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July 1946

ARCHITECTURAL RECORD

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The new method of silencing used in Watrous SILENT-ACTION Flush
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The old method of silencing flush valves is to pass part or all of the
water going to the valve through one or more screens. (Perforated discs or
shot pellets also used). The trouble with this method—as the screen on
your kitchen faucet will quickly show you—is that screens become clogged
and must be cleaned or replaced at frequent intervals.

Also, clogging makes necessary fre-
quent adjustment of the shut-off to
keep the valve working properly.
Building Permits Being Issued Fast • Premium Payments Form a New Tool for Increasing Production • FHA Offers Series of Small-Home Layouts

A mid-summer look at building activity from coast to coast leaves official Washington none too happy, even though occasional bright spots relieve the overhanging gloom. Unprecedented spurts in production could lift lagging programs to the ambitious goals set months ago but agency chiefs foresee no such miracles at present.

Strikes, particularly the coal strike, spotted supplies, black market trouble, slowness of Congress — these and other obstacles plaguing the first six months of the year lay an enormous burden on the last half if the hoped-for number of houses is to materialize by Christmas.

Construction Mounts

Yet, despite reconversion handicaps, construction is moving ahead by leaps and bounds, government men are quick to say. As June rolled in, building permits were being issued almost as fast as in the record-breaking mid-Twenties, they advise, and add that the first four months of the year saw an estimated 315,000 dwelling units started, 215,000 of them conventional in type. FHA reports applications for materials priorities by mid-May involving more than 490,000 new homes.

Housing Expediter Wyatt, on the other hand, warns against unwarranted optimism. These are "start estimates" only, he makes clear, and critical shortages of materials are handicapping builders throughout the country in going ahead with structures. Shortages are expected to extend the construction for most dwellings from the normal four months to six or seven months.

Premiums a New Tool

About the time critical building materials hit their worst period of suffering from the 60-day coal strike, the Veterans Emergency Housing law became effective, giving the government a new tool — premium payments — for securing increases in production.

An inter-agency committee from RFC, OES, CPA, NHA and OPA is arranging assignments through task committees for each critical material. Payments are designed to defray extra costs of expanded production by existing plants, costs of reopening of plants closed during the war, and to draw in certain high-cost plants subsidized during the war but not operating since. Wyatt expresses the belief that price adjustments as a production incentive had gone about as far as they could by late spring.

Sidelong Interesting

Out of the government’s comprehensive reports on civilian production (by CPA) come interesting sidelongs. For instance, new access roads to out-of-the-way government timber stands are expected to add at least 100 million board feet to this year’s lumber production and 500 to 600 million board feet next year. Further, the Forest Service has agreed to overcut South and West timber beyond normal yield for an emergency period as was done during the war.

New green veneer mills near otherwise unlogged timber, plus new plants and new dryers and lathe in existing plants are expected to increase plywood capacity one fourth by Year’s.

On the other hand, flooring manufacturers have been having trouble getting rough lumber. Those with their own sawmills sometimes find it more profitable to sell the lumber than to convert it into flooring.

Cities Must Plan

With the veterans’ housing program under way, Expediter Wyatt is placing emphasis on the role of states and communities in planning home developments. Problems of health and safety regulations, highways to make suburban localities commutable, withholding deferrable public construction, obtaining temporary housing as a stop gap, amending building codes — these are all in the state and community province, he points out.

Expert city planning is vital to the program, he reiterates in speeches and releases, and is equally as important as the quantity aspect. "If the communities jam their houses together on crowded gridiron streets without proper arrangements for light and air, if they fail to provide adequate health facilities," he warns, "they are the ones who will be saddled with the slums these will inevitably become."

Wyatt’s Powers Broad

Not all powers given to the Housing Expediter, under the Veterans Emergency Housing Act, are generally known. For instance, he can order other government agencies, including the Economic Stabilization Office and OPA, to accommodate their actions to the housing program. In fact, he is given all the authority of the Office of War Mobilization and Reconversion to carry out the housing program.

It is understood well enough that he can fix maximum sales prices on new houses, require certification for sales, establish priorities on materials, insure mortgages up to 90 per cent, make premium payments to stimulate production, and provide market guarantees for new type materials and prefabricated homes.

It is less well known that he can arrange price increases for major structural changes or improvements after a first sale under the Act, can forbid export of lumber or other housing materials, and can obtain court injunctions against

(Continued on page 10)

"I'm terribly sorry about our new Tournahayer, sir — we didn't know it was loaded!"

— Drawn for the RECORD by Alan Dunn
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July 1946
sales of houses above ceiling. He can use his "estimate of the necessary current cost" in place of "appraised value" in connection with mortgage insurance.

Besides veterans' requirements, the Housing Expeditor, in establishing priorities, is to give special consideration to "the need for the construction and repair of essential farm buildings" and to "the general need for housing accommodations for sale or rent at moderate prices."

It should be noted that he contemplates using the guarantee of markets in the prefabrication field for "lower cost units incorporating unusual methods of construction or those placing emphasis on materials not normally used in housing, such as aluminum, concrete or plastics."

NHA calls attention to new materials already brought to light, which fall into two general classes: panels or entire dwelling units made from lightweight concrete, and structural panels made from plastics, aluminum and other substitutes for lumber and plywood. The panels, it points out, are adaptable for floors, walls, partitions and roofs.

**FHA Offers Layouts**

In a move to tie in with the veterans' program, the Federal Housing Administration has drawn up a series of small-home layouts for general guidance and use. The agency says that many small homes could have been improved without affecting their cost if FHA minimum planning standards had been followed.

The layouts are suggested subject to conditions in local markets and to individual preferences. Elevations and dimensions have been omitted, says FHA, because of variations in local market preferences and to avoid implication of competition with professional architectural services.

Of six layouts, one is a two-story row house and five are one-story detached dwellings, three without basement. All provide living room, two bedrooms, full kitchen and bath, and some provide separate dining space.

**Home Ownership Up**

Some striking facts have been turned up by the Bureau of Labor Statistics on wartime changes in home ownership. The war period, reports the Bureau, saw a rapid and continuous shift from tenancy to home ownership, a shift more rapid than in the boom decade of the 1920's. With construction of new homes curtailed, much of the increase in ownership came by withdrawal of dwellings from the rental market.

Rent control limited the earnings from rental property, the Bureau points out, and encouraged owners to take advantage of the unrestricted sales market. Most generally affected were single-family rental dwellings, hence adding to the present housing difficulties of veterans. In many instances the ownership is classed as insecure due to sharp increases in sales prices, forced purchases, and temporary residence.

On a regional basis, the Bureau found that for all cities the median increase in the proportion of owner-occupied dwellings was 28 per cent; cities in the Mountain States reported the smallest increase; also low were New England cities with the Middle Atlantic area slightly higher; the largest changes occurred in the Southeastern states.

**NHA to Live on?**

One task facing Congress before mid-July was definite disapproval, if it chose to disapprove, of the President's three reorganization plans for the administrative agencies, including the National Housing Agency, announced May 16. If Congress fails to disapprove any of the plans within 60 days, it automatically becomes effective.

Among other things, Reorganization Plan No. 1, the President explains, consolidates "permanently in one National Housing Agency under the direction of a National Housing Administrator the main activities of the government relating to housing."

In effect, the plan continues the wartime setup. It puts permanently under NHA the Federal Housing Administration, the Federal Public Housing Authority, and the Federal Home Bank Administration. It dissolves the U. S. Housing Corporation of 1918.

**Federal Building Planned**

The architect of the Capitol, David Lynn, has revealed postwar construction plans in and about the Capitol area. Few, if any, of the projects, however, will get under way before next year.

A Federal Courts Building to house the U. S. Court of Appeals and the U. S. District Court is eminent on the list. It will be located on Constitution Avenue about two blocks from the Capitol grounds and will adjoin the District of Columbia Municipal Center. Cost is estimated at $10,300,000.

Other plans include an annex to the Senate Office Building, a garage and park development for the House of Representatives, and extension of the Central East Front of the Capitol Building. A block now occupied by apartments and other structures on the southwest corner of the Capitol grounds is to be purchased later.

**Vital Notes**

In keeping abreast of federal developments in construction, vital odds and ends pile up. Note these:

1. In the wake of a Veterans Administration survey, announced in June, showing more than 60 per cent of a representative group of veterans without suitable homes or apartments three or four months after discharge, NHA is sponsoring a national veterans' housing survey during the two months of
"Beauty Hint" by an Architect

This beauty hint—air conditioning—gets enthusiastic approval from both patrons and beauty salon operators. Refreshingly cool, filtered air, with excess moisture removed, is thoroughly appreciated on a hot summer day. Women make a habit of patronizing air conditioned shops. Operators like it because they can do better work and handle more appointments when they're comfortable.

The ideal air conditioner for a beauty salon—or for any kind of shop or store—is the "Packaged" Air Conditioner by Chrysler Airtemp. It's a simplified form of air conditioning. The well engineered "packages" come ready for quick and easy installation. Very little floor space is required, and the "packages" are so flexible in application that they fit well into any plan. They are easy to move—a big advantage when remodeling or changing locations.

Chrysler Airtemp pioneered "Packaged" Air Conditioners. Behind them is Chrysler Corporation and its fine reputation for engineering and mass production skill—your assurance of high quality at low cost. For details, architects are invited to write to Airtemp Division of Chrysler Corp., Dayton 1, Ohio. In Canada: Therm-O-Rite Products, Ltd., Toronto, Ont.

"Packaged" Air Conditioner

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JULY 1946
June and July. The study, being made by the Census Bureau, will cover both the veterans' housing situation and veterans' housing plans.

2. The Army and Navy Munitions Board is making a survey of underground sites for storage, which in wartime may be adaptable for vital industrial production. However, no present intention of placing industries underground is indicated.

3. CPA and NHA had to cut down drastically on non-housing construction authorization for the month of June and the first half of July.

4. Temporary extension of War Shipping Administration authority to operate as a carrier in intercoastal and coastwise trading was asked of the Interstate Commerce Commission.

5. CPA recently cut in half the amount of plywood a builder can use on a house or apartment.

6. Additional price increases prior to Congressional action on OPA include $2 per thousand board feet on mill prices for round edge northeastern white pine and $3.50 for other northeastern softwood and for Douglas fir on the West Coast; a 23 per cent boost for western pine stock millwork and 26 to 29.6 per cent for fir stock millwork; 4.5 to 12.5 per cent in producer ceilings on hardwood flooring; 20 per cent at the mill level for western pine house moldings.

7. Rosin exports will be curtailed until October 1 to safeguard supplies for housing. (Used particularly in paints, plywood, wallboard, rubber and linoleum.)

8. In the last 12 years FHA has insured loans totaling $2,135,000,000 with only $11,700,000 or 1/10 of 1 per cent declared uncollectible, Commissioner Foley reports.

9. The government expects 1946 construction to near $20 billion. Residential building is expected to reach a peak in the third quarter of the year while industrial construction is expected to climb steadily, quarter by quarter.

Architects' rendering of the new 1400-room Statler Hotel planned for Los Angeles

BUILDING NOTES

New Hotel

Preliminary plans have been announced by the Hotels Statler Co., Inc., for a new 1400-room hotel, to be erected at an estimated cost of $14,000,000 on the company's recently acquired site on the west side of Figueroa St. from Wilshire Blvd. to 7th St., Los Angeles. Holabird and Root are the architects.

Planned to take full advantage of the building code, the new hotel will be such public functions as conventions, group meetings, banquets and luncheons. Included will be a main ballroom with a seating capacity of 1,287, a secondary ballroom, private banquet and dining rooms—all on one floor. Below the ground level will be garage accommodations for 400 cars; an interior motor lobby will directly connect the garage with the hotel proper, and guests arriving by automobile will be able to register and proceed to their rooms without having to pass through the main sections of the lobby.

Hotel Renovation

Complete reconstruction of the ground floor is planned for the Bismarck Hotel in Chicago as part of a modernization program estimated to cost $1,000,000. Work will begin as soon as materials are available.

Existing shops and stores on the ground floor, including the "165 Cocktail Lounge," will be moved, rebuilt or replaced. These, and a proposed street floor restaurant, will be built of a combination of new materials emphasizing structural glass and metals. The main lobby on the second floor will be rearranged so that all services, such as transportation, theater tickets, public telephones, telegraph and public stenographer, will be conveniently grouped at one end in an area to be known as the Service Center. The west end of the lobby will be shortened to accommodate

Proposed entrance to the Bismarck Hotel, Chicago, following extensive reconstruction

(Continued on page 14)
whether you're inside looking out...

This exclusive Truscon design will produce striking architectural effects in keeping with the modern emphasis on horizontal lines. In addition, the unique advantage of completely controlled ventilation to suit varying climatic conditions, and the outstanding advantage of positive insect screen protection at all times, offers functional superiority that is difficult to match in any other type of window.

or outside looking in!

Recognition of the above Truscon features is rapidly expanding the usage of the Maxim-Air design in hospitals, institutions, schools and office buildings.

See SWEETS for full mechanical details of this efficient, good-looking window.

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(Continued from page 12)

reception rooms for newly created banquet space.

A new hotel entrance will be to the east of the present entrance, with revolving glass doors leading into a small foyer. Opposite the door will be a flower shop with glass walls from floor to ceiling so that floral window displays may enhance the attractiveness of the foyer.

An escalator, just inside the new main entrance and parallel to the building's front wall, will be of extra width to permit guests and bellboys to carry luggage with maximum comfort. The escalator will lead to the main lobby, with luggage racks at the top of the well to facilitate the handling of luggage in the lobby.

Air conditioning, at present confined to the dining rooms, cocktail lounges and private dining rooms, will be extended to the entire building including all guest rooms and public areas. Sidewalks outside the hotel will be heated in winter to protect guests from the hazards of snow and ice, and a new sidewalk-width canopy will be installed, extending from the hotel entrance to the adjoining Palace Theater. The entire modernization program is under the supervision of Kem Weber, West Coast designer.

Housing Projects

Contracts for the architectural design of Farragut Houses in Brooklyn and Stephen Foster Houses in East Harlem have been awarded by the New York City Housing Authority to the firm of Fellheimer and Wagner and Karl A. Vollmer, Associate, and to William I. Hohausner respectively.

The two recently approved state-aided projects will have a total estimated capacity of 2,720 families. Each will have a children's center and space for social and craft rooms.

London Plans

The ribbon-building indulged in after World War I is not to be repeated in England, reports Joan Littlefield from London, but instead every effort is being made to build in neighborhood units, each containing its own shops, school, community center, library and clinic.

Many London boroughs have schemes ready to go into operation the moment men and materials are available. On a 9.54-acre estate in Becher Street, Kensington, for example, the local council plans to erect 302 dwellings, giving a density of 32.5 homes and 136 persons per acre. There will be 20 houses of six rooms for the larger families up to eight persons; 48 four-room apartments for families of five; 24 larger four-room apartments which will accommodate

(Continued on page 16)
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(Continued from page 14)

six: 96 three-room apartments for four; and 18 one-room suites for single people. These will be contained in three-story blocks. There will also be eight-story blocks comprising 64 three-room and 32 two-room apartments. The buildings, planned in a north-south direction to receive both morning and afternoon sun, will be separated by grassed and tree-planted courtyards. By raising the midsection of the two eight-story blocks by a floor and a half above normal ground level, ample height is provided below for a social center, with tenants' club room in the front block and a nursery playroom with milkbar in the rear block. All apartments will have private balconies; utility rooms with laundry appliances are provided in the three-story blocks.

NEW ZONING LAW

The Los Angeles City Council has adopted a new comprehensive zoning ordinance, prepared and submitted by the City Planning Commission.

The new ordinance contains many new and important zoning features such as off-street parking and loading, removal of non-conforming uses, agricultural zoning in the San Fernando Valley, etc. It embraces 16 zones: two agricultural, one suburban, five dwelling, four commercial, one central business, and three industrial. Each zone is under a separate section of the ordinance and embraces all of the use, height and area regulations pertaining thereto, save for certain provisions and exceptions of a general nature.

Earl O. Mills, planning consultant of St. Louis, Mo., served as consultant to the Planning Commission and prepared the text of the new ordinance.

AIRPORT PLANNING

RADAR CONTROL TOWER

The first radar-equipped control tower for civilian flying was unveiled at the Indianapolis Airport on May 24 by the Civil Aeronautics Administration.

The tower employs a console screen, constructed by the CAA after many experiments with military versions of radar equipment, to give the controller a "plan-picture" of all aircraft within 30 miles of the airport. The picture appears on a cathode ray tube screen, 12 in. in diameter, and from it the regular control tower operator safely and speedily can schedule departure and approach of aircraft without being hampered by poor visibility.

The basic radar equipment which supplies signals to the tower screen is known as the Navy "SG." It was built by the Raytheon Co. and modified at Indianapolis under direction of Raytheon engineers

(Continued on page 18)
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the WADE
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DRAINS AND PLUMBING SPECIALTIES
ELGIN, ILLINOIS

JULY 1946
THE RECORD REPORTS

(Continued from page 16)

to include many late improvements developed for the Navy. Among these are the Moving Target Indication, which allows only moving aircraft to appear on the screen, eliminating disturbing "ground clutter" from reflection of waves by nearby objects. Another change is installation of an improved search antenna, which rotates on top of a 65-ft. steel tower. This permits the CAA operator to "see" airplanes at high elevation above the station as well as those at horizontal distances.

Instrument Landing

Instrument landing systems are now being installed by the CAA at 81 airports throughout the country, 31 of them for the Army. In the next fiscal year an additional 31 systems will be installed for civil use. The system consists of a localizer, glide path and marker beacons.

CONSTRUCTION UP AGAIN

Construction contracts were awarded for 52,733 projects costing $74,911,000 in the 37 states east of the Rocky Mountains in April to top March's total of $697,593,000 and that of April of last year, which amounted to $395,798,000, F. W. Dodge Corporation figures show.

That architects, engineers and building organizations are breaking construction records established during the war years by substantial amounts is reflected in the dollar volume totals for the first four months. This year's January to April contracts amounted to $2,177,404,000 in the eastern states, compared with $1,859,944,000 in the corresponding period of 1942 when wartime volume was highest.

Residential construction contracts in April totaled $370,590,000, which represented an eight-fold gain over the corresponding month of last year, and a gain of nearly $100,000,000 over March. More than 50,000 residential units are called for in the April awards, all but 2 per cent, as measured by dollar volume, being private construction as differentiated from publicly-owned dwellings.

Nonresidential building declined slightly in April from March's total and that of April last year, reflecting an anticipated trend resulting from the Civilian Production Administration's Veterans Housing Program Order No. 1 issued on March 26. The comparative nonresidential construction contract totals follow: April, 1946, $236,182,000; March, 1946, $278,725,000; April, 1945, $241,107,000.

G.I. HOUSING HELP

A "Veterans' Home Guidance Service" has been organized in Philadelphia to

(Continued on page 134)
EVERY ROOM IN THE HOUSE

a world of modern comfort, built with STEEL insulation

Wherever new homes are being built . . . wherever old homes are being remodelled . . . more and more architects and builders are specifying Ferro-Therm, the modern reflective all-steel insulation . . . that keeps 90 to 95% of all radiant heat just where it belongs . . . Reduces fuel costs by 20-30% . . . Remains 100% efficient for the life of the building.

Ferro-Therm, for all its steel sturdiness, is thin and flexible . . . and comes in light, easy-to-handle sheets . . . ready for immediate and permanent installation . . . Also ideal for special remodelling jobs where the right kind of insulation transforms a musty attic or cold, damp cellar into a comfortable playroom, den or library . . . Write for information.

EVALUATE BEFORE YOU INSULATE

Ferro-Therm

Reg. U. S. Pat. Off

AMERICAN FLANGE & MANUFACTURING CO., INC. STEEL INSULATION 30 ROCKEFELLER PLAZA, N. Y. 20, N. Y.
The index numbers shown are for combined material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926–29 for that particular type — considered 100.

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.,

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.
\[
\frac{110 - 95}{95} = 0.158
\]

Conversely: costs in B are approximately 14 per cent lower than in A.
\[
\frac{110 - 95}{110} = 0.136
\]

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926–29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published legal prices, thus, indexes reflect minimum costs and not necessarily actual costs.

These index numbers will appear whenever changes are significant.
BRIXMENT MORTAR
Is More Plastic

To compare the plasticity of any two mortars, try shoving a brick into place, with a full head joint. The more plastic the mortar, the easier the work. Try this with Brixment mortar!

AND GOOD PLASTICITY
IS THE FIRST REQUIREMENT OF GOOD MORTAR

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

One of the outstanding characteristics of Brixment mortar is its unusual plasticity. For twenty-five years, bricklayers all over the United States have agreed that the workability of Brixment is comparable to that of straight lime putty. This exceptional plasticity makes it easy for the bricklayer to secure neat, economical brickwork, with the brick properly bedded, and the joints well filled. And because of this unusual plasticity, a bag of Brixment will carry three full cubic feet of sand and still make an ideally workable mortar.

LOUISVILLE CEMENT CO., Incorporated, LOUISVILLE 2, KENTUCKY
CEMENT MANUFACTURERS SINCE 1830
then he said to himself:

Tell the people what's cookin'

Master of the picturesque is Fiorello H. LaGuardia. Asked why he chose a radio spot after relinquishing the Mayor spot in New York... his simple answer:

“People ought to be told what’s going on.”

And, there’s plenty going on in industry that people can be told about:

... new designs ... new techniques that give the people more value for less money. For example:
LOOK, MR. LA GUARDIA, how architects and engineers are stepping out in front with welded design:

"Cooking" with Welded Design

CREATING A BETTER FACTORY. Improvements such as this rigid frame structure are made possible by arc welding. Improves appearance and lighting. Reduces maintenance. Cuts tonnage 15% to 25%. Only 300 man-hours required for erection of this 50 ft. x 179 ft. structure because of maximum use of pre-fabrication. Frames built from 18" x 85 lb. beams. Purlins are 10" x 15 lb. Crane beams are 18" x 47 lb. reinforced with 10" channel welded to top flange (see sketch). Courtesy: Crown Iron Works Co., Minneapolis.

SIMPLIFYING ROOF INSTALLATION. Panels of 20-gauge formed sections are applied by plug welding them to purlins. Enamel was broken with a hammer, and 3/4" "Fleetweld 5" with 200 amps. penetrated through sheet and welded it to purlin. Total of 1680 welds made in 14 hours. Architect: Cutting & Ciresi, Cleveland.

30% LIGHTER. Welded design of lateral bracing eliminates lacing bars, rivets, ring fillers and tie plates—cuts weight 30%—is rigid, strong, streamlined, and easy to paint and maintain. Members are made of standard shapes and plate. Conventional riveted design shown on left. Full discussion in S.S.A.W. Plate 102. Free on request to structural engineers and designers.

THE LINCOLN ELECTRIC COMPANY • DEPT. 322 • CLEVELAND 1, OHIO

America's greatest natural recourse

ARC WELDING

JULY 1946
Cooled from Maine to Miami

View of typical Howard Johnson's, air conditioned with "Freon." Even when outside dry bulb readings soar to 95°F. or above, room temperatures of 10" to 15" cooler at 50% relative humidity are maintained for shock-less comfort.

...AND USING "FREON"
SAFE REFRIGERANTS

Over a hundred of the famed Howard Johnson's restaurants, catering to America-on-wheels from Maine to Miami, are air conditioned by equipment using "Freon" safe refrigerants. These cool, comfortable dining rooms rest and refresh the traveler—make him want to stop at a Johnson's again.

"Freon" refrigerants assure dependable, efficient and safe performance in modern air conditioning systems. They are odorless, non-toxic, non-flammable...even direct contact will not harm foods. That is why architects and engineers everywhere endorse "Freon" for protective insurance in restaurants and all other types of buildings.

In Johnson's restaurants, "Freon" refrigerants are used in York, Air-Temp and Carrier air conditioning units of from forty to ninety h.p. The purity and low moisture content of "Freon" add years of life to these compact, modern systems...vital parts won't corrode.

Carry the safety and long-range profitability of "Freon" in mind with you to your drafting board...specify equipment designed to utilize the advantages and the benefits of "Freon" refrigerants. Write for complete information for your files. Kinetic Chemicals, Inc., Tenth and Market Streets, Wilmington, Delaware.

FREON
safe refrigerants

"FREON" IS KINETIC'S REGISTERED TRADE MARK FOR ITS FLUORINE REFRIGERANTS AND PROPELLANTS.
"Another convert to the LOYAL ORDER OF NOODLERS!"
said Nilmerg.

DESIGNER: Is that a new secret Society?

NILMERG: There's nothing secret about it. I see you using one of those wonderful COLUMBUS Crayon Pencils — therefore I know you are a Noodler.

DESIGNER: You refer to my practice of noodling up drawings by giving them extra brilliance and verve with broad strokes of this thick crayon pencil?

NILMERG: Indubitably. And that's just the pencil for it, too. COLUMBUS Colored Crayon has a wax composition with superb adhering qualities for broad area layouts, sketches, renderings, map making, etcetera.

DESIGNER: Want to know a trade secret? COLUMBUS Crayon makes me feel like a bloomin' Botticelli. I get vivid effects that go over swell with clients.

NILMERG: I have heard many artists, architects, engineers and draftsmen express similar sentiments.

DESIGNER: Little man, you are a benefactor to the Knights of the Drawing Table.

NILMERG: Thank you — and when ordering from your Dealer, be sure to get the whole COLUMBUS range — red, blue, black, brown, orange, white, yellow, vermilion, carmine, purple, green, light green, and combination red-and-blue.
and Blandfield in Essex County. And Richard Talliaferro is offered as the very probable architect of Rosewell, Sabine Hall, Wythe House and others.

The more than 350 photographs including both interiors and exteriors, and many details, are supplemented with numerous floor plans and elevations. A particularly useful feature of the book is the alphabetical summary giving the basic facts about each of the mansions discussed. Also included are over seven pages of bibliography and a glossary of architectural terms.

DOCTOR OF INDUSTRY

"It should not have required the development of an atomic bomb to direct attention to the political importance of science and engineering," writes Mr. Mills in his preface to this survey of the engineer's place in society. "Science has much it can contribute if its workers will undertake the task," he continues. "In its methods and their objectivity it has a promising untried technique for the solution of social problems which have been amplified by the elimination of 'remoteness' from the vocabulary of geography."

Although primarily concerned with the research scientist in industry, this highly interesting volume has many a bee to put into the bonnet of the engineer in any field of endeavor. Mr. Mills draws on 45 years of "intimate association with creative workers in science" for the observations and conclusions he presents — observations and conclusions on such varying topics as the round-peg-in-a-square-hole type of employment, the workability of aptitude tests, salary curves, and "exposition for engineers."

To that last subject Mr. Mills devotes six chapters of exemplary exposition pointing up the need for clear thinking and writing in the engineering field.

SMALL TOWN CANVAS

Here is a new approach to town planning: a report on the artistic resources of a community, "and the means by which its citizens have exploited them during the ninety-odd years of its existence."

In other words, here is a study of the cultural background of a community, offered as a basis upon which to plan for future development.

As Prof. Schmeckebier points out, this report demonstrates that "there is such a thing as art to be found in the average small community. It is, furthermore, one of the richest and most direct expressions of cultural life and has gone through a stylistic evolution parallel in many ways to the artistic and cultural growth of the country as a whole."

