Save time, labor, materials with these short cuts in drafting!

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With Ozalid, you need never redraw your original tracing! Just make translucent Ozalid Intermediate prints of it ... and on these, add the individual details in pencil or ink. Then from each "Intermediate" you can produce the desired number and type of positive OZALID PRINTS.

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2. SEPARATE DESIGNS COMBINED
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To do this, you merely make a foil print of each tracing ... then overlay the foils in the desired position on Ozalid sensitized material ... and feed into your Ozalid machine.

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- Draftsman eradicates obsolete lines with quick-drying OZALID CORRECTOR FLUID.
- New design is drawn in. Any number of prints can now be made from this up-to-date "Master."

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... Designed for average printmaking requirements!

This completely new, moderately priced machine gives you these five extra values in printmaking at no extra cost—

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DIVISION OF GENERAL ANILINE AND FILM CORPORATION
Johnson City, N. Y.
Ozalid in Canada—Hughes Owens Co., Ltd., Montreal

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MARCH 1947
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BYERS WROUGHT IRON PIPE

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Byers Wrought Iron pipe, fabricated into sinuous coils, was laid on top of the floor joists in the first story, and covered with a double wood floor secured to sleepers. Similar coils were installed on the second floor. No insulation was placed around these, so they provide heat for both levels. Additional coils were installed in the ceiling of the second story. The heating medium is water, warmed in an oil-fired American Radiator boiler, and circulated by three B & G pumps. Minneapolis-Honeywell controls are used, and the system is automatically zoned.

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If you have followed any of the thousands of radiant heating installations now serving, you know that wrought iron is practically the universal choice of designers. You'll find the reason in the unusual combination of desirable features offered by the material. It is readily formed and welded, which speeds installation. It has a high rate of heat emission. It expands and contracts at practically identical rates with concrete and plaster, and so can be safely embedded in these materials. And its unique structure—tiny fibers of glass-like silicate slag threaded through the body of high-purity iron—gives an unusual degree of corrosion resistance, which has been demonstrated in countless varied applications.

Our bulletin, "Byers Wrought Iron for Radiant Heating" is a complete text-book on the subject. We will be happy to send you a copy, on request.


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Corrosion costs you more than wrought iron

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TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS
ARCHITECTURAL RECORD

VOL. 101 • NO. 3 • March 1947

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COVER: Head by William Zorach, courtesy The Downtown Gallery; plot plan of Jersey Victory Homes, Holden McLaughlin & Associates, Architects
In its ability to handle the job, handle it dependably, and stay on the job, the Imperial "Floatless" Sump Pump has written an enviable service record. The reasons are not hard to find. Three of them are pointed out below—three distinguishing features that mark a soundly engineered advance beyond the ordinary sump pump design. Remember this for the next job that presents a drainage, backwater or seepage problem—the Imperial "Floatless" Sump Pump is basically different... and measurably better.

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SELECTION AND INSTALLATION DATA—
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THE RECORD REPORTS

Senate Small Business Committee Considers Housing
Meetings on Housing Begin • Building Code Bulletin
Issued • FHA Shifts Gears for More Rental Housing

A four-point program put forth by the Senate Small Business Committee epitomizes the housing problems pending before the Congress. In a sense it reflects the fact that, with the heavy chains of governmental controls expected to be lifted, the 1947 responsibility for homes will rest on industry — in sharp contrast to a year ago when the government sought and obtained emergency powers.

For the long range, however, the Committee stresses legislation similar to the unsuccessful 1946 Wagner-Ellender-Taft General Housing Bill. The other three points — for the immediate picture — emphasize (1) rental housing (construction, reconversion and re-use); (2) removal of impeding restrictions applied by government, industry or labor; and (3) measures to spur building of low-cost houses.

Other Suggestions Made

Since the Small Business Committee was reconstituted by the Senate in spite of the general paring down of Congressional Committees, weight attaches to certain other suggestions which it passes on to the units writing new housing laws. In brief, it wants to continue the limit on non-residential construction with priority for schools, stores, hospitals and other community facilities related to the new housing developments; it would abolish premium payments, maintain rent controls only on existing units, have the federal government stimulate private industry in low-rent multi-family building, provide 90 per cent guaranteed loans for mass-produced houses, speed up apprentice training programs, and continue export-import controls.

On a long-range housing program, which the Congress may or may not get to this year, the Small Business group’s ideas are summarized as follows:

“We recommend that the Congress give immediate attention to the passage of legislation designed to accomplish the objectives of public low-rent housing, slum clearance, aid to rural housing, grants-in-aid to local communities for housing and planning studies; to develop formula for acquiring substandard areas by local communities and for reducing costs for sale or lease of such land for private or public housing; to liberalize lending powers of home loan bank boards and building and loan associations and other institutions through FHA incentives, to induce investment by private capital in large-scale housing.”

Legislation Proposed

A variety of legislative proposals came tumbling in during the opening days of the Congress. These include a bill (H.R. 43) by Representative Celler to establish a national housing policy, a comprehensive 117-page measure touching on all phases of housing.

In his message on continuing the war powers, President Truman pointed out to Congress that VEHHP powers continue until next January. “During the balance of 1947,” he said, “but it will be necessary to continue some limits on construction and to continue assistance to the producers of some bottleneck materials. I understand that voluntary arrangements are being made with a number of producers to meet the needs of the building materials industries so that the use of allocation powers can be held to a minimum.”

Portal Pay Suits Filed

The portal pay suits which swiftly accumulated after the famous Mt. Clemens Pottery decision include claims against industries allied with construction. For instance, early in the game, briefs were filed against lumber companies, covering claims similarly were filed against other branches.

Congress wanted to sweep away all of the claims at once, but didn’t know exactly how. The great danger was that, notwithstanding action by Congress, working men might sue anyway, winning on constitutional grounds. Hence most of the testimony tried to show that an amended law, a reinterpreted law or a completely new law would pass court muster.

Million Homes Foreseen

Meanwhile the general assumption in government and industry is that a million homes will go up in 1947. John W. Haynes, of the Commerce Department’s Construction Division, goes so far as to say that “the construction and building materials fraternity are beginning the biggest year of all time” — $22 billion in all. He sees a “decrease in inefficiency” and a slackened advance in construction costs.

The National Association of Home Builders, anticipating a million houses before the year’s end, says that “removal of many government controls in December has already aided home building and release of most of the remaining controls should make possible a further acceleration.” It expects rental housing will be the big job. This ties in with the forecast made by Thomas S. Holden and Clyde Shute of the F. W. Dodge Corp., in the December Architectural Record (pp. 70-72).

It should be noted, too, that NHA counts on normal construction time being restored in most areas.

Nation-wide Meetings Held

Late in January there began a series of meetings all over the nation at which the building industry, local government and federal agency representatives discussed means to stimulate a large volume of rental housing through conversions and small and large new projects. Cooperative effort is being solicited from

(Continued on page 10)

“Just think, in 20 years it will be all ours!” — Drawn for the RECORD by Alan Dunn

MARCH 1947
Oil Fired, Heavy Duty

Kewanee

Typical set-up of a Kewanee Oil Fired, Heavy Duty Firebox Boiler as used by the U.S. Army and Navy for numerous installations.

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Under the strain of extra strenuous service this Kewanee Series... whether used for power, process steam or heating... remains on the job many additional years delivering steam at minimum costs.

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Division of American Radiator & Standard Sanitary Corporation
Architects, engineers and air-conditioning contractors face a more intricate problem in hospital air-conditioning than in many other types of installation.

In hospitals they must meet atmospheric requirements which vary with each of the services. For example, in nurseries for premature-born infants, air-conditioning must contribute to the constant stabilization of the babies' body-heat (because their thermal regulating system is not yet fully developed) by equalizing temperature and humidity in the nursery. In operating rooms sterile air must be delivered—not only sterile—but without drafts. And so on, through the general wards, isolation wards, private rooms, offices, waiting rooms, etc.—each requiring its own specific atmospheric conditions.

Air-conditioning experts agree that an air-conditioning system can never be better than its air-distribution. That is why draftless air-diffusion—through Anemostats—is the answer to air-conditioning problems.

Anemostar air-diffusers distribute conditioned air in pre-determined patterns, assuring uniform changes throughout the room. Anemostats eliminate drafts... prevent dead air pockets... equalize temperature and humidity. And— they operate silently. The installation in the Doctors Hospital at Washington, D.C., again proves that Anemostats provide the air-diffusion required in hospital air-conditioning.

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REPRESENTATIVES IN PRINCIPAL CITIES

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

MARCH 1947
city officers on the questions of zoning, planning and building codes. Other phases under discussion include financial aids both private and governmental, site selection and development, streets, sewer and water supply, availability of stores and shopping centers, and labor supply. FHA technicians are provided to assist in setting up rental projects.

In a broad discussion of the municipal role in building for 1947, NHA Chief Raymond M. Foley told the January meeting of the U.S. Conference of Mayors of the need for building code revision and of the need for an inventory which "goes beyond zoning and building codes." Such an inventory, he advised, includes tax burdens, smoke, soot and noise abatement, general planning and neighborhood development as well as greater state and municipal participation in the cost of publicly-aided housing. He reported that 87 cities had taken action on their codes.

Code Bulletin Drafted

In connection with the 2000 or more building codes in the country, the National Bureau of Standards has come out with a revised bulletin entitled "Building Code Requirements for New Dwelling Construction." The recommendations made were developed by NHA along with the Standards Bureau and other government agencies, and are concerned chiefly with moderate size individual and multiple family dwellings of the type used under the veterans' program. Covered are design loads, fire protection, construction, construction requirements for masonry, wood, structural steel, etc. The publication is designed as a guide for local communities in changing their codes.

Rental Policy Changes

FHA has shifted its policy and procedures to encourage more rental housing. Its cost estimate system has been simplified to cut processing time on financing; it will allow mortgage terms to be readjusted; it will develop rental investment opportunities; it will seek to speed handling of wage determinations by the Department of Labor.

Concurrently, NHA Chief Foley has brought about the organization of an NHA Coordinating Council with representatives from the Department of Agriculture, Veterans Administration, RFC, Federal Deposit Insurance Corporation, and the Housing Expediter's office as well as NHA units.

In a move to improve housing statistics he recently called a conference of government and private industry authorities on housing.

Federal Findings Issued

As the government statisticians get around to shuffling their data on 1946, varying pictures come to light. For instance, the Commerce Department puts new construction at $10.1 billion, of which $7.8 was private and $2.2 public construction, $3.3 was private residential, $1.6 private industrial, and $0.8 privately-owned public utilities. The year's total at two-and-one-fifth times that of 1945 showed big percentage gains for warehouses, office and loft buildings, stores, restaurants and garages, public and private residential.

The Bureau of Labor Statistics expects 1947 expenditures for new construction to run 50 per cent more than 1946 with nonfarm home building claiming the greatest number of dollars. It warns, however, that the physical volume may not hit a record high "since it will take more dollars than in former years to pay for the necessary lumber, brick, wages, blueprints, etc."

BLS foresees more than 21½ million workers needed on the site of new construction.

(Continued on page 12)
Good lighting, plus ceilings unlimited

one lighting system gives you both

CEILINGS UNLIMITED — a boundless new field for the use of light as a structural aid in interior design is the added benefit offered stores, offices, schools, factories and public buildings through the installation of MILLER FLUORESCENT TROFFER LIGHTING SYSTEMS.

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More! Installation is simplified. Less than half usual number of supports needed from structural ceiling. Wiring costs cut up to 50%, and conduit and conduit fitting costs up to 80%.

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The component parts of the Dunham Differential Vacuum Heating System are designed to work as a unit — quickly, surely, automatically — to provide exact temperature control under the most varying weather conditions... through the circulation of a continuous flow of steam at variable sub-atmospheric pressures from 212°F. or higher to as low as 133°F. Architects have specified the Dunham System for such installations as Rockefeller Center and Parkchester in New York, as well as for thousands of small homes. You'll find it ideally suited for your plans. Write for Bulletin 631.

C. A. DUNHAM COMPANY, 450 East Ohio Street, Chicago 11, Illinois.

The Record Reports

(Continued from page 10)

construction projects at the peak of the 1947 program next September, a figure exceeding last year's top on-site employment by three-quarters of a million workers. About 35 per cent of the manpower required, it assumes, will be used on nonfarm housing, 30 per cent on nonresidential building and 35 per cent on non-building and farm construction.

Plan Man-Hour Studies

A measure of the man-hours of labor required for principal building materials is now under way in a series of surveys by the Bureau of Labor Statistics. The Bureau has found that it now takes 12 per cent less labor to produce 100 barrels of cement than in the middle 1930's, while 34 per cent more man-hours are required to produce a thousand board feet of dressed Southern pine lumber.

Increased production and plant utilization largely account for the change in cement production, it finds, while greater requirements in Southern pine production arise from inadequate labor force and the cutting of smaller trees.

Other products under survey include plywood, hardwood and hardwood flooring, insulation products, fabricated steel assemblies, plumbing and heating materials, and sand and gravel.

The Bureau points out that for every dollar spent on work at the site of a construction job, additional employment is created in mines, factories, and transportation systems. When the above studies are complete, they will permit estimates of the "behind-the-lines" employment involved in any given level of construction activity.

From Here and There

From numerous sources come items of interest:

1. The War Assets Administration has put out a pamphlet to guide business, institutions, banks, local governments, etc., in buying federally-owned surplus real property. It is entitled "How to Buy or Lease Surplus Real Estate."

2. Construction applications denied since last March 26 run approximately $2 billion, the Office of Temporary Controls advises. Items granted had passed $2.6 billion by February.

3. NHA reports that HH authorizations under the veterans' program put Pacific Coast states ahead, followed respectively by East North Central, Middle Atlantic, New England, West North Central, South Atlantic, East South Central, West South Central, and Mountain states.

4. A 51-page veterans' guide on "Mutual Housing" has been issued by NHA.

5. New home mortgage loans by sav-
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Up in the fresh air and sunshine, far above dangerous traffic—this school playground is one of the many new roof developments that Ruberoid specifications now make available for immediate planning.

NOT WAITING for some time in the dim future—full utilization of those valuable roof areas is possible and practicable today! Now you can plan hospitals with outdoor decks for convalecients, apartment houses with gardened roofs, department stores with recreational roofs for employees, and factory roofs with husky concrete surfaces for traffic and storage.

The old hampering difficulties that prevented ideal use of roof space need no longer stand in the way. Specifications for these new developments are available to you now. As worked out by Ruberoid engineers, these new roof developments are tested and thoroughly feasible. For full details get in touch with your local Ruberoid Approved Roofer—there's one located in every part of the country. Backed by Ruberoid's years of experience and complete line of materials he can give practical, unbiased help on your roof problems!

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THE RECORD REPORTS

(Continued from page 12)

ings and loan associations in the first 11 months last year exceeded by 74 per cent those of the full year 1945 and were more than double any previous yearly total. In reporting this, the Federal Home Loan Bank Administration sets the 11-month total at $3.3 billion.

6. The new Congress received a report on the final liquidation of the U.S. Housing Corporation, created in the wake of World War I 28 years ago.

7. Commerce Department reports a 73 per cent increase in January in total dollar construction compared to January a year ago.

8. The Senate Banking and Currency Committee has set up a housing subcommittee headed by Senator Buck of Delaware. The four other members are Cain of Washington, Bricker of Ohio, Wagner of New York, Fulbright of Arkansas.

ARCHITECTS NOMINATED
TO U.N. DESIGN BOARD

Twenty-six architects were nominated early in February by 21 nations for the Board of Design Consultants of the United Nations capital. From these the 10 members of the Board will be chosen by Wallace K. Harrison, director of planning for the East River site.

The 26 nominees are: Geronimo Remorino of Argentina; Gustave Brunnfaut, Jean van den Bosch Hendricks, Alexis Dumont, Charles Malcause and Hugo van Kuyck all of Belgium; Oscar Niemeyer, Brazil; Ernest Cormier, Canada; Hermogenes Del Canto, Chile; Sau-cheng Liang, China; Josef Havlicek, Czechoslovakia; Edvard Thomsen, Denmark; Basile Kouremenos, Greece; Roberto Irigoyen, Guatemala; Bunt Laugur Halldorsson, Iceland; Ivan Eyvind Moestue, Norway; Alfredo Dammert, Peru; Juan Arellano, Philippines; Matthew Nowicki, Poland; Ragnar Hjort, Sweden; Gordon Leith, S. Mullins, Jan Juta, all Union of South Africa; N. D. Bassov, U.S.S.R.; Howard Robertson, United Kingdom; Guilio Vilamajo, Uruguay; Ernest Weismann, Yugoslavia.

TRUCK TERMINAL PLANNED

Authorization has been granted by CPA to the Port of New York Authority for the construction of "the world's largest union motor truck terminal" in downtown Manhattan.

The huge $5,000,000 terminal, the first in a series to be built by the Port Authority, will be 1000 ft. long and 160 ft. wide. The roof is planned to accommodate possible helicopter cargo pick-up.

(Continued on page 16)
FOR WALLS - WHERE APPEARANCE AND PERFORMANCE ARE IMPORTANT

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MARCH 1947
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THE RECORD REPORTS

(Continued from page 14)

and delivery, and to furnish parking space for 70 complete tractor-trailer units.

The terminal will have off-the-street bays for 144 trucks, will be capable of handling over 2000 tons of merchandise freight daily. It will occupy the area bounded by Washington and Greenwich, Spring and West Houston Sts., only a few blocks from the Holland Tunnel and close to the steamship piers.

CANTERBURY RESTORATION

A gift of $500,000 has been made by Thomas W. Lamont toward the restoration of Canterbury Cathedral, badly damaged by German incendiary bombs on May 31, 1942. Although spared a direct hit, the historic cathedral’s roof was burned and many of its windows were blown out. Complete restoration, therefore, is possible, and now is made feasible by Mr. Lamont’s generous gift.

ARCHITECTURE SHOW

On view at the Museum of Modern Art, New York City, through April 6th, is an interesting review exhibition, “Henry Hobson Richardson Architectural Masterpieces.” Consisting of eight greatly enlarged photos selected from the Museum’s own historical collection, the exhibition shows several of Richardson’s best-known buildings, among them Brattle Square Church in Boston, Crane Memorial Library in Quincy, Mass., and Allegheny County Courthouse, Pittsburgh, Penn.

MATERIALS ROUNDUP

“Stocks of cement in the hands of producers are on the increase for the first time since early last year.” — The Department of Commerce.

“The output of some types of plumbing fixtures in 1946 exceeded that for any prewar year or the output during the war period. Further substantial increases are expected in 1946.” — Plumbing and Heating Industries Bureau.

“Past production records are being equalled or exceeded in substantially all lines of building materials.” — Tyler S. Rogers, president, The Producers’ Council, Inc.

ON THE CALENDAR

March 22–27: Western Metal Congress and Exposition, Oakland Municipal Auditorium, Oakland, Calif.
April 19–27: Metropolitan Home (Continued on page 124)
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MARCH 1947
Mr. Oud Replies

In the December issue of the RECORD there was published a highly provocative building, the Shell "I.B.M." office building at the Hague, with critical comment, under the title "Mr. Oud Embroiders a Theme." Invited to add his own remarks, Mr. Oud has written so expressively, even in a foreign tongue, that his wording has been left untouched:

My dear Editors,

The wish to challenge sharply what I am doing is a wish I can understand. Meaning that when someone is fixated to a style of development which seems clear enough, it must be a disappointment to see him escape the rules one based upon this belief. Yes, I comprehend very well your wish to go at me!

But let me defend myself and allow me to state that this is not my mistake. I have always tried to keep myself far away from all "rules." Seeing something "new" the world is immediately willing to give it a label and to place it in a particular category.

I know definitely that I myself never succumbed to this labeling.

Since I attempted to go my own way in architecture I always had only one device — a device which has guided me up to now! — "seeking clear forms for clearly expressed needs." This proved to me not to be a matter of static, it was a thing of dynamic order. The rules it brought were not of a formal nature but very informal ones. It became evident that they were changing; within distinct limits, with the development of the idea.

In the beginning I was working on laborer-dwellings and my aim was to find a good and agreeable form for them; a form — so to speak — as exact and as clear as the form of a good car, a good steamer, a good electrical tool. In other words, I was searching for a good "common" form. And we have attained much in this respect.

The world, however, does not exist only out of cars, steamers, tools, neither out of houses, factories, etc. There are grades in the usual things of our existence and in my opinion there are for that reason also grades in our architecture. Even in good democracy there will be order of precedence in the family: the father has — or should have — another function from that of the son. Analogous with this, domestic building in our Society has another function from that of an office-building, a town-hall or a church.

Little by little, I discovered that the form of a laborer-dwelling or a factory cannot be the end of all architectural wisdom. It is an error to imply that this is true and that we have already reached "new architecture" by this means. It seems to me at present quite all right that the new domestic architecture is the base of new architecture; that it should already be new architecture itself, I deny emphatically.

Architecture itself — old or new — can and must give; emotion. It has to transport the esthetic vision of one man (the architect) to another man (the onlooker). And why should it not? Are we in our modern times so condemned that we dare not set our own stages? Are we really so dried up that we don't allow ourselves to play a bit now and then? It is a very important fact which is too often forgotten in the case of new architecture!

We know now how to make "new building" by the application in a clear manner of concrete, plate-glass, steel, etc. We did this, as previously mentioned, with success. But we never dare forget that the esthetic emotion emanating from simple works like the work in question is an esthetic emotion on a very low level. Building like this — and the majority of building is of this kind — is a wonderful start toward new architecture but new architecture itself has still to be found. One could say with some exaggeration: it is the bass to the music but not its essence. In some cases: the lyric, not the epic side of architecture.

Now: new architecture is what I arrived at in my "Shell Building." It may be that it has more traditional ballast in it than former work of mine. I don't know. But it would not be the first time in my efforts that I went back a bit to make myself fit for going further on the way I seek to explore; in this case a more difficult way to tread than the way of the laborer-dwellings!

Should you have time and opportunity to study the "Shell Building" in reality [on the ground] I make bold that you shall have to establish the fact that I succeeded in finding new solutions. I agree with one of the critics you quoted that my ornament is not at all traditional. That it is developing after new directions and that it functionally is well placed into the composition.

And by the way: do you know that the "Shell Building" up to now already has been used for 5 years — sometimes by 600, sometimes by 1000 employees — and that I never heard one complaint about the practical functioning of the building? What do you think could "functionalism" do more in this respect? And why should it be forbidden to give functional doing a spiritual form? Functioning alone as a leading principle — my experience taught me this — results in esthetical arbitrariness. Don't forget this!

Yes, I am sure the "Shell Building" is an effort to arrange new practical needs in a well-considered and esthetically well-shaped form. I must confess here that I have no belief in the application of the form of laborer-dwellings and factories to office-buildings, town-halls and churches!

The whole world in laborer-dwelling-style must be unorganic and dull!

To resume: I tried to bring all that what we gained up to now in the field of new architecture to a cultural higher level. You think I went back on my way. I am not so sure of it. Look for instance one day at the building itself and see what I reached in the light and bright tone of the building as a whole: not like with plastering in a semi-permanent manner but by the use of fine and durable material. Well, trials of the same kind you will find in the whole shape as well as in the form of the details of the building. Trials to come to a new architecture on a more spiritual base.

Did I succeed? Other people may judge this. I can only say for myself that I hope to be able to try it again and again to make further progress in this direction. To have the opportunity to help new building rise to new architecture.

And this, my dear editors, still on the base of my old device: "seeking clear forms for clearly expressed needs."

With my very best wishes, etc.

J. J. P. Oud

This clarifies the difference in viewpoint. The undoubted fact that a house, an office building, a factory, each creates a different problem has somehow been twisted into a question of rank and caste. Again, Oud's critics are not against joy. They are against the small increase obtainable at great expense by decorative embroidery. Far better today to save funds by adhering to industrialized building methods under clear design; then put these funds into real embellishment of the building by top-notch artists who have real joy to convey.

— Further comment is invited. DH

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PEDAL CLAVIER
- Compass: 32-note, CCC to G
- Radiation: 8'-6" radius
- Concavity: 8'-6" radius
- Verticall: 29½" between playing surfaces of middle E natural pedal key and the playing surfaces of the natural keys of the Great manual.

PEDAL ACCESSORIES
- Swell and Crescendo Pedals: Heel end of playing surface of shoes overhang sharp keys of pedal clavier within the 1½" maximum forward position, and the 3½" maximum distance back of them.
- Swell Pedal located directly in the center of middle E—F gap on pedal clavier.

SWELL AND GREAT MANUALS
- Compass: CC to C6, 61 notes.
- Keys overhang a distance of 4" from the front edge of the Swell manual to a perpendicular line touching the front edge of the Great manual keys.
- Surface-to-surface: Swell manual is 2½" above Great manual.

ORDER OF STOPS
- Divisions of stop tablets have the following sequence from left to right on consoles: Pedal, Swell and Great.
- The order of stops within these divisions are: 16'-8'-4'-2½'-2' and mixtures. Stops assume their normal position according to pitch in the Major, Bass, Diapason, Flute, and String divisions. Loudest to softest is the order within pitch groups. Reeds follow the highest pitch stops of the above groupings.

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The WURLITZER ORGAN Series 20 Two-Manual

MARCH 1947
CONSTRUCTION COST INDEXES — Labor and Materials

Compiled by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corporation, from data collected by E. H. Boeck & Associates, Inc.

NEW YORK — ATLANTA

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% increase over 1939: 59.5
% increase over 1939: 40.3

ST. LOUIS

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% increase over 1939: 62.4

SAN FRANCISCO

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% increase over 1939: 62.0

The indexes 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.:

\[
\text{index for city } A = 110 \\
\text{index for city } B = 95
\]

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

Their costs in A are approximately 16 per cent higher than in B.

\[
\frac{95}{110} = 0.863
\]

Conversely: costs in B are approximately 14 per cent lower than in A.

\[
\frac{110}{95} = 1.160
\]

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.
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A business-minded architect planned it that way. He knew that air conditioned stores get more traffic—that cool, comfortable customers stay longer, buy more, and that employees are more contented, efficient, and that there is less absenteeism.

Chrysler Airtemp Packaged Air Conditioners were chosen because they simplify air conditioning installations in stores large and small. They can be installed singly or in multiples. Each is a complete, self-contained, automatic, "fool-proof" air conditioner. Packaged Air Conditioners are noted for great dependability, long life, low operating and upkeep costs. For details, write Airtemp Division of Chrysler Corporation, Dayton 1, Ohio; in Canada—Therm-O-Rite Products, Ltd., Toronto.

Any Chrysler Airtemp Packaged Air Conditioner can be converted to a year-round air conditioner simply by adding a heating coil.
HOSPITALS


In the spring of 1944 a series of lectures on hospital planning was given by Isadore Rosenfield under the joint sponsorship of the New York chapter of the A.I.A. and the Department of Public Works of New York City. Attended by architects, members of the medical and nursing professions and hospital officials, the lectures proved so popular that Mr. Rosenfield has now expanded them to book form. His decision to include the discussions following the lectures was a good one: these discussions not only heighten the interest of the volume (the lectures are given for their mass audience) but also answer a number of questions not dealt with in the main body of the text, and add valuable comment by doctors, nurses and hospital authorities.

For background material there is an introductory chapter on the need for hospital facilities, which, together with the following one on comprehensive planning, gives a general picture of the types of hospitals needed, and their preferred location. There follows a discussion of siting, budgeting, and integration of the functional elements of the hospital. The various elements are then taken up in detail in separate chapters.

Mr. Rosenfield is at his best in the eight chapters he devotes to the planning of the facilities required by the general hospital. These include the nursing unit, diagnostically and therapeutically, operating, laboratories and necropsy, operating, maternity and pediatrics, service departments (administration, stores and storage, dietary, laundries), and the outpatient department. These chapters, with the ones on lighting and other technical aspects, comprise the main section of the volume.

Only one chapter is given to the special hospitals — contagious, tuberculosis, cancer, chronic, psychiatric, convalescent and cardiac. There is so urgent a need for an exhaustive study of this subject that to find Mr. Rosenfield contenting himself with such brief coverage of it is somewhat disappointing. Yet in proportion to the size of the book as a whole, the amount of space allotted is fairly generous, and the main points at least are covered. This is particularly true of the mental hospital, which is discussed in more detail than are the other special types.

