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IS LASTING PROTECTION

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circulars on this new P-A-X are available on application to our general offices, or to
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STROWGER DIAL SYSTEMS

The Architectural Record, August, 1929
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In the modern spirit

No longer can a structure be merely a useful ungraceful mass of masonry. Today's architecture must be as expressive of good taste, as discerningly up to the minute, as disreputably handsome as today's motor-cars, today's furniture, today's art.

Steel is everywhere making possible a greater refinement in building design. Its immense strength and permanent security permit a wider scope of imagination in the search for means to express the modern spirit... not only in great airship docks, tall skyscrapers and huge bridges, but in small apartment houses and dwellings as well.

This is an era of steel construction... because no other building material is so adaptable... so durable... so suited to present needs and future possibilities. Steel has great strength without excessive bulk and weight. It permits lighter foundations and larger interiors with less conspicuous construction members.

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For this reason, too . . .

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RAYMOND CONCRETE PILE COMPANY
NEW YORK: 140 Cedar St. CHICAGO: 111 West Monroe St.
The New Ribbed STEELTEX takes plaster out of the replacement group

The reinforcing principle of STEELTEX is well known to architects, contractors, and builders through over a quarter of a million installations. It has won definite approval from building experts, because it puts plaster walls and ceilings in the class of one-cost building items, wherever it is used.

Now we announce a new, perfected form of this tried and tested material.

The rigidity and workability of the NEW RIBBED STEELTEX is due to its new stiffening rib, an exclusive STEELTEX feature. This rib makes the sheets straight, flat and rigid. For this reason the NEW RIBBED STEELTEX is easy to install by the average lather, giving the plasterer a level, rigid, trouble-free job on which to work, and assuring uniform, good results.

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uniform thickness, continuously reinforced by a network of completely embedded steel. No special skill is required.

National Steel Fabric Company
Pittsburgh Steel Co.
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8. New-size sheets—28½" x 50"—make this a one-man lath.
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the New Ribbed Steeltex
Made by the makers of Steeltex for Stucco, Steeltex for Brick or stone veneer, and Steeltex for Floors and Roofs.

The Architectural Record, August, 1929
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THE VOGUE SWINGS TO NATURAL INTERIORS

TIDEWATER RED CYPRESS
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in a competition just held by the Royal Institute of British Architects for the planning and design of a parking garage was given to a design using d'Humy Motoramps. There were 45 entries.

"The London Times" states that Mr. Thomas Spencer's first-prize-winning plan (which used d'Humy Motoramps) "was the only detailed practical one submitted."

Ramp Buildings Corporation

Garage Engineers and Consultants

21 East 40th Street . . . . . . New York, N. Y.
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THE SANYMETAL PRODUCTS COMPANY
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STEEL OFFICE & TOILET PARTITIONS

The Architectural Record, August, 1929
The new Y. W. C. A. Building, Cincinnati, Ohio. An interesting construction feature is the use of Carey Elastite Asphalt Plank, applied over a section of the Carey Built-up roof—an ideal roof promenade.

—Rendigs, Panzer & Martin, Architects, Cincinnati, Ohio. F. B. & A. Ware Associate Architects, New York.

It wears "plus-quality" protection overhead

The overhead covering of the new Y.W.C.A. Building, Cincinnati, is the kind of protection that architects have specified for hundreds of other splendid structures everywhere. A Carey Built-up Roof.

Multi-layered, Multi-sealed. Made of the toughest fibred felts, and asphalts carefully blended at Carey's own factory by Carey's own experts in roofing technique. Weather-tight, long-lastingly dependable. The roof that has been tested in every climate and under all conceivable conditions—the roof that asks no favors of weather and time.

Write us for full particulars—also for your copy of our Architects' Specification Book.

THE PHILIP CAREY COMPANY
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Hampden Hall
(PITTSBURGH)
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RCA Centralized Radio

A single antenna will provide radio reception for 55 apartments in the new Hampden Hall, now being erected in Pittsburgh.

The owners have solved the antenna problem by adopting RCA Centralized Radio.

In each apartment there will be a wall outlet, connected with the central antenna, enabling the tenant to connect his own receiver, pick out his favorite stations and programs—and get better reception than if he had his own individual aerial.

RCA Centralized Radio is being adopted by hotel and apartment house builders as necessary equipment in modern residence construction. It is available in two principal forms:

1. A single antenna connected with a distribution system to radio receivers in rooms throughout the building. As many as 80 radio sets of different makes can be independently operated from this common antenna, by plugging into wall outlets—and far more satisfactorily than by the use of individual antennae. Additional central antennae may be installed, if required, for additional groups of 80 receivers.

2. Centralized radio receiving equipment to distribute broadcast programs to as many as 3000 rooms throughout a building. Equipment may be installed to transmit a single program, or to make available the choice of programs from two, three or four broadcasting stations.

The first method is ideally adapted for apartment houses, dormitories, office buildings, etc., where tenants desire to have their own receiving sets. It does away with the unsightly multiplicity of individual aerials, and the inconvenience of connecting them with distant rooms.

The second method is particularly designed for hotels, hospitals, sanitariums, schools, passenger ships, etc., where transient occupants of rooms may enjoy radio programs from loudspeakers or headsets, all operated from a central receiving instrument.

Descriptive pamphlets of these two systems, and of the special apparatus designed for them, are available for architects, builders and building owners.

The Engineering Products Division, Radio-victor Corporation of America, at any District Office named below, will answer inquiries, and prepare plans and estimates for installations of any size.
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Sturdy hinges with long supporting leaves, positive door holders, and a Kee Bolt—that is Stanley Garage Hardware Set No. 1780½.

As original designers of garage door hardware in complete sets, Stanley offers this improved equipment with the assurance that it answers the requirements of today's garage construction.

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Full information on the No. 1780½ as well as other sets of Stanley Garage Hardware will be sent upon request

THE STANLEY WORKS
New Britain, Conn.

STANLEY HARDWARE

The Architectural Record, August, 1929
PAINTS • VARNISHES
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16

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Perhaps our architectural representative can assist you. He will bring you complete information...and offer to you the services of our modern, well-informed architectural department. Just let us know the most convenient time.

THE ARCO COMPANY, CLEVELAND, OHIO
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The Architectural Record, August, 1929
Good Taste Invades the Kitchen

With the renaissance of color in American life riotous kitchens became the rule. No color was too intense, no contrasts too violent.

This phase is rapidly giving place, however, to a keener perception of color harmony; an universal good taste. Its requirements are met by ARCHITECTURAL TILE with a line of colors, many of them exclusive, which has been painstakingly worked out to provide the subtle harmonies, quiet tones, that can be made for real beauty in the application of tile.

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ARCHITECTURAL TILE CO.

Rooms 207-8, Architects Building
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1404 Tribune Tower    1600 E. Jefferson Ave.  644 Martin Bldg.        NEW JERSEY
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Westinghouse Electric Elevator Company
How BRYANT GAS HEATING Simplifies Basement Planning

A modern kitchen, with the Bryant Boiler "built-in" under the clock

I. Bryant Gas Heating employs a minimum of floor space. No fuel bin or storage tank is required. No space is needed for tools, brooms, oil cans, refuse cans or other accessories.

II. The Boiler can be placed without regard to driveway—there are no fuel deliveries.

III. The latest Bryant is wholly enclosed. No controls are exposed to tampering. It can be placed, without screening, in passageway or play room.

IV. A Bryant can be located in laundry or kitchen without partitions. There is no soot, grease or grime.

V. If a basement "entertainment studio" is contemplated, the streamline design and handsome crystalline finish harmonizes with any setting.

VI. A Bryant can save its cost by reducing the excavation required and partitions eliminated.

With BRYANT AUTOMATIC GAS HEATING your client can throw away his furnace room tools—eliminate fuel storage—make a single match his winter's kindling—tend furnace by the calendar, not by the clock—live in a warm house, sleep in a cool one—laugh at blizzards—and enjoy winter.

THE BRYANT HEATER & MANUFACTURING COMPANY
17866 St. Clair Avenue
Cleveland, Ohio

The Architectural Record, August, 1929
DESIGNING the decoration of a public building... never an easy nut to crack! For the foyer of a theatre differs so radically from the lodge-room of a religious order. But when the hard shell of the problem is broken, how sweet the meat of result!

And never more sweet than when you can play with adaptable materials. Custom-built floors of cork, for instance. Then you can personalize the interior. Swirling lines and rainbowed color of theatre foyer are harmonized by a hand-tailored cork floor that guides the decoration of walls, ceiling, and furnishings. The lodge-room's somber simplicity is lightened, brightened by floor color and pattern that says "just right."

Armstrong's Linotile gives you all this freedom in floor decoration. Not just a matter of selecting the suitable color... although there are thirty marble designs and plain colors. Not merely a question of picking the preferred tile size... although there are eighteen standard sizes, both square and oblong. But distinctly a floor of your own designing. Distinctly different for theatre or lodge—or for library, bank, school, hotel, hospital, home.

And Armstrong's Linotile becomes even a greater decorative factor when you consider its practical qualities. Warm, springy, non-slippery. So quiet, too. Permanent. Easy to clean. Complete information is given in "Custom-Built Floors of Cork." Armstrong Cork Company, Custom Floors Department, Lancaster, Pennsylvania.

Armstrong's Custom Floors

LINOTILE \ CORK TILE
ANNOUNCING

AN ARCHITECTURAL EDUCATIONAL CAMPAIGN

AND SMALL HOMES COMPETITION

SPONSORED BY MIDWEST CHAPTERS OF THE
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MONOLITH PORTLAND MIDWEST COMPANY

A WIDE range of appropriate small home designs... a keener
appreciation of the value of architectural services by home
builders... these are the primary purposes that prompt the an­
nouncement of this unique competition. Prizes are offered for the
most suitable small house designs with separate cash awards for
educational articles on the importance and value of architectural
services in designing and building a home.

The contest is open to architects, architectural draftsmen, students
and any one qualified by training and experience in architectural
design and rendering. Entrants may compete for either the general
prize, the special awards, or for both.

THE PRIZES

First Prize: A three months independent trip abroad, first class, with all ex­
penses paid, and $500 cash for tips and incidentals.

Second Prize: A two months trip abroad on tour or regular cruise with all
expenses paid and $300 in cash for tips and incidentals.

Third Prize: A three weeks vacation trip anywhere in the United States, in­
cluding expenses and $100 in cash for incidentals.

Ten Honorable Mentions: $50.00 each, in addition to a special leather copy
of Richard S. Requa's latest work "Old World Inspiration for American
Architecture."

Special Prizes: First, $100 in cash; four Honorable Mentions of $50 each.

The contest is to be judged by a committee of architects, selected
by Midwest Chapters of the American Institute of Architects.
Richard S. Requa, A. I. A., Professional Advisor.

Closing Date... October 15th, 1929

All entries must be received at 650 17th Street, Denver, Colo­
rado not later than October 15, 1929. Programs fully outlining all
requirements and conditions of the contest have been prepared.
You can secure a copy by writing or wiring...

MONOLITH
PORTLAND MIDWEST
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The throb of presses is the pulse-beat of the nation. Great newspapers, like great men, are vital to the strength and growth of our national life. They speak to the world with the Voice of America . . . they guard the liberties we cherish . . . they serve us all!

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Vermont Marble Company — Proctor, Vermont
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VERMONT MARBLE

The Architectural Record, August, 1929
An interesting use of Masterbuilt Colored Concrete floors is to be seen in the Truly Warner Hat Store, Kansas City. The walk outside the store is red concrete, colored and hardened by Master Builders Colormix, distinguishing the store from any other in the block.

Inside the store, a pleasing effect in the same material carries out the color theme as a background for the display of hats.

Colormix and Colored Metalicron now contain Omicron, the new ingredient which gives concrete greater strength and protection from disintegration or corrosive wear.

The Merchandising Appeal of Colored Concrete Floors

In the construction of the modern department store and specialty shop, the selection of the right floor often affords a merchandising advantage.

Here Master Builders Colored Concrete Hardners—Colormix, Dycrome, colored Metalicron—offer a variety of interesting color effects, whether the purpose of the floor coloring is to attract attention or to blend inconspicuously with the merchandise display. Beauty and greater strength become a permanent part of the floor at an initial cost but slightly higher than plain concrete. The finish is extremely hard, tile-like in gloss, with "built-in" color that eliminates painting and up-keep expense.

These floors are obtained by the use of Master Builders Colormix, colored Metalicron or Dycrome, whichever is most adaptable to the specific job. If your files are incomplete on any of these products, write for specifications and data, or phone the nearest Master Builders office.

THE MASTER BUILDERS COMPANY, Cleveland, Ohio
Factories in Cleveland, Ohio
Buffalo, N.Y. and Irvington, N.J.

Colored Masterbuilt Floors
HAR DENE D D U S T - P R O O F C O N C R E T E
Milcor® products preserve the Charm of Graceful Interiors

Milcor® offers three metal building materials designed especially to protect and preserve the lines of graceful interiors. They are Stay-Rib Metal Lath . . . Expansion Corner Bead . . . and Expansion Metal Casing. Each of these products has a definite place in modern, fire-safe construction. And each of these products has certain structural advantages which make them particularly practical.

Stay-Rib Metal Lath is a perfected plaster base . . . It represents the highest development of expanded metal design. Reinforced by longitudinal ribs, Stay-Rib Metal Lath has great strength and rigidity without excess bulk and weight. Its mesh is so formed, that in plastering, slight pressure of the trowel completely imbeds it. A maximum protection against plaster cracks. Expansion Corner Bead and Casing have patented wings of expanded metal. When used over Stay-Rib Metal Lath, the plaster keys through the mesh of both the casing or corner bead and the lath . . . making these vulnerable points the strongest parts of the wall.

Specify Milcor products for permanence . . . The "Milcor Manual" will be sent you upon request.

Milwaukee Corrugating Company
1407 Burnham Street
Milwaukee, Wis.
LONG hours at his desk after the others had gone—necessitated because he had no privacy . . . people talking, always talking . . . typewriters clanging and banging . . . shuffling feet . . . ringing 'phones. Pandemonium. And frazzled nerves!

Partitions, he knew, would solve the problem . . . yet he hated to close down a couple of weeks to have the place remodeled. He couldn't close—not with business as it was!

Then he consulted an architect who told him of Hauserman. A 'phone call to their nearest branch brought quick results—walls sprang up around him while he worked. Sturdy, attractive offices took form.

Privacy at last! His work is better done. His nerves are back to normal. And the whole force has been vastly more efficient since Hauserman brought order from chaos.

For 13 years Hauserman has specialized in the steel partition field until today more Hauserman Partitions are being installed than all other makes combined. There are five types, many colors and finishes from which to choose. Direct factory branches throughout the land render efficient planning and construction service.

THE E. F. HAUSERMAN COMPANY
Partition Specialists
6874 Grant Avenue Cleveland, Ohio
Direct Factory Branches in Thirteen Principal Cities—organized for service nationally
Newark, Philadelphia, Buffalo, Hartford, New York,
Boston, Chicago, Pittsburgh, Detroit, Cincinnati,
St. Louis, Washington, D. C., Cleveland

THE E. F. HAUSERMAN COMPANY, Cleveland, Ohio
Send me more information about partitions for

Name
Firm
Address

The Architectural Record, August, 1929
PARTITIONS of Structural Clay Tile have proven their excellence as barriers to fire, moisture, heat, cold and sound.

When properly built on fireproof floors they have never failed to stop the encroachment of destructive fires. There is a tile for every purpose whether the construction involves load-bearing partitions, fire resistive walls, corridor protection or elevator enclosures.

Such partitions are not only proof against flames, but are moisture-proof, and will not dissolve and wash out when subjected to fire hose, rain or flood. The cellular construction of tile units affords natural insulation against heat, cold, sound and moisture.

Tile partitions form an excellent plaster base. The adhesion of plaster on clay tile is better than on any other material, and there is real plaster economy in the use of this product because of its uniformity in size and shape.

Structural Clay Tile partitions add to the life of a building—offer effective, economical insurance on the investment. Such buildings, too, are healthier and more comfortable in which to live and work.

Write for bulletin giving standard specification for the use of Structural Clay Tile, or for other information regarding its characteristics and application.
Montclair Hotel - 541 Lexington Avenue, New York

Visibly this great hostelry is a criterion of the equipment which has entered into its greatness.... Distinguished, done in the modern manner, its architecture sets the standard of artisanship in its appointments, its utilities and conveniences.

Control of the lighting is vested in switches in keeping. Two thousand H & H Tumbler Switches No. 8601 — the switch with the "balanced movement." Quiet, easy-throw, smoothly sure.... the modern conception of service with a touch of elegance.
Rolscreens may be installed in all types of windows and window trim. These modern window screens are neat and unobtrusive carrying a stamp of good taste, harmonizing with beautiful windows.

Rolscreens are all metal construction.
- They roll up and down.
- Have electro-plated "AluminA" cloth woven to our own specifications.
- Are built in with the windows, permanent.
- Fully guaranteed.

These are only a few of the important features that have been responsible for the Rolscreen reputation for quality and convenient service.

Rolscreen Company, 272 Main Street, Pella, Iowa

The Architectural Record, August, 1929
F OR the convenience of all architects Wright Rubber Tile is illustrated in thirty colors, with complete data, in the 23rd Edition of Sweet's Architectural Catalog. This same information is also available to you in handy, file size pamphlet form. We will cheerfully mail you this pamphlet without cost or obligation. Write

Wright Rubber Products Co.
Racine, Wisconsin
RISING head and shoulders above its neighbors, the thirty-seven story Palmolive Building, Chicago, is one more of an impressive group of modern structures in which Pratt & Lambert Varnish Products were used to beautify and preserve the interior surfaces.

“61” Spraying Lacquer in both the Clear Gloss and Dull Finish, dries almost instantly — a big factor which architects, contractors and owners appreciate. This rich, durable, waterproof, nitrocellulose lacquer finish is ideal for large commercial buildings.

“61” Spraying Lacquer in Clear Gloss, Dull Finish and Enamel provides architects with a new, interesting material which is daily growing in favor.

Complete information on nitrocellulose lacquer and other architectural finishes will be sent you on request. Telephone or write the nearest Pratt & Lambert Architectural Service Department, as shown here.

PRATT & LAMBERT Inc., 108 Tonawanda St., Buffalo, N.Y. (Phone Delaware 6000); 3301 38th Ave., Long Island City, N.Y. (Phone Stillwell 5100); 320 West 26th St., Chicago, Ill. (Phone Victory 1800). Canada: 28 Courtwright St., Bridgeburg, Ontario.
THESE SMARTLY DESIGNED WINDOWS BRING AIRY GRACE TO YOUR INTERIORS


Lipton Residence Casements are delicately patterned. Slim cross-pieces divide the panes of glass, and add to that buoyant atmosphere so characteristic of the modern interior. This daintiness of design is carefully supported. The four outside borders of each window-leaf are butt-welded for extra strength.

These famous windows embody the most advanced improvements. The Lipton friction-hinge makes smooth operation a certainty, and prevents all window-chatter. Made of steel, Lipton Casements will not warp or stick. They open to borrow the summer breezes and shut snug against winter storms.

A generation from today, these Lipton Steel Windows will retain their modern character. The windows of tomorrow, they will help keep your jobs up to date. As modern as today’s newspaper, they have the ageless charm of all good ornament. You will find the details in your current edition of Sweet’s. David Lipton’s Sons Co., 2209 E. Allegheny Ave., Phila., Pa.


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**TRIMOUNT "SPECIAL" SOUND-PROOF DOORS**

We offer to architects a dependable, sound-proof door, suitable for their varied needs, including broadcasting studios, music schools, movie-talkie studios, hospitals, testing rooms, etc.

The door detailed above meets the most exacting requirements. It is strongly constructed to function as a sound-proof door should, appears well and is equipped with sturdy three point contact hardware. We can make prompt delivery.

*These Doors Can Be Fire-Proofed by the Pyrono Process*

**THE COMPOUND AND PYRONO DOOR CO., ST. JOSEPH, MICH.**

Manufacturers of Compound Key-Veneered Doors and Pyrono Asbestos Interlined Fire-Proof Doors

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The Architectural Record, August, 1929
Crittall Announces . . .

A NEW COMBINED SCREEN AND CASEMENT

Now, you are offered a screened casement that is ideal for apartment house use. Crittall is introducing Stanwin Casements with screens as an integral part.

The new Crittall Screened Casement is simple and sturdy in construction and design. It consists of a lower vertical sliding screen and an upper fixed screen, attached directly to the window on the inside.

Crittall Screens are quickly removable and easy to replace. They permit free access to open or close the casement—or to operate awnings. No hardware projects through the screen, which may be raised and lowered with the finger tips.

The cost of Crittall Screened Casements is remarkably reasonable. Write today for complete information or see our nearest representative.

CRITTALL CASEMENT WINDOW Co.
10942 Hern Avenue    Detroit, Michigan

CRITTALL
CASEMENTS

Stanwin Casements - Norman Casements - Universal Casements

The Architectural Record, August, 1929
Our Contribution
to the art of Heating & Ventilation

Six years ago when the Herman Nelson light weight, compact, indestructible radiator was placed on the market, it was immediately accepted as the greatest advance in the art of Heating and Ventilation in a generation. It has made possible heating and ventilation dependability and performance hitherto unattainable.

The Herman Nelson Wedge Core Radiator is an exclusive feature of all Herman Nelson Heating and Ventilating Products and accounts for their unequaled performance.

Herman Nelson Radiator Sections
for Blast Heating and Cooling

Indestructible, operating at any steam pressure from 1 to 150 lbs., non-corrosive and leak-proof. May be arranged in banks to solve any special problem of heating or cooling.
RADIATORS—yes, but out of sight—out of the way

No longer need space wasting radiators intrude upon beauty in the home, office, or monumental building. An Architect's ideal has been made a reality by the Herman Nelson Invisible Radiator.

Once walled in, this compact modern heating unit offers all the advantages of finest radiator heat, yet permits of unlimited scope in the arrangement of furniture or decorative scheme.

Indestructible, rust-proof and leak-proof, it never requires service. Even freezing does not harm it.

From the standpoint of comfort, sanitation or investment, the Herman Nelson Invisible Radiator represents a new heating standard. Let us send you our book and complete data. The Herman Nelson Corporation, Moline, Illinois.

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RADIAiOR
For Steam, Hot Water, Vapor or Vacuum Heating
“Gates by FISKE”

Many of America’s most beautiful estates are guarded by Fiske gates. Whenever enduring beauty and perfect workmanship in ornamental metal work are prerequisites, Fiske is the natural choice. This preference is based on more than 70 years of dependable performance. Fiske cooperates closely with Architects and Builders—following through designs submitted or offering the original suggestions of skilled artists.

J.W.Fiske IRON WORKS
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ESTABLISHED 1858

DECORATIVE RAILINGS; ENTRANCE GATES; GARDEN AND TERRACE FURNITURE; ORNAMENTAL FENCING (for every purpose, country estate or industrial usage); FOUNTAINS; SUN DIALS; WEATHER-VANES; LAMP BRACKETS; LANTERNS; SPIRAL STAIRS; STABLE FITTINGS; BRONZE TABLETS; ARCHITECTURAL BRONZE; ETC., ETC.

See Our Page in SWEET’S

SPECIALISTS IN ORNAMENTAL METAL WORK
The distinguished list of those who have chosen Elevator Entrances by Dahlstrom includes many who are governed by no consideration save that of QUALITY. It is highly significant that these are among the most enthusiastic advocates of Dahlstrom equipment. Dahlstrom built Elevator Entrances include all general types . . . the designs being beautifully executed by master craftsmen. Wide variety in finish and appointment is planned to express varying individuality. And the most exacting requirements may be fulfilled in the range of color combinations.


"No building is more fireproof than its doors and trim"

DAHLSTROM METALLIC DOOR CO.
402 BUFFALO STREET (Est. 1904) JAMESTOWN, N. Y.
New York Chicago Los Angeles Detroit Dallas
Reflecting the culture and traditions of Colonial days

The Rice-Tucker Entrance, shown, was designed by Samuel McIntyre of Salem, Massachusetts, who realized to an unusual degree the possibilities of the classic column and entablature. Erected in the year 1800, this entrance so faithfully reflects the culture and traditions of the Early American period, that it is today being preserved in the Essex Institute Gardens.

