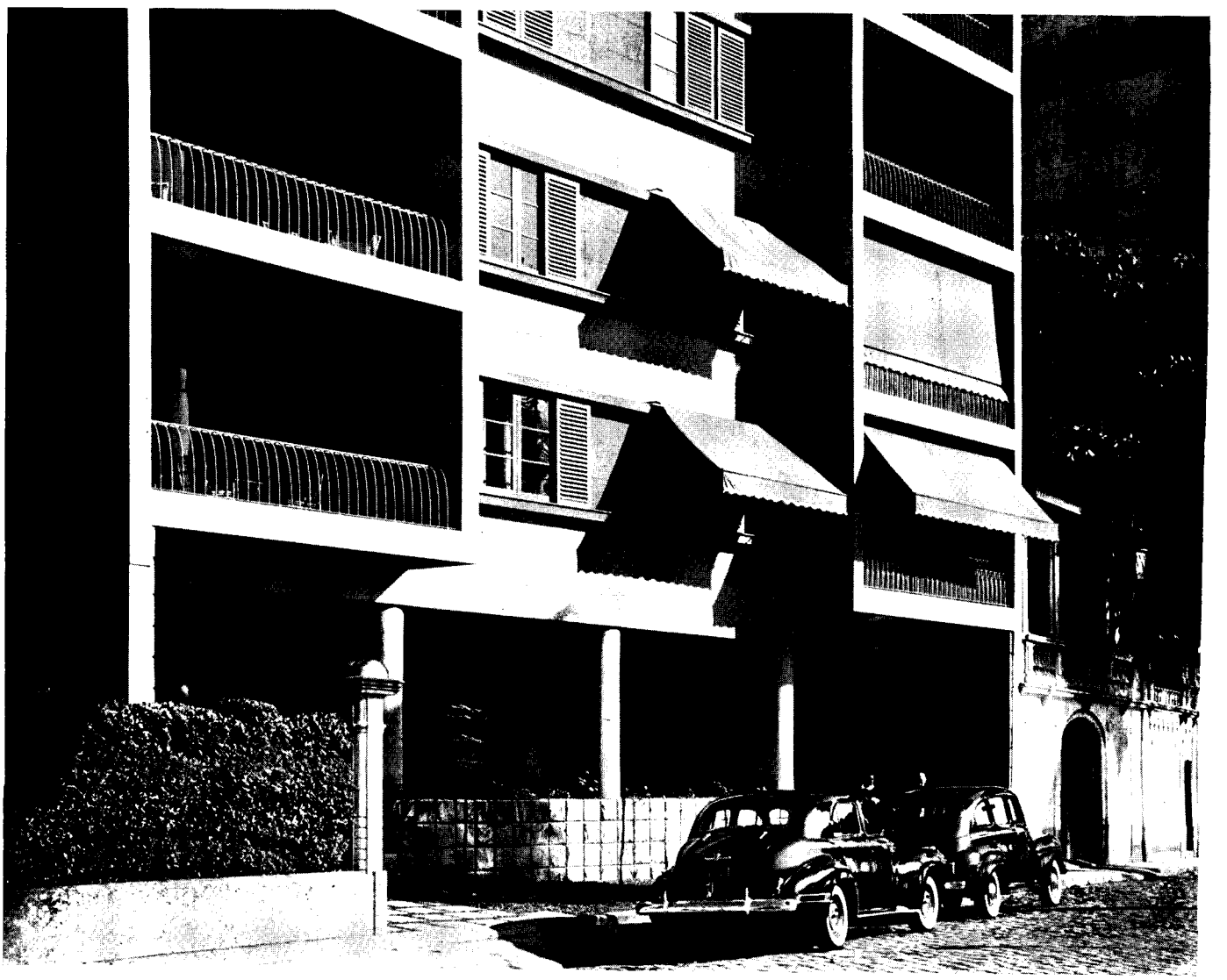
PARTITION FINISH

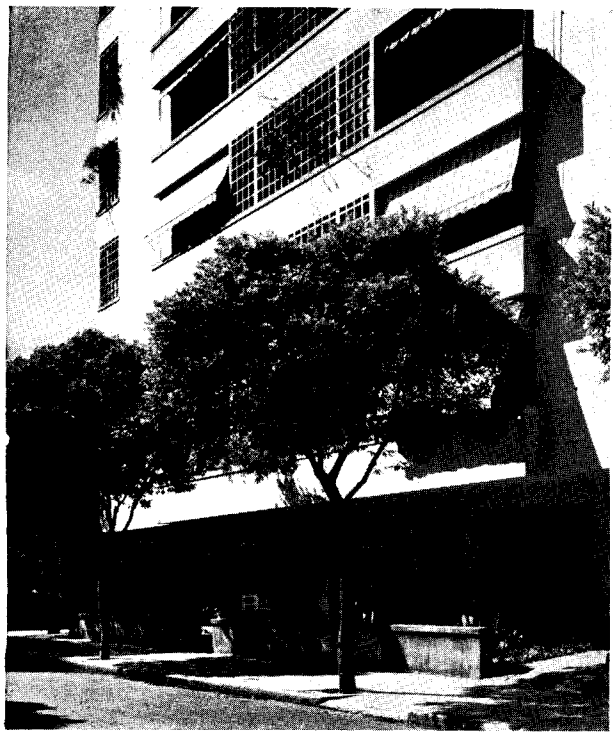
ARCHITECTURE OF BRAZIL

APARTMENT HOUSES

Many new apartment houses have sprung up within the last few years in the better residential sections of Brazilian cities. At the right, the Alameda Barao de Limeira apartments, Sao Paulo, Gregori Warchavchik, Architect. Windows are protected from the sun by large, rigid, movable awnings, and draperies which can be pulled across the openings. Again, planting is used effectively, even in a small front yard.

Below, the apartments Praia do Flamengo, Rio de Janeiro, Armando Faria Costa, Architect, built about 1938. Well-planned, medium-sized apartments are provided in the most desirable section of the waterfront. Deep balconies project slightly from the facade and privacy is assured by the side walls and the separation of balconies on both sides of the building. The windows are especially noteworthy as sliding sash are interchangeable with louvered shutters, at will. Cloth awnings are also employed to provide shade.



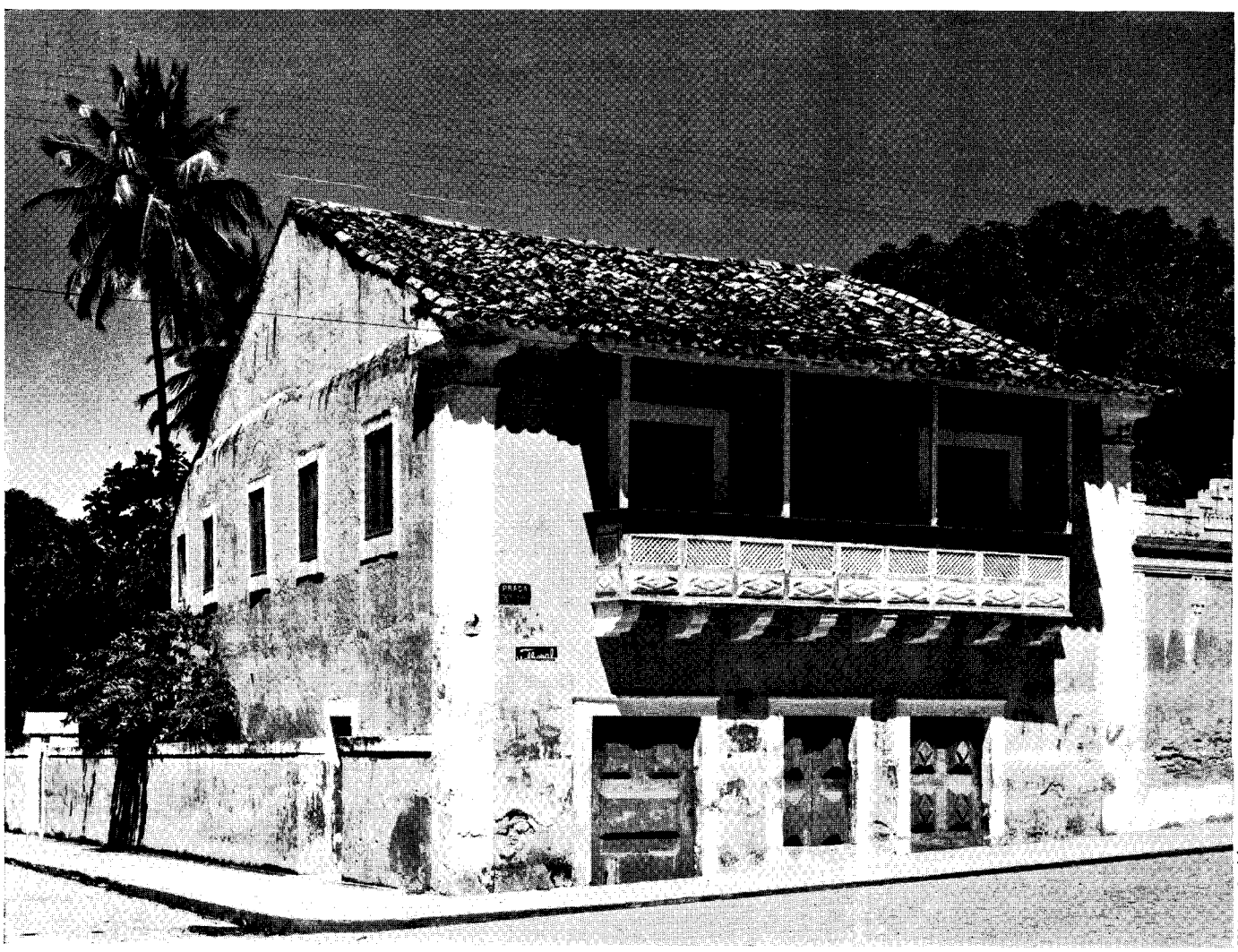


Another interesting apartment house, rua Bolivar, 97, Rio de Janeiro, Dr. Soldanha, Architect, built about 1940. The projecting terraces, centered on the facade, add greatly to the interest of the design. The concrete grilles make interesting pattern and give scale to the building. Simple awnings are used to shade the balconies and, again, planting plays an important part in the attractiveness of the setting

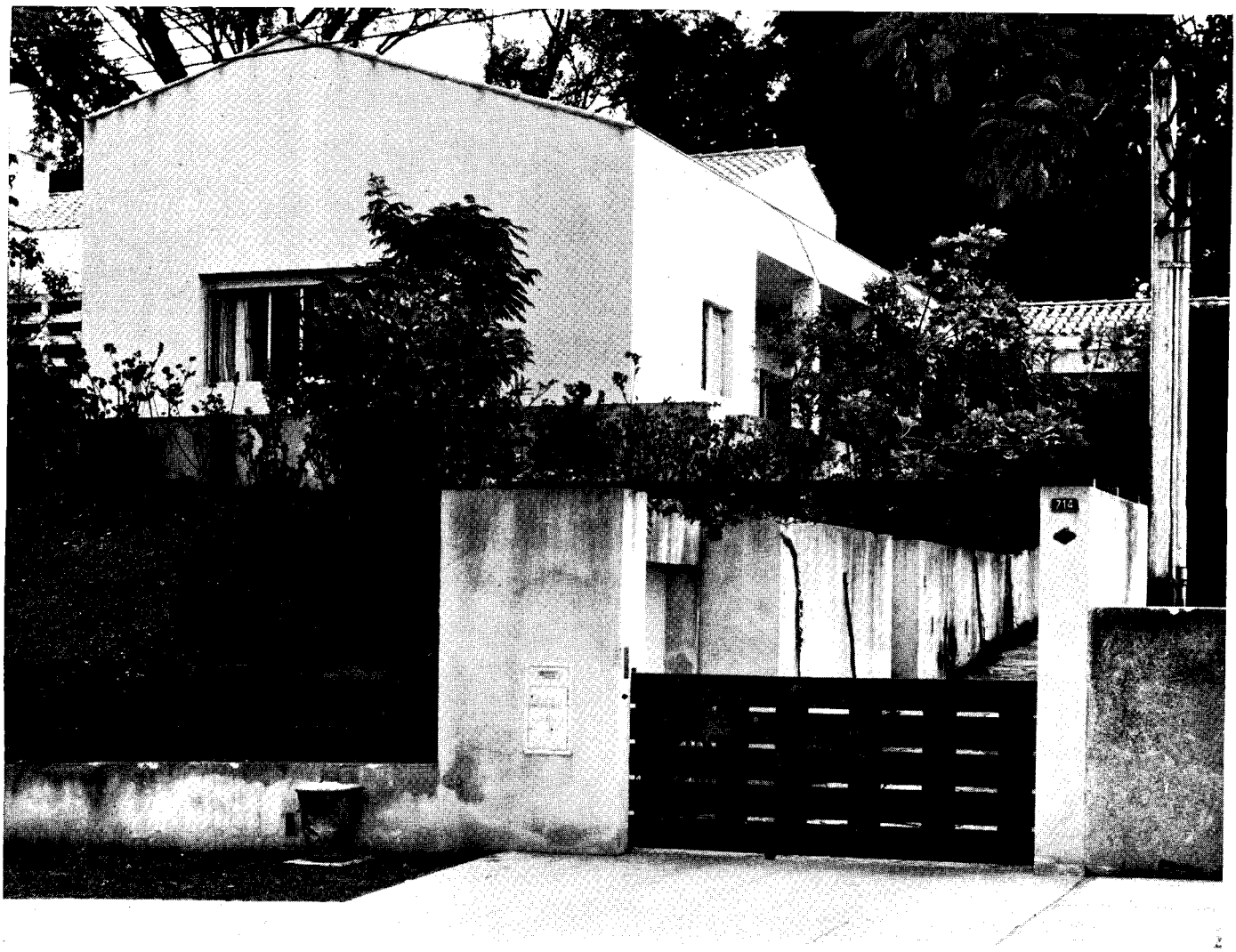
Below, one of the large, modern apartments is the Edificio Esther, Sao Paulo, Alvaro Vital Brazil and Adhemar Marinho, Architects. The design is striking in the contrast of the light wall slabs with the dark lines, which outline the edges of the building and mark the floor levels. The shaft of the completely glazed stair enclosure is another striking feature of the exterior. The penthouse apartments have garden terraces. All windows exposed to the sun have adjustable, louvered awnings. The ground floor is occupied by shops and in the basement below is the garage.

AN OLD HOUSE IN OLINDA

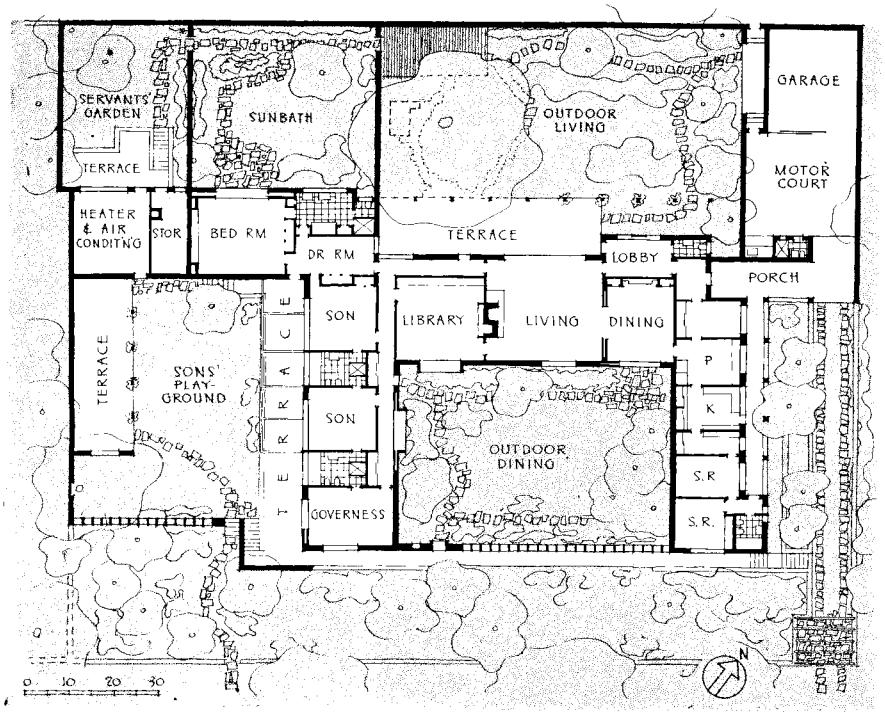
A fine example of the architecture of the Colonial period is shown in this photograph of a late Seventeenth Century house, in Olinda. Its thick, rubble walls are covered with pink stucco which contrasts with the typical rich, dark tile of the roof. The delicately latticed balconies, supported by heavy brackets, is typical of the older residential work. Slender wood columns, widely spaced, which support the roof of the balcony, are enhanced in contrast with the heavy moulded capitals of the corner pilasters. The heavy, raised panel doors are also typical of this period.



Kidder-Smith



HOUSE FOR JOAO ARNSTEIN, SAO PAULO



Bernard Rudofsky, Architect

Photographs taken in Brazil's winter time, under adverse weather conditions, cannot do justice to this outstanding example of modern domestic architecture in Brazil. The house is planned with skillful directness in creating a garden home in the city. It is virtually a country house in the metropolis, and its five gardens are closely related to the various living portions of the house which they serve. In fact, because the architect carried the walls to sufficient height in enclosing each of the gardens, the owner has, in effect, outdoor garden rooms. The enclosing walls (only a corner of one can be seen at the left in the picture above) are so designed that they will allow the circulation of air, and while one can see out through them, they obscure the garden from the street. The walls in summer are covered with vines and flowers. The plan will bear minute and careful

HOUSE FOR JOAO ARNSTEIN, SAO PAULO, Continued

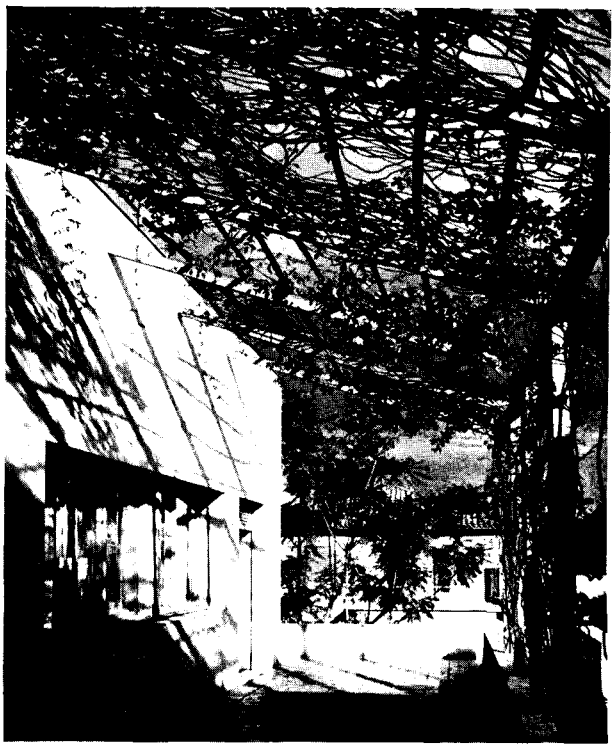
study for it reveals a most skillful arrangement of its parts and serves so effectively the way of life of the owner. The parts are all easily accessible and yet are as easily isolated. Actually the family could entertain five different large parties which would not meet, if they so desired.

The house is as efficient in its construction and equipment as it is in plan, for it is entirely air-conditioned and appointed with the most modern plumbing, lighting and kitchen equipment. As the house is located on a former swamp, concrete piles were used for the foundation. The house itself is almost entirely reinforced concrete with brick fill, and it is insulated throughout as well as having very thick walls. The floors of the main rooms are of rich hardwoods, in solid blocks some 16" square. For the large openings, and many of the smaller ones, thick plate glass was imported from the United States. The windows have sliding steel sash and there are shutters which can be pulled down and pushed out at an angle to act as awnings. Over the larger openings there are sliding grilles or heavy, sliding, louvered panels for protection against marauders.

The principal rooms are high-ceilinged, and the roof over the central portion of the house is considerably higher than is shown in any of the photographs. In this upper roof portion are run the large ducts for the air-conditioning of all the rooms. Also, in this "attic space" is a large water tank which supplies baths and kitchens.

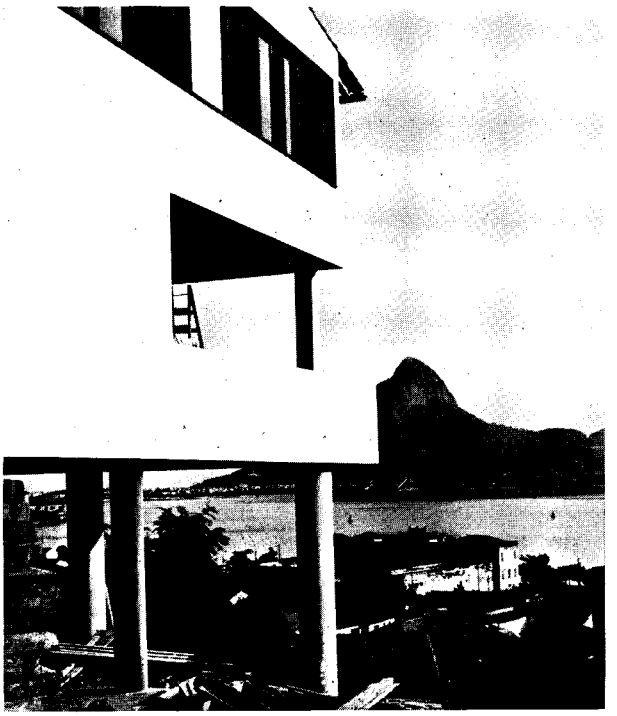
The exterior of the house is of white stucco, since color is provided by the profusion of flowers and shrubs of the various gardens. Orchids entwine around the slender porch columns and the gardener's task is one of restraining pro-

Kidder-Smith

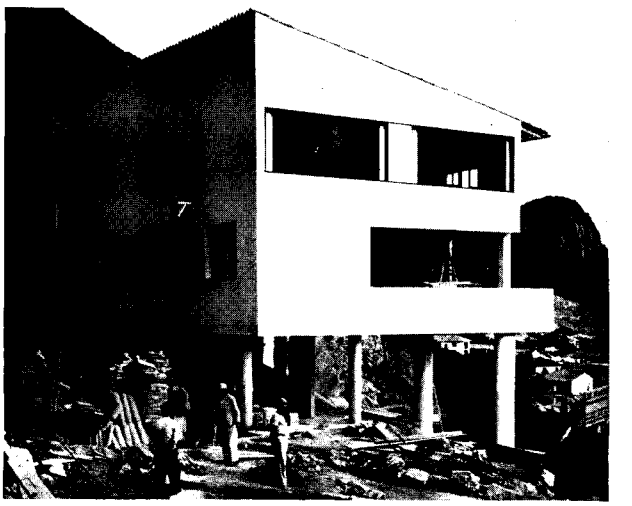


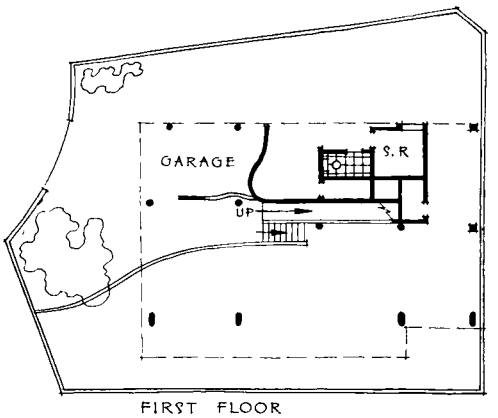
fusion and trimming back rather than making things grow. The views above and below show the "sunbath" garden which adjoins the master bedroom. Large glass doors slide *back to make room* and garden one. Unfortunately, the views were taken in June, during Brazil's winter. . . . The vine-covered trellis protects the terrace at the west of the sons' rooms which open on their own private garden

THE HOUSE OF OSCAR NIEMEYER, ARCHITECT

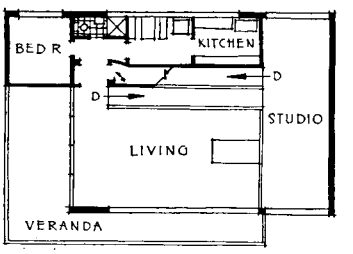


Gavea, Rio de Janeiro

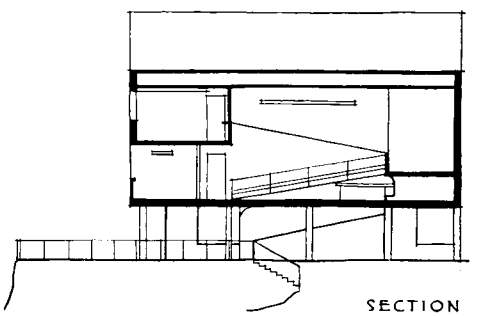




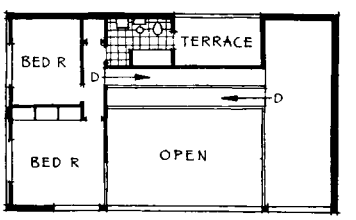
FIRST FLOOR



SECOND FLOOR

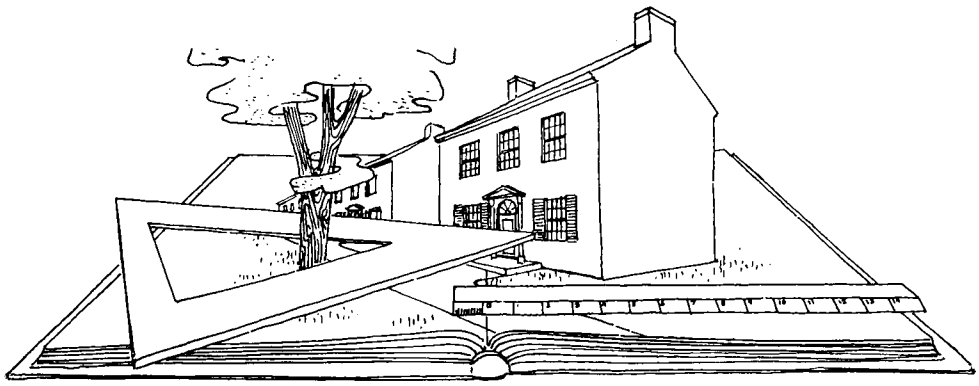


SECTION



THIRD FLOOR

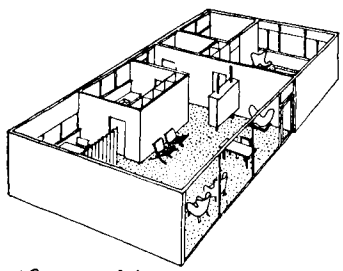
Architect Niemeyer's interesting modern house was still under construction when Mr. Goodwin visited it in 1942, and Mr. Kidder-Smith took the photographs. The house commands a magnificent view across the bay, and was planned to take full advantage of it. The high living room, the studio and the principal bedroom open toward the view, as do the veranda and the deep shaded terrace under the house. The ground floor is open except for the garage, storage rooms, and a lavatory. The spacious living room and studio mezzanine occupy about two-thirds of the enclosed space, and the ramp, which serves both studio and bedrooms, forms one side of the living room. The house is of reinforced concrete, white stucco faced. The roof tile is red and the sliding, louvered shutters at the windows are blue.



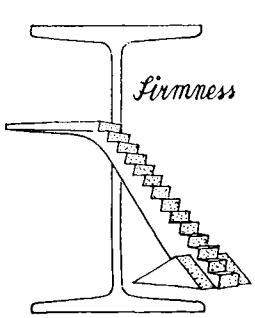
THE ART IN HOUSING

by Joseph Hudnut

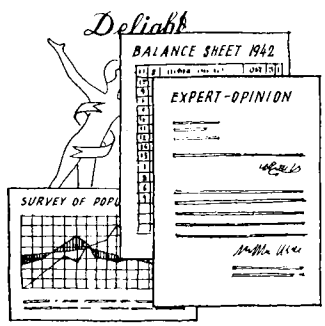
sketches by Willo von Moltke.



Commodity



Firmness

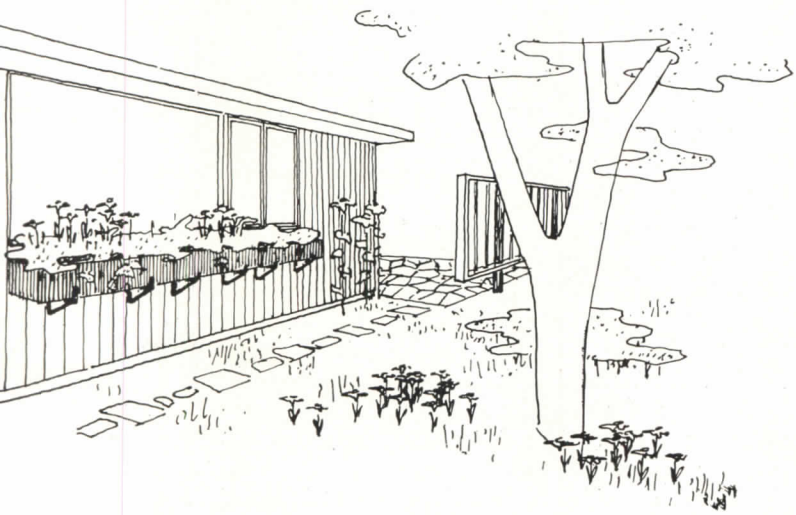


SEVERAL YEARS AGO I asked an architect who had just completed a housing project to tell me the principle upon which he had designed his facades.