Certain mechanical faults of the volume detract from its overall effective-
ness. Many of the plans are out of scale, many of them have no scale given, and a number of them are not wholly legible. References in the text are by chapter and figure number, not by page, which makes them rather difficult to locate; one of them, at least, is incorrect. One large and important plan is incorrectly keyed in its entirety. These are minor faults which undoubtedly will be corrected in a later edition.

GARDEN CITIES, INC.


Anyone at all familiar with the so-called Garden City idea is familiar also with the two London suburbs developed under the tutelage of Ebenezer Howard — Letchworth and Welwyn. This volume is largely a recounting of the history to date of the two, and an appraisal of their merit as a way of life.

Mr. Osborn’s personal connection with the actual development of these two "young" towns here stands him in very good stead. Known as a proponent of the Garden City, he nonetheless appreciates and expresses freely the difficulties, disadvantages and criticisms. As is to be expected, he harks back constantly to Howard’s Garden Cities of Tomorrow (a new edition of which he prepared only a few months ago). But he goes further back than Howard for historical background: he quotes the Bible, early Greeks and Romans, and, of course, Sir Thomas More’s Utopia. Of particular interest in this connection is the diagram he includes of a typical Levitical city "derived from description in Numbers 35, and the modern excavation of Gezer." This diagram shows a square town area of about 22 acres, surrounded by an enclosing square of 300 acres of pasture lands.

Ezekiel’s plans for Jerusalem, too, are referred to by Mr. Osborn: there was to be a "perimeter belt . . . 450 ft. wide around it, and beyond, on the east and west, ‘food lands’ extending for another 3½ miles. . . ."

To return to Letchworth and Welwyn, Mr. Osborn tells their story in some detail, and describes their various sections. He includes one chapter on their administration and finance. With this as background he then proceeds to discuss their social life and culture — a formidable job! Interesting facts he points to include:

1. The average age of the inhabitants is below that of England as a whole.
2. In the main the employed people first went to the two towns because they found employment there; only a small minority sought jobs there because they liked the towns.
3. Income extremes are relatively absent.
4. "Common to the social life of both towns is the background of a decent home for virtually every family, and of local employment for most."
5. Life is more communal than in a large city.

Mr. Osborn, naturally enough, predicts a wider acceptance of the green belt principle, and sees no reason why such town planning should not be lastingly successful. He presents his arguments forcefully.

TO HAVE AND TO HOLD


This unusual book records the accomplishments of the National Trust for Places of Historic Interest and Natural Beauty. Founded in 1895, the National Trust is strictly a private-enterprise organization, not affiliated in any way with the British government. In 1946 it owned outright 115,000 acres, and had nearly half as much again under its wing to protect by covenant. These acres are spread over the length and breadth of England, "in a thousand scattered fragments."

As by rights it should be, this is a sentimental volume. Like a guide book, it follows a geographic trail southward from the Scottish border, and furnishes maps dotted with the properties under the National Trust aegis. It is rife with lush descriptions of scenery, buildings, parks, etc. It is crowded with photos (unusually good ones, the great majority of them) of landmarks both famous and little known which are included among the Trust’s preserves: landmarks such as a good section of the Roman Wall, a number of handsome old country houses and estates, cottages and public buildings, churches, lakes, and even one of the famous “chalk cliffs of Dover.”

CHURCHES


Intended expressly for the use of building committees, this handsome volume is devoted exclusively to Christian Science churches. It covers every problem the committees must face from the selection of the site to the letting of contracts.

Mr. Faulkner not only is an architect, but has himself designed a number of Christian Science churches. He understands their special needs, their dis-

(Continued on page 30)
"Streamlined performance is important in fluorescent lighting, too!"

...And there's a way to assure it—through Certified Ballasts. The ballast, in a fluorescent lighting fixture, is the heart of the lamp and fixture operation. And Certified Ballasts, built to exacting specifications, tested, checked and CERTIFIED by independent experts, Electrical Testing Laboratories, Inc., as definitely meeting those specifications, mean—to you—longer fluorescent lamp life—most light from lamps—greater economy. Insist on the ETL Certified label on the ballasts you specify and use!

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Sala Electric Co.
2525 Clybourn Avenue
Chicago 14, Illinois
Starrin and Company
Bridgeport, Conn.

REQUIRED READING
(Continued from page 28)

tinglishing characteristics. To illustrate the points he makes, he has assembled in this volume some 200 photographs and plans of Christian Science churches throughout the country. Of all sizes and architectural styles, these will be of particular interest and help to the architect designing a church of this type. The structures vary amazingly, both outside and in — more, probably than do churches of other denominations; the plans themselves, however, are fundamentally the same.

CITY PLANNING

NEW YORK


The persistence with which the old residential area around Washington Square in lower Manhattan has withstood the intrusions of commerce certainly merits the careful study which it now has received in this booklet. The area extends from 14th Street to Canal, Broadway to the Hudson River, and takes in the whole of Greenwich Village; for planning purposes it has been subdivided into five smaller areas, three of which have been found suitable for replanning and redevelopment.

Very few specific recommendations are made in this report. The character of the district is analyzed, the shortcomings and the needs are squarely faced, and the good features pointed out. General recommendations include more parks, new express streets, a whole new loft and manufacturing area south of the Square, an extension of the residential areas, and revision of the zoning laws to provide future protection.

BOSTON

The Boston Metropolitan District: A Bibliography. Compiled by Katherine McNamar. Cambridge 38, Mass. (215 Littauer Center), Harvard University Graduate School of Public Administration, 1946. 8 1/2 by 11 in. 198 pp. $2.00.

Here is a bibliography of about 1500 items, arranged both topically and chronologically, on the "local governmental developments and attendant problems of urbanism within the area of Greater Boston" from 1784 through the first half of 1945. Included are items on subjects ranging from airports, railroads and harbors to building regulations, housing and land reclamation. There is a separate index of authors.

ARCHITECTURAL RECORD
LASTING BEAUTY

Stainless steel highlights ticket office

This attractive railway ticket office has stainless steel service counters and trim. Architects are increasingly specifying stainless steel because it is modern in appearance and adaptable to streamlined design. Just as important is its durability—stainless steel stands up under years of hard wear. Maintenance costs are cut to a minimum, since scratches, rust, and tarnish will not dull the gleaming finish.

If you are interested in new uses of stainless steel in architecture and in other fields, ask to receive the monthly publication, ELECTROMET REVIEW. Or, if you need information on the fabrication or properties 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 steel in many industries.

ELECTRO METALLURGICAL COMPANY
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30 East 42nd Street, New York 17, N. Y.

In Canada: Electro Metallurgical Company of Canada, Limited, Welland, Ontario

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MARCH 1947
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The inside facts on Varlar! How this miracle wall covering resists greases, pencil and ink marks, water, fire, vermin, dirt—stains of all kinds! How it begins a new day of low-cost wall beauty and maintenance for homes and buildings!

HERE—in 6 easy-to-read, easy-to-file data sheets—is the complete, factual report on Varlar, the new kind of wall covering that RESISTS STAINS OF ALL KINDS.

Read what independent testing laboratories say about Varlar. See why this miracle wall covering that's made with plastics an entirely new way, begins a new day in low-cost wall upkeep and beauty!

See with your own eyes how Varlar stands up under every type of test! See how Varlar resists water, fire, steam, vermin, abrasion, mildew and bacteria!

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MARCH 1947
Orchids to...

Ferro-Therm

American Flange & Manufacturing Co., Inc.
30 Rockefeller Plaza, New York 20, N.Y.

December 10, 1946

EDGAR KLUG

Gentlemen:

This will confirm the letter of November 7th regarding the performance of your Ferro-Therm Steel Insulation in the Fire of November 7th in one of our buildings.

The Ferro-Therm Insulation consists of 4 walls, 2 floors and ceilings of this room are insulated with a sheet of 99 cent Ferro-Therm.

On the morning of November 7th, fire broke out at 5a.m. causing the air conditioning system of the building to fail. The fire was completely extinguished.

The fire was extinguished to the extent that it was completely enclosed by the Ferro-Therm Insulation.

However, after the fire was extinguished, we opened the Ferro-Therm Insulated room and found that the temperature of the room had risen to 120 degrees, normal temperature for the room was 70 degrees.

It is interesting to note that the insulation reduced the temperature in the room to a normal level.

I am in receipt of a letter from the manufacturer, Ferro-Therm, informing me that they will be sending me a sample of their product for testing purposes.

I am enclosing a copy of the letter for your information.

Very truly yours,

EDGAR KLUG

AMERICAN FLANGE & MANUFACTURING CO., INC.,
30 ROCKEFELLER PLAZA, NEW YORK 20, N.Y.
How a glare problem was solved
at Loyola University

Fluorescent lighting is the most modern way of lighting today, but it also presents the problem of glare. The installation of eleven hundred fluorescent fixtures in the classrooms and libraries of Loyola University's loop center at 820 N. Michigan Ave., Chicago, required the use of some sort of light diffuser.

The ceilings are 9' 5" and fixtures were placed parallel to general vision direction (see illustration above). To produce an even intensity of light at reading level, Fluor-O-Shields (a total of 2,200) were specified for each of the 2-tube 40 watt fixtures by the lighting engineers. This is the most practical and economical way known to get the most efficient lighting with the least amount of glare.

Fluor-O-Shields are endorsed by lighting engineers, lamp tube manufacturers and electrical testing laboratories for use in factories, offices, schools—wherever good lighting is essential to better working conditions. For more data, specifications and information, write to address below.

**THREE SIZES**

- **$1.95** 40 watt 46% inch
- **$2.95** 100 watt 58% inch

**NEW!**

- **$1.25** 20 watt 22% inch

Aluminum finished in white baked enamel

*Trade Mark—Patent Pending.

CAMFIELD MANUFACTURING COMPANY • GRAND HAVEN, MICHIGAN

MARCH 1947
EVEN MODERN MIDGETS

SHOULD BE "TELEPHONE CONDITIONED"

What the up-to-the-minute home misses in size, it makes up for in planning. For one thing, a raceway for concealing telephone wires is provided for in the plans.

When there is no basement, the telephone installer generally cannot run wires up through the floor to the telephone location. But a simple wiring channel installed before the floor is laid, avoids attaching telephone wires in plain sight on baseboards and around window and door frames.

Every small home should have raceways for telephone wires. Your Bell Telephone Company will be glad to help you plan economical telephone wiring facilities. Just call your Telephone Business Office and ask for "Architects and Builders Service."

BELL TELEPHONE SYSTEM
STEEL DECK...

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Above are illustrations showing a Typical Mahon Steel Deck Sidewall application, and Insulation and Roofing Material being applied to Mahon Steel Deck Roof.
A *house, too, can be* "painted into a corner!"

- No architect or builder needs to be told that, of all home-heating fuels, Bituminous Coal is the most economical and most dependable.

So, even when a client of yours *insists* on some other fuel for his new home, it's wise to give him the chance to change his mind at some time in the future—and turn to coal!

Otherwise, he's apt to find his house "painted into a corner" when stoker developments, local coal services and cost differentials dictate the use of coal.

Just be sure that the house plan provides: (1) A chimney with sufficient flue capacity to burn coal efficiently; (2) Sufficient space adjacent to the heating unit for eventual coal storage and stoker installation.

Such sensible precautions involve but trifling cost—and they may add greatly to the future value of a house.

Coal supplies uniform, *steady* warmth throughout every portion of each room. For there's always a fire in the furnace—no "pop on and pop off" periods that permit accumulated heat to rise to the ceilings and leave floor areas dangerously cold. That, plus its low cost, is why more than 4 out of every 7 homes in the United States now heat with coal!

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BETTER AND BETTER THINGS ARE COMING FROM COAL!
For Outside Walls —
GIVE YOUR CLIENTS

Double FOR THEIR MONEY!

Specify double-duty Insulite Sheathing. It does two things for the price of one:

(1st) Sheathes  (2nd) Insulates

One product—double usage!—double service for the money!

In this day of excessive construction costs, here at least is one place where you can tell a client "You get two uses for the money you spend."

Tests prove Insulite Sheathing provides bracing strength superior to ordinary wood sheathing horizontally applied. Its insulation value over wood is common knowledge.

Refer to Sweet's File,
Architectural Section 10.439

MARCH 1947
As blueprints come to life

Up and down the land, in cities large and small, long-withheld blueprints are coming to life—steel skeletons of new buildings are triumphantly moving skyward.

In this current work, Bethlehem Structural Shapes are playing a leading part, as they have done in building construction ever since the beginning of the era of the modern skyscraper.

BETHLEHEM STEEL COMPANY
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ARCHITECTURAL RECORD
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**Thermag Automatic Circuit Breaker Panelboards**

Built from standard units and enclosed in attractive, easy-to-install steel cabinets, Thermag Automatic Circuit Breaker Panelboards can be made to fit any job requiring panelboards.

Equipped with the famous Thermag Circuit Breaker — the circuit breaker with a brain, which distinguishes between momentary and sustained overloads — Thermag Automatic Circuit Breaker Panelboards provide positive protection against short circuits and dangerous overloads, eliminating burned out equipment and other costly and irritating service interruptions.

For your next panelboard, specify Thermag Circuit Breaker type — today's answer to tomorrow's service problem.

Thermag Automatic Circuit Breaker Panelboards are available in standard and narrow column types, dust-tight and vapor-proof construction. Capacities 15 to 50 amps, 120 volt AC only — single or double pole, 4 to 42 branches with 115-230 volt, 3 wire or 120-208 volt, 4 wire solid neutral mains.

*Frank Adam Electric Company*  
*St. Louis, Missouri*

MARCH 1947
What keeps the lobster laughing can keep your clients happy, too!

The Lobster laughs in crustacean glee at the dangers of life in the briny deep. Nature provided him not only with fierce, offensive claws but also with armored protection.

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.

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.

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. Provide the best for the buildings you design. Include Barrett Specification Roofs in your building specifications. The Atomic Bomb Plant at Oak Ridge, Tenn., the Chrysler and R.C.A. buildings in New York, the Field Building in Chicago and many other famous American buildings—all Barrett-roofed—will confirm the soundness of your choice.

THE BARRETT DIVISION
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In a restaurant of renown

Duran is beautiful, resistant to wear and so easy to clean . . . small wonder it was selected for upholstery in Lindy's famed New York restaurant. Duran is a new all plastic material . . . not a fabric. Food stains, spilled drinks and smears cannot mar its tough yet resilient surface for Duran cleans as easily as porcelain.

There are literally dozens of places where Duran can add its inviting touch of luxury in cafe, lounge and guest rooms. On furniture, walls, paneling, booths and loges . . . wherever beauty and durability count specify Duran.

Whether the decorative motif is smart modernity or quiet conservatism, select from Duran's many lovely colors and finishes for that note of distinctive emphasis. Full information and samples on request.
Stock Sizes Mean Door and Plywood Dividends for Our Customers—

Percentage-wise, it's quite a dividend. By concentrating all our production on stock size doors and plywood, production can be increased a minimum of one-third.

For instance, the man-hours required to cut three lights, will produce a complete stock door. Odd sizes and other special details further limit production by added labor and material demands. The elimination today of all special doors — and concentration of our manpower and machines on stock sizes is a policy dictated by our customers' needs. It means more Roddiscraft Doors and Plywood for everybody — plus stocks in the warehouses for delivery where and when you want them.
Constant Temperature and Pressure are essential to some processes, such as the cooling of plastic molds. In such cases, a mechanical cooling system like the one shown is often preferred to the use of well water or city water.

Constant Temperature of the cooling water is maintained by automatically controlling the amount of warm water sent to the cooling tower. A three way modulating valve on the warm water pump line to the cooling tower is made responsive to a thermal control point in the suction line from the cold well to the cooling water pump. When regulated, it will divert some of the warm water directly to the cold well.

Constant Pressure is maintained in the circuit by means of an air cushion in the cooling water tank, automatically controlled by an air compressor. This removes from the system all surges resulting from the operation of control valves on process equipment.

Consultation with accredited piping engineers and contractors is recommended when planning any major piping installation. Copies of Layout No. 20, enlarged, with additional information, will be sent on request...also future Piping Layouts. Just mail coupon.

A CHOICE OF OVER 600 JENKINS VALVES
To save time, to simplify planning, to get the advantage of Jenkins specialized engineering experience...select all the valves you need from the Jenkins line, fully described in the Jenkins Catalog. It's your best assurance of the lowest cost in the long run.

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MARCH 1947
Able fingers know!

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DIXON'S TYPHONITE
ELDORADO

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Stran-Steel is versatile. It gives full scope to architectural planning, asks no compromise of beauty, utility or individuality of design. Its great flexibility is mainly the result of three factors:

The Nailing Groove. This patented feature, found exclusively in Stran-Steel members, permits collateral materials to be nailed directly to the frame. Nails are bent and clenched in a "grip of steel," held 40% more firmly than in wood.

Assembly Methods. Practically any type of joint or connection can be accomplished, simply and efficiently, with Stran-Steel. Members are joined directly by self-threading screws or with the aid of specially designed Stran-Steel fittings. On large construction projects, erection can be further speeded by welding.

Pre-Cut Members. Stran-Steel members are cut to architect's exact specifications, for fast erection at the building site. Designing is simplified because the Stran-Steel system is simplified, utilizing only a few basic members.

Stran-Steel is especially economical for multiple dwelling units... highly practical for all light-load buildings. Fire-resistant, rigid and durable, it protects the building investment. For further information, see Sweet's File, Architectural, Sweet's File for Builders, or the January issue of Building Supply News.

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STRAN STEEL

GREAT LAKES STEEL CORPORATION
Stran-Steel Division • Dept. 36 • Penobscot Building • Detroit 26, Michigan

UNIT OF NATIONAL STEEL CORPORATION

MARCH 1947
1 Discharge nozzles for warm air have directional vanes and can be rotated 360 degrees, to warm all parts of the working area. To heat an office or partitioned area, ducts can be utilized to divert heat from one or more nozzles.

2 Because of its heat resisting qualities, the Stainless Steel Combustion Chamber guarantees longer heater life and sustained heater efficiency, reduces weight of heater and eliminates refractory lining. Differential between operating and oxidizing temperatures is three times greater using stainless, as compared with designs employing carbon steel, with resulting greater protection.

3 The outer casing consists of two sheets of metal with an air space between. The inner sheet, which is cooled on both sides by the high velocity air stream, absorbs radiant heat from the combustion chamber and transmits it to the air stream, resulting in a minimum heat loss through the outer casing and keeping the exterior of the heater only warm to the touch. All seams are sealed with asbestos gaskets. Casing sections, fastened with sheet metal screws, are easily removable.

4 Every precaution has been taken to make Dravo Heaters safe to operate. Proper safety controls protect the unit in case of flame failure, ignition failure, power failure, excessive temperature in the air discharge or motor failure. In addition, combustion cannot take place unless main fans are blowing air over the chamber. In gas burning models, combustion chamber is automatically purged prior to ignition.

5 Full magnetic automatic controls are provided and mounted in totally enclosed box to keep out dirt and dust. An air space separates control box from heater casing to prevent heat transfer. Operation is thermostatically controlled and delivers usable heat within a few seconds. Selector switch permits manual operation and enables heater fans to be operated for ventilation without combustion taking place.

6 White arrows indicate path of air. Drawn in through the louvered base, air is warmed as it passes first over economizer tubes, then over every square inch of the stainless steel combustion chamber and finally, fully heated, is discharged with high velocity above working zone through louvered nozzles. Counterflo Heat Transfer is effected here when the coolest gases meet the coolest air. The temperature of the air is raised approximately 80°F, and that of the gases is lowered to about 500°F.

7 Strong, stiff rotor shaft carries air supply fans and exhauster. All fans are mounted on same shaft and are equipped with heavy duty ball bearings. Ample capacity motor is mounted on special hinge arrangement to permit self-adjustment of V-belt drive.

8 The Dravo Counterflo Heater uses a minimum of floor space. The wide range of sizes, 400,000 to 2,000,000 Btu per hour output, permits the use of a minimum number of units. Larger heat requirements are satisfied by using multiple units. Where floor space is not available, Dravo Heaters can be wall hung or suspended from roof trusses.

9 This Dravo Heater design is the result of over twelve years experience in building direct fired heaters for thousands of successful installations. It is the nearest approach to the ideal plant for open space heating of industrial and commercial buildings. The list of users of Dravo Heating contains hundreds of names of outstanding American and Canadian firms.

10 Many contractors use Dravo Heaters for temporary heat while building construction is in progress. Heaters are moved as required and construction is underway and later placed in permanent positions. No other heater is simpler to install than a Dravo Heater, because it is self-contained, uses no combustion chamber refractory lining, and the only field requirements are: Fuel supply pipe, power line and exhaust stack.
11 The Dravo Heater recirculates warm air at the working level, giving maximum comfort with minimum roof heat loss and no noticeable drafts. Warm air discharged by the Dravo Heater (approximately 11,000 cfm per million Btu) does not readily rise to the roof because it is replacing the cold air drawn from the floor. In buildings where vapor, fumes and smoke rise to the roof ventilators, the Dravo recirculation intake is at floor level and does not interfere with their journey.

12 The Dravo Heater is of simple design and is sturdily constructed of welded stainless and carbon steel. It is easily moved as requirements dictate and has lifting eyes for handling by crane. It is a compact, self-contained unit, flame tested at the factory, ready to operate. It does not require a special attendant and maintenance is negligible.

13 Here is how the Dravo Heater efficiency of 80 to 85% is obtained. Colored arrows illustrate the four-pass principle of Dravo design by showing the path of the flame and hot gases. Starting first at the burner the fuel and air are mixed and then electrically ignited and are sent swirling to the rear of the heater in a radiant flame and then, in a second pass, return in a "Counterflo" motion to the front of the chamber giving a combustion path length of 2½ to 3 times that of a single pass chamber. This "Counterflo Combustion" method provides time and space to complete combustion. On the third and fourth passes the hot gases are "whirlcooled" through two sets of economizer tubes and thence discharged at relatively low temperatures through the exhauster. This results in maximum efficiency, uniform heat transfer and relatively uniform temperatures from all warm air discharge nozzles.

14 Dravo Heaters are so designed that oil burners and controls may be replaced with gas burners and controls or vice versa to take advantage of the most economical fuel. Both types take air for combustion from main supply fans, the quantity and velocity being controlled by an adjustable damper. New type oil burner (shown here) is dependable, simple in construction and free from maintenance trouble. The heater can be equipped with either a light or heavy oil burner. The gas burner is designed to burn natural, manufactured, coke oven, butane or propane gas.

15 Two staggered banks of economizer tubes equipped with inside swirlers "whirlcool" the hot gases. The coolest gases here meet the coolest air resulting in true "Counterflo" heat transfer. In this way, the heat is fully utilized before the gases are exhausted. The tubes are round, easily accessible and the whirlers are removable for easy cleaning.

16 An adjustable damper controls the draft created by the exhaust fan to maintain a constant negative pressure within the combustion chamber.

17 The exhaust fan, propelled by the same shaft which operates the main fans, controls combustion by exerting a constant negative pressure within the combustion chamber; pulls gases through economizer tubes, and discharges them into the stack. No high stack is needed to produce draft, nor is a high stack necessary to get rid of smoke and fly ash as flue gases are clear.

18 Circulation of air in summer is possible with a Dravo Heater because a selector switch permits operation of fans only. Special applications are available for tempering make-up air in cases where dust-laden or otherwise objectionable air is exhausted to atmosphere. Dravo Heaters provide a simple method of heating, in conjunction with complete air conditioning systems. Inlet louvers are of correct size to hold standard filters. Frames can be furnished for filters.

Write for Complete Descriptive Bulletin BC 516. Heating Section, Dravo Corporation, 300 Penn Avenue, Pittsburgh 22, Pa.

DRAVO CORPORATION
PITTSBURGH • WILMINGTON • PHILADELPHIA • WASHINGTON • NEW YORK • CLEVELAND • DETROIT
With the public more aware of the ill effects of noise than ever before, architects are being confronted today with many questions and problems on how to eliminate it.

There are two basic solutions to noise problems. One is to absorb the noise that is originated within the room, which is the function of acoustical material. The other is to minimize the amount of sound that is produced. Resilient flooring materials can help in solving this problem by reducing the amount of sound from floor traffic.

Sources of Noise

Noises which come from loud voices, typewriters, telephones, and other equipment are difficult to silence or subdue. However, noises which originate from floor impact are more easily controlled.

For example, the impact of footsteps on hard floors is a common source of annoyance. If a hard floor is used in a corridor with other hard surfaces, the noise of footsteps reverberates, and its effect is magnified many times until it becomes a serious disturbance not only to persons in the corridor itself but also to those in the rooms leading from the corridor. If a resilient floor is used, the amount of noise produced is so small that it is seldom a problem.

Resilient Floors Produce Less Noise

Resilient floors, because of their composition, give under the impact of footsteps, dropped objects, and rolling wheels. This cushioning effect which makes resilient floors so comfortable to walk on also reduces the noise of impact. For this reason, footsteps are much less audible in buildings having resilient floors than in those having hard floors.

All types of resilient floors rate well as "low noise producers," but some are better than others. For example, cork and rubber tile are the most quiet of the resilient floors. However, even in areas where maintaining quiet is a problem of great concern, many other factors should also be taken into con-
Relative Noise Produced by Various Flooring Materials on Impact

A well-known technical institute conducted a test some years ago in which they measured the noise producing characteristics of various flooring materials. From the results of this test the chart shown here was prepared to show the variation between resilient and non-resilient flooring. The test consisted of dropping a steel ball on each material and, by means of a microphone and an oscillograph which transformed the sound into light waves, measuring the sound photographically.

The average of all hard floors tested:

<table>
<thead>
<tr>
<th>Material</th>
<th>Average Noise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Tile</td>
<td>10</td>
</tr>
<tr>
<td>Linoleum</td>
<td>8</td>
</tr>
<tr>
<td>Rubber Tile</td>
<td>6</td>
</tr>
<tr>
<td>Cork Tile</td>
<td>4</td>
</tr>
</tbody>
</table>

Non-resilient floors:

Resilient Flooring Materials

Resilient floors are referred to as "quiet" floors, people frequently make the mistake of believing that their use will stop the passage of sound from one room in a building to another. A resilient floor will soften footsteps so that they are less audible in a neighboring room or in the room on the floor below, but it will not stop the passage of noise through the building structure.

While acoustical or other materials may also be required to solve severe noise problems, the use of resilient floors is an inexpensive way, in nearly every case, to provide the most quiet conditions possible. These quiet floors involve little or no extra cost over hard and noisy materials.

If you have a noise problem, Armstrong will be glad to help you by making a thorough study of the problem and offering a recommendation based on its wide experience with both resilient floors and acoustical materials. Just contact any Armstrong office or write direct to the Armstrong Cork Company, Building Materials Division, 2403 Duke Street, Lancaster, Pa.
Who says you can't please Everybody!

ARCHITECTS...
Charm and beauty combined with long-lived practical utility... the aim of every architect.

BUILDERS...
Self-adjusting sleeves make installation quick and easy.

DEALERS...
Every dealer likes a well-known, fast-moving, no comeback line.

...and that all important lady

Mrs. Public...

...and she's getting more important every day. Nationwide surveys and thousands of requests for literature prove how right Stanley designers were when they created this startling new and different line of Kitchen Cabinet Hardware.

This new hardware combines unsurpassed beauty with down-to-earth practical utility. It is one product you can suggest to home buyers and owners with absolute confidence... a product that will stay beautiful and practical on through the years. Write for a copy of "Jewels in the Kitchen". The Stanley Works, New Britain, Connecticut.
2 Ways **RED LEAD** NEUTRALIZES ACIDS

...Retards Rusting

Those responsible for making metal last have long accepted Red Lead as the "standard" metal protective paint.

Now scientific research discloses sound reasons why Red Lead gives plus protection. For example, one important factor is Red Lead's ability to counteract the acid conditions which accelerate rusting.

Red Lead accomplishes this in two ways.