Several facts come hobbing up to the surface in this study. First, that Red Wing has a distinctive character of its own despite the hodgepodge miriory of some of her architecture. Second, that where local materials and labor have been used, the result has been more pleasing and more in character. Third, that much of the commercial and business district of the town are pretty bad, but utterly typical of the small community all over the country. And fourth, that with wise planning, based on a sure knowledge of the town's history and existing character, the inherent beauty of the place can be made to overcome its superficial and borrowed ugliness.

FUN IN THE FAR NORTH

Looking toward the expected influx of tourists into Alaska now that the war is over, the National Park Service has prepared this handsome report on the Territory's recreational possibilities. The greater part of the booklet is given over to a description of Alaska's chief drawing cards — a description enthusiastic and vivid enough to give any reader the wanderlust — and to a discussion of the existing facilities for the traveler. The balance is devoted to a carefully worked out plan for future development.

Some of the details of that plan are breathtaking in scope: development at Mentasta Lake of an area of approximately 6,400 acres as a vacation center to accommodate a maximum of 250 visitors at one time; establishment of major overnight tourist stopping-places at intervals of about 35 miles along the Alaska Highway and other roads in the Territory; reservation of a width of 300 feet on each side of the center line of traveled way of all roads as a right-of-way to protect scenic attractiveness. Sample plans and sketches of communities, lodges, cabins and recreational facilities are included.

BUILDING CONTROL

One of the highlights of this new edition of the Pacific Coast code is inclusion (Continued on page 26)
11,000,000 NEW AMERICAN HOMES... WILL BE BUILT DURING THE NEXT FEW YEARS

America must have 11 million new homes within the next 10 or 12 years. These homes will be heated by the plants you design, specify or install. The heating facilities you select will be one of the major factors in determining market value, sales appeal and owner satisfaction.

A coal heating plant is the most economical of all to operate and maintain. It is the only installation that can be converted to all other types of heating — this is important.

When you design or build, play safe, provide coal storage space and chimneys adequate for any fuel. Design for coal... "Fuel Satisfaction". It is economical, clean, quiet, odorless and abundant.

Norfolk and Western RAILWAY CARRIER OF FUEL SATISFACTION

Hand Fired Semi-Automatic
Hot Water or Steam Fully Automatic
Hot Air In any type of heating, coal will do it better.
Airways to More Output
Reduced Rejects
and Less Time Off!

The improved Burt Monovent, as shown in the installation above, makes the roof ridge of your factory a gigantic valve that exhausts smoke laden, hot air along the entire length of the structure.

The Monovent assures better working conditions, which result in less absenteeism, improved product quality, maximum output and fewer accidents.

Particularly well adapted to metal working, but with applications throughout all industry, the Burt Monovent Continuous Ridge Ventilator is economical to install, and maintain, is highly efficient and blends architecturally with building lines.

Write—now for catalog and data sheets on Burt Monovent. It is one of Burt's complete line of ventilators which includes a size and type for every ventilating need.

The BURT MFG. Co.
48 E. South Street • Akron, Ohio, U.S.A.
MANUFACTURERS OF VENTILATORS, LOUVERS, OIL FILTERS, EXHAUST HEADS AND SHEET METAL SPECIALTY PRODUCTS

REQUIRED READING

(Continued from page 26)
of a chapter on prefabricated construction; another is the complete revision of the chapter on masonry. The entire code has been modernized to recognize new materials and to permit new uses of old materials, and throughout the results desired have been specified rather than the dimensions limited. The sole exception to this policy is in the chapter on masonry, where minimum dimensions of masonry-bearing walls are specified.

COLORADO CODE


Here is another good basic code, intended for easy adaptation to local conditions. As stated in the foreword, it "does not attempt to dictate choice of materials," but confines its stipulations to provisions for safety and health. Electrical and plumbing requirements are included, and one section covers plywood construction. To assist in the adoption of the code throughout the state, an appendix offers an outline of procedure for an unincorporated area to become eligible for the establishment of such a measure under the Colorado state law. Models of required petitions and a model resolution to be passed by the Board of County Commissioners also are provided.

Periodical Literature

HOSPITAL DESIGN

Changing Concepts in Hospital Function. ... A Vital Consideration in Design. By Harvey Agnew, M.D. Toronto 1, Can. (57 Queen St. W.), Journal, Royal Architectural Institute of Canada, April, 1946, pp. 75-78.

"Of particular difficulty in determining the function — the many functions — of a hospital is the fact that these functions are never static," writes Dr. Agnew in this very timely and interesting article on hospital design. With no waste of words he tells of some of the changes of the past few years: new facilities provided, changes in procedures, trends toward shorter hospitalization periods and more specialized training of personnel, and so on. He discusses the relative importance of capital and operating costs, the effects of the shorter working day and the higher wages, the space-saving possibilities of more flexible planning, the probable effects of health insurance or socialized medicine. And last but most important to the architect, he suggests the various

(Continued on page 150)
VULCAN RADI-VCTOR combines radiant and convection heating at the base of cold walls to actuate gently circulating warm air for uniform heating comfort.

Since Radi-Vector’s compact construction requires but 1 1/4” extension from walls when recessed 3/4” or flush with studs, room space is appreciably conserved, for neat appearance . . . greater room utility.

Both hot water or 2-pipe steam heating systems are equally well served. Send for Catalog No. 50 for full details.

Sketch shows metal backing, finned heating unit and easily removable grille cover . . . unobtrusive yet highly efficient.

Representatives in Principal Cities

THE VULCAN RADIATOR CO. 26 FRANCIS AVENUE, HARTFORD 6, CONN.
RADIATOR MANUFACTURERS FOR OVER TWO DECADES
In Boat Building or Plant Wiring, Thoughtlessness Comes High

Enthusiastic skippers have been known to build boats in their cellars — and tear down cellar walls later on! Some planners of electrical systems have also lacked essential foresight, and have found that this lack proved even more costly.

Only Adequate Wiring can equip an industrial building for future growth, can insure systems that supply present and future power and lighting demands at the lowest cost per kilowatt consumed. Let an Okonite engineer work with you in planning full electrical efficiency with an eye on tomorrow as well as today. The Okonite Company, Passaic, New Jersey.
STEEL DECK...

for ROOFS and SIDEWALLS

Mahon Steel Deck has already received nationwide acclaim for roof and sidewall construction in modern industrial buildings... it offers possibilities in modern architectural treatment in overall design... its versatility in application and the fact that it can be insulated to any desired degree—in either roof or sidewall construction, make it universally adaptable to any type of structure. Mahon Steel Deck is now available in Cold Rolled Steel, High Tensile Alloy Steels, Galvanized Steel, and Aluminum, in any desired length up to 60 feet, to provide continuous unbroken surfaces in sidewall construction. See insert in Sweet's, or call in a Mahon representative for complete information.

THE R. C. MAHON COMPANY
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Representatives in all Principal Cities

Manufacturers of Steel Deck for Roofs, Sidewalls, Ceilings, Floors, Partitions and Doors. Also, Roof Sumps and Recesses, Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.
What would Watt do—today?

What Watt didn't have to cope with was high velocity steam. High temperatures. High pressure.

Today he'd have to learn how to beat corrosion and erosion.

*Engineers in modern steam power plants could tell him how. They've licked many of today's steam problems—with Monel.*

That's why you find this rustproof nickel alloy in vital spots throughout the powerhouse. Typical examples are pump shafts, liners and sleeves—gaskets, orifice plates, feed-water heater tubes, water columns, evaporators, water strainers and various parts of soot blowers, meters and regulators. These are only some of the places where Monel does a top-notch job.

This readily fabricated, corrosion-resistant alloy is strong, tough and rigid. It endures continuous stresses at steam temperatures. It withstands fatigue.

These qualities of Monel are equally important for building construction applications. In only a few places, of course, are conditions as severe as in steam power plants. Yet there are plenty of jobs which call for complete dependability. Lath tie-wire for suspended ceilings, to mention just one.

From cellar to roof, spot Monel in buildings you design. Specify its use in pumps, faucets, flush valves. Remember it for food service and laundry equipment, for refrigeration and air conditioning units. Consider the advantages of Monel roofing, ventilators, skylight frames, flashing, cornices and gutters.

*Wherever it's used, Monel keeps maintenance costs down, service up.*

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall Street, New York 5, N.Y.

**MONEL...** for minimum maintenance
A & P—Woolworth—United Whelan—Safeway—and, the Pentagon Building, for instance! There’s 4 million square feet of Kentile on those much-abused Pentagon floors. And there’s 20 miles of corridor floors in Rockefeller Center that have been Kentile-covered 14 years ago, —and still show no signs of wear!

WHERE THERE’S TRAFFIC—THERE’S KENTILE

If Kentile can take the toughest chain store and public corridor traffic, Kentile can answer your traffic problems, too ... for it’s the same Kentile ... practically impervious to wear, shock-and-sound absorbing, easy to clean and easy on the feet! And, remember, Kentile is the lowest cost long wearing, resilient floor covering sold, foot by foot, every time! Nor is that all! It lasts infinitely longer. And when replacements or floor alterations are necessary, only that area need be changed—not the whole floor. If you haven’t met this wonder flooring, send for our free booklet ... or ask your nearest Kentile dealer.

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DESIGN YOUR OWN! Kentile is sold—and laid—in squares of solid colors or marbleized effects, permitting you an endless variety of color combinations, and border and panel designs. Which means, with Kentile, you direct traffic as you’d have it go—

THE WHOLE STORY! Altogether, Kentile offers 15 different advantages—all told in the new, full-color catalogue showing the Kentile colors and some of the countless patterns possible—plus full-color pictures of Kentile in use. Send for your copy today —no obligation.
'Way Off There in '96

Nineteen ninety-six. Those Von Duprin exit devices you demanded for the school doors back in '96 have served for fifty years. The children who first operated them are graying fast. Their children, and their children's children, have passed through those protected doorways...and long since left. Scores of husky halfbacks have perfected their attacks by the running stride...still applying perfectly...still providing the utmost in safe, quick, economical exit. They were built to do just that.
EASY TO MAINTAIN

Stainless steel vault is lastingly attractive

This safe-deposit vault will be as new looking many years from now as it is today. Its attractive appearance is easily maintained for the hard, polished surface of stainless steel is highly resistant to scratches, rust, and corrosion and will not tarnish. Stainless steel is being used increasingly for industrial and architectural purposes because it has so many desirable qualities in addition to its beauty and permanence.

To keep informed of new architectural and other uses of stainless and other alloy steels, ask to receive the monthly publication, ELECTROMET REVIEW. If you need information on the production, properties, or fabrication of these steels, write our Technical Service Department. We do not make steel, but we do produce the ferro-alloys which are used in its manufacture, and our engineers have accumulated a fund of information on the use of stainless steel in many industries.

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STAINLESS STEEL

BEAUTIFUL ENDURING STRONG TOUGH
Many architects originally recommended PC Glass Block construction to their clients as the best available means of solving individual operating problems. But they have since learned by experience that PC Glass Blocks also effect actual savings in operating costs.

Generous supplies of natural light—directed into remote areas—increase productive working space and reduce lighting costs.

The dead air-space inside the PC Glass Blocks gives even the larger panels sufficient insulating value to reduce heat losses, to decrease wear and tear on heating equipment, to effect savings in fuel costs.

In PC Glass Block construction there is no sash to need repairs, replacement or frequent repainting. Cleaning is quick, easy. That means important savings in maintenance cost.

When your clients are ready to go ahead with new buildings or to remodel present plants, you can safely recommend PC Glass Blocks. For the results will be improved appearance, better working conditions, long, trouble-free service—and actual money savings. Write today for complete information on PC Glass Blocks. Pittsburgh Corning Corporation, Room 346, 632 Duquesne Way, Pittsburgh 22, Pennsylvania.

Also makers of PC Foaming Insulation

The plus factor with PC GLASS BLOCKS ... Economy!
How Kimpreg* puts plywood in the plastics class

PERMANENT PLASTIC SURFACE—An insoluble, flinty armor against wear and weather—that’s what Kimpreg* means to plywood! Water-resistant, parasite-proof, durable. Kimpreg increases the abrasion resistance of plywood up to 5 times when dry; up to 33 times when wet.

FUSED-IN BEAUTY—The colors of Kimpreg Plastic Surfacing are fused-in—stain-proof and washable. They are unaffected by weak organic or inorganic acids, alkalies, or common solvents... completely impervious to alcohol. Kimpreg beauty protects and endures.

FREE—NEW KIMPREG FACT BOOK—Find out how Kimpreg + Plywood can work usefully for you. Get this colorful new book on Kimpreg. Full specifications... distinctive advantages... and application ideas you can use successfully. Mail the coupon for your free copy today!

Kimberly-Clark Corp., Neenah, Wis. Please send me the new free Kimpreg Book and names of manufacturers making plywood surfaced with Kimpreg.

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JULY 1946
What keeps the 'gator feeling great
can keep your clients happy, too!

Over 90 years of successful roofing experience has demonstrated the sound value of the gravel or slag wearing surface of a Barrett Specification® Roof:

1. It holds in place the heavy-poured (not mopped) top coat of coal-tar pitch—providing a doubly thick waterproof covering.

2. It provides protection against the sun's actinic rays which otherwise dry out the valuable oils in roofing bitumens.

3. It protects the roof against mechanical damage, hail and wind, wear and tear.

4. It interposes a surface of fireproof rock between the building and flying embers—makes a roof that carries Fire Underwriters' Class A Rating.

The Alligator gets plenty of wear and tear as he slashes through the swamps. Does it worry him? Not a bit. He knows his armored wearing surface will keep him safe and sound.

The Barrett Specification® Roof, with its armored wearing surface of gravel or slag, provides comparable protection for building structures. It's so tough and long-wearing it can be bonded against repairs and maintenance expense for as long as 20 years.

Built up of alternate layers of coal-tar pitch and felt, topped by a thick pouring of pitch to anchor the gravel or slag wearing surface, it is the toughest, longest-lasting built-up roof made. It is waterproof, fire-safe, sun-resistant, and armored against mechanical damage.

As a service to your clients, recommend Barrett Specification Roofs on the buildings you design. The Atomic Bomb Plant at Oak Ridge, Tenn., the Empire State and R.C.A. buildings in New York, and many other famous American buildings—all Barrett-roofed—confirm the soundness of your recommendation.

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BUILD WITH
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Easy to Design with ... Easy to Build with

ARCHITECTS find Stran-Steel practical and economical to use. It provides durable, rigid, fire-safe framing of lightweight steel, yet permits wide flexibility in working out designs.

BUILDERS like to work with Stran-Steel. Pre-cut to required lengths, the framing members are assembled with self-threading screws. Other building materials are simply nailed to the frame by means of the nailing groove, a patented feature of all Stran-Steel studs and joists, which grips nails as in a vise, holds them permanently and securely. The frame goes up quickly, without the use of special tools or equipment.

PROSPECTIVE BUYERS are quick to appreciate the advantages of Stran-Steel. It gives homes, apartments, stores and industrial buildings a greater investment value, since sag-, rot- and termite-proof framing means lower maintenance costs.

For full details, see Sweet's File, Architectural, Sweet's File for Builders, or the January issue of Building Supply News.

GREAT LAKES STEEL CORPORATION
Stran-Steel Division • Penobscot Building • Detroit 26, Michigan
UNIT OF NATIONAL STEEL CORPORATION
The illustrations on this page show a few of the ingenious and attractive corner treatments featured in the new Weldwood Plywood installation booklet.

With Weldwood you can achieve charming and unusual architectural effects... save plaster costs and headaches, too.

Made in the finest domestic and imported woods, Weldwood provides an infinite variety of exquisite grains and subtle tones.

And remember, Weldwood Plywood is guaranteed to outlast any building in which it is used.

Send for free booklet

The new Weldwood Installation Booklet is profusely illustrated with photographs and detailed drawings. It gives a fund of useful information concerning Weldwood's many advantages, and its place in today's building picture. Send for your free file copy today.

1. This Weldwood Snap-in Internal Corner, made of wood veneer mounted on thin, flexible metal, harmonizes gracefully with modern curved architectural effects. Glue is applied between the backing-strip and stud, and the entire corner assembly is snapped into position.

2. Internal corner, showing fir sticks finished with standard ⅜ x 1⅜ inch cove mold set between panels.

3. Attractive external corner with fir sticks, finished with standard one-piece corner molding.

4. Internal corner showing Weldwood applied direct to framing with ⅜ inch vent opening and stock ¾ x 1¾ inch cove molding.
Name the DRYING SPEED...

Red Lead can meet it

Through the years, Red Lead's effectiveness in fighting rust has won it general acceptance by industry as the standard for metal protection.

Perhaps less generally known, however, is that Red Lead's extra protection is available in an extensive range of paint formulations to give you the drying speed you need.

This wide choice is due to Red Lead's compatibility with the many types of paint vehicles in use today. It can be combined with the new synthetic resins, modified synthetics, natural resins, drying oils and other vehicles.

So, whether painting schedules demand quick drying, or whether normal drying time is permitted, remember, you can take full advantage of the plus protection that has made Red Lead famous.

Why RED LEAD Means Extra Rust Protection

Red Lead has the property of counteracting acid conditions, recognized as accelerators of rust. In the presence of various acids, Red Lead forms insoluble lead salts at the approximate rate at which the acids are supplied.

This is true whether the acid originates from acid-forming environments, such as gas, smoke and moisture in the atmosphere, or from the decomposition of the vehicle. Thus, a rust-inhibiting condition is maintained with a Red Lead paint.

Red Lead also forms an adherent protective shield which prevents electro-chemical action, another prime cause of rusting.

Specify RED LEAD for All Metal Protective Paints

The value of Red Lead as a rust preventive is most fully realized in a metal paint where it is the only pigment used. However, its rust-resistant properties are so pronounced that it also improves any multiple pigment paint.

No matter what price you pay, you'll get a better paint for surface protection of metal, if it contains Red Lead.

Write for New Booklet—"Red Lead in Corrosion Resistant Paints" is an up-to-date, authoritative guide for those responsible for specifying and formulating paint for structural iron and steel. It describes in detail the scientific reasons why Red Lead gives superior protection. It also includes typical specification formulas—ranging from Red Lead-Linseed Oil paints to Red Lead-Mixed Pigment-Varnish types. If you haven't received your copy, address nearest branch listed below.

NATIONAL LEAD COMPANY: New York 8; Buffalo 3; Chicago 88; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 19; Boston 6; (National Lead Co. of Mass.); Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 30; (National Lead Co. of Pa.); Charleston 25, W. Va., (Evans Lead Division.)
THAT PROTECTS YOUR CLIENTS!

Floors get more use and abuse than any other part of a building. It is obvious, therefore, that the cost of keeping floors clean and attractive is an important factor in determining what floor should be used. The location of a floor, the use to which it is put, the volume of traffic over it—all are factors that help determine what kind of a maintenance program is necessary.

In building Tile-Tex Asphalt Tile, we have tried to recognize this fact by providing it with the smoothest, most cleanable surface possible—so that any maintenance program for Tile-Tex Asphalt Tile starts with the advantage of a better, easier-to-clean surface.

Good maintenance on Tile-Tex Asphalt Tile produces results in the form of exceptionally low cost per square foot per year. It is not accomplished by haphazard cleaning and waxing. We have made a careful study of maintenance procedure so that your clients can, with our suggestions, set up maintenance programs that will prolong the life of their Tile-Tex floors. Tile-Tex field representatives are qualified to recommend maintenance programs to fit the specific needs of each installation.

In the new Tile-Tex booklet "Maintenance Data," general instructions for different types of floor areas are outlined for the use of Tile-Tex floor owners.

large institutions, street-level store areas, and large public buildings, surveys by Tile-Tex field men can be had to provide the best and most economical kind of overall maintenance program.

The Tile-Tex Company, through this service, attempts to provide the fullest possible protection for the owner of a Tile-Tex Asphalt Tile floor. This is one more compelling reason why architects continue to specify and insist upon the best in asphalt tile—Tile-Tex. Write today for your copy of "Maintenance Data."

THE TILE-TEX COMPANY, Inc.
Asphalt Tile Mfr. Subsidiary of The Flintkote Company
Chicago Heights, Illinois • 220 E. 42nd Street, New York City

LOOK TO Tile-Tex IN '46 FOR THE BEST IN FLOORING

THE TILE-TEX 1946 PLEDGE
1. Adequate Plant Facilities
2. Continuous Product Development
3. Uniform Product Quality
4. Controlled Installation Standards
5. Maintenance Service Program

ARCHITECTURAL RECORD
5 WAYS TO REDUCE MAINTENANCE WITH Alcoa Aluminum

Without exception, wherever Alcoa Aluminum is used, you can count on reduced maintenance—or none at all.
Aluminum can't rust or rot or warp. It won't splinter or crack. It's weather-resistant and stands up against the attacks of many of the corrosive gases so often encountered in industrial areas.
You'll build better when you use this versatile building material and reduce maintenance costs for your client. Five maintenance-saving uses for Alcoa Aluminum are illustrated on this page. These will quickly suggest others to you. ALUMINUM COMPANY OF AMERICA, 2167 Gulf Building, Pittsburgh 19, Pennsylvania.

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JULY 1946
For original installation or replacement need—for every building size, every firing method—there is a modern precision-built Spencer to do your job well. Write for catalog now.

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Buildings specified with PLASTEEL roofing and siding will give permanent satisfaction! Plasteel is economical, too,—when cost is figured over building life—because it eliminates the expense of constant painting and maintenance. Let us send you samples and data. A complete Engineering Staff is ready to assist you on roofing and siding problems.

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PROTECTED STEEL PRODUCTS

Pouring concrete to encase the ends and top flanges of the beams which provides a rigid, non-shrinking base under the whole house. Boxes in the left corner are for heat ducts. Supports for studs are provided around the stair well.

Underside of the slab after forms have been stripped for use as roof sheathing. Ends of beams are encased in concrete fire stop. After painting an attractive basement will catch the eye of prospects.

6 extra selling points!

When you build your houses with J&L Junior Beam steel and concrete floors your prospects are readily impressed with the stability and permanence of your work. You can point out that in addition to being strong and rigid, the floor is non-shrinking, vermin proof, termite proof, and fire resistant.

You get these selling points at no extra cost for a J&L Junior Beam steel and concrete floor system can be included in your plans for only a small increase over the conventional system. You more than make up the difference by elimination of return trips to repair plaster cracks, trim sagging doors, and loosen stuck windows; for a Junior Beam floor does not shrink or sag. Write for information.

JONES & LAUGHLIN STEEL CORPORATION
PITTSBURGH 30, PA.
The illustration shows a typical Johnson Automatic Temperature Control System for radiant heating, as applied to an apartment building. This, or other similar Johnson Radiant Heating Controls are available for small and large residences, schools, commercial buildings, hotels, hospitals, industrial plants and almost every conceivable type of building.

The essential of Johnson Radiant Heating Control is the Duo-Stat, which controls the temperature of the water supplied to the radiant heating surfaces according to the outdoor temperature. This is fundamentally correct. It insures that a change in heat input to the radiant surfaces will occur immediately upon a change in weather conditions. With other methods of control, a change in space temperature must take place before the required change can be made in the temperature of the water supplied to the radiant heating surfaces.

SEND FOR 20-PAGE BOOKLET, "HOW TO CONTROL RADIANT HEATING," illustrated by diagrams of typical installations

JOHNSON SERVICE COMPANY, MILWAUKEE, WIS.
Direct Branches in All Principal Cities
Softly diffused daylight pours through panels of Insulux Glass Block into this plant cafeteria, operated by a large manufacturer of paper boxes. Meals are more appetizing in this room where natural daylight enhances a skillfully executed color scheme. Light is directed to the ceiling, then evenly diffused to all parts of the room. Infiltration of dust and dirt is decreased. Upkeep is low—Insulux does not require painting. Important wherever food is served, Insulux is easy to clean and keep clean.

For FUNCTIONAL beauty "DAYLIGHT WITH INSULUX"

Insulux Glass Block is far more than a decoration—
it does things!

With Insulux, light can be aimed at dark corners—
stairways can be flooded with daylight—light can be
transferred from room to room while privacy is main-
tained.

Also, high insulating value reduces the cost of heating
and air conditioning. Condensation is lowered. Insulux
is highly resistant to moisture and it does not rust, rot
or corrode.

Architectural possibilities are almost unlimited for this
modern, functional building material.

OWENS-IllINOIS

INSULUX

GLASS BLOCK

For technical data, specifications and installation details, see our section
In Sweet's Architectural Catalog, or write Dept. C-7, Owens-Illinois
Glass Company, Insulux Products Division, Toledo 1, Ohio.
Vulnerable Points Damp-proofed with ANACONDA “Electro-Sheet”

1. ROOF RIDGE sealed against danger of leakage at joint.
2. DOOR AND WINDOW OPENINGS protected against air infiltration and moisture penetration.
3. VAPOR SEAL barrier helps insulation retain original effectiveness.
4. SHOWER STALLS waterproofed by "Electro-Sheet" water-tight pan, folded at corners.

ANAONDA “Electro-Sheet” Copper is thin sheet copper formed by electro-deposition. It is furnished in long, continuous lengths to several manufacturers, where it is either bonded with high grade building papers or coated with an asphaltic compound.

In addition to the applications illustrated, there are many other places where Anaconda "Electro-Sheet" can be used to provide economical, lasting protection against driving rain, snow and other forms of moisture.

Anaconda Copper

THE AMERICAN BRASS COMPANY
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JULY 1946
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More than a new line of store front mouldings and trim . . . the new K-47 Line creates a new opportunity for expression which challenges the imagination and responds to the will of the architect.

Stylistic coherence and modern design, complementary to a wide variety of contemporary styling, have resulted from this new K-47 Line. This is the result of research by Kawneer's foremost architects and builders, and it is designed to take full advantage of Kawneer's 40 years of specialized experience.

Smooth-flowing lines and graceful profiles characterize K-47 members which have been carefully designed for interchangeability and for flexibility of use. A wide variety of custom-styled effects can be obtained by the architect—along with the advantages of immediate availability and the economy of stock shapes. The time-consuming job and unnecessary expense of detailing special shapes are eliminated.

The assemblies pictured below are just a few of the many which comprise this new Line. Construction details of both the K-47 Line and the Kawneer Standard Line will be mailed to architects upon request. Fill out the coupon below and mail it today to The Kawneer Company, 706 North Front Street, Niles, Mich.

**SEND FOR COMPLETE DETAILS**

**THE KAWNEER COMPANY**, 706 North Front Street, Niles, Mich.  
Please send me □ Construction details of new K-47 Line  □ Construction details of Standard Line

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**CITY AND STATE**
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A plumbing or heating system of STREAMLINE Copper Pipe provides maximum resistance to rust, clogs and leaks. It is practically indestructible under normal conditions of soil and water, or wear and tear of every-day use. It is a trouble-free system designed to give efficient service year in and year out without costly and annoying interruptions or replacements.

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**CIRCUIT BREAKER**
This Plugin Unit provides automatic thermal protection for circuits and equipment. Capacities: 15-225 amps., 250 and 575 volts.

**SHUTLRBRAK**
A quick make-and-break, heavy-duty operating switch... excellent for frequent operation. Capacities: 30-200 amps., 250 and 575 volts.

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Excellent for disconnect service... the hinged-type pull out door contains both switch and fuse in one unit. Capacities: 30-200 amps., 250 and 575 volts.