The entrance for each home you design can be practically a duplicate of the Rice-Tucker or one of many other famous doorways. In a new booklet, recently published by Hartmann-Sanders, there is shown a notable group of such entrances. There are also booklets displaying a complete line of garden equipment, as well as of famous Koll Lock-Joint Columns—the columns which cannot come apart. Write for the booklets. No charge.

HARTMANN-SANDERS
PERGOLAS  COLONIAL ENTRANCES  KOLL COLUMNS
ROSEARBORS  GARDEN EQUIPMENT

The Architectural Record, August, 1929

39
Georgia Marble, for a bank facade, need not cost more than ordinary stone... Frequently, when our engineers are consulted, they are able to suggest revisions in the stone details—such as simplifying the jointing or reducing the thickness of some of the blocks—which will permit the use of Georgia Marble without appreciably increasing the cost of the building... A book, "Examples of Bank Work in Georgia Marble," containing photographs and useful detail drawings, will be sent upon request.

The Georgia Marble Company • Tate • Georgia

The Architectural Record, August, 1929
You are not experimenting when you specify Wilson Partitions. They are far past the introductory stage—Profit by our experience of 50 years. When you specify Wilson Sectionfolds you run no risk of dissatisfaction such as might occur in the case of products which have not been tested and proven during long years of use.

Wilson Sectionfold Partitions are the product of the pioneers in the manufacture of partitions. Experiments, conducted over half a century have resulted in exclusive patented features which give you the utmost in durability, ease of operation and freedom from trouble.

Other outstanding advantages are as follows:
1. Prevent interference between participants of different games.
2. Avoid necessity for permanent hand ball and squash courts. Space for such courts can be sectioned off at will and then made part of the main gymnasium when desired.
3. May be equipped with slate blackboards for classroom use.
4. Small doors in partitions give easy access to all rooms.
5. Panelled differently on both sides, if desired, to harmonize with surroundings.
6. Adapted to old buildings as well as those under construction.
7. Perfect operation because of our own installation and service offices in principal cities.
8. Woodwork and hardware all products of our Factory and all of best quality obtainable.
9. Five year guarantee with each installation.

Get full details and illustrations showing how SECTIONFOLDS are increasing the gymnasium and classroom facilities of modern schools.

Send for Catalog No. 1

THE J. G. WILSON CORPORATION
11 East 38th Street New York City
Offices in all principal cities
Also Manufacturers of Rolling Partitions and School Wardrobes.
Catalogs on request.

OVER FIFTY YEARS IN BUSINESS
ANNOUNCING A NEW ALBERENE STONE PRODUCT

Decorative heather-brown tile inserts for stair-treads and landings...permanent, pleasing and safe, wet or dry.

There has been a definite demand for a material that would have the beauty of natural stone plus limitless durability.

Albertile, the new Alberene product, not only retains all the advantages of the natural quarried stone, but the process of treating it to a temperature of 1800° F. increases its abrasive quality many, many times, and also changes its color from blue-grey to a permanent heather-brown.

Used as stair-tread inserts or as a border on landings, or for tile flooring in grill-rooms, solariums, lobbies, etc., Albertiles insure satisfaction for the life of the structure, safety at all times, and freedom from upkeep costs.

The tile insert has the advantage that it can be purchased in standard sizes, and set without the necessity of securing stairway measurements which may cause delay in shipment of the material.

The brochure, "Architectural Alberene", shows Albertile in actual color, used in conjunction with other materials. Your request for it, or for a sample Albertile, will receive prompt attention.

ALBERENE STONE COMPANY
153 WEST 23rd STREET, NEW YORK


ALBERTILE
Tiles of Heat-treated Alberene Stone

The Architectural Record, August, 1929
General Offices, State Street Trust Company, Boston.
Large rectangles of cream and red grainings against a black field, with inner lines of cream. This floor expresses the feeling of stability achieved by the massive beams and columns, and the wide panelling.

Lasting Wear in a

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which permeate and bind the compound, giving it unusual toughness and density, insuring lasting resilience. Stedman Reinforced Rubber Tile does not spread, crack or chip. The surface is smooth, foot-sure and impervious.

Plan with Stedman. We design, plan and lay our floors, handling every detail, insuring excellent workmanship and lasting satisfaction. Write for our catalog—in color. Let us send a representative, qualified and competent to advise with you on any flooring problem.

STEDMAN PRODUCTS COMPANY
SOUTH BRAINTREE, MASSACHUSETTS

STEDMAN RUBBER TILE
Invisible Fibre Reinforcement gives lasting Wear and Beauty

The Architectural Record, August, 1929
The interior of The First National Bank of Boston building in Buenos Aires is finished in porphyry and green and yellow Uruguay marble. Its spacious dignity is in keeping with the character of this banking institution.

STONE & WEBSTER
ENGINEERING CORPORATION
Builders
New to the architectural profession

If not professionally, at least as individuals architects have had opportunities to follow the success of Piatt Oil-burning Water Heaters among local Piatt dealers and in homes and apartment houses. The Piatt Water Heater is listed as standard by Underwriters’ Laboratories.

This success was inevitable. The Piatt Principle of Combustion and the Piatt System of Control gives the owner an abundant supply of steaming hot water inexpensively — automatically — safely — relieving him from all considerations of operation except merely lighting. Installation is so simple that Piatt has the preference over any other water heater.

Write for arrangement layout.

MOTOR WHEEL CORPORATION
Heater Division
LANSING MICHIGAN

PIATT OIL BURNING APPLIANCES made by MOTOR WHEEL CORPORATION

The Architectural Record, August, 1929
The largest metal library equipment job in the world

Send for beautiful free book describing fully this complete Art Metal installation

75 CARLOADS—over 2,783,000 pounds—of Art Metal equipment were used in the magnificent new Free Library of Philadelphia. From the massive bronze entrance doors to the simplest fuse box, Art Metal has replaced wood.

Art Metal had the immense facilities to fill every specification... to execute every new design. For forty years Art Metal has been producing equipment for banks, libraries and public buildings. This installation shows the great value of that long experience. It is a signal example of Art Metal's ability to adapt its craftsmanship to the architect's design and the administration's purpose.

Write for this beautiful free 48-page book. In it you will find many examples of effective handling of library problems. Just address your request to Art Metal Construction Company, Jamestown, N. Y.
SANACOUSTIC sound-absorbing TILE

These simply applied ceiling tiles provide a complete substitute for metal lath and plaster on furred ceilings—plus the most efficient sound-absorbing finish on the market—plus an interior finish that is without fire hazard™—plus an interior finish with a maintenance economy comparable only to glass or glazed tile—plus attractive appearance, excellent light reflection and permanence.

Each Sanacoustic Tile consists of a perforated metal container which is filled with a fireproof sound-absorbing material.

Sanacoustic Tile supporting Tees may be wired directly to the furring channels—note the close-up above—no backing is required. Any 12 in. x 12 in., 12 in. x 24 in. or 24 in. x 24 in. tile may be instantly withdrawn from the supporting Tee to provide access to pipes, conduits or ducts in the furred space.

J-M Sanacoustic Tile is the ideal sound-absorbing finish for Offices, Bank working spaces, Hospitals, Restaurants, Schools and other rooms where it is desired to end excessive noise.

Sanacoustic Tile is a supplement to our standard Nashkote Acoustical Treatments. For further information about this Sanacoustic Sound-absorbing Tile, mail the coupon below—today.

* Underwriters' Laboratories Report No. 2197
A New Floodlight for a Thousand Uses.

A Low Priced Floodlight
Write for Bulletin 2134

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The Architectural Record, August, 1929
AN ACOUSTIC INSTALLATION of AKOUSTOLITH sound absorbing artificial stone and special colored ceramic and gold tile as a soffit course to constructive Guastavino Timbrel Tile ceiling vaults and ribs.
K-M Incinerators
For Residences, Apartments, Hotels, Offices

Three Unique Features Provide a Strong Draft Which Results in Quick Drying and Speedy, Thorough Combustion

THREE features of K-M Incinerators provide an unusually strong draft which in turn leads to the quick drying out of the refuse and speedy, thorough combustion:

—the blast furnace design of the combustion chamber.

—the two inch air space between the sides of the "suspended basket" grates and the fire brick side walls which permit the circulation of air and combustion on all sides as well as at the top of the rubbish.

—the two point draft which comes both thru the clean-out or fire door and thru the ash pit doors.

These features making for the efficient operation of K-M Incinerators together with their low cost and simplicity of design without bearing blocks, shakers, nuts, bolts, handles or moving parts of any kind have led to their widespread popularity in residential and apartment house construction from coast to coast.

Ask your local K-M distributor for complete details or write direct.

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Please send me complete details of your K-M Incinerator. □ I am a builder or □ I am a dealer.

Name
Address
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DO NOT make hospital corridors into speaking tubes that carry the conversation of every visitor into wards and private rooms. Cover the ceilings with Acoustex. Acoustex does its work efficiently; eliminates irritating echoes and reverberations. Yet not at the expense of appearance. Acoustex is a ceiling finish beautiful in itself. Its rich textured surface, tinted to your specifications, is at home in any surroundings. In more and more hospitals, offices, schools, and public buildings the ceilings of Acoustex prove that in acoustical design the trend is definitely decorative.

ACOUSTEX
The Decorative Sound Absorbent

ACOUSTEX offers you . . .
The most beautiful acoustical material on the market . . . Tiles from 6" x 12" to 12" x 24" and large sheets 2 feet wide and up to 10 feet in length . . . all one inch thick . . . Tinted to your specifications . . . Unusually high coefficient of sound absorption . . . Fire-resisting . . . Moisture-proof . . . Easily vacuum cleaned and redecorated . . . Tested through years of successful installations.

BOSTON ACOUSTICAL ENGINEERING DIVISION
of HOUSING COMPANY
40 CENTRAL STREET, BOSTON, MASS.
Acoustex erectors are located in principal cities. Should one not be available in your vicinity, write direct.
Backgrounds —

a word about

interior store design

One after another, successful merchants in widely diverse lines are learning that the atmosphere surrounding their merchandise has a tremendous influence on sales and profits. The conventional showcases of years ago are giving way to charming interiors, suggestive of the drawing rooms and libraries of homes in good taste. Today the advice of the store’s architect is eagerly sought on questions of attractive design, as well as efficient arrangement of space.

The two illustrations above are views of the interior of the new Fifth Avenue store of John David, one of America’s most successful retail clothiers. In this new store the efforts of designers, woodworkers, plasterers and interior decorators have been combined to produce an Early English background that has been enthusiastically approved by a most discriminating clientele.

The plaster effects throughout were designed and executed by Jacobson & Company. The ceiling in the overcoat room illustrated above is a faithful reproduction of the ceiling in Hardwick Hall, England, Circa 1620. The medallion over the crystal chandelier in the second floor oval reception hall, is Georgian in feeling. Both are motifs from the new Jacobson catalogue of authentic Plaster Ornament.

Jacobson & Company
239-241 East 44th Street
New York, N. Y.
WHY spend your valuable time accumulating data on the subject of church and community house flooring when this booklet — written by architects and representing many hours of research and analysis — gives you this information in graphic, readily accessible form? For your copy of this useful booklet write: — Architects' Service Department, Congoleum-Nairn Inc., Kearny, New Jersey.

FACTS YOU SHOULD KNOW ABOUT RESILIENT FLOORS IN CHURCHES

Copyright 1930, Congoleum-Nairn Inc.

(see next page)
A useful BOOK for ARCHITECTS

"FACTS . . . about Resilient Floors in Churches" is the title of a booklet written by architects who have made a survey and study of the special flooring requirements of this type of building. It represents the latest findings on various types of resilient flooring.

And most important of all: it analyzes the relative importance of quietness, comfort, durability, appearance, sanitation, for any given church or community house floor area—chancel, nave, aisles, vestibules, class-rooms, club-rooms, etc. And further—it sums up this information in a "quick-action" chart which makes all of it available to you at a glance.

This up-to-date, accurate and practical presentation of floor facts throws helpful light on the whole problem of church flooring.

Floor facts for other types of buildings are presented in the same impartial, concise fashion in other books of this series, which analyze floor problems in Schools, Hospitals, Stores, Offices, Libraries, Clubs and Hotels.

Other data offered by our Architectural Service Department includes: specifications and detail drawings on linoleum, cork-composition tile and cork carpet, descriptive booklets, etc. Write us for this and any other information you need on resilient floors.

CONGOLEUM-NAIRN Inc.
General Office: Kearny, N. J.
Authorized Contractors for Bonded Floors are located in principal cities

Here are illustrated just a few of the many color units available to architects using Bonded Floors of Sealed Linoleums and Sealed Trendlite Tiles.

BONDED FLOORS
Sealed Linoleum and Tile Backed by a Guaranty Bond

(see preceding page)
Plate glass finish... uniform quality...
simple... scientifically efficient.

AURORA is designed for doors and partitions in buildings where quality and
good taste are emphasized without sacrificing the proper illumination de-
manded by modern business.

Sample upon request.

MISSISSIPPI GLASS COMPANY

The Architectural Record, August, 1929
Why is the Taj Mahal so snowy white

SHAH JAHAN, that great Mogul emperor, pondered long over a fitting expression of his grief for the death of Mumtaz Mahal. A mausoleum, certainly, he thought—a magnificent and costly building—emblematic of the purity of a beloved wife—a gem of the golden age of Indian architecture, whose stainless and snowy perfection should typify his lost love for all time.

Here is a case where conception was followed through to execution—where the incandescent whiteness of one of the world's most perfect structures was faithfully realized in the fact just as it was planned in its creator's dream.

Many an architect, as he admires the snowy whiteness of his stucco model of a bank, towering office block, or a great urban apartment, is looking in his mind's eye at the finished building, in which no variation in tint of building stone shall be allowed to camouflage structural offsets and carving detail, or detract from the simple and sweeping vertical lines that distinguish the architecture of today.

To gain this end, the architect will avoid variety of shading in his stone. More than likely he will specify Select and Standard Buff Limestone—of which an unlimited supply is now available—for he is well acquainted with its absolutely uniform, creamy whiteness, essential to the proper execution of his plan as it is projected in the snowy model of stucco.

There is, we repeat, PLENTY of Select and Standard Buff. We have it. And we shall welcome correspondence with architects interested in the almost unique possibilities of this very beautiful uniformly creamy white stone.
ROCOCO detail is no substitute for design, nor is blank wall area always as practical as window space. As beauty lies in true utility, so window glass has become the jewel of architecture. Its increased use has added a rent producing, sales producing personality to structures.

"More and larger windows" is the keynote for better building . . . more livable interiors . . . more friendly exteriors. "The house with walls of glass" has come to stay and with it comes the need of using better glass.

“A·W·G” CLEAR-VISION Window Glass will enhance the appearance of any building in which it is used . . . Great tensile strength, exceptional flatness and uniform freedom from defects, these are some of the physical properties that have made “A·W·G” CLEAR-VISION Window Glass the preference of leading architects for more than a quarter of a century. Write for a copy of “The Sunny Side of the House.” It will interest your clients.

AMERICAN WINDOW GLASS COMPANY
World’s Largest Producer of Window Glass and maker of QUARTZ-LITE, the Ultra-Violet Ray Glass for Windows
1662 Farmers Bank Building, PITTSBURGH, PENNA.
Ohio White Finish

- the Plastic Lime

On the plasticimeter scale it tests from 225 to 285, an average plasticity of 255, exceeding by 55 points the A.S.T.M. specifications.

This extreme plasticity is of interest to the architect because it makes this lime ideal for employment in molded work and for texture finishes.

Of the half dozen good finishing limes available, make assurance doubly sure by having your plasterers use Ohio White Finish. They'll like it, too. Plasticity, in plasterer parlance, is "fatness." A fat lime goes on with less labor—covers more ground—assures better mechanical results.

Our book "Finishing Lime" should be in your file. May we send you a copy?

Ohio Hydrate & Supply Company
WOODVILLE, OHIO
Charter Member of the Finishing Lime Association of Ohio
Sweet's Architectural Catalog B1336

Our lime is marketed under four brand names—"Ohio"—"Buckeye"—"Woodville"—and "Hawk Spread." All of equal quality—all packed in distinctively marked Red Zig Zag Bags.
Hear ye! Hear ye!

Once a building is worthy of a slate roof it is worthy of a Sheldon Slate Roof

"The Roof of Eternal Beauty"

That costs no more and you are certain to obtain the Color, Pattern and Texture effect that is supremely befitting the design, tone and setting of the building. We respectfully offer you the expert service that has enabled many Architects to secure the Utmost in Roof Satisfaction for themselves and their clients.

F.C. SHELDON SLATE CO.
GENERAL OFFICES - GRANVILLE - N.Y.
BRANCHES IN PRINCIPAL CITIES
Alundum Aggregate in Terrazzo Meets These Twin Requirements

Silence. The structure of Alundum Aggregate is such that it prevents reverberation. This deadening of echoes results in a quietness much different from the harsh sound of footfalls on ordinary tile or terrazzo.

Safety. The fact that Alundum terrazzo is non-slip even when wet makes it especially suitable for hospitals because spilled liquids can cause no slipping hazard.

Close Harmony makes another record

The Thorp organization is proud of its capacity for teamwork with the architect and contractor. In the one case, this means intelligent following of instructions, expressed or implied, so that the architect's conception will be sympathetically reproduced. In the other, it means gauging production to the contractor's schedule, so that costly delays are avoided and work goes on, from start to finish, efficiently.

The Hodgson Building is a recent example of what can be done by three organizations working in "close harmony". Thorp's part was to furnish elevator enclosures and stair doors for the 12 floors. The structure was completed in record time without a single delay.

Specify THORP DOORS

The Architectural Record, August, 1929
Pipe which is not Permanent is the most costly investment on earth . . .

10
Comparative Reasons for
CAST IRON PIPE

1. Adapted to all buildings, regardless of height.
2. Unaffected by sewer gases; is rust resisting; non-corrosive.
3. Costs no more than inferior, short-life Pipe.
4. Indeterminate life for Building Drainage System.
5. Costs NOTHING to MAINTAIN.
6. Guaranteed by Manufacturers to last 100 years, or the life of any building in which used.
7. Lead-keyed hub insures a tight joint, under all conditions.
8. The only pipe not restricted as to use by City and State ordinances.
9. Many progressive municipalities REQUIRE it by ordinance.
10. Sixty-eight per cent of all buildings erected in 1928, of 20 stories and over, equipped with Cast Iron Pipe.

The Only Safe, Durable and Economical Pipe for

SOIL LINES
VENT LINES
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HOUSE DRAINS
HOUSE SEWERS
LEADER LINES
ROOF DRAINS

LEWIS TOWER BUILDING
Philadelphia
A. W. Hall, Architect
Wm. H. Gravell, Inc., Engineers

LEWIS TOWER BUILDING
BIRMINGHAM, ALABAMA

The Architectural Record, August, 1929
THERE'S A NATIONAL HEATING SYSTEM
FOR EVERY BUILDING NEED

The National Super-Smokeless Boiler
The Standard By Which All Other Smokeless Boilers Are Judged

Distinguished for its swirling scarlet flame, this boiler is scientifically designed for the efficient and smokeless combustion of all grades of fuel. The green coal cokes on the front of the grate—the distilled gases pass back to unite with pre-heated, proportioned, finely divided, and fully distributed secondary air, and are completely consumed. Schools, hospitals, all applications where cleanliness, efficiency, and simplicity are sought, know this boiler as the acknowledged leader in its field.

Each National Boiler is guaranteed—and the guarantee is endorsed by a Surety Bond, issued by The Fidelity and Casualty Company of New York. It covers three distinct guaranteed stipulations as to manufacture, design, performance, and replacement of any defective part. It assures customer satisfaction, protects against criticism or complaint.

The National Boiler Line, reduced and standardized, offers outstanding units in all desired types and sizes. Each National product is a leader in its field, has an unimpeachable record of proved performance in all types of structures. Each yields the quality of certain and sustained service that users of heating equipment are seeking today.

A line to us will bring you complete and helpful information.

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Executive Offices: 55 West 42nd Street, New York, N. Y.

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National Radiator Corporation

The Architectural Record, August 1929
Motors may LOOK alike, but they don't OPERATE the same. Certain jobs require Quiet Running motors, that is where Imperials fit in. Imperial Motors are especially built for jobs where noise cannot be tolerated. They are not only Quiet Running, but forty years of motor building has produced a durable, long wearing motor that will stand unbelievable punishment.

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"Special importance will be attached to the noiseless operation of all motors. Motors shall be tested for magnetic hum. When connected and erected in the manner approved by the manufacturer, these units shall cause no noise or vibration perceptible in any portion of the building outside the room in which they are placed. In the event of any motors causing objectionable noise, the contractor shall remove such machines and replace them with others that do not cause objectionable noise. The Architect shall decide whether the noise is objectionable or not."

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The Architectural Record, August, 1929
NATCO Flat Arch Floors afford great strength and fire safety along with minimum weight. They insure speedy construction winter or summer. This is due to the small amount of cementing materials used in the construction, which permits rapid setting and early removal of forms.

The centering is hung, saving lumber from damage, making it easily reclaimable, and keeping the lower floors clear for work by other trades. It need remain in place only one-tenth to one-fourth as long as is required under concrete construction.

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The End Construction Natco Flat Arch (illustrated) permits the skew to be cut to fit different elevation and sizes of beams. The End and Side Construction Natco Flat Arch gives better protection to the beams, but since each skew is made to fit a specific standard size, it cannot be adapted to others on the job.

Standard for years, the strength, dependability and complete satisfaction of Natco Flat Arch has been proven in thousands of important and substantial buildings all over the country. If you want specific information on any particular application—just write.

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The Architectural Record, August, 1929
THE wide parallel flanges of Carnegie Beams impart a new efficiency and greater economy to any type of construction involving the use of structural steel . . . Handbook "Carnegie Beam Sections" on request.
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The Architectural Record, August, 1929
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Our facilities enable us to prepare special designs wherever necessary, and to execute these in either cast iron or bronze.

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The Architectural Record, August, 1929
The first adaptation of the Modern Art Trend to Houses of Worship. Illustrated above are the Chancel and Choir of Main Auditorium, Chapel Seating, Chapel Chancel, the Pulpit and Detail of Vent Screen, all from the AMERICAN SEATING COMPANY Workrooms.

Rush, Endicott & Rush, Engineering Architects—Miss Adah Robinson, Designing Architect
Modern Floors for Modern Hospitals

The modern hospital floor must be sanitary, resilient, comfortable, quiet, durable, easy to maintain, attractive and cheerful in appearance.

"U. S." RUBBER TILE combines all of these essential features together with a home-like atmosphere. A superior flooring material for long and satisfactory service. Catalogue and full information furnished on request.

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What About the Core?

To be good and sound, for long keeping, an apple must have a healthy core. The buildings of tomorrow demand this same qualification—and the metal lath you specify for wall, ceiling and concrete floor construction must be of the highest grade. Kalman offers you an unusually high-quality line of metal lath to choose from. Specifying any one of them will give you the permanency that is demanded in improved, fire-safe construction.

KALMAN STEEL COMPANY

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The Architectural Record, August, 1929
American Steel & Wire Company

New York Central Railroad Building
at the Gate Way of America

Spot lighted not only by size, but by sheer beauty of proportions, the New York Central building will stand out among the sky shoudering giants of Mid-Manhattan.

In erecting this building the New York Central Railroad Company planned not only a worthy setting for the headquarters of its great transportation system, but the construction of the most modern type of office building for high class tenant occupancy.

Cinder Concrete floor arches reinforced with American Steel & Wire Company's Wire Fabric is the construction of the floor system in this mammoth building. Tests have shown that this is the strongest and most economical method of floor construction ever devised.

WIRE FABRIC
THE STEEL BACKBONE OF CONCRETE

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30 Church Street, New York

The Architectural Record, August, 1929
PARKERIZING has become so well and favorably known that architects are specifying it with full confidence in its substantial character. Mr. George D. Mason, President of the George D. Mason Company, Architects of Detroit's Seven-Million-Dollar Masonic Temple, says:

"In any combination of ornamental iron and stone work, the architect finds it necessary to consider the probable result of unsightly stains due to iron rust, and if economy is not a consideration bronze is frequently used. I believe that the Parker Process eliminates all cause for worry in this respect, and that it makes possible the use of iron with the same confidence as bronze. As no high heat is required in the Parker Process, the form and finish of iron work is not endangered; and furthermore, delicate modeling need not be filled up with any sort of painter's material.