1. **Red Lead Counteracts Environmental Acids**: The uses to which structural steel is put normally expose it to acid environments. For one thing, it is usually subjected to the attacks of industrial gases and smoke. Certain of these, in contact with moisture, produce acid-forming compounds that speed up rusting. Then, too, pollution of waterways also results in acidity. Red Lead effectively neutralizes all such acids, and thus counteracts their rust-accelerating effect.

2. **Red Lead Controls Inherent Acids**: Many paint vehicles, such as linseed oil, synthetic resin varnishes and other commonly used types, themselves produce organic acids during the natural process of ageing. Many of these inherent acids, too, hasten corrosion. However, when Red Lead is the pigment in a metal protective paint, this rust-causing acidity is kept in check. Thus, a "controlled" acid level is maintained in the paint film. This is a singular property of Red Lead and contributes greatly to its film flexibility, impermeability and long life.

Remember that Red Lead is compatible with practically all vehicles commonly used in metal protective paints, including the fast-drying resin types.

Specify RED LEAD for ALL Metal Protective Paints

The rust-resistant properties of Red Lead are so pronounced that it improves any metal protective paint. So, no matter what price you pay, you'll get a better paint if it contains Red Lead.

WRITE FOR BOOKLET: "Red Lead in Corrosion Resistant Paints" is an authoritative guide for those who specify and formulate metal paint. It also includes typical specification formulas. For your copy, address nearest branch listed below.

* * *

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**DUTCH BOY**

**RED LEAD**

MARCH 1947
When the blueprints call for RADIANT HEATING...

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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. AR37.

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7 Reasons
WHY CHASE COPPER TUBE
FOR RADIANT HEATING

1. EASY TO BEND
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7. LONG LIFE

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ARCHITECTURAL RECORD
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SPEED PLUS ECONOMY

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A Designed Steel Form with strength built in—good for re-use indefinitely without repair. Easy to assemble with non-clog wedge bolts—only a hammer is needed... a particular advantage where skilled labor is scarce, for semi-skilled or unskilled labor can set, move and strip these new forms easily and rapidly.

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MARCH 1947
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BUILT-UP with asbestos felts which are fireproof, rotproof, and weatherproof, Johns-Manville Flexstone Roofs offer the most enduring and reliable protection for your buildings.

Flexstone Roofs are smooth-surfaced, permitting quick and thorough roof drainage. They won't dry out from the sun... require no periodic coating. Upkeep expense is minimized, as actual roof can be seen—any damage is easily found and repaired.

All Johns-Manville Flexstone Roofs are engineered to the particular requirements of your building—whether it's new construction or a re-roofing project. To insure skilled application, they are applied by Johns-Manville Approved Roofers.

Three grades are available: Flexstone Super "A", Flexstone Standard, and Flexstone Service—each the finest that can be specified for its purpose. Write for our brochure BU-51A. Johns-Manville, Box 290, New York 16, N. Y.

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THE BUILDING that had no basement EVERY TIME IT RAINED!

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See our Catalog in Sweets'. Member of the Producer's Council

MARCH 1947
A typical use industrial architects are making of Insulux Glass Block is seen in Rock Island Lines' new Chicago shops. Exterior design is dominated by Insulux panels with continuous windows below. The interior is flooded with diffused daylight. Architects: DeLeuw & Cather.

How an architectural material works for industry

Improved working conditions and low maintenance costs come automatically with Insulux Glass Block—a material of recognized architectural merit.

In key with contemporary architectural thinking for industrial buildings, Insulux has also won enthusiastic industrial approval. Management favors the prevention of rot, rust and corrosion—elimination of painting—the ease of cleaning. High insulating value makes possible economical air conditioning of wide areas. Heat loss in winter and heat gain in summer are materially reduced.

For the many practical uses of Insulux Glass Block in industrial, commercial and residential construction, consult the “Glass” section of Sweet's Architectural Catalog. You will find technical data, specifications and installation details. Or write Dept. D-3, Owens-Illinois Glass Company, Insulux Products Division, Toledo 1, Ohio.

Ceiling-high Insulux panels distribute daylight across broad work areas, cut off distracting views. Clear windows furnish ventilation and vision out. Insulux Glass Block has proven advantages in all classes of construction.

Insulux Glass Block is a functional building material—not merely a decoration. It is designed to do many things other materials cannot do. Investigate!
When **SOUND** takes over—

**SALES** go into high gear

Department-store executives find that the friendly, relaxing atmosphere of music broadcast in the store builds customer good will... induces shoppers to stay longer and make more purchases.

Many stores use sound systems for making spot announcements to customers... calling their attention to bargains, slow-moving items, and store services. Some managers devote the few minutes before opening time to instructing their sales people *at their stations*, in matters pertaining to the day's work.

In case of fire or other emergency, the RCA Sound System helps to control and prevent panic.

All of the above benefits are designed into an RCA Sound System... unit-built to standardized dimensions... styled to harmonize with modern interiors... composed of precision-matched units, to provide exactly the services desired.

For specifications and further information on RCA Unit-Built Sound Systems, write: Dept. 10-C, Sound Systems, Radio Corporation of America, Camden, New Jersey.

RCA'S Unit-Built SOUND CONTROL SYSTEM

The console illustrated provides complete paging and announcing service... recorded music and radio (AM, FM, and short wave) to as many as 128 loudspeaker zones. Other console combinations are available to satisfy the needs of all types and sizes of stores.

SOUND SYSTEMS

RADIO CORPORATION of AMERICA

ENGINEERING PRODUCTS DEPARTMENT, CAMDEN, N.J.

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*Rubber Tile Flooring*

For 53 years Hood has based the superiority of its products on research. Today, the research laboratories of both B. F. Goodrich and the Hood Rubber Company stand squarely behind every block of Hood Rubber Tile.

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Specify Hood Rubber or Asphalt Tile and you specify flooring that satisfies the most particular client. For an idea of what you can do with color, pattern and design, see *Sweet’s*, or send for the new color catalog on Hood Resilient Flooring—America’s leader since 1925.

**Engineered for Apartments**

Designed to make maximum use of precious inches... and thus provide GENUINE kitchen convenience in unbelievably compact space.

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Made for long, tough service without trouble to tenants... with negligible upkeep costs for owners.

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(Model shown is Murphy Cabranette Kitchen No. 480... full kitchen convenience in two by four feet)

**Dwyer Products Corporation**

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you subtract installation time . . .

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WHETHER it's a heating installation like this one, or a simple plumbing job for a small home, Anaconda Copper Tubes offer the advantages of comparatively easy installation, freedom from rust, light weight, smooth flow through solder-type fittings, moderate cost and long-term service.

The economies afforded by copper tubes make them a paying investment not only for water lines, but also in forced circulation hot water heating, as well as for lawn sprinkler systems, tank-to-oil-burner, bottled gas and other connections.

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MARCH 1947
TONCAN IRON
Contains Extra Copper PLUS Molybdenum

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AGAINST RUST

Yes, it's extra copper—actually, twice as much as contained in copper-bearing steel—plus molybdenum that gives Toncan Iron the greatest rust-resistance of all ferrous materials in its price class.

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Made from highly refined open-hearth iron, Toncan Iron is uniformly ductile... fabricates readily and easily by all methods.

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Toncan Steel Windows, Doors, Joists and other building products

— for ducts, gutters, conductor pipes, roofing, siding, tanks, ventilators, skylights, hoods and other sheet metal applications requiring rust-resistance—and for corrugated metal drainage products

62
All electrical systems are "SUBJECT TO CHANGE"

Electrical distribution systems ought to be tagged "Subject to Change."

Architects know that it's a rare installation that doesn't have need for replacements, removals or additions among existing circuits—sooner or later.

You can give every distribution system a headstart that helps lick these problems by specifying Bulldog Vacu-Break Switchboards. These modern distribution control centers feature flexibility, convertibility and ample provision for any and all future expansion.

Front-operated switch units embody the unique Vacu-Break principle to smother arcs quickly and safely, preventing burning and pitting of contacts. And Bulldog’s self-aligning "Clampmatic Contacts" provide bolt-tight pressure to assure high conductivity, low heat losses, longer life and less maintenance.

Horsepower-rated and equipped with "quick-make" and "quick-break" operating mechanism, Bulldog Vacu-Break Switchboards can be used for operating switches as well as for disconnect switches.

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Vacu-Break Switchboards are available in 30 Amp. to 600 Amp., 2 & 3 Pole Circuits, 575 Volts and less.


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MARCH 1947
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HOT WATER
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WITH INTERMITTENT FORCED CIRCULATION

CHOOSE a Thrush controlled, forced circulating, hot water system for real "solid comfort." It provides continuous radiant heat . . . without requiring continuous Circulator operation. Thrush Flow Control System automatically regulates water temperature to maintain absolutely uniform comfort regardless of outdoor weather changes. Operating cost is low because the Thrush Circulator normally operates only a few minutes out of each hour, and firing unit operating periods are shorter.

YEAR 'ROUND HEAT, HOT WATER
FORCED circulating Thrush Flow Control Hot Water Heating System is completely automatic, convenient, and economical of fuel. It also provides Summer-Winter domestic hot water from the same boiler at low cost. Heat distribution is quicker and there is no wasteful overheating. Installation costs less because forced circulation permits the use of smaller pipe, valves, and fittings. If you are not familiar with Thrush Systems, see your wholesaler or write for literature. Address Dept. J-3.

H. A. THRUSH & COMPANY
PERU · INDIANA
FREEDOM TO DESIGN

It is foolish, of course, to express or to admit a fear. We have only to fear fear itself. But I have heard otherwise sane architects mentioning a fear that all was not well in development of Modern Design — architectural design, that is, with a capital M. The fear is that modern designers are afraid of their freedom, that well-won freedom of the functionalist who stripped off the stylistic strait jackets and left their buildings bare, naked, but unabashed in all their structural beauty. It is the fear that a new style, modern, is imposing too many rigid taboos and that the young designer may be too tempted to copy the established formal clichés, the outward forms rather than the inner spirit, the underlying philosophy of great exponents of functional and organic beauty. But such imitation is part and parcel of the traditional art of architecture.

One should have no such fears, in spite of the evidence to the contrary. In the period of building expansion just ahead there will be designers, young and old, who will no longer fear to depart from the seemingly meager palette of their art, men (and women) who will declare their freedom from any impending stagnation or sterility of a "style." They will no longer strive so hard to be "different," all in the same way with the same forms, like the iconoclastic girls who, in their desire to be different, adopted the rolled-up blue jeans, flying shirt tails and moccasins, a rigid uniform.

The urge to create will transcend the learning stage with its tendency to copy or adopt each experimental form from the current magazines. Critical judgment will dictate the exercise of some discrimination, the choice of the better solution rather than merely the novel or the different. The mistakes of others will be discovered by personal critical analysis of the published works. Most of our architectural schools are endeavoring, each in its own way, to make its students think, and think their problems through from every aspect, functional, structural, efficiency, economic, social and esthetic.

And so I believe there will be heretics who will rebel against any hardened style. Period, or Modern; heretics who will provide designs for buildings both functional physically and significant and vital spiritually. We need have no fear of sterile stagnating standardization. Designers will continue to develop a finer sense of proportion and scale, of fitness of form to function. They may even discover the uses of forms now taboo because the despised traditionalist used them. There are functions of the play of light and shade on form and surface, of pattern, of contrasting forms that give life and meaning to designs. There is too much vitality and enthusiasm in our rising architectural talent to warrant any fear that their designs will be dry and tight and circumscribed. We will see rather a new freedom, a new, more individual expression, brighter, more lively, juicy, and intensely human designs, sincere and studied in conception, bold and stimulating in execution.

Architecture will continue to be a fine art, the mistress art, even within the framework imposed by economics, mechanics, sociology and what have you. Architects will continue, now and always, to exercise their freedom to design.

Kenneth K. Stowell
EDITOR
"YPF" RESEARCH LABORATORY

IN FLORENCIO VARELA, ARGENTINA

Office of Architecture of the Engineering Department of the Yacimientos Petrolíferos Federales (Federal Oil Fields)

The increase in oil exploitation in the Argentine Republic made it necessary for the "YPF" to build this extensive modern laboratory in which to carry on an intensive program of scientific research.

The plan of the building logically and functionally divides into four main elements: (1) laboratories; (2) administration and social; (3) public display and auditorium; and (4) shops and pilot plants, each in its own wing of the building. The main facade parallels the highway but the laboratory wing is carefully oriented to obtain the best possible natural lighting.

One entire five-story wing is devoted to the 35 individual laboratories (shown in detail on pages 72–73) and to their library, archives, storage, and small shops.

The lower wings of the building, flanking the curving laboratory structure, provide, at the right of the entrance, the museum and auditorium, and at the left, the open gallery, the dining rooms and the administrative offices. The shop section with its studios and offices pro-
The laboratory wing dominates the composition, its end forming the vertical element of the entrance front. The high-ceilinged museum wall is glass from floor to ceiling, protected by the projecting roof of the slender colonnade. Below, converging lines of corridor-windows looking from the far end of the laboratory

Jorge de la Maria Prins, Hugo M. Rosso, Jorge M. Verbrugghe and Jorge Ros Martin . . . Architects

vides, in a wing paralleling the laboratories, large facilities for pilot plant construction and testing. This wing is connected to the laboratories, and by an open gallery, to the administrative wing.

The site was chosen to be relatively near the General Administration Building of the YPF and its La Plata distillery, and yet far enough removed from the industrial centers to eliminate physical and electrical disturbances which might interfere with the accuracy of meticulous research experiments. The building faces highway No. 2 and is served also by another highway between La Plata and Buenos Aires at the rear.

Comfort and ideal climatic working conditions are provided by a complete air-conditioning system, using furred-down corridors for main ducts, and by steam radiation and concealed convectors. Intercommunicating telephones and call systems assure efficient communication. The laboratory equipment, planning and finish have been carefully studied for efficient use.
GROUND FLOOR PLAN
1. Main lobby
2. Information and control
3. Gallery
4. Museum
5. Lobby of the auditorium
6. Auditorium
7. Stage and adjoining rooms
8. Washrooms
9. Watchman's quarters
10. Dining room lobby
11. Dining room for employees and technical men
12. Servant pantry
13. Kitchen and services
14. Office
15. Hall
16. Laboratories
17. Ladies' dressing and washrooms
18. Men's dressing and washrooms
19. Infirmary
20. Shops
21. Experimental rooms or plants
22. Offices
23. Offices
24. Dressing and washrooms
25. Passageway

BASEMENT PLAN
S-1 Hall
S-2 Machinery and boiler room
S-3 Compressor and ventilating, machine room
S-4 Cold storage room
S-5 Photographic laboratory
S-6 Dark room
S-7 Physics laboratory
S-8 Dark room
S-9 Workman's dressing and washrooms
S-10 Electric switchboard central
S-11 Storage batteries
S-12 Scales
S-13 Filling room
S-14 Filling shelves
S-15 Machine room of the auditorium
S-16 Passageway
A Trapdoors for bringing in machines
B Garbage incinerator
C Elevators
D Holts
E Ventilating, conduits, piping, etc.

Above the entrance a symbolic bas-relief by sculptor Carlos de la Carcova embellishes the facade. Vertical windows light one end of the meeting room shown on the opposite page.
Below: two views of the curved colonnade or open gallery connecting the shop wing with the main building, and showing the office link connecting the laboratory wing with the shops and pilot plant areas.

Above: the formal meeting room, paneled in oak, is centrally placed on the second floor above the main entrance lobby. Its acoustical ceiling has recessed panels for indirect lighting.
The great windows of the museum are protected from the glare of direct sunlight by the extended roof of the graceful portico.

The entrance lobby provides access to the museum, to the laboratory wing, to the gallery, and, by stairs, to administrative offices.

**KEY TO PLANS**

**FIRST FLOOR**

27. Hall  
28. Meeting room  
29. Chief office  
30. Offices  
31. Dining room  
32. Office  
33. Workmen's mess room  
34. Studio  
35. Offices  
36. Laboratories  
37. Projection booth  
38. Telephone central  
39. Passageways

**SECOND FLOOR**

40. Hall  
41. Library  
42. Librarian  
43. Office  
44. Laboratories  
45. Passageways
The museum serves also for leisurely access to the auditorium lobby beyond. Indirect lighting panels in the ceiling illumine the hall at night.
The simple and dignified auditorium seats 185 persons comfortably. Lighting again is indirect and pleasant.

Below, plan of a typical laboratory showing the two retorts or experiment-hoods with a table and sink between them on the corridor side of the room. The three work tables are of wood, painted, resting on glass insulator cups. The legend explains the disposition of the equipment.

A. Corridor
8. Laboratory
1. Duct for extracting gas from retorts
2. Piping for cold liquids and electric cables
3. Piping for hot liquids
4. Retorts or experiment-hoods
5. Trench with removable cover, for piping
6. Washing table
7. Experimental tables
8. Storage cabinet
9. Desks
10. Exhausts for heavy gases
11. Exhaust for light gases
12. Cocks and faucets for liquids (compressed air, super-gas, cold water, hot water, steam)
13. Sinks
14. Slide doors of the retorts
15. Shield for assisting burnt workmen
16. Shower for those spattered with acids
17. Anhydric carbonic fire extinguisher
18. Carbon tetrachloride fire extinguisher
19. Clock
20. Person call system
A typical laboratory showing the sink ends of the work tables, the wall cabinet and in the upper-right corner, the emergency shower. Each work space is provided with hot and cold water, compressed air, steam, gas and electric outlets (220-volt single-phase and 380-volt three-phase).

Typical work table and one retort or experiment-hood with its explosion-proof vertical-sliding doors. Counters under hoods are ceramic tile and each hood is equipped with feed-tube services similar to those of the tables, operated by handles outside the hood. Operating handles differ in shape so operator can identify each by touch.

Left: a double-height laboratory with mezzanine. Below: section showing vent/loating ducts, retort or experiment-hood construction, and underfloor pipe and conduit channel under sink-end of laboratory tables.
COMBINING RESEARCH AND PRODUCTION

A new building in Rio de Janeiro combines facilities for the development and manufacture of pharmaceutical products for Productos Roche, a subsidiary of Hoffmann-La Roche, Inc.

Louis Parnes, Architect

RESEARCH and production in the field of medicinal products such as vitamins, penicillin, tablets, syrups and drugs go naturally hand in hand. Logically then, they are housed in the same structure. Architect Parnes has provided therefore a plant embodying facilities for a "straight flow" process. Raw materials enter at the lower floor, flow up to the manufacturing areas and down again to delivery or storage departments. Above are the laboratories for development research, testing; and on the top floor are the employees' facilities such as locker rooms, showers, restaurant, social rooms, and roof gardens. The administrative offices are in separate wing fronting on Rua General Janabarro. Employees' entrance is, via a separate path, at the juncture of the two parts of the building. Freight traffic is entirely separate via Rua Moreas e Silva at the rear, an ideal functional division of circulation.

The plant is of reinforced concrete, the research and manufacturing portion concrete-faced (no plaster or other finish); the administration portion faced with large marble plates or veneers one inch thick. An interesting structural and functional feature of the building is the self-supporting monolithic spiral slab stair, in the administration wing.
The building is unadorned and depends for its effect on the simplicity and richness of material and the natural pattern and proportioning of its functional elements. The main entrance to the building is at the northwest corner of the administration wing. The large spiral stair at the end of the entrance lobby leads to the conference room directly above the entrance and to second floor offices. The administration wing facades are faced with large slabs of marble veneer.

Protection from excessive sun radiation consists of thin but deep (13 feet) reinforced concrete vertical divisions equipped with horizontal movable asbestos-cement louvers. The flat roofs extend some five feet beyond the wall and provide additional protection from the sun. These roof canopies are especially reinforced to resist heat-deformation and to avoid dilation joints. To further assure comfort and proper control of air and temperature all rooms of the building are completely air conditioned.
DESIGN FOR DISPLAYING MERCHANDISE

FABRICS

RICHARD BENNETT, CHICAGO
Eugene Back and Theodore Yonkler Architects

Above: The Chicago unit of this men's tailoring firm uses a fabrics display idea that has already proved effective in its New York stores. When the displays are not in use, the wall is a series of batten panels in wood, which are permanently fixed in place.

Above: Men's suitings are displayed on tall sliding racks mounted on overhead trolley tracks such as are used for garage doors. The customer can see a great number of fabrics quickly, in full-length folds, all in plain view and with uniform lighting.

Left: View of racks from rear of store, with some racks in closed position, some pulled out. There are two in each slot.

ARCHITECTURAL RECORD
In store architecture, all of the designer's spider-like enticements come to a focus on the display of the actual merchandise. Coupled with the imperative allure is the need for mechanical convenience, to obviate as far as possible the spoiling of a sale through awkward handling of goods. Here is a collection of ingenious display ideas from recent stores and showrooms.

FABRICS

SAKS FIFTH AVENUE, NEW YORK

S. S. Silver & Co. Designers

At Saks Fifth Avenue the racks of bolted materials on rollers along the walls make an intriguing array, and eliminate most of the awkwardness of handling bolts of cloth. Any fabric is easily unrolled for inspection by a patron, or the bolt is easily lifted off.

Above and right: To gain space in a long narrow departmental unit, one wall becomes a series of displays, in angling passages lined with wall-mounted bolt racks. The space below convenient wall height is developed for storage cabinets.
Two contrasting backgrounds for selling similar products, the one an ornate and feminine "bar" for beauty culture, the other a more neutral background for emphasis on a particular line of perfumes. The Parisian perspective painting is also emphasized, to proclaim the exotic origin.
CANDY

BARTON'S BONBONNIERE,
NEW YORK

Hans Weiss and William Basser
Designers

Here the basic shadow-box idea appears in several variations. Above, a pattern of lace-trimmed display boxes on mirrors.

Above: Here the shadow-box displays are scaled larger to attract attention at greater distance; the candy-stripe adds to the attention value. They are hung on glass panels lighted from behind.

Right: Again the shadow-box idea, this time in a pattern of round boxes on the curving wall to catch the eye of entering customers. Since this wall encloses a traffic area, the boxes are recessed.

MARCH 1947
In these displays, table lamps escape the usual cluttered confusion of the department store counters. They get a chance to assert some individuality under conditions closely approaching those of their use either near to or far from the wall.
CARPETS

WILF BROTHERS

Solomon Kaplan
Architect

Philadelphia

ELECTRICAL APPLIANCES

The rug department uses a massive version of the fabrics wall-type display together with the familiar floor pile. In the electrical appliance section, the saw-tooth wall gives good display to large items, section-ализed shelves for smaller ones.
YARNS

New York

Right: Balls of yarn are displayed in tiered plastic trays, sloped so that as one ball is removed the others roll down to the front. The fixture in the foreground displays knitting instruction books.

Sectionalized wall cabinets for skein yarn. Glass walls provide maximum visibility, and each glass-enclosed bin holds a full box of unpacked yarn. A little plastic tray in the front of each bin holds one skein out for convenient inspection by the customer.
An architect remarked recently that four apartment projects were planned for each one that reached the construction stage. In other words, in three out of four cases the architect must roll up the sketches and tell his draftsmen to forget the whole thing. Why?

Is it building costs, restrictions, rent ceilings, material shortages, financing? Obviously it is not lack of demand. Obviously, too, it is not lack of enterprise, if four are trying for every one who succeeds.

If building costs come to mind as the first and final answer, the charts on succeeding pages may contain some surprises. Building costs are high, to be sure, but if we stop there we are quitting too soon. In the first place, we could be charged with pusillanimity. Costs of nearly everything are high. The problem is not how high they are in relation to the past, but how high in relation to the future. If we think building costs will stay high, we had better find a way to proceed now.

In the second place, history tells us that high building costs have not proved much of a deterrent in the past. Rightly or wrongly, most volume building was done in high-cost periods. Perhaps we should not jump to any conclusion from this fact, but we ought at least to take another look at costs.

Pursuing its studies of rental housing, the RECORD has asked two experienced apartment builders — both of them architects, by the way — for today's cost studies.

These have been analyzed and charted in comparison to published "representative" figures by the Federal Housing Administration. The FHA costs are taken as "par," and the others as practical attempts by professionals to do at least as well as bogey.

One of the pros did very well — he is busy with a number of projects right now. This is Emil A. Schmidlin, architect of East Orange, N. J. The other one played on an entirely different course; he packed up his clubs and gave up the game. The interesting thing is this: Both used exactly the same construction cost. Both builders calculated construction costs at 60¢ per cu. ft. This compares with a prewar average of 35¢.

Several interesting conclusions come out of the individual and comparative analysis of each cost tabulation. Perhaps the really significant one right at this moment (with many federal controls still holding) is that relief of the rental housing shortage is likely to be spotty — it is impossible to build in some localities; in others building will proceed.

Some other conclusions are:
1. Land cost assumes remarkable importance. In the Westchester example it was $2.50 a sq. ft.; in New Jersey, just under 30¢. This item was the largest single factor determining success or failure.
2. Taxes run a close second. In terms of yearly cost taxes caused the widest divergence.
3. The FHA financing scheme, while leaving a thinner equity, does become quite a factor in fixing the percentage of annual "profit."

4. Assume 100 per cent occupancy and the margin of profit widens very rapidly, as compared with a long-term vacancy average. This would make a terrific difference in the early years of a project built at high costs in a period of heavy demand.

5. A small rent increase would widen the margins still more rapidly. The Westchester builder would lose money at 100 per cent occupancy at today's maximum rentals; but increase rentals by 25 per cent and his project does better than par. This point seems worth stressing: it does not require any staggering rent increase to change the entire picture of costs.

6. The income tax status of the owner would make a great difference. A corporate income tax would eat heavily into that little profit triangle at the top of the charts. (See "The Rental Housing Mystery," by Miles L. Colean, in the February Architectural Record.)

7. Assuming 100 per cent occupancy at adequate rentals, the owner would find it possible to amortize his investment more rapidly in the early years. Some figuring on this possibility might relieve some of his fears about undertaking to build at high costs. It might also prove the feasibility of some current proposals for permitting temporarily high depreciation in figuring income taxes, although, as Mr. Colean has pointed out, the owner must be prepared for higher taxable income in the later years.

There is another conclusion that is not quite so apparent in the charts: future cost trends are likely to be more important to the owner than any of the messages in current calculations. If the value of the dollar is to continue downward as it has in the past 50 years, the owner will do pretty well, even if costs of construction should decline a little before the inflation trend again sets in. If, on the other hand, today's costs should prove to be seriously high in relation to future ones, there would be a wave of bankruptcies. To see these effects graphically it would only be necessary to move upward or downward the angling line of "income," according to an assumed change in rental levels. The charts show rather clearly the stupendous effect of fixed costs in a rental project. Move the income line downward, just a little, and it soon gets under the level of fixed costs. But move it upward (assuming rental increases), and it rapidly widens the margin of profit. A history of the costs of the City and Suburban Homes Company (published in 1938 by FHA) shows that in the past 50 years their rentals for specific projects increased sometimes far over 100 per cent. In such a case the fixed costs of original construction become meaningless: the determinants then are later costs of modernization, replacement, operating, taxes and so on.

Thus if today's costs are but slightly higher than future averages, the charts would say there should be sufficient margin in a few profitable years to make the venture attractive right now. Or, that it would require very little rental increase to produce a boom in rental building.

In the "old days" the speculative builder used to say he would not undertake a project unless he could get his money out in five years. According to the charts, it would not be too difficult to do just that. All it would take is a few years of good rentals and full occupancy.
Cost and Income statement for "ABC Housing Corp.," Washington, D.C., two- and three-story walkup apartments of 60 units, 234 rooms.

Rents: $70.70 per unit; $18.13 per room.

COSTS (Totals)
Land — 125,800 sq. ft. @ 238 $30,000.00
Landsaping and utilities 17,552.00
Construction 292,390.00
Arch. and Bldr. fees, etc. 34,094.00
Financing, legal, insurance during construction 16,264.00
Total estimated requirements 309,300.00

INCOME (per room per year)
Rental income ($50,904 / 234 rooms) 217.54

EXPENSES (per room per year)
Interest and amortization (6%) 90.00
Real Estate taxes 26.42
Operating cost 67.49
Vacancies (7%) 15.23
Total expenses 199.14

Cash available for income taxes, corporate taxes, dividends, and surplus 18.40

FHA EXAMPLE SETS PAR FOR BUILDER'S PROFIT

The normal way of figuring a project's costs to test its soundness is simply to make a tabulation of figures such as the one above to see how income matches cost after due allowance for vacancies. This would produce a simple bar chart such as the one at the right above. However, if all of the costs are charted against percentage of occupancy the cost picture becomes more graphic, particularly when, as now, high occupancy can be expected.