"I got them," he said, "from the plates in Ramsay's 'Late Georgian Houses.'"

For some reason the remark seems less preposterous after the passing of years than at the time it was made. Not that the XVIII century flavor he gave his designs has grown more congruous to the busy life which they enclose, but rather because these facades, whatever may be their absurdities, reveal at least the consciousness of *an art in housing:* of a need for feeling and for expression, as well as for science, which is too often unacknowledged in our more recent projects. Strange as it may seem, these Georgian exteriors were added on with love; a love which was illusioned no doubt and misdirected but which was nevertheless real. The architect, I think, built with his heart, and the structures he has erected tell us so. We perceive beneath the veneer of his scholarship an intention to convey a mood, a thought; and that perception seems to lift his work above the arid materialism which clothes so often the more advanced science of our own day.

Not less of your ingenuity, gentlemen: not less of your admirable common sense and practical genius, your commendable solicitude for the public purse. More of these, not less; but could you not, without abridgment of your zeal for firmness and commodity, include also that sympathy for the human no less than the technical objectives of your program which, fused into your buildings, might illumine their dismal efficiency? I do not suggest that this light should be made to shine from Georgian or Tudor adulteries or from trimmings and furbelows of any other style or from anything added on, whether in the name of taste or of scholarship: still less from the application of principles and rules of form gathered from the text-books of aesthetes. I suggest, rather, that the architect should discover and guard some deeper purpose in his work than that of mere shelter and sanitation—and that he should find the means as an essential part of those practical processes by which materials are assembled and shaped for use to make this purpose evident. I mean, in short, that the housing project should be not an agency for social reconstruction merely but also a theme for art.



It should be understood that I am not speaking of an abstraction. I do not use the word art in the drawing-room sense of something to talk about. The art I have in mind is essentially a process of giving emotional content to *things* made by man. That is, in a housing project, something real and very much to the point. I shall go so far as to say that without such art (which I will call *architecture*) the housing project will fail as an agency for social reconstruction. Those wise and compassionate persons who in their zeal for cleanliness and fresh air, for decent sanitation and comfort, for economy and sound construction, have ignored the arts of expression little know the subtle force of idea and emotion in human affairs. They would persuade us with argument when the way to our hearts lies open before them. It has yet to be proved that mechanical refrigerators have power to promote the good life; but the power of window-boxes has been proved a hundred thousand times.

* * *

At this point someone will ask if I expect to win the war with window-boxes. To be scornful of the utility of the arts (especially when these are warmed by sentiment) and to be by that means dressed in a reputation of militancy and stern realism is the fashion since Pearl Harbor; as if an interest in civilized living were inconsistent with the objectives of this war. We flatter our enemies too highly by so gratuitous an imitation. I am not for frills in defense housing; and yet, even in the most temporary of "living units," I would admit some considerations other than the possibility of erecting these in nine and a half hours. The workers in our war industries will not be made more resolute by a too Spartan economy practiced upon their wives and children; and, while we assure these workers in speeches and in print, in radio, poster, and cinema, of our intention to defend their way of life, our promise might well be made express and persuasive in the forms of their dwellings, in the shapes and disposition of the planted areas which environ these, and in the character of those institutions, however temporary, which sustain the life of the spirit. "The Japanese," said Ch'iu Tsai, "are a naïve people: they think that wars are won by armies."

Heaven knows that I would not shelter war workers or the "low income group," or any other group for that matter, in ornamental buildings, and yet I think we have been somewhat too resolute at times to be simple, functional, and modern. A balcony or two should not disturb our conscience, a canopy over a doorway here and there, a curved line, a panel, a spot of color. String-courses are not so expensive as to tax the resources of a government truly intent on human happiness; and although I am not a lover of cornices I see no reason why we should not cap our walls with some material which would contrast with their texture and color. We should consider more curiously the nature and use of materials, and especially of the materials of walls. Red brick is practical and wholly respectable, but it is not the only material available to the architect; and even if red brick were the only material it would yet be susceptible to a hundred variations in texture, coloring and pattern—few of which our architects have even hinted at. There should be broad planes differing in materials, colors, and textures; and these should answer each other in considered sequences. There should be also a liberal use of white wherever that is possible: of a white which captures and holds the changing tones and radiances of the sky. Doorways, even in the plainest buildings, ought to have some emphasis; doorways of stone or wood can give life to the brick walls upon which they are placed. These, as well as the other details I have mentioned, could be made less costly by a reasonable degree of standardization and they could, as Mr. Albert Mayer has suggested, develop in the course of time their own idiom, not a "watered-down version of the middle class"—a sentiment in which I heartily concur.

We could do much more with windows than as yet has been attempted. I am not for variations made to avoid

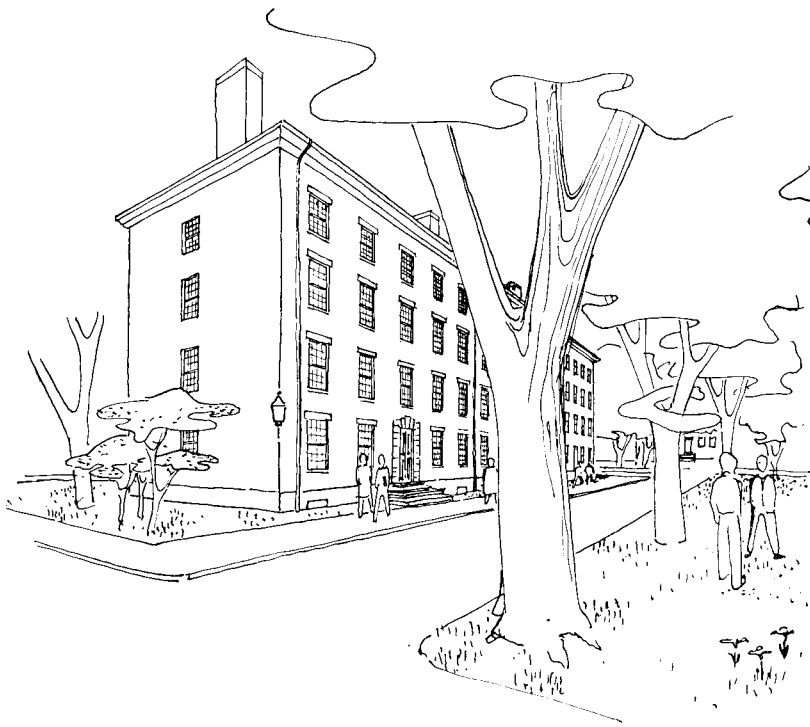
monotony—these only make the monotony more evident—but rather for a more sympathetic consideration of proportion, spacing, and treatment. Those antique buildings in the Harvard Yard—Holworthy, Stoughton, Hollis—owe their serene dignity almost entirely to their windows. It is surprising that we have learned that lesson so haltingly here in Cambridge. This corner of the Harvard Yard is very like a housing development: built for the use of men who certainly had as little money as we have to spend on architectural fripperies. The priceless ingredient in these houses is a nice sense of spacing and of relationships, of scale and rhythm. There is no plan or structure of so intransigeant a nature as to prohibit in some measure such feeling and care; nor should such feeling and care be confined to matters of form merely or of appearances. We should depend upon windows more than on any other element in our design for that residential (I almost said home-like) quality which the facades of a housing project ought to have. People live behind these windows, and the sense of that life should and can be made to shine through them.

* * *

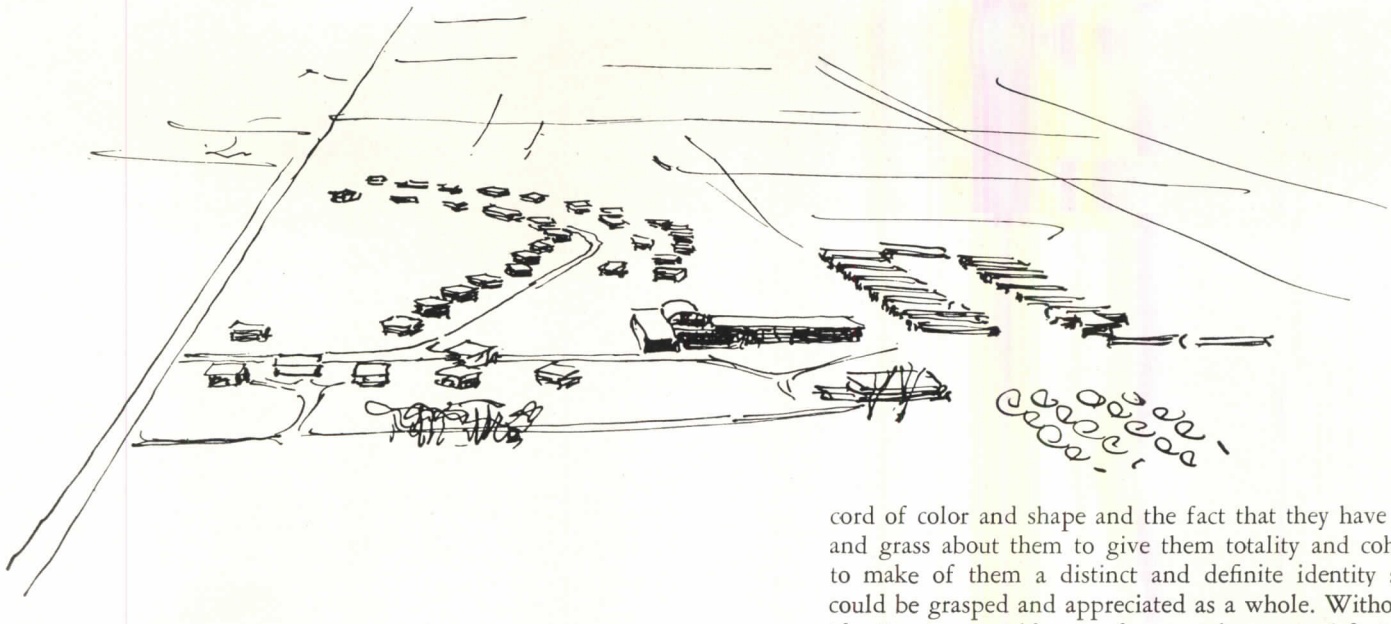
The character of buildings depends, more than most of us realize, upon such details as window treatment and the materials of surfaces; but I do not need to remind architects that these are after all only minor media in expression. That architecture is an art of three dimensions is a truth never more evident than in the designs of housing projects. The elements of those designs, the expressive elements no less than the useful, are solid objects (buildings) set in space. It is with these that the architect builds his patterns and the character of these patterns is chiefly determined not by materials or details but by arrangements: that is to say, by the shapes, proportions and relationships of buildings, and by the shapes, proportions and relationships of the spaces between and around buildings.

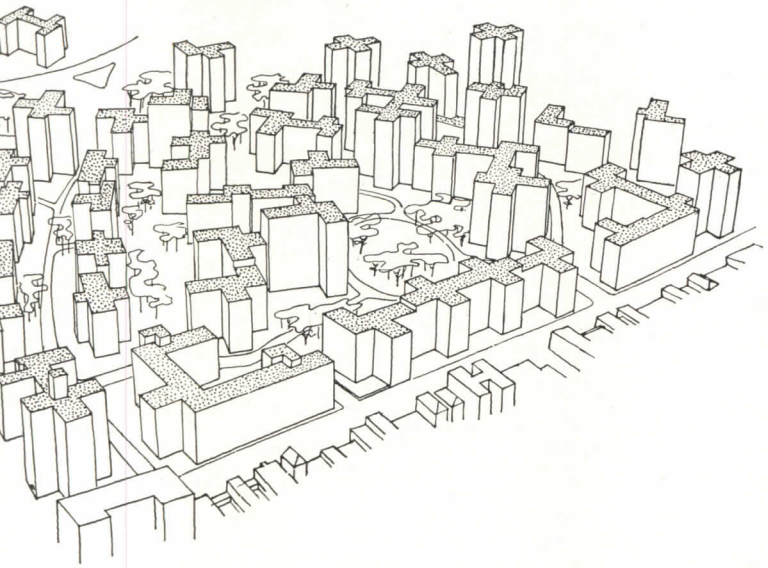
Now the most usual and most obvious fault with housing projects, considered as patterns, is their extreme monotony. The buildings are too much alike, too equally spaced. Their dreary repetitions seem to go on endlessly. I am persuaded that this monotony is as unnecessary as it is fatal to good design. I cannot believe that there is any science so tyrannous as to impose so iron a discipline; nor can it be excused entirely by considerations of economy. In an enterprise made up of so many human factors, of so many and so nice questions of economic balance, there can be, I think, no formulation of physical requirements so definite as to prohibit all variations in the forms of buildings. Our faith in "expert opinion" is much too naïve. Expert can be balanced against expert, as every lawyer knows, on any topic under the sun and if it be heresy I will yet declare my suspicion of a code of procedure so precise in every part as that of the housers. Never, never—try as they may—will they devise that four-family apartment suitable for every family of four, Irish or Polish, Yankee or Middle-West, Catholic or Puritan, tradesman or industrial worker, nor will they ever suppress (I hope) the influence of individual taste and irrational preference in the design of homes.

I remember an argument, fought out to an extreme of bitterness, over the height of buildings in a certain housing project; and no one knows to this day, and no one will ever know, whether these should have been three or four



stories in height. Why not, then, have some of three stories and some of four? With the variations in heights, variations in positions would follow (they should follow anyway) and these could be so managed as to afford not only sequences of crystallizations and groupings but also new contrasts and new harmonies in the shape, scale, and character of enclosed spaces. A quality of suspense or surprise is essential to all vitality in form, and this is never more true than in the forms of spaces. These spaces, it must be remembered, are as important elements in pattern as are the buildings: their forms and relationships must be subject to our control. Our housing projects are too often





like hospitals blown up to insane proportions, with ward after ward following in an endless march; and they lack even those central elements of administration and common services which in hospitals sometimes pull these wards into a tenuous unity.

It isn't their monotony merely, the tedious multiplication of standard units, which gives housing projects so inhuman, so antiseptic an aspect: it is even more their amorphousness, their indeterminate shape as a whole. They begin in the most casual way, zigzag endlessly over open spaces nervously dotted with trees, and end nowhere. You could double their size or reduce them by a third, and still they would be the same. Nothing is there other than the deadly concord of color and shape and the fact that they have foliage and grass about them to give them totality and coherence, to make of them a distinct and definite identity such as could be grasped and appreciated as a whole. Without such identity there could not, of course, be any satisfactory pattern.

* * *

I think of housing projects as inward-looking groups. By this I mean, not only that they should have some appreciable boundaries such as would set them apart from the city as a whole but that they should have at their center some interests which are shared in common by all and which are expressed in structures or open spaces shared by all, so that the life of the project would be focused towards the center and away from the boundaries. The residents should of course share the life of the greater city of which they are a part; and the life should flow in and out of the area at many points about its perimeter; but, beyond this, they should feel themselves also a part of a smaller community, of a neighborhood.

This dual rhythm, like that of a great heart, should be expressed in the pattern of the whole. It is all very well to "discourage" outside traffic through residential areas, but one should not carry the principle so far as to create labyrinths. I have seen housing projects which resemble nothing so much as rabbit warrens, so confused and intricate are the spaces; and I wonder that any one who gets into them ever finds his way out. Something other than traffic, I think, was discouraged.

I am equally depressed by those designs which go to the opposite extreme and provide a single wide avenue or vista, open at one end and leading straight into the center. The unity here achieved is that of an institution, not that of a neighborhood. No scheme is more likely to invite an outward, rather than an inward movement; and this is made more rather than less obvious when, as sometimes happens, the vista is ended by some imposing dome or portico or commemorative monument. What is wanted is a heart which belongs to the neighborhood alone. Your heart is no longer yours if every Tom, Dick and Harry can look into it.

* * *

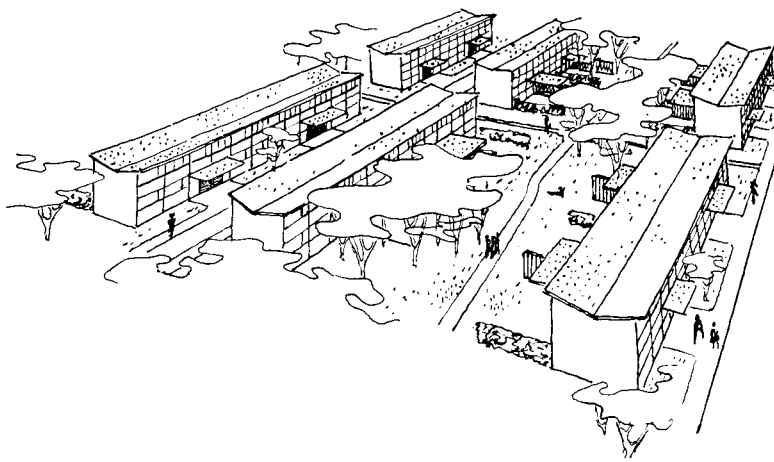
I think that there should be *streets* and that these, with the exception of a few circumferentials, should lead from the perimeter towards an open space at the center and, whenever such an arrangement is practicable, the walls of buildings should follow the lines of streets. I would restore the street as the basic element in my pattern. The street—a term which implies a public thoroughfare lined with buildings—is a theatre for a habit of life invented near

the beginnings of social growth, and perhaps we should think at least twice before we decide that zigzags in a park are truly more appropriate to a habit of life thus embedded in history. And how, without history, shall we hope for expression in architecture? Every one will agree, I think, that the most beautiful part of Boston is that part lying on the western slope of Beacon Hill; and yet it will be thought strange that I should find in this area a lesson useful for the architects of housing projects. Heaven forbid that they should copy for the unsuitable pleasure of a "low income group" the elegant complacencies of Bulfinch, and yet they might, I think, observe that unmistakable quality of neighborliness, of people aware of each other and of a common sentiment, which is in part at least the consequence of a pattern shared by house and street. The houses are designed for the streets, the streets for the houses. Certainly I would copy neither the streets nor the houses of Beacon Hill; but I would have our buildings grasp the pattern of our streets in a similar manner and so attain a similar unity, a similar clarity and definition, a similar humanity. I would have that sense of scale and articulation; and, yes, there should be backyards "decently confined" and recreational areas clearly set apart from those spaces meant for circulation and service. I should like those persons who determine the orientation of our new houses to consider if that might not be worth some abatement of their strict regulations. For my part, I am not so avid of the sun as to wish its rays to fall on every inch of my facades.

* * *

I think it most unfortunate that housing projects have so little relationship in their outward aspects with the patterns of their environments. If you fly over them they look like bright new patches on the worn fabric of the city. They will never become integral with the city, so opposed are they to its prevailing lines and scale. And yet they are parts of the city and not institutions set into it. I would restore the *street* if only to recapture in part the unity of neighborhood and surroundings; and for the same reason I should establish definite boundaries for my play areas and see to it that play did not overflow these boundaries. I have seen more than one housing project in which boys of the noisy age flow in from all the adjacent areas and fill the area with the clamor of their games so that the people who live there are, in effect, living in a playground: a very moth-eaten playground cut into little pieces, like a jig-saw puzzle, by squirming lines of concrete walks. The *street* is among the most pleasant and beautiful inventions of man.

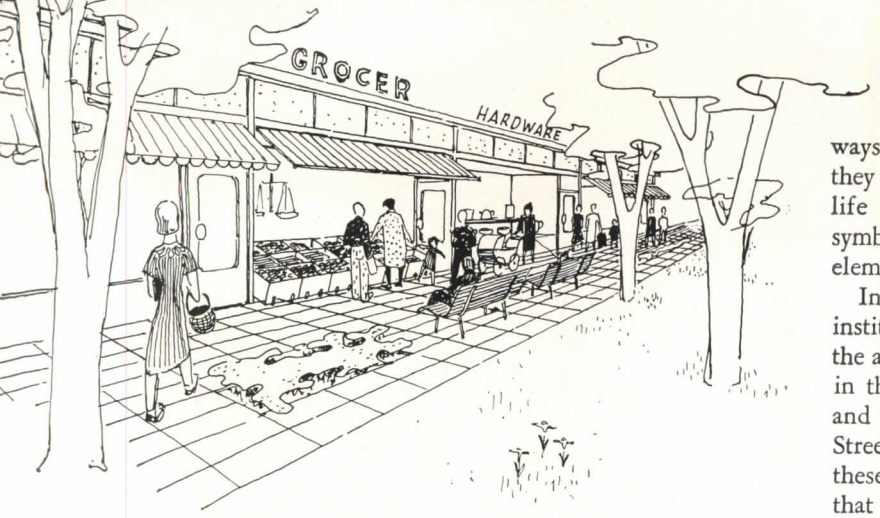
It has occurred to me in connection with the use of

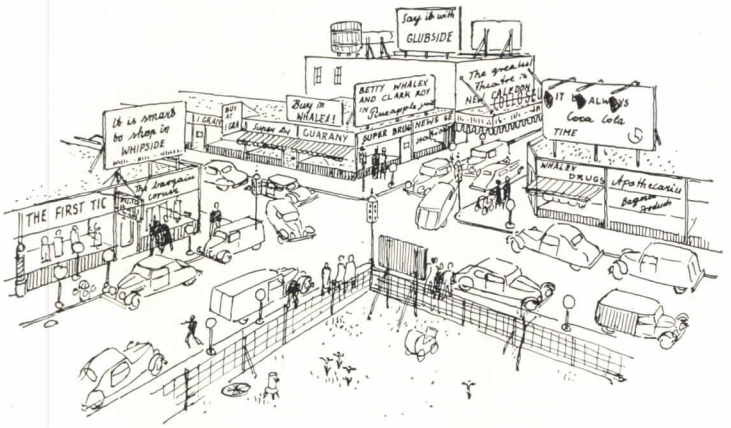


streets that housing developments might be improved (and made more practicable of achievement) if they were less compact. A few sites assigned here and there for the little-higher-than-lowest income group might be left for development by "private enterprise," so that our design is spread out a little and seasoned by variants which would be congenial also to our social objectives. I should invite a few accidents in my design; all the more so if these served to fuse my project into the wider design of the city.

* * *

New England villages, in the days when New England possessed a unique and eloquent culture, had at their centers a *common*. I would have a common at the heart of every housing project; but let me hasten to add, before some draughtsman draws a picture of my "suggestion" as elm-dotted field and picket fence and white spired church, that it is the idea, not the form, that I have in mind. At one side of my common would be the shopping center; at the other, the neighborhood institutions. The Housing Authorities, if I had my way, should assign sites for these, to be sold at reasonable prices and controlled by reasonable regulations. You have a city now without a city's amenities; a place to live in without that which makes life tolerable; technique without end, and no soul whatever.





I would not place the shopping center outside the housing project "at traffic junctions," as so many experts have suggested. I need no expert to show me what havoc automobile traffic plays with a shopping center. Shops are unifying factors; yes, and civilizing factors, too. There are few activities more pleasant than spending money and when you spend money in the company of your neighbors —to buy food and other things for your husband and children or, for that matter, to give a party—that is a social activity even though it has not yet been identified as such in the quaint vocabularies of sociologists. These, and some housing authorities, are much too snooty about shops and markets. Shops and markets, with their colored letterings, bright windows, neon lights and the murmur of crowds, disturb their antiseptic calm—and that is precisely what is needed.

* * *

My institutions should include a school, and I am inclined to like the idea of a school district whose boundaries are co-terminous with that of a housing project. I should suppose that, with a little good will on the part of boards of education, that should not be impossible of realization. I do not like the idea of a club for grown-ups in the school but perhaps that is only my prejudice. I go to my club to escape, not to find, restraint and guidance and I imagine that low-income folk feel much the same way. I should have a public library and a gymnasium and, above all, a *church*—if not one church for all, then several churches and a synagogue. I don't see how we can expect to create any social cohesion or any community spirit, still less an affection or loyalty of residents for their neighborhood, if people must go outside its limits to meet together in prayer or to attend a wedding, a funeral, or a christening. These things of the spirit can be made to illumine our new social fabric even though this is patently an artificial and in some ways an unnatural grouping of human beings; and, while they give internal strength and direction to the common life within its boundaries, they should provide also that symbol and focus which will pull into unity all the diverse elements of our design.

In and near the buildings which house the neighborhood institutions I would have sculptures and paintings—and the art of the landscape gardener should find an opportunity in the open spaces. Anyone who has seen the sculptures and fountain at the Harlem project (the one at 155th Street) will agree with me that the money which paid for these "artistic frills" was wisely spent. I know, of course, that these can't be paid for by housing authorities; but it would seem that the wise policy of the Treasury in respect to post offices might be extended to embrace other buildings built by the Government. I am for restraint and measure in these things, and I take it that restraint and measure are not terms which define starvation. Our arts of sculpture and painting need precisely this kind of patronage.

* * *

The trouble with most of our housing projects lies in the *idea* which the architect sought to express. Architects have been with notable exceptions too concerned with techniques, too intent on economy, lighting and sanitation, to give much thought to the human significance of their undertaking. Their science has been competent and active, but their insight and understanding has been neither deep nor sure. This is the true reason for that quality of unreality, of deadness, of alien manufacture which most housing projects seem to possess. Because the *idea* which is the spring and life of every work of art was too little understood to admit a deep expression, the search for form, which was genuine so far as it went, did not carry the architect beyond an intellectual satisfaction in distribution and arrangement. You can make any number of entertaining patterns out of the buildings of a housing project without endowing these with the faintest breath of life. You can play with these buildings in the way a child plays with blocks—or, what is quite the same thing, in the way an academic architect plays with peristyles and domes—and you delight the aesthetes with no end of balance, symmetry, rhythm, coherence, and every other quality admired of schoolmasters, and yet achieve not the slightest imaginative command. For that command you have to look far beyond the immediate practical exigencies of your problem; you must discover, far below surfaces and appearances, the true intent and significance of that which you are doing; and then you must be resolute to bring that to the surface, to make it express and visible. Your form must grow directly out of that discovery: out of the totality of the thing to be done.

I do not wish to end this essay without an affirmation of my faith in public housing. There is no more promising manifestation of that new will to use our collective strength to promote our collective happiness: of our determination to reshape our world to a form fit for human living. We did not expect to create that world without initial failures and disappointments: to overcome with a single blow that terrible genie which has been released from the stacks of our factories. We see now that our science alone will not be adequate to that task. We must put more art into our housing.

A new "world's largest" office building —the Pentagon Building, Arlington, Virginia, now being occupied by the War Department

THE ARMY'S PENTAGON BUILDING

Construction Division, U. S. Army Engineers; Lt. Col. Clarence Renshaw, District Engr.
G. Edwin Bergstrom, David J. Witmer—chief architects
John McShain, Inc.; Doyle and Russell; Wise Contracting Co., Inc.—general contractors

LATEST MODEL "world's largest and best-equipped office building," to a new set of specifications, is the Army's Pentagon Building, just now receiving thousands of office workers in its more than 6,000,000 sq. ft. of gross area.

Some years ago, a new "world's largest" meant a new height record, with similar spaces stacked up vertically as high as necessary. Elevator shafts were the principal space problem, and vertical travel virtually the only transportation worry.

All that is reversed in the Pentagon Building. It is done in concentric "rings" of office space in a few horizontal planes. It occupies a great area in Arlington, Va., so that transportation problems are threefold. Inside the building, transportation involves largely horizontal distances. Outside the structure there are the highly complex difficulties of access to the building from the Washington world across the Potomac. And where inside and outside meet, terminal facilities must provide for 40,000 people, arriving in automobiles and buses, with a peak of 30,000 people an hour.

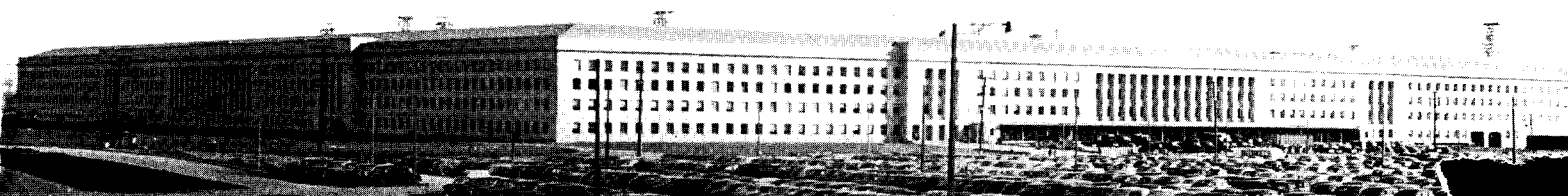
The decision to build horizontally instead of vertically did not rest just on economic considerations such as elevator cost vs. expense of great roadways and cloverleaf crossovers, or city site vs. outlying land. To begin with, the objective in the original planning was to house all workers of the War Department, then in 17 scattered buildings, in a single structure. Washington streets and facilities were already overcrowded, would rapidly get more so. Moreover, there was a trend toward living outside Washington, and anything that would encourage that trend was desirable. Thus did the Pentagon, with its concentric rings of buildings and courts, come into being.