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For full details consult your nearest PLUGIN representative.
SELECTED has a publication by a manufacturer received as wide a welcome as Revere's 96-page booklet, "Copper and Common Sense". The chances are you already have a copy, but if not, write for it now while there are still a few available. On questions of sheet copper construction you will find it gives the answers—complete.

On box gutter linings for built-in gutters, for example, there are six pages of details and text. Here, as elsewhere throughout the book, you get the latest, most authoritative facts on the best ways so far developed for designing and carrying out sheet copper construction. It is based on Revere's famous program of sheet copper research in which wholly new facts were discovered which reduce this type of construction to a matter of engineering design.

Checked and endorsed by leading architects and experienced sheet metal experts, the charts, details and information in this booklet are designed for practical men to use in solving their day-to-day problems.

Here is a simple, direct guide to longer lasting, more trouble-free sheet copper construction. It will always pay you to turn to this booklet first. Complimentary copies have been sent to all holders of Sweet's Architectural File, and, through Revere Distributors, to the majority of the sheet metal contractors throughout the country. For any further help you may wish, call on the Revere Technical Advisory Service, Architectural. Revere products are sold by Revere Distributors in all parts of the country.

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When Douglas fir stock doors are again readily available for general needs, you can be assured that they will be the finest doors which can be produced by modern precision methods. These sturdy, attractive, durable doors — made of all-heartwood Douglas fir — feature refinements which save time and labor on the job and assure better installations every time.

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Douglas fir doors will be available pre-sealed — a feature which improves dimensional stability, reduces moisture absorption, and eliminates the need for one prime coat.
It uses 47,000 feet of Geon-insulated wire

Same type insulation is revolutionizing home and industrial wiring

These front and rear views of a Rotary Switch and Relay Bank Rack—that's what Western Union calls it—give some idea of where all the wire goes. But they don't tell why so much Geon-insulated wire is used in machines like these as well as other equally complicated instruments designed and built by Western Union engineers.

Most important, of course, are the excellent electrical properties of insulation made from GEON. They permit a thinner coating of insulation. In instrument wiring that means that the assembly engineer has more room for doing his intricate job. In building wiring it means more conductors per conduit or smaller holes to be drilled.

But insulation made from GEON offers more than this. In all types of wiring it's easier to handle because it's smooth and non-sticky. It's easily identified because of the brilliant, permanent colors. It's highly abrasion resistant—pull it around sharp corners without fear of tearing. It resists water (GEON compounds, of course, are Underwriters approved for TW and other type wires); it resists oil and greases, acids and most other chemicals, sunlight and ozone, flexing, heat and cold, and most other normally destructive factors.

The next time you order wire—for manufacturing, home or industrial wiring—be sure to specify wire insulated with GEON now being made by leading wire and cable manufacturers. Or for more information please write Department A-7, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. In Canada: Kitchener, Ontario.

B. F. Goodrich Chemical Company
The low pressure boiler and unit heater system shown here is typical of the installations commonly used in warehouses, manufacturing lofts, office buildings, and single story structures where there is no need for high pressure steam.

For practical maintenance, this hookup permits repair of either the unit heater or the hot water supply system without a complete shut-down. The by-pass around the automatic water feeder permits hand filling of the boiler in the event of feeder failure. A main shut-off valve "L" is provided on the boiler so that no heat will be lost in the heating mains when the system is operated only for hot water. Unit heater aquastat prevents the fan from turning on without steam in lines. A check valve prevents back flow to trap and strainer.

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For details and valves to suit varying conditions see Jenkins Catalog

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JULY 1946
Do Your Store Plans Include Summer Slumps?

They don't have to! No retail stores need be sticky and stuffy in hot weather. The completely new 1946 Carrier Store Weathmaker takes the discomfort out of summer shopping . . . actually attracts customers and builds business.

These self-contained units fit in with the plans for any retail store—either new or remodeled. They're smart enough to stand right out in the sales space, but powerful enough to be used with duct-work in remote locations. Complete as they come from the factory, they're as easy to install as a new counter.

A centrifugal-type fan delivers cool, clean, dry air in any desired amount. And does it without noise or draft. Filters are standard size for easy replacement. The entire unit can be moved to a new store.

Air conditioning gives the retail stores you plan a prestige that means extra sales dollars. But be sure you specify a Carrier Store Weathmaker. Carrier founded the air conditioning industry more than 40 years ago . . . its research and engineering lead the field. These are advantages you get only with Carrier products. Carrier Corporation, Syracuse, New York.
FOR WIRING PROTECTION—

The Modern Way is the Electrunite Way

ELECTRUNITE E. M. T. sections join quickly and securely without threads . . . meet all safety requirements

Simple compression-type fittings eliminate tedious thread-cutting and make every joint a union. Prefabricated sections of raceway slide into position without awkward line twisting. This is another of the features which mark ELECTRUNITE E. M. T. as the modern streamlined raceway for wiring.

Basically, ELECTRUNITE E. M. T. is a lightweight rigid conduit providing all the economy and time-saving advantages which you get with this type of raceway. But there's more to it than that! ELECTRUNITE E. M. T. is made from high quality cold-rolled steel. Hence it is extra tough, extra strong and highly ductile throughout every length. It is approved by the National Electrical Code for exposed, concealed and concrete slab construction.

Wherever safety is of prime importance and ease of installation is a factor, too, you'll find the answer in ELECTRUNITE E. M. T. The Modern Way is the ELECTRUNITE Way.

Like more information? See your nearest ELECTRUNITE Distributor or Republican Steel & Tubes Division Representative.

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JULY 1946
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More Clay Pipe is used for sewage and industrial waste disposal, by far, than any other material. It's the only pipe that never wears out. It's the only practical pipe for sewers and drains. Its cost-per-year is far lower than that of any other pipe.

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That's why the architects, engineers, and contractors responsible for the air-conditioning specified 72 wall-type ANEMOSTAT air-diffusers. In this way they got the even, draftless air-distribution required. Temperature and humidity are completely equalized — without drafts — to boost production.

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Due to its patented design, the ANEMOSTAT distributes air of any duct velocity in a multiplicity of planes traveling in all directions. Simultaneously, it creates a series of counter-currents which siphon into the device room-air equal to about 35% of the supply-air, and therein mixes the room-air with the supply-air before it is discharged. The ANEMOSTAT effect air expansion within the device, which instantly reduces velocity.

Therefore, the ANEMOSTAT diffuses air of any duct velocity draftlessly, evenly and thoroughly throughout the room, closely equalizes temperature and humidity, and prevents air stratification.

**HOW ANEMOSTATS SAVE MONEY**

ANEMOSTAT wall or ceiling diffusers permit the use of higher duct velocities and greater temperature differentials. As a result, you gain corresponding reductions in duct sizes and number of duct outlets. Substantial savings in installation and operating costs naturally follow. ANEMOSTATS have no moving parts — never need attention, nor replacement — never cause callbacks.

Specify draftless ANEMOSTAT air-diffusers for your next air-conditioned industrial building. You'll get predictable, dependable air-distribution ... your client will get uniform, production-boosting air-conditioning. The list of ANEMOSTAT installations reads like the bluebook of American industry. You can have this list — write today for complete ANEMOSTAT details.

**Prompt Deliveries From Stock**

We are in a position to make prompt shipments of Anemostats in most standard types and sizes.

"NO VENTILATING OR AIR-CONDITIONING SYSTEM IS BETTER THAN ITS AIR-DISTRIBUTION"

JULY 1946
Building Hospitals

BUILDS WEALTH THROUGH HEALTH

This country needs from 1500 to 2000 new civilian hospitals and 2700 health centers, the U. S. Public Health Service reports. This need is emphasized because approximately 1200 counties, with a population of about 15,000,000 have no hospitals within their boundaries. The cost of supplying these National health needs would amount to more than $2,000,000,000.

In addition, the Veterans' Administration program calls for the construction of 77 new hospitals. The cost of these hospitals, together with additions and improvements to the 106 existing veterans' institutions, will be $448,000,000.

These civilian and veteran hospital facilities deserve the best in planning and execution. A. G. C. contractors have the skill, integrity and responsibility to construct these health projects of highest quality with maximum efficiency and economy. They are pledged to sound business principles exemplified by the A.G.C. emblem.

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Health, comfort, utility in one package

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Three basic needs of the American school have dictated the form of The Nesbitt Package: Proper classroom ventilation is provided by the Nesbitt Syncretizer Unit Ventilator. Adequate storage facilities are provided by the Nesbitt steel Classroom Shelving and Cabinets which utilize waste window space. Modern appearance at low cost is provided by the beautifully designed ensemble manufactured by production-line methods. And you can have The Nesbitt Package now. All its component parts are in stock ready for assembly and shipment after receipt of your specifications.

Write for Publication 249 on the various units of The Nesbitt Package.

Made exclusively by JOHN J. NESBITT, INC.
State Road and Rhawn Street, Philadelphia 36, Pa.
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JULY 1946
A New Development In Electrical Systems For Homes

Electrical Living is vital in modern homes... but there are varying degrees needed to fit different family income levels. By recognizing this fact, and using the correct degree for homes you design or build, you will give greater owner satisfaction.

Westinghouse engineers have made it easy for you to select the correct degree, by developing Four Degrees of Home Electrification for popular priced homes.

The booklet shown here illustrates and describes the Four Degrees, and specifies the wiring installation necessary to support the electrical equipment established for each degree. Ask for booklet B-3774.

...and this handbook has the technical data needed for designing any residential installation

The most comprehensive handbook ever produced on home wiring. Ten chapters. 120 pages. Dozens of charts, tables and diagrams. Covers every detail you require to plan and design a complete electrical system for homes. Costs one dollar. Send coupon below.

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Gentlemen: Please send me books marked below:

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PLANTS IN 33 CITIES... OFFICES EVERYWHERE

BETTER HOMES DEPARTMENT

64

ARCHITECTURAL RECORD
THE Housing Division of the Defoe Shipbuilding Company was developed with a two-fold purpose—to maintain, as closely as possible, the wartime employment level upon which the people of the industrial area in which the plant is located had come to depend and to offer the public a new solution to America’s housing problem.

- With this in mind, Defoe designers and engineers were called upon to create a new line of homes which would bring to their owners the comforts of functional design, the ease of maintenance made possible by modern compact construction—plus the economies of mass production methods. In addition, they must be built to outlast houses of standard construction!

- The Defoe organization has delivered. The skill and experience acquired by more than forty years of fine workmanship and adherence to the age-old traditions of the shipbuilder’s art have brought into being an entirely new concept of gracious living. The Defoe Homes reach new highs in comfort and convenience. While there is nothing fantastic or extreme about them, they are certainly a radical departure from any prewar “prefabricated” houses or temporary wartime structures.

- With the war won and with great hope for a permanent peace just ahead, “Better Things for Better Living” is the slogan for the coming era. The Defoe Homes will be a worthwhile contribution to the good times ahead.

This attractive Cape Cod home can be erected by the Defoe system. Variations in floor plan and exterior treatment can be made to satisfy individual requirements. This, like all Defoe Homes, can be purchased with or without the breezeway and garage.
Every so often, new ideas... new materials bring new production techniques. The FRITZ B. BURNS Post-War House in Los Angeles is an example of construction utilizing the very best in post-war thoughts that architects, builders and manufacturers have to offer.

The COMMODORE, General's new Ledge type, Swing-Spout Kitchen Faucet, is an excellent example of how reduction in weight, by construction utilizing stampings and interchangeable machine fittings, goes hand in hand with increased utility and beauty. Significant to those in the plumbing trades is the fact that the Fritz B. Burns Post-War House is equipped with the COMMODORE.

Ask your wholesaler for General's COMMODORE!
THE desperate need for shelter, a place to live — any place to live — encourages building fast with whatever is at hand, on hastily developed land and from plans dashed off in a hurry. Such a technique sometimes has been known as "jerry-building" — the houses go up fast, sell fast, develop trouble fast, and foreclosure follows. This is about the quickest method known for providing future slums. While it may provide profit to the promoter-builder, and he performs a real service in providing a roof overhead, it is not the way any sane community would want to develop. It is at best temporary shelter masquerading as permanent.

What is the alternative to a rash of thrown-together future slum districts springing up all over the country? The obvious answer is garden-type apartments for rent — for reasons stated in our issue of last May — and accepted by authorities from Wilson Wyatt to the returned veterans themselves. Well-planned, well-built, well-managed apartments for rent are assets to the community and best fulfill the needs of the veterans. We have furthered the recognition of this fact by government officials, national and local, financial interests, veterans' organizations, manufacturers and architects alike.

It will take concerted action and independent action to develop and erect such projects — and quickly. If private enterprise is to provide decent housing, enterprise is needed, enterprise on the part of architects in promoting well-conceived apartment projects. This is a type of service to the community which architects can individually, or through their organizations, undertake to the advantage of all concerned. There is nothing unethical in finding backers, money, land, and ways and means — in preparing plans, in proving the economic and social validity of such a project. It will not be long before the political advantages of rental housing come to the fore. If private enterprise does not succeed now, in spite of the besetting obstacles, public housing will take over in a big way and probably at a time when the production of building supplies is more nearly normal.

There are besetting obstacles — rent ceilings, high material costs, scarcity of materials, restrictions, regulations, and red tape, threats of subsidized housing competition. How these are being met in your vicinity, others might like to know. We welcome all such helpful information, suggestions as to ways and means, plans, and descriptions of rental projects now under way or in the making. What are your biggest problems in producing multi-family apartments for rent? What are you doing to solve them, and with whom are you collaborating? Decent rental housing needs competent architectural and engineering services; your community needs the housing. Therein lies both the opportunity and the responsibility of the profession and of its individual members.

Kenneth K. Stowell
EDITOR
ARMY HEADQUARTERS BUILDING

Army Forces Middle Pacific Command, Fort Shafter, Oahu, T. H.

Since the war ended the Army has been free to acknowledge its debt to the architectural profession, and to permit publication of many really handsome buildings which, for all their evidence of design study, were built with remarkable speed and with materials most readily available. This one, built in May and June of 1944, brought together for efficient administration the HQ staff previously scattered throughout the Honolulu district. The post was already crowded, and the only available site was a steeply sloping one of two and a half acres.

Designed by Cole McFarland with Randall B. Weaver as supervising architect, this building — it is really a group of three — was constructed with wood available at the time in Hawaii.

Exterior finish of all buildings is redwood horizontal drop-siding on which a soft green paint has been wiped. Fascias on the overhangs and columns at the entrance of building "A" are dark maroon. Windows have been architecturally banded together with flush vertical boards and are spaced 3 ft. 6 in. O.C. for maximum plan flexibility. These bands are painted a light blue-green and, with the 4 ft. overhanging aquamedia casting a deep shadow, emphasize horizontality.

Fire walls of 8 in. concrete tile, with concrete lintel at each floor, divide the floor space of all buildings into approximately 3,000 sq. ft. fireproof sections. The firewalls extend from ground to roof and, with the exception of fire doors in the corridors, completely close off each part of the building.

The effect of this structure on the architectural design of other military buildings in the Hawaiian Islands has been tremendous. Several other office buildings as well as two air terminal buildings, numerous barracks and recreation centers, etc., incorporate features of the headquarters unit.
A small bronze plaque in the main lobby gives credits for the building as follows. "Headquarters United States Army Forces Pacific Ocean Area — Lieut. General Robert C. Richardson, Jr., Commanding — This building was Designed and Constructed by the United States Engineer Office, Honolulu, T. H., Under the Direction of Brig. General Herbert B. Loper, C. E.; Colonel B. R. Wimer, C. E. — S. Perliter, Head Engineer; Randall B. Weaver, Supervising Architect; Cole McFarland, Architect; N. M. Gaddis, Architectural Engineer; H. N. Hackensmith, Major C. E., Area Engineer; Harry Berger, Construction Superintendent"
Left: Main entrance to Building "A" has two-story wood columns and recessed lanai. The great seal of the United States is made of built-up plywood finished with aluminum paint. The lobby opens to the main passage to Building "B". Left below: main entrance lobby of Building "A". Fluted columns are painted a rich blue-green. The mural was designed by Master Sergeant William R. Domaratus. Site conditions at the entrance, and the road elevation in front of the building, made it necessary to keep the entrance high to prevent having the building appear to be down in a hole. The lobby floor was therefore raised two steps above the rest of the first floor. Center: this view of the Commanding General's office shows the plywood wall finish, asphalt tile floor and acoustical ceiling. Fluorescent lighting is recessed in a 6-in. furred space in the ceiling; this space is available throughout the building for the complicated communications wiring. Right below: main axis corridor from lobby of Building "A" to third floor balcony of Building "B".
Building "A" is 20 ft. above "B" and 30 ft. above "C". These differences in elevation make pedestrian traffic a bit difficult. The steep slope determined the angles of the buildings; it also contributed to a feeling of openness in a rather fully developed site.
The sawtooth corner plan and balconies of the east side of the Shelbourne Hotel give maximum number of rooms with ocean views. Below, typical smaller hotels, with shading “eyebrows” over windows. Luxurious winter homes make the most of water views from wide windows, screened porches and balconies. Right, a permanent, but adjustable louvered sunshade.
Above, left, the entrance court fountain, Boca Raton; right, the patio of the Stotesbury residence, Palm Beach. Below, left, a tower of the Castillo de la Fuerza, begun in 1558 by Hernando de Soto, discoverer of the Mississippi; right, view across the Cathedral Plaza.
Right, Columbus Cathedral (1656–1724) where traditionally the explorer was buried until removed to Spain after the Spanish-American War. Below, church at Matanzas. Bottom, left, the Presidente Zayas, typical of the narrow streets in the old portion of Havana; right, looking into the Cathedral Square, Havana, from San Ignacio (the building on the right is the "old slave market")
CONTINUING the series of plans of various elements of the general hospital, prepared by Marshall Shaffer and his staff of hospital architects in the U. S. Public Health Service, we present here the Nursing Department, the Service Department and the Outpatient Department. These complete the plan series. They are, of course, suggestive only, would always have to be adapted to the particular conditions encountered in an individual hospital project. They do, however, incorporate the best practices developed out of innumerable conferences with medical and planning authorities.

Then remains the problem of relationships between these various departments, traffic flows within them and between them, and other similar factors which enter into the integration of the elements and the adaptation of them to the site. Such topics will be the subject of another study next month.

Together the three studies (the first appeared last month) represent a compendium of the studies of hospital design which have occupied the Hospital Facilities Section for several years, and which will continue for architects and hospital administrators.

HOSPITAL FACILITIES SECTION
U. S. PUBLIC HEALTH SERVICE
Federal Security Agency
40. 25-Bed Nursing Unit — Southern Exposure with Offset Corridor

The hospital building should be oriented so that nursing units receive the benefit of southern exposure, also prevailing winds and maximum quiet. Ideally the wing should be wide enough, as in the plan below, so that all occupied rooms will have such exposure. This plan, above, represents something of a practical compromise for the sake of economy in land and in building.

41. 25-Bed Nursing Unit — Southern Exposure

This is offered as the ideal plan for a nursing unit of 25 beds. All bed rooms face the south, and with nothing on the other side of the corridor they get maximum cross ventilation, and maximum quiet as well. No service rooms take any of the best exposure, yet their central grouping in the upright of the T saves steps for nurses, doctors, visitors and others. The balcony is noted as optional, but obviously good as sun shade as well as balcony.
42. 25-Bed Nursing Unit — East-West Exposure

Where full sun cannot be had for the bedrooms, this plan for east-west exposure divides the sunshine between both sides of the corridor. This scheme is, of course, much more economical than the previous one, and more common. The location of the nurses’ station in such an end unit should be central within the unit; the factor of traffic control is not too important. There is a trend away from the large open wards of the plan below; they are still common in large service hospitals, or in large private hospitals where flexibility is of especial importance, but are not really recommended. The two-bed room is for marginally cases.

43. 34-Bed Nursing Unit — Open Ward — East-West Exposure

Legends: 45. Bedrooms for Contagious Disease Nursing Unit.

46. Contagious Disease Utility Room and Nurses’ Work Room,

NOTE: Heat is the most important factor in the destruction of bacteria during the dishwashing process. A temperature of at least 170 degrees F. is required for effective bactericidal action. The domestic water supply cannot always be depended upon to provide water of required temperature.

Therefore the above arrangement has been devised whereby one machine (No. 27) is used for washing dishes at 140 degrees F. using the domestic supply. The other machine (No. 26), with a thermostatically controlled heater to insure a water temperature of 170 degrees F. is used for final rinsing.

With this arrangement dishes can be rinsed for longer periods without diluting or overheating the wash water as would be the case if one single tank machine was used.

The washing compartments should be large enough to admit a rack of trays.
44. Contagious Disease Nursing Unit

The outside visitors' balcony is an interesting trick for the contagious disease rooms; naturally it keeps the visitors out of the corridor, which is of course necessary; it is also uncomfortable for the visitors, a fact that has its advantages.

Always the visitor must be kept out of the bed rooms in the contagious disease department; nurses should enter as seldom as possible. The visitors are kept on the balcony; the nurses have a view window in the corridor wall (the dividing partition in the two-bed room is of glass) and often don't need to enter.

45. Bed Rooms for Contagious Disease Nursing Unit

The contagious disease rooms must also be isolated from the rest of the hospital as far as food and other services are concerned. And dishwashing is an especial problem because of the need for sterilization of everything. Actually dishes get double washing, once at 140°, once at 170°.

46. Utility Room and Nurses' Work Room, Kitchen and Dishwashing Room for Contagious Disease Nursing Unit
47. Pediatric Nursing Unit

In the pediatric nursing unit every child is considered to represent a potential case of contagious disease. It would be ideal, therefore, to have a single room for each child, but complete isolation is not good psychologically. The compromise is a two-bed room with glass screen between beds, so that each child has some feeling of companionship in his misery and yet is not subjected to the risk of contagion of a large ward; he is even protected in some measure from his roommate. The bassinets in-

TYPICAL BED ROOMS

50. Typical 1-Bed Room

The typical bed rooms are based on the "Rigs" plan, developed abroad, in which the beds parallel the outside wall, which is considered the best position since it gives the patient the choice of looking toward the light or away from it. The one- and two-bed rooms of course are alike, the one becoming the other with but minor changes in furnishings. The scheme in Plan 52 illustrates what amounts to a trend toward connecting toilets and shower baths. This arrangement might be called a practical compromise between having no baths and having a private bath for each room. The private bath is an attractive feature to the patient, who usually does not stop to realize that it probably will not be very useful, since he will be confined to his bed anyway. Perhaps the connecting bath might give something of the hotel atmosphere which the patient seems to want, without adding quite so much to the cost. For the wards the unit in Plan 53 is recommended. The large ward is not liked; a four-bed unit is about as large as the physicians like to see. This one, with beds arranged on the Rigs plan, and with curtains for use when necessary, works out well, and gives some sense of privacy. If the larger wards are necessary — and they still are not frequently — the scheme in Plan 54, which combines two four-bed wards, seeks to carry out the advantages of the former scheme.
48. **Bedroom for Pediatric Unit**

1. Sliding window curtain.
2. Lavatory with goose neck spout and knee or elbow control.
3. Waste paper receptacle.
4. Straight chair.
5. Bedside cabinet.
6. Over-bed table.

7. Adjustable hospital bed.
8. Nurses' calling station with duplex receptacle.
10. Toy and clothes cabinet.
11. Indirect wall fixture above top of cubicle partition.
12. Cubicle curtain and curtain rod.
13. Cubicle partition, 7 ft. high with bottom of clear glass set 36 in. above floor.
15. Door with clear glass in upper panel.
17. Corridor dome light.

**NOTE:** Five patient rooms may be added to this unit with no additional service rooms.

* Cribs may be substituted as required.

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50. **Typical One-Bed Room**

1. Built-in locker.
2. Bedside cabinet.
3. Adjustable hospital bed.
4. Straight chair.
5. Nurses' calling station with duplex receptacle.
7. Waste paper receptacle.
8. Lavatory with goose neck spout and knee or elbow control.
11. Corridor dome light.
14. Telephone outlet.
15. Easy chair.
16. Floor lamp.
17. Dresser.

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51. **Typical Two-Bed Room**

1. Built-in locker.
2. Bedside cabinet.
3. Adjustable hospital bed.
4. Straight chair.
5. Nurses' calling station with duplex receptacle.
7. Waste paper receptacle.
8. Lavatory with goose neck spout and knee or elbow control.
11. Corridor dome light.
14. Telephone outlet.
15. Cubicle rod and curtain.

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53. **Typical Four-Bed Room**

1. Built-in locker.
2. Bedside cabinet.
3. Adjustable hospital bed.
4. Straight chair.
5. Nurses' calling station with duplex receptacle.
7. Waste paper receptacle.
8. Lavatory with goose neck spout and knee or elbow control.
11. Corridor dome light.
14. Telephone outlet.
15. Curtil rod and curtain.

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54. **Typical Open Ward**

1. Partition, 7 ft. 6 in. high.
2. Bedside cabinet.
3. Adjustable hospital bed.
4. Straight chair.
5. Nurses' calling station with duplex receptacle.
7. Waste paper receptacle.
8. Lavatory with goose neck spout and knee or elbow control.
9. Indirect fixture at top of partition, switch controlled.
11. Ceiling dome light.
14. Cubicle curtain and rod.


61. Kitchen for a 50-Bed General Hospital Using Central Tray Service

62. Kitchen for a 100-Bed General Hospital Using Central Tray Service


In small hospitals the laundry may be located in the basement with easy access to the elevators, but isolated from patient areas. Ceiling height should be not less than 12 ft., and mechanical ventilation will probably be required. In the layout of the laundry facilities, routing is of considerable importance; it will proceed from the soiled linen (sorting) room through (1) washing wheels, (2) extractors, starching, etc., (3) tumbler, flatwork ironer, presses, and hand finishing, to (4) the central linen room. The layout will probably require the services of a competent laundry engineer, for on the scheme will depend the efficiency of the laundry operation.

**Legends:**
64. *Laundry for a 50-Bed General Hospital*
- 1. Metal washer, 24 by 36 in.
- 2. Metal washer, 36 by 36 in.
- 3. Soap tank, 30 gal.
- 4. Double compartment laundry trays.
- 5. Starch cooker, 15 gal.
- 6. Extractor, 26 in.
- 7. Platform scale.
- 8. Tumbler, 36 by 18 in.
- 10. Ironing board.
- 12. Shakeout table with sloping sides.
- 13. Flat work ironer, 100 in.
- 14. Table, 36 by 96 in.
- 17. Tables, 24 by 36 in.
- 18. Shelf over table.
- 20. Counter, 36 in.
- 22. Counter, 30 in.
- 23. High with cabinets below.
- 24. Wall cabinet.
- 25. Straight chair.
- 27. Telephone outlet.
- 29. Dutch door.
- 30. Floor drain.
- 31. Compressor.
- 33. Waste paper receptacle.
- 34. Sump.
- 35. Shelling with bins.

65. *Laundry for a 100-Bed General Hospital*
63. Kitchen for a 200-Bed General Hospital Using Central Tray Service


66. Laundry for a 200-Bed General Hospital

In the hospital laundry there is much sewing to be done, to repair gowns or linens, or just to salvage bandage material. In this larger laundry a separate sewing room is provided adjacent to the central linen room. The provision of toilet facilities within the area of the large laundry aids in efficiency and supervision.

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The central storeroom, which will accommodate a great variety of valuable stores, is planned to facilitate general supervision by one person, who beside checking in shipments will also check out supplies. He usually in addition checks the hospital help in and out of the service entrance. Anesthesia storage is a special problem, since it is explosive. Ventilation is especially necessary.