"The adaptability of the process to work either assembled or unassembled makes possible a wide field in the metal industry, and it is my judgment that engineers and architects will find the Parker Process a sure means of protecting all forms of iron and steel from corrosion.

"My experience with the Parker Process, and my observation of its results, lead me to believe that this Process can be considered as one of the great commercial achievements of modern science.

"The foregoing is but a very conservative expression of the matter, considering the very great benefit assured the metal industries for all time to come."

For booklet entitled—"Architecture and Rust-Proofing" address the Parker Rust-Proof Co., Detroit, Mich.
MONSON LUSTRE roofing slate commends itself to the architect who is seeking the finest type of unfading black slate obtainable. This black slate has no equal for strength and lasting qualities and is far more beautiful than inferior materials. Monson Lustre slate is shipped direct from our quarries and therefore receives the strict supervision and inspection as our other slate.

This beautiful black slate does not cost much more to quarry, the freight charges are about the same and it does not cost any more to apply than inferior slate. Hence a truly high class roof may be specified without fear of seriously increasing the total appropriation for the building.

We have an unlimited supply of this exceptional slate rock and architects who specify Monson Lustre slate can be assured of having what they want when the buildings are ready for it.
Problem No. XVIII

A material is required which can be used in a colorful interior. It must form a contrasting and pleasing ensemble with a highly lacquered decorative ceiling. The material must be one which can be used both for floors and walls. It must be economical in installation and must be fire-resistant and water-proof.

The Problem Solved

The architect of the J. D. Hannah apartment in San Francisco met such a problem by using Zenitherm. His design called for a Loggia rich in contrasts of color and texture. For the floor he used Zenitherm in a basket weave design in Green, Gold and Red. For the walls the colors chosen were Pink, Gold and Drab, set both in ashlar and diagonal squares. The richness of the effect lies in the tri-toned colors and innate texture.

When laid over concrete or worn wooden floors Zenitherm is usually laid in a bedding compound. On walls it is nailed to the brown plaster coat or to furring. As the material is usually cut, to fit the pattern, at the factory, and is nailed in place by carpenters, the installation cost is not high.

Zenitherm does not support combustion. It can be scrubbed and hosed without harm. 21 standard colors are available. Special colors can be made to architect’s orders. Full information for specifying can be found on page A-337 of Sweet’s Catalogue.

President

Edward E. Young,
Architect.
New houses for old — at a profit

It was just a sad relic of the gay nineties, an old frame house that was out of date. No one wanted it. Even at the buyer's own price, it could not be sold.

Then it was remodeled. The exterior was transformed with stucco made with Atlas White Portland Cement. And immediately it was sold for $13,500, which amount carried a good profit over the cost of improvements.

There are twelve million other homes in this country that likewise can be modernized with profit to their owners. Complicated rebuilding operations are seldom needed. The cost is not necessarily high. In most localities a frame house can be overcoated with Atlas White stucco for about the cost of two paintings. With consequent added beauty, fire-safeness, insulation, and freedom from upkeep costs.

Architects who are serving clients on remodeling or modernizing will find that they can achieve the utmost in exterior charm by employing the limitless color and texture possibilities of stucco made with Atlas White Portland Cement.
On a Friday morning we received an order for 80' of 12" Ric-wiL Conduit complete, needed for a service connection to a theatre in Cleveland. The order was shipped in the afternoon and reached the job the next day.

1. At 12:10 Saturday night a section of Euclid Avenue was marked "No Road" and the excavation began.

2. By 4:00 o'clock Sunday morning the trench was dug and graded, Ric-wiL Base Drain Foundation, pipe supports and bottom halves of conduit were installed.

3. By 10:00 Sunday morning the 4" steam pipe was in and welded, insulation was all applied, top halves of conduit were installed and Loc-liP joints cemented.

4. Backfilling was complete at 3:45 o'clock, practically no delay being necessary on account of cement setting.

5. Paving was re-laid and the street opened again to traffic by 7 o'clock Sunday evening—less than 24 hours after work was started.

Only Ric-wiL design, the result of Ric-wiL engineering, made this speed possible. And this same engineering explains the fact that efficiency tests of Ric-wiL are averaging from 92% to 94% efficiency. You cannot afford to overlook this conduit for your next job.
Tiger FOOTPRINTS MAKE FINE BUILDINGS Finer

The eye of the intrepid explorer quickens as he crosses the trail of the Jungle Master, for he recognizes the distinguishing tread and knows the graceful speed which characterizes that imprint. The eyes of the world sparkle with admiration when the "Footprint" (texture and finish) of our symbolized Tiger is encountered in America's architectural trail, for here again is found unquestioned individuality and distinction.

Throughout the nation, the originators and creators of better buildings concede Tiger "Footprints" to be a mark of indisputable quality, which is always accorded favorable recognition. This evidence of desirability, expressed in popular public approval and the general acknowledgment by Craftsmen of the ease of application and other exceptional working qualities of Tiger Finishing Lime has founded the accepted conviction that "Tiger Footprints" Make Fine Buildings Finer.

The Famous Tiger FINISH

Serpentine Stipple
Another Attractive Tiger "Footprint"
An exceptionally fine finish for walls and ceilings of Banks, Theatres, Churches, Show-windows or massive rooms. There is practically no limit to the color combinations which can be used. Heavy sponge treatment—flattened.

The Kelley Island Lime & Transport Company
"World's Largest Producer of Lime."
Leader Building: Cleveland, Ohio

The Architectural Record, August, 1929

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50,000 sq. ft. of full one inch FLAX-LI-NUM protect the roof of the Cream of Wheat Building at Minneapolis. 50,000 sq. ft. of a material equal in insulating value to 27 inches of solid concrete. FLAX-LI-NUM is made in full one inch thickness. It is flexible in form to conform with the deck. It will not break, crack or tear. Where sheets butt together the flax fibres interlock forming a continuous sheet of insulation over the entire roof. Let us send you a copy of the FLAX-LI-NUM Manual containing valuable reference information.

FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minnesota

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A CORRECT BUILDING INSULATION AND SOUND CONTROL MATERIAL

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The Architectural Record, August, 1929
SLATE in itself—although a splendid roofing material established by hundreds of centuries of almost universal use—is no more a roof than a box of paints is a picture. Slate is a means of design—a way to secure extremely beautiful effects by skillful variation in tone and tint and by control of graduated sizes and exposure to weather. BRYN MAWR Vermont Slate is supplied in all desired tints, colors, sizes and thickness, for every variety of roofing, flagging and interior work—and comes from a firm that have been specialists in slate and its most effective use since 1884.

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PUT Reading Genuine Puddled Wrought Iron Pipe into your buildings. As far as you are concerned, the wrench that tightens the joints is the last wrench they need ever know. For far beyond the span of human life, these sturdy pipes will resist corrosion, strain, and vibration. But if the building be torn down, other wrenches may take these pipes apart only to reinstall them elsewhere!

Be sure you get pipe with the Reading name, date of manufacture, and cut-in spiral knurl mark on it.

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Through the office of

RICHARD D. KING

Fenestra Casements were used in the Casa Riviera Apartments

Over 1,500 Fenestra Casements have not only added to the exterior beauty of this new fourteen-story apartment building at Long Beach; but have contributed to its interior charm as well. One of the most imposing buildings on the Pacific Coast, this has quickly become a popular rendezvous of the elite.

In such a brilliant beach location, nothing but sunny, airy windows could satisfy architect and owners. Because of their narrow muntins and frames, Fenestra Casements admit all possible sunlight. The swing leaves open easily, 100% if desired, to take full advantage of the fresh beach air.

Fenestra Casements are rough-weather windows, too. They close snug-tight without sticking or warping and present a wide, flat, double overlapped weathering against continued storms. Other reasons for specifying Fenestra are: easy washing from within, inside screens that protect draperies, fire resistance. See the Fenestra Blue Book in Sweet’s Architectural Catalogue for further details.

NEW! OUTSTANDING! Fenestra Screen Casements, the latest development in steel windows, provide screens that fit FLAT against the window frame, thus eliminating the cost of wood trim. Swing leaves may be unlocked and opened or closed and locked without touching the screens in any way. Yet all screens may be removed or replaced in an instant when desired. Provision is made for the attachment of brackets accommodating both glass curtains and drapes. Standard sizes reduce the cost to little, if any, more than ordinary windows. Write for details.

DEtroit Steel Products Company
2285 East Grand Boulevard, Detroit, Mich.
Factories: Detroit, Mich., and Oakland, Calif.
Convenient Warehouse Stocks

Fenestra casement windows of steel

The Architectural Record, August, 1929
WHY IS
Each of These
Important Buildings
ROBRAS 20-20
Equipped?

Two years on the market and Robras 20-20’s have become a prime requisite in all the better buildings in New York’s most exclusive residential district!

How have these radiators achieved such popularity?

Because they go in the wall out of sight, and out of the way. Because they contain more square feet of radiating surface per cubic foot, than any other radiator. In other words, more Robras 20-20 Radiation can be installed in any given space, than can any other type or kind of radiation, no matter what the size or shape of the space may be.

These radiators when installed give added beauty and dignity to the design of the room. They cost but little more than enclosed cast iron radiators, or cast iron radiators with covers.

ROME BRASS RADIATOR
CORPORATION
ONE EAST FORTY-SECOND STREET - NEW YORK CITY

The Architectural Record, August, 1929
There are some buildings in which the use of granite is inevitable. A public building such as shown here is an example. There are innumerable other buildings where it could be used to both economic and esthetic advantage if its possibilities were fully known. The office of this association is maintained to furnish, without obligation, accurate and expert advice on any subject pertaining to granite.

National Building Granite Quarries Assn.
31 STATE STREET
BOSTON, MASS.

H. H. Sherman, Secretary
Laboratory Classroom and Clinic

...all properly heated

Careful thought was given to affording every facility for the study of medical science in the new Medical School Building of the University of Chicago. And the problem of maintaining comfortable, healthful temperatures was not overlooked. Even distribution of heat and quick response to varying demands are assured by the installation of two Jennings Vacuum Heating Pumps which keep return lines and radiators always free of air and condensation.

Jennings Vacuum Heating Pumps are furnished in standard sizes ranging in capacity from 4 to 400 g.p.m. of water and 3 to 171 cu. ft. per min. of air. For serving up to 300,000 sq. ft. equivalent direct radiation. Write for Bulletin 85.

New Medical School Building, University of Chicago, Chicago, Ill. Coolidge and Hodgdon, architects; John D. Small, heating engineer; L. H. Prentice Co., heating contractor.

Jennings Pumps

THE NASH ENGINEERING CO. 13 WILSON ROAD, SOUTH NORWALK, CONN.

The Architectural Record, August, 1929
ARCHITECTS' ANNOUNCEMENTS

Allmendinger & Schleendorf, architects, have moved their office to the Williamsburgh Savings Bank Building, 1 Hanson Place, Brooklyn, N. Y., opposite the L. I. R. R. depot.

Harry Adelman, architect, formerly of 494 Broadway, Bayonne, N. J., is now located at 437 Broadway, in the same town.

Holt, Price and Barnes, architects, have moved their offices to 2500 Telephone Building, Kansas City, Mo.

Robert M. Blackall and S. Bruce Elwell have dissolved their partnership. Mr. Blackall is now practicing architecture and engineering at 75 State Street, Boston, Mass., and Mr. Elwell has established architectural offices at 18 Newbury Street, in the same city.

George Harwell Bond announces his withdrawal from the firm of G. Lloyd Preacher & Co., Inc., effective July 1st, 1929, and also announces the establishment of an office for the practice of architecture under the name of George Harwell Bond, with offices at 1309-10 Candler Building, Atlanta, Ga.

The new offices of R. E. Bostrom are located on the fifth floor of the Castle Building, 1410 Stanley Street, Montreal, Canada.

L. A. Desjardins has changed his address to 725 Denver National Bank Building, Denver, Col. Manufacturers are requested to supply them with a few self addressed envelopes or cards—that the firm may call upon them when their products are being specified.

John Taylor Egan, architect, has moved his offices from 12 East 41st Street, New York City, to 205 East 42nd Street.

Otis Joselyn Fitch, architect, has opened new offices in the Studio Building, Portland, Oregon.

Merton E. Granger has moved his architectural office from 600 Merchants’ Bank Building to 605 Gurney Building, Syracuse, N. Y.

Arthur M. Heda is now practicing architecture at Suite 1500, Madison Square Building, 123 W. Madison Street, Chicago, Ill.

F. Albert Hunt and Edward Kline, architects, have opened new offices at 127 East 47th Street, New York City. Formerly, they were located at 157 East 44th Street.

Joseph R. Koberling announces the formation of the architectural firm Koberling & Baker, located at 589 South Peoria Avenue, Tulsa, Oklahoma. They will be glad to receive manufacturers’ literature.

William C. Lauritzen, architect, has moved his offices from 690 Eighth Avenue, New York City, to 356 Fulton Street, Brooklyn, N. Y.

Frank Lippert, architect, is temporarily located at 50 Richards Road, Port Washington, N. Y. He has moved from his old office at 47 West 34th Street, New York City.

Owing to the retirement of Mr. Frank J. Helmle, the firm of Helmle, Corbett & Harrison will be known as Corbett, Harrison & MacMurray. This firm is located at 150 West 42nd Street, New York City.

The offices of Frank McCandless Crooks are now located at 508 Third Avenue, Pittsburgh, Pa.

Carl W. Clark, architect, has changed his New York City address to 33 West 42nd Street.

Lewis Settino is now practicing architecture at 225 Westchester Avenue, Portchester, N. Y. Formerly, he was located at 11 South Main Street, South Norwalk, Conn.

The partnership of MacManus & Griffiths of 11 East 42nd Street, New York City, has been dissolved. Alex. J. MacManus is practicing architecture temporarily at 75-42-113th Street, Forest Hills, Long Island, N. Y.

Charles F. Park announces the removal of his architectural office from 600 Merchants’ Bank Building, Syracuse, N. Y., to 605 Gurney Building in the same city.

W. Stenwood Phillips, architect, formerly at 157 East 43rd Street, has opened offices at 521 Fifth Avenue, New York City.

Richard S. Shapler, architect, has changed his address from 23 Maple Street, Summit, N. J., to 382 Springfield Avenue, in the same town.

The firm of Max Siegel & George H. Levy, architects, has succeeded the firm of Cohen & Siegel at 45 West 57th Street, New York City.

Chester J. Storm, architect, has changed his address from 1440 Broadway to 225 West 34th Street, New York City.

Walter S. Timmis is now practicing architecture at Second National Bank Building, Hempstead, Long Island, N. Y. He used to be at 315 Fifth Avenue, New York City.

Announcement has been made by D. A. Valvano of the removal of his architectural office from 88 Broad Street, Elizabeth, N. J., to 225 No. Wood Avenue, Linden, N. J.

Lawson Libby Wagner, architects’ consultant, has offices at 1420 Graybar Building, New York City, where he would be glad to receive manufacturers’ literature.

C. W. Brazer, architect, has changed his address from 1133 Broadway to 232 Madison Avenue, New York City.

Robert Wiseman has moved his office from 18 East 41st Street, New York City to 7 East 42nd Street.

The firm name John B. Peterkin-Thomas M. Bell & Frank M. Andrews of 285 Madison Avenue, New York City, has been changed to Shape, Bready & Peterkin.

The Architectural Record, August, 1929.
An escape into silence

The ideal condition, in this industrial age, for maximum efficiency of work, rest and recreation, is comparative quiet, for we live in bedlam. In and out of homes, offices and workshops we suffer a confusion of jarring noises.

Sound travels in waves. Sound waves created in one room may not be halted by a wall or ceiling, but set it vibrating, somewhat as a telephone diaphragm vibrates, with the result that the sound is re-created on the opposite side.

Modern science has made possible the confining of sound within the room in which it originates. Such confinement is provided by the USG System of Sound Insulation.

This system is a supplemental construction for forming floors, partitions and ceilings so that sound will not be transmitted through them. It includes the treatment of vents, ducts, etc., and the setting of machinery bases.

The USG System of Sound Insulation is installed, under contract, by the United States Gypsum Company, which assures undivided responsibility, and guaranteed results. For information address Sound Insulation Department, United States Gypsum Company, Dept. 43K, 300 W. Adams St., Chicago, Ill.

USG SYSTEM OF SOUND INSULATION

Created by the United States Gypsum Company

The United States Gypsum Company offers a complete sound service, which includes noise absorption and auditorium correction, as well as sound insulation
EXCAVATIONS AT DELOS

Delos, to the architect and archaeologist, is important for its mosaics. Knowledge of the old Greek floors is derived almost entirely from the excavations made on the island by the French Archaeological School at Athens. The ancient floor mosaic reproduced here was excavated recently and has not before been illustrated. It was measured and rendered in water color by André Leconte, winner of the Grand Prix de Rome in 1916.

The peristyle court distinguished the domestic architecture of Delos. Each house turned its back to the street and the entrance gateway was the only element of interest on the exterior, excepting the high walls of marble. Through the vestibule and past the gatekeeper’s quarters, the visitor came to the court, the very heart of the house, surrounded on four sides by the portico.

Generally a cistern was found under the court for storage of water to supplement the well in the event of a great drought. The vaulted ceiling of the cistern was often richly ornamented in mosaic.

Around the court were the rooms of the household. The reception and banquet halls were spacious and had mosaic floors as fine as that of the court. In the service rooms, the kitchens and the slaves’ quarters, flooring was either the trodden earth or a very coarse mosaic. One house possessed a bath room; almost all had a rudimentary sewerage system.

The Delian house usually had an upper story, reached by large stairways of stone or wood. These rooms, likewise decorated in mosaic or fresco, were arranged like those of the ground floor and opened on a gallery surrounding the court. A terrace or low roof with large tiles topped the house.

The mosaics belong to the period of great prosperity, the third, second and first centuries B.C., after the Romans ceded the island to the Athenians and Delos became the center of a flourishing commerce.

Great buildings and fine private houses were built. With rare exceptions the houses were grouped in insulae varying greatly in dimensions, sometimes comprising three or four large mansions, sometimes a large number of small lodgings. Forms were very irregular since the Delian architect was not constrained by parallel lines or right angles. Streets went zigzag and crossed obliquely. Each builder had the same ideal—to utilize most advantageously the ground at his disposal. Because of this natural development, the architecture of Delos avoided rigidity and the harshness of geometric lines.
MOSAIC FLOOR IN DELOS ISLAND, GREECE
SCALE 1/40
PARK restaurants in the United States are something of a rarity. Road houses, night clubs, hotel dining rooms, "hot dog" and soda stands are more national expressions of eating out. The park restaurant is for most of us a European acquaintance. A few unimaginative attempts serve chiefly to emphasize the lack.

The old Casino in Central Park was such an essay. In make-up it was a compromise between a road house and a sort of Coney Island Winter Garden. The accommodations comprised two small dining rooms, a glassed-in conservatory covered with paint and a large, dark interior room, the middle of which was occupied by a steep stair to the basement. Outside, a tiled terrace covered with a low awning in summer provided out-of-door eating space. There was no resemblance to the outdoor restaurant of Europe similarly located, but in a rough and ready fashion it furnished some of the elements of an inn and something of the air of an amusement park. In the nineties, when New York was small and Central Park something of a drive, the Casino enjoyed a polite popularity.

The alterations by Joseph Urban place the Casino in the hotel class. Something of the old inn character was preserved with one of the small dining rooms, at present the least used feature of the layout. The two most popular rooms are those where tables are set about the dance floor and the part of the main dining room where the ballroom floor is in view. Similarly, the first seats taken on the terrace are those where persons arriving can be seen. Seclusion can hardly be set at a premium at present, whatever its value to the Victorian diner.

The old building could have accommodated about three hundred and fifty persons shut off from one another in small and large groups; the altered layout provides for four hundred and sixty-eight. On the opening night this layout gave place to one for six hundred; tables for two were practically without demand and larger parties had to be accommodated. Such continues to be the case. Parties of six are a fair average. The original plan seated 114 persons in the pavilion, 96 on the terrace, 128 in the main dining room, 96 in the ballroom and 24 in the small dining room, at round tables 30 inches for two persons and 33 inches in diameter for four, accommodations which can be stretched to four and six covers. Twelve square tables in the main dining room were provided to be used separately, or combined as banquet tables.
The plan provides a clear traffic scheme emphasized by the carpet designs. Although it is in units based on a 27-inch width throughout, open in arrangement as the old building permits, its use and the comments of patrons suggest that still greater openness of arrangement would be practical. One of the excellences of the arrangement for social usage is the sense of pageantry and leisurely movement suggested in the traffic routing. A single, sweeping stair with an easy rise and many landings gives access through a porch and vestibule to the square foyer which distributes guests to the coat rooms, dressing rooms and main dining room, office and the lobby. The lobby in floor plan is a continuation of the foyer but mounts higher in volume. It gives access through two doors, six feet wide, to the pavilion and through a ten-foot folding door to the ballroom. At the other end of the ballroom a ten-foot door throws the main dining room and ballroom together. The small dining room is entered directly from outside or through a small door and passage at the end of the lobby. This passage connects the pantry service with the pavilion. The terrace and pavilion in summer work as one room together through the use of seven ten-foot openings at the curved end. The glass doors fold back against the reveal of the walls and the pavilion becomes a room virtually out of doors. On the terrace the cantilevered awning gives shade but, instead of interposing supports between the people and the prospect, enframes the view in one sweeping, inclusive line. The bigness in effect of this device together with the unobstructed spaces of most of the rooms gives a grandeur to the scheme often lacking in arrangements of greater actual dimension.

The domed ceiling of the pavilion contributes to the airiness of this room, main-
tained by the delicacy of its lighting and decoration. The unobstructed space was attained through the use of Lamella construction, an invention used first for hangars and somewhat familiar at present in garage work. In Europe it has been developed also as a steel structure. Steel Lamella is not yet available in this country. The decorative qualities of this method of construction are shown in the room by Urban. Foreign photographs also show its decorative possibilities though the apsidal form is less usual. In order to preserve the unit scale of the construction Urban covered the undersize intersections in the apse with plywood and formed a great six-pointed half star of streaming floral decoration. The dome itself covers the space like a tent; there is no air chamber, yet the room remains the coolest in the building owing to the openness of the door and window plan.

Acoustically the Pavilion is a sensation. When the orchestra placed in the central bay under the half dome plays, the music has a richness of tone seldom heard. There are no echoing surfaces owing to the broken ceiling and the wood construction seems to vibrate like a cello.

The ballroom, originally the interior space with the central stair already described, has a ceiling of black glass squares hung on a wooden framework from the old ceiling. By leaving the ceiling undefined in this way height is given the room and the festive quality of the crystal chandeliers and the people below is doubled by reflections.

Opposed to the pavilion in tonal quality is the effect of the glass ceiling on the acoustics. Here the music has a sharp brilliance lacking, however, any metallic quality. Such power is given the tone that it penetrates the whole building when not muffled by the presence of many people.

The main dining room occupies the former winter garden designed originally as a conservatory. Heat through the glass was always a drawback which had been formerly somewhat overcome by painting the roof. Urban dropped the ceiling at the sides and filled the central dome with a mural of purple and blue butterflies and flowers. The walls and low parts of the ceiling were covered with silver leaf to provide a lively background for the magenta-stenciled decoration.

Lighting is for the most part handled in a flood-light system, either through glazed diffusing transoms, as in the lobby and main dining room, or in enameled metal diffusing fixtures, as in the small dining room and pavilion. Opal glass plates conceal the source and soften the light in the foyer and entrance vestibule. Down the corridor an extremely effective enameled metal fixture is used which gives a diffused illumination
ALCove off small dining room
CENTRAL PARK CASINO
JOSEPH URBAN, ARCHITECT
DETAIL, SMALL DINING ROOM
CENTRAL PARK CASINO
JOSEPH URBAN, ARCHITECT
CEILING DETAIL, PAVILION
CENTRAL PARK CASINO
JOSEPH URBAN, ARCHITECT
DETAIL, BALLROOM.
CENTRAL PARK CASINO
JOSEPH URBAN, ARCHITECT
BALLROOM
CENTRAL PARK CASINO
JOSEPH URBAN, ARCHITECT
CEILING, BALLROOM
CENTRAL PARK CASINO
JOSEPH URBAN, ARCHITECT
CORNER OF PAVILION
CENTRAL PARK CASINO
JOSEPH URBAN, ARCHITECT

Photo: Sigurd Fischer
INNER LOBBY
CENTRAL PARK CASINO
JOSEPH URBAN, ARCHITECT
leading to the main dining room. Brilliance was desired for the ballroom so crystal covered the shining metal reflectors and clear bulbs. A ring of unshaded candle lights finishes the fixture at the top and describes a circular constellation in the black glass above. All lighting fixtures, furniture and carpets were specially made.