The chart is simply drawn: all annual costs are assumed to be fixed, thus the cost lines are parallel to the base (it might be said that operating costs will vary somewhat with percentage of occupancy, but as a practical matter the variation would surely be negligible — any operating savings with high vacancies would be eaten up by renting or decorating expense). The income does, of course, vary in direct relation to occupancy, and becomes a straight line from zero to maximum income.

Immediately it becomes apparent that the only profit in a rental building (with its high fixed costs) comes in the upper triangle. In this FHA "par" example, profit begins at about 85 per cent occupancy. It goes up rapidly approaching 100 per cent occupancy.

The author drew such a chart many years ago to show how quickly disaster comes when either rents or occupancy is reduced. Today, when occupancy is presumed to be 100 per cent, the chart also illustrates how rapidly the picture can change in the other direction.

FHA officials might be horrified to know, for example, that this standard set of costs shows a 20 per cent profit on the owner's equity, provided he achieves 100 per cent occupancy. A slight dash of cold water comes next — the FHA sample sheet calls it, not profit, but "cash available for income taxes, corporate taxes, dividends and surplus." In any case 20 per cent sounds like good business.

Move back on the chart to 93 per cent occupancy (the FHA figures 7 per cent for vacancies) and the "profit" has dropped to 10.9 per cent. This is of course based on the owner's equity of something over 10 per cent.

All the basic cost figures were taken from an FHA tabulation in its booklet "Rental Housing for Veterans" published last September. The only thing changed was the allowance for amortization, which has recently been cut from 2 to 1½ per cent.

In relation to the figures shown on the next two charts it is worth noting that land cost in this FHA example is about 24 cents a sq. ft., and the total cost per room runs about $1668. This latter figure is just nicely within the maximum allowable figure of $1800. The rentals average $70.70 per family unit, or $18.13 per room per month. In the next two calculations, showing actual projects, costs per room ran in one case $2975, and in the other $2214. Under the $1800 ceiling, then, neither of the other two projects could be built, even though one of them shows that it would pay out nicely under the present maximum rentals.

MARCH 1947
IN NEW JERSEY COSTS PERMIT BUILDING NOW

Cost Figures from Emil A. Schmidlin, Architect

Mr. Schmidlin is currently quite enthusiastic about the possibilities of building apartment buildings under the present FHA Title VI financing scheme. As a matter of fact, he is building a number of projects now and is acting as consultant for several more in the northern New Jersey area.

He has given here today's true cost figures for that area. To be strictly precise, these costs are not those of any given project. He took the 60¢ cube cost because it just happened to match exactly the figure given by the Westchester builder; cube costs for non-fireproof, walkup buildings actually vary from 58 to 61¢, and that is the way they are currently figured by FHA.

The principal difference between his costs and those from Westchester are in land costs: 30¢ against $2.50 per sq. ft.; and in taxes: $132 per four-room apartment per year against $325. He has also changed the financing arrangements to use the Title VI method. There are other differences—he uses 1700 sq. ft. of land per apartment as against 900 in Westchester. The four-room apartment is slightly smaller in New Jersey—12,000 against 14,000.

These differences when transferred to annual costs show that he would come out pretty well, even though in Westchester County the same costs of construction would show a loss.

How well is indicated by some analysis of the profit triangle in the chart. In this example income crosses total costs at 81 per cent occupancy, and the overall profit is just slightly better than in the FHA example. At 100 per cent occupancy it amounts to 24 per cent, at 95 per cent occupancy it is 18 per cent. That is, of course, 18 and 24 per cent on an assumed 10 per cent equity. It should be remembered that there might be some theory in the assumption of $92 per month rental for a four-room apartment. In an actual case the OPA-FHA rentals might be fixed at a somewhat lower level. As a practical matter, however, it is interesting to note that even under 60¢ building costs and maximum allowable rentals it is perfectly possible to work out a project that makes a good showing.

Mr. Schmidlin points out further that the annual amortization under the FHA set-up is figured as a cost item but is actually a saving, or at least a safety factor. It would seem to be only reasonable cost accounting to figure depreciation as a cost item in what is after all classified as a "wasting asset." On the other hand the FHA has announced its intention to use considerable discretion in helping builders through any difficult years that might be ahead. In other words in a depression period of minor severity it would be perfectly feasible to waive the amortization temporarily.

Even without such help from the mortgage, however, he would have a margin of safety of his own. If in the early years of high occupancy he could set aside a surplus fund he would be prepared for trouble.

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Cost and income statement for various two- and three-story apartments in New Jersey.

**COSTS (per 4-room apartment)**

- Land—1700 sq. ft. per 4-room apt. .................. $500.00
- Bldg.—12,000 cu. ft. per apt. @ 60¢ per cu. ft. ........ $7,200.00
- Financing, architect's and builder's fees, etc.—15% .................. 1,155.00
- Total cost of 4-room apartment .................. $8,855.00

**INCOME (per 4-room apartment per year)**

- OPA rent allowed $80 per month per apt. ........ $960.00
- Services allowed—$3 per room per month ........ 144.00
- Total income allowed .................. $1,104.00

**EXPENSES (per 4-room apartment per year)**

- Interest—4%+1½% on 90% mortgage .................. $358.63
- Amortization—1½% (first year) .................. 119.54
- Taxes—$33 per room per year .................. 132.00
- Operating—$70 per room per year .................. 280.00
- Vacancies—5% .................. 55.00
- Total costs .................. $945.17
- PROFIT (before income taxes) ........ $158.83
NEW YORK BUILDER WOULD NEED HIGHER RENTALS

A builder in the Westchester area of New York who has for years operated his own projects recently made these calculations for a building to adjoin an existing one. He quickly discovered that the arithmetic did not work out well, and offered these costs as proof positive that under present controls he must sit on the sidelines.

There is no argument there. With the land costs and taxes indicated, coupled with today's construction costs, he is through before he starts.

The chart is interesting, however, to show what might happen if the rent ceilings were abandoned. He has proved rather definitely that he is in a high-cost location and that rent ceilings here prevent any sound financial structure. It is natural to assume that in such an area rentals would be fairly high were it not for existing ceilings. It would not be difficult for a soap-box orator to convince his listeners that if there were no restrictions rents would quickly double. The chart indicates that this is by no means necessary. The added line for income represents an increase above existing ceilings of only 25 per cent. That would mean a rental of $115 per month for a four-room apartment in a rather wealthy community.

The new line on the chart shows that a 25 per cent rent increase would make his project slightly better than the par set by the FHA. His income would match operating costs at 83 per cent occupancy, and the income line of the chart takes a sufficiently higher angle to just about match the other two examples.

In calculating overall profits he apparently does not do quite as well as the appearance of the chart seems to indicate, for in this case his "profit" must be figured against a 25 per cent equity instead of the 10 per cent assumed in the other instances. Nevertheless, at 95 per cent occupancy he would show a rate of 5.6 per cent. At 100 per cent occupancy the figure is 8 per cent.

In the succeeding years his results are not so easy to follow. He does not have the fixed rate of interest and amortization. He shows an amortization of 2 per cent per year, which presumably is a flat annual rate of reduction of the mortgage. If he actually paid this each year, his interest would be declining gradually. He already starts with a more conservative original loan, with presumably a safer margin for trouble, even if it does not show up in the percentage of "profit." The reason it does not show so readily, of course, is that while the rate is lower, the actual amount is higher. It will be noted that these differences in financing will also result in different income tax impositions.

Cost and income statement for small apartments in Westchester Co., N. Y.

<table>
<thead>
<tr>
<th>COSTS</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Land—900 sq. ft. per apt. @ 2.50</td>
<td>$2,250.00</td>
</tr>
<tr>
<td>Bldg.—3,500 cu. ft. per room, or 14,000 per apt.—@ 40c</td>
<td>8,400.00</td>
</tr>
<tr>
<td>Financing, architect's and builder's fees, carrying charges during construction, incorporation, etc.</td>
<td>1,250.00</td>
</tr>
<tr>
<td>Total cost for an average 4-room apartment</td>
<td>$11,900.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INCOME</th>
<th></th>
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<tbody>
<tr>
<td>OPA rent allowed per apartment—$80 a month</td>
<td>$960.00</td>
</tr>
<tr>
<td>Services allowed—$3.00 a room a month</td>
<td>144.00</td>
</tr>
<tr>
<td>Total income permitted</td>
<td>$1,104.00</td>
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</tbody>
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<table>
<thead>
<tr>
<th>EXPENSES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest (assumed 7 1/2%, int.) 9000 @ 4%</td>
<td>$360.00</td>
</tr>
<tr>
<td>Amortization—2%</td>
<td>180.00</td>
</tr>
<tr>
<td>Taxes (assumed assessment at $10,000) @ 3 1/4%</td>
<td>325.00</td>
</tr>
<tr>
<td>Operating—today's minimum $70 a room a year</td>
<td>280.00</td>
</tr>
<tr>
<td>Vacancies—5%</td>
<td>50.00</td>
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<tr>
<td>Total expenses</td>
<td>$1,195.00</td>
</tr>
<tr>
<td>BALANCE</td>
<td>$91.00</td>
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</tbody>
</table>

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89
Some of Parkmerced's buildings are monolithic concrete. On most blocks, however, construction is concrete to the first floor with wood frame and stucco above. Coverage by buildings is less than one quarter of the total 200 acres.

High Standards, Low Rents, Parkmerced, San Francisco

Metropolitan Life Insurance Co., Builders
Leonard Shultze & Associates, Architects

SIGHTING high on convenience, openness, sunlight and related amenities of environment for 2531 middle-income families, the builders managed to hold their aim steady, despite wartime preventions, to the extent of completing two thirds of this project by early 1945. Rentals continue to range from an average of $54 monthly for a one-bedroom suite to $82.50 for a three-bedroom duplex. Like Parklakbrea at Los Angeles (see Architectural Record, May '46, pp. 88-90), also created through the substantial investment resources of the Metropolitan, Parkmerced raises a high standard, and hope and inspiration, too, for crucially needed housing developments to follow.

Top plan: One-bedroom suite on second floor is identical, except that closet is over access stairway. Two plans, right: Second floors extend over entrance passageway to interior of block. Kitchens face streets; all living rooms and most bedrooms overlook patio lawns.
Original model used for project promotion gives fair idea of present general layout, although in later development the ravine in foreground was filled and graded, together with other major changes. The Common at center comprises about three acres of lawn. Each block of buildings contains three or four grassed and planted patios with, in most cases, a children’s playground, laundry and storage rooms at the center. Average block also provides stall type garages.
TWO SOUTHERN GROUPS PLANNED FOR LONG TERM DIVIDENDS

PEACHTREE HILLS, ATLANTA, GA.

Both at Peachtree Hills, shown on this page, and at Highland Lakes, across, "attempt was made," say the architects, "to provide permanent buildings for the lowest possible cost, since a limited but long term dividend was the object of the investor." At the same time, in both cases, heavily wooded rolling sites were capitalized to give tenants the pleasantest of possible natural surroundings. Buildings were fitted to topography to minimize grading and to retain trees, and oriented to provide maximum sunlight and open view for each unit.
Burge & Stevens & Associates
Architects-Engineers

HIGHLAND LAKES, ORLANDO, FLA.

Materials and equipment for both jobs are practically identical and were chosen with regard for a minimum of maintenance. Footings, framing, floors and roof structures are reinforced concrete; roofing is 20 year built-up. Exterior walls are hollow-clay tile, cement stuccoed. Interior partitions are hollow clay tile and gypsum plaster. All apartments have gas stoves and refrigerators; gas fired, forced warm-air heating units serve each six apartments. W. Kenneth Miller was the local associated architect, supervising construction.
WHAT KIND OF GROUP DESIGN?

POSSIBILITIES AND PREVENTIONS

By Arthur C. Holden, F.A.I.A.

What kind of group design may, in the next few years, be possible as well as desirable? The question in this discussion hinges more on straight factors of planning and design than on finance economics. The answer, of course, involves consideration of what the public wants. Contact with the demands of public taste, in turn, reveals that the public on its part lacks sufficient information as to the range of possibilities, and the hindrances in the path of accomplishment.

It can be argued that the public in general looks with suspicion upon innovations; nevertheless, when homes are offered which combine economy, convenience and attractiveness, there is active public response, not much diminished by departures from the commonplace in group arrangement and design. Moreover, the public is asking more and more discerning questions about the respective advantages of buying and renting; and also whether housing, planned as a group, can be offered only on a rental basis.

The increasing demand for suburban rental apartments may in part be attributed to recent experience with planned war housing. In spite of shortcomings, many of these large-scale housing projects have furnished a concrete demonstration of new horizons in residential communities. In a great many cases these projects have been accepted by the public as giving more convenience and attractiveness, in proportion to the money and risk involved, than houses and lots offered in undesigned rows, previously accepted as a minimum standard.

To some extent the impression prevails that such limited experience with the planned community as the public has enjoyed has been made possible through governmental subsidy. Accordingly, there is a great demand for more subsidies so that there can be more housing of these improved types, and more projects planned on the basis of the group. Moreover, it appears that legislatures and courts, in much part, are in agreement that governmental subsidies are justified both to aid our cities rid themselves of unfit obsolete habitations, and to aid in providing housing of a minimum standard of decency for families whose earnings are, through no essential fault of their own, below the level at which decent housing can be provided on a straightforward basis. But present demands for subsidies go far beyond the limits originally intended. The question is asked "Why can't those who can afford to pay obtain homes that are planned on the group basis and which possess a reasonable degree of assurance to the amenities of community life?"

Granted that the progress made has given the general public a new hope for better living conditions, it is my belief that we have fallen far below what should have been possible and lack the utilization of the training standing of the restraining factors, it is likely that, in the future, we may fail to make the gains that should be possible in group housing and community design.

The Architect: Specialist in Coordinating Specialists

Much of the credit for America's great industrial progress is due to specialization. There comes a point, however, where specialization begins to create new dangers of its own. The architect is especially aware of this, because a large part of his task as designer is to coordinate the work of specialists. He himself is a specialist at coordination. He has to have a broad knowledge, not only of how other specialists work, but of how far their provinces of practice will permit modification in the interest of objectives beyond each specialist's particular concern.

Let us make clear that in discussing "group housing" and deliberately avoiding the use of the term "apartment house," we assume that the state of public taste has advanced beyond acceptance of the tall city apartment, or even the standardized four-family house, both originally designed for a typical city lot and too frequently transplanted to a rural or suburban environment. Such buildings remain city apartments or flats even though specialists who create them dub them "Cottswold Manor," hoping thus to cash in on the publicity value of fake half-timbered gables cutting the roof line, or projecting from an otherwise inoffensive third or fourth story wall. Such incongruous city transplantations assume the transfer of an urban system of lot subdivision to country and suburbs, and the regularization of country roads into streets.

It is my contention that the character of the rural landscape can be maintained if houses are grouped appropriately, with a minimum semblance to arrangement in rows. This can be done by careful attention not only to the design of buildings but to the design and arrangement of the spaces between. We should consider the concentration of buildings in groups, and in no less degree strive for the concentration of open spaces. In the ideal we should aim at a skillful combination of dispersion and concentration.

How Did We Miss?

At this point it is pertinent, perhaps, to inquire why the design of our communities has fallen so far short of the ideal, in spite of the fact that the past 70 years have produced continuous improvements in the technique of building. Probably never before in history has such a great physical task been performed in such a short period of time as the astonishing amount of construction accomplished by the American people.

The rapid development of machine processes and ad
Model of Project for the Bannockburn Cooperators — Vernon DeMars, Architect. A most significant proposal for the development of a golf course site. The plan does not fit into zoning laws as written inasmuch as it calls for three widely separated tall apartments planned harmoniously with group-row and individual housing. The design attempts to make the most of natural features and to concentrate the buildings, leaving sufficient open area between to retain the natural assets of the landscape. Strangely enough, surrounding property owners have opposed the development, little realizing that a gridiron plat could be laid out and built up with banal individual family homes under present zoning laws, and that variation of types of buildings makes possible the preservation of open space.

Continually available. But probably the greatest factor in increased productivity has been the specialization of labor and the subdivision of tasks. It is not necessary here to go into details of how the labor of creating materials has become increasingly separated from the labor of erection, or how separate sets of skilled craftsmen have developed to handle different types of materials. It is more important to stress the division of responsibility. The man who designs the building has been glad to have the contractor assume the responsibility for erection. The contractor who builds usually prefers to have someone else take over the responsibility for owning and maintaining. The major portion of the money required for construction is furnished by neither the builder nor the ultimate owner; it is loaned frequently through an agent to be gradually paid back in exchange for the use of shelter.

But in many respects this division of responsibility has had definitely nonprogressive effects, tending to create habits setting unfortunate limits upon design. For example, those who lend money want the limits of the owner’s responsibility definitely fixed. The owner also wants boundaries established within which his authority will not be challenged. As a result of divided responsibilities, the limitations of a system of individual development have carried over into an era with a tremendous necessity and potential capacity for common planning.

Furthermore, we have set up regulations and enacted into law certain restrictive measures of original good intention, designed to protect the public against the abuses of special interests. Most of these restrictive measures presuppose an individual interest confined within certain specific boundaries, working against individual interests confined within adjacent plottages, as well as against the public interest. For example, many of our zoning laws are focussed upon restricting the building bulk on a single lot and, especially in suburban areas, upon maintaining certain minimum front, side, and rear yard dimensions. We appear to have been practically blind to the encouragement of procedure which is based upon the interdependability of property rights and advantages.

In 1946 it was my privilege to submit recommendations for zoning ordinance revisions to a city of over 40,000 population, where invasions by intensive type apartment houses were a cause for concern. The proposed code suggested a basic differentiation for individual lot developments from large scale plot developments which provided for the design of space between buildings. It appeared futile even to attempt to secure official backing for such a proposal. City officials didn’t see how concert of action could be secured for the laying out of plot developments in the older parts of town where property was already cut up into lots, and they were quite frank in saying that they didn’t want “apartment” groups to replace former large scale gentlemen’s estates.
in neighborhoods where individual lots were salable. It made no impression upon a planning board, composed of specialized department heads, to point out that, under the existing code, gentlemen’s estates in the sparsely settled sections of the city could be cut up into individual lots, on each of which two family houses could be erected, ranged in rows with no more than the minimum required side yards between buildings.

In many cities the usual code requirements forbid the construction of more than one building on a single lot, and also forbid the construction of a building on a lot which does not abut a public street of a minimum width, generally set at 50 feet. These are outgrowths of such abuses as abounded in the city of Washington, when old stables or rear alleys were made over into Negro tenements without adequate sanitary provisions. Such legislation was also originally designed to protect the ignorant lot purchaser against being sold a lot to which no legal access was obtainable. Adequate access for fire apparatus has been another (and valid) reason given for regulations of this type, but there has been as yet little consideration for stultifying effects upon design.

— And Further Hindrances

Group planning has encountered other positive difficulties. Accepted methods of design have not found a way to provide adequately for common recreation space, and to preserve those natural features of the landscape which furnish values enjoyable in common with use of the surrounding properties.

Let us take as an extreme example the “planning” of the interior of an average block laid out in lots for one-family homes. In the days of the buggy whip, it was ad-
Stanworth Project, Princeton, N. J., for the New York Life Insurance Co.; Holden, McLaughlin & Associates, Architects. 152 individual family units on a terrain where large specimen trees and a variation in grade of 50 ft. were factors in planning. The great depth of the 15-acre tract suggested a private loop road for access. The apartments are entered from the rear, the fronts in all cases facing on the garden from which automobile traffic is excluded. Dwellings are developed from unit plans, with the variations in grade and grouping furnishing the main esthetic elements of the design. Rents range from $60 to $125 per family. Located on one of the most important residential streets in Princeton with potential attractiveness beyond what is usually possible, these houses are designed with large rooms as a long-range investment, to be desirable after high costs have been largely amortized. Progress photo taken in January.
and cover the irregularities of grade with fill, thus facilitating the eventual sale of independent parcels of real estate. All too frequently lots and houses are arranged principally with an eye to delivering a marketable property with a house that conforms to all requirements, unchallengeable through law or contract but starkly oblivious to the amenities of neighborly living.

In planning group housing the same type of habits and similar forms of specialized regulations militate against the improvement of design. Theoretically, the purpose of group housing is to secure the advantages of location and terrain for a larger number of families than could possibly enjoy such amenities in city, country or suburbs on the basis of single family homes.

But the belief is still widespread that all large scale group housing should be so designed that it may be split up and sold to small scale owners if the project proves unsuccessful. Many cities and towns require in their codes that every building shall be connected independently to a public sewer. This may be all very well for a city type apartment where families are piled up floor over floor, but where effort is being made to preserve a rural atmosphere and where the families and buildings are spread out horizontally, such a regulation usually adds unnecessarily to cost, and tends toward the destruction of natural charm because of the innumerable trenches intersecting tree roots.

There are other habits and requirements which make group planning difficult. Among these are certain mandatory preferences of the land planning division of the FHA. There has been insistence that facades should, wherever possible, be parallel to the street and that under no circumstances should rears be exposed to view from a public road. Even though a differentiation has been established between arterial streets and minor residential streets, there has been insistence, in which most municipalities join, that all public rights of way should be 50 feet in minimum width, and that added to this, there should be a minimum setback of 25 feet.

Lists of requirements such as these have been built up to suit the concerns of various specialists. The designer cannot help but chafe under them for they limit his power to make original use of the conditions that are presented to him. Most highway and fire departments support the insistence upon wide surface pavements, pointing out the dangers of blocking snow plows in winter, and fire apparatus. Then there is the ever present consideration of heavy fuel delivery trucks and garbage collections. There is also the problem of how to take adequate measures for the ubiquitous automobile and still preserve the charm of unbroken greensward, trees and shrubs. The arrangement of a group housing project must satisfy these practical considerations of access and needed services, but there is much margin for give-away in meeting the no less essential requirements of gracious and happy living.

Generalization regarding higher standards of group planning is likely to sound discouraging. A good plan is still one which makes the most out of opportunities presented. Even if all of the handicaps imposed by restrictions and specialized habits cannot at once be overcome, good group design should stimulate man, in the broadest possible sense, to acknowledge that more can be realized through common and shared enjoyment than through the obdurate definition of legal boundary lines, within which each individual may exercise his narrow choice, whether it be to exploit, desecrate, ignore or even to cultivate nature.

"Wartimes, new horizons": Monroe St. Project, built as temporary emergency housing for National Capital Housing Authority; Holden, McLaughlin & Associates, Architects. An irregular, well-wooded site of gentle gradient planned around a system of courts
VARIED-LEVEL PLANS, PITTSBURGH

William C. Young, Architect

Construction on the building shown above, and in plan at right, is just about to start; the similar building shown below in rendering is just finished. Brief study of the plan will disclose varied levels between apartments—a distinctive feature of both projects, implementing garages in the basement since both are on reasonably level sites. Construction is steel joist and concrete floor; exteriors, brick with tile on cinder block back-up. Each building has an incinerator; concealed hot-water heating. $80 rents include utilities.
SPACIOUSNESS WITH OUTLOOK ON ROCK CREEK PARK

WASHINGTON, D. C.

Building rentals will probably be upwards of $35 per room, requiring fairly spacious layouts. A number of units have balconies and a few have two baths. Interior finishes will be painted plaster walls and ceiling; floors, wood block set in mastic; tile in baths; linoleum in kitchen. Large glass areas in dining spaces will be double-pane. A major feature of the building as a whole will be an integral two-level garage for 91 cars, access being directly from two boundary streets with differing levels, no ramps.
Materials in lobby will be: floor and base, terrazzo; walls of plaster, rubble stone and plywood. Large glass areas and copious planting are calculated to arouse feelings in key with the general theme of spaciousness and broad natural outlook.

Berla & Abel

Architects

The rendering across page, top, shows the building’s southern exposure, overlooking Rock Creek Park valley. Designed to take advantage of maximum height permitted under zoning laws, the building’s ground coverage, at typical floor level, is about 40 per cent of the plot. Construction is fire-resistant throughout, with reinforced concrete skeleton frame. Floor slabs are concrete with tile fillers. Exterior walls are to be buff face brick, with 8-in. cinder block back-up; interior, wood furring and plaster on gypsum lath. Heating system will be hot water radiant. Entire building will be mechanically ventilated, with air pumped into corridors, through vertical ducts (see top sketch), from basement fans. Air will enter apartments through door louveres.
GARDEN TYPE GROUP IN CAPITOL CITY

VALLEY AVENUE, WASHINGTON, D. C.

Berla & Abel, Architects

THE garden apartment type of building,” the architects write, “and division of the project into seven small buildings resulted from financing considerations and a predilection on the part of the owner for this sort of arrangement. We personally believe that under the given circumstances, a single large multistory building on the site would have been about as economical to build and operate. Moreover, providing the same number of apartment units, it might very possibly have permitted better tenant outlook and landscaping. Under present local building conditions, construction costs of this garden type are about the same per unit as would be those of an eight-story building on the same site.”

Local building codes required fire-resistant construction throughout; concrete frame was chosen as most economical for this region. Interior partitions are gypsum block, plastered. Door bucks and frames are steel. Windows are stock light-weight steel casements, with steel interior jambs and stools. Exterior walls are red brick with limestone trim.
STUDENT-FACULTY UNITS

GEORGIA SCHOOL OF TECHNOLOGY, ATLANTA

Burge & Stevens and Associates, Architects

Requirements here were to design apartment units for the use of students and faculty members. They were needed in a hurry; at the same time, the school is in the midst of a long-term expansion program, requiring that the building be a durable permanent structure. Another factor: the present veteran's schooling program stipulates that rents be within reasonable range. (Financing of the building is being accomplished through a self-liquidating bond issue.) Basis of the design, therefore, was permanency and few luxuries, using materials capable of absorbing considerable abuse with a minimum of maintenance.

Footings, floor and roof framing are reinforced concrete. Exterior walls are common brick facing with hollow clay tile back-up. Walls and ceilings are finished with gypsum plaster. Floors are asphalt tile. Windows are aluminum; door frames, steel; doors, flush wood within apartments, fire-resistive in public corridors.

Half of the building is heated by conventional forced hot water; the other half by a floor panel radiant system. This was done purposefully for making comparative studies. Steam is provided from a central plant.
BALCONY UNITS
NEW YORK CITY

Sylvan Bien, Architect

74TH ST. AND MADISON AVE.

Sunlight and air on all faces, practically guaranteed for the future, were the basis of this all-out balcony endeavor. Streets are the margin of guarantee on the northern and eastern exposures. Immediately to the west is a low, permanent private residence; and a low building to the south is owned by the apartment proprietor.

The architect points out other considerations directed toward the type of tenant "who appreciates the finest in apartment living": three high speed elevators instead of two, as in comparable buildings; radio outlets in each unit, with "music by Musak"; conduits for television; interceptor telephone service for each apartment; a restaurant; maid and houseman service. Individual deep freeze lockers will be provided; kitchens and bathrooms without windows will be mechanically ventilated. All balconies can be enclosed and heated during winter.

Construction is steel columns and beams, reinforced-concrete cinder arches.
PARK AVENUE APARTMENTS, NEW YORK

ONE COMPACT, ONE LUXURIOUS

George Fred Pelham, Architect

36TH ST. AND PARK

Commenting on problems of urban apartment design in general, the architect writes: "Zoning restrictions and the necessity of utilizing every foot of space sometimes result in unusual conditions on uppermost floors. The bulk and shape of the general mass often lack symmetry; fenestration, parapet walls heights, etc. must be judged from the viewpoint of the occupant, rather than the observer. . . . In a certain location, it may be legally possible to introduce a balcony, possibly detrimental to the facade but producing additional owner revenue. . . . In order to avoid costly off-sets and furring, columns, plumbing stacks and vent ducts must be carried straight up wherever possible. Consequently each floor plan must be studied separately and then restudied in the light of conditions above and below."