67. Central Storeroom for a 100-Bed General Hospital

68. Record Storage for a 100-Bed General Hospital

69. Nurses' Locker Room for a 100-Bed General Hospital


NOTE: The size of the Central Storeroom and proportions of its various units will vary with each individual hospital. This plan shows the relationship of the units and generally the type of storage facilities required for each.


NOTE: Female help locker room is similar.
70. Outpatient Department for a 50-Bed General Hospital

Really the outpatient department has little relation to the size of the hospital; its size and facilities depend more on the amount of the "charity load." It would be located, of course, near the administration department and near the adjunct diagnostic and treatment facilities. The "staff corridor" is a good feature; it permits circulation of doctors without interference from patients.

71. Outpatient Department for a 100-Bed General Hospital
73. Examination and Treatment Room with Dressing Cubicles

75. Two Examination and Treatment Rooms with Waiting Room


The outpatient load usually depends not on the size of the hospital but on the situation and policy of the hospital with regard to clinical work, largely for charity patients, or possibly for research. An analysis of the expected load is a planning requirement. The table above is a sample of such a study, with assignment of stations for each type of outpatient work.

76. Combined Doctor's Office, Examination and Treatment Room with Waiting Room

Plan 73, a typical treatment and examination room for the outpatient department, has two noteworthy points: the staff corridor running along the rear of the rooms permits the doctors to get from one room to another quickly without having to mix with the patients in the main corridor; and the dressing cubicles with the two doors give some privacy to patients, while serving to speed the use of the room. Plan 74 shows a minimum room for treatment and examination in a conventional scheme; its provision for circulation is a good feature. Plan 76 illustrates something new in the general hospital—an office for private practice by a physician in the hospital. Again, the dressing room saves time. The next plan shows a larger version of the same scheme.
Final determination of facilities to be included in the outpatient department depends to a large extent on the peculiar situation of the hospital. These last plans in the series show what might be considered normal facilities in the fairly large outpatient department—a room for minor surgery, eye, ear, nose and throat rooms; and a dental suite—there are others that might logically be included in certain hospitals. Naturally this selection assumes convenient access to the other facilities in the hospital, but there is a limit to the load that the main hospital can take from the outpatient department, and the latter should be reasonably well equipped for its normal purposes. The eye, ear, nose and throat rooms, it will be noted, show a considerable difference. The smaller one could be made to function in a small outpatient department, but the larger one is none too big for a 200-bed hospital; it might even be considered a minimum for modern medical practice.


THE SCHOOL SHOP FOR GENERAL EDUCATION

Only one boy or girl out of every six attending high school or junior high will go directly into industry after graduation; but every boy and girl without exception will live in a society that is more and more industrial.

This fact makes it supremely important that our growing citizens have some first-hand acquaintance with industrial aims, industrial tools, industrial materials. Special attention must therefore be given by school planners to those "industrial arts" work centers which have come up only recently from the basement where they previously subsisted as "manual training" rooms carved out of the coal bin as an afterthought.

TYPES OF INDUSTRIAL EDUCATION

By Arthur B. Mays, Professor of Industrial Education, University of Illinois

Organized education involves two major aspects, (1) cultural and (2) vocational. It is true that all cultural education has some vocational significance and all vocational education contributes something to culture. However in the one phase of education the predominant purpose is the development of culture, the pushing back of horizons, increasing understanding, and socially desirable appreciations and relationships; whereas in the other, the major purpose is training and education for occupational competency both for individual and social welfare and progress. The term "vocational education" is a broad one including all forms of education and training which are designed to prepare persons for successful occupational work.

"Industrial education" has come to mean, in the United States, those types of education and training which deal with the technical knowledge and skills involved in the industries and mechanical trades. In this broad sense it includes certain divisions of engineering as well as trade education, and the nonvocational school subject called industrial arts. However, common usage during recent years has made the term "industrial education" mean only the two divisions of organized instruction known as, (1) industrial arts, or the nonvocational type of industrial education, and (2) vocational industrial education, which includes trade training and training for the other industrial occupations of less than college grade.

Of the two divisions of industrial education, what is now called industrial arts (formerly known as "manual training") has been in the schools of this country since 1880, and it is the more widespread form of industrial education found in the public schools. It is nonvocational. It has two major divisions, namely, elementary
Two photographs which strikingly illustrate the difference between "industrial arts" education and vocational education. The upper one, which was taken in the Bethlehem Central School, Delmar New York (plans on page 104) shows every essential printing operation in a single view — composition, imposition, presswork. These boys will be familiar with the basic processes in printing. The lower view shows boys who are under training to become linotype operators, learning that thoroughly.

and secondary. Elementary industrial arts includes many forms of handwork such as basketry, modeling, block printing, thin woodwork, weaving, and other such activities suitable for children in the grades below the high school, and which have played a part in the history of civilization and are such as will promote the intellectual, aesthetic, and manual development of children. This work also serves to sharpen interest in the world in which the children live and grow, and to help them understand it. Much progress has been made in recent years in this division of industrial arts, and its educative values are no longer questioned by educators. In fact, elementary industrial arts is now generally regarded as an essential feature of modern general education, and as an important basic preparation for the secondary-school types of industrial arts. It has other special values that are recognized as contributing to the intellectual and aesthetic development of children, that cannot be achieved in any other way. This division of industrial arts is often closely related to the art instruction of the elementary schools and, as far as possible, to all the other phases of instruction. Its correlation with all the school activities is particularly important if maximum educative values are to result.

The underlying purpose of industrial arts at the secondary-school level is to enable boys and girls, who now live in an industrial world and soon will have to cope with it as adults, to become intelligent concerning their industrial environment, and be able to deal with it effectively, both now and later. The materials, products, and processes of industry constitute one of the most obtrusive and ubiquitous factors in the modern environment. This may easily be tested by the reader. If he will look about him for a moment he will observe that everything in the room where he is sitting, while he reads, except his own body and personality, is the product of industry. His clothes, his chair, the floor, the walls, the house itself, and every material object in the room resulted from the work of industry, and to a striking degree his own personality is greatly modified by modern
industry. This being true, it is imperative that every boy and girl shall become intelligent about, and effective in dealing with, modern industry and its many products. To produce such intelligence and effectiveness is the primary function of industrial arts in the junior and senior high schools.

There are, of course, specific training objectives involved in the purposes of industrial arts. Some of the more important of these are: the development of efficient work habits, the development of the habit of clear analytical thinking when dealing with mechanical and constructive work; the development of skill in cooperating with others in constructive enterprises; the acquisition of a wide range of knowledge and appreciation concerning industrial materials, processes and products; the development of a wide range of tool, machine, and drafting skills; the development of safety habits when in the presence of tools, machines, and other mechanical equipment; the development of the ability to use effectively one’s knowledge of mathematics and other useful knowledge in meeting the practical work-problems of life; and various other similar objectives. There are numerous industries from which the subject matter of industrial arts is drawn. In general they are the basic and highly important industries which underlie modern industrial civilization. The significance of certain industries as factors in the creation of modern civilization can be indicated by the simple device of asking the question: "If this industry had never existed would civilization today be quite different in character?" By applying this test it will be found that there are twelve or thirteen industries that may properly be designated as "basic". They include such industries as the wood industries, metal industries, ceramic industries, the graphic-arts industry, the transportation industry, the power industry, etc.

Two types of shops are commonly used to achieve the ends of this phase of school work, namely (1) the general shop, in which several industries or divisions of a single industry are represented, and (2) the unit shop, in which a single industrial occupation is represented. There are several types of general shops in use. The two most common types are: (1) the shop where four or more different "areas" of industry are represented, such as, wood, metal, the graphic arts, plastics, power, communications, ceramics, etc., and (2) the shop which represents several phases of a single major division of industry, as, a general wood shop, a general metal shop, or a general graphic-arts shop, etc. The former of these is sometimes called "a laboratory of industry" particularly where much emphasis is placed upon industrial information and certain elementary activities of an experimental nature. In all types of industrial-arts shops attention is given to the use of films, models, assigned readings, class reports, etc., for the purpose of extending the understanding of pupils with reference to modern industry. The general shop has had its most important growth at the junior-high-school level and it seems to be the most effective means of realizing the aims of industrial arts at that level.

In the senior high school, and often in the ninth grade, the prevailing practice is to use the unit shop to reach the objectives of industrial arts. It is at this level that many persons become confused with reference to the difference between nonvocational and vocational-industrial education. The confusion results chiefly from the fact that the equipment, methods of instruction, and the character of work done differ little, if any, from the vocational shop. Indeed, in some schools the wood shop, the machine shop, or the drafting room may be used part of the day for industrial-arts classes and part of the day, and in the evening, for vocational classes. The difference lies not in the character of the equipment or even in the quality of work performed, but in the purposes of the pupils and the aims of the instruction. In this age all men and most women need at least some experience during their school life of the kind provided by industrial-arts shops and drafting rooms, regardless of the occupations followed in subsequent adult life. Many students in industrial classes plan to continue their education in college immediately after high-school graduation, while others plan to begin business or home-making careers. Obviously, to them their high-school industrial-arts courses do not mean vocational education. It is true, however, that a considerable number of boys expect to enter the trades or to work at semi-skilled occupations in factories soon after graduation. For these, their early industrial-arts experiences have definite vocational values. Even those who plan to enter trade courses in the last years of high school, or during the immediate post-high-school years, find their industrial-arts courses excellent foundation training. These considerations, however, in no wise change the basic purposes of industrial arts and should not lead to confusion in terminology. Many so-called "academic" subjects also are basic to numerous types of vocational education and to the practice of many vocations, but one rarely hears them referred to as "vocational subjects." It is important for the progress of both industrial arts and vocational-industrial education that the layman, as well as the professional educator, distinguish clearly between the purposes of each kind, or department, of industrial education.

The content of vocational-industrial education is derived from the results of an industrial survey of the community which reveals what trades or other industrial occupations are in need of trained workers. The content of industrial arts, on the other hand, is drawn from the basic and significant new industries, and the skills and facts taught are those which give an adequate representation of industry, and are such as have general educative value.

Safety is always important in the school shop, requiring the attention of department heads and teachers. Where lively boys and girls are concerned, safety administration demands all possible skill and ingenuity. Injuries to school pupils may maim them for life. Safety is therefore one of the first considerations in planning the shop size, shape, and equipment arrangement. Safety instruction is also one of the prime factors.
PLANNING THE INDUSTRIAL-ARTS SHOP

The "industrial arts" shop is the opposite of a vocational shop. The vocational shop trains for specific jobs in industry. The industrial arts shop educates all citizens for life in an industrial environment.

Both kinds use many processes and tools in common. This creates obsfucation in many minds. For practical results the architect must have a clear grasp of the basic distinctions, while he steers clear of family quarrels by providing the kind of industrial arts shop that can be converted easily to suit the views of successive teachers.

The accompanying diagram (figure 1) seems to represent distinctions that are basic.

The comprehensive general shop (top row of rectangles) is the school shop for general education about industry, giving a diversified experience with industrial methods, in compact space. Each square represents a component unit; each unit is one general field of industrial operation, such as electrical work, or metal work, or wood work, or machining, ceramics, textiles, printing, food processing, graphic arts, photography.

The general unit shop is represented by one of these squares separated from the rest. It still stands for one general field of industrial endeavor, and not training for a single job. It is shown alone because it is either one of a series in a large school, or it is the only kind of industrial education for which the school in question has the vision or personnel.

The unit industrial shop, omitting the adjective "general," is indicated as a thin sliver, because it represents a single activity within a general field. It may be just a welding shop, not a general metal shop; or it may teach automobile repairing alone, not general machine work. This sub-unit tends always to slip in the direction of the vocational type of training — indeed, a good vocational course would be conducted in just such units, somewhat more elaborately equipped.

Figure 2 shows diagrammatically the difference between industrial-arts organization and vocational organization. The horizontal row of broad rectangles, all joined together, stands for the broad coverage of general fields found in a comprehensive industrial-arts program. The tall slivers represent sub-units out of each field, not connected up but each pursued separately as vocational training for a specific job, and studied thoroughly, in depth. Needless to say the two systems supplement and complement one another. (See AR Building Types Study, Vocational Schools, April, 1940.)

Within the industrial arts field taken by itself, there are conflicting views which the architect need not try to resolve. If the general shop space is well planned, it can normally be converted by successive teachers to meet their several interpretations of the concept.

Existing shops are notoriously dropped into the basement. This position will never do in new plans. Many industrial education supervisors would like to see the shop move at one bound from the cellar to the head of the class, occupying space opposite the main entrance. This arrangement, they argue, would put before visitors that part of the school, which is most directly concerned with the realities of present-day life, and would also provide for visually interesting display of student work. It is also argued that shop noises are no obstacle in the central position, because the entrance is a confused zone anyway, being surrounded usually by administrative offices, gym, and auditorium. A splendid example capitalizing shop display in such a situation is the Farmington High School, Flint, Mich., by Lyndon & Smith, Architects.

The contrary approach puts the shops in with other noisy areas at wing-ends — an excellent example is the Rhinebeck Central School, New York, now under construction, by Moore & Hutchins, Architects.

The shop cannot fit easily in a regulation classroom wing of conventional 22-ft. room width. The shop should stand at a wing-end, where it can absorb either the corridor width or the entire building width of 50 ft. or more; or else it may stand as a branch in itself.
SIZE AND SHAPE

Methods of computation for size include (a) the use of a preliminary assumption based on recommended practices within the specified state; (b) modifications for local emphasis and available teaching force; (c) study of details by means of \( \frac{1}{4} \) in. scale drawings or of templates representing equipment likely to be used.

**Preliminary assumptions**, expressed in square feet per pupil, are a very useful expedient, despite recent proclamations extolling the greater accuracy of starting the study with templates. The general assumption makes allowances for change — and not one shop in ten retains its exact original layout. Space allotments suggested by state departments vary widely, being generally cramped in those closely populated industrial states which also tend toward more progressive and comprehensive programs, and being more generous in other areas such as the South. Typical recommendations:

**New York State:** A basis of 75 sq. ft. gross interior area per pupil — approx. 1800 sq. ft. for a “well-planned shop for 25 pupils and 1 teacher.”

**Michigan:** A minimum of 50 sq. ft. net area per pupil, excluding storage space, tool crib, finishing room, planning space. This average allowance to be progressively increased in unit shops as the number of pupils per room grows smaller.

**Virginia:** The gross interior area per student in general shops is put at 120 sq. ft. minimum.

**Louisiana:** Average area per pupil, as indicated in five suggested plan diagrams for comprehensive general shops of 16–20 pupils each, is 92 sq. ft. In a unit auto-mechanical shop for 20 pupils (50 by 70 ft.) the average is 187.5 sq. ft.; in unit machine shops or sheet metal shops (40 by 60 ft.) the allowance per pupil is 120 sq. ft.

**Local variations** according to industries prevailing in the region, or teaching skill available, affect the ultimate plan. Clay in Ohio, or textiles in New York.

The template method of spotting equipment is highly useful in obtaining the best ultimate shape and arrangement. Such templates may be obtained in two- or three-dimensional form from organizations such as Visual Production Planning, Inc., 101 Park Avenue, New York 17, N. Y. (see \( \frac{1}{4} \) in. scale models on front cover). Templates can also be made of cardboard. See TSS, p. 119.

In shape, the industrial arts shop requires proportions somewhere between 1:1.5 and 1:2. L' and U's are officially frowned on as shapes because they are more difficult for one man to control.

GENERAL ROOM PLAN CONSIDERATIONS

It is assumed that architects and shop men alike are thoroughly familiar with the elementary principles of grouping different kinds of work together, and observing flow lines, so that the anvil is next to the forge and the circular saw near the lumber rack, etc. We list a few further principles:

1. **Wood or fibrous floor, concrete floor:** Many shops are so divided, and this controls the plan. On the concrete area are grouped activities having a fire hazard or using copious oil or water, e.g. hot metal work, ceramic furnace, mechanical repair shops. (See plans.)

2. **Clean work, dirty work:** This correlates to some degree with the above. The concrete floor tends to serve "dirty" work. It is an error to provide wood storage in this vicinity, where sparks, metal filings, oil, can become imbedded in boards on their way to the saw. The space division into areas of "clean" and "dirty" work gives rise to the use of glassed partitions to protect areas for graphic arts, planning, photography and the like from the dust that arises even from such clean work as wood and clay. (See especially plan for Hugh Morson High School, page 103.)

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3. Window area, inner floor area: Most shop teachers seem to prefer having machinery such as lathes stand next to windows for natural lighting. In New York State, where more different kinds of activity are included than elsewhere, the supervisor believes that outer wall area is needed for storage under high windows, but some of the best active teachers seem to prefer full-sized windows.

4. Tool supply. Tool rooms or bins requiring check-out have the disadvantage that half of the short time at the pupils’ disposal is spent obtaining and returning tools, and that one pupil, placed in charge, loses that study period altogether. Apparently the best system is based on separate cabinets or, where possible, open wall panels, for each kind of work, close to that work. These are quickly controlled by one youngster in each area assigned to the job; misses are easily seen.

5. Materials supply. Vertical lumber storage conserves space, makes for easy removal. Disadvantages: lengths are restricted to 10 or 12 ft.; twisting is induced in some boards. Horizontal storage, usually on rows of pipes with ends inserted, at a slight slant, into vertical posts, holds longer pieces and preserves the shape of the lumber, but requires more careful organization. Metal sheets and strips are held in vertical open compartments. Other arts and crafts depend on local cabinet storage, along wall spaces, at columns, or under benches.

6. Storage of work in progress. This is the provision which is most generally neglected or forgotten altogether. Locker space is required for this in every department. One suggestion is the use of space under work benches, where shop teachers hate the usual useless tool drawers, would prefer having open storage space, reaching all the way down to the recessed base at the floor.

7. "Planning center." Whether elaborate or simple, this must afford a clear view of the whole shop for the teacher. The only kind requiring architectural preparation is that which is combined with a drafting, graphic arts, or other "clean" department behind a glass partition (see accompanying plans).

MATERIALS STORAGE (below). These photographs are from the Burris School, Muncie, Indiana (more fully illustrated, pages 100-1021). Leather storage rack is seen at left, vertical lumber rack at right.
TOOL SUPPLY (left and above). The use of a tool crib, as photographed in a trade school, is often frowned upon by the industrial arts teacher. His pupils have only short periods in shop, should get at tools instantly from open racks or panels, as seen above, right; one pupil can be delegated custodian of each rack. Storage of nails, etc., is seen in the example across-page.

PLANNING AND PROJECTS CENTERS (right and below). As mentioned in the text, it is natural and easy to let children sit on benches, as seen in the larger view, to observe a blackboard demonstration. In the smaller picture is a glimpse of the "planning center" behind the glass partition, where a girl is examining pottery from the "museum," and boys are planning at a desk with books. Both these views are from Bethlehem Central School of which the plan appears on page 104.
8. Display. Cabinets built into the wall, and facing the corridor outside the room, give a chance to display student work; other cabinets may be provided inside, always having glass fronts or doors as protection against ever-present dust. A great deal more display is required than is often realized. Interior walls, at least from a hard wainscot to the picture-rail height, should therefore be of a material that permits tacking. In the planning area, in addition to desks and other working necessities, there must be space for counters or open cupboards holding samples of ore, wood, clay, textiles, papers, and other materials of industry. This kind of space is valuable and must be insisted upon. If a sacrifice is to be made, the first thing to go should be pseudo-classroom space with seats or benches generally vacant. Pupils may sit on work benches instead, to listen to talks, preferring the informality of the situation.

EQUIPMENT AND FINISHES

1. Floor and wall finishes. For general shop areas, the material in most common present-day use is hardwood, usually maple. Other materials: wood block, resilient tile, rubber (for more details see AR, April '40, p. 100.) Concrete is preferred in areas devoted to automobile mechanics, forge, heavy machine work. Walls should preferably have a wainscot 4 to 5 ft. high of a hard-finished material such as tile, which is easily maintained. Above this wainscot should be a bulletin-board

Below: The type of wash-up fountain used in regular industrial establishments is highly recommended for use in the larger school
material such as soft wood, wall board, extending to the picture rail. Acoustical ceilings should provide minimum absorption of 35 per cent; 50–75 per cent preferred.

2. Outlets — power and electric. Inadequate wiring is the bane of the shop man. Minimum requirement in power outlets for the well planned shop is 110-volt outlets every 15 ft. around the shop. Adequate power wiring includes 220-volt outlets at about 10-ft. intervals along the outer wall, and under-floor to the central area containing tools such as the jointer, sander, power saw, band saw, wood planer, a possible metal planer. Height of wall outlets, 42 in. above floor. Switch panels have too often been placed in positions out of easy reach. A red pilot light is indispensable at or near the main switch. Gas Outlets may be required at the metal heat-treating oven, the ceramic oven, the kitchen.

3. Lighting. The customary glass-globe fixture used throughout schools is too easily broken when hit by long boards, etc. Hence a preference for incandescent fixtures of concentric layers, or fluorescent fixtures with cut-off baffles acting as protection. Local lights attached to machines are also easily hit by young pupils; might be replaced by spotlight provisions in the ceiling permitting direct illumination of critical machine parts. Lights recessed in the ceiling for general illumination have the disadvantage of creating excessive brightness contrasts with the dark ceiling unless supplemented by a few indirect lights of low power and wide spread used expressly to illuminate the ceiling itself and incidentally to soften the down light. For lighting levels, see IES Manual of Recommended School Practice.

4. Ventilation. Beyond the general requirement of 6 to 7½ changes of air per hour and 65°F temperature with relative humidity of 30 to 60 per cent, there is needed a big exhaust fan to be used in connection with special noxious operations such as plating; also, where finishing rooms and materials storage are in dead interior space, mechanical ventilation should not be forgotten. The grouping of the forge, the heat-treating furnace for metals, and the ceramic oven near one another permits carrying the respective exhaust flues and chimneys out of the room together in a single stack, and supplying a single hood. The more elaborate shop in a big school may require forced evacuation of sawdust, shavings, etc., through under-floor flues.

5. Plumbing. An item all too frequently forgotten though urgently needed is a drinking fountain. Toilets need not be placed within the shop area. Highly desirable in larger shops is an industrial-type wash-up fountain. In comprehensive shops, the irreducible minimum wash-up facility is one deep sink, piped for hot and cold water. Cold water is needed in the graphic arts area for paints and paste; in wood-working for glue; in the ceramics area; in metal work at quench tubs. All shop sinks need extra large drains, and more especially big easy traps, since there is no other place where children can dispose of clogging materials such as clay, wax, grease, paint, plaster of Paris. If automobiles are to be driven into the shop, a floor drain is required in the concrete floor.
INDUSTRIAL ARTS LABORATORY

BURRIS SCHOOL, Muncie, Indiana; Herbert F. Smenner,

Architect for the Shop Extension

This arts workshop is a showplace of industrial arts education, connected with the Ball State Teachers College. Dr. Fred C. Schmidt, Jr., was consultant in preparing the plan. Its scope is far broader than most. The purpose is to relate all "The Arts," including fine arts, household arts and industrial arts. There is also the desire that boys have a taste of household arts, girls of industrial ones.

The plan (next page) mirrors the belief in coeducation, and also belief in stimulating the pupil's own interest so that he spends a major part of his industrial-arts time in occupations which he finds to his liking. Note that there are no formal corridors or passageways through the area. In getting from one part to another the boy or girl has options of routes that lead past all the variety of work offered. The planning principle is the same that is used by the department store which seeks to intrigue customers into exploring all the component shops. The plan has been criticized for having too many partitions, though glass has been introduced in many of those which the plan marks solid (see photographs). The justification for the use of glass partitions is the desire to break down the physical barriers between various subject-matter areas.

Color presented an unusual problem because of the openness of the plan through the use of glass partitions. Harmony had to be maintained although distinctiveness in color was sought for each area. Pastel shades were finally selected, cool for south and west exposures, warm for north.

THE PHOTOGRAPHS illustrate various parts of the Burris School interior. In the metals room shown at the top of the page opposite, note concrete floor, and wood floor in contiguous forward area. The lockers hold student work in progress. Hood is needed over furnace to remove noxious gases; duct against ceiling at rear is part of regular ventilation system. On this page, from top to bottom: a tool cabinet built in with vertical ventilator shaft; consultation and storage space, in crafts area; the ceramics shop with furnace and potters' wheels; part of the woodworking shop.

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PLAN OF THE BURRIS SCHOOL, Muncie, Indiana — see text discussion and photographs on preceding pages
This suggested plan was made for a vocational shop but illustrates principles that apply to industrial-arts shops as well. In good arrangement there are three related unit shops which have the character of general training. The metal shop and the electrical shop both serve the auto shop which stands between them. This more limited selection of fields of work is advocated by some industrial-arts teachers. An automobile, they say, contains a power plant, electrical system, radio, plumbing system, it demands sheet-metal work, woodwork, ceramics in spark plugs at least; indeed, it involves almost every shop activity but printing.

HUGH MORSON HIGH SCHOOL, Raleigh, N. C., William Henley Deitrick, Architect

A comprehensive general shop for industrial-arts use that is less cut up by partitions than the Burr's School plan, and arranged with great competence. There are fewer departments. Note that hot metals are concentrated in a corner where there is a concrete floor and a common hood for exhausts and chimney. The ceramics area, the other item of "dirty work," is at the same end of the shop, which is graded in plan from "dirty" to "clean." Glassed-in enclosures protect graphic arts, photography, and planning and drawing (note display cabinet toward corridor). The use of a tool center is open to question, some teachers preferring open panels of tools near each kind of work. The shop teacher instrumental in planning was C. Merrill Hamilton.
Separate tool panels for different kinds of material, easily supervised by one pupil for each section. Open arrangement quickly checked visually by teacher. No time lost at a "tool crib." Glass bowl fixtures are easily destroyed - lowered types are better protected. Display cases would create less clutter if built into the wall.

Storage areas need ventilation.

Concrete floor in hot-metals area.

Maple floor in main area is well liked by teacher.

These drawers are useless; since tools are kept hung up. This space should be divided into large sections for the storage of work in progress.
SPECIAL ACKNOWLEDGMENT for help in preparing this study is made to Mr. Neuthardt (whose shop is seen on these two pages) and who has kindly lent photographs which are to appear in a forthcoming book on industrial arts education; to Mr. Fred Strickler of Teachers College, Columbia University, and to Mr. Ray G. Fales, Supervisor of Industrial Education, N. Y. State Education Dept.

This busy shop has a high-ranking reputation among school men. The room is a little too long and narrow to meet the highest standards as now postulated, but the teacher, Mr. Emerson E. Neuthardt, has made the most of it. The interior views (there are others on page 97) suggest how much more goes into such a shop than we are accustomed to see in photographs of architects’ designs just finished and not yet used. A part of the characteristic clutter of school shops arises out of the vestigial affection for “peasant art” and “arts and crafts” of teachers who have not emotionally graduated into the industrial epoch; but a part of it arises out of the need for much more display than school boards have included in building programs presented to architects. This “museum” display, along with display of finished student work, should be integrated in the room plan along with tools and material storage.