The cretonnes of the pavilion were specially blocked in Urban’s scenic studio. Precedent for the architect’s universality, established in the Metropolitan Museum Exhibition, is continued in the Central Park Casino. New York now possesses a restaurant which, for versatility of design in varied media, can be compared with European achievements.
To give a glimpse of the World-of-Make-Believe in the making, by tracing the permutations a theatrical production goes through from its inception to the moment when the curtain rises on the opening night, I am choosing for illustration Walter Hampden’s *The Light of Asia*.

The play is a chronicle of the life of Buddha, presented in nine scenes and involving over a hundred characters, many requiring three and four complete changes of costume. Numerous elaborate properties are also necessary; a fruit tree in full bloom, a litter and two palanquins, thrones, rugs, cushions, flowers, musical instruments, swords, spears, head dresses, belts, sandals, and so on, all of which, even to the last shoe string, it is the province of the art director to provide.

Although the designing, drawing and detailing of all this may occupy months, the actual fabrication must be done in a few weeks by reason of the conditions prevailing in the New York theatre where scenery must pass without a pause from carpenter shop to scenic studio and thence to the theatre, and where costumes cannot be started until rehearsals are under way, not until four weeks before the opening because of the terms of the Equity contract. For example, if you need horses as gentle as kittens, they will be delivered punctually every night at the stage door. If you are called on to furnish a room in the Victorian manner, there are two great emporia wherein are stored the spoils of countless auction and rummage sales. One man makes a business of buying clothes from arriving immigrants for use in the theatre; another specializes on the making of animals’ heads; still another makes practically all the armor seen on the New York stage. During the peak of the theatrical season all these purveyors of theatrical pleasure labor incessantly.

Active work on a production begins usually about four weeks before the opening and corresponds to “breaking ground” for a building operation. For months before one has been dreaming, scheming, drawing, and re-drawing. Just how much of this has to be done depends largely upon the felicity and practicability of one’s initial conception: in the case of *Cyrano*, the preliminary sketches were carried out without a single important change; in *The Light of Asia*, on the other hand, three schemes were abandoned before discovering the final one which grew out of the necessity for quick scene changes, for getting many actors effectively on and off the stage, and for the performance of certain rituals and dances.

All these matters were determined by Mr. Hampden in the same manner an architect’s client determines the general layout of his factory, store or bank. Our deliberations finally led us to an arrangement of steps and platforms, a permanent set in which there are seven separate entrances and exits and four different acting levels. Moreover, the steps are so few, low and broad, that they do not interfere with the dramatic action. This stage arrangement proved to be half the battle, because it established other features of the production. All that remained was to give each scene its appropriate “dressing” by means of curtains, ground rows, back drops and stage “props.” The elimination of “flats” greatly facilitated scene changes.

My experience in the theatre has convinced me of the soundness of Mr. Hampden’s contention that the stage floor should be three dimensional, with some practical system of ramps and platforms to reinforce the “mystical protagonists.” The sound-
ness of such a scheme was demonstrated in the scene before the battle of Agincourt in Mr. Hampden’s production of *Henry V.*, where the kneeling king has a long scene alone; only by placing the single figure on a rocky mound was it given the necessary dominance.

The permanent set was built first of all, and rehearsals conducted upon it, so that the actors could become at home in their environment. The next addition was a vast expanse of black velvet curtains at the sides and rear of the stage, forty-two feet high, and set as far back as possible. These curtains absorb the light so successfully that they give the effect of infinite space; they can be parted to reveal the cyclorama, and masked apertures at right and left form invisible exits. Gauze drops, ground rows and foliage borders, slim garlanded masts, a ruined wall, a pool, a shrine, wine jars full of orchids and jasmine, and other paraphernalia of luxury and pleasure complete the stage accessories.

The scenery and stage "props," such as chairs, tables and beds, are usually let by contract from working drawings, supplemented sometimes by color sketches or pasteboard models. For curtains and draperies, samples of materials and dyes, and full-size details of stencils are furnished. Rugs are bought, rented or borrowed. All artificial foliage is executed from sketches by artisans. Costumes are let by contract from carefully drawn colored sketches. Wigs and shoes are the work of specialists.

In the costumes for *The Light of Asia*, a difficulty was encountered. Hindu clothing consists largely of simple cloths and success depends, therefore, less in the making than in the wearing. The costumes were designed on the back instead of on the drawing board, the actors being instructed how they should be worn. In the coloring of the costumes three things had to be kept in mind: their dramatic and psychological appropriateness, their relation to the various backgrounds, and to one another.
Scenery is painted either vertically on counter-weighted frames that slide up and down, or horizontally on what is known as a "painting floor." The latter is the European method, and has an advantage in permitting the color to puddle, giving a richer texture. The Bodhi tree, in *The Light of Asia* was painted in this way. The medium used is opaque water color with an admixture of glue, and the material canvas, except where an effect of luminosity is desired, and muslin and dye are used. Curtains must always be dyed, for paint will stiffen the fabric and flake off. A variety of materials may be used, but linen is perhaps the most satisfactory. In *The Light of Asia*, for the large curtains I used what is known as table felt; this has a heavy pile and takes dye. After being dyed in two tones they were spattered with violet, and darkened gradually toward the top to give an effect of descending "from the unknown to the known." In the theatre, broken color, mixed in the spectator's eye instead of on the canvas, is the most beautiful. Sometimes painted surfaces are sponge-stippled, spattered, or rolled with a wound-up cloth, to give richness of texture. Sometimes, like water colors, they are washed on. To give "life" sometimes they are sprinkled, while still wet, with bronze or silver powder.

A scientific knowledge of color is of the utmost value to the artist working in the theatre. He must know not only the visual effect of various color combinations, but also the effect of colored lights on colored surfaces. Stage light is usually warmer than studio light, so all colors must be correspondingly colder. The finished and lighted scene has often to be toned up or down by the painter.

During the fabrication of the scenery, properties and costumes, the company is being rehearsed, the "extras" drilled, the
dances and music developed. These various elements coalesce shortly before the first dress rehearsal. This event is preceded by a dress parade in which each costume is inspected, accepted or rejected. Changes are inevitable in the costumes brought thus into juxtaposition with other costumes and seen under stage lights. These changes continue up to the opening night and not infrequently thereafter.

Only after the dress rehearsals is it possible to attack the problem of lighting, although charts of the lighting of each scene have been made, and the necessary equipment provided. Because dress rehearsals are usually few and troubled, the lighting, though of the first importance, gets less than its due consideration. This was not so, however, in the instance of The Light of Asia, where an entire day, instead of the usual few minutes, was given over to the lighting of a single scene. Of course, this scene involved sunlight, moonlight, dawn, lightning, and "the light that never was on sea or land," in addition to an aura about the body of the Buddha and the "invisible ray" (made visible by a chemical paint) directed on Mara's animal-headed horde.

The ideal equipment would make it possible to command light of any color or intensity upon any point within the stage area. Color is obtained by means of differently dyed gelatines; intensity is regulated by means of rheostats or dimmers. Diffusion and concentration are taken care of by diffusing screens and lenses whereby the lighted area may be reduced to the size of a human face. The old system of "strips" and "borders," rows of lamps in galvanized iron troughs placed above and at the sides of the stage, is obsolete in up-to-date theatres. The X-ray type of unit, with each lamp in its individual reflector and equipped with
gelatine screens, is gradually giving place to spot-lights of various types and sizes, which are capable of being swung in any direction, focused, and provided with adjustable metal shields to overcome the "spill" of light. Footlights are used more and more sparingly, merely to mitigate the heavy shadows cast by overhead light. In Hampden’s theatre I eliminated them entirely, together with the unsightly footlight "trough." Their function is performed by spot-lights on the front of the balcony. There are certain types of lighting units used for special purposes: a powerful lamp and its reflector on an adjustable stand to throw a shaft of light through a window or open door; small strip-lights placed on the floor or hung on the scenery to take the blackness out of ground rows or masking pieces; flood-lights hung far away and high aloft to give the effect of bright sunshine or moonlight. The cyclorama, or sky cloth, is lighted by units of a special type, which, though only four feet away from the cloth, spread an evenly distributed sheet of light from top or bottom, of any color or intensity.

The richness of stage light, compared
with ordinary lighting, is due to the fact that the white light is split into its component colors and re-mixed "in the eye." The result is a natural light, but one in which the shadows are opalescent, multi-colored, because the shadow of a colored light yields always its complementary hue. If, for example, an object be illuminated by a red light from one direction and by a green light from another, it will appear in its true color because red and green, being complementary, will produce white, but the shadows, instead of being grey-violet, will be red on the side opposite the green light, and green opposite the red. By the use of different colored lights a living, dynamic quality can be imparted to the most ordinary fabrics,—they can be painted with light.

In The Light of Asia production I endeavored to eliminate the "picture frame,

Fabricated and delivered at the stage door, all these accessories of the production are ready to be handled by the stage employees. The wardrobe mistress delivers the costumes to the dressing rooms, and keeps them clean and in repair. The "crew" is captained by the head carpenter, whose lieutenants are the head property man and the head electrician. Each in turn is commander of his own squad, which

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THE ARCHITECTURAL RECORD

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COSTUMES, WALTER HAMPDEN'S "LIGHT OF ASIA"
THE RUINED GARDEN

Cyclorama

Ground Row

Black Velvet curtains

Tree Gauze

Shrine

Ruined Wall

PLAN
THE PLEASURE PALACE

THE ARCHITECTURAL RECORD

PLAN

Cyclorama

Black Velvet curtains

Ground Row

Tree House

Umbrella

Lamp

Couch

Jar

PLAN
THE BODHI TREE
INTERIOR

Cyclorama

Ground Row
Tree price

Black Velvet curtains

Plan

Curtain
Jar
Seat
The City Square
varies in number according to the size and elaborateness of the production. The head carpenter's contingent handles all the scenery on the stage floor; another group, the "flymen," aloft in the fly gallery, attends to the curtains and painted drops, and whatever else may be suspended from the gridiron. The head property man usually has assistants whose duty it is to lay the floor cloth, set, and dismantle the stage of its mobile elements at the beginning and end of every scene. There is a house electrician and a stage electrician, each presiding over his own switchboard. This backstage crew, never seen and rarely heard by the audience, often outnumbers the actors in a theatrical production.

Such are some of the problems and processes of professional theatrical production. Into the question of the inherent necessity of these problems, or the intrinsic excellence of these processes, I shall not enter. When it is impossible to change existing conditions one must operate as one can within the imposed limitations. But perhaps some new start on simpler and firmer foundations may emerge under the domination of a different consciousness, perhaps the consciousness of the younger generation, in whom, despite discouragement and frustration, enthusiasm and hope burn bright. For to them the theatre is an altar flame of which they could be, and perchance will be, the ministering acolytes.
ARCHITECTURE, THE EXPRESSIOriN OF THE MATERIALS AND METHODS OF OUR TIMES

BY LE CORBUSIER

Let us not confuse outward show, however impressive, with an essential truth which is still indistinct in the whirlpool of an epoch in the full tide of evolution.

By "impressive outward show," it is implied that the architecture of today appears to be dictated in the eloquence of its form by modern materials and methods. "Essential truth" suggests an architecture that results from the state of mind of an epoch and that an architecture exists, takes form and is expressed only at that very moment when a general evolution of mind is accomplished. It is at that moment alone when mind has recognized and admitted a system of thought which, above all, represents in every field a profound modification of previous states. There is no architecture during periods of crisis; architecture comes after periods of crisis.

The crisis then has passed? From the consideration of the world about us the opposite seems certain. Perhaps not; a few spirits (not all—far from that, but only those of leaders—and that is enough) have passed through the crisis, and have formulated a new attitude of mind which follows completed changes. Only objects—material reality—are in a state of complete disturbance. And why are they? Because precisely at this moment, there breathes a new spirit and the entire world—both man and materials—must inevitably follow the implacable destiny of a new tendency.

Is there then indeed an origin to this profound upheaval? Most certainly. It has existed for a hundred years. During the century our brains have escaped from ancient customs. Our life has gone from day to day, changed bit by bit. And thus we scarcely appreciate it. We were unable to know where all this was leading, we could feel only that it was leading, powerfully, violently, and ever and ever more rapidly.

Meanwhile, shallow spirits of limited vision cried out: "The world is being wrecked, all is lost." And in desperation, like shipwrecked sailors grasping at floating debris, we clung to the past. Never before had so much archaeology been done as during those heroic times when science was pushing us, each day more insistently, along the adventurous paths that lead towards the unknown.

Is not architecture determined by new materials and new methods? (It is high time I were defining what architecture is.) Indeed to all in America belong the new materials, with you modern methods are in use. But for a hundred years your architecture has not evolved. Alone your programs have changed. And you construct your skyscrapers in the manner of students of the École des Beaux-Arts building a private house. I repeat: a hundred years of new materials and new methods have made no change whatsoever in your architectural viewpoint.

* * *

It is time, though, to define architecture. Architecture is not building. Architecture is that cast of synthetical thought in response to which the multiple elements of architecture are led synchronically to express a purpose. And as this synthetical purpose is absolutely disinterested, having for object neither to make durable, nor to build rapidly, nor to keep warm, nor to promote sanitation, nor to standardize the domestic usefulness of the house, I would say, since it is above any utilitarian objective, it is an elevated purpose. Its object is to bring us benefits of a different nature from those of
PALACE OF THE CENTROSOGUS, MOSCOW
LE CORBUSIER AND PIERRE JEANNERET, ARCHITECTS
material usefulness; its aim is to transport us to an inspired state and thus to bring us enjoyment.

Saying this I find myself in accord with the humblest accomplishment of the simplest conscientious laborer, and on the other hand I put myself in agreement with all the great traditions of the past.

Nevertheless, there exists in these days, an absorption in definitely practical ideas which is precisely expressed by the subject which was suggested to me, "Architecture, the expression of the materials and methods of our times."

I will even say that it is the clue to the present situation. And here is the reason:

A system of thought is imbued with life only when there exists a balance between the results of evolution and the spiritual direction of its progress.

What, then, is the direction of its progress today?

A hundred years of a mechanical era have brought forth an entirely new spectacle. Geometry is supreme. Precision is everywhere. The right angle prevails. There no longer exists any object that does not tend to severity.

Industrialism has stated the postulate of economy: to attain the maximum of result at the minimum of expense.

Science, mathematics, analysis and hypothesis, have all created an authentic machinery of thought. An imperative need of clarity, the search for the solution. It is for that which the mathematicians term the "elegant solution."
Has not this all pervading precision, exactness and accuracy definitely annihilated the imperceptible, distance and mystery? Miraculously, quite the contrary is the case. This century has officially opened to us gates yawning on the infinite, on majesty, silence and mystery. More than ever before, man's soul is pathetically brought face to face with itself. Never was there an epoch so powerfully, so unanimously inspired. Poetry is everywhere, constant, immanent.

* * * *

Here, then, is set forth that point of view which constitutes the present era, a veritable magnetic pole towards which swings the compass of our initiatives, of all our initiatives.

Let us come to the point. What, in view of the purity and supreme clarity of this new state of thought, are our present architectural forms? Do we concern ourselves with this gleaming liberty of disinterestedness, of courage and poetry? Alas, how timid we are, how firmly we are chained, like slaves. The past has ensnared us, whereas its law is to cry to us, 'carry on—why don't you progress and move forward?' We are cowardly and timorous, lazy and without imagination.

Cowardly, timorous, lazy and without imagination, because, now and invariably, we want our new houses to resemble the old. What a poverty of creative ability!

Meanwhile the means are at hand; science, mathematics, industry, organization.

We still permit our houses to lie close to a damp and unhealthy ground. We are still discussing whether or not our houses
TWO HOUSES AT STUTTGART

LE CORBUSIER AND PIERRE JEANNERET, ARCHITECTS
are to have roofs, while roof gardens bring
health, joy, and an upheaval of plan
replete with magnificent liberties. We are
still building our houses of stone, with
massive walls, while light and slender
cars are speeding at sixty miles an hour
through snows or under the tropical sun.
We are still employing masons and carpen­
ters on the job, to work in rain or snow, or
fair weather, while factories could turn out
to perfection that which we accept poorly
executed.

And so forth and so on.

* * * *

Here, now, are my conclusions. In what
way are we to allow so many innovations?
How are we to select these forms still un­
known in the building of houses? How are
we to arrange them in such a manner as
will bring us anew before an architectural
phenomenon as will make us feel once
more the vigorous delights of architecture?

A state of new enthusiasm exists; a
system of thought has been wrought by a
hundred years of investigation and acquired
results. We have a line of conduct. Instinc­
tively our choice tends towards such
constructive systems, towards such ma­
terials as possess forces capable of feeding
our enthusiasm. In us moderns the new
feelings, an instinct, control actions which
are in harmony with each other.

The harmony of former centuries is in
confusion. The effect continues but the
cause has been swept aside by the mechani­
cal revolution. The mechanical revolution
is a new cause—immense phenomenon in
the history of mankind. Where are the
new effects?

Let us be led by this enthusiasm which
animates us. Industrialization, standardiza­
tion, mass production, all are magnificent
implements; let us use these implements.

I wish to give you the basis of my reason­
ing: I am certain that that which at this
moment appears most revolutionary in con­
temporary architectural creations, be it in
France, Germany, Russia, or elsewhere,—
all that is still nothing more than the old
aspect caught in the quicksands of the past.
It is my opinion that as yet we have seen
nothing new, done nothing new. That
which will come in architecture will sur­
vive only when an urbanism, brought face
to face with the present social upheaval,
will have created cities of which we have
as yet not even an idea, of which we have
not yet even considered the possibility.

Such is the progress on the one hand (and
it is gigantic by comparison with the means
at the disposal of the builders of the
Romanesque period, or that of Louis XIV)
and on the other hand the architects of the
contemporary epoch daring at last to state
a problem, and to announce the answer,
and thus to give to the world an architec­
tural system which is the resultant of the
spirit of an era.

The line of action exists—the modern
system of thinking.

The Americans, however, are the people
who, having done most for progress, re­
main for the most part timidly chained to
dead traditions.

On the other hand, their willingness
to progress further strikes me as bound­
less. And that is a force which, soon, will
swing the balance.
PORTFOLIO
OF
CURRENT ARCHITECTURE

General View
Residence of Irvin F. Impink, Reading, Pa.
LEWIS BOWMAN, ARCHITECT
HAROLD C. SHOEMAKER, LANDSCAPE ARCHITECT
Plot Plan
Residence of Irvin F. Impink, Reading, Pa.

LEWIS BOWMAN, ARCHITECT
HAROLD C. SHOEMAKER, LANDSCAPE ARCHITECT
View From Entrance Driveway
Residence of Irvin F. Impink, Reading, Pa.

LEWIS BOWMAN, ARCHITECT
Ground Floor Plan

Second Floor Plan
Residence of Irvin F. Impink, Reading, Pa.
LEWIS BOWMAN, ARCHITECT
Angle Detail
Residence of Irvin F. Impink, Reading, Pa.
LEWIS BOWMAN, ARCHITECT
Residence of Irvin F. Impink, Reading, Pa.

LEWIS BOWMAN, ARCHITECT
Entrance Detail
Residence of Irvin F. Impink, Reading, Pa.
LEWIS BOWMAN, ARCHITECT
Interior of Main Hall
Residence of Irvin F. Impink, Reading, Pa.
LEWIS BOWMAN, ARCHITECT
Horn and Hardart Building, Sixteenth and Chestnut Streets, Philadelphia

RALPH B. BENCKER, ARCHITECT
Detail of Bay
Horn and Hardart Building, Sixteenth and Chestnut Streets, Philadelphia
RALPH B. BENCKER, ARCHITECT
Stairway
Horn and Hardart Building, Sixteenth and Chestnut Streets, Philadelphia
RALPH B. BENCKER, ARCHITECT
Stairway
Horn and Hardart Building, Sixteenth and Chestnut Streets, Philadelphia
RALPH B. BENCKER, ARCHITECT
Horn and Hardart Building, Broad Street, Philadelphia
RALPH B. BENCKER, ARCHITECT
Horn and Hardart Building, Broad Street, Philadelphia
RALPH B. BENCKER, ARCHITECT
Entrance to Display Room
The Denver Sewer Pipe and Clay Co. Building
M. H. AND B. HOYT, ARCHITECTS
FIRST FLOOR PLAN
THE DENVER SEWER PIPE & CLAY CO.
M.H. & B. HOYER ARCHITECTS.
Entrance to Vestibule
The Denver Sewer Pipe and Clay Co. Building
M. H. AND B. HOYT, ARCHITECTS
Abraham and Straus Building, Brooklyn

STARRETT AND VAN VLECK, ARCHITECTS
Detail of Brickwork
Abraham and Straus Building, Brooklyn
STARRETT AND VAN VLECK, ARCHITECTS
NORTH ITALIAN BRICK CHIMNEYS
BY MYRON BEMENT SMITH
PART II

In the preceding article reference was made to the Baroque chimneys of the Palazzo Ducale at the Certosa of Pavia. The measured drawings in this article, plates IV and V, show two more of these Certosa chimneys, the photographs of which appear as figures 19 to 22. It was my good fortune, on the first trip to the Certosa, to see the pair of chimneys marked figure 19 undergoing a restoration by Signor Silvio Nicchi, the gentleman in figure 20. Signor Nicchi has been at the Certosa since his youth, he told me as we sat on the ridge tile one day enjoying the view over the flat Lombard water-meadows. In the course of these years he has taken down and rebuilt nearly all the chimneys in addition to doing the general repair work for the many buildings that form the Certosa group. His natural courtesy, modesty and serene disposition do not entirely conceal the secret pride with which he regards his work.

To take down and rebuild this pair of chimneys occupied Signor Nicchi and an assistant for three weeks. Each piece was marked as it was taken off, the broken bricks carefully matched and replaced by new, the whole laid out along the roof and, when all was ready, relaid again, ending by threading the finials in their iron rods and at last flying the pennants. After a scrubbing with stiff brushes, a last coat of white gesso and its fresco decoration was laid on. A few days later I took the photograph and went over the dimensions. Not a figure had changed appreciably from the original measurements made before the reconstruction. In a few years no one will guess that this brickwork has been touched, except for necessary repointing, within the three hundred years since it was originally laid.

The next illustration, figure 22, is interesting in that it gives a view of the vents which here show clearly as the curtain wall has been removed from its corbels. By referring to the section view of plate IV it is noticeable that any down draft which might be caused by a wind against the chimney is balanced by an up-draft through the openings between the corbels. Italian chimneys do three things: they let smoke out by a natural draft, they prevent back drafts and they keep rain from washing soot down the inside of the flue. The varied solutions of these problems result in the interesting forms of which this series can show but a few. When one recalls the high, open Italian fireplace with its wide throat and lack of damper it is not hard to see why the chimney top is given this exacting consideration.

The most picturesque parti for this problem was found in the village of Pisino, inland on the Istrian peninsula (See figure 23). Note the form of the tile plates that cover the side openings and then the scale given by the vertical louvres and the smaller vents above with their minute sills. This chimney, like most of those illustrated, was designed by a village mason working in a tradition yet seemingly not hampered by it.

The next page of four illustrations, figures 24 to 27, show fantastic creations which were popular in the Gothic period. These Bergamo chimneys are all on the same old palace and are so unusual that the Italian government has declared them Monumenti Nazionali, thus putting their preservation under the control of the min-
NORTH ITALIAN BRICK CHIMNEYS
PLATE IV
FROM THE CERTOSA OF PAVIA
MEASURED AND DRAWN BY
MYRON BEMENT SMITH
Fig. 23. PISINO, ISTRIA
Fig. 24. S. EUSTORGIO, MILANO

Fig. 25. BERGAMO

Fig. 26. BERGAMO

Fig. 27. BERGAMO
FIG. 28. MIRA, VENETIA
NORTH ITALIAN BRICK CHIMNEYS
PLATE V
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The steep thatched roof and white-washed walls of the cottage at Mira (figure 28), might be in an English countryside were it not for the characteristic divided Venetian chimney which, due to the hip roof, stands out from the slope. But for the interesting up-thrust of white wall with its break of pitch in the thatch the chimney might lack sufficient attachment to hold it as part of the composition. The sides of the flue are faced with thin paving bricks with flat side to the weather. This was done for economy as well as to keep the stack from being top-heavy.