This location is handy to midtown office buildings, thus the compact plan for appeal to business couples with possibly one child. Most eating and entertaining will be done off premises; all facilities are planned for minimum housework.

70TH ST. AND PARK

This strictly residential neighborhood abounding in big incomes, together with a narrow plot, imposed considerably different problems. Rooms and facilities are more generous, though still directed toward small families. Baths were located to obviate additional lavatories off foyers and, at the same time, keep guests from passing through bedrooms. Lack of maids’ rooms in some units derives from the probability of much "day" help. Narrowness of the plot hindered compact "utility core." Long foyers serve to integrate units.
TERRACE APARTMENT IN UPTOWN NEW YORK

Leonard Schultze & Associates, Architects

This building, well-along in construction at 87th St. and Madison Avenue, advances the balcony motif to a point where closest definition might be: a hanging garden apartment. Each unit on the upper floors, with a few exceptions, has a private porch or terrace upon which extensive planting will be encouraged. The first floor will contain stores, in addition to the superintendent’s quarters and a large entrance hall in marble.

Construction is steel frame, with concrete floor slabs encasing hot-water radiant coils. Basement, in addition to containing heating plant, will provide tenants’ laundry and storage.
Comparative Costs in Apartment Heating

When New York City Housing Authority was looking for the most economical heating system for its Brownsville Houses, an unusually detailed study of various heating schemes and arrangements for a typical multi-story apartment was made by Meyer, Strong, and Jones, Inc., Consulting Engineers.

While this study was made in 1943, relative aspects of the cost comparison (see table on page 109) should still apply. To keep costs comparative, prices have been translated into an index with 100 as a base figure for the typical New York City Housing installation (No. 1, below).

The study was made purely on the basis of installation costs (disregarding everything common to all schemes, such as boiler rooms and underground distribution systems), and not upon other considerations of convenience, performance, or operating costs.

Included in this analysis are various riser and connection arrangements for the conventional 2-pipe vacuum system, 1-pipe steam system, and the "Metro" downfeed riser system. To make the study as complete as possible, comparative costs were also figured for unit-heater and panel-heating systems for the same apartment.

1  (Typical New York City Housing) 2-pipe vacuum. Risers in room corners. Radiator connections at floor

2  2-pipe vacuum. Risers in room corners. Radiator connections chased at floor

3  2-pipe vacuum. Risers at windows. Radiator connections at ceiling

4  2-pipe vacuum. Risers in room corners. Radiator connections at ceiling

5  1-pipe steam. Risers at windows. Radiator connections at floor
Left: Riser diagram for 1 (2-pipe vacuum). Risers for 2, 3, and 4 are similar. Right: Riser diagram for 5 (1-pipe steam)

Basement plan of entire building, showing piping for 5 (1-pipe steam). H = risers for hall or kitchen, B = bathroom risers

Above: Unit heater. Heated air from steam-to-air heat exchanger is forced through ducts to rooms in the apartment

Above, right: Riser diagram for unit heaters

Right: Unit heater arrangement for typical apartment wing
7 Downfeed through convectors. This is the so-called "Metro"* system wherein sub-atmospheric steam is fed downward and through the convectors, as shown in the riser diagram. This eliminates cross connections in rooms, also individual collector traps since the riser is trapped in the basement. The convectors consist of a finned and enclosed section of the downfeed riser, and cannot be shut off, though in the original system a damper was included in the convector enclosure to regulate the volume of air circulating through it.

*The original "Metro" system was developed for Parkchester Apartments, Bronx, N. Y., and patented by Edward E. Ashley, Consulting Engineer.

8 Panel heating plan. Coils shown by solid lines occur in slabs of floors 1 through 6 and the roof; those shown by broken lines, in floors 1, 3, and 5 and the roof. All coils and branches are 3/4 in.; welded and buried in concrete. Right: Riser diagram for panel heating.

**COMPARATIVE HEATING COSTS FOR A TYPICAL 4½-ROOM APARTMENT**

Prices, based on 1943 material and labor costs, are comparative only and include nothing common to all schemes, such as boiler room, and underground distribution. Control systems included are similar except for panel heating.

<table>
<thead>
<tr>
<th>Cost Index</th>
<th>Scheme No.</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.0</td>
<td>1</td>
<td>(Typical New York City Housing) 2-pipe vacuum. Risers in room corners. Radiator connections at floor</td>
</tr>
<tr>
<td>104.9</td>
<td>2</td>
<td>2-pipe vacuum. Risers in room corners. Radiator connections chased at floor</td>
</tr>
<tr>
<td>105.7</td>
<td>3</td>
<td>2-pipe vacuum. Risers at windows. Radiator connections at ceiling</td>
</tr>
<tr>
<td>106.6</td>
<td>4</td>
<td>2-pipe vacuum. Risers in room corners. Radiator connections at ceiling</td>
</tr>
<tr>
<td>91.4</td>
<td>5</td>
<td>1-pipe steam. Risers at windows. Radiator connections at floor</td>
</tr>
<tr>
<td>242.4</td>
<td>6</td>
<td>Unit heater</td>
</tr>
<tr>
<td>101.4</td>
<td>7</td>
<td>Downfeed through convectors</td>
</tr>
<tr>
<td>277.6*</td>
<td>8</td>
<td>Panel heating</td>
</tr>
</tbody>
</table>

*Panel heating licenee's estimate: 216.5
A floor system of precast concrete slabs has been adapted to one of America's largest garden-type apartment developments, Parkway Village*, in Queens, N. Y., with a promise of considerable savings in construction costs. This is a 110-building project which will house United Nations' personnel in 2- and 3-story units, providing 675 garden-type apartments.

The original plan was to use wood floor members since the buildings do not exceed three stories in height and are of residential character. Three factors changed this plan: (1) the present shortage of wood; (2) a desire for fire-resistant construction; and (3) the speed with which precast floor systems had been used in large Navy installations during the war.

Preliminary studies were then redesigned to conform to convenient floor slab modules. Due to the extent of the project, there are 12 basic sizes of slabs, divided into types required by the location of sleeves for mechanical trades or the location of bearing wall at right or left. The accompanying apartment plan shows how a typical floor is subdivided into slab areas.

Each floor of a typical building unit is made up of 24 precast slabs, varying in size from 7 by 10 ft. to 16 by 16 ft., averaging one slab for each room or half of a room. Their thickness is 1 1/2 in. with tapered ribs, 6 in. deep and 21 1/2 in. wide at the bottom. Reinforcement is provided by welded wire mesh in the slab and one rod in each rib; 6,800 slabs in all will be required for the project.

The slabs rest on cinder block walls and interior Lally columns, and are secured to them by anchor bolts. Careful precasting makes it possible to use the underside of the slabs as an exposed ceiling, after cement finishing where needed and painting. Floors are of hardwood set in mastic, without sleepers or subflooring.

Advantages of this precast system over poured-in-place floors are: (1) economy; (2) standardized procedure, which employs 115 concrete molds in place of thousands of temporary wood ones; (3) faster construction, since floors can be set in place quickly without obstructing the floor below with shoring for wood forms; (4) lighter floors as compared with the usual poured-in-place slab; and (5) savings in plastering and finishing due to high-quality surface appearance of the precast slab.

COST CONSIDERATIONS

An actual cost analysis of the precast system is difficult to make. On this project, the precast system has only recently moved from the pioneering stage into standardized procedure. Once the system becomes routine, however, the following approximate cost is estimated: $60 per sq. ft. of precast floor, which, according to preliminary cost estimates,


Left: Apartment plans show how their floor areas are subdivided by precast slabs, which rest on cinder block walls and interior Lally columns. Hardwood floors are set in mastic, without sleepers or subflooring. Below: cross-section of one of the slab types.
Steps in casting the concrete mold. Left: Precast hollow squares are placed within metal edge forms and blocked above the ground. Abutting flanges of the squares will form the mold for the ribs of the slab. Compressed-air risers are set in the center of each square, and concrete poured flush with their cover plates. Right: Completed mold after surface has been finished and reinforcement set in place.

Steps in casting the slab. Left: High-early-strength concrete from the central mix plant is poured in the prepared molds. Right: After the slab has been cured it is pulled by a vacuum lift. Initial separation is started by a blast of compressed air from the risers.

is about 50 per cent below that of poured-in-place floors.

The 60¢ per sq. ft. estimate for precast floors is comprised of the following:
- $0.02 for molds.
- 0.38 for concrete, labor, materials, and equipment.
- 0.12 for erection.
- 0.08 for vacuumatic curing.

MOLD PREPARATION AND SLAB CASTING

The heart of the system is the casting yard covering 12,000 sq. ft. near the site, and employing 115 molds. The first step in making the mold face is to cast, in metal forms, a number of concrete hollow squares, averaging 3 ft. in outside dimensions, with outer edges tapered and flanged. Groups of these squares, after stripping, are laid within steel edge forms of the finished slab dimension, in such a way that their flanges butt together and form the mold for the ribs.

Compressed air pipes are built into the form with vertical risers, topped by loose plug plates, at the center of each square. Their purpose is to provide a blast of compressed air that will help separate the slab from the mold. Metal cores are also placed at this time if required for openings in the finished slab, for piping or other services.

Concrete is poured into the centers of the squares which have been blocked a few inches above the ground so that the concrete will spread beneath and form a heavy base, and leveled so that its face is flush with the plug plate covering the compressed air risers.

After the mold so formed has been cured and given a smooth surface finish, it is painted with lacquer as a seal and brushed with a mixture of form oil and castor oil. A prefabricated mat of welded wire and rod reinforcement for the floor slab is laid in place, and concrete from the central mix plant poured. The concrete is brought to the mold in motor-driven "buggymobiles" that have a capacity of 1 cu. yd.

High-early-strength concrete and the application of vacuum pads for approximately 10 minutes permit the slab to be drawn on the day after pouring. It is raised from the mold by means of a vacuum lift after compressed air starts the initial separation.

The strength of the slab was indicated by a load test which required 255 lb. per sq. ft. to cause 0.311 in. deflection (1/360th of the span); 345 lb. per sq. ft., which is more than four times the expected total load, produced 0.71 in. deflection, but not actual failure.
ANYONE who follows the standards and rules covering are welding electrodes and techniques cannot help but wonder at the severe tests and restrictions they impose. Here is a process that has been used in countless cases for over a generation, the record of which has been almost perfect; yet it is criticized and limited more than any comparable process in all mechanical history. This criticism is not because of structural failure. It is entirely in the region of theory covering conditions which do not occur in commercial application.

There is one controlling factor concerning welded structures which appears to be disregarded. In the case of mild steel, which embraces more than 95 per cent of all welding, the welded joint is very much stronger and has a very much higher elastic limit than the plates joined.

Since that is true, the weld will not be used in actual service at anywhere near its point of failure. As a matter of fact, if in actual application the welded structure were loaded to a point that even approached the elastic limit of the welded joint or the metal immediately adjacent to the weld, the structure itself would be useless.

Perhaps we can illustrate the matter this way. Suppose there were a chain of 100 links, each link being made of 1-in. round, 99 of these links being made of mild steel and one link made of high-strength alloy steel, corresponding to the weld metal. Then suppose the chain were tested. Would anyone worry about the chain breaking in the one alloy link? He would not, because every one of the other 99 links would break long before the alloy steel link was even partially loaded.

The same is true of a welded structure. The weld itself and the metal immediately adjacent to it have an elastic limit 50 per cent above that of the parent metal and an ultimate tensile strength at least 20 per cent greater. If the strength of the rest of the structure is sufficient, certainly the weld must be. As a matter of fact, structures are designed with a factor of safety so that their maximum load is less than one half the elastic limit of the parent metal. Obviously, it would not be stressed to more than one-third of the elastic limit of the weld metal and the plate immediately adjacent to it.

Because of this program of criticism, great and unnecessary expense is put upon the manufacturer using welding. This, of course, is paid by the buyer in higher prices, with no possible return accruing to him. There are countless illusory cases that could be cited. The following are examples: If there is surface porosity, even so much as a little hole on the surface, the weld is rejected. If that same porosity were below the weld surface where it could not be seen, the manufacturer must cut it out carefully and re-weld the joint, at great expense, after finding it with expensive x-ray. Again, if there occurs slight undercutting at the edge of the weld, the weld must be rewelded and the slight undercut eliminated.

The accompanying photographs are shown as proof of the efficiency of welded seams, even with so-called defects. Here is porosity carried to an extreme, yet the joint is stronger than the plate. Here is great undercut and even laps in the weld. Still the plate breaks first in tension. Not only would such joints be rejected. The question naturally is asked, "Why?"

It would appear obvious that there could not possibly be a riveted joint which could join any of these pieces of steel together in any way which would not ultimately break in tension, yet there is no testing of the rivets, no x-ray of the voids in their joint, no elimination of the undercut, while we know in every riveted joint that all of these defects are present not only occasionally, but in every case. Again we ask the obvious question, "Why accept such defects in a riveted joint and reject them in arc welding with its greater strength, ductility and soundness?"

There is no doubt that if the restrictions that add nothing whatsoever to the efficiency of any welded joint were removed, the cost of welding could be reduced by as much as 90 per cent in many cases, with no decrease in safety.

It is my belief that architects and engineers should do everything in their power to see that codes are changed to reflect these realities.
ALUMINUM STORM WINDOWS

For metal casement windows, the Ceco aluminum-frame storm window provides complete inside coverage. These storm windows allow full operation of the casement ventilators, and, if desired, a controlled ventilator may be included in the storm panel. A rubber weathering seal around the perimeter of the storm sash frame is furnished. Panels are light and easily stored for the summer in space used for winter storage of metal frame screens. Ceco Steel Products Corp., 5701 West 26th St., Chicago 50, Ill.

HEATING CONTROL

The Compensated Limit Control for domestic heating plants is designed to provide control over the approximate amount of heat input in the house by anticipating changes in heat demand and permitting more precise control from the room thermostat. It can be used with oil, gas, or stoker fired warm air heating systems. Designated by Type No. T 418, the control consists primarily of a mercury switch instrument case and two capillary tubes with bulbs; one, 20 ft. long, for mounting outside the house and the other, 10 ft. long, to be installed in the basement or warm air supply of the furnace. In use, the control goes into operation as outside temperatures fall below 65° F. At this point the temperature in the furnace is raised according to a predetermined schedule. While designed for use in conjunction with the Moduflow system of automatic temperature control, it can be used also in some types of panel heating and with the conventional “on-off” thermostat method. In the Moduflow method, the thermostat itself controls volume dampers which deliver the amount of heated air to the living space. Minneapolis-Honeywell Regulator Co., 2707 Fourth Ave., South, Minneapolis 8, Minn.

ELECTRIC PANEL HEATING

Electric heating cable, developed by L. N. Roberson Co., is being used in panel systems to heat a large number of houses entirely by electricity in the Seattle area, where utility rates are comparatively low. This unique form of radiant heating employs special Heatsum cable, embedded in wall or ceiling plaster, and connected through junction boxes to an electrical source. Cost of heating cable and thermostats reportedly averages 3.25¢ per cu. ft. of house; and for the completed job installed, 7.5¢ per cu. ft. Operating costs for the Seattle area, where electricity rates average 1½¢ per KWH, are quoted as on par with No. 1 oil at 7½ a gal. Electricity bills for 13 panel-heated houses showed average power consumption of 2.36 KW per cu. ft. for a year. These were total bills, including lights, range, and water heater as well as panel heating. No difficulties are reported in obtaining insurance; Underwriters Laboratories is said to have termed residences so heated insurable. L. N. Roberson Co., Dept. AR, 1539 E. 103 St., Seattle 55, Wash.

WATERPROOFING

Celadri waterproofing compound comes in colors for decorating as well as sealing brick, stone, stucco and all porous masonry surfaces. The manufacturer claims that Celadri gives water tightness and hardens to a rock-like consistency that will last the life of any surface except floors. It is recommended for application either inside or outside, and above or below ground. Drying time is 6 to 24 hr. Colors are white, buff, light gray, dark gray, blue, green and terra cotta. Paste shades are obtained by mixing colors with white. Celadri Corp., 644 Willis Ave., Williston Park, N. Y.

BOILER-BURNER UNIT

An unusually compact boiler-burner unit has been developed to furnish hot-water radiation for the small house as well as a year-round supply of domestic hot water. It is small enough to fit into a standard kitchen cabinet, with hot-water storage tank above, or comes equipped with a steel jacket for installation in utility room. A vaporizing burner is used, which reportedly burns 30 to 40 per cent less oil than the average burner — a maximum of only 3½ gal. per hour at high fire. The small size and high heating efficiency of this unit are made possible by the Miller Heat Spirator principle, which builds up pressure instead of a draft in the firing zone, re-

A small house can be heated by this cabinet-size boiler-burner hot-water unit.

(Continued on page 136)

MARCH 1947

To eliminate the chore of clearing snow and ice from sidewalks, steam piping is embedded in 100 ft. of concrete paving before the new office building of Heekin Can Co., Cincinnati. The wrought iron pipe connects with steam system used to heat water for panel-heating floor coils within the building. Photo courtesy of A. M. Byers Co., Pittsburgh, Penn.
MANUFACTURERS' LITERATURE

AIR CLEANERS
(1) Hydro-Whirl Dust Collectors and (2) Hydro-Whirl Spray Booths (Bulletins 101 and 201). Technical bulletins giving complete information and specifications on a line of wet dust-collectors and wet-type spray booths. Information in (1) includes operation and installation details, typical applications, planning methods, table of suggested air volumes. Second booklet describes batch type, down-draft and conveyorized spray booths, points out the chief features of the Hydro-Whirl line, discusses selection of size and type, arrangement and maintenance. 16 pp. ea., illus. Peters-Dalton, Inc., 17900 Ryan Rd., Detroit 12, Mich.

ALUMINUM BUILDING WIRE
Hazard Aluminum Building Wire. The story of aluminum insulated wire and cables; carrying capacity, durability, voltage drop, sizes, corrosion resistance; dimensional data table and table of comparison with copper conductors. Price lists separate. 6 pp. Hazard Insulated Wire Works, Division of the Okonite Co., Wilkes-Barre, Penn.

BOILERS
Double-Pass Firebox Boilers (Bulletin RM-1, 6th ed.). Illustrates and describes a line of riveted or welded double-pass steel firebox boilers built especially for stoker, oil or gas firing. Includes ratings and dimensions tables for each of the three series in the line. 8 pp., illus. The Brownell Co., 430 N. Findlay St., Dayton 1, Ohio.

DATA BOOK
Horn Construction Data and Handbook. New edition. First section gives compact technical data on all Horn products such as flooring materials, exterior and interior coatings, roofing materials and waterproofing. Second section contains many useful tables, conversion factors, weights and strengths of building materials, etc. 96 pp., illus. A. C. Horn Co., Inc., 43-36 Tenth St., Long Island City 1, N. Y.*

ENAMEL ON STEEL
Porcelain Enamel on Steel in Architecture. An outline of many uses of porcelain enamel on steel in the architectural field; includes sketches and details of both exterior and interior applications; points out advantages claimed (color, texture, durability, etc.); tabulates uses in various types of buildings. 32 pp., illus. U. S. Steel Corp. Subsidiaries, 429 Fourth Ave., Pittsburgh 19, Penn.* or any office of the following U. S. Steel subsidiary companies: Carnegie-Illinois Steel Corp.; Columbia Steel Co.; Tennessee Coal, Iron and Railroad Co.; and U. S. Steel Export Co.

GASOLINE APPLIANCES
Design for Better Living. Booklet describing and illustrating the uses of gasoline lamps, lanterns, iron, burners and portable cooking units. Includes full information on a new line of oil-fired heaters. 26 pp., illus. The Coleman Co., Inc., Wichita 1, Kansas.

HEATING
Automatic Control of Radiant Panel Heating. A comprehensive and useful manual on the control of panel heating, covering the theory of control and the applications of controls. First section compares the control requirements of panel and convection heating and their inherent controllability, discusses in detail the theory of panel heating control. Second section includes a set of three design graphs (ceiling, wall and floor panel) and a series of generalized control-system diagrams for various typical installations, each with a brief description. 40 pp., illus. Minneapolis-Honeywell Regulator Co., Minneapolis 8, Minn. $1.00.

Warm Air Radiant Panel Heating. The installation of the Panaire System in a ranch-type house. Description of the special construction required. Floorplan with overlay showing location of heating unit and the baffles which determine the path that the warmed air will follow. 16 pp., illus. Surface Combustion Corp., Toledo 1, Ohio.*

HOME ELECTRICITY
(1) Home? and (2) The G-E Electric Sink Does the Hard Work in My Kitchen. The first of these two new booklets covers every detail of house wiring, shows what electricity can do in making rooms more livable and useful, includes full definitions of commonly used electrical terms and symbols, and offers a special section for architects and contractors giving information on the size of wire recommended, the number of outlets required in various rooms, the spacing of the outlets, etc. The second booklet gives a full description of the G-E automatic dishwasher and a description of the new line of gas ranges and cookers.

Appliance and Merchandise Dept., General Electric Co., 1285 Boston Ave., Bridgeport 2, Conn.* (1) 10 cents; (2) 5 cents.

KITCHENS

LIGHTING
Lighting to a T. Detailed brochure on cold cathode lighting and how to plan it. Includes engineering and design data, information on color control, efficiency, cost, installation, applications. Formula for determining tubing footage and its arrangement. Table of recommended levels of illumination. 20 pp., illus. Cat- ler Light Mfg. Co., 2026 N. 22nd St., Philadelphia 21, Penn.

PLUMBING

Presenting the 1947 Crane Plumbing and Heating Line. Description of all items now being manufactured by Crane, together with a number of items not yet in production. Features the "Dial-Ease" faucet and color photos of suggested bathrooms, powder rooms and kitchens. Includes specifications of all units. 24 pp., illus. Crane Co., 836 S. Michigan Ave., Chicago 5, Ill.

PROJECTION SCREENS
Radiant Projection Screens (Bulletin No. 6002). Folder showing full line of screens in tripod, box, wall and easeel types, with accessories. Includes specifications, table of sizes and prices, and a screen selector giving complete screen sizes in various lenses and projector-to-screen distances. Illus. Radiant Mfg. Corp., 2607 W. Roosevelt Rd., Chicago 8, Ill.

ROOFING AND SIDING
(1) Reynolds Lifetime Aluminum Corrugated Roofing and Siding; (2) Aluminum "Snap-Seat" Roofing; (3) Aluminum Shingles; (4) Aluminum Clapboard Siding. Set of descriptive folders giving specifications, installation details, main features, advantages claimed. 4 pp. ea., illus. Reynolds Metals Co., Building Products Div., Richmond, Va.*
It's what's *Inside* that Counts!

With a radio, the cabinet counts as furniture. But it's what's *inside* the cabinet that makes the difference in tone, in power, in clarity and trouble-free performance.

With building products, too, it's what's *inside* that counts. Your eye seldom sees the values that make the important difference.

That's why building-wise people insist on Celotex Building and Insulating Products. They know the raw materials which go into Celotex products are the finest that nature can grow and man can refine.

They know, too, that rigid production controls all along the line guarantee the uniformly high quality of every product bearing the Celotex name.

Timeless laboratory research perfects materials and methods still more... helps to maintain Celotex leadership year after year.

These, plus more than a quarter of a century of building materials "know-how," are the invaluable ingredients in every Celotex product.

They make a big difference in performance... in long life and low cost maintenance. A difference that has proved its value on hundreds of thousands of building jobs of every kind.

* * *

There aren’t enough of these famous Celotex products to go around now—but our plants throughout the country are working day and night to increase production. Everything possible is being done to speed the time when we can supply you with all the Celotex products you need.

Building Board  Celo-Rok Sheathing and Wallboard
Interior Finish Boards  Celo-Siding  Cemesto
Celo-Rok Anchor Lath and Plaster
Flexcell  Rock Wool Insulation  Triple Sealed Shingles

* * *

**Celotex Building Products**

The Celotex Corporation • Chicago 3, Illinois

March 1947
"This boiler can wait 'til the roof is on"

When your client's heating plant is to be H. B. Smith, you can go right ahead and finish your building before you install the boiler. This means that when material and labor shortages slow down or stop the job, your new boilers don't have to stand in a half-erected building exposed to the elements.

H. B. Smith boilers can be placed in any building, through ordinary doorways, because they are assembled from multiple cast-iron sections. These sections are shipped directly to the point of installation, where they are assembled quickly and easily. H. B. Smith header-type construction cuts erection time and costs too.

Once an H. B. Smith Cast-Iron Boiler is installed, the owner usually agrees that there is no finer looking, finer performing boiler in service. So when your building schedule calls for a boiler that can be installed "after the roof is on"... or whenever there is need for uninterrupted, efficient low-cost heating... recommend H. B. Smith Boilers, for new installations or replacement. For the complete story of H. B. Smith dependability, write for your free catalog.
New York City Housing Authority places great stress upon the importance of popular playgrounds for the children of tenants in its housing developments. Considerable thought and ingenuity have gone into its studies of individual units of playground equipment. An understanding of child psychology and experience with existing playgrounds lead its designers to believe that many popular, safe, and inexpensive items of equipment can be made from simple building materials: concrete, sewer pipe, wood beams, cinder block.

Children like to play about building walls under construction; hence, the dodger with its maze of foundation walls. They like to balance on logs and rails, crawl through large pipe, duck into "foxholes." For more imaginative play, there are the concrete boat, airplane, and stage.*

Few playgrounds are large enough to require all of these items of permanent equipment, but selected ones might add to the fun of children in housing developments, schools and camps. The designs are patented, but New York City Housing Authority welcomes their use in such projects. The dimensions shown are mere suggestions, and can readily be adapted to available materials and layouts.

*The dodger and tunnel slide, prototypes of all such equipment, were originated by Alexander J. Melfat and Jacob John Span of New York City Housing Authority. W. C. Vlasak, Chief of Project Planning.

(Continued on page 119)
Its chassis is equipped with a wide variety of installation aids: holes, slots, knockouts... so you can mount it anywhere and anyway.

*Viz-Aid* commercial fixtures... for two 40- or two 100-watt lamps. U.S. Patent Nos. D-138990, D-143641, others pending. Request Bulletin 10-B-1 for complete details.

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

(Continued from page 117)

CIRCULAR PLAY UNIT

BALANCING BEAM

BALANCING TRACK

PLAY BOAT

(Continued on page 121)
Whether your plans include remodeling or new construction, here are 3 compelling reasons why K&M "Century" APAC sheet material is the right material to use.

1. **APAC IS VERSATILE**
Furnished in 4' x 8' sheets 7/16", 1/4", 3/8" thick, APAC is easily adaptable to outside sheathing, office panelling, partitions, elevator shaft casings, stock rooms and storage bins... in fact APAC has as many uses as a building has surfaces.

2. **APAC IS PRACTICAL**
Compounded of asbestos and portland cement, APAC is completely fire-resistant, rot-proof, vermin-proof and termite-proof. It makes a neat-looking job and will never deteriorate. Time only toughens it.

3. **APAC IS ECONOMICAL**
First cost is low, and APAC is so easy to cut, handle and apply that it lowers the cost of construction. Once it's on, APAC lasts indefinitely, without maintenance or protective painting.

If there's anything else you want to know about this remarkable building board, we'll be glad to give full details. Just call or send us a card.

*Keasbey & Mattison has been making it serve mankind since 1873.*
PLAYGROUND EQUIPMENT

(Continued from page 119)

CHILDREN'S STAGE

AIRPLANE

NOTE: PROVIDE OPENINGS FOR SURFACE DRAINAGE AT FINISHED GRADE LEVEL.

DODGER
**Practical applications of Glass**

**ATTRACTION SURROUNDINGS** are an invitation to the architect to take advantage of them in designing a home. For this reason large window areas, glass panels, even glass walls have grown in favor during recent years. Pittsburgh Polished Plate Glass has been consistently selected by many architects to glaze such areas. Now, Twindow, Pittsburgh's new window with built-in insulation, makes such applications more practical than ever before. For Twindow affords not only clear vision, beauty, and generous light transmission, but the comfort and economy of efficient insulation as well. Architect: Anthony Thormin.