PHOTOGRAPHS on these two pages are from the Bethlehem Central School and show details of an industrial arts shop in successful operation. The textile display (above) is close to the planning center (and may be picked out in the general view, bottom of page 97) — an essential element of the good shop. The hot metals area (below) has a concrete floor, metals of relatively low melting point are used. The elevation (left) shows the organization center at A-A in plan with overhead show space for finished projects.
A fine example of a shop occupying a separate one-story wing which secures bilateral natural daylighting, easy access for deliveries (including access for automobiles to be worked on), and easy sound isolation from the rest of the building. (Lumber storage space acts as a natural sound barrier between the shop and the arts room next door.) A comprehensive general shop including more activities than most

The New York State Education Department advocates industrial arts shops of an extremely comprehensive type, based on the idea that children should explore the whole industrial environment (a far higher percentage of children in this state will go, for example, into printing or textiles than into woodworking; and if the youngster goes into no industry at all, it will still be true that these occupations engross a high percentage of his neighbors). Another purpose, especially in junior high schools, is to test the whole series of the child’s aptitudes. The plan at the left is one of a graduated series in four steps to take care of classes from 10 to 25

**NEW YORK STATE SUGGESTED PLANS**

Based on existing buildings, not an ideal setup, the plan above is uncommonly tight in its provision for 16 children. In an area 22 by 50 ft, it accommodates tools for no less than 10 fields of industrial operation. The example at the right suggests methods of introducing aeronautical study in an area somewhat larger and used as a comprehensive shop. Few states use such romifying programs
Reflection Factors in Store Windows

By Kenneth C. Welch, A.I.A., I.E.S.

The familiar problem of combating reflections on store-front windows is becoming more important because of the present trend toward the open-front store. Glass fronts often reflect strongly lighted buildings or sky with the result that the glass appears to be covered with a "veiling glare," and pedestrians are reflected as in a mirror.

Formerly, strong lighting could be used within the window to overcome reflections, but the open-front store cannot be as highly illuminated as a "boxed-in" window.

Show windows, with backgrounds and theater-lighting, can be a large item of expense. Consequently, merchants are discounting their face value, rating them in proportion to the amount of pedestrian traffic which passes by the site, without entering, and to the need for displaying upstairs merchandise. This occurs to the greatest degree, of course, in existing metropolitan central districts.

In large shopping goods stores on the fringe of such districts, and in certain suburban locations, which sometimes pull through their doors as many as 90 per cent of the women who contact them.

This sketch indicates how external brightness factors on a clear day affect the display window of a neighborhood store on the shaded side of the street with low surrounding buildings. Any display within arcs A and C, reflecting brightness of 1500 footlamberts or more, is obliterated, because one can see only the reflections of skylighted buildings and sunlitened sidewalks. Moving cars and pedestrians add to the reflected confusion. Through small arc B there is fairly good visibility, and through arc D very satisfactory conditions exist. Of course, when the shopper steps close to the window and causes it to reflect the lower brightness of his own figure, the display can be seen to better advantage in that small area.
In this example the display is located on the sunny side of the street, necessitating an awning or marquee. This protection against the sun has the effect of decreasing illumination within the window. The display within arcs A and B can be seen fairly well provided the street paving has a dark reflection value and the building opposite is not too light in color, and provided also that the display is lighted, has window backs, and merchandise of sufficient reflection value to create average brightness of 300 to 400 footlamberts. The display within arc C is obliterated by glare from the sunlit sidewalk.

This sketch shows the plan of a typical arcade-type window, indicating how a glass show window set at a right angle to the street reflects the lower brightness within adjoining show windows, when it is approached from the customary oblique angle. The display within arc B can therefore be seen quite satisfactorily. The glass in front of arc A reflects lighted surfaces and possibly even a view of the sky up the street resulting in annoying reflections and veiling glare.

The open-front design has the effect of eliminating the physical barrier between the exterior and interior, and psychologically helping in the expensive process of getting the prospective customer inside the store. Once the merchant gets the customer past this barrier, half his battle is over. With the elimination of veiling glare and all reflections, the enclosing glass does not exist as an architectural surface, even though the glass frame may remain as part of the composition.

This trend toward open-front design, which places the interior on display from the street, emphasizes the importance of producing brightness values on the interior architectural surfaces and merchandise to overcome the veiling glare on the enclosing glass. This problem is much more difficult to solve in the average interior with the open front than in the shallow show-window background which in many cases is lighted largely by daylight. This problem of glare and its analysis is concerned entirely with brightness factors, and through brightness engineering a solution can be found.

Clipped corners, often used because they appear so inviting from a traffic standpoint in plan view, frequently cause bad veiling glare over a large portion of the window. From the oblique approach, all of the display in arc B can reflect daylighted surfaces. Also to be considered are the double reflections of high brightness value such as might occur in reflection line C. A typical curved window, which again looks interesting in plan, reflects and distorts everything that might be daylighted in the street, reducing in size the reflected objects, but showing a multiplicity of accented brightness patterns that act as an efficient camouflage in concealing merchandise on a bright day.
VEILING GLARE

Plate glass, when clean, is a transparent substance with two polished surfaces, which is about eight per cent efficient as a reflector. It is the reflection of light from these two surfaces which reduces the transmission of the light through the glass. There is a process available which introduces on glass surfaces a film a fraction of a wave length of light in thickness, which greatly reduces the reflection and thereby increases materially the transmission of light. To date, however, this process is valuable mainly for lenses and has limitations as to size of glass that can be treated. Also, the microscopic film is not very durable in exposed positions.

It is evident, therefore, that when one attempts to view a surface of given brightness through this transparent reflector, reflecting a greater brightness, it becomes necessary to look through the latter, which appears as a fog or veiling glare when reflecting plain surfaces. This obviously hampers the ability to see surfaces and details on the other side of the glass.

When a pattern of brightness is reflected, as in the case of the highlights from specular sunlighted trim on an automobile, the distractions can be even more harmful in obliterating the display, because the reflected design is something upon which attention can readily be focused. The relative distances involved — first, from the eye through the glass to the display being observed, and, second, the sum of the distance from eye to the glass and back to the bright pattern being reflected — have a decided bearing. When these two distances are widely separated, one can focus on the display with binocular vision, and see better through the reflected pattern which is out of focus. Also in the case of reflecting patterns, if the patterns are in motion, as from pedestrians or vehicles in sunlight, and the viewer is in motion, especially in a swiftly moving automobile, the moving reflection can become increasingly distracting when one is attempting to fixate on the motionless display. In this case the matter of speed of vision and relative brightness* also become a matter of importance.

When a permanent canopy is part of the design, with building line at either F or G, the reflection factor of the sidewalk can be lowered to a practical minimum and ceiling of the canopy reduced to a possible 30 per cent reflection factor. Distracting reflections can be eliminated by setting the glass at a protruding angle and providing normal interior brightness. Transom bar T is at door-head height, and joint R provides a natural protection to the glass.

THRESHOLD OF HARMFUL VEILING GLARE

In this analysis only the simpler problem of reflecting fairly large areas having a plain surface is considered, because on many occasions it becomes necessary to place the glass in such a way as to reflect plain surfaces that are a part of our architectural structure.

We can establish by observation, assuming average eyesight, that we reach what we call "apparent veiling glare" when the ratio of the brightness of the plain surface being reflected to that of the surface being viewed through the glass is unity (one to one). This assumes that both surfaces are large enough to be worthy of consideration.

In this case the resulting veiling glare is just barely apparent and is not harmful. It results in what can be called a quite satisfactory condition. Any increase, however, in this ratio will result in an increasingly unsatisfactory condition.

When the ratio of reflected to viewed brightness reaches two, a condition results which can be called the threshold of destructive veiling glare. This condition materially reduces the ability of the displayed area to attract attention.

*A possible solution of reflection problems when considerable areas of sidewalks and street and the lower part of the buildings opposite are in the shade is found in this arrangement whereby the glass front is tilted forward. As a result, veiling glare is reduced by restricting reflections to those of shaded areas of low brightness. It is necessary to provide a protective railing.

When a ratio of five is reached, there is an impossible condition which completely destroys the primary function of the display. This condition can result when a clear sky or sunlighted surfaces with medium reflection factors are reflected. It is impossible to create brightness with artificial illumination on large enough areas to overcome veiling glare satisfactorily under this condition.

If it is important to see the display, it therefore becomes necessary to arrange the glass geometrically in reference to normal and important viewpoints so that only surfaces of lower brightness are reflected. These surfaces can be those of neighboring structures that are in shade or simple surfaces which are part of your own structure, the brightness of which can be controlled.

INFLUENCE OF THE SITE

It is an accepted principle of good architectural practice to analyze a given site from all possible angles and all exterior conditions that might have a bearing on the design of the structure.

One condition that will not change is its solar orientation. However, we may have a central-district site in one of the man-made canyons, with such an orien-
tation that all surfaces that might be reflected in display-enclosing glass are comparatively low in brightness regardless of weather conditions. On the other hand, we may have low buildings, vistas the length of a street, light-colored structures in direct sunlight, all of which, if reflected, can completely destroy display values. Too often store buildings are designed without considering these varying brightness factors due to external conditions. The architect often produces (or reproduces) a pretty picture of a window and trusts that it will function properly. A client might even have examined and approved a satisfactory window treatment elsewhere, which, under the different external conditions existing on his own site, would prove unsatisfactory from the standpoint of visibility.

As an indication of these competing brightnesses, consider a display window on the shady side of a street where skylight alone would produce some 400 or 500 foot-candles and some supplementary artificial illumination might raise this to 600 or 800 foot-candles. Assuming a practical average reflection factor of about 50 per cent, on the larger areas of display or surround, we would produce an average brightness of from 300 to 400 foot-lamberts. The ingenuity of the ventilating engineer would be taxed to produce these values of brightness with only artificial lighting. Yet with even these much higher than average values of brightness we cannot permit the reflection of bright sky, light-colored buildings or even light-colored sidewalks in sunlight without causing harmful veiling glare. These exterior brightnesses can reach or exceed 1500 to 2000 foot-lamberts.

It is obvious that under these conditions, with today's lighting tools it is quite impossible economically to produce with artificial illumination the required brightness on surfaces large enough to attract attention. Therefore, when such external conditions do exist, and we want to realize the full value of an open front in the daytime, we must dispose our glass geometrically so that it reflects areas of greatly reduced brightness that exist in the vicinity or that can be incorporated as part of the structure we are building.

There are many ways that this can be accomplished from both a plan as well as a vertical-section standpoint. The accompanying illustrations are not intended as designs, but merely illustrate the principles outlined. They indicate conditions to avoid, some of the problems, and a few possible solutions. All are based on the law which states that the angle of reflection equals the angle of incidence and the fact that plate glass is about eight per cent efficient as a reflector. The rest is a question of knowing your brightness values.

Above: Illustrated again is principle that glass set at right angles to the street, when viewed from position A, reflects windows opposite and not the daylighted street. Unsymmetrical plan gives the pedestrian at B a good view of the display. Below: Glass set at a 45-deg. angle reflects arcade area along line R-2, rather than daylighted street along line R-1, as in square-corner design.

A view of the interior was thought to be the best advertisement for this ticket office of Western Air Lines in Los Angeles. H. Roy Kelley, Architect. Glass set at a conventional angle would have resulted in distracting reflections. The solution was a protruding V-shape design, protected against light from above by a non-reflecting canopy and from below by plants and a black concrete sidewalk.
WARTIME ADVANCES IN WELDING

During the war years the welder became, with reason, the personification of the battle of production on the home front. Consequently the great emergency gave welding a vastly extended field of application in which wide experience was gained, so that today the welding of steel skeletons of buildings offers the architect a more readily available and technically matured construction method.

Out of the war effort came the following advances:

1. The many welders trained during the war in shipbuilding and aircraft manufacture form a great pool of potential structural steel framers.

2. Fabrication plants with a wealth of experience in the production of welded members now have an excess capacity available for producing structural steel.

3. Improved methods of design and standardized details have been developed to produce stronger, simpler structures more quickly and at lower cost.

4. Welding equipment and electrodes have been developed to produce stronger welds with greater speed in any position.

5. Improved methods of inspection have been developed to insure compliance of workmanship with codes and specifications.

6. Revised building codes often provide for the use of welding where not formerly permitted.

These are the basic advantages of welding:

For the architect, the freedom possible in the handling of the architectural scheme and layout of the structure is a feature of some interest. Variations may be introduced to conform with the functional requirements of the individual problem. Truss-framing of irregular panel lengths can be fabricated easily, with truss members at various angles to allow clearance for openings as dictated by architectural considerations. Rigid frame construction permits the use of a bent-rib roof member, giving unobstructed floor areas, maximum headroom, freedom from diagonal cross-bracing and from shadow lines from truss members. This makes for the best lighting and visibility in such buildings as auditoriums, gymnasiums, armories, hangars and many industrial buildings. Furthermore, when price differentials exist, or it is anticipated that there will be difficulty in obtaining a specific material, plates may be substituted for rolled shapes in the fabrication of individual members.

Fast erection in the field. The use of welding permits more prefabrication away from the building site, and in positions where connections are more conveniently made. In addition to being made of a smaller number of components, the welded member requires no punching or drilling of rivet holes, which results in less handling during fabrication, simpler shop procedure, and more rapid erection. Angles for temporary field connections may be punched and welded to the main members in the shop to speed assembly on the job. The assembly of components may be fabricated to accommodate the easiest position for welding on the job.

Economies. The welded connection is the simplest structural connection, for the two members are joined directly to each other without a third connecting member. Since welding simplifies not only the individual structural forms, but also multiple assemblies, and facilitates both shop fabrication and field erection, a saving in the cost of material and labor is effected. Further economies in space, weight, and cost result from the following: (1) the elimination of holes required when riveted connections are to be made, thus affording effective use of the full cross section of members; (2) the use of single plates instead of angles in making built-up members, and for stiffeners in plate girders; (3) the possibility of using lighter structural members with rigid end connections; (4) the considerable saving in metal used in the joints; (5) the generally more effective distribution of material.

Simplified maintenance. The smooth surfaces of welded fabricated members are easily cleaned and painted, and there is small area to be covered. Simplified forms of details and connections present minimum opportunity for corrosion.
Ease of remodeling. Remodeling and making additions may be accomplished with a minimum removal of existing walls, floors, etc., because the exposure of beam ends or column faces to which welds are to be made is sufficient to accomplish the connection. There is no need for the exposure, preparation, and punching of larger areas. Since the necessity of field drilling or punching is eliminated, large savings of time and labor are effected. This results in reduced disruption of normal activities in the building being altered.

Elimination of noise nuisance. In considering the advantages of welded construction as compared with riveted structures, an advantage obvious to the layman is the elimination of noise. When buildings are constructed near hospitals, schools or libraries, ordinances frequently require that welded construction be used.

THE WAR BROUGHT MANY ADVANCES:

The exigencies of war production overcame many obstacles that previously had retarded a more general adoption of welding. These were: (1) skepticism about the value of the welding processes through inexperience; (2) lack of trained personnel; (3) preference on the part of the steel fabricators, with few facilities for turning out welded shapes, to continue production of riveted members for which their plants were primarily designed.

With our entry into the war, the major part of all steel production was suddenly diverted to shipbuilding and aircraft construction, in which the accepted practice for joining structural steel parts was by welded connections. Many steel fabricating plants were converted from the use of riveting to the use of welding. Steel fabricators made drastic changes in their organizations and plants. New equipment was installed, and new procedures established. Workers were trained and valuable experience was gained in the design and assembly of welded frames for structures. Through the production of enormous quantities of structural welded work, it was established that welding may be used with the assurance that safe and useful structures will result.

Steel fabricating plants fully versed in the production of welded structural members now have an excess capacity. Furthermore, contrary to the condition that exists in the majority of the building trades, there is an abundance of technicians trained in the use of welding for structural assembly. With the products of much research and highly technical development, a wealth of shop practice and experience, and an abundant supply of operators trained in assembly procedures, welded steel processes are in a strong position to help in meeting the demands for new construction in all classifications of building.

IMPROVED DESIGN AND TECHNIQUE

Broad and continuous research, particularly during the war years, has developed a more efficient and rational method of design. With increased knowledge and experience, the early tendency to copy designs developed in riveted structures has been supplanted by better methods applicable specifically to the welded technique. Standardized details and design diagrams have relieved the designer of many of the routine calculations that were once necessary. In recognition of the progress made in the development of the science and technique of welding, the American Institute of Steel Construction has for the first time, in its 1946 specifications for standard procedures in steel construction, included welding in a single specification with riveting and bolting. Previously welding was regarded as an entirely separate subject, and had been covered by an individual set of specifications.

Whereas before the war it was commonly thought that welding held its greatest advantage in work that did not involve enough duplication to warrant making elaborate templates, it has been found that welding has particular advantages in duplication. Much study has gone into the best methods of preparing jigs for the assembly of parts in the shop.

Advance has been made in the use of "slot" and "plug" welds to increase areas of welded surface, and to assure proper and convenient position for the operator. Study of stress flow lines and the importance of maintaining paths as nearly uniform as possible has resulted in improved standards for the formation of welded joints. The use of cut-out sections to avoid intersecting welds from several directions, and the avoidance of welds transverse to the lines of stress in tension members have been accepted as standards. "Butt" welds have come into increasing favor, due to the more general recognition of their greater freedom from stress concentrations and consequent greater strength in fatigue caused by vibration, repeated or cyclic stresses or dynamic shocks, which have at times in the past caused failure of connections.

Study has been given to the utilization of the inherent rigidity of welded connections to obtain an economy of material in designs embodying the principles of continuity and rigid frame construction. By the introduction of a semi-rigid type connection for partially restrained framing, mid-span moments of beams have been decreased and end moments increased to a point where they approach equality, thus providing a better balanced design with lighter beam sections. The warping and bending effects occasioned by the high heat of welding are understood better today, and precautions are taken to counteract them.

BETTER EQUIPMENT AND ELECTRODES

Manufacturers have maintained a constant progress in the development of welding equipment, and in the introduction of electrodes to meet the diverse needs encountered. Better electrodes have been developed for use in a.e. welding to produce a weld metal of a quality as high in any position as had previously been attainable only in the flat position. The superior quality of welds made with coated electrodes has been acknowledged by the American Institute of Steel Construction, whose specifications for 1946 allow for the use...
of stresses in the weld metal equal to those permitted in the base metal.

HIGHER INSPECTION STANDARDS

To visual and mechanical inspection methods formerly used there have been added electromagnetic and radiographic tests. Practically all building codes that accept welded assembly of steel structures require that all operations be inspected and approved by a qualified inspector. The inspector’s responsibilities cover work prior to, during and after the actual welding. In addition to determining that materials are of proper composition, homogeneous and free from defects, the fitting of the various members and the preparation of edges and surfaces to be welded must be checked for compliance with fixed standards. During welding, the temperatures, quality of welds, welding procedures must all have the approval of the inspector. After welding, bonds are checked to assure proper penetration of weld metal, freedom from porosity, correct profile with no undercutting, absence of cracks or checks in weld and surrounding metal, and proper alignment without warping. The completion of these inspections assures that the sound and substantial framework envisioned in the design has been realized in fabrication and erection.

LIBERALIZED BUILDING CODES

Although building codes were slow to provide for joining of structural steel by welding, and for a while hampered an extended use of the process, by July, 1913, over 110 cities permitted structural steel welding. Subsequent to that time many other cities altered their building codes to permit the use of welded connections. It was the adoption of a new code in New York City in 1937, which included acceptance of welding in steel fabrication and erection, that gave a decided impetus to its being accepted by a group of smaller cities. Building code requirements are constantly being simplified and standardized, while additional cities continue to adopt the welding technique as a recognized procedure.

FUNDAMENTALS OF WELDED DESIGN

Certain basic principles established by welding engineers prove useful in an understanding of the design problems involved in planning a welded structure:

1. Design especially for welding, dismissing riveted prototypes from mind.
2. Remember that simplicity of detail is the keynote of welded design. A simple design is the best technically, and the most economical.
3. Do not reduce weight of material, however, below point where increased fabrication cost more than offsets saving in material.
4. Visualize a planned sequence of construction operations which will permit control of distortion and shrinkage stresses.
5. Avoid eccentricities in connections where possible, and take into consideration any appreciable ones, even though they may be neglected customarily in standard riveted connections.
6. Avoid "notch effects" that induce concentrations of stress, and abrupt changes in contour or section that would interfere with smooth paths of stress flow.
7. Make the surfaces of butt welds sufficient only to insure full cross section equal to that of base metal. Avoid so-called "reinforcement" of butt welds.
9. "Box" or return fillet welds by extending them full-size around adjacent corners, especially where a longitudinal fillet theoretically ends at a corner not adjacent to a transverse weld.
10. Avoid tendencies toward progressive bending or rotation (not inherently self-limiting) about longitudinal axis of a fillet weld in a direction causing tension in the root.
11. Avoid details that might cause progressive tearing of fillet welds from one end to another, similar to the "unbuttoning" of a line of rivets due to bending.
12. Utilize wherever possible the natural adaptability of welding to continuous and rigid frame types in which rigid joints are required.
13. In the case of simply supported beams or girders (tire buildings without wind bracing), provide for sufficient flexibility of connections, such as is afforded by standard riveted connections, to permit end rotation of beams that must accompany simple beam deflection. Proportion welds to sufficient strength to insure deformation in the base metal.
14. In welded splices and connections, investigate stresses in both welds and base metal to determine critical section, as in riveted work.
15. Exercise care in using welds in combination with rivets and bolts (computed to carry stress) in the same structure. If grouped together, the rivets cannot slip to develop bearing and assume their share of load.
16. Bolted field connections for lightweight secondary beams, when permitted by the code, work out satisfactorily in conjunction with welding for other field connections and shop work. Often some costs can be saved by shop welding even though field connections are riveted. But field welding adopted to eliminate noise is invariably uneconomical when welding is not adopted for shop work also.
17. Detail connections and joints to provide a maximum of shop welding and minimum of field welding. Also design for welding in downward position wherever possible.
18. Where holes are necessary for rapid construction, as for tier buildings, detail shop and field work for the least punching and drilling in a few parts and as few heavy members as possible. For best economy, avoid punching and welding on the same member wherever you can.
19. Some temporary connections can be made from clips, cleats, etc., held until welded, but positive means must be provided to hold members together and align them prior to welding.
20. Provide duplication in parts of sufficient similarity for the use of jigs and fixtures wherever practicable.
21. Specify steels of known weldability characteristics. For special steels, specify electrodes, welding rods, and procedures that are known to be suitable.
22. Provide definite information by means of adequate symbols such as Standard A.W.S. Symbols (and notes where necessary), referring to standards or special types of welds, and to workmanship specifications for making them.

DESIGN OF FIELD-WELDED CONNECTIONS

The various types of members and their assembly in the structural skeleton of a building have individual characteristics and requirements that must be thoroughly understood before a techni-
COLUMNS BASES

The simplest form of connection is that of the column to its base. When columns are not subjected to tension or bending moments, which their bases must be designed to resist, the design will be determined by simple gravity loads. Such columns may be either shop welded to the base plates or field welded. In either case the base plate is anchor bolted to the base. When the masonry plates are large, it is usually desirable to set and level them separately before beginning column erection, the milled column bases then being attached equally to the anchor bolts and masonry by means of clip angles welded either to the web or flanges of the column.

Eccentric applications of gravity loads, or horizontal forces such as wind, traction and sway or temperature, however, cause bending stresses. In structures having considerable extent it may be found that temperature changes will impose bending stresses on the outside columns, whereas under ordinary circumstances they would support only a simple gravity load. Rigid frame construction also introduces these forces. In designing bases to meet these conditions, clips, angles or channels are bolted to the masonry and welded to the columns, in order to give a stiffened connection capable of resisting the bending stresses. Fig. 1 illustrates this method of column setting.

COLUMN SPICES AND CONNECTIONS

The simplest column splice, made without punching of the columns, employs clip angles shop welded to each flange of the column. These are field bolted during erection until a butt weld can be made. Another method of splicing is by welding small punched plates to the ends of the column sections, which, in the field, are bolted together prior to welding. In a third method, which is indicated in Fig. 2, punched angles are shop welded to the top of the lower section of the column, and a punched plate is welded to the bottom of the upper section to be joined to it. Temporary connection is made in the field with bolts until a field weld can be made to join permanently the plate and the lower section of the column.

FLEXIBLE CONNECTIONS

The most direct way of framing a beam to a column is to land the beam on a seat attached to the column, and to secure the beam to that seat. This is the method employed for securing beams subjected to uniformly distributed or concentrated static loads, in order to accommodate the deflection which will result under load.

The use of an angle seat shop welded between the flanges of a column is illustrated in Fig. 3. To this angle the beam, which has a punched connection plate welded in the shop, is bolted during erection, and later welded. The vertical leg of the angle acts as stiffener. A flexible connection at the top prevents side-ward twisting of the beam without imposing any end restraint. No transfer of horizontal stresses can take place, for the heel of this angle connection being left free, deflection of the beam under load will result in deformation of the angle, and therefore the beams exert only a vertical load stress on the supporting column.

The attachment of a beam to the flange of a column is demonstrated in Fig. 4. In this case the beam rests on an angle seat welded to the side of the flange. If heavily loaded, the angle may be stiffened by a plate set vertically within its two faces. A flexible connection is provided for the top flange of the beam, by welding an angle to both column and beam in a manner similar to that in the illustrated example.

Another method of accomplishing
beam to column connection is that shown in Fig. 5. Here the web of the beam is welded to half of an I-section which has previously been welded to the column flange. For heavier reactions an additional plate is welded to the side of the beam web opposite the I-section leg. As the beam flanges, in which the greater part of the stresses are concentrated, are left free, tension stresses carried in the web are absorbed by deformation of the connecting metal, and no horizontal stress carries into the column.

SEMI-FLEXIBLE CONNECTIONS

Where it is desired to have a certain amount of restraint on the beams and columns, in order to provide for wind bracing or other purposes, the type of connection illustrated in Fig. 6 may be used. Here the beam is supported by an angle or I-section, the top flange of the beam being welded to the front edge of a plate which is welded at the back to the column web. The inherent elasticity of the material in the plate thus gives limited flexibility to the connection.

RIGID CONNECTIONS

Beam and column connections made by other methods are usually quite flexible. However, welding offers the possibility of a completely rigid structure, for welded joints are as rigid as the metal itself. Therefore, by the use of welding, continuity and economy in the main material unattainable by any other method may be achieved.

In order to take advantage of the benefits to be derived from continuity, a considerable revision is required in the design of beams and columns. For fully fixed-end beams, there is a theoretical saving of from one third to one half, and when auxiliary cover plates and variable depth sections are employed to reinforce the short length of span in which the higher values of negative moment exist, additional advantages will be gained.

FIXED END AND CONTINUOUS BEAMS

Continuous columns may be used if the beams are field butt-welded to the flanges of the columns as shown in Fig. 7, and stiffeners shop welded between the column flanges. The stiffeners carry stresses across the column sections. At times a variation of this method is employed, in which short beam sections are shop welded to the columns, and the beams are field spliced at the inflection points in the span. This is the usual method when the cross sectional area of the column is large as compared to the area of the beam.

The second manner of effecting beam to column joints in a rigid assembly is to use continuous beams with the column butt welded to the top and bottom of the beams as indicated in Fig. 8. Stiffeners equivalent to the column flanges in section are butt welded between the beam flanges in the shop. The beams are continuous over the lower sections of the column, and have only one field splice per span located in the beams at one of the inflection points. The upper column section is butt welded to its seat on the beam. In the latter method of erection, the connections to the interior columns of the structure receive but a very small portion of the moment in the beams as compared with that transferred through the connections from beam to column in the former method. Erection problems are also simplified, for shop welded connection angles slip over the top of the column and engage a bolt through the web. Thus the beam is immediately supported by the column. A similar bolted connection connects the webs of the beams at the field splice.