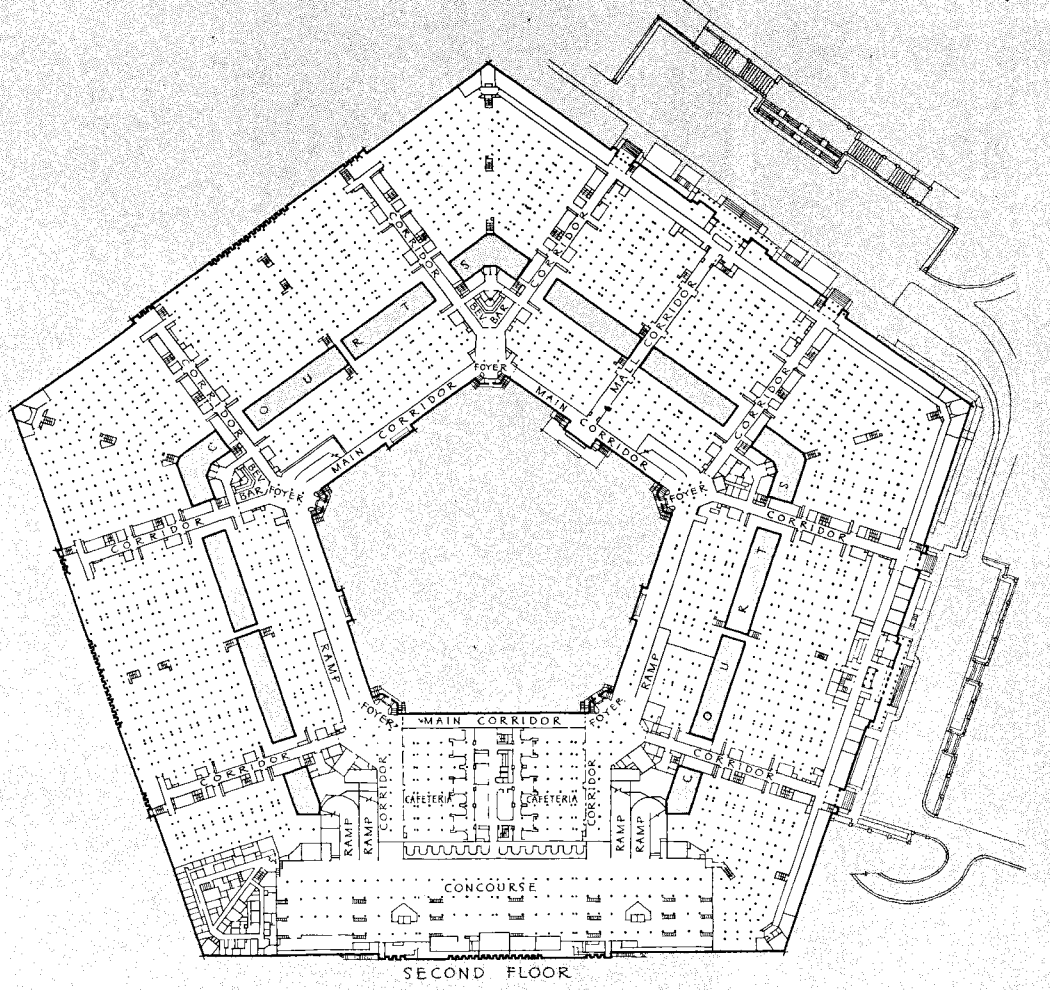
Describing the development of the pentagonal plan, the architects' analysis says:

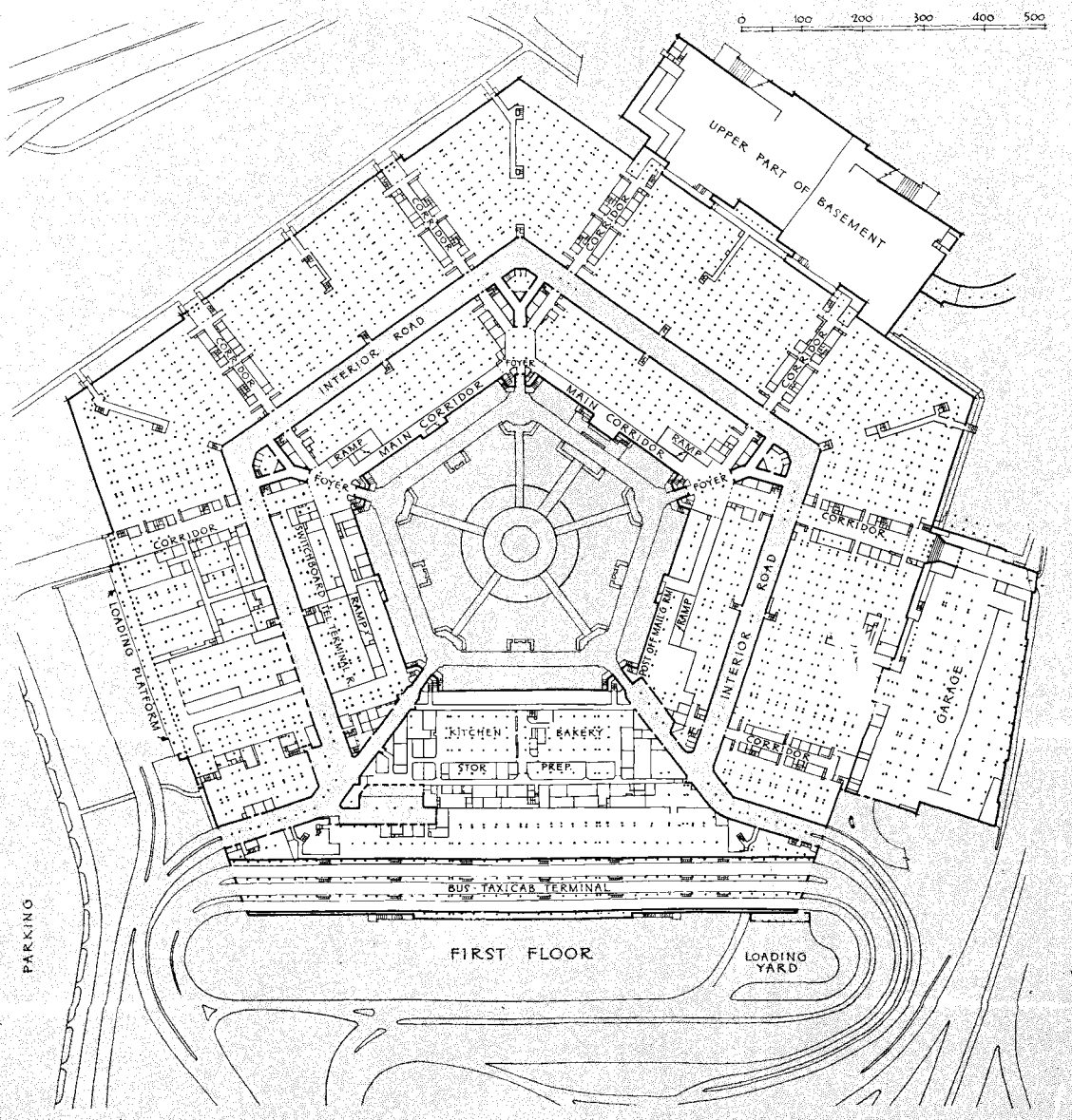
"A building without elevators could not be many stories high, even with ramps in place of elevators. Ramps were necessary for the quick and fluent movement of thousands of occupants. A building housing 40,000 occupants on a few floors required a very large area per floor. Such a great floor area, distributed in wing after wing, a score of wings, in the usual manner of large (and yet much smaller) buildings would . . . impose long distances of travel. The center of a circle being the nearest common point from which to reach any point on the circumference, and a relatively small ring within a larger ring being the shortest line of travel from which to depart to reach points on the larger ring, also lead to the determination of a pentagonal plan, composed of a series of pentagonal and concentric rings. The innermost part of the inner ring became a relatively short main corridor from which, much as spokes of a wheel, radial corridors reached to the outer rings. Bordering these radial corridors were the logical locations for stairways and toilet rooms."

Architecturally the building is "far from, yet reminiscent of, the classic tradition." Limestone, so familiar in

U. S. Army photo



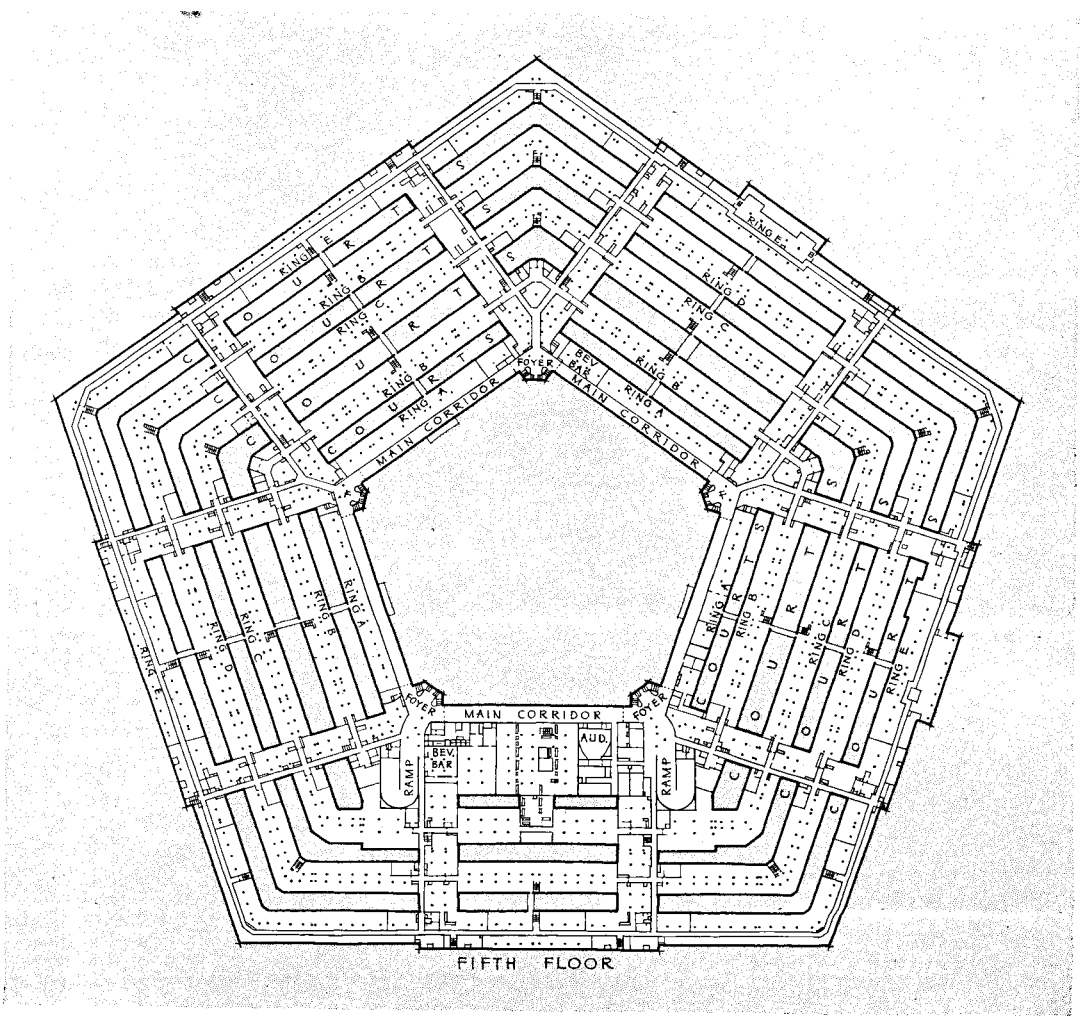

MAIN CORRIDOR
FOYER
CAFETERIA
CAFETERIA
CONCOURSE
RAMP
CORRIDOR
BAR
SECOND FLOOR


0 100 200 300 400 500
UPPER PART OF BASEMENT
INTERIOR ROAD
MAIN CORRIDOR
FOYER
RAMP
CORRIDOR
SWITCHBOARD
TELEPHONE
LOADING PLATFORM
KITCHEN
BAKERY
STOR
PREP.
POST OFFICE
GARAGE
BUS TAXICAB TERMINAL
PARKING
FIRST FLOOR
LOADING YARD

Horizontal, not vertical, distances measure the Pentagon Building. There are virtually no elevators, just a few escalators, but there are 16½ miles of corridors. Eight ramps, 20 to 30 ft. wide, provide the principal vertical circulation. The corridor which lines the central court is the shortest way around the building and therefore provides the main circulation horizontally. Radial corridors fork off from it across the courts to various sections of the building. Thus are distances kept to a minimum. Multi-level, fully-enclosed bridges carry the radial corridors across the inner courts. One of the courts becomes, at first floor level, an interior roadway for maintenance vehicles, post office deliveries, and fire trucks.

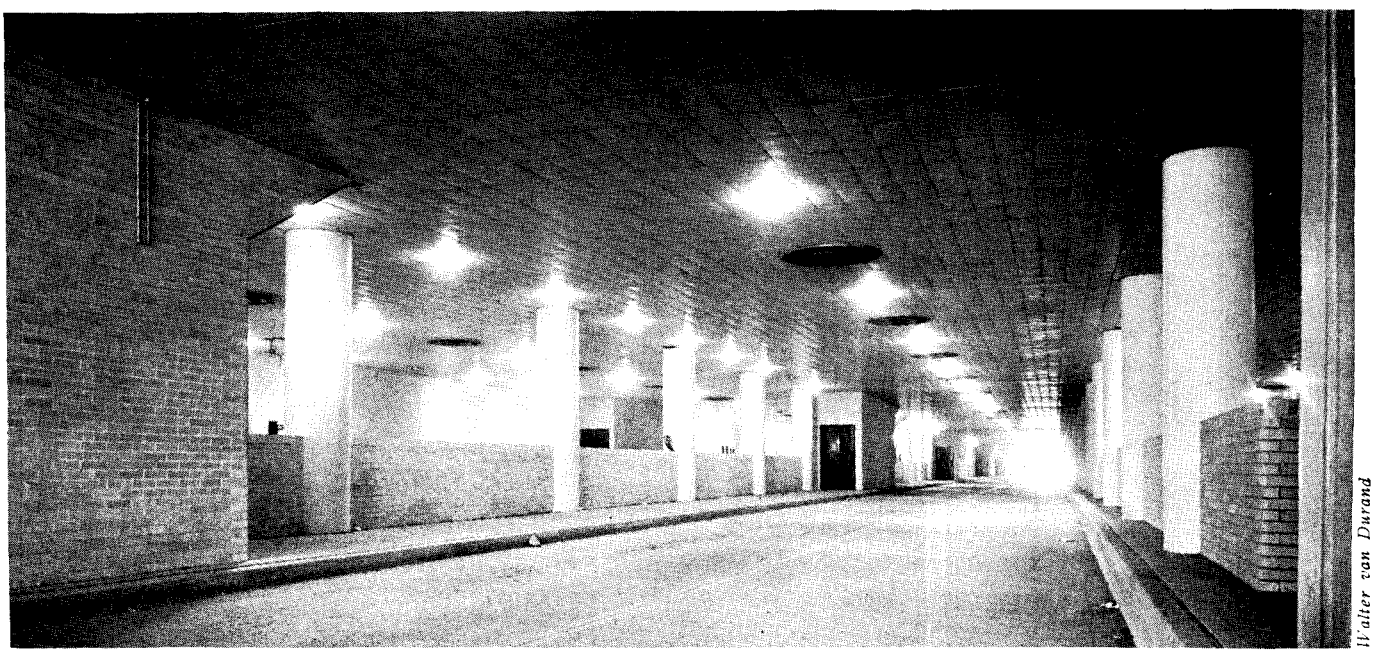
Offices are numbered by floors, building rings, corridors, then room numbers. The visitor might be directed to 4-A-3-10; 4 being the floor, A the ring, 3 the corridor, and 10 the room.

Principal entrance for employees is a great bus and taxi station with a concourse above. At the ground level, buses come directly in to the station loading platforms; 28 of the large trailer-type buses may load at the same time, and the bus lanes may be cleared in three minutes. Stairs lead up from the loading platforms to the concourse, which measures 150 by 680 ft. The concourse is lined with shops, a post office, bank, and lunch counter



Above: The concourse, a forest of red columns between walls of glazed terra cotta, is 680′ long. The ceiling height is 10′-11½″

Below: Air conditioning discourages formation of ice and condensation in the bus terminal. Acoustic tile minimizes noise



Walter van Durand

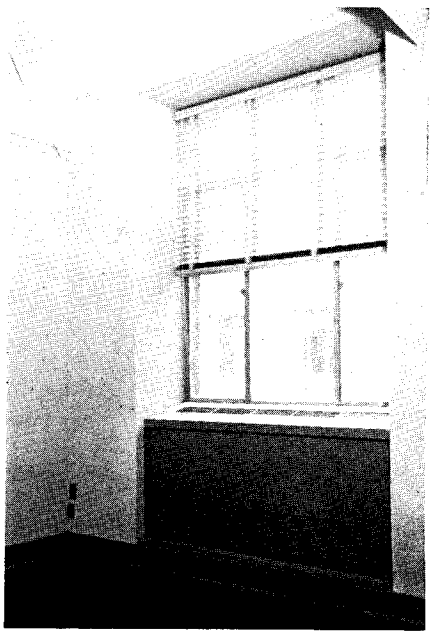
government buildings, was used for the exterior perimeter. The building itself is of reinforced concrete and all exterior walls of the inner rings and the center court are of architectural concrete. The roofs of the outer and inner rings are sloping and are covered with mottled green slate, the color chosen to blend with the landscape in the interests of camouflage. Indeed, the Pentagon Building, now sheer and stark, was visualized as taking on a friendlier aspect as the trees and shrubs of a 300-acre landscaping project grow and mature. The proper planting of the site of any building enhances its design.

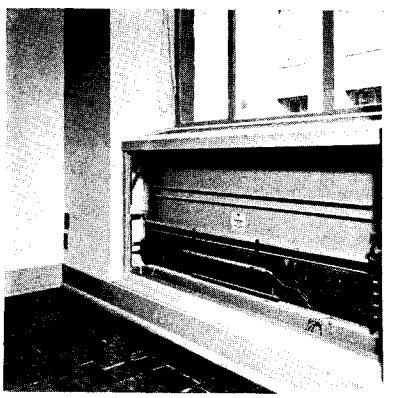
Each of the five facades of the exterior portion appears as the front, with 140 ft. colonnades of 36 ft. columns, and two flanking colonnaded entrances. However, two of the sides appear more important, the central colonnades being projecting porticos. Elsewhere the columns are engaged with the wall, and one of the sides provides a canopied delivery platform 300 ft. long. Reaching out from each of the two more important facades, there will be an extensive terrace, and extending toward Columbia Island and the Lincoln Memorial, there will be a 1,000-ft. landscaped mall. From the terrace looking across the lagoon and the Potomac to the National Capitol extends a garden terraced in three levels. Each is designed to provide an approach from lower elevations and a setting of dignity for the building as viewed from important highways.

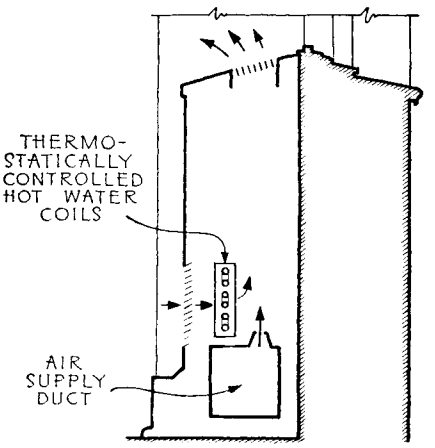
HEATING, AIR CONDITIONING AND LIGHTING THE PENTAGON BUILDING

THE huge Pentagon Building is supplied with heat and air conditioning from a separate powerhouse building through an underground tunnel 1500 ft. long. The boiler-refrigeration plant is constructed of reinforced concrete design and construction was started before bids were received on the ultimate equipment. In spite of this rush, the plant was completed with a good utilization of space. Charles S. Leopold, mechanical engineer, was consultant on this work.

The necessity for speed and design of equipment of the entire building was such that construction was already in progress before final layouts could be made for mechanical equipment. This involved the necessity of spacing and sizing thousands of openings in the concrete frame before the ducts, pipes, shafts, etc., had been studied in detail. Another design problem was the saving of space for fans and conditioning apparatus throughout the building itself. As finally worked out, there are more than 500 fans tucked away in some 200 small spaces throughout the building.







Combination window units for either heating or cooling provide the air conditioning for the space at the building's perimeters, the units forming the entire sill and stool. They operate on the induction principle, in which a jet of air, from a vertical duct beside the window, induces a flow of air from the room. The resulting mixture of fresh and recirculated air is discharged through the top grille. The air supply is constant, so that ventilation is always maintained. The sloping sill aids air flow and discourages the piling up of books on the grille

Atmospheric Control System

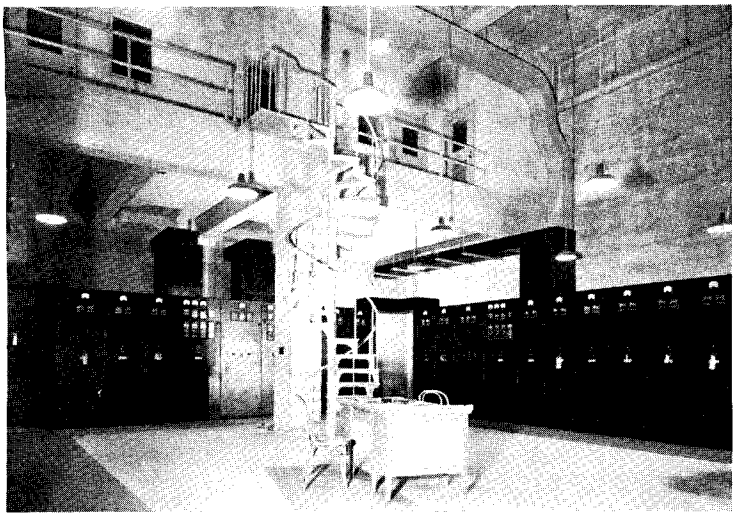
The air conditioning system was designed for maximum flexibility; partitioning is possible, without change of the perimeter system, as the design in effect consists of one unit for each window. Because of the large areas supplied by the one system, there is somewhat less flexibility in the interior spaces, but there are compensating factors in the air supply to counterbalance this difficulty. The so-called perimeter space is considered to be that within 25 ft. of the windows, which are approximately 10 ft. on center.

The problem of conditioning the space near the windows is solved by the use of combination window units for either heating or cooling. These units form the entire sill and stool. They are of the induction type, in which a jet of air from the room goes through a steel-finned heater within the unit. The resulting mixture is discharged through a grille in the top of the unit.

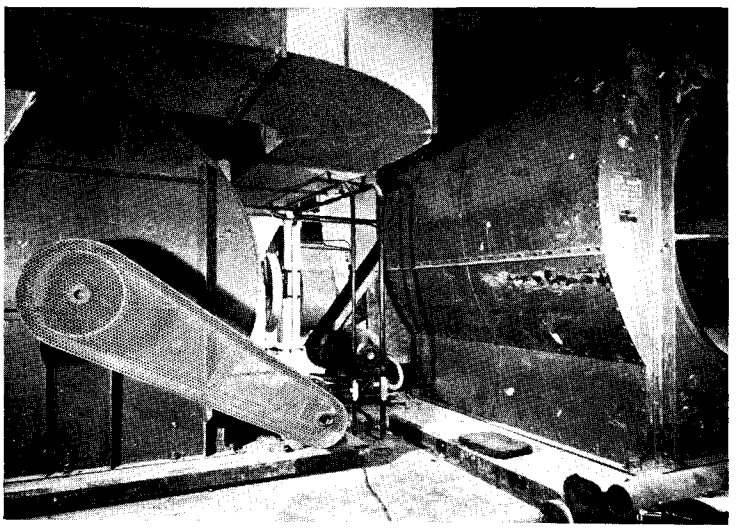
These units differ from the ordinary application in the following respects: 1. They have a sloping sill which serves the dual purpose of aiding air distribution and preventing the obstruction of air flow by the piling up of books and papers; 2. the units operate with a constant quantity of air from the jet, so that ventilation is automatically maintained, and control is effected by varying the temperature of air supply to the jet. The ultimate control is effected by the use of a self-contained hot water control valve on the forced hot water heater. The primary control involves the temperature of the air supplied to the jet, this temperature being determined by outside weather conditions, including the intensity of solar radiation. The amount of air supplied through the jet is the equivalent of that required for cooling in peak summer weather.

Although this system was designed to function without local manual control, provision was made so that independent controls can be managed where small areas are partitioned from the general space. Adjacent to each window there is a vertical duct which supplies air to the window unit from the conditioning apparatus located on the fifth floor. These ducts are prefabricated of asbestos, and comprise a central core and external insulating sheath. All fittings and tap-offs also were prefabricated. The interior spaces are supplied by horizontal ducts furred into the ceiling. Circular diffusion ceiling outlets are used in some areas and sidewall outlets in others.

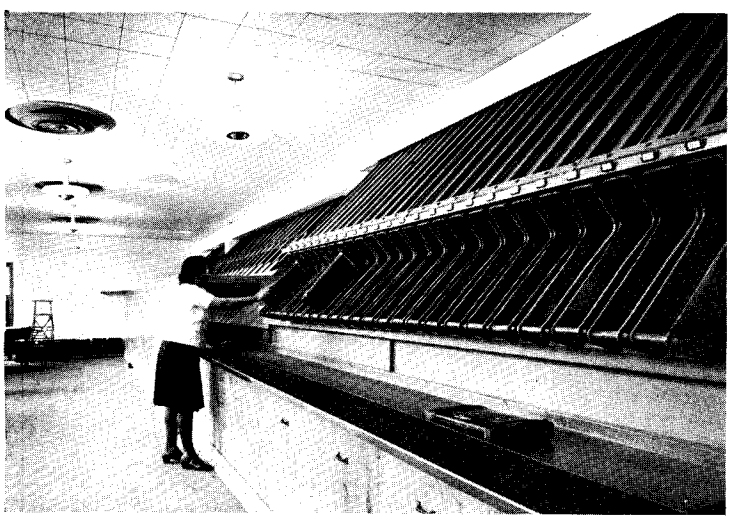
Both the interior and exterior systems are supplied by the same air washer systems. In general, these comprise return air dampers, relief dampers, fresh air dampers, direct surface dehumidifiers, spray pump, filters, and from three to five fans. The air supplied to the local recirculating fans for interior spaces is the straight dehumidified air. The air for window units is temperature-controlled by a reheater and by the admixture of recirculated air, the control being effected by outdoor temperature and the intensity of solar effect.



The control room is planned and equipped for efficient operation



About 570 fans, tucked away in service areas, distribute conditioned air



Pneumatic tubes for interoffice communication save many messenger miles

For the typical office space of the building there are approximately sixty washer systems.

The chilled water used for drying and cooling the air is supplied by twelve 1120-ton centrifugal refrigerating units. These are capable of chilling approximately 24,000 gallons of water per minute, from 53 to 43 degrees. There are 80 spray and coil type dehumidifiers in which the chilled water cools 4,000,000 cu. ft. of air per minute to 55 degrees.

The boiler equipment consists of five 80,000 lb. per hour three-drum units with multiple retort underfeed stokers. The plant is equipped with mechanical dust precipitators. The products of combustion pass through the induced draft fan and emerge from a stub stack approximately 6 ft. above the roof. Means have been provided to maintain a high velocity in order to carry the products of combustion clear of the building. The water treatment consists of the use of deaerating feed water heater with Zeolite treated make-up water.

The huge bus terminal introduces a special ventilating problem. Here there are eight large fans which supply sufficient air to keep the carbon monoxide content within safe limits. The primary control on these fans is manual, but they are also mastered by carbon monoxide controllers which will turn on the ventilation in the event that the operator has not anticipated the condition. A small amount of heat is used to temper the air in order to keep the area dry.

The Electrical System

The power supply for the whole operation is obtained from the local utility company, and is transmitted at 66,000 volts to two 33,000 KVA transformers located adjacent to the boiler-refrigerator plant. These transformers reduce the voltage to 13,800 for distribution to the main building and to the boiler-refrigeration plant. Within the Pentagon Building there are sixteen transformer vaults of 2,000 KVA capacity each. Each vault has four transformers distributing on a radial feed system, with provisions for paralleling buses in the event of transformer failure. The secondary distribution is three phase, four wire, 125-216 volt.