**TWINDOW.** Pittsburgh’s new window with built-in insulation is made up of 1 or more panes of Pittsburgh Glass with a sealed-in air space between them. When Twindow is composed of 2 sheets of glass, it provides almost double the insulating effectiveness of single-glazed windows—and even better insulation when 3 or more panes of glass make up the Twindow unit. Twindow cuts heating costs, minimizes downdrafts, virtually prevents steamed windows.

**WIDE LATITUDE IN BATHROOM AND KITCHEN DESIGN** is made possible when Carrara Structural Glass is selected for walls, wainscots, ceilings. This glass comes in 10 beautiful shades. It won't craze, check, stain or absorb odors. It is readily decorated in various ways. It is easy to clean. (Note the Heavy Plate Glass shower enclosure in this room, the decorative, horizontal mirror strips in the Carrara walls.)

**PITTSBURGH PLATE GLASS COMPANY**
DECORATIVE POSSIBILITIES of Pittsburgh mirrors are illustrated by this example of a map sand-blasted on the mirror to five different depths, and then the whole mirror panel edge-lighted. Edge-lighting through the various levels of sand-blasting gives the map varying tonal values. Combined with mirror-backed shelves and glass desk, the effect of this "mirror mural" is striking.

THE APPEALING GOOD LOOKS and practical virtues of PC Glass Blocks have made them a favorite among the newer building materials. They transmit daylight generously, and yet preserve privacy. They have noteworthy insulating properties. They are available in various attractive patterns and sizes. Designed by Paul Laszlo.

Pittsburgh Plate Glass Company
208-7 Grant Building, Pittsburgh 19, Pa.
Please send me, without obligation, your booklet entitled: "Ideas for the Use of Pittsburgh Glass in Building Design."

Name
Address
City State
MONTGOMERY HYDRAULIC ELEVATORS FOR ECONOMY

FEATURES

INITIAL LOW COST — Montgomery Hydraulic Elevators ... both freight and passenger ... eliminate building cost of penthouse. Load bearing walls are unnecessary. Designed and built to meet service requirements where travel is limited to 36 feet.

OPERATIONAL ECONOMY — Hydraulic principle reduces operation expenses. All down travel by gravity.

STANDARDIZATION — Montgomery takes the lead in standardizing complete installations. From years of experience and thousands of jobs, several standard selections were chosen. This assures better delivery, lower cost.

SERVICE — Montgomery direct factory agents and branch offices in all principal localities offer the highest in efficient and prompt service.

Get complete details. Write for new Montgomery Hydraulic Elevator folder.

THE RECORD REPORTS

(Continued from page 16)


May 6-8: The President's Conference on Fire Prevention, Federal Works Bldg., Washington 25, D.C.

May 6-10: 2nd National Plastics Exposition and Annual Convention, The Society of the Plastics Industry, Coliseum, Chicago.


June 16-19: Semi-annual Meeting, American Society of Mechanical Engineers, Stevens Hotel, Chicago.

July 7-13: 1st Annual Store Modernization Show, Grand Central Palace, New York City.

Sept. 1-4: Fall Meeting, American Society of Mechanical Engineers, Hotel Utah, Salt Lake City, Utah.

Nov. 3-7: 2nd International Lighting Exposition and Conference, Stevens Hotel, Chicago.

Dec. 2-5: Annual Meeting, American Society of Mechanical Engineers, New York or Atlantic City.

COMPETITIONS OPEN

Memorial Scholarship

The Managing Committee of the John Stewardson Memorial Scholarship in Architecture has announced a competition for a scholarship of the value of $1000, the holder of which is to pursue the study of architecture in the United States or foreign countries as determined by the Committee and under its direction.

Citizens of the United States who shall have studied or practiced architecture in the State of Pennsylvania for the period of at least one year immediately preceding the scholarship award are eligible to complete for the scholarship. Candidates must be not less than 22 nor more than 32 years of age on March 13, 1947, the final day for the receipt of applications. For further information and registration blanks, address the Secretary, Morton Keast, 1108 Commonwealth Bldg., 1201 Chestnut St., Philadelphia 7, Penn.

Masonry Home

A "Plasticrete Home" competition to select an architect for a firesafe, masonry home to be erected in Hamden, Conn., has been announced by The Dextone Co. of New Haven, The Wm. M. Hotchkiss Co. of New Haven and Bridgeport, and Plasticrete Corp. of Hamden, Conn., joint sponsors.

The purpose of the competition is "to encourage architects and engineers to design masonry homes which incorporate the Plasticrete System." The winner will receive a trophy and a certificate of recognition.
Facing tile for Rental Housing

fire-safe...cuts maintenance costs...assures earlier use

All these very important considerations for the low-cost Rental Housing you design are made possible by Structural Clay Facing Tile.

Unglazed Facing Tile lends itself very well to exteriors. For interiors, either glazed or unglazed is used. Both are fire-safe. Both go up fast and help assure earlier use of the structure.

Because Facing Tile is strong and durable and stands rough usage, it has become common practice to use it in stairwells and corridors. It does not scratch, crack, mar or decay. Structural Clay Facing Tile is colorful...easily cleaned with soap and water. These advantages help cut maintenance costs.

With a permanent finish and a wall of great strength in one material, Facing Tile means less time and money spent for construction...earlier returns on investment...less financing.

Many of these advantages are made more certain by the present production of Facing Tile in modular sizes. The result is perfect fitting with other modular materials...greater flexibility in design...less time for drafting and site supervision...less material waste...better workmanship with reduced labor...earlier occupancy.

Any Institute Member will gladly furnish more information, or write direct to Desk AR-3 of the Institute. See Sweet's 1947 Architectural Catalog for additional data.

INSTITUTE MEMBERS
Belden Brick Company
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Continental Clay Products Co.
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Mapleton Clay Products Co.
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Stone Creek Brick Company
Stone Creek, Ohio
West Virginia Brick Company
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MARCH 1947
Don't Overlook

MICHAELS PRODUCTS

in Your Building Plans

The manufacture of ferrous and nonferrous metal building products has always been a major part of our business. And now that restrictions are lifted, and materials obtainable, we offer to architects and builders a variety of bronze, aluminum and nonferrous metal products. For specific requirements Michaels craftsmen will faithfully reproduce in metal the most intricate architectural designs. If your plans include metal products, write us.

MICHAELS PRODUCTS

Fixtures for Banks and Offices
Welded Bronze Doors
Elevator Doors
Elevator Enclosures
Check Desks (standing and wall)
Lamp Standards
Marque
Tablets and Signs
Name Plates
Railings (cast and wrought)
Building Directories
Bulletin Boards

THE MICHAELS ART BRONZE CO., Inc., Covington, Kentucky

THE RECORD REPORTS

(Continued from page 124)

home design with Plastercete Bloc walls and Lith-I-Bar floor construction ... and to demonstrate the design characteristics, economy and other desirable qualities of contemporary concrete masonry construction. First prize will be $1000, second will be $500, and third, $250. All architects and designers living or practicing in Connecticut are eligible to compete.

For further information and copies of the program, address the professional adviser, Harold D. Hauf, A.I.A., c/o Department of Architecture, Weir Hall, Yale University, New Haven 7, Conn.

Church Design

An open competition for students in architecture in American schools and colleges is being conducted by the Interdenominational Bureau of Architecture, the Church Architectural Guild of America, and Christian Herald.

Prizes are offered as follows: first, $250; second, $75; third, $50; fourth, $35; and 6 honorable mentions of $15 each.

The registration fee of $1.00 must be sent in by October 10, and material submitted by December 24, 1947. The program and full information may be obtained from Elbert M. Conover, Director, Interdenominational Bureau of Architecture, 297 Fourth Ave., New York 10, N. Y.

AT THE COLLEGES

Fellowships Announced

The University of Pennsylvania, School of Fine Arts, has announced the following graduate fellowships and scholarships in architecture for 1947-48: two $1000 Theophilus Parsons Chandler Fellowships in Architecture, for advanced study; the Albert Kahn Scholarship in Architecture, providing a maximum of $1100 toward tuition and other expenses; two University Graduate Scholarships providing tuition; and the Albert Kahn Scholarship in Industrial Architecture ($250). For further information address the Dean of the School of Fine Arts. All applications must be made by May 17, 1947.

The Graduate School of Design of Harvard University will offer two or three fellowships for advanced study in city or regional planning for the academic year 1947-48. The stipends will not exceed $1500 each. Applications should be made prior to April 1, 1947, to the Chairman of the Department of Regional Planning, Hunt Hall, Harvard University, Cambridge 38, Mass.

The School of Engineering of The
Now your clients will ask you about REYNOLDS Lifetime ALUMINUM SHINGLES AND CLAPBOARD SIDING

We're telling your clients about the advantages of aluminum building materials...fire-proof, rust-proof, rot-proof, vermin-proof...giving better appearance, greater comfort, more lasting value for the 1947 building dollar.

You'll find new scope for architectural design in these modern materials. Choose between the traditional effect of clapboard siding, with either individual shingles or the handsome, low-cost, big-sheet "Snap-Seal" roofing. The aluminum weathers to a beautiful dull-gray to blend with any architectural style. Or it takes paint well when desired.

Another big architectural point is the insulation value! Aluminum reflects up to 95% of all radiant heat. Keeps an interior amazingly cooler in summer—and warmer in winter, with less fuel.

Be prepared for this national advertising...which will have your clients asking you all about Reynolds Lifetime Aluminum Building Products. Write now for your A.I.A. Files. Reynolds Metals Company, Building Products Division, Louisville 1, Kentucky.

Available now in any quantity!

Hundreds of millions of square feet already produced and delivered:

MARCH 1947
PUT FIRST THINGS FIRST

In Industrial Ventilation

Clients Want AIR MOVEMENT

Fundamental? Yes. The first thing good industrial ventilation must do is to move air. But that doesn't necessarily mean big, bulky, costly installations. Functional design is the No. 1 "must" for high efficiency, simplified layouts, and space and money savings. That's why Propellair double-action fans offer you and your clients many advantages.

HIGH VELOCITY, HIGH VOLUME

Like modern aircraft wings, both surfaces of Propellair airfoil blades produce air movement—the back even more than the front. Scientific design makes entire blade length work—not just the tip—for uniform air flow over whole fan area. Entrance ring is airfoil-principle—prevents "tip recirculation"—makes blade efficiency pay off in high velocity, high volume.

Capable, compact Propellairs are the answer to every industrial ventilating need. Types and sizes for every service and location. Qualified sales engineers in principal cities. Write for all the facts.

7000 c.f.m. from 1½ h.p. Motor

Fumes and vapors from the process cleaning of small brass fittings are collected and exhausted by a 24" Propellair in above installation at Weston Electrical Instrument Corp., Newark, N. J. Right foreground, degreasing tank. Left, conveyor-type gas-fired oven. Along wall, tanks for acid dip and water rinse. These are vented by slot-type hoods to pull fumes away from operator. Fan is located in duct beyond tanks.

THE RECORD REPORTS

(Continued from page 126)

nounced that 10 sponsored graduate fellowships with stipends ranging from $750 to $1800 per year are available for 1947-48. The School is also offering 10 departmental graduate assistantships at $1000 per year and a number of full-time research assistantships. For further information address H. P. Hammond, Dean, School of Engineering, The Pennsylvania State College, State College, Penn.

New Buildings

At Western Reserve University, Cleveland, immediate construction is planned for a $205,000 addition to the School of Law and a $95,000 Karl E. Davis Memorial Building.

The Law School building will be an extension of the present annex back of the main building of the School. It will provide classrooms for the greatly expanded student enrollment.

The Memorial Building, to be used for a veterans' dormitory, will provide additional locker and shower space for the gymnasium. It is so planned that when the need for housing becomes less acute the second floor can be converted into areas for boxing, wrestling and classrooms. It is expected to be ready for occupancy by the beginning of the spring session next month.

Hospital Planning Conference

A Conference on Hospital Planning will be held April 4-6 at the College of Architecture and Design, University of Michigan, Ann Arbor, under the sponsorship of The Ann Arbor Conference, an informal group of practicing architects and educators.

Prominent hospital architects, hospital consultants, representatives of the U. S. Public Health Service and the American Hospital Association will participate in the three-day meetings. Chairman is Kenneth Black, of Lansing, Mich.; Amedeo Leone of Detroit, Alden Dow of Midland, Mich., and Walter Rolfe, of Houston, Texas, form the program committee.

Architects concerned with hospital work are invited to the extent of room accommodations. For reservations address Wells I. Bennett, Dean, College of Architecture and Design, 207 Architecture Bldg., Ann Arbor, Mich.

New Courses

An interesting new course in Mechanical Equipment of Buildings was inaugurated on January 22nd at the University of California Extension Division. To last 18 weeks, the course will cover
HARDLY A GHOST OF A CHANCE FOR WIND TO GET THROUGH

NEW SELF-FITTING SILENTITE

Wind infiltration—that fuel-eating destroyer of comfort—has hardly a ghost of a chance to get through the new self-fitting Silentite window.

Thanks to scientific engineering, the new Silentite has “floating” weather-stripping. The wood sliding bars, which are seated on full-length bronze weather-strips, press tightly against moving parts of window and keep each in firm contact with the sash, regardless of its position.

At the head, a spring leaf is compressed by the top rail when the sash is closed, providing a weather-tight fit. At the meeting rails, interlocking weather-strip members solve an age-old problem. At the sills, another spring leaf weather-strip foils infiltration.

No wonder this new Curtis self-fitting Silentite is 20% more weather-tight even than the original Silentite—which was America’s first “insulated” window!

Here are some additional reasons why you’ll want to specify CURTIS SILENTITE!

* Silentite is a Wood Window—and wood is a natural non-conductor of heat and cold. It is toxic-treated to give it longer life.

* Amazingly easy operation—famous Silentite spring suspension. No weights, cords or pulleys to get out of order.

* New locking safety—new self-fitting Silentite locks in two positions. Window can be left open 6 inches for ventilation and yet be securely locked.

* Easy installation—sash put in with minimum effort. Windows accurately pre-fitted at factory—no fitting required on job.

* Streamlined beauty—sturdy, one-piece narrow mullion, more glass area for given openings.

MAIL THE COUPON FOR COMPLETE FACTS ABOUT THIS AMAZING WINDOW IMPROVEMENT

CURTIS COMPANIES SERVICE BUREAU
AR-35 Curtis Building
Clinton, Iowa

Gentlemen: Please send me your new book on the new Silentite Window line.

Name__________________________________________________________________________

Address_______________________________________________________________________

City________________________State_____

MARCH 1947
THE RECORD REPORTS (Continued from page 128)

conditioning, plumbing, fire protection, electricity, acoustics, lighting, law, etc. The Division of Social Philosophy of The Cooper Union, New York, has announced a meeting on April 11 on "How New is Modern Architecture?" Speaker will be Henry-Russell Hitchcock, professor of Fine Arts, Wesleyan University.

The New School, New York City, is currently holding a special series of lectures entitled "Planning for Our Communities." Covering such subjects as the elements of city planning, traffic and transportation, official media of planning, housing, and urban land economics, the 15-week course is under the direction of Charles Abrams and Henry S. Churchill.

Special Veteran Course

Fourteen G.I.'s, all employed in architects' offices in the greater Pittsburgh area, form the special evening class in architecture now being held at Carnegie Institute of Technology. Believed to be the first G.I. apprentice training group to be organized in the professional field, the class is sponsored by the Pittsburgh Chapter, A.I.A.

The group meets twice a week, will complete 120 hours of training under the apprentice training program of the government. Class instructor is Rody Patterson, himself a veteran of both World Wars, and member of Palmgreen, Patterson & Fleming, Pittsburgh architectural firm.

HONORS CONFERRED

Tribute to Greenley

At a testimonial dinner and special program in his honor on the 25th anniversary of his presidency of the Architectural League of New York, Howard Greenley was awarded the League's President's Medal.

The 20th president of the League, Mr. Greenley is architect of the Prince George Hotel and the interiors of the Lord Dunvegan mansion in New York City; of the house of Alanson B. Houghton, ex-ambassador to Germany and England, in Corning, N. Y.; of residences for Edson Bardley at Newport, R. I., and Charles A. Coffin in Locust Valley, L. I.; and of picture galleries for the late Joseph E. Widener at Elkins Park, Philadelphia.

Mr. Greenley started his architectural career in the offices of Carrere and Hastings, architects of the New York Public Library. Following his graduation from the Ecole des Beaux Arts in Paris in 1901, Mr. Greenley was associated with Arnold Brunner. From 1903 to 1932 he headed up his own architectural firm.

Participating in the tribute to Mr. Greenley were all living presidents of the League, 10 honorary members, and 120 men who have been members for more than 25 years. Also participating were The Metropolitan Museum of Art, National Academy of Design, American Academy in Rome, New York Chapter of the A.I.A., Faculty of Fine Arts of Columbia University, American Academy of Arts and Letters, National Institute of Arts and Letters, Society of Beaux Arts Architects, and others.

Engineers Honored

Conferring of honorary membership upon four of its distinguished members featured the 94th annual meeting of the American Society of Civil Engineers in January. The men honored were: A. W. K. Billings, retired president of the Brazilian Traction, Light & Power Co.; Charles B. Burdick, Chicago consulting engineer; Albert P. Greensfelder, St. Louis contractor and civic leader; and LeRoy K. Sherman, Chicago con-
You'll build or remodel better with Gold Bond

Wonder how many Post readers feel the way I do?

"Somewhere we're going to have a house, Bill and I. With grass around it, and the blue bowl of the sky over it, and a tree or two of our own to carve a couple of hearts on if we want to. We're young, and planning, and each day brings us closer to owning it."

The house you will build will be a "wonder house" too. For, since Dad built, modern science has taken a hand in new construction materials and methods. Outer walls, for example, now add greater strength and fireproofing when Gold Bond cemented gypsum sheathing supplies the base for outside finish. Inside walls and ceilings will give years of trouble-free service when they're made of Gold Bond fireproof gypsum lath and plaster.

Heating costs are reduced as much as 40% in new and old homes with fireproof high-efficiency Gold Bond Rock Wool insulation. And summer comfort is doubled.

You can plan on these scientific building improvements and many more to give you a house that is better in every respect than any that has ever been built before. A house that will serve for many long and happy years with the least amount of repair and upkeep expense.

There are over 150 research produced Gold Bond products that cost no more to specify and use than ordinary building materials. Each of them is engineered to do a specific job better. If you want Gold Bond results, be sure to speak to your architect and builder about using Gold Bond products!

Today our entire production can't keep up with demand. But just the same our more than 10,000 Gold Bond lumber and building material dealers are doing their best, helping veterans to get housed, helping their customers in every way they can. See your Gold Bond dealer first whether you plan to build or remodel. He can help you get what you want, and get it better. Not always right away but tomorrow sure! National Gypsum Co., Buffalo 2, N.Y.

Over 150 brand Gold Bond Building Products for new construction or remodeling add greater permanency, beauty and fire protection. These include wallboard, lath, plaster, lume, sheathing, wall point, insulation, metal and sound control products.

DEMAND THESE SIX GOLD BOND FEATURES IN YOUR NEW HOUSE

Gold Bond Cement Lath is the perfect practical plaster base. Smoothes and cleans up in no time. Costs less than old wire sheathing.

Gold Bond Gypsum Lath is the perfect practical plaster base. Smoothes and cleans up in no time. Costs less than old wire sheathing.

Gold Bond Gypsum Plaster is especially prepared to give you a constant bond. It won't crack or curl. Replaces walls and ceilings with greater durability and beauty.

Clear the chimney,并对 a coat of Gold Bond Fireproof Gypsum Lath. This transforms the black flue into a new, clean tube. The chimney remains frost-proof, free from frost, and free from rust which spoils the look of the house.

Build a fireproof mantel. Art or Addison colored. This mantel is comparatively new in the building field. It's fireproof, frost-proof, frost-resistant, and a real savings in upkeep. Makes a good starting point for new or old homes.

Dine in one hour with an attractive wall surface. Modern wall finishes are made up of non-porous fine aggregate that lends itself to a complete range of colors.
ELECTIONS

Morgan L. Fitch of Chicago formally took office as president of the National Association of Real Estate Boards at an installation banquet in Washington, D.C., on January 30th.

The Board of Trustees of the American Designers' Institute has announced the following elections: president, Alexander J. Kostellow, New York; vice presidents, Ruth Gerth of San Francisco, and Stewart Pike of Philadelphia; treasurer, Lionel C. Algoren, Chicago; secretary, Ann Franke, New York.

At its 25th annual meeting on January 24th, the Architects Club of Chicago elected R. Harold Zook president, to succeed Benjamin Klekamp. Also elected were: first vice president, Murdo Ross; second vice president, Walter Buchroeder; secretary, Friza Wagner, Jr.; treasurer, Edward Baeseman; directors, Elmer Fox, Frances Dittrich, George Brown, William Jacobson, Earl Boyle, and Edward Hedrich.

Robert R. Clegg, district sales manager of the American Lumber and Treating Co., has been elected president of the Chicago chapter of the Producers' Council.

OFFICE NOTES

Offices Opened, Reopened


Albert W. Kirschenbaum, Architect-Engineer, has opened offices at 53 W. Jackson Blvd., Chicago 4, Ill.

Samuel M. Kurtz, A.I.A., has resigned his position as associate member of the firm of York & Sawyer, and has opened an office for the general practice of architecture at 101 Park Ave., New York 17.

Onnie Mankki, A.I.A., has opened an office for the practice of industrial design and architecture at 7113 Euclid Ave., Cleveland 3, Ohio. Mr. Mankki was formerly vice president and director of industrial design for Designers for Industry, Inc.

W. Thomas Schaar, A.I.A., has announced the opening of his office at The Meadowbrook Bldg., Sunrise Highway, Bellmore, N. Y.

New Addresses

The following new addresses have been announced:

Wm. S. Ahern Construction Co., General Contractors, 159 E. Chicago Ave., Chicago 11, Ill.

Leon N. Fagnani, A.I.A., Pennsylvania Railroad Bldg., Wilmington, Del.

H. Russell Kenyon, 107 Union Ave., Mt. Vernon, N. Y.

William J. Potter, Architect, 9 Rockefeller Plaza, New York 20, N. Y.

Firm Changes

D. C. Andrews has been appointed a general superintendent of construction of the Turner Construction Co.

The Clay Sewer Pipe Assn., Inc., has announced the addition to its technical staff of L. O. Keener, for a number of years associated with the Pennsylvania Dept. of Highways.

Frank P. Gates, A.I.A., and Raymond Birchett, A.I.A., have announced the formation of a partnership under the firm name of Gates & Birchett, Archi-

CORRECTION

We regret that the Chicago architectural firm mentioned on page 79 of Architectural Record for January was erroneously given as Perkins, Will & Row.

(Continued on page 134)
QUICK RELIEF for the BUILDING WIRE SHORTAGE

- Worldwide shortage of copper shows strong evidence of continuing through '47, maybe longer, thus prolonging present difficulties on deliveries of the heavier sizes of conductors.
- Because of its high conductivity and excellent record for durability, aluminum is the natural substitute.
- Current carrying capacity of aluminum Performite Building Wire, Type RH, equals that of copper Hazacode, Type R. The 16% difference in conductivity between copper and aluminum is compensated for by the temperature rating spread between the two types of insulation.
- Therefore no increase in conductor or conduit size is required except where runs are so long as to involve excessive voltage drop, or where substituting Type RH aluminum for Type RH copper.
- Aluminum Type RH Wire costs no more than copper Type R because the higher cost of the better grade Performite Type RH rubber is offset by the lower cost per 1000 feet of aluminum.
- The lighter weight of aluminum insulated conductors provides handling, transportation and installation advantages.
- Quick relief for the building wire shortage is now provided on sizes No. 6 Awg and larger Hazard Aluminum Performite Building Wire Type RH, where approved by local inspection authorities.

TO GET ALL THE FACTS, write for technical Bulletin H-407, illustrated above, which gives tables of capacities; comparative weights, data on characteristics; information for quick determination of voltage drop, conductor sizes, circuit length and currents for both aluminum and copper. Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pa.

HAZARD

insulated wires and cables for every electrical use

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THE RECORD REPORTS (Continued from page 132)

tects and Engineers, with offices at Jackson and Vicksburg, Miss.

Election has been announced of Harold A. Hallstein to the newly created post of executive vice president of The Austin Co., Engineers and Builders, Cleveland, Ohio.

William T. Herzog and John L. Henderson have announced the establishment of their new firm, Herzog & Henderson Associates, Inc., for the practice of architecture, building and industrial design. Address, 715 Ontario St., Oak Park, Ill.

John Sherwood Kelly, Architect, formerly at 4216 Prospect Ave., Cleveland, Ohio, is now associated with George W. Stickle and Robert W. Stickle in the practice of architecture under the firm name of Stickle, Kelly and Stickle. Address, 2422 Prospect Ave., Cleveland 15, Ohio.

Richard E. Lawrence and Eugene W. Dykes have announced the formation of the firm of Lawrence & Dykes, Architects, with offices at 4542 7th St., S.W., Canton 4, Ohio.

Alfred M. Rinaudot, Architect, has announced the association of C. Wayne Mead, Architect, with his firm and the change of the firm name to Rinaudot and Mead, Registered Architects. Address, Housing Guild Bldg., 7240 Wisconsin Ave., Bethesda 14, Md.

Jas. Gamble Rogers, F.A.I.A., has announced that upon completion of his current work, his practice of architecture and organization will be carried on by the firm of Rogers and Butler (Francis Day Rogers, A.I.A., and Jonathan Fairchild Butler, A.I.A.) at the present offices, 70 E. 45th St., New York 17. Mr. Rogers himself is maintaining offices at the same address as Consulting Architect.

Arthur F. Schwarz, Jr., has rejoined the firm of Mauran, Russell, Crowell & Mullgardt, Architects, and is now a member of the firm. Address, 1620 Chemical Bldg., St. Louis 1, Mo.

Elwyn E. Seelye, Albert L. Stevenson and Burnside R. Value have announced the formation of a partnership to continue the engineering practice of Elwyn E. Seelye & Co., Consulting Engineers, under the firm name of Seelye, Stevenson & Value, Consulting Engineers, with offices at 101 Park Ave., New York 17. Mr. Stevenson has been associated with Mr. Seelye for 30 years in charge of structural design and the design of industrial buildings. Mr. Value has been associated with Mr. Seelye for the past five years, in charge of heavy engineering work such as airports, foundations, hydro-electric plants, dams and tunnels.

S. Raymond White and Wm. A. Endebrook have announced the formation of a partnership to be known as Endebrook-White Co., General Building Contractors, with offices at 4511 Virginia Ave., Newport News, Va.

Kenneth E. Wischmeyer and Charles W. Lorenz have announced the formation of a partnership for the practice of architecture under the firm name of Wischmeyer & Lorenz, Architects, with offices at 911 Locust St., St. Louis, Mo.

JOHN BAY SLEE

The death of John Bay Slee, F.A.I.A., early in January deprived Brooklyn, N. Y., of one of its outstanding leaders in the work of slum clearance.

Member of the firm of Slee & Bryson, Mr. Slee was keenly interested in Brooklyn's civic improvement, and the architect of many of the city's best-known buildings, including the courthouse of the Appellate Division of the State Supreme Court and the borough's proposed Civic Center. He was a past president of the Brooklyn chapter of the A.I.A.
Order KOOLSHADE SUN SCREEN Now
TO ASSURE INSTALLATION THIS SPRING!

This actual photo shows the complete visibility through KOOLSHADE

For Cooler Comfort All Summer Long, No Shading Device Known Matches KoolShade's Efficiency

KoolShade Sun Screen makes sun-exposed rooms as much as 15° cooler . . . even on the hottest days! Here's how it works: KoolShade blocks and radiates up to 90% of sun heat rays outside the window! Yet vision from inside is clear, and every elusive breeze drifts through.

Where air conditioning systems are used, KoolShade reduces operating costs. On new installations an excellent cooling job can be accomplished with less refrigeration equipment when KoolShade is used on all sun-exposed windows.

KoolShade installs like ordinary insect screen . . . requires no maintenance . . . will never rot, rust or rattle . . . insect proof, too! Order now to assure installation before hot weather sets in.