In Torriano is found the low chimney (figure 29) with thin tiles used to screen the smoke openings from the wind. The finial with its ball is also a piece of carved brick. Figure 30, from the Certosa again, is unusual in that it was designed without a curtain wall for the vents. Number 31, at the church of S. Lanfranco, Pavia, had its curtain of brick or of tile, to prove which the sharp projecting brackets still exist. More noticeable, however, are the splayed brick that fill the lower part of the openings, probably to deflect the rain. In spite of its mutilation another S. Lanfranco chimney, figure 32, shows a clever use of simplest materials. The spouts are made of pan tiles cut off at a raking angle. The screen which at one time concealed both the vents and the inner roof is made of large flat tile, originally cut in graceful profiles, fragments of which remain. Some study was given to the color spotting, the spouts coming against light gesso, as do the carved corbels. The screen, it is evident, once had a thin coat of plaster to conceal the joints in the tile.

During the seventeenth and eighteenth centuries the large cove moulding which was so popular for cornices found an expression in the chimneys. Figures 33 to 35 show variations of this Baroque feature and also illustrate the fondness of that period for covering everything over with plaster. The example from Milano has the date, MDCCLXIII, legible in the cavea. From Verona comes the last illustration for this instalment, a severe but not ungraceful example of classic pediment and entablature mouldings.

(To be continued.)
ALLIED ARTS
AND
CRAFTSMANSHIP

OVER-DOOR SCULPTURE, UNIVERSITY MUSEUM, PHILADELPHIA
A. STIRLING CALDER, SCULPTOR
WILSON EYRE AND MCLVAINE, AND ASSOCIATES, ARCHITECTS

Featuring
INTERIOR DECORATION
SCULPTURE
LANDSCAPE ARCHITECTURE
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JOSEPH URBAN, ARCHITECT

Photo, Fischer
TECHNICAL NEWS
AND
RESEARCH

ENTRANCE LOGGIA
ST. CLOUD HOSPITAL, ST. CLOUD, MINN.
SCHMIDT, GARDEN & ERIKSON, ARCHITECTS

Featuring

HOSPITAL SOUND INSULATION
SOUND PROOFING THE HOSPITAL

BY CHARLES F. NEERGAARD*

Noise has become a major problem in our cities. In the hospital where the comfort and even the life of the patient demands quiet, the situation is particularly acute. After every critical operation the first demand of the surgeon is absolute quiet for his patient. Yet in our structures we seemingly do all we can to make this impossible. The density and rigidity of fireproof building materials produce an interior finish which is a perfect reflector of sound, and vibrations are carried through monolithic construction with little loss of intensity.

It is a common tragedy for a new hospital, architecturally beautiful, skillfully planned and radiating color and warmth, to prove a bitter disappointment to its creators, because of intolerable noise, when opened to patients. Low voices are intensified and echoes from the crash of a carelessly dropped utensil penetrate throughout the structure.

I. SOURCES OF NOISE

A. NOISE FROM WITHOUT.

Noises, ever on the increase, indicate the importance of locating new hospitals in a quiet neighborhood. The open window welcomes every rattle and rumble of passing truck or trolley, the raucous automobile horn, and all the clamor and din of our busy communities. Hospital zones of quiet, usually more honored in the breach than in the observance, may help, but generally there is no relief for the patient except to keep the windows closed, install sound filters at the window, or see that these outside sound waves are promptly and effectively absorbed as they enter.

B. NOISE FROM WITHIN.

The inside noises incidental to hospital operation are many and varied. We may divide them into four groups.

1. AVOIDABLE NOISES. Among these are loud talking and laughter in rooms and corridors, thoughtless acts of which everyone is guilty at times. Given rigid enforcement of the rule “Be Quiet” and a proper hospital morale, these can largely be controlled. Accidental noises resulting from dropping of dishes and pans and shifting of chairs on the hard floor, theoretically avoidable, call for constant care on the part of all. Many a sufferer can testify how numerous are mechanical noises. Windows rattle, shades flap, radiators gurgle and pound, valves hiss, faucets drip, doors slam and latches chatter with every passing draft. Such disturbances are inexusable. Regular inspection will obviate them to a considerable extent. Rigid control of avoidable disturbance will result in marked improvement in any institution. Unfortunately the superintendent has too many other things to think of.

2. UNAVOIDABLE NOISES. Groans and screams of delirious sufferers and cries of infants and children are perhaps the most disturbing psychologically. Many of these conditions can be isolated, walled off in quiet rooms.

Noisy work rooms should be segregated in planning, yet we often see the rooms of patients immediately adjoining an elevator or diet kitchen. When food is served and dishes washed on each floor, the resulting clatter is a major source of annoyance and can be overcome by a centralized food service.

3. VIBRATION. Vibration through the pipes and frame of the building is more readily avoided than corrected. In one hospital, through unwise economy, the power plant was placed in the sub-basement, although there was ample space for a separate building. In the night a patient on the top floor at the far end of the building, 175 feet horizontally and 70 feet vertically away from the engine room, could hear the pumps pounding as if in the next room. Alongside they did not seem noisy. Faulty engineering had failed to take the simple precaution of insulating the pump foundations from the floor slab.

4. SOUND TRANSMISSION BY PIPES. Another hospital went to considerable expense to fur all ceilings in the patients’ rooms, but gave no heed to the steam risers which passed through five floors. An unprotected one-inch pipe, it is found, will transmit more sound than 150 square feet of unfurred ceiling. More quiet at less cost might have been secured if the ceilings had been left unfurred and the pipes covered with felt.

*Reports of the Bureau of Standards at Washington and publications of many recognized acoustical authorities have been consulted. Architects, engineers and builders, who have given special thought to architectural acoustics, have contributed much. The engineering departments of the various firms whose systems are here discussed have given cordial cooperation. Ten hospitals and twenty other buildings using acoustical measures were inspected, and the effectiveness of the treatment and difficulties of cleaning carefully investigated. See also “Sound Proofing Apartments,” pp. 290-8, The Architectural Record, March, 1929.
II. ACOUSTICAL TREATMENTS COMPARED

Sound is controlled in two ways, both of which are needed to secure quiet: **Acoustical Treatment**, the covering of ceilings and walls with soft or porous materials to absorb the sound waves at the source, and **Sound Insulation**, the setting up of barriers against the transmission of noise from one room to another.

Acoustical treatment is the major line of defense against noise. Until comparatively recently most of the problems presented to acoustical engineers have been in connection with the even distribution of sounds of different pitch throughout an auditorium, to so control and disseminate them that they would reach each auditor without loss of tone or character. Churches, lecture rooms, theatres and concert halls have all suffered from echoes and poor acoustics, the correction of which has largely stimulated research in the past.

Quiet in a room is accomplished by the same scientific principles. In the hospital the aim is to eliminate sound rather than to control its distribution, "to convert our corridors from megaphones to mufflers," as an acoustical advertisement is phrased.

The conventional hospital room and its furnishings could hardly be worse if deliberately designed to intensify noise. Rigid walls, bare floors and uncovered furniture offer no check. How unlike conditions in a home or hotel!

The furnishings of a hotel room 12' x 15', usually not found in the hospital, would provide quieting results equivalent to 72 square feet of open window.*

<table>
<thead>
<tr>
<th>Item</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpet, 8 sq. ft.,arine lining 45% absorption</td>
<td>8 sq. ft.</td>
</tr>
<tr>
<td>2 easy chairs, 8 sq. ft. upholstery 100% absorption</td>
<td>16 sq. ft.</td>
</tr>
<tr>
<td>2 side chairs, 15 sq. ft., cushion each 75% absorption</td>
<td>30 sq. ft.</td>
</tr>
<tr>
<td>1 pair heavy curtains, 16 sq. ft. 65% absorption</td>
<td>16 sq. ft.</td>
</tr>
</tbody>
</table>

*Based on Prof. Floyd R. Watson's "Table of Sound Absorbing Coefficients for Materials."

**A. ACOUSTICAL MATERIALS.**

These may be divided into two groups: **organic,—** felts and fibres; and **inorganic,—** plasters and tile. Ten different makes using hair felt, hair and asbestos, cane fibre, wood fibre, flax, gypsum and cement were considered. The felts and fibres are cemented or nailed to walls and ceilings and variously finished; the plasters are applied over brown mortar.

Since all the available systems of acoustical treatment utilize soft or porous materials, it would seem difficult, if not impossible, to maintain the traditional standards of cleanliness. Can we safely introduce in the structural surface of the hospital a material whose nature imposes any restrictions on cleaning and painting? Can it be kept sterile to bacteria and vermin?

By the process of elimination, which took into consideration all the factors that the hospital must weigh in making its investment, the study focused on five different types of acoustical treatment. These are products of firms long and successfully identified with hospital problems and will serve as examples. Other similar systems are available and it is not necessarily a reflection on their value that they are not discussed in detail. The treatments identified by their trade names may be briefly described.*

**Nashkote A** consists of one inch of hair and asbestos felt which is applied to the ceiling or wall and finished with a muslin membrane cemented to the felt and painted with a special water color paint. It has an absorption efficiency of 42% and costs 70¢ a square foot applied.

**Nashkote B** consists of one inch of hair and asbestos felt, covered with a light surfaced oilcloth cemented to the felt. The oilcloth is thickly perforated with "pinholes," about 7½% of the felt being exposed to the air. The surface of the felt is of white hair so that the holes are barely perceptible at a distance of...
NORTH ITALIAN BRICK CHIMNEYS

BY MYRON BEMENT SMITH

PART II

In the preceding article reference was made to the Baroque chimneys of the Palazzo Ducale at the Certosa of Pavia. The measured drawings in this article, plates IV and V, show two more of these Certosa chimneys, the photographs of which appear as figures 19 to 22. It was my good fortune, on the first trip to the Certosa, to see the pair of chimneys marked figure 19 undergoing a restoration by Signor Silvio Nicchi, the gentleman in figure 20. Signor Nicchi has been at the Certosa since his youth, he told me as we sat on the ridge tile one day enjoying the view over the flat Lombard water-meadows. In the course of these years he has taken down and rebuilt nearly all the chimneys in addition to doing the general repair work for the many buildings that form the Certosa group. His natural courtesy, modesty and serene disposition do not entirely conceal the secret pride with which he regards his work.

To take down and rebuild this pair of chimneys occupied Signor Nicchi and an assistant for three weeks. Each piece was marked as it was taken off, the broken bricks carefully matched and replaced by new, the whole laid out along the roof and, when all was ready, relaid again, ending by threading the finials in their iron rods and at last flying the pennants. After a scrubbing with stiff brushes, a last coat of white gesso and its fresco decoration was laid on. A few days later I took the photograph and went over the dimensions. Not a figure had changed appreciably from the original measurements made before the reconstruction. In a few years no one will guess that this brickwork has been touched, except for necessary repointing, within the three hundred years since it was originally laid.

The next illustration, figure 22, is interesting in that it gives a view of the vents which here show clearly as the curtain wall has been removed from its corbels. By referring to the section view of plate IV it is noticeable that any down draft which might be caused by a wind against the chimney is balanced by an up-draft through the openings between the corbels. Italian chimneys do three things: they let smoke out by a natural draft, they prevent back drafts and they keep rain from washing soot down the inside of the flue. The varied solutions of these problems result in the interesting forms of which this series can show but a few. When one recalls the high, open Italian fireplace with its wide throat and lack of damper it is not hard to see why the chimney top is given this exacting consideration.

The most picturesque parti for this problem was found in the village of Pisino, inland on the Istrian peninsula (See figure 23). Note the form of the tile plates that cover the side openings and then the scale given by the vertical louvres and the smaller vents above with their minute sills. This chimney, like most of those illustrated, was designed by a village mason working in a tradition yet seemingly not hampered by it.

The next page of four illustrations, figures 24 to 27, show fantastic creations which were popular in the Gothic period. These Bergamo chimneys are all on the same old palace and are so unusual that the Italian government has declared them Monumenti Nazionali, thus putting their preservation under the control of the min-
Fig. 19. CERTOSA OF PAVIA

Fig. 20. CERTOSA OF PAVIA

Fig. 21. CERTOSA OF PAVIA

Fig. 22. CERTOSA OF PAVIA
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FIG. 28. MIRA, VENETIA
Fig. 33. NEAR CARAVAGGIO, MILANO

Fig. 34. MILANO

Fig. 35. S. LANFRANCO, PAVIA

Fig. 36. VERONA
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171
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The furnishing of a hotel room 12' x 15', usually not found in the hospital, would provide quieting results equivalent to 72 square feet of open window.¹

The treatments identified by their trade names may be briefly described.²

Nashkote A consists of one inch of hair and asbestos felt which is applied to the ceiling or wall and finished with a muslin membrane cemented to the felt and painted with a special water color paint. It has an absorption efficiency of 42% and costs 70¢ a square foot applied.

Nashkote B consists of one inch of hair and asbestos felt, covered with a light surfaced oilcloth cemented to the felt. The oilcloth is thickly perforated with “pinholes,” about 75% of the felt being exposed to the air. The surface of the felt is of white hair so that the holes are barely perceptible at a distance of ¹Based on Prof. Floyd R. Watson’s ”Table of Sound Absorbing Coefficients for Materials.”

¹

<table>
<thead>
<tr>
<th>Material</th>
<th>Absorption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpet</td>
<td>60%</td>
</tr>
<tr>
<td>Chair</td>
<td>80%</td>
</tr>
<tr>
<td>Curtains</td>
<td>75%</td>
</tr>
<tr>
<td>Plaster</td>
<td>50%</td>
</tr>
</tbody>
</table>

²The authorities for the coefficients of absorption used will be found in table on page 185. The cost naturally varies with the size and location of the job.

A. ACOUSTICAL MATERIALS.

These may be divided into two groups: organic,—felts and fibres; and inorganic,—plasters and tile. Ten different makes using hair felt, hair and asbestos, cane fibre, wood fibre, flax, gypsum and cement were considered. The felts and fibres are cemented or nailed to walls and ceilings and variously finished; the plasters are applied over brown mortar.

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10 feet. It has an absorption efficiency of 64% and costs 80¢ a square foot applied. The oilcloth can be stippled with washable oil paint without affecting the absorption, provided no film of paint is left over the holes, which requires care on the part of the painter.

Acousti-Celotex is composed of compressed sugar cane fibre, in the form of large tiles, ½" thick and drilled with ¼" holes 1" deep, 441 to the square yard. It is cemented and nailed to the ceiling. The surface can be painted with a brush and oil paint, without loss of effectiveness, provided the paint does not cover or enter the holes. The absorption is 70% and the cost 75¢ per square foot applied.

Acoustical Plasters are available in two forms, precast tile, and plaster mixed and applied on the job. The plaster is usually composed of irregular grains of pumice bound together by cement or gypsum where the points touch. This leaves a multitude of very fine intercommunicating voids in which the sound waves are throttled. The surface is rough. Coloring can be done by mixing pigments in the aggregate. Laboratory tests indicate that the various makes of plasters, ½" thick, have an absorption value varying from 8% to 32%. Two brands of plaster were studied. Akoustolith plaster uses pumice particles graded to approximately uniform size with a Portland cement binder. Its absorption is 32% and the cost 44¢ a square foot applied. Sabinite plaster (New Brighton) uses pumice grains bound with gypsum. Its absorption is 30% and the cost 30¢ a square foot applied.

B. RELATIVE COST AND VALUE OF MATERIALS.

To illustrate in a practical way the relative cost and value of the different materials, let us consider them as applied to a nursery 15' x 30' with a 10'6" ceiling height. The side walls, to a point 7'6" above the floor, must be hard finished to withstand daily scrubbing, which leaves available for acoustical treatment the ceiling with an area of 450 square feet, and the upper 3 feet of wall, or a maximum of 720 square feet. To secure the greatest possible quiet, the three treatments having low efficiencies are applied to both upper walls and ceiling, the other two on the ceiling only. The sixth column (Table I) shows the

NURSERY WITH ACOUSTI-CELOTEX CEILING
ST. JOHN'S HOSPITAL, TULSA, OKLA.
WIGHT & WIGHT, ARCHITECTS
net additional cost for acoustical treatment of the room, allowing for the omission of finished plaster; the seventh column the net cost for each unit of absorption, which one buys actually. All the materials are applied over a coat of brown mortar. The percentage of absorption is based on C4 pitch, as determined by various authorities. (See Table A, page 185.)

Table I gives the cost of variously providing for the effective absorption of sound in a nursery. A room acoustically treated by one of these methods will be noticeably less noisy than an adjoining room a room without dependence on the human equation.

Noise as it reacts on the human ear is measured by the physicist in sensation units which are of so fine a gradation that a difference of a unit is barely perceptible to normal hearing. The reduction of sensation of loudness from reverberation in a room, by acoustical treatment, is not directly proportional to the amount of absorption, but is proportional to the logarithm of the absorption. To illustrate, if a nursery has 100 units of natural absorption in its bassinets, blankets, mattresses and other surfaces, the addition of 200 units of absorption will reduce

<table>
<thead>
<tr>
<th>Table I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Nashkote A, 1&quot; felt muslin membrane, 720 sq. ft.</td>
</tr>
<tr>
<td>Nashkote B, 1&quot; white felt, oil cloth membrane pin-hole perforations, 450 sq. ft.</td>
</tr>
<tr>
<td>Acousti - Celotex, 1/4&quot; oil painted, 450 sq. ft.</td>
</tr>
<tr>
<td>Akooustolith plaster, 1/2&quot;, 720 sq. ft.</td>
</tr>
<tr>
<td>Sabinite plaster (New Brighton), 720 sq. ft.</td>
</tr>
<tr>
<td>Sanacoustic Tile, 250 sq. ft.</td>
</tr>
</tbody>
</table>

*Sanacoustic Tile was developed subsequent to these studies and is therefore not included in the other tables.

not treated, but at the present time we must take largely on faith to what extent the quiet contracted for in terms of units of absorption is actually delivered.

The result of acoustical treatment is something intangible, and has not been measured in the past except by its effect on the human ear. In the reverberation test commonly used, a note of known pitch is sounded in a closed room and the length of time taken for the sound to diminish to inaudibility is measured by a listener with a stop watch. An expert familiar with this technique can make the test in any small room and determine the effectiveness of the absorption of acoustical treatment, using as a basis, a similar room untreated. This test is not practical in corridors.

Since the motion picture industry has been brought face to face with the acoustical problem through the necessity for proper sound control in studios where "talking movies" are made, experiments furthering those of the acoustical engineers are being carried out. These tests should soon result in a mechanical device for recording sound conditions in the loudness by 5 sensation units. Reduction of 10 sensation units would require 900 additional absorption units. It has been shown in the cost table that these absorption units cost, when applied, about $1 a unit.

Scientists have determined the relationship between loudness and absorption, but the question, "When does loudness become annoyance?" is still the subject of research. In a hospital the aim is to bring loudness outside the border line of annoyance, which for a sick and nervous patient is obviously lower than for a healthy individual.

C. MAINTENANCE OF ACOUSTICAL MATERIALS IN THE HOSPITAL.

If we spend $200 or $300 extra to make a nursery quiet, we desire naturally to know how long the treatment will last, what effect frequent cleaning and repainting will have on its efficiency, what the cost of maintenance will be, how the material will be affected by leaks and whether it is sterile to bacteria and vermin. When the manufacturers were asked for
answers to such practical questions, little substantiated data could be obtained. The admitted lack of definite knowledge is no discredit to them, but rather an indication of the need for more research and experimentation in the new factors introduced by an exacting hospital technique. Since so many points were unsettled, a number of studies were undertaken to see what could be found. The results of these are given in the following tables.

1. Frequency of Cleaning and Painting. First an attempt was made to establish some standards. How often should hospital walls and ceilings be washed and painted? Local conditions and individual theories and practice necessarily govern these procedures. Eighteen hospital superintendents gave their routine for cleaning and painting corridors, nurseries, delivery rooms and the like. In the nurseries, three wash the ceilings every month, nine every three months and two find it necessary to clean them only every other year. Four paint the ceilings annually, thirteen every two years (Table C). From this widely varying practice, we have assumed that quarterly cleanings and biennial painting will represent a reasonable maximum. Several architects and acoustical engineers have criticized such frequent cleaning as extreme. Perhaps this may be so, but the hospital will naturally seek products which measure up to its peculiar needs, rather than compromise its standards.

2. Effect of Painting. The following comments of Professor F. R. Watson are significant. Note that the matter of washing is not touched:

"A very important consideration is the painting or decoration of acoustical materials. If such painting closes the pores of the material, or if painting a membrane stiffens it, the absorbing efficiency is reduced. The effect of spraying paint is not as serious as that of applying it with a brush. Acoustical plasters may be sprayed with paints without serious effect. Acousti-Celotex appears unique in this respect, because it may be painted in any way, even with oil paint with a brush, without appreciable effect on the absorption. This is due to the perforations which allow sound to penetrate to the interior, where absorption takes place, even if painted. Porous membranes over materials do not have a marked effect, because sound passes through the open work in the mesh. Such membranes can be painted only with caution, because closing the open mesh will prevent sound from getting to the material underneath for effective absorption."

Evidently the maintenance of acoustical material will add another problem requiring constant watchfulness to the superintendent’s daily work. If a painter puts even a single coat of paint or enamel on an acoustical surface in the wrong way, its value is largely lost. Wherever a room is treated acoustically a small metal plate giving proper instructions for cleaning and painting should be fastened to the material in a conspicuous place.

3. Effect of Washing. A sample of each material was scrubbed with soap and water ten times, allowing sufficient intervals for drying. The average amount of water absorbed increased the weight of samples as follows:

Nashkote A, felt with muslin membrane. .................. 30%
Nashkote B, felt with perforated oilcloth membrane. 18%
Acousti-Celotex, oil painted .................................. 13%
Akoustohth plaster .......................................... 6%
Sabinite plaster ............................................. 11%

These tests were not made under actual service conditions. Samples only were available. These were scrubbed on a table, not inverted as they would be on a ceiling, so the absorption of water is naturally exaggerated.

To determine the effect of leaks, samples were immersed in water for an hour. The gain in weight and

* Since this study was conducted a new material has come on the market which simplifies the problem of cleaning and painting. Sanacoustic Tile, shown in the illustration on this page, has a painted or enameled surface which will permit washing without any reduction in acoustical value.
ENTRANCE FACADE
ST. CLOUD HOSPITAL, ST. CLOUD, MINN.
SCHMIDT, GARDEN & ERIKSON, ARCHITECTS
REAR ELEVATION
ST. CLOUD HOSPITAL, ST. CLOUD, MINN.
SCHMIDT, GARDEN & ERIKSON, ARCHITECTS
thickness and the condition after 72 hours were as follows:

<table>
<thead>
<tr>
<th></th>
<th>Weight Gain in Thickness</th>
<th>Weight Gain in 72 hours-drying</th>
<th>Weight after Normal</th>
<th>Weight Gain in Plus 10%</th>
<th>Weight Gain in Plus 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nashkote A</td>
<td>73%</td>
<td>10%</td>
<td>Normal</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nashkote B</td>
<td>50%</td>
<td>10%</td>
<td>Plus 10%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Amavit-Glass</td>
<td>62%</td>
<td>10%</td>
<td>Plus 20%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Amavit-sponge</td>
<td>42%</td>
<td>0</td>
<td>Normal</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Subros paint</td>
<td>34%</td>
<td>0</td>
<td>Normal</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The results of these experiments are admittedly, more suggestive than conclusive. The vital question the loss of absorption value after years of frequent washing and painting, can be determined only in an acoustical laboratory where the progressive changes, resulting from similar tests on large areas, can be accurately and comparably measured.

4. Cost of Cleaning and Repainting. To reduce the maintenance factor to definite terms, we will use the same nursery and consider the cost of cleaning and painting the various materials, as previously applied to its walls and ceiling (50 square yards of ceiling, or 80 square yards when the ceiling and upper 3 feet of walls are treated). The cost of cleaning and repainting naturally varies widely, whether done by contract with union labor or by hospital employees. The unit cost figures used here represent a fair average of a number of estimates from contractors, hospital and hotel managers. The important deductions to be made from Table II are the relative costs of maintenance for the different materials.