BEAM CONNECTIONS

The connections of beams to beams or of beams to girders are simply accomplished by butt welding. The shop punching of the main members to provide for temporary field connections should be eliminated as much as possible, in order to reduce fabricating costs. Angles punched and welded to the members provide a simple and economical field connection.

PLATE GIRDERS

Since the plate girder is composed of a great many pieces and requires extensive shop fabrication it offers one of the outstanding examples of the efficiency of welded design. The elimination of rivet holes makes the full depth of the web effective, and therefore the depth may be decreased as compared with the depth of the riveted girder. Lighter plates are used instead of angle stiffeners, fillers are eliminated, and the weight of weld metal is considerably less than that of rivets. There are half as many pieces to handle in fabricating, thus effecting a decided saving in labor.

TRUSSES

In trusses of proper arc-welded design, gusset plates are generally eliminated. Tension members in the arc-welded design are lighter than those in riveted design because the cross section does not have to be increased to account for rivet holes. They may be designed in various ways using T-shapes, H-shapes or U-shapes for chords. The web members are generally angles or channels. At any given joint, the component of stress of a web member which is picked up by the next web member is transferred directly from the one to the other without passing through the chord at all. In a riveted truss all web members must be connected to the gusset plates for the full stress they carry, and the component is picked up by the next web member through the gusset. The inherent rigidity of welded construction offers resistance to lateral forces such as those generated by the operation of mechanical equipment and to wind stresses. Trusses are not necessarily limited to roof construction, and will frequently offer opportunities for considerable economies in space and weight when used instead of beams or girders to support floors carrying heavy loads. Furthermore, their use will decrease deflection. The detail in Fig. 9 indicates how most joints of heavy trusses can be made without gusset plates by means of welding.

RIGID FRAME CONSTRUCTION

The opportunities in architectural design offered by the use of rigid frame construction have already been mentioned. The clean lines and the arched forms that are obtainable are highly effective. In the forming of the shaped beams that compose the framework, the greater part of the work can be done in the fabricator's shop. This results in the erection becoming a simple beam and column job, and assures maximum speed and economy.

Figs. 1, 3, 7, 8, and the photograph, courtesy of The Lincoln Electric Company.
Figs. 2 and 4; courtesy of Engineering News Record, and Air Reduction Sales Company.
Figs. 5, 6, and 9; courtesy of Air Reduction.

JULY 1946
MANUFACTURERS’ LITERATURE

AIR CONDITIONING
Carrier Air Conditioning — Refrigeration — Unit Heating. Booklet discusses air conditioning, refrigeration and heating engineering services offered. Various types of dehumidifiers, air conditioners, compressors, condensing units, cold diffusers, unit heaters and heat diffusing units are shown and described. 12 pp., illus. Carrier Corp., 300 South Geddes St., Syracuse 1, N. Y.*

AIRPORT HANGARS
Airports by Luria. Complete airport design and construction service is offered in this folder. Details and dimensions of standardized hangars constructed on a unit system in a variety of designs. Flexible arrangement of units and possibility of expansion are emphasized. Hangars for commercial airports and for small planes. 8 pp., illus. Luria Engineering Corp., 500 Fifth Ave., New York 18, N. Y.

DRAFTING
Axonometric Drawing — the Universal Picture Language. Principles of isometric and dimetric projection for pictorial engineering drafting are discussed, together with the requirements for producing true, accurate drawings of these types. Methods of using the "Inscrutmaster" stencils to replace scales, triangles and protractors for speedier axonometric drawing. 20 pp., illus. John R. Cassell Co., Inc., 110 West 42nd St., New York 18, N. Y.

ELECTRICAL APPLIANCES

FANS AND VENTILATORS
Airjet Roof Ventilators and Vent Flue Caps. Aerodynamic principles are discussed in relation to design of roof ventilators and vent flue caps. Engineering data given for calculation of wind pressure, heat transmission and heat loss through roofs, attic temperatures, solar heat transmission through skylights, size of ventilators required. Number of air changes required tabulated by building types. Weather data for major cities throughout U. S. cover maximum and minimum temperature, average summer temperature, humidity, wind velocity and prevailing wind direction. Discussion of special features, dimensions, specifications, assembling and installation. 16 pp., illus. C. R. Gelet Co., 35 North Raymond Ave., Pasadena 1, Calif.

Emerson-Electric Fans for 1946. Catalog of range of fans from small portable to heavy-duty wall-, ceiling- or column-mounted oscillating fans. Also includes kitchen ventilators, exhaust fans and cooler fans. Complete construction details, dimensions, specifications, weights, current consumption, capacities, 26 pp., illus. The Emerson Electric Mfg. Co., St. Louis, Mo.*

FINISHING

FINISHES
Moleta Architectural Color Guide. A range of 150 colors, shading from pastels to deep tones, is reproduced in this book designed to be used as a guide in matching wall colors with color samples. For each color sheet, formula is given to show how the shade can be quickly mixed, using the "Moleta" toners and "Moleta" Flat White. 150 pp., illus. Monroe, Lederer & Tanniss, Inc., 606 North American St., Philadelphia 23, Pa. $5.

GREASE TRAPS

HARDWARE

HEATING AND HOT WATER
How to Cut your Fuel Bill. Bulletin presents diagrams showing how to prevent combustion fuel losses. Types of electric draft controls illustrated. Data on operation of controls with stokers, oil and gas burners. 16 pp., illus. Campbell Engineering Co., Appleton, Wis.

Electric Radiant Heating with Roberson Heatsum Cable. General features of radiant heating, and specific characteristics of electric radiant heating. Method of calculating load requirement, thermostat location, specifications and installation. Sizes and properties of the heating cable. 4 pp., illus. L. N. Roberson Co., 1539 East 103rd St., Seattle 55, Wash.


INSULATION

Factors Affecting Heat Transmission through Insulated Walls. Test results are given for a variety of insulating materials in varying forms, thicknesses and positions. Tables show range of thermal conductivity, summary of findings and conclusions. 25 pp., illus. Engineering Experiment Station, University of Minnesota, Minneapolis 14, Minn. 40 cents.

LIGHTING
The Story of Edwd. F. Caldwell & Co., Inc. Anniversary brochure outlines the development of artificial ill. (continued on page 146)
The Case of the Exhausted Executives

... It Happened in Baltimore!

PROBLEM: Nerve-wracking noise—in the Baltimore plant of the Glenn L. Martin Co. Production executives—supervising the Mars, the B-26 Marauders, and the PBM Mariners—had offices alongside the production line. The din was constant, exhausting. Executives had to shout to make themselves heard. It was almost impossible to talk on the 'phone.

SOLUTION: Management called in the local Acousti-Celotex distributor—member of the only sound-conditioning organization in the world with the "know-how" of over 100,000 acoustical installations. To the ceilings he applied Acousti-Celotex, the original and genuine Ferox processed, drilled fibre tile, and most widely used of all acoustical materials.

RESULT: A distinct decrease in noise—a remarkable improvement in working conditions. All production executives got more done in shorter time with less strain. The benefits of sound conditioning this area were so demonstrable that the Glenn L. Martin Company now has Acousti-Celotex in all offices... in cafeterias, reception and recreation areas, as well.

MORAL: It's a smart management that invests in Acousti-Celotex® sound conditioning. Installations in offices, factories, schools, hospitals, stores, banks, restaurants, theaters and churches prove this. So consult your local Acousti-Celotex distributor. His advice is yours without obligation, and he guarantees results. A letter to us will bring him to your desk.

* * *


Sound Conditioning with

Acousti-Celotex

* Perforated Fibre Tile

Since 1923

Sold by Acousti-Celotex Distributors Everywhere • In Canada: Dominion Sound Equipments, Ltd.

A PRODUCT OF THE CELOTEX CORPORATION, CHICAGO 3, ILLINOIS

JULY 1946
No matter how carefully you engineer your lighting layouts, their success depends largely on the fixtures you specify. Certified distribution curves prove the efficiency of optically engineered Day-Brite fluorescent fixtures. They are skillfully designed for easy installation and maintenance. Quality construction in every detail makes them a dependable source of abundant, glareless illumination.

There is a Day-Brite fixture to meet every lighting need. Write us your requirements,

Day-Brite Lighting, Inc., 5465 Bulwer Avenue, St. Louis 7, Mo.
Nationally distributed through leading electrical supply houses.
In Canada: address inquiries to Amalgamated Electric Corporation, Ltd., Toronto 6, Ontario.
SCHOOL SHOP EQUIPMENT: WOODWORKING

Drawings of machinery on this and page 121 are reproduced at ¼ in. = 1 ft. scale. Architects, in planning shop layouts, may find it helpful either to trace directly over these reproductions or use them, cut out on cardboard mounting, as templates. Data and recommendations are for general guidance; particular situations may require appropriate modifications. Drawings on this page were based on drawings and data from the Delta Mfg. Co., Milwaukee. For additional information see Delta Booklet "How to Plan a School Workshop"
"Cast Iron, of Course!"

Real estate management executives who know say cast iron — whenever they are consulted on the best type of boiler for a new building or for replacement. For experience has taught them these important facts about cast-iron boilers:

They last longer — their cost per year is lower . . . they successfully resist corrosion and rust . . . they are sectional — easily installed and replaced . . . they are easily cleaned and maintained at consistently lower cost.

Men who know also agree upon H. B. Smith Cast-Iron Boilers as the leaders in the field. For every commercial, industrial, institutional or residential use, for all fuels and fuel-burning methods, they recommend them without hesitation.

Write for a free catalogue of H. B. Smith Cast-Iron Boilers. And specify them with confidence, always.

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CAST-IRON BOILERS

THE H. B. SMITH CO., INC., WESTFIELD, MASS. Offices and Representatives in Principal Cities
SCHOOL SHOP EQUIPMENT: METALWORKING

BENCH LATHE

ALLOW 6' CLEARANCE FOR FEEDING WORK THROUGH HEAD STOCK

LATHE SHOULD NEVER FACE WINDOWS

SHOULD BE PLACED AT 45° ANGLE TO WINDOWS

DAYLIGHT

TOOL GRINDER

GRINDER WHEELS MUST HAVE GUARD

NEVER LOCATE GRINDER NEAR FINISHING OR POLISHING OPERATIONS

ENGINE LATHE

ALLOW 6' CLEARANCE FOR STOCK FEED THROUGH HEAD STOCK

LATHE SHOULD NEVER FACE WINDOWS

PLACE AT 45° ANGLE TO WINDOWS

DAYLIGHT

SHAPER

RAM ON SOME SHAPERS EXTENDS BEYOND BASE OF MACHINE ON BACK STROKE

SHOULD BE PLACED AT 45° ANGLE TO WINDOWS

DAYLIGHT

MILLING MACHINE

ALLOW CLEARANCE FOR SERVICE-ACCESS DOORS

PLACE AT 45° ANGLE TO WINDOWS

CHIP GUARDS ARE NEEDED FOR SAFETY

DAYLIGHT

POWER-CUTOFF SAW

PLACE AT 45° ANGLE TO WINDOWS

ALLOW 10' TO 12' CLEARANCE FOR STOCK FEED

ALLOW OPERATOR PLENTY OF WORK AREA

PRESS BRAKE OR POWER SHEAR

ALLOW 6' RADIUS FOR HANDLING SHEET STOCK

DAYLIGHT

MONTH AND PAGE NUMBER: JULY 1946 121
Take the case of the
INHIBITED MOLD
vs. the
FRUSTRATED COCKROACH

You never know when your knowledge of Hubbellite may be what will make you the fair-haired architect of some client for the rest of your financial life.

One day you may have an order for a locker room with a floor that inhibits many molds and bacteria growths.

Another time you may be called on for a kitchen floor. One which repels roaches. And, which also withstands foods and fats that ordinarily dissolve resilient floor surfaces.

In either case, specify Hubbellite. Hubbellite is a cupferous, monolithic surfacing available in several colors. It is non-sparking, static-safe, resistant to neutral oils and greases, non-dusting and non-denting under ordinary point loads. It will stand up well under foot traffic and light wheeled units common in most plants. Most unique of all—it inhibits molds and repels roaches.

Hubbellite is an unrivaled floor surface for hospitals, locker rooms, kitchens, floors where explosion is a hazard or where solvents have to be resisted. This sounds like a big mouthful. The best way to check up on Hubbellite is to write, giving your particular interest or ask for complete literature for your file. We have tests from impartial scientific laboratories made on Hubbellite and also reports of actual installations.

HUBBELLITE
IS SOMETHING TO KNOW ABOUT

H. H. ROBERTSON CO.

2404 Farmers Bank Building
Pittsburgh 22, Pennsylvania

Offices in 50 Principal Cities
World-Wide Building Service

These quickly-wired Outlets and Caps have every improved feature for easy installation and use. Straight-in wiring with solderless connectors make fast work of range hook-ups. Cap and Receptacle combination make a neat, compact installation with attractive harmony of design.

Range Cap No. 7952 is of polished black Bakelite, designed to match the Receptacles. Range Outlet No. 7950 is surface type; polished black Bakelite. Also available in white Ivorylite: No. 7950-I. Range Outlet No. 7987 is flush type; polished black Bakelite. If wanted with .040" brush brass plate, specify No. 7990; with .060" plate, No. 7991.

HART & HEGEMAN DIVISION

ARROW-HART & HEGEMAN ELECTRIC COMPANY, HARTFORD 6, CONN., U.S.A.
# TABLE 1

## State Legislation Affecting School Shop Design

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*Compiled by the National Safety Council.

## Key to Figures

1. Three or more stories permitted before such protection required.
2. Not required by law but is common practice.
3. Doors required to swing inward.
4. Not required by law, but all exits must be approved by state fire marshal.

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# TABLE 2

## State Labor Regulations Affecting School Shop Design

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*Compiled by the National Safety Council.

## Key to Figures

1. No state department of labor.
2. No safety code in state at present.
3. Safety code governs situation in mines.
4. To protect employees (teachers) of school only.
5. But architects are at liberty to make inspection.
ZONE CONTROL using CLARAGE
“Blow-Thru” Multitherms

Now one Clarage “Blow-Thru” Multitherm Unit can be used to air condition various parts of your building exactly as requirements warrant. A typical 3-zone installation is shown at left. Unit can be arranged to serve from two to six zones — an exclusive Clarage development.

ZONE CONTROL compensates for the difference in solar radiation on different parts of a building during different periods of the day. It also takes into account variations in exposure, wind velocity, construction, and internal heat loads.

Thus winter and summer, if desired, you can maintain various temperatures in various parts of your building. Each zone is automatically controlled independently — yet only one conditioning unit necessary.

---

EQUIPMENT ARRANGEMENT

1. Filter Section
2. Tempering Coil with Steam Distributing Tubes
3. Fan Section
4. V-Belt Drive
5. Motor
6. Fan Discharge Section with Access Door
7. Distributing Plate
8. Reheat Coil with Steam Distributing Tubes
9. Cooling Coil
10. Zone Double Mixing Dampers (3 sets)
11. Access Door
12. Zone Room Thermostats
13. Zone Damper Motors
14. Steam Valve
15. Cold Water or Refrigerant Valve
16. Temperature Controller

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Clarage ZONE CONTROL air conditioning is adaptable to practically any type of building — industrial, commercial, etc. Write for further data.
PRODUCTS for Better Building

AUTOMATIC REGISTER

Individual room control of warm air heat is promised by the Grad-U-Flow register without the necessity of elaborate control systems. A self-contained unit no larger than the conventional warm air outlet, it requires no electrical power. In operation, a bulb mounted under a cover on the front of the grille reacts to changes in room air temperature and causes a bellows to expand or contract. By means of levers the bellows opens or closes the grille dampers to maintain a constant temperature. A screw mechanism which alters the balance point of the levers permits selection of the temperature level desired for the individual room. Curved to permit even distribution of air, the grille is equipped with turning vanes which insure smooth and quiet operation. When production arrangements have been completed, the register will be offered for installation in new homes and in existing dwellings equipped with forced warm air heating systems. Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., South, Minneapolis 8, Minn.

WATERPROOFING

In the final stages of drying, the waterproofing preparation Kay-Tite expands and sets with extreme hardness, to form an impermeable masonry seal. According to the manufacturer, this material is applied like paint to walls which have been thoroughly soaked, and in the process of drying out it is sucked in to bond with the wall surface. No further surface finish is required, as it is smooth, washable and grime-resisting. When laying cement floors on ground level, it is also stated that the waterproofing may be sprinkled over the surface of the cement, and troweled into the finished surface to make it watertight, and increase surface hardness. Kay Tite, West Orange, N. J.

ALUMINUM PANELS

Permanent rigidity, imperviousness to moisture, and light weight are achieved in Reynalite, a new aluminum panel material. In this product two sheets of aluminum are bonded to a cellulose core by means of a plastic adhesive. The material is said to be uniform in quality, lightning and fire resistant, insect proof, and to have high insulating value. Wood veneers can be bonded to either or both of the metal surfaces. Fastened with ordinary nails or screws, it may be worked with the usual carpenter tools. Tests have indicated this material suitable for the construction of walls, partitions, ceilings, roofs, interior panels and cabinets. Reynolds Metals Co., Aluminum Division, 2500 South Third St., Louisville 1, Ky.

INSULATING GLASS

Air spaces in Twisadow, the new double-glazed window unit are hermetically sealed to effect thermal and dust insulation, and prevent condensation. Hollow aluminum tubing separates the glass plates and holds them in position, while a stainless steel channel encloses edges of glass and tubing for maximum protection during installation and use. Two or more plates of glass enclosing ¾ in. or ½ in. air spaces are declared virtually to prevent condensation, thus permitting use of larger windows, and to reduce heating and air conditioning costs. The standard unit is made with clear polished plate glass, but for special purposes units can be made employing heat-absorbing, water white, laminated safety, heat-tempered or other special glass. Available in a wide range of sizes in any combination of straight edges, with standard double glazing. Special triple, quadruple and multiple glazed panels can also be produced, as well as simple cylindrical beads within definite limitations. Dept. PRT, Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh 22, Pa.

GLASS FIREPLACE SCREEN

Dirt, soot, fumes, smoke and sparks are effectively prevented from getting out into the room by Thermo-Lite, the new glass fireplace screen. Made with a polished brass finish frame, the glass is especially heat treated to withstand temperatures up to 650° F. The fixture is made in 10 sizes to fit standard fireplaces without adjustment, and flanges permit variations to accommodate openings slightly larger or smaller than standard. Draft is controlled by sliding doors in the base. Merryweather Products Co., Akron 8, Ohio.

ALUMINUM ROOF PAINT

An asphalt base roof paint contains aluminum paste to form a reflecting, protective covering that gives longer life for the surface and reduces inside temperatures. When the paint is applied the aluminum pigment rises to the surface to form a foil-like, metallic shield against the elements. Eighty per cent of the sun's rays are said to be reflected. Suitable for use on smooth or slate roll roofing, asphalt shingles, built up, slag or metal roofs, it is also made for outside metal work such as tanks, flashings and iron fences. The paint is packaged ready for use and may be applied with brush or spray gun. Dry within an hour, the surface can be used in three to four hours after application. United Gilsonite Laboratories, Scranton 1, Pa.

CIRCULAR INCH CONVERTER

Fractions of an inch are simply converted into decimals or millimeters, and corresponding U.S. standard gage numbers and drill numbers revealed, by use of the Calculidae inch converter. Only 5¼ in. in diameter, the device has decimal equivalents graduated in .001 in., and metric equivalents graduated in .1 mm. Range is from 0 to 100 mm. Graduations are reproduced on facing surfaces and protected with a plastic lamination. The non-warping, non-inflammable plastic instrument is unaffected by moisture, perspiration or ink. Directions are printed on the back. American Hydromath Co., 145 West 57th St., New York, N. Y.

STEAM BOILERS

Standard water tube boilers, the new Springfield Type M series, ranging in steam generating capacity from 6,000 to 17,000 pounds of steam per hour feature a water-cooled furnace design found particularly successful where it is necessary to maintain uniformly high efficiency over a wide range of load conditions. Erection is facilitated by

(Continued on page 126)
shop assembly of a considerable portion of the parts, and provision of complete framing to receive standard dimension refractory and insulating materials. Dimensions for various size units have been standardized. Designed for automatic firing, the boilers are stated to be simple to maintain and to be able to operate considerably above rated capacity. Heat applied to steam delivery tubes and steam delivery above water level are features intended to insure very dry steam and freedom from priming. Springfield Boiler Co., 991 E. Capitol Ave., Springfield, Ill.

NON-DRIP FAUCETS

Easy operation and easy repair were incorporated in the design of the new non-drip faucets, Diadene. Shutoff the valve mechanism in the same direction as water flow allows the water pressure to aid in closing the valve and prevent dripping. By placing the pack-}

New faucet designed to prevent dripping

ing between the threads and the chamber through which the water flows, it has been possible to lubricate the stem threads without risk of its washing away, and also to prevent the possibility of lining corrosion of the threads. For simplicity of repair a cartridge control unit is used, standard for all faucets of this design, which is easily and quickly removed. A spare cartridge may be substituted for any cartridge in need of repair, and the damaged or worn parts in the removed cartridge can be replaced or repaired at a later time. Pearl grey plastic handles and base coverings are standard with these fixtures. These handles are insulated, so that they will not get uncomfortably hot, no matter what the water temperature may be. They are stated to be capable of supporting hard wear, high temperatures and ordinary cleaning agents, and to be unaffected by acids or medicines. Crane Co., 836 South Michigan Ave., Chicago 5, Ill.

SAFETY OUTLET CAP

A plastic cap for electrical outlets, the Amerline safety cap, is offered to protect against possible accidental shocks and also to exclude dust and moisture from the outlets. It fits snugly into 110 or 220 volt openings, yet is easily removed. The cap is recommended especially where children are likely to play around outlets. Amerline-Chicago, 1753 North Honore St., Chicago 22, Ill.

FUNGICIDES

A line of fungicide concentrates, the Nuocides, has been developed to meet a wide variety of mildew and rot proofing needs. For ease and safety of handling, these fungicides are solutions or liquid emulsion bases, and include both solvent and water soluble types. Some components arrest or inhibit microbial growth, while others destroy them. It is asserted that with their use a high degree of resistance to mildew and rotting can be imparted to rope, textiles, lumber and other products. Nuodec Products Co., Inc., 796 Magnolia Ave., Elizabeth F., N. J.
When the blueprints call for RADIANT HEATING...

here’s why you’ll want Copper Tube

YOU’RE designing for lasting appreciation. So, for the radiant heating system, be sure to include copper tube in your specifications. The great durability and long-range economy of Chase Copper Tube mean a satisfied client, and satisfied clients build business and prestige for you.

You boost your stock with heating contractors, too, when the specifications call for Chase Copper Tube.

It’s easy to bend, light in weight, comes in long lengths, and is sold through plumbing and heating wholesalers throughout the country.

The demand for Chase Copper Water Tube is so great that we are not able to satisfy it at all times. However, the technical information is now available to you for future planning. For a complimentary copy of our new handbook write, on business letterhead, to Dept. AR-76.

7 Reasons
WHY CHASE COPPER TUBE FOR RADIANT HEATING

1. EASY TO BEND
2. LIGHT IN WEIGHT
3. SOLDERED FITTINGS
4. SMALL DIAMETERS
5. LONG LENGTHS
6. LOW COST
7. LONG LIFE

Chase BRASS & COPPER CO.

Waterbury 91, Connecticut

This is the Chase Network—handiest way to buy brass

INCORPORATED

ALBANY | ATLANTA | BALTIMORE | BOSTON | CHICAGO | CINCINNATI | CLEVELAND | DETROIT | HOUSTON | INDIANAPOLIS | KANSAS CITY | LOS ANGELES | MILWAUKEE | MINNEAPOLIS

NEWARK | NEW ORLEANS | NEW YORK | PHILADELPHIA | PITTSBURGH | PROVIDENCE | ROCHESTER | SAN FRANCISCO | SEATTLE | ST. LOUIS | WASHINGTON

(Indicates Sales Office Only)

JULY 1946
PLASTIC-COATED WALLPAPER

Included in the more than 1000 new patterns of wallpaper offered by the manufacturer are 75 styles of the new plastic-coated wallpaper, *Varlar*, in pattern and texture effects. The plastic coating which combines with the plastic content of the surface of the wallpaper eliminates the possibility of cracking or peeling, and produces a surface that has tested to be 50 times more washable than regular wallpaper. Spots and stains of all kinds may be easily washed away. Supple and flexible, it may be hung as easily as any good quality, regular wallpaper. Single rolls are 24 ft. long and 18 in. wide. United Wallpaper Inc., Merchandise Mart, Chicago, Ill.

SAFETY-TOP ELECTRIC RANGE

Cooking units are placed in a row across the rear of the Presteline electric range, thus setting them out of the reach of young children, and also eliminating the possibility of scalded arms for the housewife in reaching across front units. This new range incorporates the latest developments for utility and efficiency in operation. Pressed Steel Car Co., Inc., Domestic Appliance Division, Chicago, Ill.

What makes a LONGSPAN Outstanding?

Look for the U-shaped diagonal web. It provides an excellent welding condition and a constant chord spread that results in outstanding lateral rigidity. This exclusive Macomber design is made in underslung or square end types with sloping or parallel chords in lengths up to 70 feet. Here is a completely standardized structural unit, specified from load and span tables for unobstructed floor or roof support. Get our complete design information for your next project.

Macomber
Canton • Ohio
Member of the Steel Joist Institute

Increased safety is feature of new range

New autopsy table can be rotated on base

AUTOPSY TABLE

Mounted on a circular pedestal base which permits rotating through a 90° arc, the new Boston autopsy table incorporates all essential features for satisfactory use. The table is made of stainless steel, and the top is equipped with five removable perforated panels, one of which is fitted with a headrest, while another has a sponge bowl as an integral part. Long edges of the table are graduated in centimeters. All plumbing fixtures and waste outlets are concealed from view in the pedestal, yet are accessible through a removable panel. An aspirator is optional. All welded joints are ground and polished, thus rendering surfaces seamless for easy cleaning. Hospital Equipment Division, Market Forge Co., Garvey St., Everett 49, Mass.

FIBERGLAS ROOFING MAT

For use as a carrying and reinforcing agent for bitumen in roofing applications, a Fiberglas roofing mat has been (Continued on page 130)
**ASBESTOS IN ACTION**

*Engineers' Club, Dayton, Ohio
Architect: Scheib & Williams, Dayton, Ohio
Applicator: Myron Cornish & Company, Dayton, Ohio*

---

**ONLY K&M SPRAYED "LIMPET" ASBESTOS CAN GIVE YOU FULL ARTISTIC FREEDOM**

**ACoustics**

Noise reduction is a highly desirable feature in the design of modern clubs, restaurants, hotels and cocktail lounges... but so is freedom of architectural expression. That's why K&M Sprayed "Limpet" Asbestos is the ideal acoustical material. It assures the required degree of sound absorption, at the same time offering full latitude for carrying out architectural motifs. In the illustration above, for example, notice the many curves and recesses in the pattern of the ceiling. Sprayed "Limpet" Asbestos treats these irregularities as easily as plane surfaces.