NOTE THESE VALUABLE FEATURES

- Permanently set at 17° angle for greatest shading efficiency.
- Prevents the fading of valuable drapes and furnishings.
- Easy and inexpensive to install—will not rot, rust or rattle.
- Fits neatly and smoothly into modern architectural design.
- Durable bronze KoolShade also effective as insect screen.

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Ingersoll Steel Division
Borg-Warner Corp., Dept. M3
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Please send free sample and literature, also the name of my nearest KoolShade distributor.

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Company
Address
City
State

MARCH 1947
sulting in a high heat transmission per sq. ft. of boiler surface. The boiler is of a fire-tube type, having 9 vertical tubes. Into each tube is placed a Spiralator which gives the products of combustion a spinning motion. The unit carries all needed controls: constant level valve, draft regulator, high limit control, aquastat, circulator control, and room thermostat. It bears the approval of the A.S.M.E. Heating Products Div., The Miller Co., Meriden, Conn.

**PLUG-IN GAS CONNECTOR**

Primarily conceived for use with smaller pieces of commercial equipment, a plug-in gas connector may some day be used in the domestic field for connecting space heaters, refrigerators, and even ranges at outlets conveniently located about the house. Flexible or semi-flexible metallic tubing would replace solid iron pipe now used for conveying the gas, and so facilitate the moving of appliances for cleaning, painting or servicing. American Gas Association Testing Laboratories have conducted fundamental research and set up a tentative list of specifications for a plug-in connector, to serve as basis for prospective manufacturers. Complete data is available from American Gas Assn., 420 Lexington Ave., New York 17, N. Y.

**FIRE PROTECTION**

The manufacturers of Sentry Flame-Gard products for wood and textiles announce a plastic roof paint for shingles and a compound which, according to laboratory tests, makes ordinary paint effective for fire resistance. The plastic roof paint, available in several colors, can be used with Sentry Flame-Gard for Wood, which also serves as a sealer. This combination reportedly provides exceptional protection from fire, termites, and weather. Sentry Products Corp., Dept. AR, 436 W. Arbor Vitae, Inglewood, Calif.

**AIR CLEANER**

Utilizing the simple electrical principle that objects with like charges repel each other and those with unlike charges exert attraction, Precipiron electrostatic air cleaner is said to remove 85 to 90 per cent of all dust in circulating air streams within the house. Air to be cleaned first passes through an electrostatic field created by a "gate" of 7 highly charged hair-thin tungsten wires and 8 grounded aluminum tubes, spaced alternately. The air then enters the "dust collecting" cell which consists of 69 aluminum plates, alternately charged negative and positive, and set edgewise to the air stream. The charged dust particles are attracted to oppositely charged plates and clean air leaves the unit. High voltage direct current for the unit is produced from standard house current by an energizer consisting of electronic tubes, transformer, and capacitor. Cleaning the dust-collecting plates is accomplished by turning a handle which releases a water spray. This flushing, which takes approximately 3 minutes, is said to be required about as often as a refrigerator requires defrosting. Standing 52 in. high, 27 in.

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**SPECIFY KINTRIM FOR MORE Visible Value**

The graceful and lustrous beauty of KINTRIM catches your client's eye—accents features of interior design that, otherwise, might go unappreciated. And KINTRIM affords you greater freedom along modern, sweeping lines . . . For these metal moldings also have the structural precision you need and want for more attractive, practical use of: (1) Wallboards, and (2) Linoleums for walls, counters, and floors.

For "visible value"—to fit covering materials snugly—KINTRIM is precision-made in a complete range of gauges. And every section of KINTRIM Stainless Steel embodies Kinkead's refinement—the Rolled Edge—to protect hands and clothes from snagging.

KINTRIM beauty and utility can add to the recognition you already enjoy. Specify it—as the finishing touch for more "visible value!"

Details on KINTRIM Stainless and Aluminum designs may be had promptly. Write our "Architects' Dept."

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Let's get to the bottom

OF OFFICE PLANNING

...WITH

BIGELOW

RUGS

Here's a manager's office that shows what good planning can accomplish. In a relatively small area, modern design has created ample working, conference and display space, a feeling of dignity and roominess. When you get right down to it, there's one thing that gives this office...or any office...beautiful, yet quiet simplicity. That's the floor covering of Bigelow Contempora.

Bigelow Contempora is a luxuriously sculptured carpet that adds richness and color to office design. It's Lokweave too...made by the special Bigelow weaving process that means no installation waste. Lokweave carpeting stands up longer, is durable and thus truly economical. Bigelow's Carpet Counsel will help you choose from a complete line of better-than-ever floor coverings.

BIGELOW-SANFORD CARPET CO., INC.
140 MADISON AVE., NEW YORK 16, N.Y.
can be used either in conjunction with a warm air heating system or with an independent air-circulating or air-conditioning system. Westinghouse Electric Corp., 306 Fourth Ave., Box 1017, Pittsburgh 30, Penn.

FLOOR OUTLETS

Two new service fittings have been announced as component parts of the Nepean
tick underfloor wiring distribution system. Their housings are stamped

STEEL INSULATION

Ferro-Therm insulation of light-gauge steel is once again becoming available on the market. Crimped every 4 in. for added stiffness, this insulation is stapled in place and weighs only 0.25 lb. per sq. ft. Because of its thinness, five sheets can be cut at a time and a carpenter reportedly can install an average of 800 sq. ft. or more in a day. This insulation is said to act as an effective fire arrester, and as a barrier to rats and termites. It is coated with a tin alloy for corrosion resistance. American Flange and Mfg. Co., 30 Rockefeller Plaza, New York, N. Y.

AWNING WINDOWS

Window panels consisting of horizontal sashes hinged at the top to swing outwards are featured in the Gate City Type “O” Window. Made of wood, these “awning” windows can be constructed by any millwork shop, following blueprints and instructions furnished with the hardware by the manufacturer. Where desired, fixed lights may be used in combination with the window, either above, below, at the side, or within the individual tier. Advantages are said to be: (1) elimination of need for draft shields; (2) protection for screens and storm sash, which are installed inside the building; and (3) good ventilation in rainy weather, when windows may be left open. Gate City Sash and Door Co., Fort Lauderdale, Fla.

ALUMINUM WINDOWS

Manufactured in 25 standard sizes, a new double-hung aluminum window with either 2 or 4 lights is now on the market for residential construction. It is equipped with spring type sash balances, and designed for installation by an experienced operator in only 15 minutes. Double-strength glass is set with Everseal, requiring no putting. Window is said to cast no more than wood or steel windows of similar design, and to be adaptable to all types of house construction—frame, brick, brick veneer, and poured concrete. Windows are shipped to jobbers in knock-down form, 5,000 sashes or frames to a car-load. Jobbers do the assembling and glazing. Premier Metal Products Corp., Phoenix, Ariz.

ROOF COATING

A new reflective roof coating, Richlume, is said to have unusual insulating, waterproofing, and fire-resistive qualities when applied by brush or spray to tar-and-gravel work paper, built-up asphalt, or composition shingle roofs. Richlume is not an aluminum paint but a coating developed for use on bituminous material only. A new plastic vehicle for the aluminum pigment produces a close bond with roofing

(Continued from page 136)

A beautiful residence garage using two sizes of standard Barcol OVERdoors.

A standard Barcol OVERdoor in an ice-manufacturing plant storeroom.

This modernized horse barn employs standard Barcol OVERdoors for space and heat saving.

Small manufacturing plants, service garages, and the like have standard Barcol OVERdoors.

Standard Barcol OVERdoors

SOLVE LOTS OF PROBLEMS

— IN LOTS OF PLACES... 

Only the Barcol OVERdoor HAS ALL OF THESE FEATURES

1. ROLLER-CRANK CLOSING ACTION.
2. SELF-LATCHING BOLTS.
3. TWIN-TORSION TAILORED SPRINGS.
4. CONTINUOUS VERTICAL TRACK BRACKETS.

Sturdy construction, readily adaptable design, and ease of operation make the standard Barcol OVERdoor useful for many other applications in addition to its regular use on residence garages. A few of these are suggested in the pictures above. Remember — consider a standard Barcol OVERdoor whenever you have an unusual or difficult door problem that needs solving. Consult your Barcol representative.

FACTORY-TRAINED SALES and SERVICE REPRESENTATIVES IN PRINCIPAL CITIES

BARBER-COLMAN COMPANY

102 MILL ST. • ROCKFORD, ILL.

(Continued on page 140)
FOR COMFORTABLE LIVING

Modern construction methods for today's modern comfortable living demand modern material — Arketex Ceramic Glazed Structural Tile combining three-fold requirements of beauty, permanency, and economy.

Arketex is beautiful! Available in a range of bright colors from delicate tints through bold, full-bodied tones.

Arketex is permanent! The lustrous, non-fading colors keep their original freshness forever . . . will not craze, crack, scar, or mar.

Arketex is economical! Unlike ordinary building materials, it is a permanent wall and finish all in one — the first cost is the only cost. No periodic painting or refinishing necessary.

Practical architects and builders know their clients will recognize and appreciate good judgment in construction materials. That's why it pays to — Always specify Arketex — first with the finest!

ARKETEX CERAMIC CORPORATION • BRAZIL, INDIANA
VAPOR CONDENSATION
YOU CAN SEE
May Be Funny...

but
"In-Wall"
Condensation
IS NO LAUGHING MATTER

The same vapor that "steams up" windows can make insulation soggy and impair its efficiency if it condenses within walls. Condensation is the deadly foe of insulation. Uncontrolled condensation can cause wall stains, paint peeling, hasten structure rot. A sure way to lick "in-wall" condensation and give life-long protection to insulation is with a separate vapor barrier. Standard with architects the country over is Bird Neponset Black Vapor Barrier. Applied on the warm side of insulation, Bird Neponset Black safely repels vapor, keeps insulation at peak efficiency. Costs only about $20. for a $10,000 building. Consult Sweet's Architectural file, 9b-2, or write Bird & Son, inc., 156 Wash. St., E. Walpole, Mass., for sample.

ARCHITECTURAL ENGINEERING
TECHNICAL NEWS AND RESEARCH

(Continued from page 138)

materials without penetrating beneath the surface. In addition, it is claimed that the vehicle remains flexible and allows the coating to expand and contract with the roof under all weather conditions. Insulating qualities result from its reflective surface. Up to 80 percent of sun’s rays are reflected, according to laboratory reports, resulting in as much as 15 percent cooler temperatures within buildings. Richcraft Co., Chicago, Ill.

DECORATOR WALLS

New combinations of materials for the decorative treatment of walls have recently been exhibited by U. S. Plywood Corp. Added to its line of Flexwood and Flexmelt, a paper-thin wood veneer bonded to fabric or flexible metal, are Checkwood, jewel-cut squares of plywood on fabric backing; Flexglass, rectangles of mirrored and patterned glass on fabric backing; and Leatherwall, colored lengths of leather designed for walls and ceilings in quilted, corded, or floral patterns. Another innovation is Leatherfloor, which employs cowhide in 4-, 6-, and 8-in. squares as a floor covering. The leather is preserved and hardened with an invisible plastic coating. United States Plywood Corp., 55 W. 44th St., New York 18, N. Y.

LADDER LEVELER

For use on sloping terrain, Shur-Foot Leveler and Locking Base automatically levels the ladder laterally on a half-circle of steel pipe and provides abrasive shoes, on ball and socket joints to assure a firm grip. Weight of the ladder locks it in place after it has been leveled. When the ladder is lifted in moving to a new position, the Shur-Foot unlocks automatically. This base is furnished in 4 sizes, to accommodate ladder widths from 16 in. to 24 in. Akron Steel and Sales, Inc., Akron, Ohio.

GAS HEATER

The Rheem Series 70 storage water heater is a completely automatic unit built to operate on any of the better grades of domestic fuel oil. If an oil-fired central heating unit is already installed, this heater in most cases can utilize the same oil supply. All parts are protectively housed in a steel jacket finished in baked white enamel. A 2 in. thick inner jacket of Fiberglas holds maximum heat within the storage tank. The patented pot-type burner is said to operate on a flame so small that it permits a new low in oil consumption. Oil input to both main burner and pilot fire is monitored at all times. Installation requires only a hot and cold water

How to
Solve Your
Clients’ Fence Problems!

There are a lot of points to be checked in specifying fence—and Anchor Chain Link Fence’s four exclusive features hold the answer to all of them. Here’s why an Anchor Fence will insure your clients’ maximum protection for long years of service:

1. Deep-Driven Anchors hold the fence permanently erect and in line, in any soil or weather, yet permit easy relocation where necessary.
2. Square Frame Gates are amazingly free from warping and sagging.
3. U-Bar Line Posts are self-draining, rust-free and rigid.
4. Square Terminal Posts improve strength, durability and appearance.


Anchor Fence
Nation-wide Sales and Service Requesting
Visibility Unlimited

It's human nature to look when there's something to see and a modern, open-view front makes it easy for shoppers to look right into the store. Immediately, the attractive, well-lighted interior is revealed with its friendly atmosphere and tempting array of things to buy.

There's selling power in modern design and the store architect is keenly aware of it. He artfully combines beauty with utility and makes it pay off in increased patronage. We are privileged to work with the country's outstanding designers and to execute their ideas in complete Brasco Construction.

The Brasco line of unified members, in stainless steel or aluminum, blends harmoniously with either new or standard building materials and beautifies the entire front. Engineered for complete safety and expertly fabricated, Brasco meets every demand for modern, trouble-proof store front construction, easily installed.

BRASCO MANUFACTURING CO.

HARVEY  ·  (Chicago Suburb)  ·  ILLINOIS

National Distribution Assures Effective Installation

MARCH 1947
(Continued from page 140)

connection, a flue connection, and an oil supply. Once the heater has been lighted and adjusted, the automatic thermostat control takes over. Appliance Div., Rheem Manufacturing Co., 570 Lexington Ave., New York 22, N.Y.

SELLING AIDS

Sliding trays of transparent plastic are now being offered for better visual presentation of store merchandise in stock. These storage trays may be recessed in wall fixtures, used in groups as special built-in showcase units, or supported by brackets on counter tops. Trays, which are of one-piece construction with sliding covers, vary in size from 9 by 12 by 2 1/2 in. to 11 1/2 by 15 by 4 in. Advantages claimed are compact storage, eye-appeal, and more rapid selection of merchandise. Merchandise Presentation, Inc., 42 East 51st St., New York 22, N.Y.

MOVIE PROJECTOR

The new Victor Model 60 sound projector for 16 mm. films comes in a luggage-type aluminum carrying case. The machine is a multi-purpose unit for either sound or silent film and may be used with a record player or as a public address system. It includes reverse operation and has the advantage of still picture projection. Among new features are a lever device for quick centering of the picture on the screen, and separate controls for both bass and treble, giving better sound control. Victor Animatograph Corp., Davenport, Iowa.

FLUORESCENTS

A packaged line of commercial fluorescent lighting equipment has recently been announced under the name of Light-in-Line. Bases and enclosures for 16 fixture combinations are packaged individually to cover a full range of lighting intensities. All can be mounted by the four standard mounting methods. Among models are the 2-light 40-watt, 2-light 100-watt, 4-light 40 watt, and 4-light 100-watt combinations. Moe-Bridges Corp., Sheboygan, Wis.

STANDARDS

A list of 864 standards approved for the national use of industry has recently been released by American Standards Association. In each case they represent general agreement on the part of maker, seller, and user groups as to the best current industrial practice. For an index of these standards, write American Standards Association, 70 E. 45th St.

---

KINNEAR ROLLING DOORS

Advantages of Kinnear Rolling Doors are quickly apparent: by rising vertically into a compact coil above the lintel, they save floor, wall and ceiling space... open out of reach of damage by wind or vehicles... require no "clearance" area for operation... clear the entire doorway when opened. And Kinnear's famous interlocking-steel slat construction (proved by 50 years of satisfactory performance) assures extra protection against fire, intrusion, accidental damage, and the elements. Any size, for old or new construction. Write!

THE KINNEAR MANUFACTURING CO.
Factories: 1860-80 Fields Ave., Columbus 16, O. 1742 Yosemite Ave., San Francisco 24, Cal.

Office and Agents
In All Principal Cities

KINNEAR PRODUCTS CORP.

A. W. FABER'S CASTELL LOCKTITE

the professional man's refill drawing pencil which embraces 7 exclusive features

CLEAN—No need to touch the lead and get graphite particles or dust on your fingers or smudges on your drawing. Hold point to paper, press button, lead can be adjusted by upward or downward movement of hand.

NON-BREAKAGE—An unusually fine precision collet supports the graded lead all the way around and prevents it from breaking or snapping off under greater than normal pressure during the painting or sanding process or when in actual use.

NON-SLIPPAGE—The same precision collet holds the lead in a bulldog grip. Lead positively cannot slide back into the holder.

QUICK—Just press your thumb on the button release. Eliminates two-hand screwing or turning operation.

STURDY—Finest quality plastic and metal used in every part, exposed metal parts gold plated, all expertly assembled.

BALANCED—Every part is well proportioned giving you a drawing instrument which is perfectly balanced in your hand.

GUARANTEED—If your Castell Locktite does not perform perfectly, return it to your dealer or to us for exchange immediately.

Holds all standard makes of refill graded drawing and retouching leads. We recommend WINNER Techno-TONE 1930.

only $1 at your Art Supply House, Drawing Material Dealer, Blue Printer, Stationer or Photographic Supply Shop.
47 Years of Heating System Management at Notre Dame

A great university is, among other things, big business, receiving and disbursing large sums, maintaining and operating a large physical and mechanical plant. Consistent, competent management of the physical plant, such as is revealed by the record of heating system management at Notre Dame, is essential to success.

The first proposal for a Webster Vacuum System of Steam Heating at the University of Notre Dame was dated June 27, 1899—the installation, containing 16,913 sq. ft. of radiation, was completed in 1900. This great heating system now totals 320,000 sq. ft. of radiation—twenty times the original size.

Currently, a Webster Moderator Control System is being installed, designed to (a) balance distribution so that all radiators may be partially heated in mild weather, (b) apply automatic control-by-the-weather to the entire installation, (c) centralize all manual control to 38 zones at a single operating station.

How well these results are accomplished must be the subject of a later report. In the meantime, our experience is available to help you in your heating system management problems.

Special 38-zone Central Control Panel for Notre Dame Moderator System Installation.

WEBSTER HEATING SYSTEMS

(Continued from page 114)

VALVES
Pressure Reducing Valves (Bulletin 461). Engineering, operating and maintenance data on pressure reducing valves, differential valves and overflow valves for steam, air or gas services. Gives large cross-sectional and external views of each class of regulator, together with construction details, features such as stellited seat rings, and complete tables of pressure ranges, sizes and capacities. Selection table. 20 pp., illus. Leslie Co., 57 Delafield Ave., Lyndhurst, N. J.

WINDOWS

LITERATURE REQUESTED

The following individuals and firms request manufacturers' literature:
Morton J. Berman, Design Engineer, 718 S. 58th St., Philadelphia 43, Penn.
Marvin E. DeFeo, Architect, 411 E. Houston Ave., Marshall, Texas.
John B. Dadd, Architect, 17 Alhambra Arcade, St. Petersburg, Fla.
Dr. Frank L. Ehasz, Consulting Engineer, 7 West 44th St., New York 18.
Jesse M. Elliott, 1410 N. Main St., Danville, Va.
Paul D. Gilbert, Planning Division, Drake Construction Corp., 45 Crosby St., New York 12, N. Y.
Fred W. Gould, Civil and Structural Engineer, 1271 Bender Ave., Cleveland 12, Ohio.
Sidney Kalin, Residential and Commercial Designer and Draftsman, 2505 W. Cold Spring Lane, Baltimore 15, Md.
H. Russell Kenyon, Architect, 107 Union Ave., Mt. Vernon, N. Y.
Alfred W. Kirschenbaum, Architect-Engineer, 53 W. Jackson Blvd., Chicago 4, Ill.
Edward J. Mutruex, Instructor in Design, School of Architecture, Washington University, St. Louis 5, Mo.
Samuel B. Settle, Consulting Engineer, Union Trust Bldg., Parkersburg, W. Va.
Charles Vail, Office Engineer, Creole Petroleum Corp., Apartado 889, Caracas, Venezuela.

The RESTORATION of COLONIAL WILLIAMSBURG

A Reprint of the December, 1935 Issue of
ARCHITECTURAL RECORD
104 pages, bound in cloth
$2.00 per copy

The Colonial Williamsburg Number of ARCHITECTURAL RECORD—issue of December 1935—was sold out soon after publication but the entire editorial contents have been reprinted and bound in permanent book form with blue cloth covers.

Many thousands of these Williamsburg reprints have been sold but the demand continues unabated.

ARCHITECTURAL RECORD
119 W. 40th Street, New York, N. Y.
Enclosed is $……for which send copies of your reprint, The Restoration of Colonial Williamsburg, bound in cloth, at $2.00 per copy.

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Address………………
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The Patter of Little Feet... is **TOUGH** on School Floors!

Active youngsters! Whole armies of them—sliding, running, scuffing and marching over school floors the country over. What an unfailing test this is of any floor's ability to withstand a consistently heavy flood of traffic over the years—without showing visible signs of wear!

Tile-Tex is a tough, durable asphalt tile that's especially suited to the heavy punishment given a floor by normal school traffic. It has been floor-tested in hundreds of schools everywhere... for as many as twenty years... without visible signs of wear. No wonder so many architects specify Tile-Tex for today's schools.

Furthermore, Tile-Tex is available in bright, clean, permanent colors, (both plain and marbleized), plus a wide range of accessories, including feature strips and custom-made inserts—assuring architects complete freedom of floor design in classrooms or corridors, cafeteria, auditorium or any special room.

Tile-Tex is easy to clean and resistant to stains and scars. Its resilient slip-safe surface reduces floor noise and provides firm footing. And it stays down when installed over concrete floors at or below grade.

Ask us to have an experienced Tile-Tex field man call on you with the approved Tile-Tex Contractor in your city. They will be glad to help you with any of your floor problems. The Tile-Tex Company, Inc., Chicago Heights, Illinois.
Look at the facts! There's no speculation, no wishful thinking when you specify Gas. It is the preferred fuel in 21 million out of 24 million urban homes and the odds are still growing. Naturally there must be a valid reason why people continue to want Gas . . . particularly in this period of change and progress. The answer is conclusive. Gas is progressive! It is modern from every angle, in every way. Gas as a fuel is clean, fast, easy to regulate. Gas service is economical—and even more important—always available. Gas appliances combine the most in satisfaction with the least in work. And that goes for water-heating, refrigeration, house heating and air-conditioning as well as for cooking. Remember, more clients will want your services tomorrow—if you give them what they want with Gas, today!

BUILD FOR TOMORROW....

The kitchen that's 10 years ahead of the times

Even the shape of this latest "New Freedom Gas Kitchen" is news! It introduces the modified semi-circular plan—for greater efficiency in a smaller space. Notice how near the refrigerator is to the range . . . and how few steps need be taken to put the food on the table and then clear the dirty dishes to the sink. Yet for all of its work-saving compactness, this kitchen has so much light and air, it would be an ideal "little workshop."
Better from your point of view, too!

Feature for feature, modern Gas ranges cost less than any other type. They look smarter, last longer without expensive overhauls, are simpler to install, require no costly utility connections. In fact, you couldn’t find a cooking appliance that guarantees more overall satisfaction both from your own and your customers’ point of view!

See your local Gas Company for complete technical details on new Gas ranges and all other Gas appliances.

WITH WHAT THEY WANT TODAY!

The range that’s 10 ways better for cooking

One look at this list and it’s easy to see why the new automatic Gas range is more wanted than ever—by more women than ever!

1. It’s clock-controlled... Gas comes on... cooks complete oven meal... turns itself off (even when nobody’s home).
2. It’s faster... burners light instantly to high-boil.
3. It’s flexible... flame not limited to 3, 5 or 7 heats—but can be turned to precisely perfect heat for every cooking job.
4. It’s cleaner... burners set to prevent clogging from spill-overs.
5. It’s cooler... no lingering heat long after top-burners are off.
6. It’s economical... “click simmer” on every burner saves fuel and food.
7. It bakes better... oven is ventilated so that heat circulates evenly on every level.
8. It really broils... meats look and taste better when quick-seared and flavor-sealed by real flame.
9. It’s “custom-built” for every family... only Gas ranges come in such a wide selection of styles (4, 6 or 8 burners—high or low broiler—with or without griddle—and many other “choice” features).
10. It’s tagged “CP”... the buying guide that assures every woman of a Gas range built to industry-wide standards of safety, modernity and cooking excellence.

GAS

AMERICAN GAS ASSOCIATION

THE WONDER FLAME THAT COOLS AS WELL AS HEATS

MARCH 1947
AT THE COLONNADES • ENTERPRISE OIL BURNERS

FOR REAL HEATING COMFORT

THE COLONNADES... Overlooking New York Harbor and the Atlantic Ocean from its beautiful location in the Borough of Brooklyn, has long been noted for its attractive charm... for gracious and comfortable living.

The answer to constant and uniform heating for these spacious apartments was found more than ten years ago when two ENTERPRISE Oil Burners were installed. Poret & Posner, owners and operators of The Colonnades, have this to say about these ENTERPRISE BURNERS: "... have been operating all these years very efficiently and to our entire satisfaction, in this building as well as in others we own and operate."

ENTERPRISE Oil Burners
COMBUSTION EQUIPMENT DIVISION OF ENTERPRISE ENGINE & FOUNDRY CO.
SAN FRANCISCO 10, CALIF.

This is but one of thousands of installations which continue to support the evidence of exceptional ENTERPRISE burner service and performance. Whether your requirements call for economical heating of apartment houses, hotels, commercial buildings, theaters, hospitals—or for production processes in industrial plants—plan now to investigate ENTERPRISE Oil Burners. Furnished in Manual, Semi-Automatic and Fully-Automatic Models in combinations to meet your specific requirements.

Write today for Catalog No. 47
HAS YOUR BUILDING THIS RAINCOAT?

One bad storm may result in costly damage to an unprotected building and contents. To protect a building and beautify it is now a simple process with Waterfoil. Unlike any other protective coating, Waterfoil is made of irreversible inorganic gels which bond both chemically and physically to masonry surfaces. By helping to impede water penetration into concrete, brick or stucco walls, Waterfoil also prevents reinforcing bar rust, spalling or disintegration. Don’t wait for the gale. Write for the literature today — it’s important to all building maintenance.

A. C. HORN COMPANY, Inc.
Established 1897 — 50th Anniversary
Manufacturers of Materials for Building Maintenance and Construction
43-36 Tenth Street, Long Island City 1, N. Y.
Houston, Texas
Chicago, Illinois
San Francisco, Calif.
Toronto, Canada

MARCH 1947
"ME, A LANDLORD, GETTING FAN MAIL?"

It all started when I installed an automatic Otis Elevator.

"Yes sir, this new Otis Elevator is the smartest investment I ever made.

"My tenants are getting the most reliable elevator service obtainable — elevators they can run when the attendant is off duty ... cars that stop level with the landing ... doors that open and close automatically.

"I know this is going to keep my tenants from wanting to move into newer apartments."
reasons why you should specify

WIRE AND CABLE INSULATION MADE FROM

GEON plastics

for industrial, domestic, manufacturing and utilities wiring

Resistance to ozone, wear, sunlight, water, chemicals, and most other normally destructive factors

14 colors including NEMA standards

More conductors in a given space

Excellent electrical properties

Thin coating of insulation

Ease of handling

Easy stripping

Light weight

Be sure to specify wire or cable insulated with GEON in order to get all these advantages. Or, for information regarding special applications please write Department N-3, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. In Canada: Kitchener, Ont.

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F. GOODRICH COMPANY

GEON polyvinyl materials • HYCAR American rubber • KRISTON thermosetting resins • GOOD-RITE brand chemicals

MARCH 1947
Why limit yourself to ordinary types of flooring? Shown here are a few examples of residential Medusa White Terrazzo—the flooring that sets a new decorative note in the modern home. Here is the material that gives you the advantage of custom design with unlimited possibilities of patterns and a wide variety of colors.