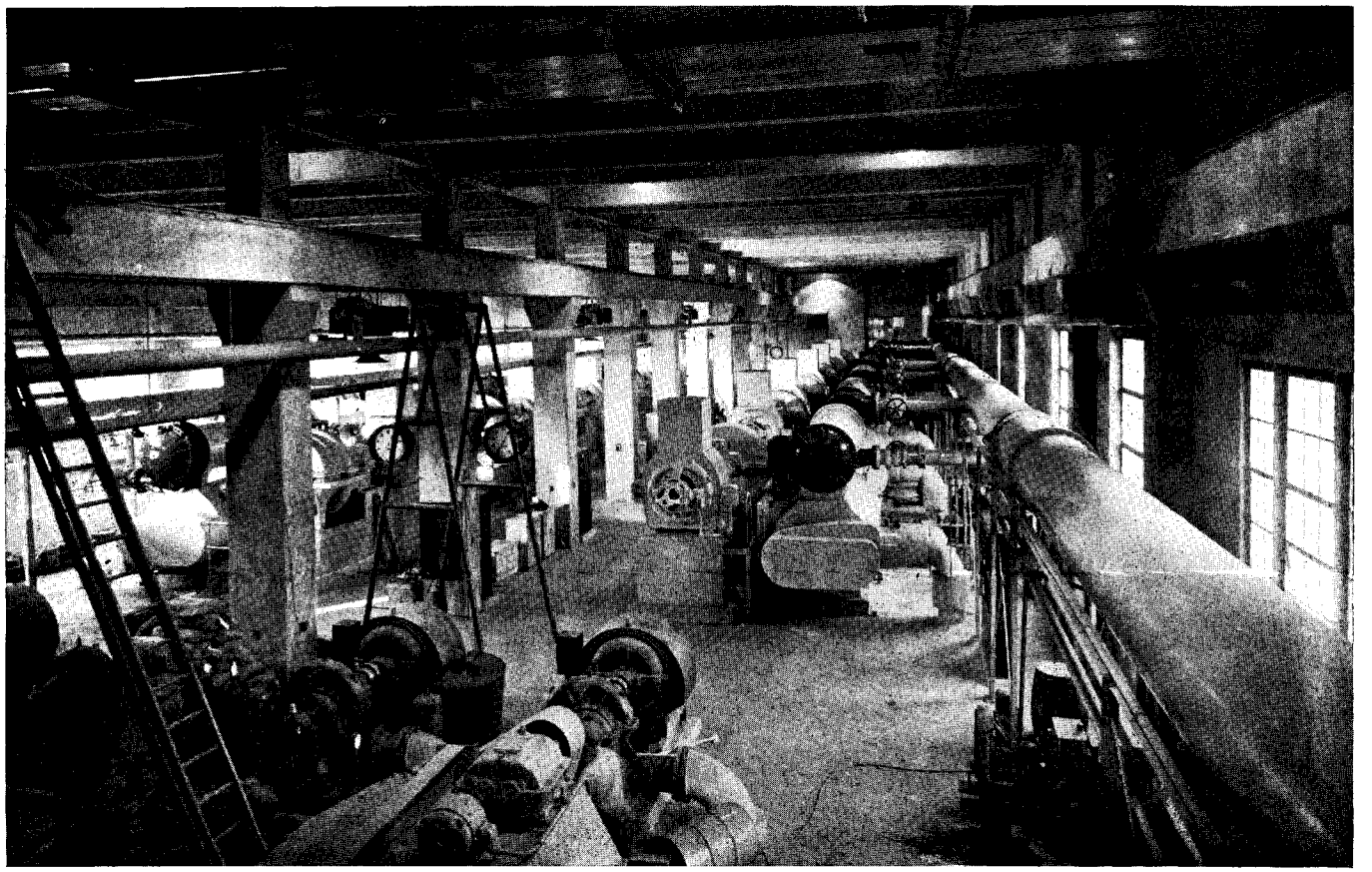
The general illumination of the building is essentially indirect, utilizing bottom bowl silvered lamps. The sight line is controlled either by a glass bowl or by concentric metal rings. In many cases the lighting fixture has been combined with the air outlet, this combination consisting either of the indirect fixtures described above or a prismatic refractor, and in a few cases, of light louvers.

A limited system of underfloor duct is provided for signal systems, such as buzzers, intercommunicating phones, and the like. All areas are provided with centrally-controlled synchronous clocks. There is provided also a complete combined watchman's tour and fire alarm system, with other protective systems in large areas.

The Pentagon Building houses the largest private branch telephone exchange, with a capacity of 12,000 extensions.

View of boiler room in separate building. Boilers are for heating only, as electric power is provided by the local utility company

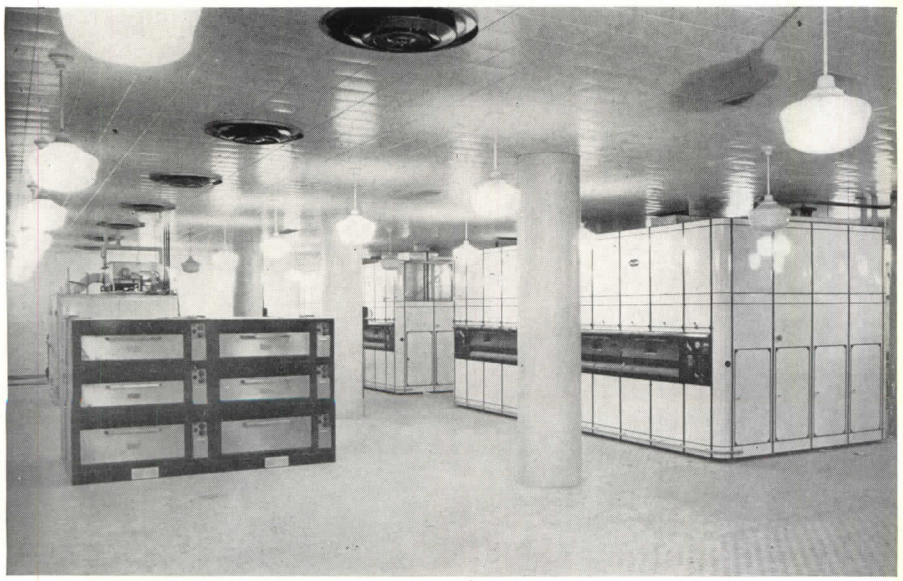
Air conditioning equipment occupies nearly half of the utility building, boiler room and control room taking the remainder



Walter van Dwrand

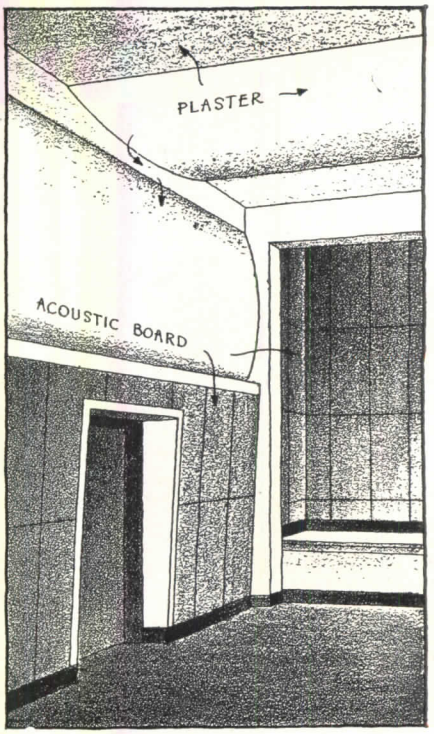
One of six main cafeterias, which serve a total of 6,000 persons at one time

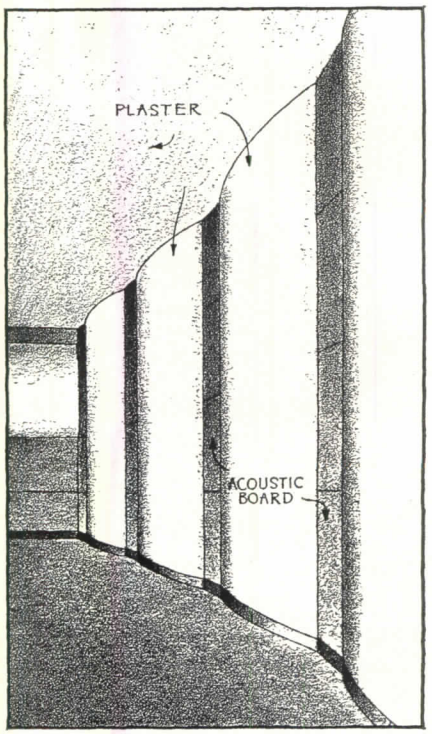
Additional facilities are provided by beverage bars in corridors



Walter van Durand

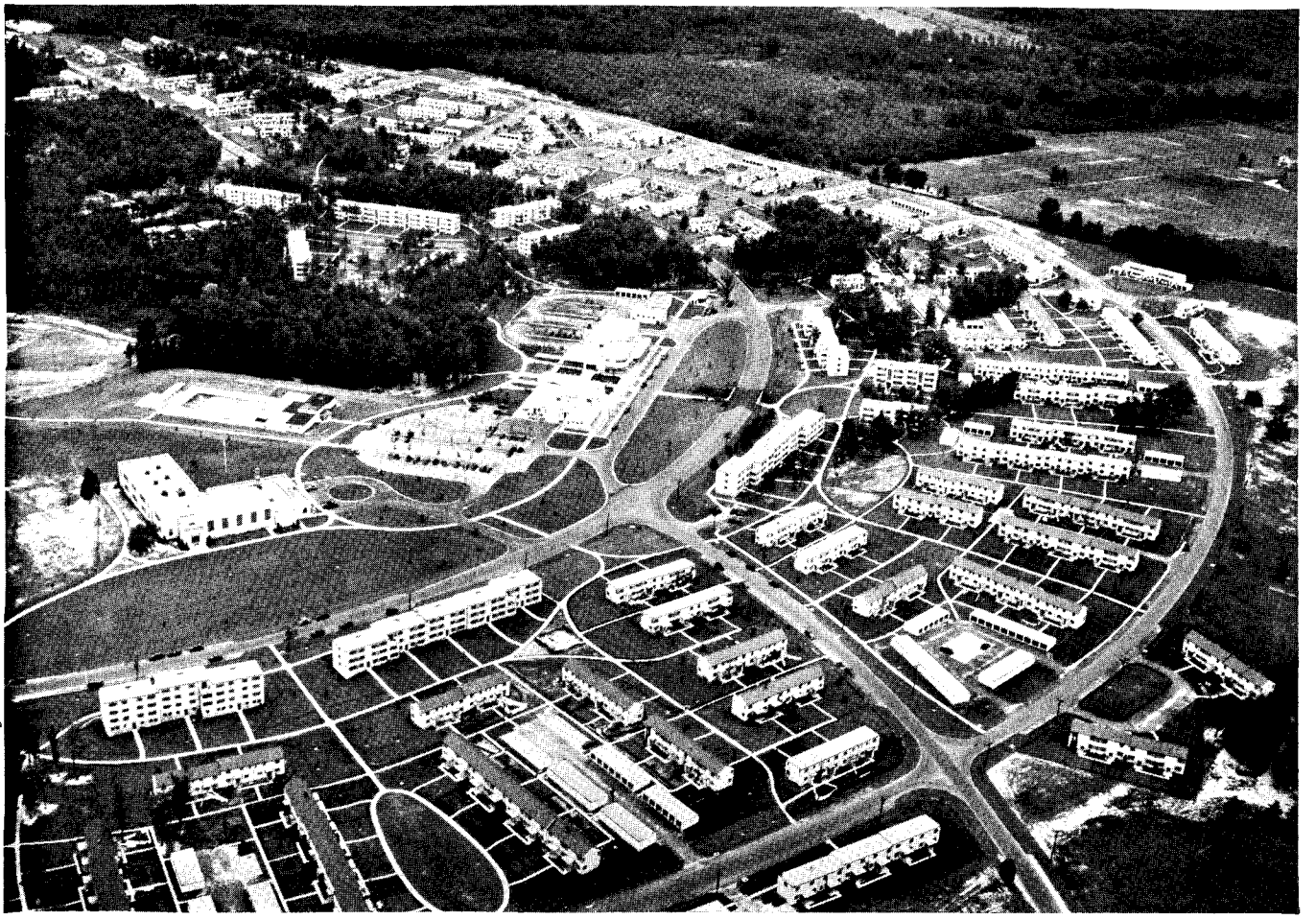
Some appliances in the kitchens and bakeries are heated by electricity





Acoustic treatment was specified for the entire building. One group of rooms that received special study as to acoustics was review rooms for sound motion pictures. The ideal condition sought involved two principal procedures: 1. to install an amount of sound-deadening material calculated to reduce sounds to give an acceptable time of reverberation without making the room too dead, and 2. to modify the interior surfaces, as shown above, so that reflected sound would be diverged to produce the desired mixture, or "diffusion," of sound without the usual resonance effects. F. R. Watson was consultant on acoustics

PLANNED COMMUNITIES



Fairchild Aerial Surveys

PLANNING PRINCIPLES APPLIED IN WARTIME

By TRACY B. AUGUR

PLANNING THE POSTWAR COMMUNITY

By THOMAS W. MACKESEY
in collaboration with GILMORE D. CLARKE

ARCHITECTURAL RECORD'S BUILDING TYPES STUDY NO. 73

JANUARY 1943

PLANNING PRINCIPLES APPLIED IN WARTIME

An account of the planning of a town for Willow Run workers

By TRACY B. AUGUR*

THE AMERICAN people build a new city every 11 days. This is not a war production figure; it's just the average record of the past hundred years. The 1940 census lists 3,464 urban places with a population of 2,500 or more. The 1840 census lists 162. In the intervening century no less than 3,302 communities gained and held their place as American cities. Thirty-three cities a year, 2¾ a month, for a hundred years—complete, functioning, populated new cities! That's quite a record, even in these days of Liberty ships. It establishes the American people as a nation of new city builders.

In the spring of 1942 the American people decided to devote their traditional energies to the building of yet another new city, made necessary by the fast moving events of war.

This time the need was critical. A mammoth defense industry had been built in open country on the assumption that labor could be recruited from the farms and villages for 30 to 40 miles around. Pearl Harbor changed the defense industry to a war industry. Rubber-borne transportation lost its source of rubber. Military recruitment and war production cut deeply into the available manpower. Full and early production at the new plant became doubly urgent. Housing for its huge production lines was nearly complete, the largest factory ever built by man. Housing for the men and women who would have to be drawn in to operate the production lines was practically non-existent. There was scant time to construct it before the coming winter, when needs of the plant for labor and needs of the labor for housing would become acute.

The plant in question was the Willow Run bomber plant, 28 miles from down-town Detroit. The new town was one part, a relatively small part, in fact, of a housing program designed to meet the most critical needs of its growing labor force. According to the operating company, that force would reach a peak of 100,000 in early 1943. The over-all housing program contemplated a total of 30,000 family dwelling units, half to be built by private and half by public enterprise, together with accommodations for around 20,000 workers in temporary dormitories and apartments. A third of the huge labor force would still have to commute.

Of the 30,000 dwelling units, the 15,000 to be built by private enterprise and 9,000 of those publicly financed were to be built in existing communities within reasonable distance of the plant, where essential services could be expanded without undue difficulty. That would more than take up the absorptive capacity of those communities. The remaining 6,000 dwelling units, 20 per cent of the total, were to be built as a new town in the plant's immediate vicinity. By thus dividing the construction program between public and private enterprise, and between communities ranging from 4 to 12 miles from the plant, it was hoped to distribute the load without too great burden over a territory that already was short of water supply and of needed capacity in other essential services.

The 6,000 houses in the new town were to be placed as close to the plant as possible in order to reduce dependence on rubber-tired transportation and were to have their own utilities and municipal services to avoid overloading those in other towns. Because the plant would have a postwar employment of 25,000 or more, according to the estimates of Company executives, the new town was to be built on a permanent basis.

Planning a New Town

With this program of need and the terrible urgency of war behind it, the planning of the new town began. The first problem was to find a suitable site, the second to organize it for convenient living. In both particulars the increasing restrictions of the war program played a major role. Transportation was a vital factor. The site should be, if possible, within walking distance of the plant, yet safety required that it be at least a mile away. Materials and labor for basic utilities were scarce, yet the land around the plant was flat and needed heavy under-drainage for intensive use. Water supplies were limited. Wells and auxiliary supplies developed for the plant were sufficient for its use but no more, and were jealously guarded against diversion. The supply of nearby Ypsilanti was already over-taxed, and its planned expansion would no more than take care of additional housing scheduled for that city. The Detroit system, though already extended to within ten miles of the plant, would need new and larger mains to serve the new housing that had been programmed along its lines. Utility developments and extensions that would have been relatively simple in peacetime were ruled out by war shortages in materials and labor.

Choosing a Site

Although many of the restrictions on site selection for the town of Willow Run were born of war, they were not essentially more severe or more numerous than those that ordinarily affect the location of a new community. A brief review of the analysis that preceded final choice may therefore throw light on the general process of site selection in the planning of new towns. It involved finding answers to a long list of questions:

1. What purpose was the new town to serve, immediately and in the future?

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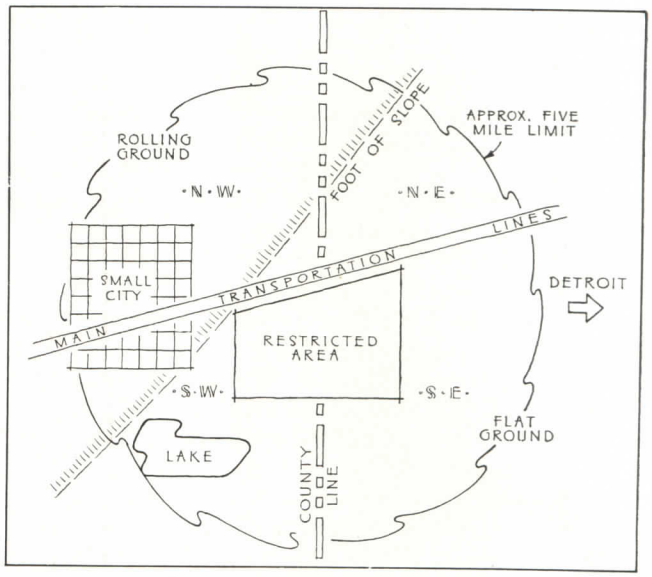
Figure 1: First step in town planning for "Bomber City", a diagram of the territory in which a suitable town site was sought. This site, near Willow Run, was divided into four quadrants by transportation lines and county line. Plant lies in southwest section. The small city indicated is Ypsilanti



2. How large should the town be to serve that purpose, and what were its prospects of later growth?
3. How big a site was needed for a town of that kind?
4. Within what territory were sites of that type available?
5. Within that territory how did alternative locations rank with respect to
   (a) water supply, sanitary sewerage, storm drainage
   (b) electricity, gas, telephone services
   (c) cost of land in dollars and in disturbance to existing institutions
   (d) suitability for urban development
   (e) relationship to existing governmental units—counties, townships, school districts and other cities
   (f) highway and other transportation facilities
   (g) compatability with a sound program of regional development, etc.?

The new town of Willow Run had a primary and immediate purpose that overshadowed all other considerations in site selection. It was to provide living accommodations for plant employees and their families, in a form that would provide the security and satisfaction essential to continued personal efficiency throughout a sustained period of war production. Its postwar functions were of secondary concern, but would be similar to its wartime function except for an increasing diversity in the nature and location of the employment centers that it served.

The size of the initial population was predetermined by the town's part in the total housing program, but was safely above the minimum needed for successful operation of an urban community. The census puts places of more than 2,500 people in the urban class. Experience has shown that ordinarily a larger population is needed to support essential institutions, at least a thousand families and preferably several times that number. There is no precise figure that forms the dividing line between success and failure, or between efficiency and inefficiency in operation. The 6,000 families assigned to Willow Run afforded a good operating base, and there was every indication that a town of that size would have a useful function even if employment at the plant were drastically curtailed at war's end. There was no positive indication that a larger town in that location would be necessary, but neither could it be said that enlargement never would be needed, or that a moderate increase would be undesirable.

The amount of land needed for such a town could not be stated in abstract terms; much depended on site conditions. It was the amount needed for 6,000 dwellings, with their streets, schools, churches, shops, playgrounds, parks, public works and protection from outside encroachment. It was the amount needed to permit economical development without the necessity of draining swamps, clearing woods or incurring excess construction costs. For purposes of site selection, it was enough to know that several square miles of contiguous land would be needed.

The territory open for consideration was limited by the growing transportation crisis. A 5-mile radius from the plant was the outer limit, a closer location much to be desired. In ordinary times this restriction would have been less severe, although reasonable proximity to work is desirable in any case. But during the years of the plant's war operation, the rubber tires on which Americans customarily escape their factories were to be critically scarce, therefore the less dependence on them the better. More than half of the family housing built for the Willow Run plant would of necessity be 8 to 12 miles away, along a rail line that might be pressed into service if rubber failed. It was important that the remainder be built within walking or short-haul distance.

The territory available for town location was further limited by the size of the plant and adjacent installations at the center of the area. Within reasonable allowance for safe clearances, an area approximately 3 by 4 miles was barred to housing development. In only one sector was there any possibility of bringing housing within reasonable walking distance of the plant entrance.

Figure 1 depicts in diagrammatic form the territory in which a suitable townsite was sought. The diagram has been distorted in scale and details have been omitted for obvious reasons. The territory is divided into four quadrants, first by a belt of main highway and rail lines running east and west, and second by a county line running north and south. The plant lies in the southwest quadrant and is entered from the west and north.

The two quadrants to the east are wholly rural. They are made up of flat land with insufficient relief for good drainage and with a high water table. The southwest quadrant is of much the same character, except for the presence of lakes which break its continuity, and for a strip of urban development along its northern edge. The city of Ypsilanti occupies the southern part of the northwest sector and the rest is rural. This sector differs from the others in one important aspect, namely that the land rises gradually toward the northwest, affording natural drainage for

storm water and providing a generally more attractive topography for residential development.

In making a choice of location for the Willow Run townsite, all parts of this territory were very carefully studied, and tentative site layouts were made to test the feasibility of the more promising locations. Through the cooperative efforts of the Federal Works Agency, Federal Security Agency, National Housing Agency and local governments, the crucial questions of water supply and sewerage for the entire area from Detroit to Ypsilanti were intensively studied, for those two factors more than any others determined where housing could be built. In much of this territory local water distribution lines had been installed during the hey-day of real estate speculation without adequate connections to sources of supply, and local sewers without proper outlets or disposal facilities. This led to the constant claim, not always made from motives of pure patriotism, that many areas were already "improved" and available for war housing development, which in fact were no more ready for such use than open farmland.

The numerous other questions affecting town development were studied in like manner for the whole area, and in relation to specific sites. Naturally, some locations were superior in one respect and others in another, but in the final analysis the northwest sector stood out clearly above the others as the best all-round location for a large-scale war housing development.

From that point on, site selection narrowed to the picking of a specific area and the establishment of a definite purchase boundary. This involved a detailed examination of the topography, and of the ownership, use and value of the parcels to be included. By observation in the field and use of available maps an "outer" site boundary was drawn. Within that boundary, detailed information was secured by making property line and topographic surveys, compiling property ownership records, making appraisals of the value of land and improvements, and by field study of the uses being made of the various parcels. It was particularly important in this case that buildings and even well-equipped trailer camps already housing war workers should be disturbed as little as possible.

Since the project was a war project being carried out directly by the Government, the choice of properties to be included was made without reference to the identity of the owners; tracts were included or excluded from the purchase boundary solely on the basis of their importance to the project and the extent of their existing development and use. For the most part they were large farms without extensive improvements. It was assumed that in wartime no owner would plead special privileges, and that assumption proved correct except in the instance of a single wealthy non-resident, one of whose numerous holdings unfortunately fell near the center of the townsite area. In contrast, full cooperation was received from farmers and other resident owners for whom the project frequently spelled personal inconvenience and at times real hardship.

Site Organization—The Town Plan

While surveys and appraisals of the site were under way, studies were made on a diagrammatic basis for the organization of the community which was to occupy it.

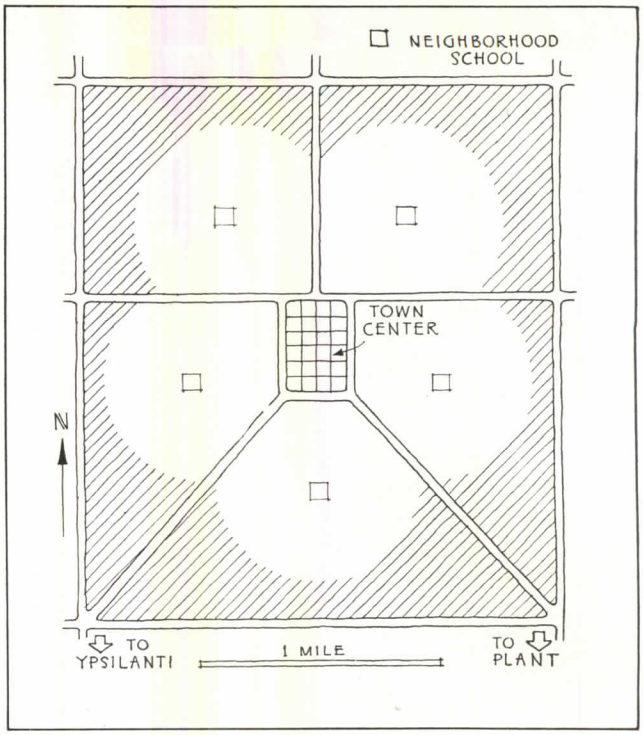


Figure 2: After the townsite was chosen it was divided, in a theoretic diagram, into five neighborhood units, each unit containing the families necessary to support a school center

A cellular type of organization was adopted, that is, the town was divided into neighborhood units along the lines developed by Clarence Perry in his studies for the Russell Sage Foundation, each unit containing the number of families needed to support a well organized elementary school and neighborhood center. The neighborhood units were arranged in a radial pattern around the town center, which contained the administrative buildings, business district, high school and other properties that served the community as a whole. (Figure 2)

General traffic circulation within the town was provided by roads located between the neighborhood units, the main street system thus becoming a series of spokes radiating from the town center and extending to the grid of county highways which provided circumferential and by-pass circulation outside of the town area. Circulation within the neighborhood units and between one unit and another was purposely made secondary and indirect in order to discourage outside traffic from entering the residential areas.

It is to be noted that the basis of this diagrammatic organization was social rather than physical. Its purpose was to provide a place where people could enjoy the benefits of community life without its hazards; where they could have quiet and pleasant homes within convenient and safe walking distance of their neighbors and of the schools, playgrounds and other social institutions that they and their neighbors used, and at the same time be free of congestion and the dangers of heavy highway traffic. While there was a certain amount of symmetry in the design of the organizational diagram, it underwent considerable distortion in the process of adjusting the diagram to actual site conditions. The purpose of the initial studies was

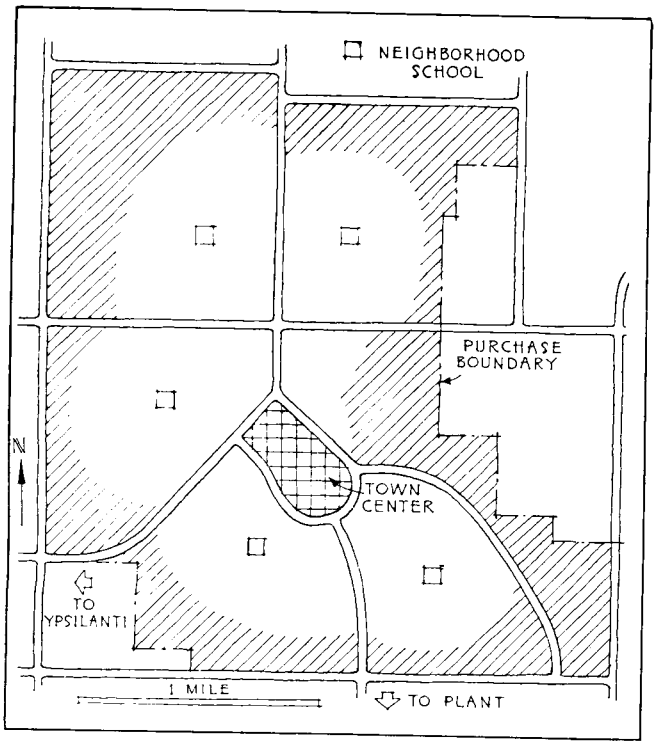


Figure 3: Final step was to adjust the theoretic diagram to actual site conditions. Principal factors were natural contours, and the desirability of avoiding development of wooded areas

to develop a good social pattern of community organization around which the physical pattern of streets, building and open spaces could be laid out.

Heart of this organization was the school system, a school system serving all ages and catering to their many educational, recreational and other social needs through a broadly conceived and fully utilized school plant. Because of the prevailing restrictions on construction it was a fair assumption that for the duration of the war the school buildings, and very simple ones at that, would have to serve all of the town's social purposes—formal education, entertainment, religious services, governmental meetings and all other occasions for which the people exercised their time-honored right of peaceable assemblage. After the war each school center could be expanded by the addition of special purpose rooms and other buildings to meet the town's developing requirements.