D. SUMMARY.

On the basis of the two computations, Nashkote A would seem to be barred because of the high cost of both installation and maintenance, and yet it has been the most widely used of all the felt treatments in hospital practice. The assumption that the muslin membrane must be replaced every five years, and the oilcloth of Nashkote B every eight years.
would seem conservative. In the cleaning test, the cement by which the membranes are attached to the felt lost its strength after six or eight severe washings.

The choice would seem to narrow down to Nashkote B, Acousticelotex and the plasters. Both organic materials are incompatible with hospital standards, the one exposing its felt and the other its many deep holes to the air. Both are to a limited extent combustible.

1. Plaster. Theoretically, acoustical plaster should be ideal. It is inorganic and introduces no new or unusual material into the building. However, unless it is applied in strict conformity with the manufacturers' directions, its use is fraught with uncertainty. It is a comparatively simple matter to make uniform samples in the factory which will be tested successfully in the laboratory, but it is quite another thing to get the average plasterer on the job to put on each square foot perfectly. If too much pressure is applied, and it is instinctive for the mason to use pressure when he smooths his work with a float or a darby, the moisture is squeezed out to the surface and forms a film over the pores. It is, therefore, imperative that acoustical plaster be installed under the supervision of the manufacturer who can then insure and guarantee results in provid-

### Table II

<table>
<thead>
<tr>
<th></th>
<th>Annual Cost</th>
<th>Cost per Sq. Yd.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hard-finished Plaster</strong>—Normal conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 sq. yds. Cleaning (sponging) @ 6¢ per sq. yd.</td>
<td>$2.50</td>
<td></td>
</tr>
<tr>
<td>Four times a year</td>
<td>$10.00</td>
<td></td>
</tr>
<tr>
<td>Repainting every 2 yrs., 2-coat work @ 27¢</td>
<td>$13.50</td>
<td>$16.75</td>
</tr>
<tr>
<td>Annual cost 1/2</td>
<td>6.75</td>
<td></td>
</tr>
</tbody>
</table>

**Nashkote A**—Muslin membrane, water color painted, which must be repainted after each washing.

| 80 sq. yds. Cleaning (sponging) @ 6¢ per sq. yd. | $4.80 |                  |
| Four times a year | $19.20 |                  |
| Repainting @ 30¢ per sq. yd. | $24.00 |                  |
| Four times a year | $96.00 |                  |
| Replacing membrane every 5 yrs. @ 36¢ | $28.80 |                  |
| Annual cost 1/8 | 5.76 | 120.96 | 1.51 |

**Nashkote B**—Oilcloth membrane painted.

| 50 sq. yds. Cleaning (sponging) @ 6¢ | $3.00 |                  |
| Four times a year | $12.00 |                  |
| Repainting every 2 yrs. (stippled) @ 27¢ | $13.50 | $18.75 | 0.38 |
| Annual cost 1/2 | 6.75 |                  |
| Replacing membrane every 8 yrs. @ 36¢ | $18.00 |                  |
| Annual cost 1/8 | 2.25 | 21.00 | 0.42 |

**Acousticelotex BB**—Finished in oil paint.

| 50 sq. yds. Cleaning (sponging) @ 6¢ | $3.00 |                  |
| Four times a year | $12.00 |                  |
| Repainting every 2 yrs. (stippled) @ 27¢ | $13.50 | $18.75 | 0.38 |
| Annual cost 1/2 | 6.75 |                  |

**Acoustical plaster**—Sprayed with special washable paint.

| 80 sq. yds. Cleaning (careful scrubbing and sponging) @ 8¢ | $6.40 |                  |
| Four times a year | $25.60 |                  |
| Repainting every 2 yrs. (spray—1 coat) @ 18¢ | $14.40 |                  |
| Annual cost 1/2 | 7.20 | 22.80 | 0.41 |

These figures represent approximately maximum conditions in rooms where the ceilings and upper walls are washed four times a year.

The cleaning and maintenance of the plaster present some difficulties. The coarse granular surface, while pleasing in appearance, from its very texture will collect dust, which is of course the case with the felt fibre. It can be thoroughly cleaned only by the use of a brush. The nature of the plaster aggregate is such that surface grains will loosen to some extent in cleaning. Although this will not affect the absorption, the tendency of the particles to flake off
raises a question of the advisability of its use on the ceilings of nurseries, labor and delivery rooms. Given proper installation, plaster would seem, in spite of its low percentage of absorption, the most appropriate material for corridors, utility rooms and diet kitchens, where flaking will not be a menace to the patients.

Authorities state that the plasters can be sprayed with a special acoustical paint without materially affecting the absorption value. It seems logical, however, that each successive film of paint, combined with the dust which cannot be reached, must lessen the size and number of the apertures, with the result that the investment will return steadily decreasing dividends in quiet.

2. Nashkote B. The type here considered represents the latest development in a long series. The use of a white-surfaced felt and the reduction of the perforations in the oil-cloth to pinhole size have overcome the aesthetic objections to the older installations. There are no data to indicate how long the oil-cloth will last or what effect exposure to the air will have on the resiliency of the felt over a period of years. The weak link in the chain—a serious matter—is the cement which soon lost its strength in both washing and soaking tests. However this treatment possesses a material advantage over both Celotex and the plaster since the surface can be renewed through replacement of the membrane at a cost of 4¢ a square foot,* with only a slight loss of absorption through the successive applications of cement. When leaks occur a large percentage of water is absorbed but soon evaporates with apparently no ill effect to the felt. Theoretically, Nashkote B should represent a permanent form of treatment and should withstand the severe hospital conditions for many years.

3. Acousti-Celotex. In all the buildings visited this material had either an unfinished or a stained surface, neither of which is washable. When stained and stencilled a very attractive appearance is secured, but unfortunately such a surface cannot be washed. Celotex seemingly offers the easiest and most economical maintenance of any of the materials. Oil paints can be put on with a brush in the ordinary way without measurable loss of absorption, provided the holes are not filled. Although the painted surface can be washed, dust will not be reached in the deep holes and can be removed only by a vacuum cleaner. Toward that extent successive coats of paint entering the holes will close the pores and lessen the effectiveness is undetermined.

Celotex tends to warp when damp. Its surface is somewhat rough and the many holes give it the appearance of a huge inverted cribbage board. Experiments with various colored paints are being carried on to determine how the perforations may be most effectively camouflaged.

4. Sanacoustic Tile. There has been recently brought on the market a material known as Sanacoustic Tile, which apparently meets the hospitals' exacting specifications. This consists of a perforated sheet metal container, the surface of which is finished in baked enamel. It has a high light-reflecting value and may be cleaned easily with a damp cloth or sponge. The claim is made that it can be repainted without affecting the sound-absorbing efficiency in any way. The metal tile is filled with a sound-absorbing element of rock wool, a fibrous stone not open to any doubts as to cleanliness and sterility which have been raised against vegetable felts and fibres.

Sanacoustic Tile comes in different sizes, 12" x 12".

*The manufacturers state that in a room of average height they are prepared to replace the membrane of Nashkote B at 4¢ a square foot at the present cost of labor and maintenance.
12" x 24", 24" x 14", and filled with sound-absorbing element is snapped into steel supporting T's. These are attached to the existing ceiling in an old building, or in new construction the supporting T's may be wired to the furred ceiling members and all metal lath and plaster omitted. This form of acoustical treatment may be applied directly to hollow tile, concrete slab or joist construction. It is evident that it will qualify economically for hospital purposes as neither the metal tile nor wool filling will suffer from either cleaning or repainting. Furthermore, the tile or sound-absorbing element cannot be injured in cleaning or repainting. The Underwriters' Laboratories report that Sanacoustic Tile does not contribute to the fire hazard of a building.

Where acoustical treatment is needed in sterilizing rooms, kitchens, diet kitchens and utility rooms and escaping steam is present, continual exposure to excessive moisture will rust the supporting T's. For these conditions, Sanacoustic Tile and all supporting T's and clips can be furnished in aluminum, giving a non-corrosive finish.

E. BETTER ACOUSTICAL MATERIALS NEEDED.

While none of the materials and methods now on the market seem to measure up wholly to the hospitals' exacting standard of maintenance, the manufacturers realize that the ideal is yet to be achieved and are spending many thousands of dollars each year in acoustical research. We hope that out of their efforts will come an improved specific for sound absorption. It should be an inorganic, highly porous tile, smooth-finished, even glazed perhaps, and tinted, never needing to be painted, and washable. It should have more absorption than the present plasters with at least a 50% efficiency. Surely this is an achievement not impossible to our miracle-working industrial chemists and resourceful engineers. Such a tile sounds expensive, but given the formula or process the cost will be based on volume of production. While we are specifying, let us set a price limit of 50¢ per square foot installed.

The purpose of this study is to emphasize the importance of building quiet into the hospital structure and no deductions should be drawn from anything said that acoustical treatment, even in its present stage of development, is impractical for hospital purposes. On the contrary, the achievement of quiet surroundings for the patient is so vital that it far outweighs the cost and care involved in installation and upkeep.

### Table A

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>Cost per sq. ft. applied</th>
<th>Co-efficients of absorption</th>
<th>Gain in weight following scrubbing</th>
<th>Gain in weight following soaking</th>
<th>Fire resisting</th>
<th>Appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nashkote A, 1&quot; felt, muslin finish</td>
<td>70¢</td>
<td>45%</td>
<td>30%</td>
<td>75%</td>
<td>Yes</td>
<td>Fair</td>
</tr>
<tr>
<td>2. Nashkote B, 1&quot; felt, white oilcloth, pinhole perforations</td>
<td>80¢</td>
<td>44%d</td>
<td>18%</td>
<td>100%</td>
<td>Yes</td>
<td>Fair</td>
</tr>
<tr>
<td>3. Flax-li-num, 1&quot;, muslin finish</td>
<td>85¢</td>
<td>61%a</td>
<td>15%</td>
<td>80%</td>
<td>Yes</td>
<td>Good</td>
</tr>
<tr>
<td>4. Balsam Wool, 1&quot;, perforated steel membrane</td>
<td>65¢</td>
<td>47%a</td>
<td>Entirely disintegrated</td>
<td>No</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td>5. Acoustibloc, 1¾&quot;, painted</td>
<td>41¢</td>
<td>43%b</td>
<td>17%</td>
<td>No</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td>6. Fibrofelt, 1&quot;, muslin membrane</td>
<td>65¢</td>
<td>38%b</td>
<td>21%</td>
<td>No</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td>7. Acousti-Celotex BB, 1¾&quot;, oil painted</td>
<td>75¢</td>
<td>70%c</td>
<td>68%</td>
<td>No</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td>8. Acoustex, 1&quot;, poplar excelsior, magnesite binder</td>
<td>55¢</td>
<td>37%c</td>
<td>28%</td>
<td>58%</td>
<td>Yes</td>
<td>Fair</td>
</tr>
<tr>
<td>9. Akoustolith plaster, 1/2&quot;, (New Brighton)</td>
<td>44¢</td>
<td>32%e</td>
<td>6%</td>
<td>14%</td>
<td>Yes</td>
<td>Good</td>
</tr>
<tr>
<td>10. Sabinit Plaster, 3/4&quot;, (New Brighton)</td>
<td>30¢</td>
<td>30%d</td>
<td>11%</td>
<td>20%</td>
<td>Yes</td>
<td>Good</td>
</tr>
</tbody>
</table>

The coefficients of absorption used (i.e., percentage of sound absorbed as compared to one square foot of open window) are based on a pitch of 511° (C.4).


Cost figures cover material installed in the New York district. Prices necessarily vary with locality and quantity.

Scrubbing Test.—Each material was scrubbed with soap, water and brush ten times, weighed before and after. The average increase in weight is the figure used.

Soaking Test.—To determine the effect of leaks, samples of each material were weighted, the thickness measured, and then immersed in water for one hour.
Each material was weighed and its thickness measured. It was then immersed in water for one hour, weighed and measured again after the drip had stopped. After three days each was weighed again.

<table>
<thead>
<tr>
<th>TABLE B</th>
<th>SOAKING TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FELTS</strong></td>
<td></td>
</tr>
<tr>
<td>1. Nashkote A</td>
<td>4 oz.</td>
</tr>
<tr>
<td>2. Nashkote B</td>
<td>4 oz.</td>
</tr>
<tr>
<td>3. Flax-linen</td>
<td>3 oz.</td>
</tr>
<tr>
<td>4. Balsam Wool</td>
<td>2 oz.</td>
</tr>
<tr>
<td><strong>FIBERS</strong></td>
<td></td>
</tr>
<tr>
<td>5. Acoustibloc</td>
<td>6 oz.</td>
</tr>
<tr>
<td>6. Fibrofelt</td>
<td>4⅝ oz.</td>
</tr>
<tr>
<td><strong>PLASTERS</strong></td>
<td></td>
</tr>
<tr>
<td>7. Acousti-Celotex</td>
<td>10 oz.</td>
</tr>
<tr>
<td>8. Acoustex</td>
<td>12 oz.</td>
</tr>
<tr>
<td>9. Acoustolith</td>
<td>10% oz.</td>
</tr>
<tr>
<td>10. Sabinite</td>
<td>5 oz.</td>
</tr>
</tbody>
</table>

After one hour soaking, the membranes of Nashkote A and B were noticeably loosened. After a second hour of soaking the cement had entirely lost its strength.

**STEAM STERILIZATION TESTS IN HOSPITAL AUTOCLAVES**

<table>
<thead>
<tr>
<th>Akoustolith</th>
<th>Sabinite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight of sample before testing</td>
<td>169⅛ Grams</td>
</tr>
<tr>
<td>Weight of sample after 30 minutes sterilization at 180 degree dry heat</td>
<td>163⅛ Grams</td>
</tr>
<tr>
<td>Weight of sample after steam sterilization of 15 lb. pressure for 17/16 hours at 110 degrees</td>
<td>165⅛ Grams</td>
</tr>
</tbody>
</table>

After these tests were made the appearance of the Akoustolith sample was the same, and there seemed little if any tendency for the material to crumble or disintegrate. The Sabinite showed slight softening after dry heat, but not after steam.

**TABLE C**

Reports from hospitals in various cities showing the frequency of washing and painting the ceilings and upper walls in certain rooms where acoustical materials should be used.

<table>
<thead>
<tr>
<th>Hospitals</th>
<th>HOW FREQUENTLY WASHED</th>
<th>HOW FREQUENTLY PAINTED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corridors</td>
<td>Nurseries</td>
</tr>
<tr>
<td>1. N. Y. City</td>
<td>Every</td>
<td>Every</td>
</tr>
<tr>
<td>2. N. Y. City</td>
<td>6 mos.</td>
<td>3 mos.</td>
</tr>
<tr>
<td>3. N. Y. City</td>
<td>12 mos.</td>
<td>3 mos.</td>
</tr>
<tr>
<td>4. Brooklyn</td>
<td>6 mos.</td>
<td>4 mos.</td>
</tr>
<tr>
<td>5. Brooklyn</td>
<td>6 mos.</td>
<td>3 yrs.</td>
</tr>
<tr>
<td>6. Brooklyn</td>
<td>6 mos.</td>
<td>6 mos.</td>
</tr>
<tr>
<td>7. Brooklyn</td>
<td>3 mos.</td>
<td>3 mos.</td>
</tr>
<tr>
<td>8. Port Chester</td>
<td>3 mos.</td>
<td>3 mos.</td>
</tr>
<tr>
<td>9. Rochester</td>
<td>6 mos.</td>
<td>3 mos.</td>
</tr>
<tr>
<td>10. Utica</td>
<td>24 mos.</td>
<td>23 mos.</td>
</tr>
<tr>
<td>11. Buffalo</td>
<td>6 mos.</td>
<td>6 mos.</td>
</tr>
<tr>
<td>12. Valhalla</td>
<td>12 mos.</td>
<td>12 mos.</td>
</tr>
<tr>
<td>13. Boston</td>
<td>12 mos.</td>
<td>12 mos.</td>
</tr>
<tr>
<td>14. Boston</td>
<td>12 mos.</td>
<td>12 mos.</td>
</tr>
<tr>
<td>15. Providence</td>
<td>12 mos.</td>
<td>12 mos.</td>
</tr>
<tr>
<td>16. Pittsburgh</td>
<td>6 mos.</td>
<td>4 mos.</td>
</tr>
<tr>
<td>17. Erie</td>
<td>12 mos.</td>
<td>3 mos.</td>
</tr>
<tr>
<td>18. New Haven</td>
<td>6 mos.</td>
<td>3 mos.</td>
</tr>
</tbody>
</table>

(Continued on page 148 of this issue)
NOTES AND COMMENTS

APPLICATION OF APARTMENT HOUSE DATA TO AN ACTUAL LAYOUT

In response to the arguments advanced by Mr. Henry Wright in his article, "The Modern Apartment House," and which emphasize the greater net return possible when less ground is covered owing to a decrease in the hall space required, a reader writes him, and with a specific case in mind inquires as follows:

"We shall take a northwest corner because of the morning and afternoon sunshine, size 100 feet facing east and 150 feet facing south. On this we shall erect to best advantage, as stated in your article, a 5-story apartment house. Would you make it a "U"-shape with the light court facing south? What width should the court be, 40 feet or 50 feet? The apartments will be two and three rooms. The main floor will cover the entire property except where the side and back are set back. The main floor is to be separate from the apartments above and will have its own entrance near the corner on the 100-foot side, the apartment entrance being at the other end. At the far end of the 150-foot side will be another entrance for the apartments.

"The set-back is 10 feet on the 100-foot side, 10 feet above the main floor; the 150-foot side has to be set back 8 feet, 8 feet up from the ground. The ground value is about $40,000. The apartments would rent for $50 a month for two rooms and $75 for three rooms.

"The cost of construction is 35 cents, or a trifle less, a cubic foot. The basement will be 8 feet under sidewalk level with a 12-foot basement ceiling. The apartments may have any ceiling height desired.

"The building should be of reinforced concrete, sound proof, and containing every thing that will make it rentable. How can this space be divided to best advantage? What features must these apartments have in order that they may be rented ten years hence?

"How would an efficient typical floor plan appear when divided into two and three room apartments? The halls can be 4 feet 6 inches according to our building code, and are required to run to light.

"I should like to know what could be built and what the earnings on a financing proposition would be."

Mr. Wright has prepared, in reply to these inquiries, a comparative analysis of the possibilities in developing the site. Three schemes are illustrated: the customary solution of covering a maximum ground area, and two solutions covering less ground area but so planned that the apartments will have a minimum of corridor space. In explanation of his analysis of comparative costs, Mr. Wright's comments to his correspondent are as follows:

"An archaic plan is proposed for consideration. Many persons conclude that because the tenement law says you must not cover more than 70% of your land nor go nearer to the side and rear lot lines than 8 and 10 feet, the first thing to do is to proceed to these maximum conditions and then, in order to use all the space, to fill your building with wasteful halls."

"After mentioning such requirements as more morning and afternoon sunshine and facing south, you suggest a plan in which at least two apartments on every floor will face north on only an 8-foot light court with no communication through which they can get south, east or west sunshine, breeze and outlook. Two more apartments on each floor will have only a west exposure on a 10-foot court; these would of course get sunlight and a breeze from the west until a building is erected on the property next door.

"You speak of apartments so planned that they will be rentable ten years hence. Let us hope that builders as well as tenants will begin to appreciate the tremendous economic loss in dark inside court apartments by then, in which case at least 40% of such buildings as the one you suggest will be vacant as they deserve to be.

"I shall not attempt to offer any suggestions for a typical efficiency plan or a building required to be sound proof, and to contain everything that will make it rentable. It would take more than labor-saving accessories to make the kind of building you propose,—and there are hundreds of them planned, particularly in Western cities,—really rentable to people who appreciate the comforts of sunlight, outlook and quiet. Fortunately for builders, only a few people ever insist on these essentials. Others will accept as substitutes gaudy foyers, gas fireplaces, humidified air and elevators."

"My suggestion to you is to employ the best architect in your city. Ask him for an economic analysis of the problem. Some stupid building laws may have to be changed if they require you to fill the plans with halls and place stairs on all the best outside exposures. Such cities as New York and Chicago have changed their laws within the last year so that for walk-up fireproof apartments only one stairway and no fire escapes to each section of an apartment building with two or more stair groups are required. The Michigan Boulevard Gardens, for

* See the March, 1929, issue of The Architectural Record, pp. 213-245.

*Klaber and Grunsfeld, Architects. See the March, 1929, issue of The Architectural Record, p. 223."
Plan "A"  
35 Rooms on each floor  
6 floors  
Total Cost of Building $188,000  

<table>
<thead>
<tr>
<th>Room Area</th>
<th>Floor Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>224 Sq. Ft.</td>
<td>782 Sq. Ft.</td>
</tr>
</tbody>
</table>

Net  
Stairs and necessary hall 20 " " 678 " "  
Excess hall 42 " " 1500 " "  

Area  
2.86 Sq. Ft. 10,000 Sq. Ft.  
Room rental $25.00 a month $300.00 $63,000  
Carrying charges 285.07 59,861  
Profits  
$ 14.93 $ 3,136

Plan "B"  
35 rooms on each floor  
4 floors  
Total Cost of Building $180,060  

<table>
<thead>
<tr>
<th>Room Area</th>
<th>Floor Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>229 Sq. Ft.</td>
<td>822 Sq. Ft.</td>
</tr>
</tbody>
</table>

Net  
Stairs and necessary hall 19 " " 671 " "  
Area  
2.48 Sq. Ft. 8000 Sq. Ft.  
Room rental $25.00 a month $300.00 $41,000  
Carrying charges 270.62 37,887  
Profit  
$ 29.38 $ 4,113

Plan "C"  
28 rooms on each floor  
8 floors  
Total Cost of Building $371,771  

<table>
<thead>
<tr>
<th>Room Area</th>
<th>Floor Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>297 Sq. Ft.</td>
<td>838 Sq. Ft.</td>
</tr>
</tbody>
</table>

Net  
Stairs and necessary hall 24 " " 672 " "  
Area  
3.21 Sq. Ft. 8980 Sq. Ft.  
Room rental $27.50 a month $330.00 $73,420  
Carrying charges 313.20 70,158  
Profit  
$ 16.80 $ 3,762

APARTMENTS COVERING LEGAL LIMITS OF LOT SHOW LESS PROFIT

<table>
<thead>
<tr>
<th>Type</th>
<th>Lot Coverage</th>
<th>Light and Air</th>
<th>Corridors</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;A&quot;</td>
<td>Ordinary</td>
<td>Maximum</td>
<td>Wasteful</td>
</tr>
<tr>
<td>&quot;B&quot;</td>
<td>Efficient</td>
<td>Desirable</td>
<td>Economical</td>
</tr>
<tr>
<td>&quot;C&quot;</td>
<td>Efficient</td>
<td>Satisfactory</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>
which I was consulting architect, are five stories high, fireproof and based on this single exit plan.

"According to your plan, you fill the lot to the maximum side line restrictions with hall entrance apartments, leaving a court about 56' x 52' toward the south street. You then cover 10,008 of the 15,000 square feet, or 66% of the lot. My article plainly states that it is uneconomical to cover more than about 50% on land costing less than $5.00 a square foot. Your land is to cost $1.66 a square foot. Roughly estimating, you should be able to pay the carrying charges with a four-story building covering between 55% and 60% of the property or with a five-story building covering 50%.

The plan without halls will be actually more flexible than one with halls so a greater efficiency and better room sizes should be secured. The comparison of the two plans follows:

<table>
<thead>
<tr>
<th></th>
<th>A. Submitted Plan</th>
<th>B. Small Hall Plan</th>
<th>C. Larger Rooms Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rooms</td>
<td>6 x 35 = 210</td>
<td>4 x 35 = 140</td>
<td>8 x 28 = 224</td>
</tr>
<tr>
<td>Height in feet</td>
<td>10,000</td>
<td>8,700</td>
<td>8,980</td>
</tr>
<tr>
<td>Cubic contents</td>
<td>720,000</td>
<td>452,400</td>
<td>826,160</td>
</tr>
<tr>
<td>Cost at 40s a cubic foot (no extra cost assumed for elevator)</td>
<td>$288,000</td>
<td>$180,960</td>
<td>$371,772</td>
</tr>
</tbody>
</table>

Add 15% financing and carrying charges and multiply 115% annual charges.*

$50,000 site cost and $10,000 carrying charges, etc.