**IDEAL FOR RADIANT HEATING**

Due to its marble chip content, terrazzo is ideal for floor type radiant heating. The installation of terrazzo over heating pipes—buried in the concrete directly below—not only assures warm floors but makes practical ones too. Terrazzo provides sanitary, vermin proof, enduring surfaces that require no costly maintenance—that clean easily with soap and water.

**MEDUSA WHITE ASSURES EXACT REPRODUCTIONS**

When you specify terrazzo, be certain your exact desires of patterns and colors can be carried out easily. Specify Medusa White Portland Cement—the cement with the successful 40 year service record for outstanding terrazzo. Pure non-staining Medusa White as a matrix, sets forth the colored marble chips in such a manner to give maximum color values in the finished floor. And, by adding color pigments to Medusa White, delicate shades for blending or contrasting backgrounds can be obtained.

Plan now for residential terrazzo—in recreation rooms, hallways, vestibules, porches, bathrooms, and wherever rich beauty and long service qualities are desired. Specify Medusa White—the original white portland cement for better terrazzo—rich in beauty—long in wear.

**MEDUSA PORTLAND CEMENT COMPANY**

1015 Midland Building • Department "H" • Cleveland 15, Ohio

Also made by Medusa Products Co. of Canada, Ltd., Paris, Ontario
THE Improved
HERRING-HALL-MARVIN
CIRCULAR Night Depository

Even on banking days, your bank is closed 75% of the time. And, now, the 5-day banking week—with your customers lacking banking facilities Saturdays, Sundays and Holidays all through the year.

No wonder the big chains favor banks with night depositories. They need—all your customers need—round-the-clock deposit service. It frees them of worry over loss by fire, burglary, holdup. It ties them more closely to your bank, and it is one of the best new business builders a soundly managed bank may employ. It is today's "must"—if your bank is to be truly modern.


Bank 5-Day Week
Not Before Mar. 8

It will be at least March 8 before Massachusetts banks go on the five-day week authorized by a law signed yesterday by Gov. Bradford.

A spokesman for the Massachusetts Bankers Ass'n said today a subcommittee of the Boston Clearing House Ass'n had recommended the law be put into effect on that date but that the matter would come before the Clearing House executive committee at a meeting Monday.

The law contains an emergency preamble making it effective immediately, but banking officials said the complexities of the change-over, involving notifying depositors, would make it impossible to cut the Saturday workday at once.

HERRING-HALL-MARVIN SAFE CO.

Manufacturers of Bank Vault Equipment - Bank Counters - Tellers' Buses and Lockers - Safe Deposit Boxes - Night Depositories - Bank and Office Safes
BUILDERS OF THE UNITED STATES SILVER STORAGE VAULTS AT WEST POINT
Famous Silent Refrigerator now offers

1947 Servel Gas Refrigerator brings tenants and owners
great new features, plus silence and dependability

Yes, the great new 1947 Servel Gas Refrigerator is even finer than the Servels that have already won the praises of more than 2,000,000 families. The 1947 Servel contains a big Frozen Food Locker that stores up to 60 packages of frozen foods. This famous refrigerator offers moist cold and dry cold for garden vegetables and meats. A specially designed flexible interior provides extra roominess. Plastic Coated shelves are rust- and scratch-resistant. All these new conveniences—plus Servel’s permanent silence—are the reasons tenants will say, “There’s nothing to match the 1947 Servel!”

Owners, too, will appreciate the lasting dependability and economy of the 1947 Servel. They know from experience that the Gas Refrigerator not only stays on the job year in and year out, but its low operating cost remains low for the life of the refrigerator. That’s because the freezing system of the 1947 Servel, like that of every previous Gas Refrigerator, has no moving parts to wear or break down.

These exclusive advantages—new, convenient features, plus famous silence and dependability—explain why you’re sure to please tenants and owners when you specify the 1947 Servel for the new apartment buildings and homes you design, build or manage. Plan now to provide outlets for Gas Refrigeration in your current designs and construction work. For specification data on the great 1947 Servel Gas Refrigerator, consult Sweet’s Catalog. Or write today to Servel, Inc., Evansville 20, Indiana.

WHY SERVEL STAYS SILENT,
LASTS LONGER

Different from all others, the Servel Gas Refrigerator has no moving parts in its freezing system. It operates on the continuous absorption principle of refrigeration. In a Servel, the refrigerant is hermetically sealed in a set of vessels connected by pipes. A tiny gas flame is applied to the lowest vessel. As a result of the evaporation properties of the refrigerant and the law of gravity, ice forms in an upper vessel. No machinery—motor, valves, pumps and compressors—is needed. That’s why Servel has no moving parts to get noisy, none to wear...

why it stays silent, lasts longer.
more convenience ... more value

BIG FROZEN FOOD LOCKER
Up to 60 packages of frozen meats, poultry, vegetables, fruits, biscuits can be stored in Servel's big convenient Frozen Food Locker. It helps housewives save hours of shopping time, plan new and delightful menus in every season.

MOIST COLD, DRY COLD
Servel's big dew-action fresheners are ideal for keeping garden vegetables and fruits. Salad greens actually crisp up, perishables stay safe and appetizing. And fresh meats keep tender for days in the Servel meat keeper.

FLEXIBLE INTERIOR
The 1947 Servel offers an amazingly practical flexible interior. For extra roominess, shelves are adjustable to eleven positions. And they're Plastic Coated for the utmost in rust- and scratch-resistance.

The GAS Refrigerator

MARCH 1947
Since its introduction eight years ago, Atlas Duraplastic air-entraining portland cement has proved its versatility—its adaptability to almost every type of concrete work. The pictures show a few of its varied uses.

Duraplastic cement makes the concrete more plastic, more uniform and more durable. Its use requires no unusual changes in methods—just the same good workmanship and careful supervision regularly employed. It complies with ASTM and Federal specifications and sells at the same price as regular cement.

Send for further information.
Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N.Y.

OFFICES: Albany, Birmingham, Boston, Chicago, Cleveland, Dayton, Des Moines, Duluth, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.
No fuss—
No feathers—
No fiction—

Just facts for architects!

Lending libraries aren’t stocked with American Blower Bulletins and we don’t expect any of them to make the “Best Seller” list.

But you will find American Blower Bulletins packed with authoritative data on air handling, air conditioning, heating, cooling, ventilating and allied subjects. These Bulletins have been compiled by American Blower engineers after extensive research. We believe they will save you both time and trouble.

Drop us a card today. Your selection of the five Bulletins shown, or any of our many other Bulletins will be sent promptly without charge or obligation.

**Axial Fans**
Vanexial and Tabexial Fans for heating, ventilating, process work and other air handling needs. This bulletin gives complete details on construction, component parts and installation of both fans together with all necessary tables and data. Also friction and duct sizing charts.

[Bulletin No. B 813]

**Attic Fans**
This method of comfort cooling by means of nature-conditioned air has been widely accepted by architects and homeowners as an ideal means for attaining low-cost hot-weather comfort. This 4-page bulletin contains complete data on the equipment necessary to do a highly satisfactory job in any home.

[Bulletin No. 2214]

**Humidifiers, Dehumidifiers and Air Washers**
A complete line of equipment for public buildings, schools, theaters, hotels, apartments, and industry, wherever humidifying, dehumidifying, and air washing are required. Bulletin No. 3623 contains the necessary data, tables and charts to accurately figure and specify this equipment.

[Bulletin No. 3623]

**Type V Fans (with Cast Iron Housings)**
These units can be used to advantage in air handling work, wherever corrosion and erosion resisting qualities are desired. All housing parts coming in contact with air or gases are cast iron. A variety of arrangements to meet all types of jobs. Capacities from 156 to 8,000 CFM.

[Bulletin No. 1810]

**Industrial Heaters**
For factories, garages, hangars, warehouses, machine shops, and other difficult heating jobs. Seven sizes—79,000 to 1,630,000 BTU per hour. Four arrangements—for wall, horizontal, inverted, and floor installation. Bulletin contains all the data necessary to figure even the most difficult heating problems.

[Bulletin No. 5917]

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**American Blower**

American Blower Corporation

Detroit 32, Michigan

In Canada: Canadian Sirocco Co., Ltd., Windsor, Ont.

Division of American Radiator & Standard Sanitary Corporation

MARCH 1947
The reason lies in the amount of engineering knowledge and experience reflected in the design of the units which provide air distribution at the vital point of delivery. Take our new Aerofuse Multi-Louver Damper, for example. This is not a very complex piece of equipment as such things go. "Anybody can make one" you may say. Yet we have spent more time and effort getting this unit "just right" than many of our much more intricate products. As a result, when you specify Aerofuse ceiling diffusers with multi-louver dampers you can be sure that this much of your system will do PERFEKTLY the job it is intended to do... deliver the proper amount of air as you want it and where you want it, evenly distributed and without drafts.

TUTTLE & BAILEY
NEW BRITAIN, CONNECTICUT
This front of L·O·F Polished Plate Glass says "welcome" in clear, bright tones. The view of the interior creates an impression of pleasant efficiency.

TWA TURNS AN OPEN FACE TO ITS PUBLIC

Count on this modern business to use up-to-date architectural treatment in its new Chicago ticket office.

Designed by Architects Skidmore, Owings & Merrill of Chicago for Trans World Airline, this beautiful "store" uses glass to let people see in—to invite them in. Its pleasant atmosphere owes much to intelligent use of glass. It is another example of a Visual Front—the "open" type front that puts more appeal, more zest and more selling power into business places. Libbey-Owens-Ford Glass Co., 6537 Nicholas Bldg., Toledo 3, Ohio.

A This stairway is smart in more than appearance. The transparent panels of glass are L·O·F Tuf-lex*—plate glass that is tempered for greater resistance to impact.

B Light from the "egg crate" ceiling streams through diffusing panels of Flutex Patterned Glass. Note how the fixtures extend through the front to provide a lighted marquee.


LIBBEY · OWENS · FORD a Great Name in GLASS
ONLY THE SPEAKMAN ANYSTREAM

is three different showers in one. A turn of the lever and it delivers

REGULAR SPRAY for relaxation... NEEDLEPOINT SPRAY for stimulation...
or FLOOD SPRAY for a no-splash rinse. No wonder it's
the choice of architects for installations calling for the latest refinements.

Like all Speakman plumbing fixtures, the Anstream Shower Head is rugged in construction. In the FLOOD position, the Anstream is self-cleaning thus eliminating a major source of trouble and maintenance expense. With all Speakman Showers and Fixtures, repairs may be made quickly and inexpensively, when—after long service—normal wear takes place.

Speakman Showers and Fixtures are distributed nationally through plumbing supply dealers and plumbing contractors.

SPEAKMAN

SHOWERS AND FIXTURES
"The best in brass since 1869"
SPEAKMAN COMPANY, WILMINGTON 99, DELAWARE
This is important to the man about to select refrigeration or air conditioning equipment:

90 percent Flexibility with Pre-Rotation Vane Control ...exclusive with York Allis-Chalmers Turbo Compressor

The Pre-Rotation Vanes illustrated are an exclusive design feature, and provide extreme operating flexibility to meet varying load demands down to as little as 10 percent of full load. Adjustment of the vanes varies the angle at which the refrigerant gas enters the impeller wheel, and imparts a "pre-rotation" to the gas, thus changing the performance characteristics of the compressor resulting in stabilized performance over this extreme capacity range. In effect, each position of the vanes puts a different compressor "on the line."

This is but one of the many features of the complete York line of refrigeration and air conditioning products.

York Corporation, York, Penna.

This TOO is important to the man about to select refrigeration or air conditioning equipment

York experience and York engineering assistance are available where you are, to complement York mechanical design advancements and the complete range of York equipment.

In the New York Area, for example, District Manager Christensen has a corps of seventeen sales engineers assigned to service York customers in this district. Their practical and technical assistance is available to you, whether you are planning, purchasing, installing or operating refrigeration and air conditioning installations.

A. CHRISTENSEN District Manager

Assisted by:
R. K. Serfass, Sales Manager
W. Allen
A. N. Barnes
H. W. Coon
A. J. Cordrey
J. G. Doebrich
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J. E. Fitzsimmons
J. W. Floreth
C. P. Foley
R. F. Fox
W. S. Galazzi
L. J. Jacobson
J. Krsnak
E. Lilygren
E. Spencer
C. Weigand
Where Does the Architect Come In?

When this set of photographs recently appeared in the ARCHITECTURAL RECORD, a history was given of the plant as a COMMUNITY REFRIGERATION CENTER. An exciting story it made, too.

However, some readers may be wondering just where the Architect comes into the picture.

Well, the City Ice Company plans to extend its main plant until it covers the entire city block. This block faces the Civic Center in Gainesville, Ga. Other buildings around the Center—the Post Office, the City Hall and the Federal Building—are all of marble. The new entrance to the ice plant will also be of marble. The enlargement will include new offices, refrigeration and fixture sales and display rooms, a lobby, entrance to the locker rooms, and a new food processing room.

This Ice Company has nine plants, and operates 22 Frick refrigerating machines. Another example of the fact that "the users of Frick machines make money". Where economy and dependability both count, there you'll find Frick Refrigeration. It's preferred for air conditioning, ice making, and all other commercial cooling work.
MUCH DEPENDS ON THESE DEVICES—

Of prime importance in a school, theater, auditorium, church, or industrial building is the safety of the occupants. Without it, beauty and comfort and convenience become valueless.

A vital part of a building's safety is safe exit—the positive assurance that the occupants can get out quickly and easily, no matter what the emergency.

That is a problem which can be settled easily, simply, and at surprisingly low cost. It is merely a matter of insisting that every exit door be equipped with the world's top quality fire and panic exit devices...the fast, sure, safe devices of drop-forged bronze which carry the name

Von Duprin

VON DUPRIN DIVISION, VONNEGUT HARDWARE CO., INDIANAPOLIS, IND.

MARCH 1947
HEATING EFFICIENCY AT ITS BEST!

HYDROTHERM

AUTOMATIC GAS-FIRED BOILERS FOR HOT WATER HEATED HOMES

2HW3
280 sq. ft.
installed radiation
Weight: 234 lbs.
Size: 15"x26"x26"

BETTER THAN
80% THERMAL EFFICIENCY!

Engineers rate it the most efficient gas-fired boiler with the HIGHEST BTU output for its size and weight. It has a higher capacity in ratio to size and weight than ever before attained. HYDROTHERM'S fully patented unique construction induces a rapid and positive circulation of water through the heating system, usually without the aid of pumps. It can be economically installed by one man. Compact and smartly jacketed for room or basement. HYDROTHERM is available in standard ratings to cover heating requirements of small homes, multiple family and apartment houses.

SCIENTIFICALLY DESIGNED HEAT TRANSFER UNITS AND IMPROVED WATER CIRCUIT

1. TUBES - scientifically overlapped ribbed tubes and uniquely staggered section arrangement means more heat transfer surface is surrounded by the radiant flame.

2. WATER CIRCUIT - zig-zag flow of water thru horizontal sections prevents undesirable internal circulation within absorption unit. Generates positive pressure which assures rapid and continuous circulation of hot water thru entire heating system.

3. HEAT TRANSFER - deep ribbed, staggered, horizontal sections of patented design provide a tremendous heat absorbing surface in a minimum of space. Assures highest fuel economy.

WRITE FOR NEW ENGINEERING BOOKLET AR3

The easy, practical way to cover insulated surfaces

Sewing the canvas—or applying metal strapping—these time-consuming operations are no longer necessary. The canvas, asbestos, fiberglass or other non-conductor can be securely bonded with Arabol Lagging Adhesive.

This adhesive dries in 4 to 6 hours; leaves a sized finish on the lagging material... the job is completed. No paint need be used on this sized finish, unless you prefer to add one coat for appearance. Maintenance is simplified—grease, oil, soot and dirt wash off easily. And the adhesive is vermin-proof... fire-retardant, too.

Arabol Lagging Adhesive has successfully passed rigorous tests by independent laboratories. The results show that it retains its adhesive powers despite exposure to extreme temperatures, to immersion in water and to live steam.

Write us today for detailed facts and figures. Don't place open specifications on lagging work—ask for Arabol Lagging Adhesive. You can depend on it to fill your most exacting requirements for both utility and appearance. Also, ask about our cork cement for adhering cork to cork on refrigerator lines.

THE ARABOL MANUFACTURING CO.
Executive Offices: 110 East 42nd St., New York 17, N. Y.
CHICAGO—54th Ave. & 18th St. SAN FRANCISCO—30 Sterling St.
Branches in Principal Cities. Factories in Brooklyn, Cicero, San Francisco.

Adhesives... ARABOL!
The new plastic armor for plywood... **Kimpreg**

**ATTRACTION, PERMANENT.** Kimpreg fused with Plywood gives America this remarkable material. It's smooth and flint-like—weather-proof, long-wearing, and washable. There is greater strength, greater water resistance in plywood surfaced with Kimpreg!

**STRONG, STAINPROOF.** Kimpreg is a thermosetting phenolic resin sheet to be fused with plywood in manufacturing. Abrasion-resistant, scuff-proof, mar-resistant, impervious to alcohol, it's a material with amazing possibilities.

**ADAPTABLE, ECONOMICAL.** Kimpreg + Plywood is ideal for bars, kitchen counters, concrete forms—or wherever a durable surface is required. Combines the multiple advantages of plastic with the basic economy and workability of plywood. For complete information, mail the coupon today.

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

- **Name:**
- **Firm:**
- **Type of Business:**
- **Address:**
- **City, Zone, State:**

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*MARCH 1947*
For Beauty and Low Maintenance

MINWAX WOOD FINISHES
— the original penetrative stainwax finish

Whether used in large developments where the problems of maintenance cost and tenant satisfaction are pre-eminent, or in the individual home, Minwax Wood Finishes satisfactorily answer all requirements.

Their special gums, oils and waxes penetrate the surface of the wood—toughening it and increasing its ability to withstand daily use. This resistance to wear is dramatically revealed by the record of service in Hillside Homes (above) where the floors have been in use without resurfacing since 1935. Worn spots can readily be restored — without visible laps — by a simple application of more of the original material. With ordinary maintenance, the finish actually improves with age—in beauty as well as serviceability.

For further information, see Sweet's — or write Minwax Company, Inc., Dept. A3, 11 West 42nd Street, New York 18, N. Y.

SEAPORCEL—the-beautifier is also Seaporcel—the-salesmaker. Not only for your clientele, but for you.

What more natural prospect-question than "Who did that job?" And what more natural self-promise than "That's for me, too"?

See how Seaporcel becomes the background of perfection for letters of distinction in the front portrayed here. See how Seaporcel, in turquoise terra cotta, blends daringly, dramatically, adroitly, with white metal, Kasota stone—yes, even wood, utilized in the upright fins as shown in the above photo.

With unlimited color range, from delicate pastels to jet black ... with numerous finishes, including gloss, semi-matte, terra cotta, granite and limestone ... Seaporcel offers you a material at once versatile, economical, and enduring. For Seaporcel is porcelain enamel de luxe—not painted, but fused to steel for lasting newness.

Get The Facts—And You'll Get SEAPORCEL

WRITE TODAY for bulletins, showing applications and current jobs.
Inquiries from interested agents invited; there are a few areas in which Seaporcel Porcelain Metals, Inc., desires representation.

SEAPORCEL PORCELAIN METALS, INC.
Formerly Porcelain Metals, Inc.
28-02 Borden Ave., Long Island City 1, N. Y.

Seaporcel (Reg. U.S. Pat. Off.) is a ceramic fused into its metal base at 1500 degrees F.
Modine Convector Radiation gives you these two heating principles blended into one!

1. **RADIANT HEATING**
   Mild, radiant heat in just enough quantity to offset heat loss from window areas — that's what those arrows represent, coming from the Modine Convector Panel below the window. To this we add...

2. **CONVECTION HEATING**
   Warmed air circulated by Convection Heating. Hot water or steam passes through copper heating unit which draws cooler, floor-line air into bottom of convector where it's warmed, rises and then passes out through grille.

**Result:** Dependable new heating comfort for moderate cost homes and apartments ... distinctive room charm and cleanliness without unsightly radiators! Yes, Modine Convector Radiation provides a modern, blended heating system for modern living — a heating system that makes possible individual room control — that responds almost instantly to sensitive automatic controls — that gives you gentle air circulation without the use of moving parts that wear out. If you're planning to build a new home or apartment, specify Modine Convector Radiation ... look for Modine's representative in the "Where-to-Buy-it" section of your phone book ... write for complete information and free descriptive literature! MODINE MANUFACTURING CO., 1773 Racine Street, Racine, Wisconsin.
The demand for KIMBERLY Carbo-Weld DRAWING PENCILS

is proof of Kimberly "Built-in-Quality"—the quality incorporated in their strong, smooth leads, uniform grading and the Carbo-Weld process of binding wood and lead so securely that point breakage is cut to a minimum on the drawing board.

Regardless of the work, planning, rendering, tracing, etc., Kimberlys will do the job better—and for exceedingly fine blueprint reproduction, use the Tracing Degrees.

THE 22 ACCURATE DEGREES ARE 6B to 9H TRACING 1-2-3-4 and EXTRA B for layout.

Write Department R for a free trial pencil, ask for your favorite degree. Buy them from your dealer.

HOMASOTE COMPANY, Trenton 3, N. J.

ARCHITECTURAL RECORD
New Hotel in North Dakota has OPEN-WEB JOISTS

It's the 160-room Dacotah Hotel—recently built at Grand Forks, N. D. This six-story building has a structural-steel framework. The first floor is of reinforced-concrete construction with Bethlehem Open-Web Steel Joists installed in the other floors. A total of 110 tons of these joists were used.

Because they eliminate shrinking, sagging, and squeaky floors, as well as cracks between floors and baseboards, Bethlehem Open-Web Joists are ideal for every type of light-occupancy structure. When used with concrete floor-slab and plaster ceiling, they provide a floor construction that is effective for at least two hours in preventing the spread of fire.

Bethlehem Open-Web Joists mean fast construction, too, because they arrive at the job completely fabricated, and can thus be installed without falsework. Two men can handle the standard-type joist, merely a light gin pole being needed to raise the Longspan type of joists into place. Bethlehem Open-Web Joist also speed the work of other trades, for they facilitate the placing of pipes, conduits, and ducts.

We've a compact folder on Bethlehem Open-Web Joists (Folder 522) which you'll find both interesting and helpful. It contains design tables and detail drawings, plus specifications for open-web joist construction. Ask the nearest Bethlehem district office to send you a copy. Or, if you prefer, drop a line to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

MARCH 1947
This BALANCE is in your favor

Simply designed air diffuser blends with interior

Provides complete air conditioning comfort by eliminating drafts, noise, hot or cold spots.

In addition to their unobtrusive appearance, Kno-Draft Adjustable Air Diffusers are specified for installations like the one pictured here in the offices of Schwarzenbach-Huber Co. because they combine all the advantages of scientific air diffusion plus adjustable features which assure positive air pattern control.

Kno-Draft adjustability increases efficiency and economy.

Diffusers improve occupant comfort by delivering conditioned air gently and thoroughly. Drafts and noise so often experienced with grilles, registers and other louvered devices are eliminated. Economy is increased. Diffusers handle greater air velocities and greater temperature differentials. This means less air volume, smaller, simpler ducts and fewer outlets.

To those advantages, Kno-Draft adds adjustment features that increase both the efficiency and economy of the air diffusion principle and a simplicity of design that blends with any decor.

Kno-Draft Direction Adjustment assures positive air pattern control by affording any angle of air discharge from vertical to horizontal that is needed to accommodate ceiling heights, individual or seasonal requirements. Volume adjustment is made with a patented damper that regulates the amount of air without affecting the velocity or diffusion pattern.

Send for FREE handbook that simplifies the selection and installation of diffusers. Write Dept. S-12 on your letterhead.

W. B. CONNOR ENGINEERING CORP.
AIR DIFFUSION AIR PURIFICATION AIR RECOVERY
112 East 32nd Street New York 16, New York
IN CANADA: Douglas Engineering Co., Ltd., 1405 Bishop St., Montreal 25, P.Q.

THE selection of Ellison Balanced Doors not only enhances the appearance of any entrance—but they are so pivoted top and bottom that wind pressures are equalized as the door is opened, permitting them to move easily and quickly to one side of the door opening. Counter-balanced they require only a slight spring action to close.

This effortless action facilitates traffic flow. Since the doors swing on a shorter radius, their projection is reduced 40 to 45%. Made in bronze, aluminum and stainless steel as complete prefabricated units, ready to install, including door, frames, mullions, trim, saddles and necessary hardware. Available in a wide range of standard sizes and types or built to your specifications.

Write for our new 12-page booklet giving additional specifications and illustrating types, or see our section in SWEET'S

ELLISON BRONZE CO., INC.
JAMESTOWN, NEW YORK

Ellison
BALANCED DOORS

Breuninger Apartments
601 19th Street N.W., Washington, D.C.
Distinguished Hosts Choose
The Stone of Distinction . . .

* These are only a few of the continent’s many fine hotels and athletic clubs built of Indiana Limestone.

Our Technical Division, with a century’s experience in all applications of the nation’s most frequently specified building stone, offers you personal counsel on questions unanswered by our Sweet’s File Catalog.

You are invited to forward plans and specifications to the Institute for competitive cost estimates by our member companies.

INDIANA LIMESTONE INSTITUTE
P.O. BOX 471 • BEDFORD, INDIANA

MARCH 1947
It is never too early to plan the KITCHEN

Nor too soon to call in Van Range

Van's century of kitchen engineering experience will assure

- Efficient Layout
- Modern Design
- Precision Manufacture
- Economical Operation

Early planning is essential

To the conveniences you have designed into your clients' new homes and to provide the safety of another exit in case of fire, add outside cellar doors — permanent Bilco copper-steel outside cellar bulkhead doors — and earn their lasting thanks.

Bilco bulkheads are made in three standard sizes, or any special size, to fit neatly and unobtrusively into your plans. They cost no more to start with than old-fashioned wooden doors, far less in the long run. Rrotproof, sagproof and rustproof Bilco doors never need repair or replacement. Their flange construction and sliding bolt lock keep Bilco doors weatherproof and tamperproof.

Many thousands already in use.

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M A R C H 1947
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The Truscon Planning Board says, "Right now, February 15, our shipping schedule read like this: Industrial Piloted and Projected Windows, 18 weeks; Architectural Projected Windows, 18 weeks; Open Truss Steel Joists, 8 to 10 weeks; Ferroborb Steeldeck, 18 weeks; Metal Lath Products contingent upon our ability to secure rare materials; Bank Vault Reinforcing, 8 to 10 weeks. Our suggestion is that you keep in close touch with your Truscon representative and work with him on your specifications."

Six Different Truscon Steel Building Products in this Job

The Armstrong Furnace Company has just completed a fine new building in Columbus, Ohio, for the greatly expanded manufacture of its warm air furnaces. This well-designed structure is just about 100% steel, as far as the practical application of this material goes. R. W. Setterlin & Sons were the contractors. Truscon fabricated the structural steel members to exact specifications. Truscon "O-T" Open Truss Steel Joists permitted fire-resistant ceiling construction, especially since it was used with Truscon trucks move very close to the inside wall of the building and any part of the window ventilator extending inward would create a potential accident risk. Thus the projected window with the ventilator projecting outward eliminates this hazard. Efficient erection and completed enclosure of the structure was speeded considerably by the precision-made units fabricated in the Truscon factory, each item being made to fit without on-the-job reinstalling.

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Truscon Structural Steel in Armstrong Plant

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Truscon Adds New Metal Lath Accessories

Within the past few weeks Truscon has added equipment to fabricate short and wide flange bulb nose corner beads, special base screens, picture mold and casings. The addition of these products will enable Truscon to furnish a more complete line of Metal Lath Accessories. More about this later.

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This new sash (Pittco De Luxe 12C) was designed to meet demands for a plain, rectangular sash to harmonize with certain modern store front designs. It is styled to blend with and complement the many mouldings in the Pittco De Luxe line. It is finished with the same satin-smooth richness which has made De Luxe so pleasing to architects and owners alike. And its extruded method of manufacture assures rugged strength and a clear, sharp profile. Pittco De Luxe offers a wide variety of impressive combinations for top quality installations.

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