Choice of the school system as the core of a new town's organization does not give an automatic answer to the organizational problem. Towns, like people, have different characteristics and the school system that fits one community will not necessarily fit another. Educators, like experts in other fields, retain their freedom to disagree on professional problems. Finally, despite the universality of public education, parochial schools still form an important part of the school system in many localities. The solutions worked out at Willow Run therefore are not necessarily applicable to other cases, but are of value as illustrations of the method used in organizing the town plan.

Since education is the business of educators, the Willow Run problem was presented to representatives of the U. S. Office of Education and the Michigan Department of Public Instruction, who jointly worked out the solution on which the town plan was based. In its simplest form the question was, given a town of 6,000 families, almost entirely the families of industrial workers, how many and what types of school should be provided? This question was faced first on a long-range basis and then adjusted to wartime restrictions. Based on the experience of other industrial communities in Michigan it was assumed that under normal conditions, about 20 per cent of the school load would fall on parochial schools, but it was not known whether such schools could be built during the war. Experience in Michigan industrial centers also indicated that high school training should place emphasis on preparation for early participation in business and industry rather than on preparation for a continuance of formal education in college. The basic school system thus worked out for Willow Run consisted of a local or neighborhood school for each 1,200 families, one central community school closely integrated with the business and administrative center, and two parochial schools.

The neighborhood schools were intended, when fully developed, to take care of all grades from pre-school through the tenth, and hence would contain all the facilities needed to serve as active centers of neighborhood life. The central school was intended ultimately to serve grades 11 through 14, or two years more than the conventional school. Strong emphasis on business and industrial training would give this school plant a special character that would make it particularly useful as the cultural and training center of an industrial town. The two parochial schools were expected to cover only the elementary grades, overlapping part of the educational functions of the neighborhood schools.

The town organization developed around this school plan was one consisting of five neighborhood units of approximately 1,200 families each, grouped around a town center, with sites for parochial schools reserved at points central to the north and south halves of the community. Although wartime restrictions promised to greatly curtail the construction of the total school plant, and probably to change the initial distribution of grades, it was felt that the basic organization should be retained in order to have some facilities for community gatherings within reach of every resident. In a new town there would be no existing churches, lodge halls, or even unused garages to fall back on for essential social uses, and the living rooms of war houses would not accommodate very large crowds: The schools would be the only buildings available—truly multi-purpose institutions.

Adjusting Plan to Site

The final step in preparing the preliminary town plan was that of adjusting the theoretic diagram to actual site conditions. Here two factors assumed special importance: one, the necessity of taking full advantage of the natural contour of the ground for storm drainage and sanitary sewer layouts, as a means of reducing labor costs and the use of critical materials; the other, the desirability of avoiding development in wooded areas for the dual purpose of preserving the woods for community use and escaping the extra labor of clearing. Low ground and a divided watershed at the southeast corner of the site led to a readjustment in purchase boundary to exclude land that

could not be served economically by the town's sewerage system. A large institutional property to the east of the town center was also excluded from the development plans. Figure 3 shows the diagrammatic town organization adjusted to site conditions.

If it were possible to draw a line between town planning and site planning it would fall somewhere in this process of adjusting the general theory of town organization to the actual layout of the various elements. In the case of Willow Run the line was marked by a shift in the manner of handling the planning work. Choice of site and general town organization had been the work of the official staff of the housing authority, in consultation with representatives of other public agencies concerned with such related matters as schools, public health, roads and governmental organization. Design of the various elements of the plan was turned over to private architectural and engineering firms, and the staff from then on served primarily in a coordinating and supervisory capacity. This did not prevent the designers from suggesting changes in the basic organization of the town plan, nor the staff from suggesting changes in individual designs, but it marked a shift in the responsibility for initiating solutions to the planning problems.

Planning the Five Communities

Five architectural firms were chosen to prepare site and building plans for the five neighborhood units, and a sixth for the town center. An engineering firm was assigned responsibility for the overall problems of water supply, sewerage and main roads. Frequent group meetings of the architects, engineers and housing staff served to mold inidvidual contributions into a coordinated town plan.

Each of the architectural firms was given considerable latitude in developing plans for its section of the town. Within limitations of cost and the use of critical materials imposed by the war program. As a result there was an interesting variety in the handling of the various sections, as shown in the "semi-final" town plan depicted in Figure 4. Use of the "super-block" was common, with the majority of houses served from short loops or cul-de-sacs, but the relation of house to street varied. In some sections the street was treated as the service side and houses "faced" interior paths and open spaces; in others, houses had a conventional street front and service was handled at the sides. The fact that the majority of houses were of the single and twin type, with only a small percentage in rows, made interesting variations possible.

This variation in treatment of the several residential neighborhoods caused annoyance to some who felt that there should be uniformity throughout the town, and that their own particular theory of site design should be its basis. But the view prevailed that since the town was to be occupied by human beings, who by virtue of their natural perversity have different likes and dislikes, it would be a sounder investment of public funds if opportunities for choice among different types of accommodations were deliberately created. It is easier to provide this choice by variations in site plan than by variations in house plan, since the latter were more closely restricted by cost and materials limitations. In fact the choice of five separate architectural firms to design the sites was motivated by a desire to tap their varied experience in handling large-scale housing problems. The results demonstrated that equally competent designers can attack a common problem and produce equally competent solutions which are refreshingly different. All solutions, of course, had to meet the same basic restrictions on developmental costs.

Despite the differences in site design, the provision of abundant open space was a common characteristic of all the site plans. Its distribution through the neighborhoods was partly a matter of design, and partly a matter of the natural conditions that prevailed on each site. To avoid expensive storm drainage installations, the natural surface drainage courses were left free of development, and wherever possible woodlots and fine trees were left undisturbed. Steep slopes that would involve excess construction costs also were left undeveloped. To the unpracticed eye, the degree of openness resulting from this type of treatment often looks extravagant, but actually it is more likely to result in economy by reducing the developmental costs. Where the cost of raw land is reasonable and the end purpose is its beneficial use, and not subdivision into a maximum of building lots for high pressure selling, open development generally adds economy to its other desirable features.

One of these features that was given special consideration at Willow Run was the increased safety from air bombardment. Obviously the fewer houses per gross acre, the fewer there are to be damaged by any given bomb hit, and the less is the danger of a spreading conflagration. The more open the pattern of main utility lines the less is the likelihood of crippling damage to the systems. So by a fortunate coincidence, the purposes of war and peace are both served by an open type of residential development.

It is not the purpose of this article to discuss the many interesting details in the site plans developed for the residential, commercial and public areas at Willow Run. Unfortunately most of them, like the plan of the town itself, will remain paper plans. Changes in program soon after the preliminary plans were completed reduced the size of the town from 6,000 to 2,500 units and later changed the 2,500 from permanent to temporary construction. At this writing it appears that a temporary war housing project of considerable size will be built on a part of the Willow Run town site, but the building of a town, in the sense in which it is herein discussed, is deferred.

What the postwar period will bring, at Willow Run or elsewhere, is any man's guess. There is no reason to believe that the American people will not return to their old schedule of 33 new towns a year, and there are at least two good reasons for believing that they will greatly exceed it in number and in quality of product. One of these reasons is that they have definitely chosen an urban as opposed to a rural mode of life. The other is that the cities we now possess do not afford the type of urban living that Americans have a right to expect and that they are coming increasingly to demand. Some new towns will be built on the ruins of the old and some will be built outside, but they will be built and built better than they ever have been built before.

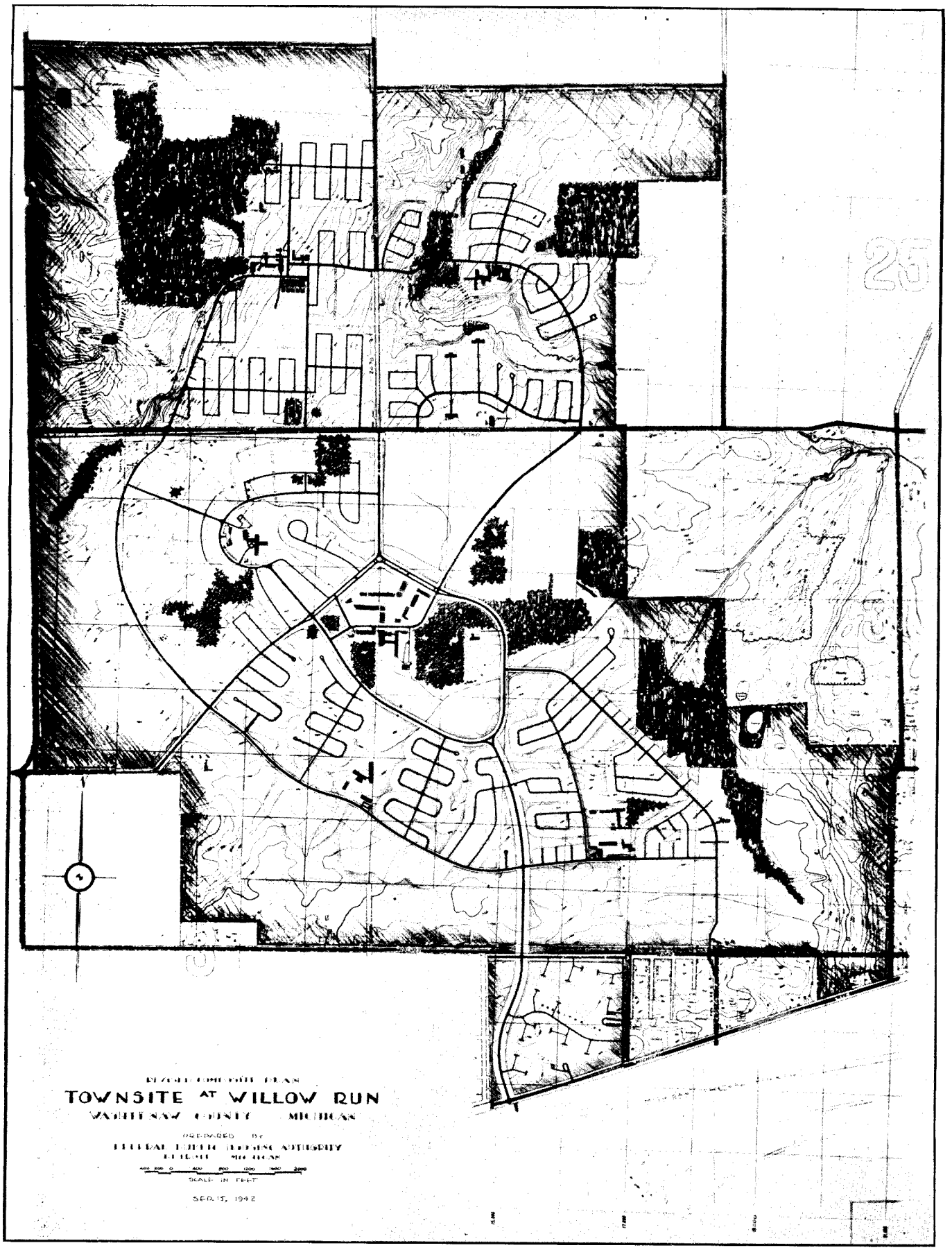


Figure 4: The composite plan for the originally-planned Town of Willow Run. Five architectural firms were chosen to prepare site and building plans for the five neighborhood units. Each was given considerable latitude, and an interesting variety resulted. The "super-block" was commonly used, with most houses served from short loops or cul-de-sacs, but in different layouts

PLANNING THE POSTWAR COMMUNITY

By THOMAS W. MACKESEY*
in collaboration with GILMORE D. CLARKE

THERE ARE four points upon which most thoughtful persons, whether economists, city planners or public administrators, who have given serious consideration to internal postwar readjustments, are agreed.

1. The problems of transition from an all-out war effort to peacetime economy will be many and complicated. Demobilization of the millions of men under arms and the reemployment of additional millions now engaged in war industries must be accomplished intelligently with full realization of the impact that a movement of such magnitude must necessarily have on the national economy.

2. The building industry can and must be a major factor in easing the shift from a wartime to a peacetime economy.

3. The job of building for peace is so big and so important that the Federal Government will have to play a large part in formulating policy and in providing aids to localities participating in a building program.

4. There must be a carefully defined plan ready to be

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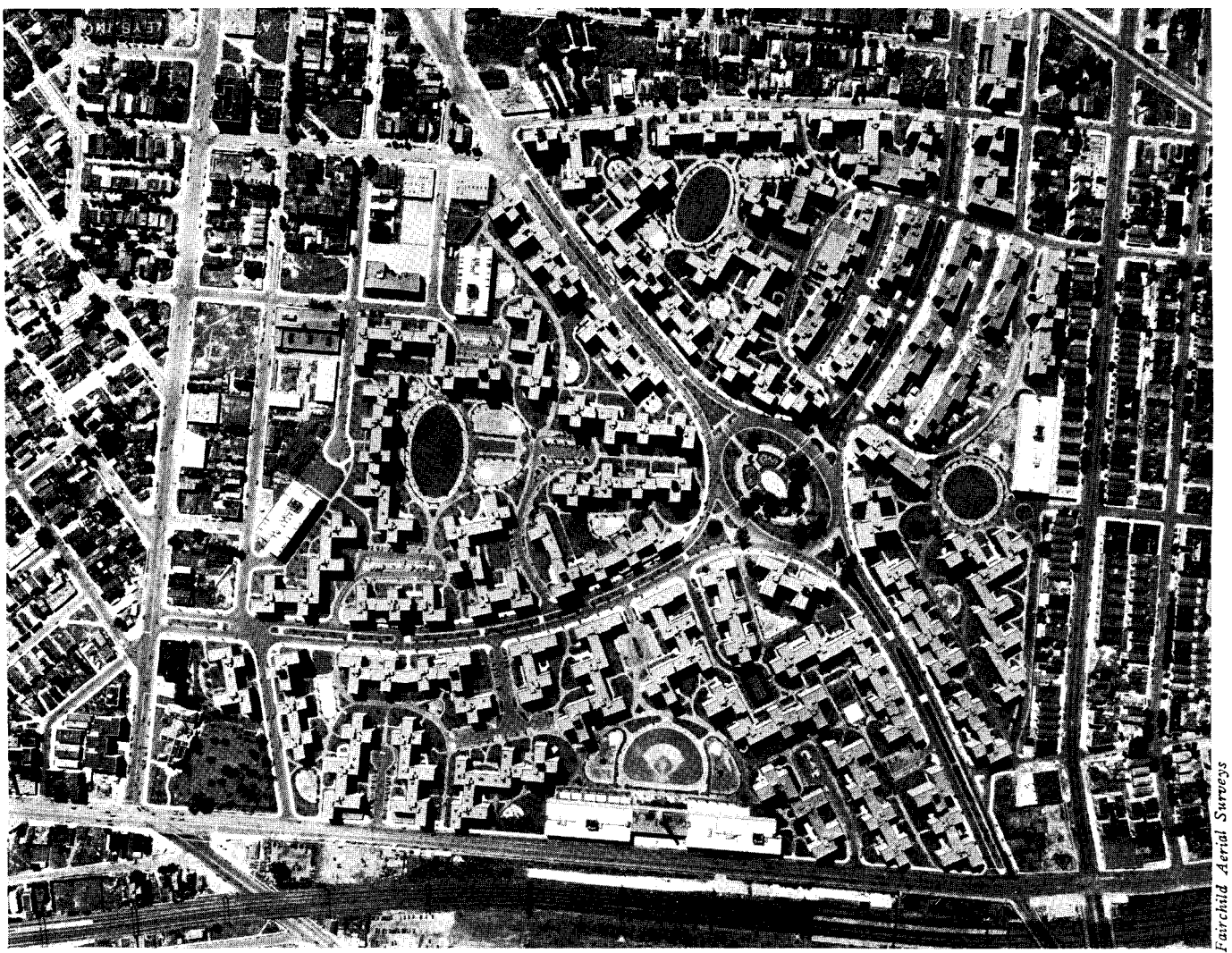
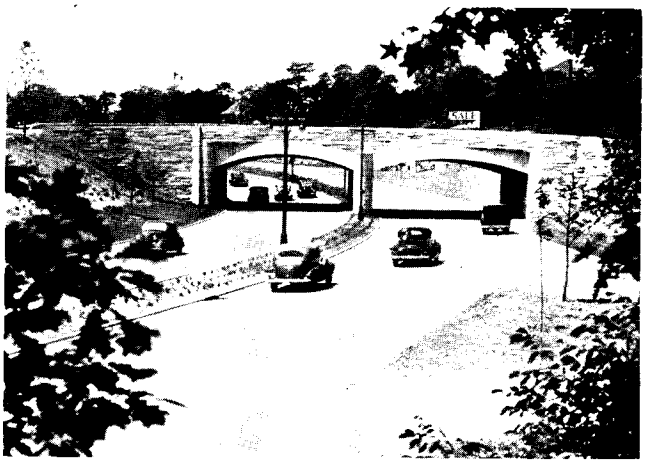


Fairchild Aerial Surveys

"Parkchester . . . has been criticized for having too many people on the land, yet had it been developed on the prevailing gridiron pattern with the ordinary type of Bronx apartment house . . . the same site would have provided for more than twice as many families." (Board of Design: R. H. Shreve, chairman, A. J. Eken, G. Gove, H. C. Meyer, G. D. Clarke)

John Gass

Boston Post Road, Bronx, N. Y., shows what happens when through traffic mixes with local traffic on a business street. Good planning will keep the two apart, and speed them both



"Through traffic will be routed around these neighborhoods on special through-traffic ways to which local traffic will have access only at controlled points. Streets will be quiet and safe"

put into effect immediately when the war is over.

The rebuilding of our cities must be on a big scale. During the war we are learning that obstacles can be swept out of the way of progress when there is the will to do it. Our cities, step-children of an age of feverish industrial expansion, can be rebuilt to be sane, healthy and pleasant places in which to live if we can carry on with that same spirit of determination that we now have to win the war.

A New Regional Pattern?

The industrial and population pattern of the country has been determined by a number of forces over the years. As those forces never are frozen in relative importance, so the regional pattern never is static but is forever changing with changing conditions. A question that we must attempt to answer is—Can we expect a major reshuffling of our population and our production equipment in the postwar period? Will there be new cities to design among the wheat fields of the West and the cotton fields of the South?

There has been much dislocation of industry and population since the war began. The shift has been for the most part, however, to already important industrial cities or regions. There probably will be some shifting of population and industry inland after the war due to a number of new influences. Chief among these is the enormous expansion of the aviation industry. On June 30, 1940, there were only 322 transport planes in use by domestic airlines and 108 planes on foreign routes. The tremendous investment in planes, machinery and airports during the war cannot be ignored in forecasting the future of transportation. It will serve to reduce the advantage of those regions now well served with fixed transportation lines, and may tend to diffuse industry somewhat. The heavy industries, however, which are the backbone of the industrial pattern, will continue to be dependent on water and overland transportation.

Another development that may alter the transportation pattern, and so the industrial pattern of the country, should it materialize, is the projected St. Lawrence-Great Lakes Seaway. This would unquestionably bring to the Middle West an advantage of cheap water communication with Eastern ports and with Europe.

The growing importance of the plastic industry must be considered. Plastics are made from a variety of materials. Should plastics replace some metal in many fields there may be industrial development in areas where the new materials are readily available. And new developments in light metals and alloys will have their effects.

Improvements in the economical transmission of power may further help to diffuse industry.

Added to these influences which seem to point to the Middle West as a region of postwar industrial opportunity is the possibility of public policy encouraging the location of industries essential to the national welfare beyond easy bombing range from the coasts.

While the forces discussed above probably will result in some shift in population, it seems inescapable that the major task facing us is not the planning and building of entirely new cities but the replanning and rebuilding of existing centers. In either case the same principles must obtain if cities are to be healthful, efficient and pleasant places in which to work and live.

The Urban Pattern

In spite of the half-facetious comments of an occasional sensationalist, the city is basically sound and, need it be said, is here to stay. The city has grown as a result of social, economic and political demands; it will last as long as the factors that called it into being prevail. A distinguished expert, when asked his opinion on what to do about the problems of one of the great industrial centers of the country, remarked, "Abandon it." That sort of reluctance to deal with realities will not solve the many and real problems of urban organization and life.

The metropolis is not going to disappear but it is going to be spread out more. For many years now there has been apparent in all of the large American cities a natural trend away from the center toward the metropolitan periphery. The suburban movement has been a natural reaction against the over-built, over-crowded city. A first need is for a reduction in population densities in cities. There is no need for over-crowding the land, and the community gains nothing by permitting it. Sir Raymond Unwin aptly demonstrated the fallacy of crowding the land.

Fairchild Aerial Surveys

"Playgrounds, playfields, green oases amid the heat and dust of pavement will be required; no city has enough of them." (Sarah Delano Roosevelt Playgrounds; Department of Parks, New York)

Zoning ordinances need comprehensive revision, with particular attention to the control of the density of population. We should not wait until after the war to restudy obsolete zoning regulations, and there are very few throughout the country that are not in that category. We should be revising zoning regulations now as part of the essential planning for the postwar period. Parkchester, the gigantic housing venture of the Metropolitan Life Insurance Company in the Bronx, has been criticized for having too many people on the land, yet had it been developed on the prevailing gridiron pattern with the ordinary type of Bronx apartment house to the extent permitted by law, the same site would have provided for more than twice as many families!

Behind congestion lies the bugaboo of high land values. It is ironic that many badly needed public improvements have been blocked by the "land values" that the public itself has created. Urban land of itself is of no value; it has value only because of the community. The community must regain some control over the values that exist only because the community exists. Pressure is building up from all quarters to control urban land values. In England above the din of war strong voices are heard calling for steps little short of the nationalization of land. It is not without meaning that these voices come from the strongholds of conservatism—the Church and the Bench. When that happy day arrives when economists can solve the problem of land values, the work of the city planner and architect will become more significant.

Neighborhood Units

The principle of the Neighborhood Unit, advocated by Clarence Perry and others, has met with wide approval among city planners. That theory is sound and should be followed as far as possible in postwar rebuilding. It means that residential areas should be organized in neighborhoods, the nucleus of which is to be the elementary school. In connection with the school, located near the geographical center of the neighborhood, will be found ample play areas. The school building itself in the future must play an expanded role. It is absurd that buildings representing such a large public investment should be so restricted in use. School buildings will be designed for and must serve as neighborhood social and welfare centers. They can fill a definite neighborhood need during the evenings and summer months when ordinarily they are locked up.

Through traffic will be discouraged from passing through the neighborhood. The streets will be quiet and safe, with local traffic only. They will be laid out in an informal fashion to fit the topography and to achieve privacy and domestic scale. Through traffic will be routed around these neighborhoods on special through traffic ways to which local traffic will have access only at controlled points. A system of such through traffic ways will radiate from the center of the city to the open country.

These neighborhoods will be homogeneous in character. There are those who advocate the intermingling of all kinds of people in a single neighborhood under the erroneous impression that such mixing up is evidence of democracy in action. This sort of proposal ignores the basic principle of democracy—respect for the wishes of the people. It further overlooks a cardinal principle of planning and of common sense—that plans for the physical development of our communities, if they are to mean anything, must be based on natural social trends. All students of sociology recognize that people of similar backgrounds and interests like to be together. This community of interest is not limited to the country club set. It is found in all segments of the population, all ethnic and income groups. Birds of a feather flock together by preference and it is difficult to see what can be gained from attempting to force a mix-up of the population.

The transition between areas of different use is always a danger spot and source of trouble. When residential property abuts a commercial or industrial area, the residential property tends to deteriorate fast. The most striking example of this is to be seen in the zone of deterioration that surrounds the central business area of nearly every city. The general rundown condition and widespread tax-delinquency here offer an opportunity for a solution that will serve more than one end after the war. The problem is big and the solution must be big and bold.

A belt of open space should be cleared around the business area to be used for park purposes, automobile parking and sites for public buildings. It would at one time clear out some of the worst blighted areas of the city, help to solve the parking problem, insulate the residence area against the influence of the commercial zone, furnish a

belt of green where it is needed badly, and provide a fire break about the high-risk area. With a rapidly growing city, confining expansion of the business area in this way would not be possible. Many of our cities, however, have reached or are approaching a stabilized population, and there is no reason why such an open girdle would not be entirely feasible. Throughout the city elsewhere buffers of park area should separate one type of land use from another.

Before the war, technology had progressively shortened the work week, increasing leisure time. There is need for more open space, more and larger areas for both active and passive recreation in the city. Playgrounds, playfields, green oases amid the heat and dust of pavement will be required; no city has enough of them now.

The economies and other possibilities of the "superblock" are too great to ignore. About one-third of the developed area of our cities is in streets—and still traffic congestion in the streets is one of the most spectacular problems of every city. No city has solved it yet. There is plenty of land—even too much—devoted to traffic movement in the city. The distribution of that land in the street pattern of the city is wholly bad and archaic. Intelligent planning can reduce the area ordinarily devoted to streets by one-third and take care of vehicular and pedestrian traffic in a sane and satisfactory manner.

In building new neighborhoods the old street pattern must be revised. Many streets will have to be closed and a new type of city block much larger than the traditional city block must be evolved. These super-blocks will be developed as a whole with generous open spaces designed as supplementary to the building. Living quarters will face away from the street and toward the open spaces in the interior. Streets will be regarded as service ways only. Pedestrians will prefer to use pleasant footways in the interior of the block rather than a sidewalk along the street.

Cul-de-sacs will be used occasionally to service residential buildings. They are economical and provide privacy. The cul-de-sac must be used intelligently, however, and not as a universal panacea. Some recent housing developments use the cul-de-sac with all the deadly regularity and monotony that the gridiron plan was ever guilty of.

What a tremendous difference it would make to American cities could they control expansion in this manner. It is hoped that the immediate necessity of rebuilding the old areas of cities in the postwar years will not blind us to the desirability of controlling future expansion by the acquisition of land reserves.

The only significant area for planning and rebuilding the city is the real area of city influence, not political boundaries. This will include the suburbs and satellites of the central city and may overlap county or even state lines. Public administrators will have to work out a formula for resolving the confusion of conflicting and overlapping jurisdictions of independent governmental subdivisions or taxing districts. Plans can be and must be made for the social and economic region that is the real city, without regard for the accident of city boundaries. To be carried out, however, a new and broader concept of metropolitan government is needed.

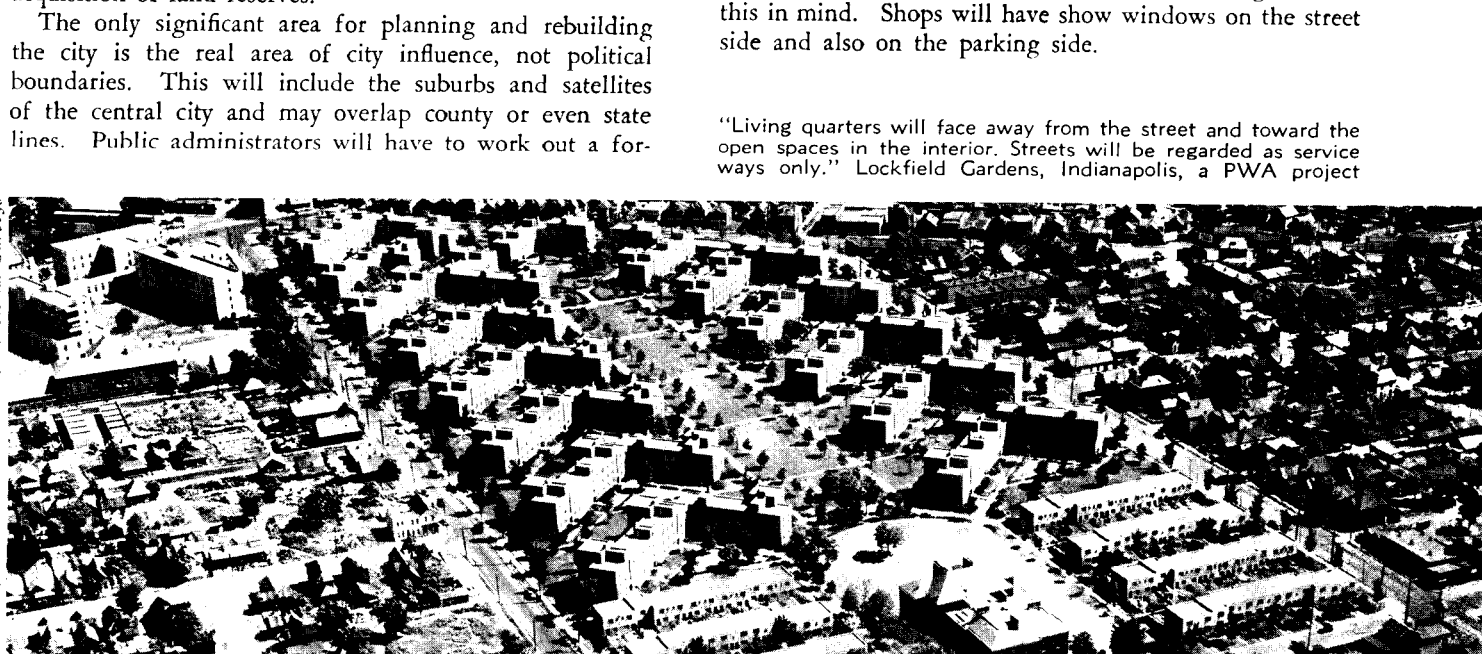
Transportation

A promising field for postwar public works lies in the modernization and coordination of transportation facilities. The need for modern highways is acute. The annual highway accident toll attests to that. The highway engineer must catch up with the automotive engineer. With notable exceptions our roads are essentially the same as they were when they carried only horse-drawn vehicles. They have been paved, widened in places, and have had some of the worst curves eased a bit, but essentially they are the same old highways. We must conceive and build between centers of population freeways or thoroughways, based on the principle of no access from abutting property. The freeway will by-pass smaller communities and pass through the outskirts of the larger cities. It will carry only through traffic. Only at controlled points will it be possible to get on or off it. Through open country a right-of-way from 300 ft. to a quarter of a mile wide is desirable. Traffic in opposite directions will be separated by a dividing strip of varying width; the lanes may be separated by 1,000 ft. or more in some places. The old hood-and-tangent type of highway alignment will give way to smoothly flowing curves following the natural topography.