Multiply by 115% annual charge.

$45000 site cost and $10,000 carrying charges, etc.

Multiply by 115% annual charge.

Maintenance and vacancies

(No elevator $72, 6-story elevator $52, 8-story elevator $80)

Allowing for 3% more vacancies on account of lack of proper light and air.

$59,864

Why do you desire elevators? As owner of any-

* Carrying charges under A, B and C without the surplus provide for 6% on the equity besides the amortization of 15% of the total building cost, so that the owner in 10 years at a moderate vacancy would have paid off 5% of this original cost and be receiving an additional return equal to 6% on this retired amount.
GLAS IM BAU

KORN, ARTHUR

"GLASS for Building and Objects of Use" contains 187 excellent illustrations chosen from the most advanced German point of view. It is divided in four parts. Each division is preceded by an article explaining the technique of the materials illustrated: opaque glass, prism glass and glass brick, mosaic and glass painting, and glass for illuminating. The articles contain more than mere information; they are written with enthusiasm. The leading article by Herr Korn, the compiler of the book, is an almost ecstatic appreciation of new uses for glass in building.

Glass is the material which encloses space without the appearance of its being there. It is a skin between man and the elements which lets pass the benefits of light and controls for us sound, air, dirt, heat, cold and the rain. Open your walls to floods of sunlight and build your rooms inside with the daylight of the street permeating the very partitions. Let the anatomy of your building show not between banks of glass but through great areas of cantilevered crystal. Such are the office building by Mies van der Rohe and the work shops at Dessau. Put your store on the street like an oriental bazaar behind a great sheet of plate glass which makes the store beyond at once part of the street and apart from the street, as in Korn's apothecary shop. Use tremendous areas of glass to be flooded by night with illumination. Place neon light lettering against these backgrounds for night advertising, and by day profit from the light diffused through a glass wall as in the stair shaft by Krayl. New methods have made glass strong enough for use as furniture and proof against heat.
for cooking. Look at these recent developments in the glass technique and conjecture the possibilities of glass used fully as a building material.

The choice of illustrations shows the latent powers in glass which fascinate Korn. How far these possibilities are discernible in present expressions, how much new technical achievement is put to the test; these are the qualities he seeks to show. Underlying his thought is always the realization of building as space and volume, part of which must be enclosed in glass.

The German sense of carrying an idea to completion tends toward a substitution for windows of areas entirely of glass; their love of cleanly expressed ideas and uninterrupted space results in what people of another mind call hardness and bareness. They have caught the artist's sense of the material itself and its intrinsic nature more purely than any other contemporary nation and are expressing this sense on an unprecedented scale. As the articles by Deutsch, Liese, Gehrich and Oram show, they are a progressive and enthusiastic body of technicians. Their artists and manufacturers are eager to impart the qualities and limitations of their products in order to establish a right use of them and a fuller appreciation. A book exhibiting cooperation on such a geographic and industrial scale as does Glas comes as an inspiration; it cannot be regarded as illustrating an arbitrary whim but must be held as an index of a powerful current in design. Shepard Vogelgesang

Gropius, Walter

While the activities of the Bauhaus Institut of Dessau are various it is perhaps in architecture that the most significant work is done. In the excellent series of small, inexpensive and well illustrated books which the Bauhaus issues, the two devoted to architecture, that of Gropius on Internationale Architektur, and that of Oud on Hollandische Architektur, have been perhaps the most valuable, with covers and typography designed by Lucia Moholy Nagy as modern and as interesting as the buildings illustrated within. The first of these has very naturally been exhausted in the three years since its first appearance. The present second edition makes it again possible to obtain what is perhaps the finest epitome of modern architecture and provides for the inclusion of certain work that has been executed since the book first appeared.

The full list of additions includes the designs of Honnes Meyer (of the Bauhaus) and Hans Witwer (of Basel) for the Palace of the League of Nations in which the frame is of aluminum covered steel; two Russian public markets, one by Ginsburg and Wladimiroff, the other by Mielnikoff, both in Moscow; two Dutch factories, one by Mart Stam, the other by van der Vlugt; the hangar at Orly in France by Freyssinet; a Russian factory by Norwert in Moscow; a design for a skyscraper by Neutra from his "Wie Baut Amerika;" a hospital project by Tony Garnier; the new houses of the Bauhaus professors by Walter Gropius; a country house by Krezcar of Prague; a house by Mart Stam of Rotterdam; steel houses by Georg Muche and Richard Paulick of the Bauhaus; the housing development at Pessac near Bordeaux by Le Corbusier and Pierre Jeanneret; a steel house by Marcel Breuer of the Bauhaus; houses by Oud at the Hook of Holland; houses in rows at Dessau by Walter Gropius; and finally apartments outside Frankfurt by Ernst May. Considering that these new examples are but representative of types, the new preface by Gropius, which the reviewer feels may well be quoted, is fully borne out.

"Since the appearance of the first edition (in 1925) the modern architecture of the various lands of western culture has followed the line of development indicated by this book with a surprisingly rapid tempo. Then but an idea, it is today a solid fact: the appearance of the modern buildings as they are shown in the innumerable publications of German, Slavic and Latin lands, is in general more than inspiring. As once Gothic, Baroque, Renaissance were current all over Europe, so the new spirit in building of our technical epoch begins more and more to cover the entire civilized world, borne by the intense standardization of international technique. The increasing interest of the general public in the development of the new theory of architecture points with certainty the sense of the new building: Provision for the demands of life...Dessau, July, 1927." Henry-Russell Hitchcock, Jr.

Kitchen Management
Dahl, J. O.
 Kitchen Management. Harper & Brothers, New York. $5.00

The location of the kitchen in the plan of a hotel, restaurant, or other building with food service, is obviously of concern to the designer, but too often it is placed as an afterthought in space "left over" after the dining and other rooms have been determined. That there is now a book on the kitchen, written for architects and hotel managers, is an indication of its importance and that there is something to be said about it.

In this volume the writer deals with the subject of waste resulting from poor planning; of the best kinds of kitchens for all types of institutions; of materials to use in floors and walls; of the position of pantries, store-rooms and dishwashing departments in relation to the main kitchen. Mr. Dahl is well known as a hotel, restaurant and club consultant.
YERBURY, F. R.
Modern European Buildings, First Series, 244 plates. Payson and Clarke. $19.00

Mr. Yerbury was the co-editor, with Mr. Howard Robertson, of a volume on Modern French Architecture previously reviewed in THE ARCHITECTURAL RECORD. He is Secretary of the British Architectural Association, and spends most of his time now traveling over Europe in search of material for architectural publications. He has been largely responsible in England for the more general spread of interest in modern architecture and its developments since the Great War.

The strongest impression one gets from Mr. Yerbury's plates is simplification, the elimination of non-essentials. This, he thinks, has been mainly due to economic depression and the high cost of building. These have to force the architect into new experimental lines.

Mr. Yerbury may be partly right in seeing a more clearly developing national architecture in England than in most continental countries, but I do not find the evidence for it in the plates. The more creative, the more striking at least, in respect to design seem to be Finnish, Swedish, Danish, German, Dutch. It would seem also that, apart from the towering of our new American structures, European architects are bolder than ours; American architects are relatively conservative, if not timid. The main stream of creative art still flows in Europe. But Europe has not a unity. There is a European culture, but the adjective "European" in such connection is not geographical. Like the adjectives "Latin" or "Greek," it has long overflowed its borders. America is an essential part of that culture. Culturally, we are all Europeans, just as France or Spain is as Latin as Latium. It remains to be seen whether America will take advantage of its detached geographical position to evolve a national expression free from "styles" that have so long been associated with cultural attributes.

ARTHUR W. COLTON

A CORRECTION

The interiors of the Jay-Thorpe Store illustrated in the June issue of THE ARCHITECTURAL RECORD were incorrectly attributed to Buchman & Kahn. While Buchman & Kahn were architects for the building, Whitman & Goodman were the architects solely responsible for the design of the interiors illustrated. The interiors are significant of the recent trend in the design of shops for women's wear in which luxuriously appointed salons serve as the setting for the display of models and the exhibition of garments. Counters and display racks are entirely eliminated.

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WHITMAN & GOODMAN, ARCHITECTS
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Sunlight

The Architectural Record, August, 1929
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What do we see when we look down the corridor of an apartment building? Doors!—Guardians of valued possessions and privacy. But no door is stronger than its lock—which is one reason you see Corbin Unit Locks in so many fine apartments. For with Corbin there is no bargains with protection—it is an integral part of every Corbin lock.

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Plants and Offices at: Berkeley, Cal.; Camden, N.J.; Framingham, Mass.; Galt, Ontario; Hyde Park, Mass.; Sturtevant, Wt. Canadian Representatives: King Kelly, Ltd., Winnipeg, also Branches in Principal Cities and Agents in Foreign Countries. The Silent Unit Heater-Ventilator

The Architectural Record, August, 1929
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HOLDS itself out so that it will not even stain through porous newspaper, yet so tenacious in adhesion, so elastic that coated tin can be bent and rebent without fracturing the film.

**Velumina Wallhide First Coater**

—often saves as much as half the material on porous walls!
—seals, as no other product, against suction spot — lime — alkali, and moisture troubles!
—often can be re-coated in 4 to 6 hours, according to finishing material and condition of individual job!

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Specify it! Because no other material gives such sure insurance against suction spot, lime, alkali and moisture troubles—no other will insure such excellent high standard results in two coat work or offer the time saving possibilities in getting jobs done! Specification writers write for Booklet!

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Newark, N.J., Portland, Ore., Los Angeles, Cal.

The Architectural Record, August, 1929
FROM NON-FIREPROOF TO FIREPROOF

And a Floor Added Without Disturbing Work by Use of

GYPSTEEL Pre-Cast Gypsum Slab Construction

A PART of the Newark Evening News Building, after thirty years of service, had become antiquated. It was not fireproof. It increased the fire insurance on the main building. It really did not contain adequate floor space for the publisher's needs. The original steel work could not support an additional floor without reinforcement. Reinforcement meant interruption in the use of the building. What could be done?

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MINNEAPOLIS, gateway to the Northwest, a progressive city of beautiful buildings, is the home of two new impressive structures to which it can point with architectural pride — the Northwestern National Bank Building and the Hodgson Building.

Both are equipped with Russwin Hardware, distinguished for originality of designs — modernistic and classic — as well as for enduring quality and the lifetime of trouble-free service which it renders.

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The Architectural Record, August, 1929
The MODERN touch in great public services

DODGE REPORTS, like that outstanding daily journal The Kölnische Zeitung whose Exhibition Pavilion in the modern manner is shown above, constitute a public service whose roots are fixed in the nation as a whole—for building is the second largest industry of America. In line with the modern trend towards still further perfected service, Dodge Reports are aimed toward the elimination of waste in time and money, for they make it at once easier for manufacturers to sell building products and easier for architects to specify and buy them.

No. 5 of a series of interesting examples of the modernistic note in European architecture. The illustration shows a night view with novel flood-lighting effects of the Exhibition Pavilion of the Kölnische Zeitung in the 1928 Press Exposition at Köln. The Architects were Riphahn and Cord of Köln. The tower in the centre is sexagonal, and the pavilion itself is placed on the main axis of the House of Nations.
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in the modern Studio Living Room

THE modern heating equipment for modern rooms . . . harmonious, decorative and above all, wonderfully efficient . . . The fact that the Modine Cabinet Heater insures complete heating comfort in rooms that are recognized as hard to heat, recommends it to you for all rooms . . . Built in two models . . . Floor Type above equipped with efficient built-in humidifier . . . Wall Type, only 5½ inches in depth and recommended where space is a most important factor as in apartments, offices, shops, etc.

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Williams Reversible Window Equipment permits the regular building employees to clean windows from the inside safely and rapidly. Recent tests have shown that Williams Equipped Windows can be cleaned safely in 40 to 50 per cent less time than is required to clean ordinary double hung windows of equal size.

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For twenty-five years manufacturers and installers of reversible window equipment
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Clean Your Windows from the Inside

The Architectural Record, August, 1929
There is Nothing BETTER!

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There is nothing better—all-enamel finishes are attractive, durable, easy to keep clean; capacious ovens and efficient broilers produce deliciously cooked foods; the Red Wheel gives hours of leisure to the home-maker, watching the baking while she is miles away; hundreds of sizes and styles to choose from.

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UNLESS THE GAS RANGE HAS A

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LORAIN
FREDERICK G. FROST designed this bath-dressing room. Ceiling, walls, floor and dressing table are constructed with Keramic Tiles... real tiles... in a color scheme of gold, gray and orchid. The floor plan is shown at the right.

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FIG. 9

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The Architectural Record, August, 1929
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The Architectural Record, August, 1929
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The Architectural Record August, 1929
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The Architectural Record, August, 1929
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Architect, Margersoyd & Ogden, New York City
General Contractor, Thompson-Starrett Co., New York City
Heating and Ventilating Engineers, Joros & Baum, New York City
Plumbing Contractor, Frank B. Rosette, Inc., Long Island City, N. Y.
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The Architectural Record, August, 1929
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Represented in SWEET'S—page C354

Manufactured by LEONARD-ROOKE COMPANY
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The Architectural Record, August, 1929
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This nameplate identifies a genuine Dunham Thermostatic Radiator Trap.

The Dunham Differential Vacuum Heating System and individual parts of the apparatus used in that system are fully protected by United States Patents Nos. 1,644,114 and 1,706,401, and Canadian Patents Nos. 282,193, 282,194 and 282,195. Additional patents in the United States, Canada and foreign countries are now pending.
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Statistics tell that each apartment or residence averages five deliveries a day: dairy, bakery, grocery, meat-market, newspaper, laundry, department stores, dry cleaner, tailor, etc. Damages to unprotected parcels, annoyances of incomplete deliveries and dangers of going to door for deliveries are well understood. The Receivador obviates all this—makes deliveries of supplies and parcels automatic.

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See SWEET'S Catalog

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the finest syphon-jet type, with this exclusive added refinement, costs no more than ordinary high grade syphon-jet closets.

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The Architectural Record, August, 1929
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—light in weight

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459 Broadway
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In Canada: Canadian Blower & Forge Co. Ltd.
Kitchener, Ontario.
III. SOUND INSULATION AND COSTS

Sound Insulation is the setting up of effective barriers around noise centers to prevent the sound passing through walls, floors and ceilings to adjoining rooms, and to break up the continuity of the building which would otherwise carry the vibrations as readily as the air itself.

When we seek the most effective type of sound proof partitions and floors we are faced with the same situation that we found in trying to determine the best form of acoustical treatment to use,—data based almost exclusively on laboratory tests. The results of different investigators vary widely, due to different methods of testing and the conditions under which the experiments are conducted.

In building a hospital with the usual limited appropriation, a sane balance must be sought between expenditures for insulation and absorption, and sound judgment used in their application. Simple and comparatively inexpensive insulating precautions intelligently applied, so far as could be determined in these studies, offer nearly as effective protection as more elaborate methods and will provide the average hospital with as much "sound proofing" as it can afford.

EXAMPLE OF SOUND INSULATED HOSPITAL BUILDING.

Without going into further discussion of acoustics, we will outline the conclusions reached by describing precautions incorporated in the plans and specifications of a new maternity pavilion, soon to be erected in New York City. The hospital is in a quiet neighborhood, so there is no necessity of acoustical treatment to deaden noises which come from the outside when windows are open. This, for hospitals located in congested districts where there is heavy traffic, is a matter of major importance, too often neglected when new buildings are planned. In designing this new pavilion, service and administration noise centers were located as remotely as possible from the patients’ quarters, and insulation and acoustical measures were provided only for sources of uncontrollable noise, nurseries, labor rooms, diet kitchens and corridors. Taking the same nursery described earlier in this article, we will complete the picture by outlining the special structural details adopted for insulation against the transmission of noise.

1. Floors. The floors throughout the building are of steel beam and girder construction with cinder concrete slab 4 inches thick. Over the slab are spread 2½ inches of dry coarse anthracite cinders which, because of their porosity, make a fairly effective sound deadening pad. On top are 2 inches of concrete mixed with a minimum of water, to serve as a binder and base for an inch of stiff mortar on which is placed the finished floor. One of the soft floors is used, a combination of cork, rubber and asphalt which can be scrubbed. Some engineers recommend the use of 2 inches of cork as a deadening pad. This costs 25¢ a square foot as compared to 10¢ for the cinders. The cinder pad will absorb some vibrations and will serve to insulate the partitions from the floor slab and it was our conclusion that the results should prove effective, with the added provision of a hung ceiling, in controlling the vertical sound waves.

2. Ceilings. Hung ceilings are used in all patients’ rooms, supported on insulated hangers. These are made in two pieces with heavy felt between. If a hung ceiling is connected to the floor slab with rigid hangers it has little sound insulating value. While the special hanger adds about 12¢ a square foot to the cost of ceiling construction, it increases its insulating value 200% to 300% over the conventional type of construction.

3. Partitions. The partitions enclosing the room are formed of two separate walls of gypsum block with a clear, unbridged air space of two inches between. This, Professor Sabine has found, is as effective as the use of insulating materials between walls, either with or without air spaces. Obviously it is less expensive, although covering more floor area.

In erecting double walls care must be taken to avoid bridging. If there is any connection between them, even so much as one nail driven through, the vibration in one will be transmitted, as by a diaphragm, to the other and will set it in motion. The two walls should be laid on the dry cinder concrete and the top mortar floor brought up to them, not carried under. The walls should be laid simultaneously and precautions taken to keep loose mortar from dropping between them and forming a link at the bottom. To prevent this a wood strip hung between the blocks to fill the opening, and raised as each tier is laid, is effective.

4. Doors. The corridor door frame is anchored to the blocks and built solid, 6 inches of steel and masonry. The door, of furniture steel, is 2 inches thick and cork filled. It closes against felt gaskets on top and sides which stop vibrations and fill the cracks, with an expanding rubber strip to close the bottom space at the floor. Thus the cries of infants are barricaded on all sides except at the windows.

5. WINDOWS AND VENTILATING UNITS. It was decided to keep the windows closed and to provide double sash. This is made practical by a combined heating and ventilating unit proven highly successful in schools. A small noiseless fan draws air through a vent in the outside wall, passes it through filter pads over a steam coil and blows it up to the ceiling, where it is distributed without drafts to all parts of the room. Clean air, perfect circulation and control of both temperature and air changes are insured. The device is not expensive to install or operate. It is simple in design with all parts readily accessible for cleaning. The problem of the open window is overcome and the ventilation of our nursery and labor rooms improved.

6. INSULATION OF PIPES. Further precautions provide for the covering of all pipes carried through the room or its walls with felt, and the filling of all cracks around pipes and conduits, where they pass through the floor slabs, with insulating fiber. The principle throughout is to break the structural continuity of walls, floors and pipes, and to minimize the sound carrying vibrations.

7. ACOUSTICAL TREATMENT. To supplement Sound...
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Please check your special window and door frame requirements against the Andersen details and specifications. (See Sweet’s Catalog pages B1413 to B1435.)

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You know just what you will get when you specify Andersen Frames and you are always protected against substitution by the trade mark die-stamped into the genuine White Pine sills and casings.

To be sure of quality, follow Andersen Frame details and specifications in Sweet’s Catalog.

See SWEET’S Catalog Page B-1413

Andersen FRAME CORPORATION., Bayport, Minn.

Alps Apartments, Kansas City, Mo. Harry Foster Almon, Architect

Andersen Box Frames installed by John H. Kelley & Sons, Builders.

The Architectural Record, August, 1929
Insulation, and to blot out the myriad sound waves which the shrill cries of infants set in motion, we must have Acoustical Treatment. As a result of the investigations and experiments already described, alternate proposals for acoustical treatment are called for, specifying either Nashkote B, consisting of 1" hair and asbestos felt covered with finely perforated oilcloth membrane; or Acousti-Celotex, 1/4" thick. The final decision is to be based on appearance.

Acousti-Celotex costs less for upkeep and maintenance as well as having a lower installation cost per unit of absorption, and has therefore slight economic advantages for hospital purposes. The latest development of Nashkote B, using white felt under the membrane, however, is superior in appearance to the Acousti-Celotex with its many large holes. If the experiments now being carried on produce a color scheme which will successfully camouflage these holes without serious loss of light reflection the weight of evidence would be slightly in favor of the Acousti-Celotex. From the standpoint of absorption there is little difference. Each square foot of Nashkote B absorbs 66%, and of Acousti-Celotex 70%, of the sound waves which would pass out of a room through a square foot of open window.

For corridors, diet kitchens and utility rooms acoustical plaster with at least 30% absorption is called for.

8. Cost of Sound Insulation and Acoustical Treatment. The following table summarizes the cost of the various special structural items:

| Nursery, 15' x 30', with 10'6" ceiling; 315 sq. ft. of double partitions vs. single wall. | $393 | $254 |
| 2" sound proof door with felt and rubber gaskets vs. ordinary hollow metal door. | 56 | 43 |
| Additional inside steel sash; frames and transoms for three 4' x 7' windows | 180 |
| The hung ceiling is standard in either case; additional cost for insulated hangers at 126 sq. ft. | 34 |
| Univent heating and ventilating device substituted for an ordinary radiator | 320 |
| 450 sq. ft. of acoustical treatment @ $80 vs. 3 coats ordinary plaster, less finished coat of plaster | 360 |
| Pipes are felt covered in either case | 1363 |
| | 429 |

Thus we are spending an extra sum of $933 to control the noises in one nursery.

The maternity pavilion under discussion is an addition to an existing hospital. It is a building of 4½ stories and basement with a maximum capacity of 75 beds on the three upper floors. The delivery suite is in a half story on the fifth floor. The building contains 388,500 cubic feet, or an average of 5,466 cubic feet a bed, which is comparable to the bulk of the modern compact type of general hospital. For this reason the cost of making this building quiet is fairly suggestive in its general application to hospitals.

When the preliminary budget for the new building was prepared, the sum of $10,000 was included for the control of noise. No attempt was made, as so often done, to insulate all partitions on the patients' floors, the treatment being limited to those around the foci of uncontrollable noise which were in close proximity to the patients' rooms. Three nurseries, two labor rooms and two delivery rooms were designed like the nursery described before. Acoustical plaster was specified for the ceilings of the diet kitchens, utility rooms and 480 lineal feet of corridors on the patients' floors. According to the preliminary estimate of the builder, the total cost of the sound control measures will be $7,967. This represents an extra investment of $108 a bed. The cost per cubic foot is increased a trifle over 1½, and the total structural cost about 2½%, surely a moderate price to pay for permanent quiet.

Prevention rather than cure is a policy that applies to noise as well as to health. Adequate treatment which costs, say, $500 should last indefinitely, but let us assume its life is only ten years. The cost to the hospital in depreciation and interest, with an added $20 for extra expense in cleaning and painting is $72 a year, or 20¢ a day to insure freedom from disturbance from infant cries. If 20 beds are within hearing, the cost of relief is $4 a bed each day—certainly not an extravagant figure.

BIBLIOGRAPHY


The Architectural Record, August, 1929
Perfect Fitting...Moisture Proof
TROUBLE FREE

Armstrong's Cork Covering meets all the requirements of an ideal insulation for refrigerated drinking water systems.

First, it is perfect fitting—molded in sections to the exact measurements of standard pipe sizes and fittings. Carefully applied according to instructions, there are no air pockets where moisture may condense.

Second, it is moisture-proof. The cork granules of which it is made are naturally resistant to moisture. In addition, Armstrong's Cork Covering is protected by a heavy coating of air and moisture-proof asphalt mastic, ironed on at the factory.

Third, it is trouble free. Lines properly insulated with Armstrong's Cork Covering can safely be enclosed in walls and pipe chases with the assurance that the insulation will last and continue to function effectively for the life of the building.

The Armstrong engineering service offers to architects and engineers, free of cost, the benefit of years of experience in designing drinking water systems. Write for the book, "Refrigerated Drinking Water." Armstrong Cork & Insulation Company, 901 Concord Street, Lancaster, Pa.; McGill Building, Montreal; 11 Brant Street, Toronto.

Armstrong's Cork Covering
for Cold Lines, Coolers and Tanks

The Architectural Record, August, 1929
CONSTRUCTION STATISTICS

From the records of F. W. DODGE CORPORATION, Statistical Division. The figures cover the 37 states east of the Rocky Mountains and represent about 91 per cent. of the country's construction volume.