Applied easily and quickly by spraying from a "gun", "Limpet" Asbestos sticks tight to any clean surface, regardless of shape or composition. It has a noise reduction coefficient of .70 in a ¾" application. It is light in weight, resistant to fire, moisture and vermin. Its thermal conductivity is only .31 at 75° F. It can be given up to 10 coats of paint without noticeably impairing its acoustical efficiency.

Is it any wonder that more and more architects on more and more jobs are specifying Sprayed "Limpet" Asbestos? If it's new to you, it will pay you to investigate it at once.

---

**KEASBEY & MATTISON COMPANY • AMBLER • PENNSYLVANIA**

*Nature made Asbestos...
K&M best in asbestos*

---


**JULY 1946**
developed. A uniform felted glass fiber sheet, .015 in. thick, it has a breaking strength of 10 to 14 pounds per inch width. The non-cellular structure of the individual glass fibers is unaffected by high-temperature applications of bitumen. An effective reinforced waterproofing is achieved by penetration of the bitumen roofing into the mat. Material is produced in rolls 18 in. and 36 in. wide. Owens-Corning Fiberglas Corp., Toledo, Ohio.

**HIGHER FLUORESCENT RATINGS**

Increases in the rated light output of 20-watt and 40-watt white and daylight fluorescent lamps have been announced. The initial lumen output per watt of the 20 watt white lamp has been increased from 43 to 46; of the 20 watt daylight lamp from 38 to 40; of the 40 watt white lamp from 52 to 58; and of the 40 watt daylight lamp from 47 to 48. Westinghouse Electric Corp., 306 Fourth Ave., Box 1017, Pittsburgh 30.

---

**PRECISION-BUILT LOCK**

A shear pin that snaps when someone tries to force the lock by turning the knob with a wrench gives added protection to the Integralock cylinder lock, yet leaves the cylinder in the knob in working order for unlocking by key. Made of pressure formed metals with bronze, brass and chrome finishes, the new lock is made in mortise and cutout types. Its self-lubricating, precision-designed and machined parts are said to assure long wear and low maintenance. Sargent & Co., New Haven, Conn.

**MAGNIFYING LENS**

A rectangular, pocket-size magnifier, the Mini-Mag, offers a much larger field of vision than is usually obtained in a magnifier of similar size, of optical glass, the lens is plano-convex, so that by holding the convex side up a flat field with little distortion results. The lens, which is 1\(\frac{1}{4}\) in. wide by 2\(\frac{1}{4}\) in. long, is framed in luminar and holds into a handle of the same material. Edroy Products Co., 480 Lexington Ave., New York 17, N. Y.

**EXPANSIBLE MEMORIAL**

A bronze memorial tablet, the Opening Door memorial, never gets out of date, since it provides for the insertion of additional leaves as necessary. The tablet is 25 in. by 32 in., and in the center is a bronze door, which, when opened, reveals sheets of bronze with which are photo engraved the names of those honored. Five hundred names may be placed on each leaf. Cincinnati Metalcrafts, Inc., 34th and Robertson Ave., Cincinnati 9, Ohio.

**SAFETY STANDARDS**

A safety blueprint has been prepared covering standards of adequate fire protection, exits and lighting for grandstands, tents and other places of outdoor assembly. Featured sections are construction and capacity of grandstands; location and flameproofing of tents; adequate exits and lighting for all places of outdoor assembly, and protection measures necessary. Natl. Fire Protection Assn., Executive Office, 60 Batterymarch St., Boston, Mass. 25 cents.
HOSPITALS stay modern
with SNEAD MOBILWALLS

Change is as inevitable in hospitals as in the science
of medicine. Snead Mobilwalls enable a hospital to
keep pace with the ever-changing needs of the
times, quickly, easily and inexpensively.

Snead Mobilwalls are the outstanding movable steel
wall for modern hospital interiors. They combine
the privacy, permanent appearance, and sound-
proofness of fixed masonry walls with instant mo-
bility, flexibility, low upkeep, and complete reusa-
bility.

The Memorial Hospital, New York City, provides
a significant example of the value of flexible in-
teriors. This modern hospital for the treatment of
cancer is equipped throughout with Snead Mobil-
walls. The medical and business staffs operate in
complete privacy and quiet with easily rearranged
flush steel Mobilwalls. This extreme flexibility has
already served the hospital many times when rear-
rangements had to be effected overnight. Small
clinic operating rooms, dressing rooms, and exami-
nation rooms are of similar construction. Semi-priv-
acy is obtained for ward patients with Snead Mobilscreens. The entire installation was made with
3-inch thick flush Type RF Mobilwalls, finished in a
light cream color enamel.

Let us send you complete details and photographs
of Snead Mobilwalls and Mobilscreens for hospitals.
Our engineers will gladly cooperate in preparing
interior plans and specifications, without obligation.

Memorial offers hope for the control of
cancer. Give to Memorial Cancer Center
Fund, 444 East 68 Street, New York City.

SNEAD & Company

Designers, manufacturers and erectors of library bookstacks and steel partitions

Sales Office: 96 Pine Street, JERSEY CITY 4, N. J.  Main Office and Plant: ORANGE, VA.
Johns-Manville Announces
Fifty Million Dollar

Multi-Million-Dollar "Test Tube" for actual experimental factory production, as well as fundamental research, now under construction near Bound Brook, N. J. The Johns-Manville Center ultimately will include six large buildings. Innovations in the first unit include ten experimental factories under one roof; a movable rear wall to permit temporary or permanent additions, or to accommodate extra-large machinery; a special system of interior construction to provide flexibility to meet changing needs for laboratory facilities.

Dr. C. F. Rassweiler, Vice-President of Johns-Manville Corporation in charge of research and development, states:

"We are living in an era of scientific improvement unparalleled in man's history. One single development stemming from social and economic needs can bring revolutionary changes throughout an industry. Today, we stand on the threshold of a new era, which has unlimited horizons for the development and improvement of new products for home and industry.

If this goal is to be achieved, some individual or group of individuals must have the imagination, courage and facilities to meet the challenge. Johns-Manville has accepted this challenge and is now in the process of constructing the world's largest research laboratory devoted to service through science for better homes and greater industrial efficiency."
Expansion Program
to include World's Largest Research Center
for Building Materials and Asbestos Products

Ground is broken, construction is under way, and the first unit of Johns-Manville's great post-war Research Center will be completed this fall. It will be the world's largest Research Center devoted to developing, testing and improving building materials, insulations, packings, and asbestos products.

Planned before the war, but postponed till Victory, this Research Center will bring together in one giant unit the newest and most complete research and testing facilities yet devised for these fields. It is the first project in a $50,000,000 expansion program which J-M hopes will assure 25% greater employment than in its highest peacetime year.

The Research Center will do a double job. It will study, test and improve today's products...it will develop new products to meet the new needs of industry tomorrow.

It is your laboratory...devoted to your problems...designed to produce more efficient Johns-Manville materials for you!

Manufacturers of 1200 Products for Home and Industry
advise and assist ex-G.I.'s interested in purchasing homes and businesses, already functioning, the service is under the direction of John B. Waltz, Jr., a veteran of five European campaigns and holder of the Silver Star. Sponsor is Roy A. Heymann, of Heymann and Brother, Philadelphia real estate firm.

The new service offers to help veterans find homes and business locations and advise them on the relative values of either or both. Also offered is help in investigating home and business potentialities in relation to location, advice against unsound ventures, counsel on alterations and improvements, etc.

**HOUSING DEPARTMENT**

A separate Housing Department has been established by the New York Life Insurance Company under the direction of O. L. Nelson, assistant secretary. G. Harmon Gunney has been named chief architect for housing.

The company already has announced two housing projects which are now under development: the Fresh Meadow project of more than 3,000 apartment units in Queens, N. Y.; and a 150-apartment project at Princeton, N. J. Both will be garden type apartments.

**ENGINEERS HONORED**

Honorary membership in Tau Beta Pi, national honor association of engineers, has been conferred on Harold S. Ellington and Col. Herbert W. Alden of Detroit.

Mr. Ellington, a member of the firm of Harley, Ellington and Day, Inc., Architects and Engineers, is a member of the American Society of Civil Engineers and president of the Engineering Society of Detroit. Col. Alden, director of engineering and formerly chairman of the board of the Timken-Detroit Axle Company, is one of the founders of the Society of Automotive Engineers, and a fellow of the American Society of Mechanical Engineers.

**MEETINGS ANNOUNCED**

The summer convention of the American Society of Civil Engineers will be held at Spokane, Wash., July 17-20, and the fall meeting of the Society is scheduled for October 16-19 at Kansas City, Mo. Both meetings will feature technical sessions for the discussion of irrigation, power, hydraulics and other civil engineering matters.

**PLANNING URGED**

Advance planning of commercial and industrial construction, public works and other types of building currently restricted because of the need for channeling materials into veterans' housing should be encouraged by the federal government, according to A.I.A. president James R. Edmunds, Jr.

"If the planning for the post-emergency period were to be stopped by uncertainty," Mr. Edmunds points out, "there inevitably would be a serious bottleneck in the planning field as soon as the present restrictions on non-housing construction were lifted."

**SWEET'S ARCHITECTURAL**

Larger and more useful than ever before, the 1946 Sweet's File, Architectural, contains 924 manufacturers' catalogs totaling 7,268 catalog pages. Its comprehensive information on product forms, characteristics, performance and use stands in marked contrast with the encyclopedic type of information formerly offered by many of the firms.

Sweet's File, Architectural, is especially designed to meet the catalog needs of designers and constructors of buildings which are architect-planned and constructed under a general contract. It is distributed to active offices of (Continued on page 136)
YOU CAN'T USE DYNAMITE TO CLEAR THE DRAINAGE SYSTEM WHEN grease FROM KITCHEN DISHES CHOKES UP THE PIPES

Wherever food is served, grease is an ever-present hazard. For when the grease from dishes, pots and pans is washed down the drains, it builds up layer upon layer on the inside of the drain lines until it eventually clogs up the pipes. When that occurs, you just can't "blow out" the grease. Kitchen service must be interrupted and repairs must be made which are costly and inconvenient. The right time to guard against this hazard is when specifications are being written ... and the right way is to install exclusive Josam Cascade Grease Interceptors. Their cost is so little compared to the permanent trouble-free service they provide!

PLAN FOR constant ACTION

INSTALL THE exclusive

Josam CASCADE GREASE INTERCEPTOR

An exclusive feature of Josam Grease Interceptors is the Cascade Design, based on the principle of the waterfall. Due to the tumbling of the grease-laden water over four levels, the grease is separated from the waste water with speed and completeness, regardless of temperature. The tumbling action is augmented by baffles scientifically placed with relation to each other to cause the proper degree of agitation below grease level, thus retarding the flow of water, forcing the grease to separate and rise to the top level where it can be easily removed. No cold water connections are necessary. Solids and sediment are evacuated, preventing decomposition of solids which cause odors in ordinary types of grease interceptors. Each Josam interceptor is equipped with the Josam exclusive "flow-control" which governs flow and insures over 90% grease retention efficiency. To be sure, specify Josam Cascade Grease Interceptors. A type and size for every installation. Accept no substitutes!

Write for free copy of Manual "A"—a digest of the latest important information on Grease Interception.

SEND COUPON FOR FREE COPY OF LATEST LITERATURE
Josam Manufacturing Co., 302 Empire Bldg., Cleveland 14, O.
( ) Send free copy of Manual "A"
( ) Send free copy of Josameter—The slidebar guide to sizing of grease interceptors.

NAME

FIRM

ADDRESS

CITY and STATE

JULY 1946

JOSAM MANUFACTURING COMPANY
Executive Officer, 302 Empire Bldg., Cleveland 14, O. • Manufacturing Division, Michigan City, Ind.
Representatives in all Principal Cities
Josam-Pacific Co., 705 Folsom Street, San Francisco, California — West Coast Distributors
Empire Brass Company, Ltd., London, Ontario, Canada—Canadian Distributors
architects and building design engineers (in private practice or employed by corporations or by federal, state and municipal departments) and to general building contractors. The types of projects handled by recipients include apartment buildings, hospitals, houses, institutional and office buildings, churches, banks, theaters, and so on.

**BOOKS WANTED**

The American Book Center is collecting and shipping abroad scholarly books and periodicals which will be useful in economic, social and industrial rehabilitation of Europe and the Far East. Emphasis is placed upon publications issued during the past decade, and all subjects are wanted, especially those dealing with the sciences and technologies. Textbooks, recreational reading and popular magazines are not needed.

Shipments should be sent prepaid to The American Book Center, c/o the Library of Congress, Washington 25.

**PUBLICATIONS NEEDED**

"For a full six years of German occupation Czechoslovakia was deprived of source material on American science," writes Harry D. Gideonse, president of the Masaryk Institute. "Its libraries were destroyed and plundered by the Nazis.

"One of the gravest problems of its rebirth is this continued lack of information on the tremendous advance of research and practical achievements made in the United States. Urgent requests are reaching our Masaryk Institute, each of which stresses anew the pathetic need for this material.

"Upon the suggestion of our professional advisor, Robert H. Podzemny, member of The Architectural League of New York, we are turning to you for help in answering this call. Books and journals published since 1939 in the fields of architecture and engineering are most sorely needed. You might be able to spare them and thus help to cement the traditional friendship of our peoples and establish a lasting contact of our professions.

"All donated publications may be shipped in cartons, collect, to The Masaryk Institute, 8 W. 40th St., New York 18, N. Y. We pack them for overseas shipping to the National and Charles University Library in Prague, where an allocation committee distributes them to the proper institutions. Each book carries an ex libris with the name of the donor, thus placing on permanent record his personal share in this project of 'Science for Freedom.'"

**PLANNERS ELECT**


**OFFICE NOTES**

**Offices Opened, Reopened**

Clark & Enersen, Architects and Site Planners, have established an office at 1202 Sharp Bldg., Lincoln, Neb.

Eckbo, Royston & Williams have opened new offices at 121 Beale St., San Francisco 5, Calif.

Emile Gallet, Architect and artist designer, has resumed his designing free lance practice after three years with the Navy Department. Address, 120 W. 12th St., New York City.

Maj. William C. Halbert, Corps of Engineers, having been released from active duty, has reopened his office at 277 North Ave., New Rochelle, N. Y., (Continued on page 138)
LOOKING for a low-cost way to build lightweight, sound-insulating partitions? Then you'll want to know about the New Gold Bond Hollow Wall System. With this method of construction a 4\(\frac{3}{4}\)" wall reduces room-to-room noise as effectively as an 8" solid brick wall plastered both sides...a space saver for apartments, schools, hospitals, hotels, offices and housing projects.

Strong, fireproof double partitions that are completely independent of each other...no ties or bridging. Clear unobstructed space for service piping and ducts. Patented snap-on metal base is part of the complete system—speeds erection, lowers costs. And, because partitions are separate units they may be spaced any distance apart while the cost remains the same. National Gypsum Company, Buffalo 2, N. Y.

NEW BOOK ON REQUEST.
A new illustrated book describing the Gold Bond Hollow Wall System in detail, with scale drawings, is now on the press. A post card will bring you an advance copy without charge.
under the name of William Carter Halbert, A.I.A., Architect.

Fred J. Hughes, Architect, has resumed practice at 1375 Euclid Ave., Cleveland, Ohio.

William Koblik, Architect and Associates, announce the opening of offices at 211 California Fruit Bldg., Sacramento 14, Calif.

Angus McSweeney, Architect, has resumed practice and has opened new offices at 514 Mission St., San Francisco 5, Calif.

Albert Melniker, Architect, recently returned from duty with the Corps of Engineers, AUS, has reopened his office at 130 Bay St., Staten Island, N. Y.

William Muschenheim, Architect, has announced reopening of his office at 230 W. 13th St., New York 11, N. Y.

Roth & Rausch, Architects, have opened offices at 120 N. Broadway, St. Louis 2, Mo.

Runyan & Sles (Damon O. Runyan and Angus E. Sles), Engineers, have reopened their office in Longmont, Colo., following their discharge from the Armed Forces.

E. Allan Sheet, Architect, has resumed his practice with temporary offices at 327 North Western Ave., Los Angeles 4, Calif., pending locating permanently in Beverly Hills.

Paul M. Speake, Architect, having returned from service with the Navy, has reopened his office at a temporary location in the Old Post Office Bldg., Huntsville, Ala.

New Addresses

The following new addresses have been announced:


Robert M. Becker, Structural Engineer, 50 Beacon St., Boston 8, Mass.

J. Lloyd Conrich, Architect, 593 Market St., San Francisco 5, Calif.

C. Howard Crane, Architects and Engineers, 7, Buckingham Gate, London, S.W.1, England.

J. di Cristina & Son, Wood Products and Stair Builders, 350 Treat Ave., San Francisco 10, Calif.

Eugene Henry Klauber, F.A.I.A., A.I.P., Housing and Town Planning Consultant, 56 W. 45th St., New York 19, N. Y.

Paul A. Marzillier, Architect and Engineer, and Ernest Weyland, Architect, 633 N. Water St., Milwaukee 2, Wis.

Thomas Henry Moran, Architect, Hillcrest Estates, Jefferson Rd. and Route 31, Princeton, N. J.

C. Godfrey Poggi, Architect, 621 Newark Ave., Elizabeth, N. J.

Whitney R. Smith, Architect, 204 South Los Robles, Pasadena 5, Calif.

Sebastian J. Taurelli, A.I.A., A.D.L., 296 Delaware Ave., Buffalo 2, N. Y. as

Walter Dorwin Teague, Industrial Designer, West Coast offices, 3142 Wilshire Blvd., Los Angeles 5, Calif.

Firm Changes

Kenneth W. Dalzell and K. Whitney Dalzell, Jr., have formed a partnership for the general practice of architecture under the firm name of Dalzell & Dalzell, Architects. Address, Dalzell Bldg., Millburn Ave., Short Hills, N. J.

Huson Jackson and John Hancock Callender announce the formation of a partnership for the practice of architecture, design and housing research, under the firm name of Jackson and Callender. Address, 299 Madison Ave., New York 17, N. Y.

Willis Irvin announces the association of his daughter, Helen Stuart Irvin, as member of the firm Willis Irvin, Architect, Helen Stuart Irvin, Associate Architect, with offices in their own building, 722 Greene St., Augusta, Ga.

John M. Kokkins and A. C. Lyras

(Continued on page 140)
Building?
Modernizing?
Partitioning?

Look into this revolutionary idea for treating all interiors

See how M/P Metlwals give you rich beauty and high utility at surprisingly low cost

Write today for our A.I.A. file booklet on M/P METLWAL Paneling and Movable Steel Partitions—the modern idea in distinctive interiors for executive, factory and general offices, stores, banks, ships, hotels, hospitals, schools, residences and other buildings of every kind.

Made in lifelike wood grains and soft color finishes...providing an all-flush surface from floor to ceiling...eliminating the need for filler boards of other materials at ends or above the cornice level... M/P METLWALS make possible an endless variety of new, modern decorative effects. Equally important, exclusive construction features of M/P Paneling and Partitions eliminate the need for plaster in new construction...and permit fast, clean, simple installation in modernization or partitioning work.

Our free booklet pictures many handsome METLWAL interiors...and shows you how these standardized units of bonderized steel combine fine appearance, quiet and fire resistance with low initial cost and permanent economy. Write on your business letterhead for our free METLWAL Booklet No. 14M. for your A.I.A. file. Address: Martin-Parry Corporation, York, Pa.

HERE'S THE INSIDE STORY of the unique construction features of M/P Movable Steel Partitions: (A) Steel studs spaced 24" apart. (B) M/P Snap-On Clip for ease of erection. (C) Baked-on finish on bonderized steel. (D) Asbestos lining. (E) Corrugated backing for horizontal strength. (F) Corrugated backing of reverse panel. (G) Vertical steel stiffener. (H) 3½" air space gives ample room for pipes and cables; standard panel sections may be used as air conditioning ducts.

EASE OF ERECTION and standardized unit construction give M/P METLWALS high value and utility at low cost.

READILY MOVABLE without waste are the permanently beautiful M/P Partitions on this modern office floor.
have formed a partnership for the general practice of architecture under the name of Kokkins & Lyras, Architects, with offices at 4-6 Platt St., New York 7, N. Y.

Norman Lederer and Leonard Joseph, Architects, have announced formation of a partnership for the general practice of architecture. Address, 37 W. 57th St., New York 19, N. Y.

Reginald E. Marsh has announced his withdrawal from, and the consequent dissolution of, the firm of Tooker & Marsh, Architects. Mr. Marsh is now associate architect with the firm of Starrett & Van Vleck, with a branch office at 101 Park Ave., New York 17, N. Y.

Ray Rich, USNR, has been named a full partner in the firm of Van Doren, Nowland & Schlademundt, Industrial Designers, of New York and Philadelphia.

D. Kenneth Sargent, Frederick S. Webster, Thomas T. Crenshaw and Milo D. Folley have formed a partnership for the general practice of architecture under the name of Sargent, Webster, Crenshaw and Folley, Architects. Address, Syracuse Kemper Bldg., Syracuse 2, N. Y., and Watertown Natl. Bank Bldg., Watertown, N. Y.

John Y. Sloan, Architect, John A. Beane and Warren H. Thompson, Consulting Engineers, have announced formation of a partnership and the removal of their offices from 296 Delaware Ave. to 775 Main St., Buffalo 3, N. Y.

Charles E. Thomas has announced a partnership with Gordon Sweet for the practice of architecture under the firm name of Thomas and Sweet, Architects, with offices at 224 Colorado Springs Natl. Bank Bldg., Colorado Springs, Colo.

Kenneth L. Trumble, recently returned from the Pacific, is now an associate in the office of Charles F. Oehnbach, A.I.A., 505-506 Elderfield & Hartshorn Bldg., Niagara Falls, N. Y.

Lam Woo, Architect, following four years of service in the European theater, is now a draftsman in the university architect's offices of Ohio State University, of which he is an alumnus.

APPOINTMENTS

Harold Bush-Brown, A.I.A., professor and head of the department of architecture, Georgia School of Technology, has been appointed to the Board of Advisory Architects of the American Commission for Living War Memorials. He succeeds the late William J. Sayward, F.A.I.A., of Atlanta.

Robert B. Jacoby has been appointed deputy governor of the Federal Home Loan Bank System, with which he has been associated for the past 13 years.

The appointment of Capt. E. A. Verpillot, USNR, of New York City, as Deputy Expeditor in charge of the Office of Production and Supply, has been announced by Housing Expediter Wilson W. Wyatt. Capt. Verpillot will work closely with Rear Admiral Kirby Smith, USNR, and in general will have charge of the production end of the Veterans Emergency Housing Program. Under him will be the technical research, prefabrication production, construction, materials, and labor relations branches of the organization.

A CORRECTION

The up-state New York school project presented on page 110 of the March RECORD and on pages 72-81 of the April issue was credited incorrectly to Perkins and Will, Architects and Engineers, in March, and to Kaehler and Waasdorp, Wheeler and Will, Associated Architects, in April. The school is the work of Kaehler and Waasdorp, Architects, Perkins and Will, Architects-Engineers, and should have been so credited in both issues.
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JOHNSTOWN, PENNSYLVANIA
A.I.A. CONVENES AT MIAMI BEACH

Architects from all over the country journeyed by plane, car or train to Miami Beach for the A.I.A.'s first post-war convention, May 8, 9, and 10. This 78th Annual Convention found some five or six hundred architects and many wives in attendance, the largest registration recorded at any convention in the Institute's history.

From almost any point of view, the week was a great success. The strain of war was gone, and the strain of re-conversion and government regulation was not enough to dampen the architects' spirits or their enthusiasm for the airing of grievances. Many of the old guard were on hand, and on the other hand, many delegates were attending their first convention. There should be a rule that of every two delegates one must be under forty, and each pair should be accompanied by a junior associate or student member.

The fact that there was not one hotel large enough to accommodate the entire group, detracted but little from the unity, but it did make for some difficulty in finding friends and cohorts for informal discussions.

The Florida Chapters had arranged interesting sightseeing tours. A boat trip around Miami and Biscayne Bay, with fleeting views of luxurious winter homes, and a day's jaunt to Boca Raton and Palm Beach were most enjoyable. To top it all off, over a hundred architects took advantage of the air tour to Havana, with all its old-world atmosphere and picturesque Spanish architecture.

Sessions of the Convention itself were conducted in a healthy and friendly spirit, and formal business was disposed of with dispatch. Urban planning, "Rebuilding America," was discussed from various points of view by Sumner Spaulding, Jerrold Loeb, Henry Churchill, Louis Justement, Howard K. Menhinick, and Tyler S. Rogers. Carlos Contreras of Mexico City brought word of urban planning developments from our southern neighbor. The attack and defense of the city of Chicago enlivened the proceedings.

An afternoon of round table discussions was full of interest. Four separate round tables were conducted simultaneously — the one on schools by Charles T. Ingham and Kenneth C. Welch; on hospitals by Marshall Shaffer and Charles H. McCauley; on housing by Louis Justement and Henry Churchill; the one on the meaning of design by Ralph Walker and Edwin B. Morris.

A most interesting "open session" of the Board of Directors was held one evening to give any and all members and delegates a chance to make suggestions, to air grievances, and to speak their minds. The President's Reception was a gala occasion held around an outdoor swimming pool.

The problem of providing heat for buildings containing large, unobstructed areas is economically and efficiently solved by the use of Dravo Direct Fired Warm Air Heating. This method provides self-contained heaters in sizes from 300,000 Btu to 2,000,000 Btu that can be used in single or multiple units.

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(Continued on page 144)
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as an inspiring
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VENUS Drawing Pencils are engineered to give you drafting perfection without failure: accurately graded to assure uniformity in all 17 degrees... strong in performance... smooth and clean in action.

At the Annual Dinner, the Gold Medal of the Institute was awarded posthumously to Louis Henri Sullivan. The letter of acceptance from George G. Elmslie was read by Paul Gerhardt, Jr. Fellowships were conferred on Louis Justement of Washington, D. C., Samuel A. Marx of Chicago, Talmage C. Hughes of Detroit, G. Edwin Brumbaugh of Philadelphia, Frank E. Cleveland of Boston, D. K. Este Fisher, Jr. of Baltimore, and Henry E. Guterson of North California.

With much wit and wisdom, Roger Allen of Grand Rapids acted as toastmaster in his usual masterly fashion. Philip M. Klutznick of the Federal Public Housing Authority was the serious speaker of the occasion.

Most vociferously debated business to come before the Convention was the attitude of the Institute toward the qualified architects' list of the American Hospital Association (See AR 12/45, p. 79). Pros and cons were expressed with feeling. A roll call supported a resolution: "Resolved, That the A.I.A. in convention assembled instructs The Board of Directors to disapprove the nominations of A.I.A. members for the examining board of A.H.A. together with any suggestions of approval thereof, understood or implied, and that the A.I.A. respectfully advises the A.H.A. that it looks upon any specialized list as undemocratic in principle and contrary to ethical practice."

Other resolutions adopted a new administration organization structure for the Institute, furthered the unification of the profession, urged the redrafting of the Wagner-Ellender-Taft Bill, approved of the Senate Bill 191 (hospital survey), expressed thanks to the archi-tects of Florida for their hospitality, and approved of most of the other sections of the report of the Board of Directors.

Much of the value of any Convention is the contact of mind with mind and the exchange of ideas in informal conversation. The Miami Convention was no exception, and the bathing beaches, terraces, and tours enhanced the convivial and friendly spirit.