Near large centers of population commercial and passenger traffic will be separated, with the latter brought into the city on attractive parkways.

Within the city, streets must be designed for the purpose that they are to serve. In the past a city street has been simply a city street—the same whether carrying through traffic, serving an industrial area, the shopping center, an apartment house district or an area of single family houses. Street pavement is too costly and the space it occupies too badly needed for traffic movement to be usurped by curb parking. Public off-street parking spaces must be provided—not haphazardly wherever there happens to be an idle lot, but according to a community-wide plan. Shops, business places of all kinds, even banks, will find it advisable to provide auto parking facilities for their customers. The buildings themselves will be designed with this in mind. Shops will have show windows on the street side and also on the parking side.

"Living quarters will face away from the street and toward the open spaces in the interior. Streets will be regarded as service ways only." Lockfield Gardens, Indianapolis, a PWA project



Fairchild Aerial Surveys

All phases of our transportation system need coordination and unification. In cities an imperative need is for modern combined terminal facilities, serving the needs of all means of travel. It may be that the task of coordinating the terminals of all railways, waterways, airways and busways can be accomplished only by Government action. If so, it is a public responsibility that must not be shunned. We must agree with the recent report of the National Resources Planning Board, *Transportation and National Policy*. "The most neglected aspect of transport development has been the provision of terminal facilities. The antiquity of port facilities; the duplication and inefficiency in railroad freight yards and stations; the difficulties of urban truck loading and passenger car parking; and the lack of modern, conveniently located, and properly protected airports are all familiar manifestations of the universal neglect of terminal operations. . . Modern terminal areas should be provided by appropriate Government action as an integral part of the city plan, their facilities open on equal terms to all suitable carriers."

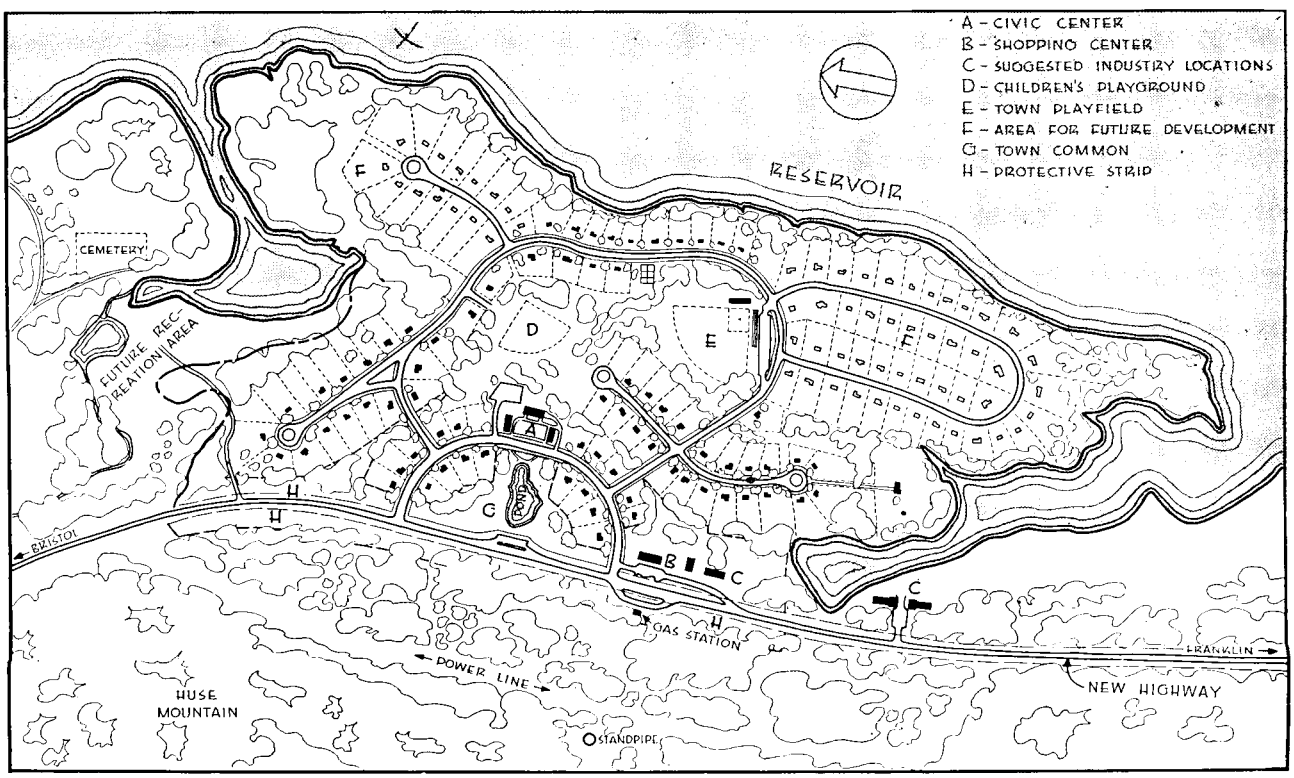
Public Policy Plus Private Enterprise

Plans on paper, however soundly conceived or beautifully drawn, are only of academic interest unless they are capable of being carried out. The job of reshaping our cities is so vast that all the resources of the community must be brought to bear on it. This is a total war; it is a responsibility of all the people. So the reconstruction that follows must be considered a part of the war effort and a responsibility of all the people. Certainly, the task of converting our national resources of man and materials and machines to productive purposes must be faced squarely by the Federal Government. There must be a master policy and there must be Federal assistance in effectuating that policy.

That does not mean that all plans should be made in a Washington bureau, nor does it mean that all construction should be directed from the Capital. Rather the need is for full utilization of all the individual enterprise, initiative and daring that built a great nation from a wilderness in the short span of 300 years. Individual enterprise, is needed—both in preparation of plans and in carrying them out—but it must work within the limits of public policy.

Real property must be transferred from the field of speculation to the field of investment. As a sound investment possibility, city rebuilding should attract the funds of insurance companies, labor organizations, banks and fraternal organizations. Some insurance companies are already engaged in neighborhood building under legislative authority. Further possibilities are opened by the Urban Redevelopment Corporations Law in New York and similar devices in Illinois, Michigan and Kentucky. In the sort of cooperative effort provided in those acts, bringing together the wisdom of the Government and the resources of its citizens, lies the hope of reshaping our environment.

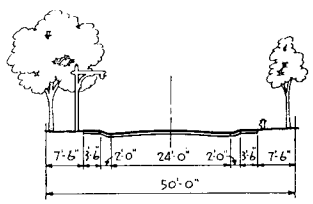
If we must rebuild our environment in the days following victory we must plan for it—*now*. We must be prepared to meet victory with something more than acclaim and thanksgiving. We cannot sit complacently by and permit the youth, now fighting the battle for freedom, decency, righteousness and honor on the military and civilian fronts, to return to the WPA, the CCC and the NYA.



Town planners never had a better opportunity than at Hill, New Hampshire, where a completely new town was built, the old town to be abandoned because it lay in the site of a new flood control reservoir. Planned by the State Planning and Development Commission, the village provides safe streets, economy, recreational areas, attractiveness, a modern pattern

TYPICAL CURB SECTIONS AND CUL-DE-SAC S

ARCHITECTURAL RECORD
TIME-SAVER STANDARDS
JANUARY, 1943



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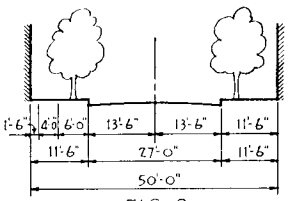

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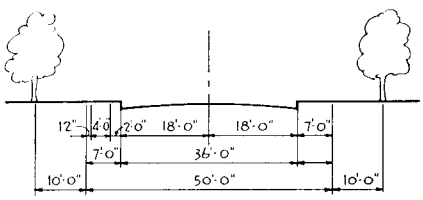

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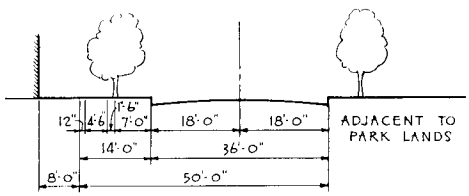

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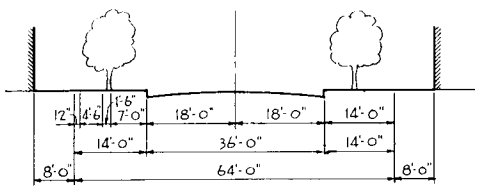

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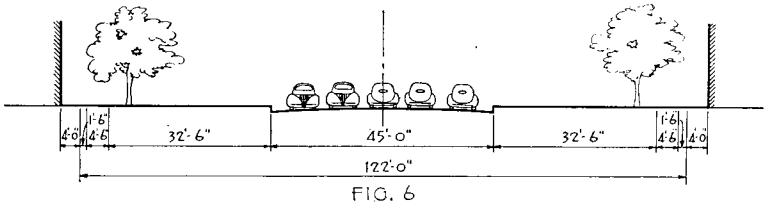

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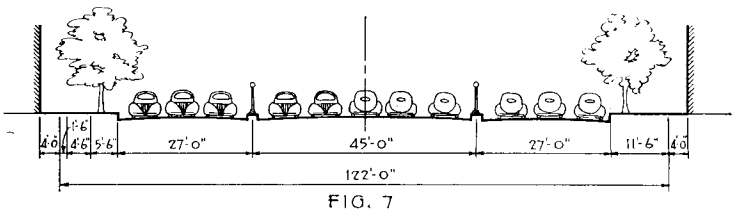

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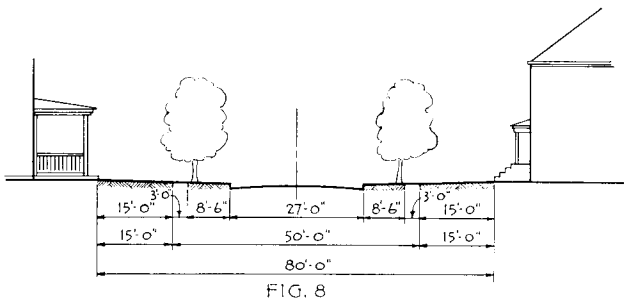

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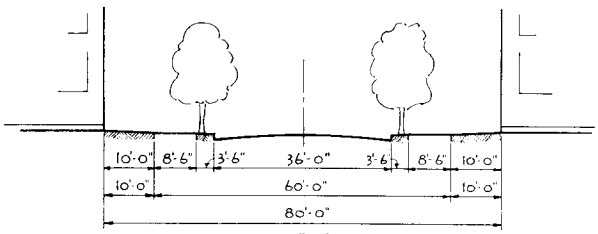


FIG. 9

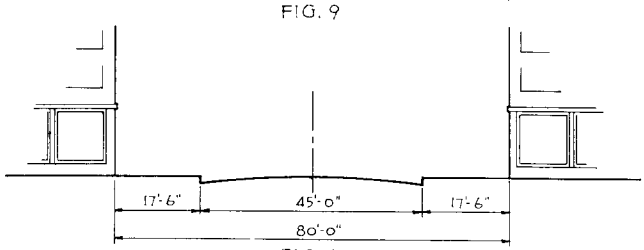


FIG. 10

Fig. 1—Typical roadway cross section for minor residential streets in low-cost neighborhoods. Section by Land Planning Division, Zone II, Federal Housing Administration.

Fig. 2—Usual subdivision cross section of 50′ right of way between property lines. Not recommended as remaining 1′-6″ planting strip between sidewalk and property line is inadequate.

Fig. 3—Preferred section if wider right of way is likely to be needed for future traffic growth. Trees located to permit pavement widening. Trees at property line indicate community setback regulations.

Fig. 4—Section of 36′ roadway adjacent to park land showing good relative location of trees. Building face set on property line.

Fig. 5—Same as Fig. 4, but with buildings on property lines on both sides of street.

Fig. 6—First stage of planned through-traffic highway, or "boulevard," leaving wide planting strips to be used later for expansion of traffic.

Fig. 7—The ultimate development of through-traffic highway of Fig. 6.

Figs. 8-9-10—Diagrams showing evolution of 80′ dedicated street or road, from residential use (Fig. 8), to apartment house use (Fig. 9), to business (Fig. 10).

"Relative location of walks and trees is undergoing a change with respect to automobile curb parking, to the extent of placing the sidewalk directly adjacent to the road curb, and locating trees between the walk and the property line."—Alfred Geiffert, Jr.

ARCHITECTURAL RECORD
TIME-SAVER STANDARDS
JANUARY, 1943

SUBDIVISION PLANNING STANDARDS

LAND PLANNING DIVISION — FEDERAL HOUSING ADMINISTRATION

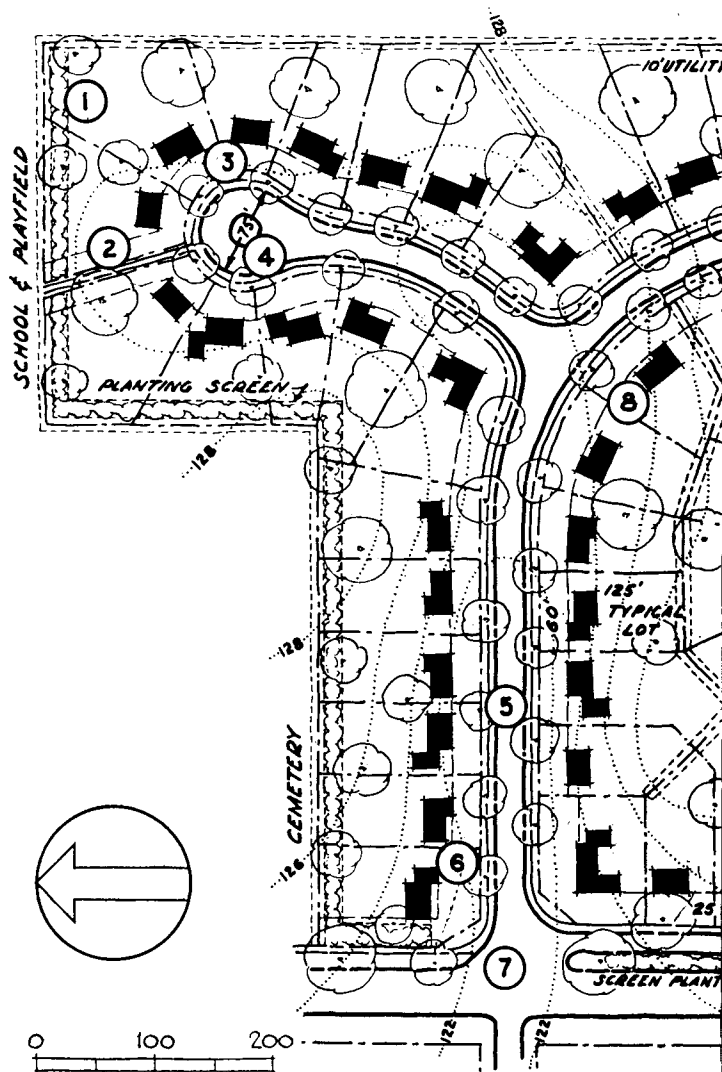
This subdivision provides 101 desirable building sites for low cost homes. A majority of the houses face east or west and will, therefore, receive sunlight into their front rooms at some time during the day. In the preparation of the plat for recording, lots should be numbered consecutively throughout the entire tract.

The street plan is adapted to the topography and provides for surface water drainage. Although the number of entrances from the major thoroughfare is limited, the street pattern facilitates the flow of traffic from the principal approach. Curved streets create greater appeal than is possible in a gridiron plan. Blocks up to 1200 ft. long are desirable and reduce expense for cross streets. This subdivision does not require its own system of major thoroughfares. However, recognition is made of the present and planned roadway pattern of the city in which it is located.

A subdivision of this size does not require provision for complete community facilities, such as stores, schools, and churches, necessary in a larger neighborhood.

Complete information regarding the site and its relation to the town or city of which it is a part are essential to the planning of a desirable residential neighborhood. Not only is it necessary to have a closed, true-boundary survey, but also complete topographical data, including locations of existing trees that might be preserved. The capacity of storm and sanitary sewers should be known. The adequacy of a safe water supply system and the existence of other essential utilities, and of transportation facilities, are important factors.

Residential subdivisions should be located where they will not be adversely affected by industrial expansion and other non-conforming uses. They should be in the trend of residential development of similar type homes. To further assure stability, residential areas should be safeguarded by recorded protective covenants, and the establishment and enforcement of a zoning ordinance governing the use of the property and surrounding areas.

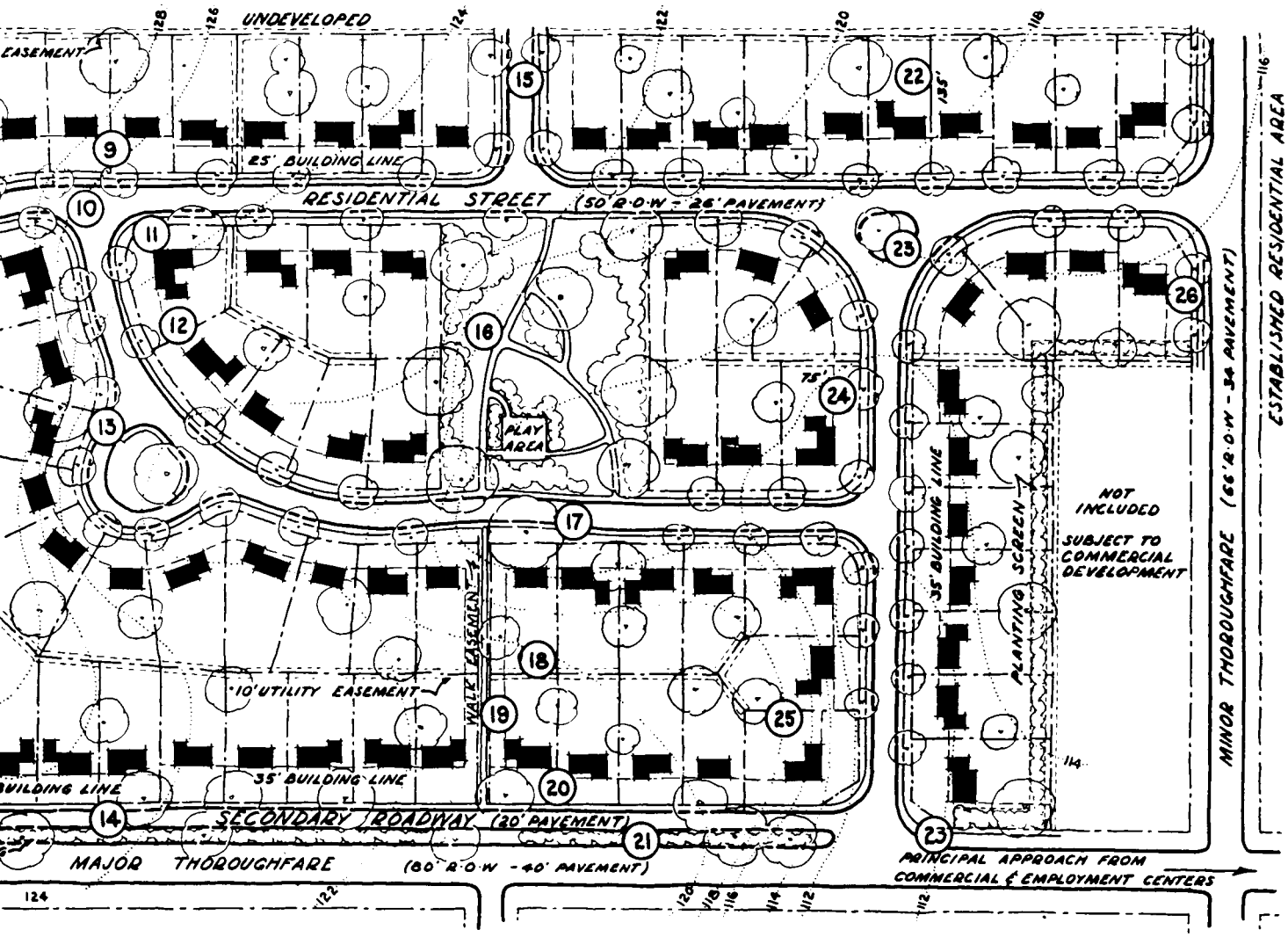


LEGEND

1. 15-ft. easement for planting screen to provide protection from non-residential use.
2. 10-ft. walk easement gives access to school.
3. Cul-de-sac utilizes odd parcel of land to advantage.
4. Turn-around r.o.w. 100 ft. in diameter.
5. Street trees planted approximately 50 ft. apart where no trees exist.
6. Additional building set-back improves subdivision entrance.
7. Street intersections at right angles reduce hazards.
8. Lot side line centered on street end to avoid car lights shining into residences.

SUBDIVISION PLANNING STANDARDS

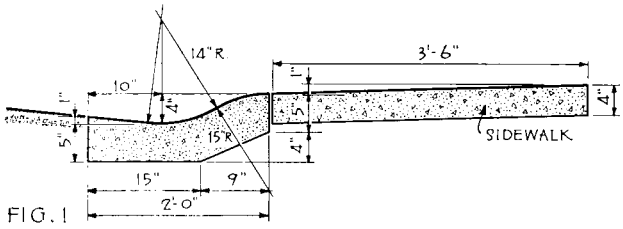
ARCHITECTURAL RECORD
TIME-SAVER STANDARDS
JANUARY, 1943



9. Residences opposite street end set back farther to reduce glare from car lights.
10. Three-way intersections reduce hazards.
11. Property lines on 30-ft. radii at corners.
12. Lot side lines perpendicular to street right-of-way lines.
13. "Eyebrow" provides frontage for additional lots in deeper portion of block.
14. Secondary roadway eliminates hazard of entering major thoroughfare from individual driveways.
15. Provision for access to land now undeveloped.
16. Neighborhood park located near center of tract. Adjacent lots wider to allow for 15-ft. protective side line set back.
17. Pavement shifted within right-of-way to preserve existing trees.
18. Above ground utilities in rear line easements.
19. 10-ft. walk easement provides access to park. Adjacent lots wider to allow for 15-ft. protective side line set back.
20. Variation of building line along straight street creates interest.
21. Screen planting gives protection from noise and lights on thoroughfare.
22. Lots backing to uncontrolled land given greater depth for additional protection.
23. Low planting at street intersections permits clear vision.
24. Wider corner lot permits equal building set back on each street.
25. Platting of block end to avoid siding properties to residences across street.
26. Lots sided to boundary street where land use across street is non-conforming.

ARCHITECTURAL RECORD
TIME-SAVER STANDARDS
JANUARY, 1943

TYPICAL CURB SECTIONS AND CUL-DE-SACS



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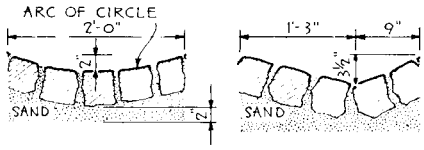

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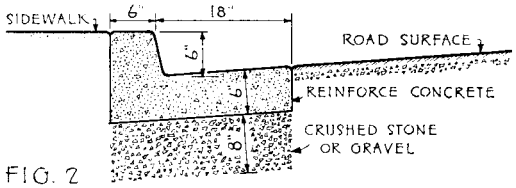

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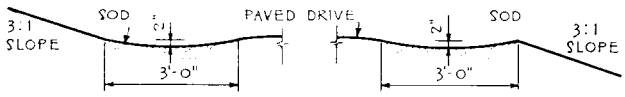

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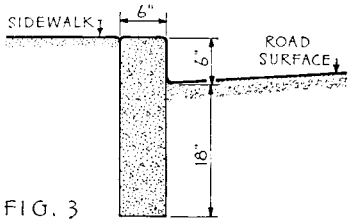

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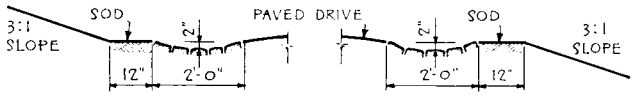
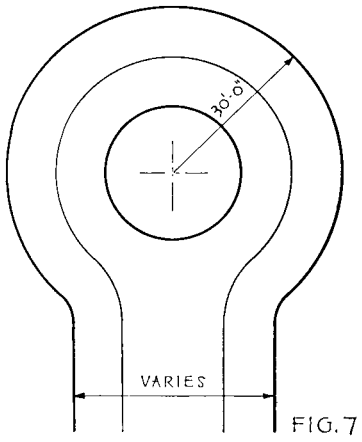


FIG. 6

CURBS AND GUTTERS



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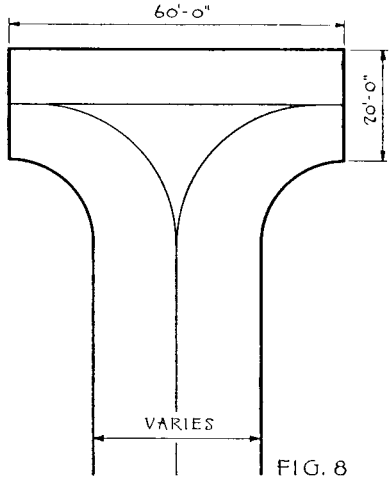

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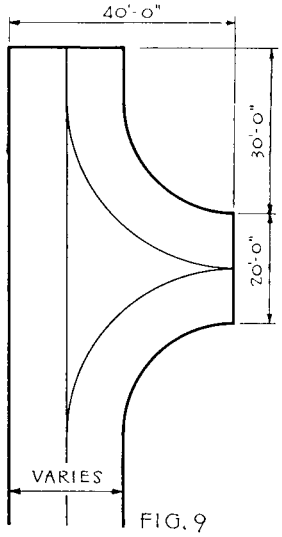


FIG. 9

DEAD ENDS

Fig. 1—Rolled curb and walk. This type of improvement is inexpensive. —Land Planning Division—Zone II, Federal Housing Administration.
Fig. 2—Typical curb of reinforced concrete. Gutter becomes part of road area.
Fig. 3—Typical traditional vertical curb of reinforced concrete.
Fig. 4—Cobble gutters, left section used for straight road alignment, right section used on curved road or bend in road.
Fig. 5—Sections of sod gutter at top and bottom of bank for road on sloping terrain.
Fig. 6—Paved gutter showing shoulder and desirable maximum ratio of slope.
Standards courtesy of office of Alfred Geiffert, Jr., Town Planner, except as otherwise noted.

Looking ahead with Asbestos

QUIET!
LET'S GIVE TOMORROW'S RESEARCHERS A BETTER CHANCE TO THINK!

That's just what Keasbey & Mattison, with its Sprayed "Limpet" acoustical asbestos, proposes to do. Research is helping to win this war; research will be as indispensable in the peace to come. Quiet laboratories mean better work!

K&M Sprayed "Limpet" is proving that right now, in many war laboratories hard at work on urgent Army and Navy problems. Sprayed onto the laboratory ceiling "Limpet" absorbs most of the sound that strikes that surface. A layer only ¾-inch thick, for example, has the high noise-reduction coefficient of .70.

But that's not all! Sprayed "Limpet" brings to laboratories not only more quiet but *more fire safety*. Being highly fire-resistant it is a barrier between the laboratory—with its inevitable chemicals, gases, explosives, inflammables—and the rest of the plant.

K&M's output of Sprayed "Limpet" is almost wholly claimed by the war effort, but when the war is won it will be available to the research labs of the future, and for other places—offices, hospitals, theatres, radio stations, auditoriums—where accurate sound control is a prime prerequisite. Meanwhile, K&M's own research into asbestos goes on, seeking new ways in which Nature's strangest mineral may benefit the peoples of the world.

* * *

Nature made asbestos;
Keasbey & Mattison, America's asbestos pioneer,
has made it serve mankind . . . since 1873

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains

Figure 1

LIGHTNING "UMBRELLA"

A WIRE "umbrella" to shield vital explosives plants and oil storage centers from lightning has been developed by Dr. Gilbert D. McCann, Westinghouse Electric & Manufacturing Company engineer, and is already in use. Requiring a minimum of strategic materials, the shield is said to deflect lightning driving earthward at more than 11,000,000 miles a minute. It consists of a steel wire strung above the building to be protected and anchored on tall wood poles at each end. (See Figure 1). The wire is connected with steel rods buried in the ground. Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

X-RAY PROTECTION

NOW AVAILABLE from stock in all regular or standard plywood sizes is a new lead-clad plywood material developed to simplify lead insulation against harmful cathode or x-rays in hospitals, foundries, etc. Lead sheets, generally 1/16 in. thick, are bonded or cemented to plywood either by means of a new specially developed latex cement, or by casein cements used with flannel sheeting to gain some elasticity. The latex bonding method at present is available and applicable only for requirements of higher priority ratings, such as Army, Navy, Air Corps and Public Health Service Hospitals and essential or vital war plants. The casein flannel bonding methods are less restricted as to priority and use.

X-ray operators' observation windows, available from stock in all standard sizes and glazed with x-ray proof lead glass, are made by the same company. These, the lead-clad plywood and the battens are produced under the trade name "Andelco." Andel & Company, Inc., 5218-20 N. Kedzie Avenue, Chicago.

NON-METAL SINK

BECAUSE of war restrictions on cast iron and pressed steel sanitary ware, one company has developed a new non-metal line of sinks called Perma-Gloss. It is made of selected clays fired at a high temperature with a layer of vitreous china glaze. This process is reported to produce a homogeneous, durable, light, uniform body that will withstand thermal shock and will not craze or dunt, with a lustrous, stain-and-acid-proof surface. General Ceramics Company, Metuchen, N. J.

COMPREGWOOD

A NEW TYPE of plastic-bonded plywood called Compregwood takes its name from a combination of the two words "compressed" and "impregnated." It is made by impregnating the veneers with resin, then subjecting them to heat and very high pressure. The resulting product, according to the manufacturers, is stronger than metal pound for pound. Durez Plastics & Chemicals, Inc., 1130 Walck Road, North Tonawanda, N. Y.

VOICE PAGING

WITH MASS communication a recognized means of speeding operations in large plants and other buildings, the Operadio Manufacturing Company has developed a system of voice paging and automatic time and fire signal operations which includes equipment for distributing radio programs or recorded music and for recording executive meetings or messages. Paging may originate from 2 independent positions through a "locked-out" circuit preventing simultaneous operation and resultant confusion. Precedence can be given to certain vital services or functions (i.e., the fire signal) with any other service automatically locked out when such a signal is given. Operadio Manufacturing Company, St. Charles, Ill.

WOOD LOCKERS AND SIMPLIFIED SHELVING

WOOD CLOTHES lockers, originally designed for the Navy Department and adopted by them, are made of plywood, substantially framed and finished in olive-green eggshell enamel. Various sizes and combinations are available, including a large double locker unit with shelves, a 10 locker unit with coat hangers and seat, and a stationery storage cabinet.

A SIMPLIFIED (patented) wood shelving offered by the same company requires no hardware whatever. The shelves can be inserted at any level, as close together as 6 in., and, according to the manufacturers, are instantly adjustable and exceptionally strong. All units are available in selected solid oak, poplar or clear pine. Backs are 1/4 in. gum plywood. Ivel Corporation, 211 West 61 Street, New York City.

CEMENT DISPERSING AGENT

A CEMENT dispersing and air entraining agent known as HP-7 is claimed to improve all the essential qualities of concrete when added to a paving mix —transverse strength, resistance to wear, freedom from scaling—at little or no extra cost. HP-7 is essentially a combination of an air-incorporating agent (sodium lauryl sulphate) with a cement-dispersing agent (a derivative of lignin sulphonic acid). The Master Builders Company, Cleveland.

LEAD CAULKING FERRULES

CONTINUING research for means to accomplish durable sanitary plumbing installations with minimum use of critical materials, the Lead Industries Association has developed and tested hard lead caulking ferrules. Of non-critical material, these ferrules can be welded or wiped to lead pipe. The Association reports them to be amply strong and rigid to stand caulking into cast-iron pipe with either lead wool or poured lead, having tested them and

(continued on page 90)

(continued from page 88)

found them satisfactory at pressures exceeding those encountered in required plumbing tests. They will be made in 2, 3 and 4 in. sizes. Lead Industries Association, 420 Lexington Avenue, New York City.

COLOR GUIDES

TWO RECENTLY developed color guides reduce the problem of color-harmonizing almost to a mathematical formula. These are the Color Harmony Manual, a set of 13 small volumes containing 680 movable color chips, and the Color Harmony Index, a set of 6 mechanical indexes which, at the press of a button, makes the same 680 colors available for comparison. In both guides the chips are arranged so that exact color complements are adjacent to each other, and in both the chips are glossy on one side, dull on the other for texture comparisons. Container Corporation of America. (Condensed from *Business Week*, November 21, 1942).

NEW STANDARDS

GYPSUM LATH: Standard specifications for gypsum lath (ASA No. A67.1-1942), gypsum sheathing board (ASA No. A681.1-1942) and gypsum wall board (ASA No. A69.1-1942) have been approved by the American Standards Association. All three standards cover such aspects as composition, flexural strength, sampling; dimensions, weights and permissible variations; finish, packing and marking. The new standards, which were developed under the leadership of the American Society for Testing Materials, also specify procedures for inspection, rejection and claims for rehearing.

GAS FLOOR FURNACES: Standard minimum specifications for gas floor furnaces of the gravity circulating type have been approved by the American Standards Association (Commercial Standard CS99-42). With the latest American Standard Approval Requirements for Central Heating Gas Appliances (ASA: Z21.13-1940) as basic prerequisites, this standard covers construction and installation requirements for gravity circulating type gas floor furnaces, including those having single or dual wall register outlets, for use with natural, manufactured, mixed and liquefied petroleum gases. This new standard, which was developed by the National Bureau of Standards, includes the sizing, placement, general installation requirements, venting, gas connections and methods of certifying compliance with the standard.

EMULSION PAINT

A NEWLY DEVELOPED oil resin emulsion wall coating called Opaltone is said to be readily washable and easily applied by roller, brush or spray. Its manufacturers report that it requires no primer or sealer, contains no critical raw materials and has no objectionable odor. It comes in 8 pastel shades and pure white. Truscon Laboratories, Caniff & G.T.R.R., Detroit.

Any inexperienced person can operate an Ozalid Whiteprint Machine

MISS ARCHER was hired yesterday . . . and she's already operating the Ozalid Whiteprint Machine at top efficiency . . . making whiteprints of engineering drawings, charts, and letters in seconds.

This illustrates how Ozalid DRY DEVELOPMENT has revolutionized printmaking — transforming what was once a tedious job into a simple routine. You merely feed the original and the Ozalid sensitized material into the machine. Two quick steps—EXPOSURE and DRY DEVELOPMENT . . . and you have positive reproductions which are ready for immediate use in the shop or field.

Compare this simple process with blueprinting, which demands the services of more than one trained operator to check water sprays, potash baths, temperature of drying drums, tension of rollers . . . in addition to other wasteful operations which throw print production off stride.

Follow the example of thousands of manufacturers who have been convinced of Ozalid's superiority. Install a compact Ozalid Whiteprint Machine in your drafting room. You'll be sure of a "head start" in war production . . . and savings in labor and materials.

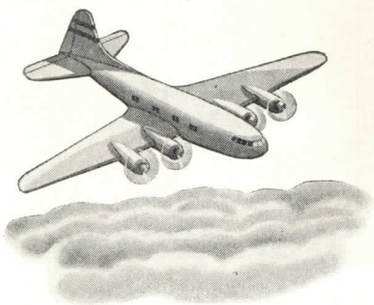
Write for "Simplified Printmaking," which completely explains the Ozalid Process.

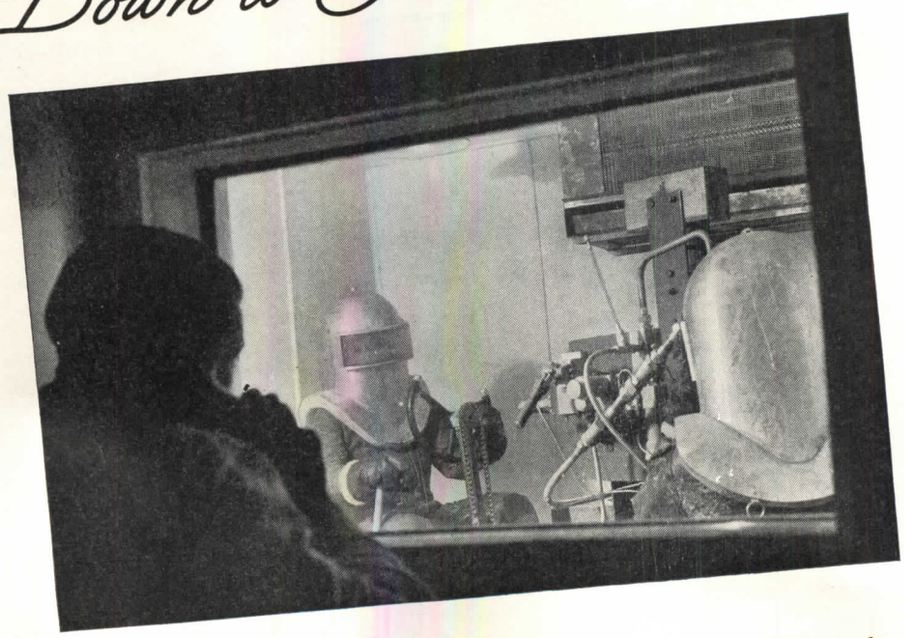
SIMPLIFIED PRINTMAKING is an illustrated booklet containing valuable "know how" information. It shows how to eliminate unnecessary drafting; make prints with blue, black, maroon, or sepia lines on a white background; reduce trimming waste; make "new" originals for subsequent print production.

Ozalid Products Division

GENERAL ANILINE & FILM CORPORATION
Johnson City, N.Y.

GLASS HELPS BRING THE STRATOSPHERE *Down to Earth!*





Six . . . seven . . . eight miles up. Up in the stratosphere. Soon our flyers and planes will be streaking through heights fit only for angels, before.

Because these heights do strange things to men and machines, industry is untiringly testing the performance of special motors, instruments and parts under actual stratospheric conditions. It is also seeking facts that will help medical science protect the men who rise to these rarefied heights where concentrated oxygen must be breathed and —100° cold combated.

Large testing chambers, like the one in the Douglas Aircraft Company plant, pictured above, bring the extreme temperature and atmospheric conditions of the stratosphere down to earth. These chambers are built with large glass windows so that work inside can be observed.

Because of the bitter cold inside, this would have been one of the most difficult windows in the world to glaze if it had not been for a remarkable Libbey·Owens·Ford glass development . . . Thermopane.

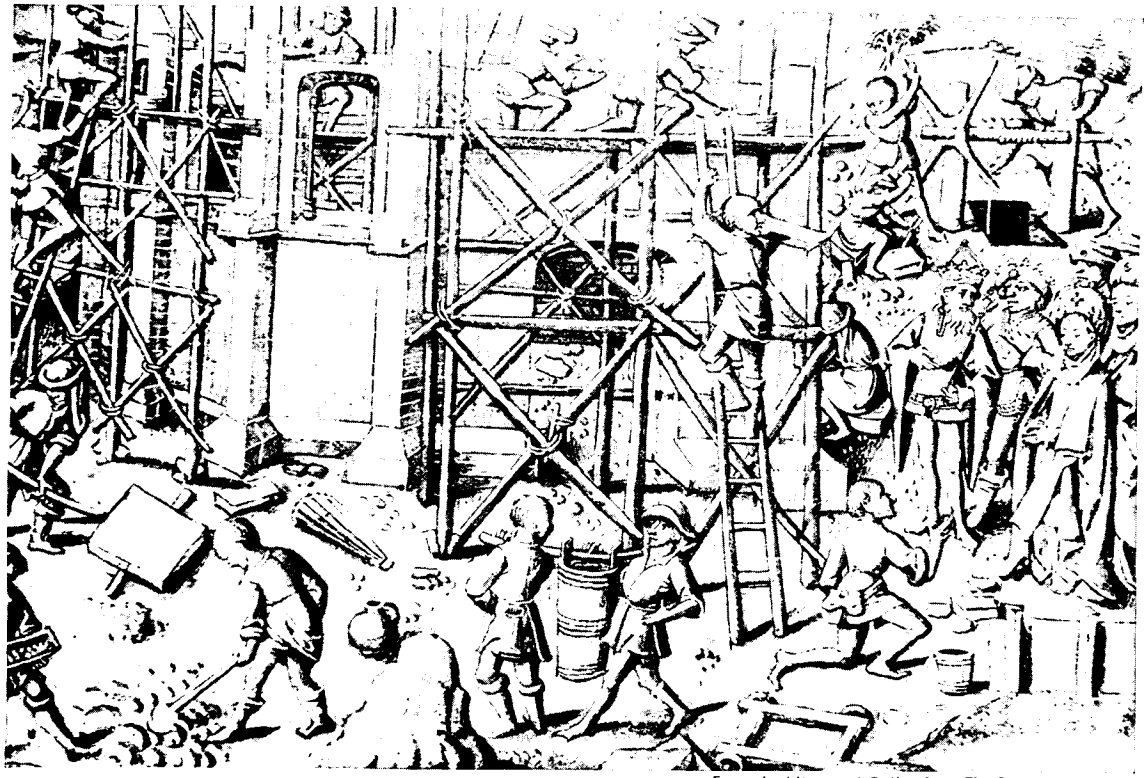
Thermopane might be likened to an air-conditioned glass sandwich. It is made of multiple panes of glass bonded together in one unit. The air space between each pane of glass is dehydrated and sealed. This unusual insulating window eliminates condensation between panes, even under conditions of extreme cold. No dirt nor dust can get inside the glass to impair vision. In short, Thermopane, for the first time, provides a glass window that insulates and affords the clearest vision at the same time.

Today, Thermopane is making an important contribution to the war effort. Tomorrow, this new glass unit, perfected by Libbey·Owens·Ford, promises to open the way to revolutionary benefits in the fields of clear-vision insulation and window conditioning for postwar construction.

Libbey·Owens·Ford glass research is multiplying the usefulness of flat glass, both for military and civilian needs. L·O·F flat, bent or tempered glass products undoubtedly will help solve design and construction problems for architects who will plan the buildings of the future. Libbey·Owens·Ford Glass Company, 1339-A Nicholas Building, Toledo, Ohio.

LIBBEY·OWENS·FORD
QUALITY *Flat Glass* PRODUCTS

Buildings like this didn't need telephone booths



From Architectural Collection—The Bettman Archive

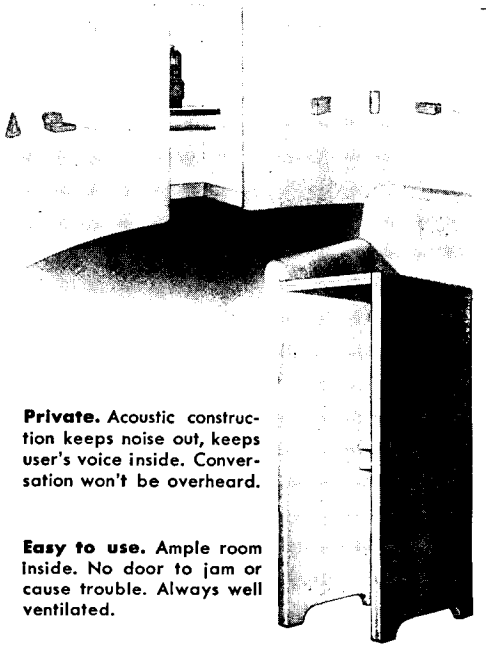
TODAY

busy office buildings need modern built-in telephone booths . . .

The modern way to provide public telephone facilities is by means of attractive, doorless, built-in telephone booths. By specifying Burgess Adaptor Acousti-Booths, you eliminate design problems. These booths are ready for installation in any modernization or building project and can be finished to harmonize with any interior decorating scheme. They will add a distinctive note to your plans for future building.

Telephone users like these booths because their patented Burgess acoustic construction makes them quieter and more private inside than ordinary closed-in booths. They're always well ventilated and easy to keep clean. Burgess Battery Company, 2821-A W. Roscoe St., Chicago, Ill.

Operating under Burgess Patents

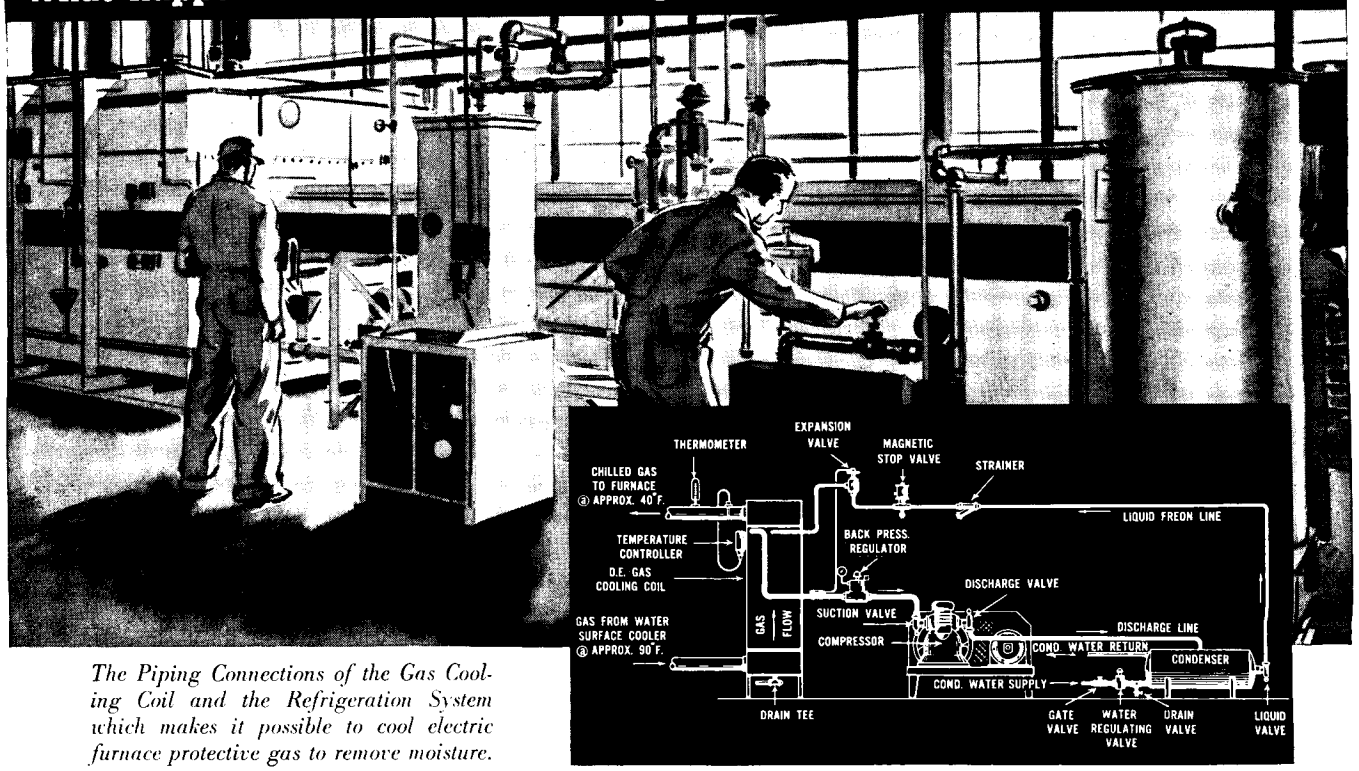


Private. Acoustic construction keeps noise out, keeps user's voice inside. Conversation won't be overheard.

Easy to use. Ample room inside. No door to jam or cause trouble. Always well ventilated.

BURGESS TELEPHONE *Acousti-Booths*

What happened when TRANE wrung water vapor out of half burned gas!



The Piping Connections of the Gas Cooling Coil and the Refrigeration System which makes it possible to cool electric furnace protective gas to remove moisture.

Protective atmosphere solves war production problem that saves precious metals and machine tools

THE ELECTRIC Furnace Company, Salem, Ohio, an important manufacturer of heat treating equipment, had to create a protective atmosphere in the sintering furnace it produced. In powdered metallurgy, the method that saves machine tools and materials in the manufacture of bushings and single articles for vital war industry, powdered metal is placed in the form desired, subjected to tremendous hydraulic pressure and then treated in the sintering furnace. The protective atmosphere was required to prevent oxidation and scaling created by the air in the furnace.

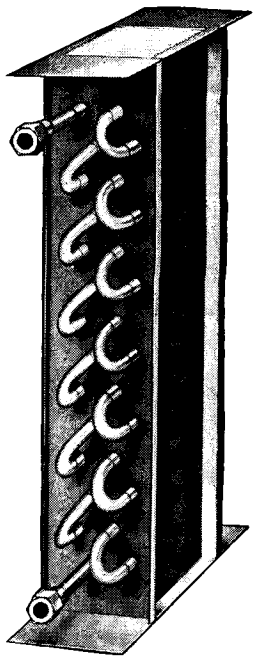
It has been found that this protective atmosphere can be produced most economically by partially burning commercial fuel gas. Unfortunately, however, this burning process produces water vapor which is also an oxidizing agent. Only a very low water vapor content is permissible for satisfactory results.

Condensation of the water vapor seemed to be the most effective way to do the job—especially since water at ordinary temperatures could be used to cool the gas. Tests, however, showed that the temperature of the gas could not be reduced sufficiently for the required degree of water vapor removal.

To solve the problem, Trane Air Engineers provided a special gas cooling coil. A direct expansion refrigerant was circulated through this coil. The temperature was reduced almost to freezing.

Thus Trane provided the means for a truly protective atmosphere completely free of all harmful oxidizing effects.

As in this and hundreds of other cases, the facilities of the Trane design engineering department are at the disposal of government and industry in the design of new and refined equipment to speed the war effort. Your nearby Trane Field Office will be glad to furnish details.



This Unit Cools Protective Atmosphere to Remove Dangerous Moisture

The Trane Gas Cooling Coil, utilizing a direct expansion refrigerant, cools partially combusted gas from 90° to 40°, thereby removing dangerous water vapor in a vital heat treatment process. This represents another of the many problems solved through the use of Trane Heat Transfer Equipment of both standard and special design.

THE TRANE COMPANY

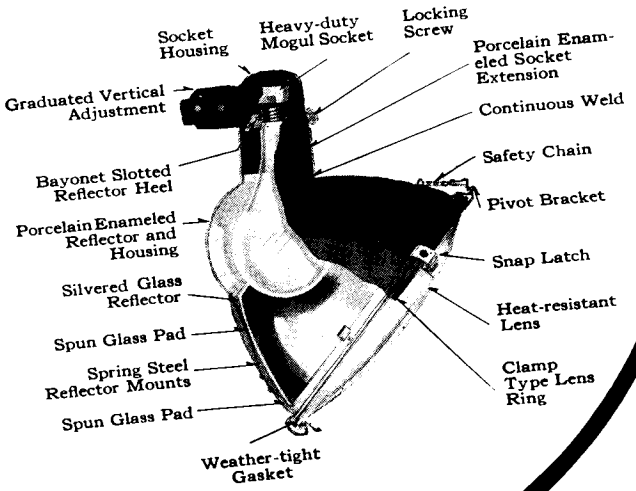
LA CROSSE, AIR WISCONSIN

Also TRANE COMPANY OF CANADA LTD., TORONTO, ONTARIO

HEATING • COOLING • AIR CONDITIONING EQUIPMENT FROM 85 OFFICES

DESIGNED TO

Protect



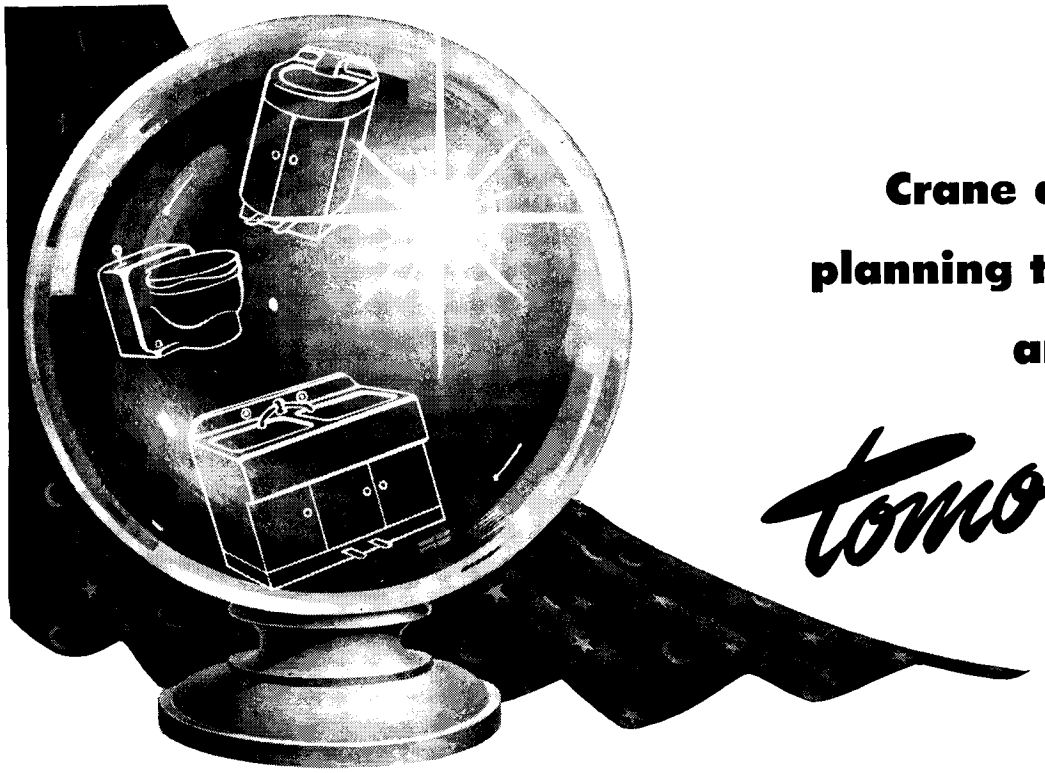
NOW A COMPLETE LINE OF FLOODLIGHTS FOR EVERY WARTIME NEED

Our engineers have given eyes to the "night watch" with a new line of protective floodlights that help guard American war industries.

Westinghouse Types EH and EHG with universal lamp position, and VEG with vertical lamp position, are rugged, weather-tight units. And to meet a variety of lighting needs, a choice of narrow beam reflector (silvered glass) or wide beam reflector (porcelain enameled steel) with various lens and lamp combinations, is available. Both types of floodlights have graduated, locking adjustments to facilitate aiming and relamping.

For stand-by emergency lighting, Westinghouse Type E floodlights, with universal lamp position, are available in sizes from 75-watt to 1000-watt for wide beam application only.

Producing this line of protective floodlights for America's "night watch" is an all-out job at Westinghouse today. And the nearest Westinghouse Lighting Distributor will gladly help answer any protective lighting problem you may have. Or, you may write for "Protection with Light" Planning Book, B-2280-A. Westinghouse Electric & *Manufacturing* Company, Edgewater Park, Cleveland, Ohio.



Crane designers are planning the bathroom and kitchen of *tomorrow*

WHAT will the bathroom and kitchen of tomorrow be like? Already on the drawing boards of Crane designers are new ideas—startlingly different ideas that promise new beauty—new comfort and new economy for tomorrow's homes.

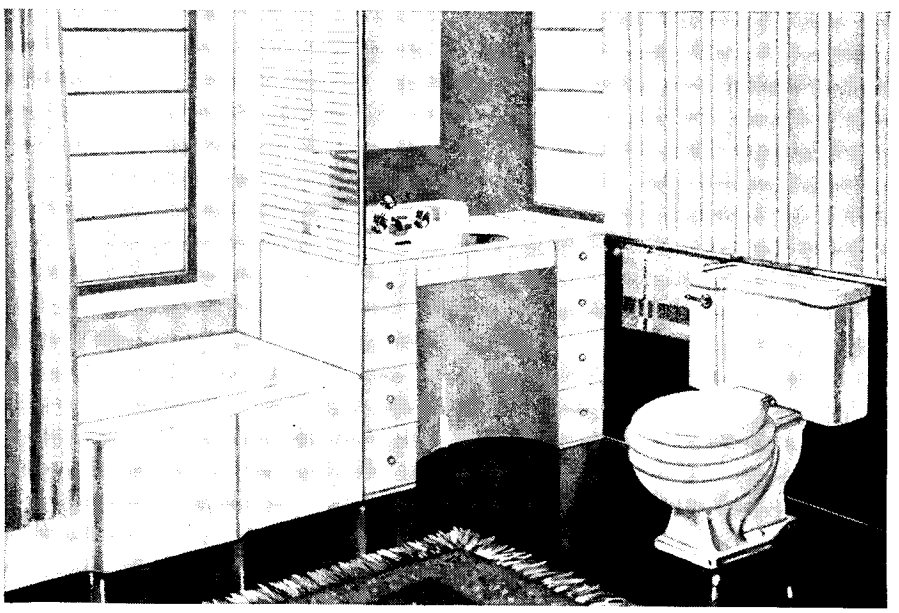
Even now plans are being made to submit these ideas to architects, builders and home owners. The Crane line of the future will be designed to reflect the wishes of those who are planning homes and those who will own the new homes of postwar America.