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JULY 1946
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• Toilet compartments usually dominate a toilet room, influencing the environment of a room which is important to everyone occupying the building. The easy way to have clean, inviting, colorful and sanitary toilet facilities is to install Sanymetal "Porcena" (Porcelain on Steel) Toilet Compartments.

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Sanymetal "Porcena" Toilet Compartments embody the results of over 32 years of specialized skill and experience in making over 70,000 toilet compartment installations. Ask the Sanymetal Representative in your vicinity (see "Partitions" in your phone book for local representative) for further information about planning suitable toilet room environments for modern school, industrial, and institutional types of buildings. Refer to Sanymetal Catalog 198-5 in Sweet's Architectural File for 1945, or write for file copy of Catalog 84.

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REQUIRED READING

(groups which should be consulted in the early stages of hospital planning.

One point Dr. Agnew makes which is being heard with increasing frequency is the need for separate facilities for the chronically ill and the convalescent patient. He recommends a study of the rehabilitation programs developed by the Armed Forces during the war.

Dr. Agnew does not hold with the philosophy of building hospitals to last for a relatively short period such as 25 years. They are too costly to operate, he says, and are not practicable except for military use. A semi-permanent type of cottage structure, however, he thinks has a definite place in convalescent care.

What he recommends as a means of preventing a hospital from becoming obsolete at an early age is to "so build the shell that it can be modernized and revamped as often as required with the minimum of expense. . . ."

SPOTLIGHT ON PLASTICS


Unexpectedly, in view of its title, this is still another article about the much-publicized Burns experimental house in Los Angeles. It is a different sort of article, however: it does not describe the house as such, but discusses in detail the innumerable applications of plastics incorporated into the building. Laminated redwood siding for the exterior, plastic wall coverings, Plexiglas shower enclosures, Formica laminates for kitchen drain boards and work tables, Koroseal-upholstered chairs — these are only a few of the items described.

SCIENCE AND ART


In delightful style, Prof. Bernal here points up the direction which architecture currently is taking pretty much all over the world: a trend toward "building for human requirements and human utilities conceived of in a conscious way, and doing so under conditions which both provide and require new materials and new methods of construction."

What do people really do in houses, Prof. Bernal asks. How much fresh air is required, and what is fresh air, anyway? What is the most satisfactory way of heating a house? Simple as these questions may sound, they have never been wholly answered, and they are indicative of the need for an analysis of the requirements of every building before planning is started.

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G-E LAMPS
GENERAL ELECTRIC
They're no "amateurs" when it

If there's any room in the house in which women have a professional interest... it's the kitchen! Today, they average 1600 hours a year working in the kitchen... and countless other hours planning how it can be improved! For instance, note their expert comments on the 5 most important features of this time-saving "New Freedom Gas Kitchen" design tested in a recent survey:—

"It's such a handy, compact kitchen! Everything within reach... and plenty of cabinet and counter space. So cheerful, I'd really enjoy working there!"

"I've had a Gas refrigerator for years and never had a day's trouble! It's absolutely noiseless. And these new Gas refrigerators are so conveniently arranged you don't have to waste time looking for things!"

"What I wouldn't give for a dishwasher sink like that—particularly if I had one of those automatic Gas water-heaters—so I'd never have to worry about getting enough hot water."

"An adjoining laundry is a mighty smart idea! Particularly if it has one of those wonderful automatic Gas laundry dryers I've heard so much about."

"That streamlined, automatic Gas range is just what I want! Flame-cookery is so much better and faster—and Gas equipment costs less to run, too!"

OVER AND OVER AGAIN—women state their preference for Gas as the modern, most practical kitchen fuel! More than 20,000,000 urban and suburban women use Gas ranges now... say they offer greatest convenience, maximum savings in time, food and money! Assure your clients complete satisfaction by specifying Gas throughout the house. It's the cleanest, most dependable and ultra-modern fuel for cooking, refrigeration, water heating, house heating and summer-winter air conditioning. Your local Gas Company will be glad to supply you with complete technical details.

NOW READY For further information on this invaluable builders' and architects' manual, write: American Gas Association, 420 Lexington Ave., New York 17, N.Y.
comes to kitchen planning!

ONE IN A SERIES OF
“NEW FREEDOM GAS KITCHEN” DESIGNS
SHOWN CURRENTLY IN A LIST OF IMPORTANT WOMEN’S MAGAZINES

JULY 1946
HOMES THAT **STAY UP-TO-DATE...START WITH**

G-E WIRING MATERIALS

In spite of housing shortages, your clients still look for *lasting* value when they buy homes. They want a protected investment for the years ahead, and you can help them to achieve it by providing electric systems that are suited to present and future needs.

You add life . . . you add value . . . you add *modernity* to homes when you specify or use G-E wires and cables. There's another big benefit, too, because the name of General Electric means "quality" to the home buyer. It assures him of the good electrical service he wants plus lasting protection for his investment. Section W4-744, Appliance and Merchandise Department, General Electric Company, Bridgeport, Conn.

---

**G-E WIRES AND CABLES**

**BX* ARMORED CABLE**

This armored cable is extremely flexible for easy handling. It resists moisture, and is flame-retarding for extra safety. An added feature is the S-shaped paper wrap which is easy to remove and gives greater protection. It also increases the dielectric strength of the cable. Available in all standard sizes, in 2, 3, and 4 conductors. Also in 2- and 3-conductor leaded cable, and bare armored ground wire.

**BRAIDX**

This non-metallic sheathed cable is recommended for old and new buildings, and for wiring additions and replacements. BraidX can be fished without supports from outlet to outlet, or can be run on dry surfaces of woodwork, plaster, cement, or brick. BraidX cable is resistant to moisture, flame, and mechanical injury. It is especially suitable for rural electrification. Available in sizes 14 to 4, in 2, 3, and 4 conductors, with or without ground wire.

**PVX**

Thermoplastic insulation provides high dielectric and mechanical strength in this non-metallic sheathed cable. It is unusually resistant to oils, acids, alkalies, sunlight, and abrasion. PVX strips easily, and its light weight and positive conductor identification facilitate speedy installation. The Type T conductors are approved by Underwriters' Laboratories, Inc., for 60 C. operation. Available in sizes 14 to 4, with 2 or 3 conductors.

**SERVICE ENTRANCE CABLE**

This cable is used from the entrance cap to the meter equipment, and can be installed directly on the outside of buildings without conduit protection. Two-conductor round, and three-conductor oval service entrance or service drop cable is available in standard sizes, with or without galvanized flat steel armor.

**THERMOPLASTIC BUILDING WIRE (TYPES T AND TW)**

G-E thermoplastic building wire is a small diameter, thermoplastic-insulated wire made of highest quality materials, and produced to meet rigid specifications. It can be used for all wiring requirements where permitted by local codes, and is suited for varying conditions. It resists flame, oils, acids, alkalies, and other chemicals and solvents, and is virtually unaffected by sunlight, moisture, and weathering. All wire and cable listed here is approved by Underwriters' Laboratories, Inc.


GENERAL ELECTRIC

158 ARCHITECTURAL RECORD
For Families Who Like to Sleep Upstairs

Anthracite Simpli-Fire Room provides more house, more heat, for less money

What can you say to clients nowadays who want to build homes? How can you help them? Not by offering less and less house...fewer, smaller rooms...inadequate heating!

Anthracite Institute felt that there must be a solution, that with heat a necessity only part of the year, money could be saved on a scientifically engineered heating arrangement and used to buy more house.

The result—the Answer Home with the Simpli-Fire Room, designed by Chapman and Evans, small-homes specialists.

1. Conveniently located, a few steps down from the kitchen, the Simpli-Fire Room eliminates all need for the costly, old-fashioned cellar, saves construction time, reduces over-all cost.

2. Heating costs, too, are lower, since the Simpli-Fire Room is designed for anthracite, the economy quality fuel.

3. Thanks to the Simpli-Fire Room, the use of anthracite becomes amazingly easy. The storage bin is within convenient reach of the heater. Ash shoveling is a thing of the past—along with dust and dirt!

4. Type of heating is optional...steam, hot water, or warm air...with specifications bearing the Seal of Approval of the Anthracite Institute available for each system. Plenty of heat is assured with warm, healthful floors.

For FREE Plans of this Answer Home—and others—Fill out, mail coupon today.

Anthracite Institute
Department 79
101 Park Avenue, New York 17, N. Y.
Please send free of charge handsome 16-page color brochure showing Answer Homes Nos. 1, 2 and 3 with floor plans; also details of 3 types of Simpli-Fire Rooms.

Name __________________________
Firm __________________________
Street __________________________
City __________ Zone __________ State __________

JULY 1946

159
THE BANK THAT NEVER CLOSES ITS DOORS

THE Improved
HERRING-HALL-MARVIN
CIRCULAR Night Depository

How is it at your bank? Summer's here. Noon closing? Saturday closing? Plus Holidays! So far as your depositors are concerned, these are intervals over which your bank has ceased business. Consider the Herring-Hall-Marvin Circular Night Depository... the bank that never closes its doors! It accepts the depositor's daily receipts. Relieves him of worry against loss by fire, burglary, holdup. Encourages him to increase his deposits. Wins new friends for your bank. Builds for your bank continuously in community prestige and good will.


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OTHER AGENCIES ALL OVER THE WORLD
"PETRO ... ALWAYS ... SATISFACTORY..."

William W. Gaylord, Consulting Engineer, of Hamden, Connecticut, has had long experience in a consulting capacity in connection with power and heating equipment for smaller industrial plants, schools, apartments, and commercial buildings. He emphasizes the important factors concerning oil burning systems:

"Liquid fuel has many advantages such as cleanliness, convenience, ease in handling and adaptability to full automatic operation which make it particularly desirable for use in Schools, Apartment Houses, Commercial Buildings and Industrial Plants. Furnaces should have ample combustion space and be carefully designed for the type of burner to be used and load to be served in each case.

"The development of reliable oil burning systems for full automatic operation with the heaviest commercial oils makes fuel costs comparable with coal, and the savings in labor in several cases have shown overall savings in steam costs of from 10% to 15%.

"The Petro Oil Burning Systems installed under my specifications and supervision have always given economical and satisfactory operating service."

Says Consulting Heating Engineer

"PETRO Systems have always given economical and satisfactory operating service." Here, in a few words, you have Mr. Gaylord's experience with Petro Oil Burning Systems in industrial plants, schools, apartments and commercial buildings.

Comments such as these, from professional consultants who are competent to evaluate heating performance correctly, emphasize the adaptability and applicability of Petro equipment. They point up the technical knowledge and over 40 years' engineering experience that enable Petro to meet particular heating plant needs effectively. To benefit from Petro's seasoned judgment and skill in coordinating oil burning equipment into a smoothly working system, a little extra may be added to the initial cost of the Petro installation. But this is more than overbalanced by the significant economies that are earned consistently thereafter by superior Petro performance.

Petro engineers welcome the opportunity to cooperate in preparing recommendations that will best fulfill the particular requirements of your buildings.

PETRO REG. U.S. PAT. OFF. cuts steam costs

PETROLEUM HEAT AND POWER CO. • Makers of Good Oil Burning Equipment Since 1903 • Stamford, Connecticut

JULY 1946
Fewer SLEEPING MEMBERS mean MORE TENANTS

Low-rental apartments—in efficient, modern buildings—offer one of the major solutions to the present housing shortage. To insure the investment value of such projects, the architect must often provide for as many as 400 tenants per acre. In their approach to this high-density problem, the architect and engineer are making striking advances in construction methods. Every brick, every reinforcing bar, every elevator is planned for maximum service and minimum dead space. "Sleeping members"—elements that merely enclose without contributing to support—are eliminated wherever possible.

The Lillian Wald Apartments in New York—housing 436 people per acre—ideally test these advanced architectural principles. Readers of Architectural Record found this project used as the basis of an analysis of low-rental apartment construction, in a recent issue. The analysis—fully illustrated—covered 25 pages, gave all the complicated calculations needed. The result will be more apartments for more veterans.

A few people still think of the architect as being, first of all, an artist. Here is the evidence that Appearance is only one of his yardsticks. He is equally concerned with Utility and Investment Value. To every project—and every building product—he applies all three.*

Architectural Record is his work book—the publication in which he knows he will find the practical information he needs in his business of planning projects and selecting materials and equipment. That is why every check shows at least 80% of all current planning of investment building is on the boards of Record subscribers.

Unique editorial methods—based upon Dodge Reports—enable Record editors to know at all times just what problems are currently facing their readers. Each issue of the Record is built accordingly.

Architectural Record has 25% more architect subscribers than its nearest competitor. That fact is your evidence that this is the publication in which to keep your story told.

*We have prepared a check list—"Pointers on Writing Architectural Copy"—which enlarges on the three yardsticks of Appearance, Utility and Investment Value. Your copy will be mailed on request.
In the days ahead you can count on hearing reproduced sound wherever people gather.

You’ll find it far more widely used in offices, industrial plants, hotels, theatres, restaurants, hospitals and schools. You’ll find it in brand new places too—in trains, planes, busses and ships.

Helping to bring you this new era in sound is a revolutionary development of Bell Telephone Laboratories—the new Western Electric Type 728 loudspeaker. It reproduces music and speech with such amazing realism that it will give you an entirely new conception of sound reproduction. You won’t believe that reproduced sound can be so full, so natural until you hear this new speaker in action!
Non-conducting material protects the pipes and ducts of every large building and plant. The method you use to apply this material is only one detail of construction. But the handling of this detail means money, time, quality—gained or lost!

Use Arabol Lagging Adhesive if you want a new and easier way to do the job. Apply it to fiberglass, canvas, asbestos or other lagging material. It has been used and thoroughly proved on all such materials.

This method eliminates the time-consuming task of sewing; makes it possible to use less skilled labor; speeds up the entire operation. The adhesive dries in 4 to 6 hours, leaving a size finish which requires only one coat of paint. It is vermin-proof ... fire-retardant, too.

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Performs half a dozen indispensable services—conditioning air, cooling drinking water, dispensing beverages, freezing ice, making ice cream, quick-freezing foods, and holding desired temperatures in any number of rooms and boxes—for meats, fish, poultry, dairy products, fruits, vegetables, frozen foods, candy, flowers, etc.

If the restaurants in which you are interested need any of these cooling services, get in touch with your nearest Frick Branch or Distributor. Literature and estimates cheerfully furnished.

China is among the Eastern Countries that use Frick Air Conditioning and Refrigeration.
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The most widely used concrete reinforcement

The Carew Tower, Cincinnati, Ohio. In all types of reinforced concrete structures—whether for concrete or steel joists, floors and roofs in monumental buildings, or for small basement and other ground slabs—American Welded Wire Fabric, with its closely spaced members, furnishes evenly distributed reinforcement.

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*This modern hinge, the SOSS INVISIBLE HINGE, eliminates unsightly, broken surfaces—and surfaces marred by protruding butts. It thereby provides greater opportunities for unusual artistic design for flush, streamlined surfaces, and far more attractive doors, cupboards and secret panels. The SOSS INVISIBLE HINGE places a hinge where it really belongs—hidden from view completely.*

Write for the Soss "Blue-Print Catalogue." This catalogue gives full details for the many applications of this modern hinge. Sent free to you on request.

**SOSS MANUFACTURING COMPANY**

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**The Weather**

Increasing cloudiness and colder today. Easterly winds 10 miles per hour to strong north winds. Snow.

**HOURLY TEMPERATURES**

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**NO MATTER WHAT TRICKS THE WEATHER MAY PLAY THE DUNHAM SYSTEM IS ON TO THEM! . . .**

The Dunham Differential Vacuum Heating System is not an "on and off" control, it circulates a continuous flow of steam at variable sub-atmospheric pressures—provides control of both steam temperature and steam volume. Ordinary systems must circulate steam at a minimum of 212°F. Dunham circulates steam from 212°F or higher to as low as 133°F, thus permitting the system to automatically compensate for fluctuations in outside weather. Circulating steam at lower temperatures prevents troublesome overheating of building interiors with attendant wasted fuel and health hazards. Write for Bulletin 632.

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Save thousands of dollars worth of lost time, lost motion and spoiled work... with

Swartwout
AIRMOVER
modern industrial ventilation

You can trace greater efficiency—including reduced spoilage, fewer accidents, more production—directly to better elimination of heat, smoke and gases! Swartwout knows how to help you get sufficient air changes in your work rooms by natural ventilation to show astounding results.

The Swartwout AIRMOVER—advanced application of air-moving principles to roof ventilator design—speeds unwanted heated air upward with minimum resistance. It's only 32" high, pleasing in appearance, gives you large capacity exhaust economically.

Teamed with AIRMOVER is the Swartwout Industrial Intake Louver—the ideal modern method for providing fresh air from near floor level. Avoids the drawbacks of open windows. Completes the natural ventilation requirement of fresh air to replace outgoing stale air. Write for information on AIRMOVER complete natural ventilation.

THE SWARTWOUT COMPANY
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Weatherproof
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30 YEARS OF SERVICE

Millions of feet of this all-purpose building board have been used for new construction and modernization during the past 30 years. This steady popularity, through good times and bad, is based on Homasote's ability to turn in a first-class performance under all conditions. We are continuing to emphasize quality in all steps of manufacture—in order to maintain top structural strength with great insulating value.

Permanently crackproof, an ideal base for paint or wallpaper—Homasote eliminates the use of plaster, saving both time and money. Moisture proof in itself, Homasote helps keep buildings dry and free from mildew.

Take full advantage of Homasote's insulating properties by using it for sidewall and roof sheathing. Use it for interior walls and ceilings; see how the big sheets (up to 8' x 14') improve the appearance of any room, eliminating objectionable wall joints and batten strips. Wherever Homasote is applied, it provides structural reinforcement and makes a more livable home.

We invite architects and builders to send for a copy of our new booklet describing some of the many uses for weatherproof Homasote. The book gives physical characteristics, performance charts, specification data and application instructions. Write for your copy today.

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Carbon dioxide has, of course, long been recognized as one of the fastest, most effective fire fighting agents. Its advantages as a non-damaging extinguishing medium, with no clean-up mess or time loss, give it an important plus value in many industries and situations.

The problem has been to make this dry, inert gas practically available in fire fighting equipment equally capable of protecting small, multiple, or very large hazards.

Cardox Fire Extinguishing Systems...using the Cardox methods of engineered control and application...have multiplied the applications of carbon dioxide as a fire fighting medium to provide the most effective type of protection for critical or major hazards throughout large plants.

All Cardox Fire Fighting Equipment has one characteristic:

The distinctive Cardox method of control and engineered application of carbon dioxide, stored at 90°F, and relatively low pressure in a single storage unit containing from 3/4 to 125 tons of fire-destroying Cardox CO₂...enough to handle even large fires and leave an ample reserve for new emergencies.

As a result of the broadened range of effectiveness of carbon dioxide (by Cardox control and application) Cardox Fire Extinguishing Systems today provide all the recognized advantages of CO₂ fire protection for hazards that were at one time considered beyond the scope of carbon dioxide.

Fire protection should be planned with the same care given the facilities for any major production process. We should welcome the opportunity of helping you evaluate accurately the place of Cardox Broadened CO₂ protection for the specific fire hazards in new buildings, alterations, or additions you are planning for your clients.

Write for Bulletin No. 1566.

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JULY 1946
Maternity Cases need nutritious food!

From conception until weaning, the life and growth of the child depends upon the nourishment it derives from the diet of the mother. Hence the insistence of physicians upon wholesome food, properly balanced, easily digested and readily assimilated. To provide this essential therapy for the outstanding hospitals of America is the specialty of

JOHN VAN RANGE KITCHEN EQUIPMENT

Since 1847 hospital managers and their architects have availed themselves of the assistance of this Company in laying out all departments in which food is to be prepared and served. Proceeding from a sound architectural plan, we design the equipment, with professional understanding of the problem as a whole and in its individual parts. • John Van Range Kitchen equipment, so planned and constructed, makes possible the preparation of menus that comply with doctors’ instructions as completely as the medicines compounded according to their prescriptions. Cooking in the polished compartments of John Van Range Stainless Steel equipment retains the nutrients of provisions unimpaired. Also the natural flavors, juices and even the appetizing colors that whet jaded appetites.

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1. STANDARDIZED CASE - 30 lock functions available in one size case.
2. CASE IS SMOOTH - no bosses or projections mean better fit, easier mortising.
3. HUBS, LATCH BOLTS and DEAD BOLTS are forged bronze; all interior working parts are extruded or wrought metal, to withstand abuse and assure long service.
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7. ALL LOCKS are available with anti-friction (3/8” throw) or plain (5/8” throw) latch bolt.
8. DEAD BOLT LOCKS are available with either 3/8” or 1” throw. Dead bolts are interchangeable so switch from standard to long throw is easy.
9. FAMOUS RUSSWIN ADJUSTABLE BALL BEARING PIN TUMBLER CYLINDER. Adjustable for doors from 1½” to 2½” thick.

10 TWO LINES —

Standard: 1” x 8” front for 13/4” doors 2½” backset. Heavy Duty: 1½” x 8” front for 13/4” and up doors. 3½” backset (available in special 2½” backset). Case is the same for all types of lock functions.

RUSSWIN "TEN-STRIKE" LOCKS

SINCE 1838

RUSSWIN DISTINCTIVE HARDWARE

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PERTINENT KITCHEN DATA

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Efficiency is industry's keynote! Design kitchens that give maximum production in minimum space. Hotpoint-Edison electric cooking equipment does the job in a small plant or large factory.

WHY your client will like a Hotpoint-Edison 3-Deck Bake Oven

- Takes up less than 14 square feet. Capacity—sixty 1-lb. loaves or thirty-six 9" pie tins or six 18" x 26" roll pans.
- With Ad-A-Deck construction each deck operates as a separate oven. Products requiring different temperatures bake at the same time. Decks can be added as needed.
- Improved accurate automatic temperature control assures even products with a minimum of time and labor.

HOW designing is easier with Hotpoint-Edison

- With no vents, flues or pipes to consider, equipment is placed to greatest convenience.
- Simplified ventilation and air conditioning. Less heat is created so less heat is dissipated through the kitchen.
- Fire hazard is reduced without flame or inflammable fuel.

For further details about this Bake Oven and Hotpoint-Edison's complete line of dependable electric cooking equipment, consult a Hotpoint kitchen specialist or write to us. Edison General Electric Appliance Co., Inc., 5625 West Taylor Street, Chicago 44, Illinois.

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JULY 1946
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“CZC”-treated wood has all the natural advantages of untreated wood plus many others. It not only resists termites, but also prevents decay, retards fire. It is odorless, paintable, clean and easy to handle.

You can make your buildings safer and easier to maintain at low cost by specifying “CZC”-treated wood. For additional information on this wood preservative that gives additional long life to wood, write E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington 98, Del.

DU PONT CZC
Chromated Zinc Chloride
MAKES WOOD RESIST DECAY - REPEL TERMITES - RETARD FIRE

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YOU can save fuel, power and equipment, for in every case where a Dorex unit has been applied, it has converted stale, contaminated air to fresh air at a cost considerably lower than the cost of bringing in and conditioning outdoor air. A variety of Dorex unit types and sizes permits easy installation in almost every existing or planned air conditioning system.

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W. B. CONNOR ENGINEERING CORP.

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ARCHITECTURAL RECORD
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Inasmuch as its durability, natural beauty, resistance, uniformity and moderate cost have made Indiana Limestone the most frequently specified building stone throughout the United States and Canada, the resulting wealth of information is more than adequate to afford architects prompt, satisfactory answers to most of their questions.

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There is a New Trend in Store Design

Robert Alan Jacobs' conception of a Service Station

- "The attempt here is to put all cars under cover, with covered access for the passengers to the rest room and covered access for service station attendants from the lubritorium or sales office to the car itself.
- "The idea of the snack bar is to encourage the motorist to relax en route rather than to dash in and out. This will reflect favorably on sales.
- "The powerful motive of the 'airplane wing' supported on hollow metal piers could become the trade-mark of the particular oil company which operates the chain of service stations. It could be easily prefabricated and shipped, as could the station itself. It does definitely do two things; it stands out obviously as a shelter for automobiles and gives direction to the station itself.
- "In the lubritorium, stock garage doors are used, with glass instead of plywood panels. Plate Glass is used in the rest room and sales room. The rear wall of the rest room is in wine Carrara Glass. Through the sales room and other walls of the rest room, different color Carrara or paint may be used. The exterior of short side of the lubritorium is of Carrara Glass, with free standing letters showing the name of the company on the upper left hand corner."

Ely Jacques Kahn
Robert Allan Jacobs
Architects

The adaptability of Pittsburgh Glass and Pittco Store Front Metal to a wide variety of designs—and the consistently high quality of these products—make them preferred, by architects all over America, for store front and interior work.

In 23 leading retail magazines, Pittsburgh Plate Glass Company advertising is telling merchants about these products, is urging retailers to consult their architects about modernizing their stores.

You are assured of prompt, helpful service by a nation-wide system of "Pittsburgh" branches and dealers.

Send for this free book: "How Eye-Appeal—Inside and Out—Increases Retail Sales".

It contains photographs of store fronts and interiors—representing practically all kinds of business, in all parts of the country—selected from the thousands that have been remodeled with Pittsburgh Glass and Pittco Store Front Metal. Send in the convenient coupon for your free copy of this up-to-date book, "How Eye-Appeal—Inside and Out—Increases Retail Sales".

Pittsburgh Plate Glass Company
2216-6 Grant Building, Pittsburgh 18, Pa.

Please send me, without obligation, a free copy of the book, "How Eye-Appeal—Inside and Out—Increases Retail Sales".

Name: ____________________________
Address: _________________________
City: _____________________________  State: __________

"PITTSBURGH" stands for Quality Glass and Paint

PITTSBURGH PLATE GLASS COMPANY

JULY 1946
TRANE STANDARDIZES
the Convactor-radiator
for Installation Direct from Stock

NEW MASS PRODUCED DESIGN
FITS MOST HEATING APPLICATIONS

Here is the standard convection heating unit long demanded by architects, engineers, contractors, and wholesalers! In the new Type A design, Trane presents a Convactor-radiator that operates equally well on steam or hot water—can be installed either free-standing or recessed—and is available in a range of sizes fitted to the needs of cottage, factory or skyscraper.

READY FOR INSTALLATION

Now, for the first time, Convactor-radiators will be available from local wholesalers’ stocks as a unit package completely assembled and ready for installation. Featuring Trane developments that reduce on-the-job time to a minimum, the new Type A units are mass produced for maximum economy—now cost no more to buy and less to install than old-fashioned radiators.

FOR THE UNUSUAL APPLICATION

Easy to specify, purchase, and install, Type A Convactor-radiators are designed for the great majority of installations. However, for the unusual or special application, Trane still makes available the same extensive special purpose line that established Trane leadership in the convactor field.

See your local wholesaler or nearest Trane field engineer for details of the new Type A Convactor-radiator.

Here’s what standard means

- 1 element for both steam and hot water.
- 1 cabinet style installed 2 ways.
- Sizes that fit most applications.

HOW THE TRANE CONVECTOR-RADIATOR CAN BE INSTALLED TWO WAYS

The same cabinet can be installed either as a free standing or recessed unit without change and with no difference in performance.

HERE’S A PLUS FEATURE

Dampers for the positive control of heat can be obtained and installed in two minutes without tools. Operated by an adjustable chain through the grill, these dampers give instant response without the use of valves.

For a complete description of the entire Trane Convactor-radiator line, write for Bulletin DSB-380.