And when V-Day comes and prospective home owners say "Go Ahead," the Crane line promises the architect a new conception of beauty and efficiency in the bathroom and kitchen.

The Drexel bathroom group shown at right may contain the fixtures many of tomorrow's home owners prefer, and, if it does, it will be included in the Crane line.

But the introduction of new materials—the development of the new ideas on which Crane designers are now at work—may mean a bathroom and kitchen of the future radically different from the bathroom and kitchen of the past.

Whatever fixtures are included in Crane's postwar line, they will embody the years of experience—the technical skill of Crane designers and engineers—the same regard for beauty and style, as well as sanitation, that have always characterized Crane quality equipment.



CRANE

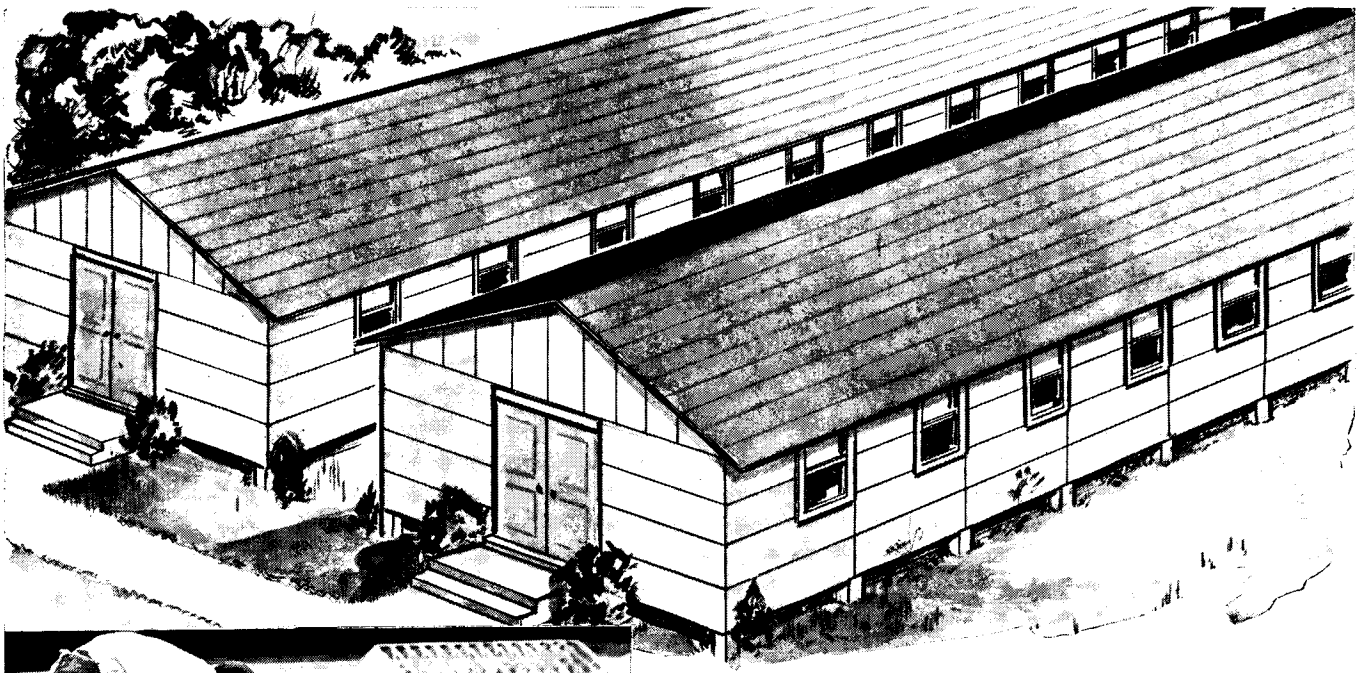
CRANE CO., GENERAL OFFICES:
836 S. MICHIGAN AVENUE, CHICAGO

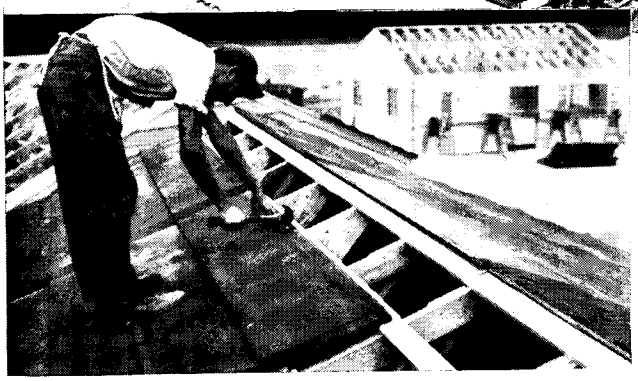
PLUMBING • HEATING • PUMPS
VALVES • FITTINGS • PIPE

NATION-WIDE SERVICE THROUGH BRANCHES, WHOLESALERS, PLUMBING AND HEATING CONTRACTORS

TWO NEW TRIPLE-PURPOSE PRODUCTS HELP SPEED CONSTRUCTION OF WAR HOUSING AND DORMITORIES

. . . Now Specified by the Government





Celo-Roof Units Go On Fast . . . Combine Roofing, Decking and Insulation

CELO-ROOF units are made from ¾" cane board encased in 90 pound mineral surfaced roofing. Heavy butts form deep shadow lines. Interlocking wood nailing strip on under surface of each unit eliminates need for shingle lath or sheathing boards. Size: 7'11 15/16" long by 15½" wide. Exposure 13 inches. Available in red, green, or black.

Celo-Siding and Celo-Roof Combine Strength, Insulation, and Good Appearance!

CELO-SIDING is a granule-surfaced siding made from cane fibre board, coated on all sides with an asphalt compound, then extra-coated on the exterior surface. Crushed mineral granules are then firmly pressed into this exterior surface to form a beautiful, permanent finish in brown, buff, red, or green.

Celo-Siding is ⅞" thick and 2'x 8' or 4'x 8' in size. 2'x 8' size has T&G joints on long edges. 4'x 8' size has square edges all around. Each suitable for horizontal or vertical application. All joints can be sealed with a caulking compound. *Thus one material serves for sheathing, siding, exterior finish, and insulation.*

Write for Specification Details and Samples on Both These New Products!

CELOTEX

REG. U. S. PAT. OFF.

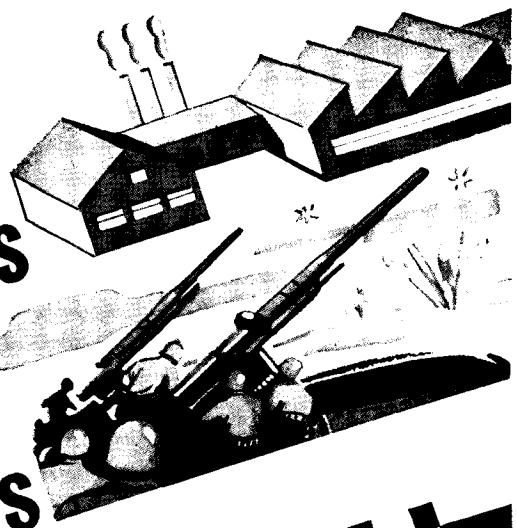
BUILDING PRODUCTS

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

THE CELOTEX CORPORATION • CHICAGO

INVEST IN U.S. WAR BONDS

Maintain the plants behind the guns with dependable H & H SWITCHES

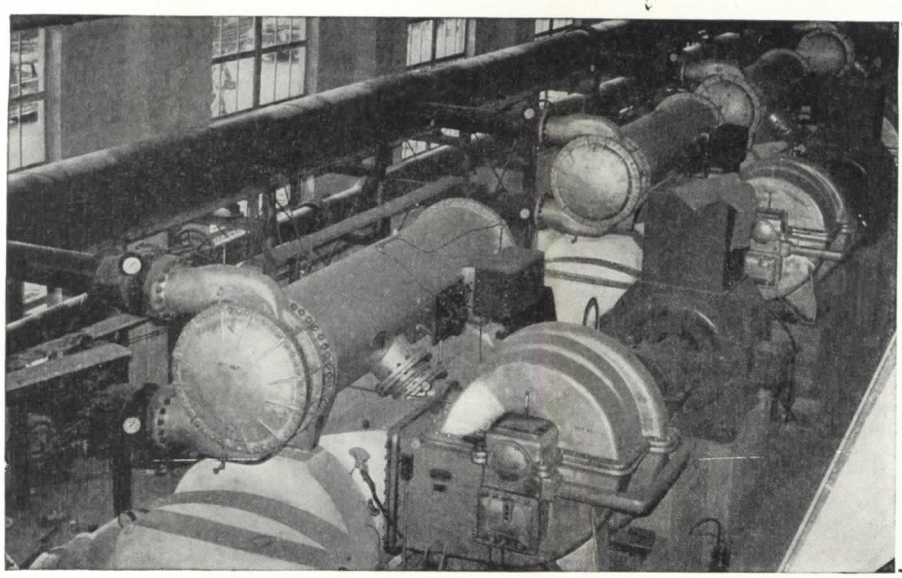


Maintain plant facilities in *ACTION* — *without interruption* of light or power. Every machine and lighting unit energized through dependable Controls, — H & H Controls. For these are vital PRODUCTION controls that regulate the amount of work your machines and operators can do.

"Hot wires", heavy loads, round-the-clock operating schedules, — these demand super-stamina in Switches. . . Even minor shut-downs cause shortages at the front.

So install *or* replace with H & H Switches for continuous, positive *ACTION* on your production-lines. . . Heavy-duty controls for lighting and power circuits; specification-grade T-rated 10, 20 and 30 Amp. "Type C" Switches, Rotary Snap Switches, Ceiling Pull Switches, Door Switches, Flush Tumbler Switches with or without outlet box covers. You'll find in them the fighting Quality to keep functioning, — the sure-fire DEPENDABILITY for war production.

HART & HEGEMAN DIVISION
ARROW-HART & HEGEMAN ELECTRIC COMPANY, HARTFORD, CONN.

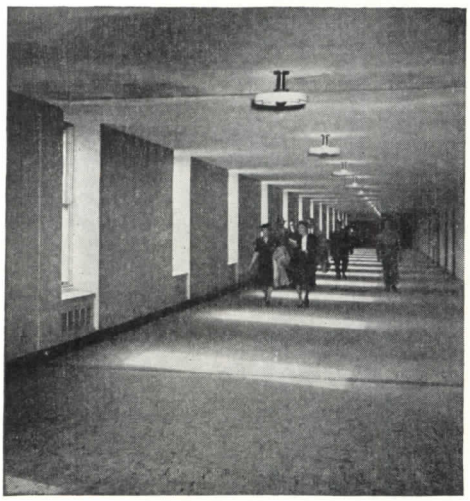


Design and Construction directed by Lt. Colonel Clarence Renshaw, District Engineer of Arlington, Virginia. *Chief Architects,* G. E. Bergstrom and D. J. Witmer. *Mechanical Engineer,* Charles S. Leopold, Philadelphia, Pa. *General Contractors,* joint organization of John McShain, Doyle & Russell and Wise Contracting Company, Inc. *Mechanical Sub-Contractor for Refrigeration Plant,* Carlson Bros. of Michigan; for the *Building Conditioning,* Baker Smith, Inc. and Mehring & Hanson Company. *Refrigeration Machines and Weathermaster Units* by Carrier Corporation.

12 CARRIER CENTRIFUGAL REFRIGERATION MACHINES provide a cooling capacity of 13,200 tons. This is equivalent to the melting of 26,400,000 pounds of ice daily.

WORLD'S LARGEST OFFICE BUILDING

COMPLETED FOR WAR DEPARTMENT



CORRIDORS AS WELL AS ALL OTHER space are served by Carrier Weathermasters designed as an integral part of the building.

7,800 WEATHERMASTER UNITS supply a total of 3,900,000 cubic feet of conditioned air per minute. Each office enjoys desired temperature and humidity supplied by the Carrier Weathermaster unit serving it.

This most coveted honor, the Army-Navy "E", was awarded to Carrier Corporation for excellence in war production.

Carrier

AIR CONDITIONING
REFRIGERATION

Individual Weather Control for each Office

A huge army of government employees — 35,000 strong — moved into Arlington, Virginia recently as the War Department occupied its tremendous new building on the shore of the Potomac just across from the nation's capital.

One of the outstanding features of the building is the Carrier Air Conditioning System. As a result of it, several million square feet of interior space, including basements, that otherwise would have been wasted except for storage, have become available for regular use.

In addition, the air conditioning helps to keep manpower at peak efficiency by offsetting the enervating heat prevalent on the shores of the Potomac in summer and the vagaries of Washington weather in winter.

Just as the Pentagon Building is the largest office structure in the world so is the Carrier Air Conditioning System the largest of its type ever installed.

LIGHTING assumes unprecedented responsibility in the efficient operation of the WAR DEPARTMENT'S NEW PENTAGON BUILDING

42,000 KURT VERSEN FIXTURES

perform around-the-clock in the world's largest office building.

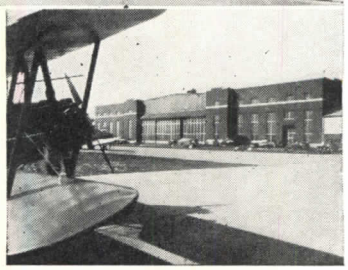
They provide optimum working and seeing conditions for 50,000 office workers, guarding against eye-strain and fatigue and helping to prevent costly, if not fatal, errors.

Twenty-five to thirty-five footcandles of scientifically balanced illumination with a total absence of glare and shadows are helping to conserve human energy and high morale.

KURT VERSEN LUCETTES use not more than 1½ lbs. of steel and 4 ft. of copper wire. Their unparalleled efficiency makes possible a considerable saving in copper wiring both for fixtures and circuits.

kurt versen company

709 Sip Street • Union City, N. J.



BUILDINGS TO BUILD THE NAVAL AIR ARM

THE "nests" of our seagoing warbirds are *buildings* . . . vast hangars, assembly and repair shops. You'll find them at scores of naval air bases and training centers. Also included are innumerable administration buildings, barracks, houses, and hospitals for the personnel . . . all being built at remarkable speed.

Many of these air bases rival a small city in size. The amount of hardware required . . . for doors, windows, cabinets . . . is tremendous, and a large share is being furnished by Stanley.

Since this and other branches of the armed forces have first call on today's production, the supply available for normal use is limited to those projects which have Governmental approval. The Stanley Works, New Britain, Connecticut.

STANLEY
Trade Mark

STANLEY HARDWARE

Who is the man who ate this dinner?

Clue #1 — *He's a very satisfied gentleman.*

Clue #2—*He's been here for two or three days calling on his Baltimore and Washington customers.*

Clue #3—*He does this often because The Lord Baltimore Hotel is perfect as business headquarters in the Baltimore-Washington territory.*

Who is he? He could be you!

Nearly 50 trains daily between Baltimore and Washington—two great centers of war activity.

For better accommodations — wire your reservation in advance.

The LORD BALTIMORE HOTEL

BALTIMORE • MARYLAND

700 rooms—each with radio, tub and shower

Swimming pool on the estate of Mrs. George W. Crawford in Greenwich, Connecticut; Russell B. Aitken was the designer and William Lescaze the architect. The turquoise-lined pool is 75 feet long by 40 feet wide, and is illuminated.

A BEAUTIFUL POOL UNIFORMLY PROTECTED

IN planning swimming pools architects have found that safety is a basis for design. In this regard Mr. Lescaze, the architect of the beautiful pool shown here, says,

"The architect's design should result in the creation of a well planned and attractive swimming pool. The intelligent use of chlorination should provide sterilization that is continuous and positive at all times—a uniform protection for bathers in every part of the pool. Wallace & Tiernan Chlorinators provide that necessary protection by adequate and reliable chlorination."

Now that W & T equipment is unavailable due to priorities, the Wallace & Tiernan organization cooperates with architects and engineers in keeping present installations in top working condition. Hundreds of architects are taking advantage of this nation-wide service.

Ask for the W & T Swimming Pool Technical Publications which review water treatment for various types of pools.

"SWIM IN DRINKING WATER"

WALLACE & TIERNAN CO., INC.

Manufacturers of Chlorine and Ammonia Control Apparatus

NEWARK, NEW JERSEY

Represented in *Principal Cities*

As an accommodation to readers the RECORD'S book department will endeavor to supply at the price quoted any book reviewed by Miss Coit in her monthly column

"REQUIRED READING"

(see page 26)

Thus books from different publishers may be included in a single order and with a single remittance.

Due to risks in transmission of overseas communications we can not for the present accept responsibility for orders to publishers in foreign counties and respectfully recommend that such orders be sent to those publishers direct.

Book Department

ARCHITECTURAL RECORD

119 West 40th St., New York, N. Y.

modine

UNIT HEATERS are helping to insure man-power against colds and accidents

AMERICA IS LOSING 400,000,000 work-days of war production yearly —because of workers' injuries or sickness!

Every war plant must open a second front *now*—to protect workers—to stop this waste of man-power.

Employee training, preventive medicine...and improved working conditions will do it.

Planned heating will help you prevent worker colds and accidents. A plant heated by Modine Unit Heaters is a healthier place to work.

Thermostatically controlled . . . Modines *automatically* maintain *even temperatures* in all working spaces. No chilling drafts stiffen workers' muscles, or numb their hands and feet. No hot blasts make them uncomfortable, over-heated, or drowsy.

Modines' healthful, even heating insures worker comfort, raises resistance, builds up stamina *and* productivity. And Modines *conserve fuel* as well as productive man-power! *Get War Edition Catalogs 142B and 142C.*

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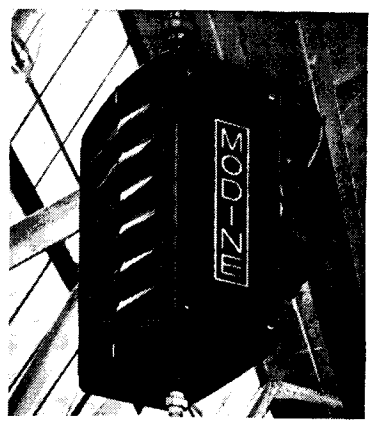

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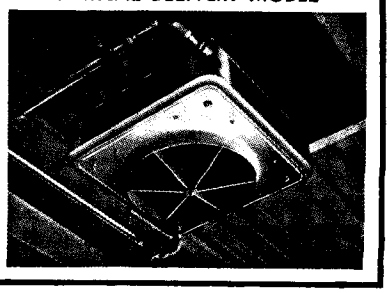

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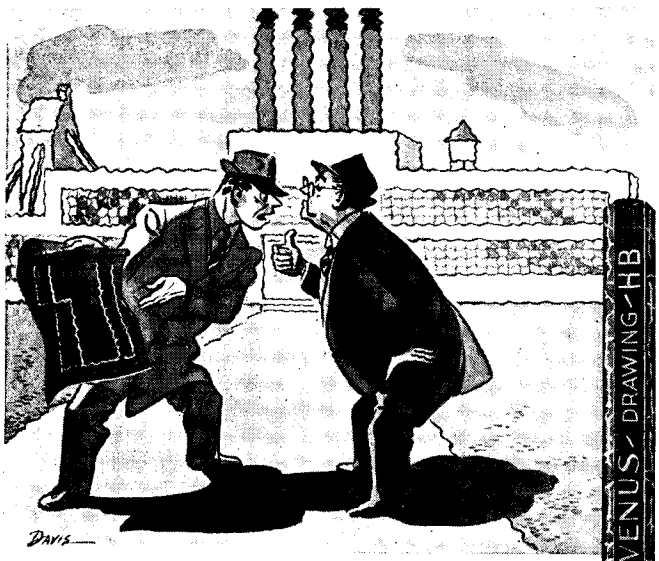

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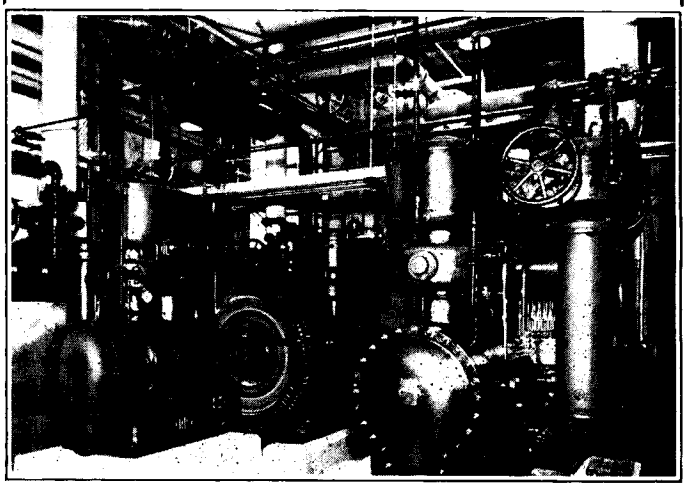

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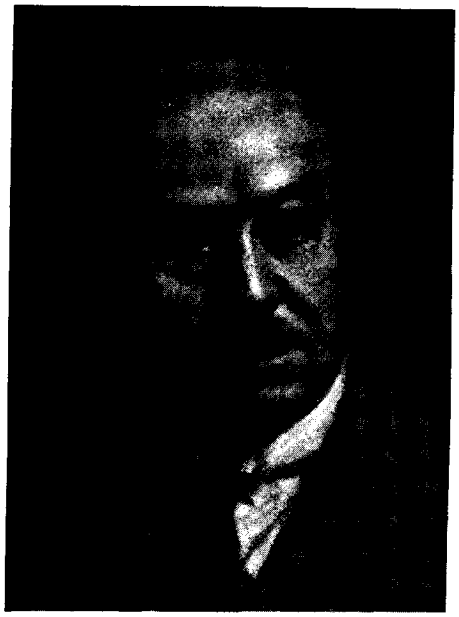

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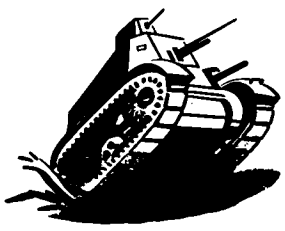

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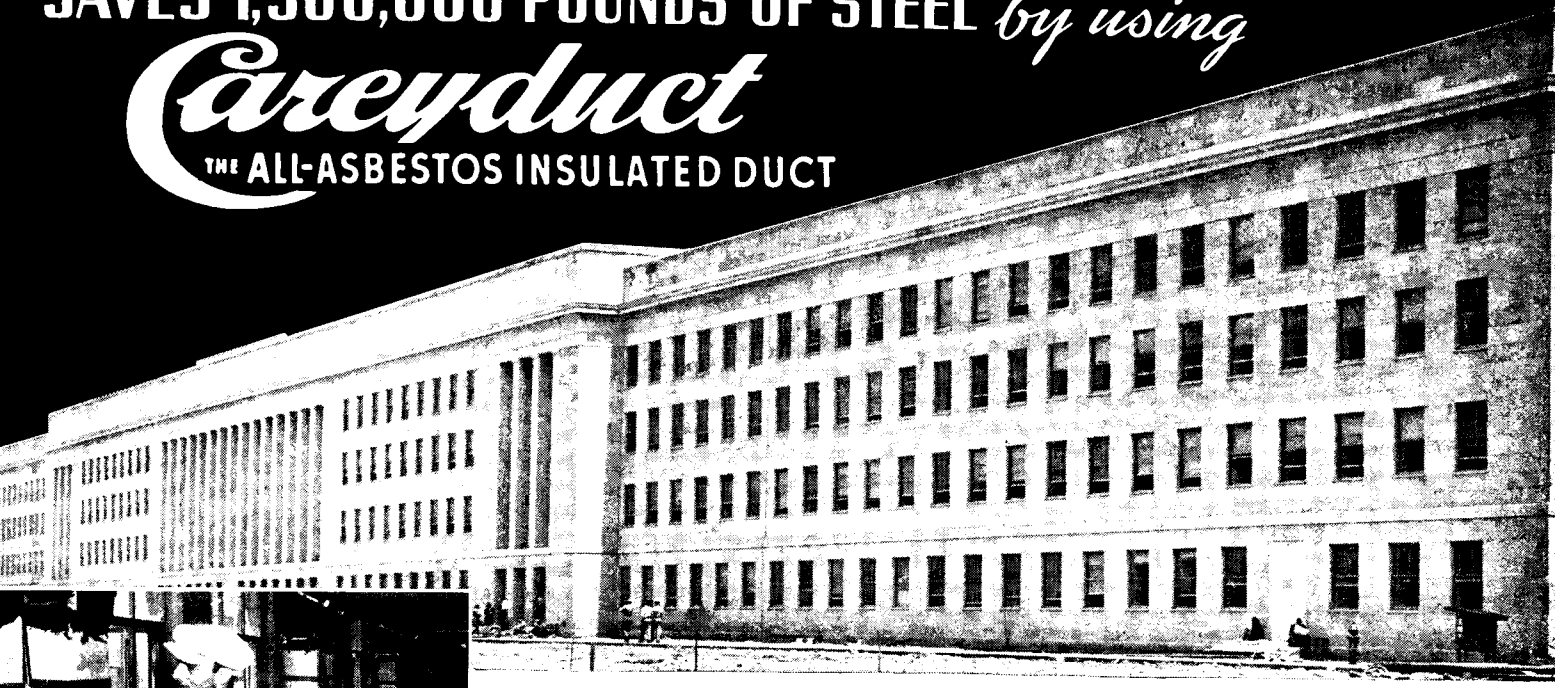

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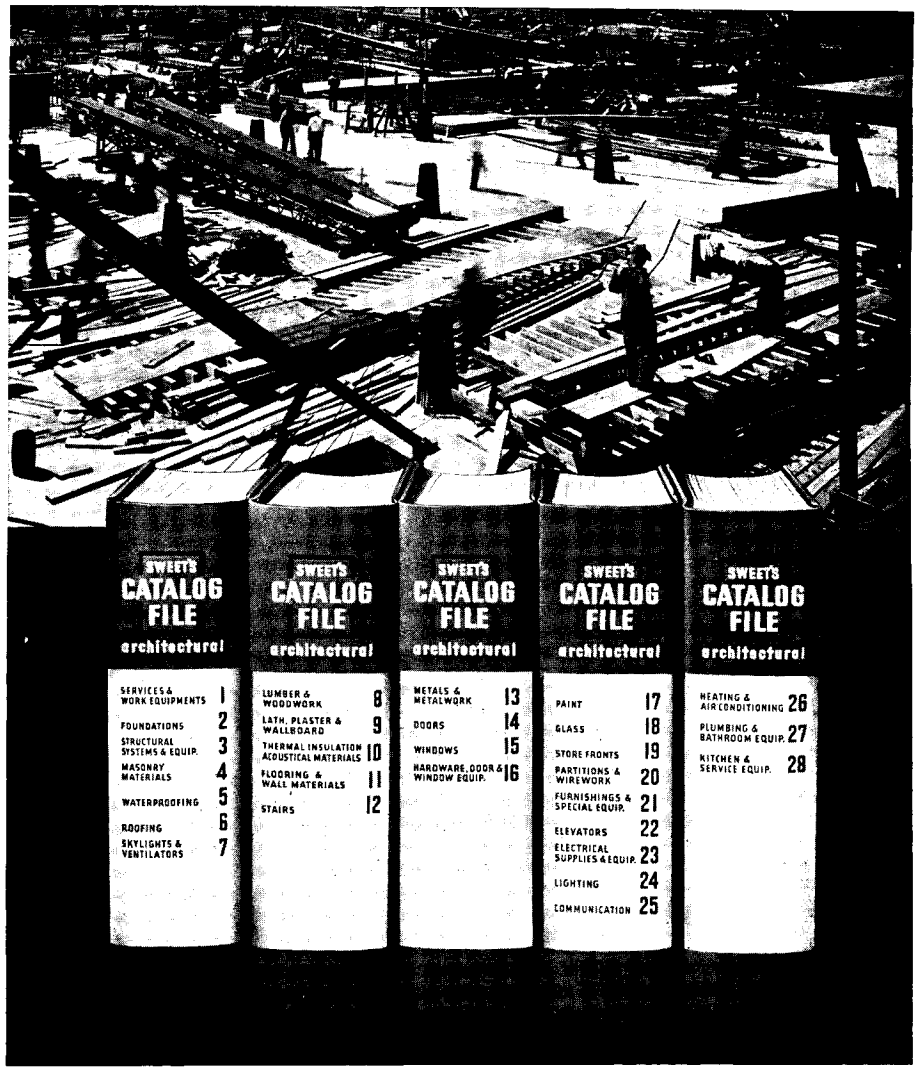

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