First Five Months, 1929

<table>
<thead>
<tr>
<th>Classification</th>
<th>Number of Projects</th>
<th>Valuation</th>
<th>Number of Projects</th>
<th>Valuation</th>
<th>Per cent. of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Buildings</td>
<td>10,267</td>
<td>$408,686,000</td>
<td>4,260</td>
<td>$258,594,300</td>
<td>73%</td>
</tr>
<tr>
<td>Industrial Buildings</td>
<td>2,855</td>
<td>334,036,700</td>
<td>1,012</td>
<td>78,097,500</td>
<td>24%</td>
</tr>
<tr>
<td>Educational Buildings</td>
<td>1,430</td>
<td>145,900,000</td>
<td>1,217</td>
<td>140,356,700</td>
<td>96%</td>
</tr>
<tr>
<td>Hospitals and Institutions</td>
<td>413</td>
<td>46,183,800</td>
<td>302</td>
<td>40,669,500</td>
<td>88%</td>
</tr>
<tr>
<td>Public Buildings</td>
<td>486</td>
<td>55,644,600</td>
<td>286</td>
<td>52,166,900</td>
<td>94%</td>
</tr>
<tr>
<td>Religious and Memorial</td>
<td>85</td>
<td>42,319,700</td>
<td>58</td>
<td>37,533,500</td>
<td>89%</td>
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<tr>
<td>Social and Recreational</td>
<td>1,058</td>
<td>62,485,100</td>
<td>639</td>
<td>49,818,300</td>
<td>80%</td>
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<tr>
<td>Residential Buildings</td>
<td>51,102</td>
<td>932,621,500</td>
<td>13,164</td>
<td>556,741,000</td>
<td>61%</td>
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</table>

<table>
<thead>
<tr>
<th>Classification</th>
<th>Valuation</th>
<th>Total Building</th>
<th>Valuation</th>
<th>Planed by Architects</th>
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</thead>
<tbody>
<tr>
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<td></td>
<td>1,598,517,400</td>
<td>21,769</td>
<td>$1,253,978,400</td>
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<td>2,485,655,700</td>
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<tr>
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<td></td>
<td>1,794,401,300</td>
<td>25,666</td>
<td>1,565,687,700</td>
</tr>
</tbody>
</table>

COMPARATIVE CONSTRUCTION COSTS

44 Cities—March, 1929

(Index numbers based on New York City taken as 100)

The building cost index has been obtained by combining the material price index and the wage scale index, weighted in the proportion of 58 to 42. This ratio of material cost to labor cost was the result of recent research by the U. S. Bureau of Labor Statistics, as published in the January, 1929, issue of the Monthly Labor Review. The same weighting factors have been used for all cities.
The annual loss in the United States due to rust is estimated at $600,000,000. This figure is appalling—particularly when you realize that much of the loss is preventable by using equipment made from copper and its alloys.

Do you contribute to this waste by specifying equipment that can rust—for service where it is constantly exposed to dampness?

Penberthy Automatic Electric Sump Pumps and Penberthy Automatic Cellar Drainers cannot rust, because they are constructed of copper, brass and bronze throughout. Architects who specify them keep their clients' dollars out of the rust pile.

The operation of Penberthy Sump Pumps and Cellar Drainers is thoroughly dependable and economical. There is a size and type for every drainage requirement.

These Penberthy Pumps are quickly available—they are carried in stock by the leading jobbers throughout the country.
STATEMENT—Regarding the advertisement in The Architectural Record, May 1929 issue, we have been advised by the Widmer Engineering Company that the St. Louis University High School building was originally designed by Barnett, Haynes & Barnett, architects, and that the Widmer Engineering Company reconstructed said building in 1927, at which time The Philip Carey Company put on a new roof over practically the entire roof area.—The Philip Carey Company.

Paul Coste has been appointed Manager Flooring Department of the Sundries Department of the United States Rubber Company, New York City. Mr. Coste had been with the Goodyear Tire and Rubber Company at Akron, where he had been promoted to the post of Manager Flooring and Tile Sales.

The Standard Sanitary Manufacturing Company has remodeled and furnished its show rooms at 18 East 45th Street, New York City; 375 Flatbush Avenue Extension, Brooklyn; 32-04 Northern Boulevard, Long Island City, and 528-534 Ferry Street, Newark, N. J. There is an interesting presentation of exclusive designs in fixtures and fittings, and a complete exhibit in attractive settings of Plumbing Fixtures in the new Standard colors. Any one interested in the display is cordially invited to visit the show rooms.

The New York Society of Architects has established an Employment Bureau for the assistance of all architects. All draftsmen and juniors who are qualified are requested to file an application at the office of the society, 29 West 39th Street, New York City.

Announcement is made of the refinancing of the Universal Sanitary Manufacturing Company of New Castle, Pennsylvania. The new officers of the company are W. Keith McAfee, President; K. K. McAfee, Vice-president; Clyde M. Whittaker, Secretary-Treasurer; Fred A. Glenn, Factory Manager. Although the company has been recapitalized, there has been no interruption in its operations at any time.

Mr. Kirk, the pioneer of the casting process of forming vitreous china plumbing fixtures, tunnel kilns, and numerous other improvements will still act in an advisory capacity.

The Truscon Nailer Joist is a new product of the Truscon Steel Company of Youngstown, Ohio. This Steel Nailer Joist is of the Open-Truss type and is designed for use in homes, apartments, stores, schools, and other structures where wood floors are to be used.

Mr. Charles G. Edwards of Charles G. Edwards Co., 93 Worth St., New York, announces that Mr. Richard O. Chittick, until recently Executive Vice-President of the Real Estate Board of New York, is now associated in the real estate business with the Charles G. Edwards Co. Mr. Edwards was for three years President of the Real Estate Board of New York and is a past President of the National Association of Real Estate Boards. He is at present Chairman of the Committee of Ethics and Commissions and a member of its Arbitration Committee.

The Federal Seaboard Terra Cotta Corporation announces that it has established new headquarters at 10 East 40th Street, New York City, at which address it has brought together the sales and executive offices of the corporation.

The Triple Insulaire Company, of Milwaukee, Wisconsin, manufacturers of Triple Insulaire, the recently developed insulation material which makes use of the scientific principle of "Caged Air" insulation, announces that Mr. W. G. Hollis, formerly joint Secretary-Manager of the Northwestern Lumbermen's Association and the Retail Lumbermen's Association, has become actively associated with that Company as Vice-President.

Mohawk Stucco Company, Inc., of Brooklyn, N. Y., announces the appointment of Thomas W. Higgins as head of its Technical Department. Mr. Higgins is a member of the American Society of Civil Engineers and for the past ten years has been connected with Atlas Portland Cement Company as a member of its technical staff and service department.

Mr. H. W. Kingsbury has resigned as Chief Engineer of the Peerless Unit Ventilation Company, Inc.

Mitchell Vance Co., Inc., formerly at 503 West 24th Street, New York City, announces the establishment of sales and manufacturing headquarters at 70 Washington Street, Brooklyn, N. Y.

At the general conference on the commercial standardization of Wallpaper which was held in Washington, D. C., May 25, 1929, they established a minimum standard of quality. In order to make the standard conform with the best current practice, the conference appointed a standing committee to consider comments and suggestions on the specifications, looking toward their revision if necessary, about January 30, 1930, when consideration will be given to a moisture resistance test, a fading test requirement for engraved paper, and other improvements in the specifications.

A total of 102 Simplified Practice Recommendations have been effected to date by American Industries, in the cooperative effort to eliminate waste through a reduction in the manufacture of superfluous varieties of staple articles, according to a report covering the activities of the Commercial Standards Group of the Bureau of Standards, United States Department of Commerce, for the first three months of 1929, just made public by Ray M. Hudson, Assistant Director of the Bureau, in charge of that group. This report reviews the progress made during the first quarter of this year.

Granville P. Rogers, formerly managing director of the Artistic Lighting Equipment Association, New York City, is now with the Steel Founders' Society of America, 352 Graybar Building, New York City, in the same capacity.

Ramp Building Corporation, garage engineers and consultants, announces from its general offices at 21 East 40th Street, New York, that Fred W. Moe has been elected President.
AND SO STARTS A NEW SCHOOL

ONCE IN A GENERATION a genius flashes across the firmament of art. The galleries of the world acclaim his work. Contemporaries study his technique, imitate his mannerisms. A new school of art is founded.

Twenty years ago a new school of brick design was started in much the same way. A brick was developed in this country so radically different from any other that it became famous over night. Architects saw in the texture and colors of "Tapestry" Brick a new medium of expression. Their approval put "Tapestry" into the nation's finest structures.

Today, although the most widely copied brick in the world, "Tapestry" is more than ever the choice of those who build for character. There is a difference in "tone"—a difference in color—a difference in the general impression that makes the "Tapestry" Brick building more desirable from every standpoint.

Brick can be imitated, standards of service can be followed, co-operation can be copied. But why risk disappointment when it's so easy to be sure? The "Tapestry" trade-mark on each genuine "Tapestry" Brick is a guarantee of satisfaction that has never failed to make good.

FISKE & COMPANY, Inc., 17 West 46th Street, New York City—18 Newbury Street, Boston. Plants at Milton, Ridgway, and Darlington (Beaver County), Pennsylvania.

There is only one "Tapestry" Brick. . . Fiske makes it, and burns the name into each "Tapestry" Brick for your protection and the protection of your clients.
First in 1882
Still Out in Front

When Samuel Cabot invented his Creosote Shingle Stains in 1882, they were the first exterior stains ever made. Architects were quick to see their artistic value, which opened a new field of design and treatment.

Building arts have progressed, and so have Cabot’s Stains. First in 1882, and still out in front, they now have even more vivid and lasting colors, disintegrated to colloidal fineness by the patented Cabot Collopaking Process, invented in 1918.

Cabot’s
Creosote Shingle and Wood
Stains

Send in the coupon below for vital information.

RECENT TRADE PUBLICATIONS
ISSUED BY MANUFACTURERS OF CONSTRUCTION MATERIALS AND EQUIPMENT

These may be secured by architects on request direct from the firms that issue them, free of charge unless otherwise noted.

FITTINGS, COPPER AND BRASS
“Chase Copper Water Tubing and Red-Brass Fittings for Underground Service.” Different kinds of pipe available for underground service. Materials used in the past; their advantages and disadvantages. Results of an investigation among water works engineers to find out their difficulties in the past; their suggestions. Method of installing and advantages of Chase Copper Water Tubing for underground service work. Specifications. Chase Red-Brass Fittings. Their alloy, manufacture and characteristics. Other uses. Chase Brass and Copper Company, Inc., Waterbury, Conn. 8% x 103/4 in. 40 pp. III.

COPPER TUBE
Also Bulletin No. 10. Tube couplings. Specifications and instructions for the installation of “parker” tube couplings and Copper Tube in buildings, power plants and similar structures. The Parker Appliance Co., 10320 Berea Road, Cleveland, Ohio.

STAINLESS STEEL

OIL CIRCUIT BREAKERS

HARDWARE

TERRA COTTA
“Top Stories and Roof Lines.” Use of Terra Cotta for top stories and roof lines. Modern developments which have replaced the projecting cornice on large and small buildings. Examples of modern architecture and modern adaptations of classical Greek, Romanesque and Italian Renaissance. Atlantic Terra Cotta Company, 19 West 44th Street, New York City. 8½ x 11½ in. III.

The Architectural Record, August, 1929
The Invisible Superintendent at the Mortar Box Makes Possible

One Mortar for all Masonry

IT IS unnecessary to specify special mortars for different kinds of brickwork. The simple BRIXMENT mix—one part BRIXMENT, three parts sand (no lime, no portland cement)—makes a mortar suitable for all masonry.

Tested in piers, its strength approaches that of straight 3-to-1 portland cement mortar. This makes it suitable for foundation, load-bearing or parapet walls and even for tall, free-standing stacks.

Since it is hydraulic, water-repellent and used without lime, it is ideal for walls below grade. . . Since it helps prevent efflorescence and fading of mortar colors, it is especially desirable for use with face-brick. . . The economy resulting from its low cost and plasticity justifies its use in backing-up and in partition walls. . .

Architect's handbook on request. Louisville Cement Company, Incorporated, Louisville, Ky.

BRIXMENT for Mortar and Stucco

The unusual plasticity of BRIXMENT mortar makes it especially well suited for setting tile and block because of the long cross-joint used in such work.

The Architectural Record, August, 1929
BALDOR
Adjustable Variable
Speed Motor
Earns Reputation
for Dependability
On Unit Heaters

TRUE to the tradition of Baldor Motors this
new motor has proven its depend­
ability by actual performance
and many other tests. . . Get the
facts. Baldor Electric Company,
4364 Duncan Ave., St. Louis, Mo.

RECENT TRADE PUBLICATIONS—(Continued)

NAILING CONCRETE

"Nailcrete." Physical properties of and composition
of Nailcrete. Its uses: for subfloors, roof coating, re-
inforced roof slab, floor-fill, etc. Nailcrete as a nailing
base for wood floors. Specifications. Mixtures. Actual
installations. The Nailcrete Corporation, 105 West
40th Street, New York City. 8¾ x 11 in. 15 pp. III.

"INCOR CEMENT"

"A New Record with Incor." Reports of pre-cast
concrete piles driven from two to three weeks earlier
than has heretofore been possible prove saving of
time with "Incor." Also practical demonstration of
high-early-strength concrete. International Cement
Corporation, 342 Madison Avenue, New York City.
8¼ x 11 in. 6 pp. III.

CONCRETE

"Marquette Super Cement Concrete." Composition.
Use in all classes of construction and advantages in
each; foundations, caissons, subgrade construction,
basements, swimming pools, tanks, subways, floors,
subaqueous construction, concrete burial vaults, ex-
terior plaster, etc. Examples of its use. Recommended
construction practice. General precautions. How to
specify Super Cement. Marquette Cement Manufactur-
ing Company, Chicago, Ill. 8¾ x 11 in. 24 pp. III.

TWO-FAMILY HOUSES

"Two-Family Houses of Concrete Masonry." New
approaches to the problems involved in two-family
house design. Compact, workable arrangements of
rooms, well lighted stairways, proportioning of wall
to window space, well proportioned exteriors, etc.
Prize-winning and other designs. Information about
concrete masonry and portland cement stucco. Sketches
and details. Portland Cement Association, Chicago,
Ill. 8½ x 11 in. 23 pp. III.

ORNAMENTAL CAST WORK

With Atlas White Portland Cement Concrete. Wood
molds—information, particulars and drawings. Plaster
models and molds, flue molds, sand molds. Typical
ornamental work. Cast concrete stone. Atlas Portland
Cement Co., 25 Broadway, New York City, 8½ x 11
in. 20 pp. III.

NEON LIGHTS

"Claude Neon." Neon concentrated ray beacon.
The Meridan Arrow. Airway Signs. Boundary mark-
3¾ x 8¼ in. 9 pp. III.
Also "The Beckoning of Beauty." Examples of the
"light that beckons business." Claude Neon Lights,
Inc., 41 East 42nd Street, New York City.

CHANDELIERS

"Commercial Lighting." Lighting for stores, offices,
schools and similar buildings. Types of lighting equip-
ment best suited to each type of building. Proper
lighting intensities for commercial establishments.
Tables. Directions for ordering. Beardslee Chandelier
Mfg. Co., 216-218-220 South Jefferson Street, Chi-
cago, Ill. 8¾ x 11 in. 40 pp. III.

The Architectural Record, August, 1929
With the growing appreciation of the important part communication plays in every-day life, there is coming a radical change in the telephone needs of the nation. Especially is this true as to the number and location of telephones within the home. Where previously one, or possibly two telephones were considered sufficient, people today want telephones throughout the house. Particularly in those rooms most frequently used, so that calls may be made and answered without waste of time or effort.

Many architects are providing for this modern convenience in their plans for new and remodeled residences. By consulting with their clients, and with representatives of the local telephone company, they can determine not only what rooms are desirable for telephone locations, but also what places in those rooms are most suitable. In addition, planning in advance for the telephone arrangements makes it possible to lay conduit for wires within the walls, thus affording protection to the wires, and resulting in improved appearance.

Many other things contribute to modern telephone convenience. Your Bell Company will be glad to explain them to you—and to help you plan the telephone arrangements for your new building projects. Just call the Business Office.

The Piedmont, California residence of Mr. R. J. McMullen, with accompanying floor plans, showing the telephone outlets and conduit layout which provide for modern telephone convenience.—Frederick H. Reimers, Architect.
RECENT TRADE PUBLICATIONS—(Continued)

RECREATING TYPICAL OLD HOMES

“TRANSFORMATION—From an Old House to a New Home.” Several variations of treatment for each of eight old houses, each representing a style popular thirty-five or more years ago. Wide range of remodeling possibilities in old houses. National Lumber Manufacturers Association, 702 Transportation Building, Washington, D. C.

STEAM PLANTS, PAPER MILL


BRASS, BURNISHED STEEL

“Fenders and Dog Grates.” Brass and burnished steel dog grates and andiron baskets. Various designs. Todhunter, 119 East 57th Street, New York City. 8 1/2 x 11 in. 6 pp. III.

GRILLEs AND REGISTERS

Ventilating registers, ornamental grilles and heating specialties. Grilles from cast iron, cast bronze and wrought bronze in a wide variety of designs to harmonize with any type of architecture. Sanitary and special design registers. Wm. Highton & Sons, Division of Hart & Cooley Mfg. Co., New Britain, Conn. 8 1/2 x 11 in. 48 pp. III.

RESTAURANTS

“Planning Restaurants That Make Money.” Problems confronting the architect when planning a new restaurant or remodeling an old one. Fitting the restaurant into the architectural plans. Location of kitchens. Table showing areas per seat in various types of restaurants. Model plan of small size kitchen. Typical restaurant plan showing efficient use of basement space. Pointers on planning and furnishing of dining rooms. Cafeteria designing. The soda fountain tea room. Facts about restaurant equipment. Various interiors. The John Van Range Company, Division of Albert Pick-Barth Company, Inc., Chicago, III. 8 1/2 x 11 in. 78 pp. III.

PANELBOARDS

“Panelboards, Steel Cabinets.” Standardized panelboard sections. Meter bar type meter control panelboards and cabinets. Floor boxes. Switchboards for various purposes. Tables. 7 3/4 x 10 5/8 in. 104 pp. III.


PANELBOARDS

H & C—HIGHTON GRILLES have three great advantages. First, that owing to the association between Wm. Highton & Sons and the Hart & Cooley Mfg. Co., it is now possible for architects to secure from us any type of steel, cast iron, cast bronze or wrought bronze grille—formerly specialized lines procurable only from two or more manufacturers. Second, that any of our STEEL Grilles are now procurable in COP-R-LOY Steel, which resists rust and corrosion indefinitely and is distinguished for its ability to take and retain coatings of all kinds. Thirdly — all our grilles are examples of the combination of fine materials, good design and first-class workmanship, providing the architect with a standard of excellence that guarantees satisfaction. Write for new catalogue of Highton grilles and registers, including many designs never previously shown. Both firms, now operating in association, are represented in Sweet's Architectural Catalogues.

WM. HIGHTON & SONS
Division of Hart & Cooley Mfg. Co.
New Britain, Conn.

Branch Offices
BOSTON, 75 Portland Street
NEW YORK, 101 Park Avenue
PHILADELPHIA, 1600 Arch Street
CHICAGO, 61 W. Kinzie Street

The Architectural Record, August, 1929
The trend toward better architectural design in small, as well as large homes calls for a selection of better materials for sidewalls and roof... for color harmony... for quality appearance... for enduring charm.

You can not go wrong in choosing WEATHERBEST Stained Shingles. They are all 100 per cent edge grain red cedar stained by the WEATHERBEST process that insures more enduring colors and better values. WEATHERBEST should not be compared with process stained shingles of inferior quality. There is seventeen years' experience behind the WEATHERBEST policy, "Not to cheapen materials or process to meet price competition."

Check your files for Color Pad and Portfolio of full-color Photogravures showing actual color treatment of WEATHERBEST Homes. Also check coupon for data on special effects and book on modernizing old homes. WEATHERBEST STAINED SHINGLE CO., Inc., 2319 Main St., North Tonawanda, N. Y. Western Plant—St. Paul, Minn. Distributing Warehouses in leading centers.

CLASSIFIED DIRECTORY OF ADVERTISERS
Alphabetical Index to Advertisers, Page 180
After reviewing advertisements in this issue—consult Sweet's Architectural Catalogue 23rd edition for catalogue and specification information on the products of the most of the manufacturers.

Acid Proof Chemical Stoneware
Knight, Maurice A.

Acoustical Installation—Guastavino, R., Co.

Acoustics
Boston Acoustical Eng. Division of Housing Company
Housing Company
Johns-Manville Co.
Stevens Soundproofing Co.

Air Compressors
Westinghouse Traction Brake Co.

Arc Welding—Lincoln Electric Co.

Arch Roofs
Lamella Roof Syndicate, Inc.

Architectural Faience
Associated Tile Mfrs.

Architectural Supplies
American Lead Pencil Company
Higgins, Chas. M., & Co.

Artstone—Rackle, George, & Sons Co.

Asbestos—Johns-Manville Corporation

Balances, Sash—See Sash Balances

Basement, Windows—Steel
Detroit Steel Products Co.
Kalman Steel Company
Truscon Steel Company

Bathroom Accessories
Eustis, J. P., Mfg. Company

Beads—Corner Metal
Concrete Engineering Co.
Genfire Steel Company
Kalman Steel Company
Milwaukee Corrugating Co.
Truscon Steel Company
Wheeling Corrugating Co.

Beams, Angles, Channels, Etc.
Carnegie Steel Company

Blinds—Venetian—See Venetian Blinds

Boiler and Pipe Covering
Ric-wil Company

Boilers—American Gas Products Co.
American Radiator Co.
Badger, E. B., & Sons Co.
Bryan Steam Corp.

Bolts—Door—Corbin, P. & F.

Brass and Bronze Workers
See "Ornamental Metal Workers"

Brick—Common Brick Mfrs. Assoc. of America
Fiske & Company, Inc.

Bridges—Steel—American Bridge Co.

Builders—Stone & Webster, Inc.

Building Paper—Bird & Son, Inc.

Buildings—Steel
Carnegie Steel Company

Butts—Corbin, P. & F.

Cabinet Work—Hyde-Murphy Co.

Cabinets—Medicine
Eustis Mfg. Co., J. P.

Cabinets—Radiators
Tuttle & Bailey Mfg. Co.

Cement Operators—Rixson, Oscar C., Company

The Architectural Record, August, 1929
IN THE
MATHER TOWER,
CHICAGO

Among the finest examples of modern architectural skill is the Mather Tower in Chicago. Distinguished throughout by a clean-cut simplicity of treatment, it achieves lasting interior beauty with du Pont finishes.

Throughout the country, architects and engineers find in du Pont paints and varnishes products that skillfully express the modern trend in color and texture — that uniformly meet, in quality, the most exacting standards.

A new booklet of color suggestions by architects . . .

Modern color schemes for residences, suggested by leading architects, are illustrated in the new du Pont book, "Modern Color Schemes for Your Home." We shall be glad to mail a copy to you, together with a card showing the new du Pont Prepared Paint colors.

Inquiries regarding du Pont paints, varnishes, enamels, and other pigment products are invited. The Architectural Division is equipped to deal intelligently with special problems of application, decorative effects, and technique.

In those far corners, those places where it is always difficult to get heat to penetrate, Bryan Oil Burning Boilers will do the job. The heating capacity of the Bryan Copper Tube Boiler is practically unlimited. Our No. 8 will keep the medium-sized house as warm as toast on the coldest day—and do it economically too.

There are so many superior features which are only to be found in the Bryan boiler that architects everywhere are turning to them as a solution of the Oil Burning problem.
STORE FRONTS, DOORS
AND
SEALAIR WINDOWS
are made
by Skilled Craftsmen
to comply with architect’s drawings and specifications regardless of design. The 1929 SWEET’S contains the Kawneer catalog with complete information on all average store front problems.

The Architectural Record, August, 1929
Your Clients' Lawns need April Showers all Summer long —

THOMPSON Concealed Lawn Sprinkling Systems will guarantee your clients perfect lawn watering all during the hot summer months—for countless summers to come.

Economical to install, a Thompson System pays for itself in from one to three years.

It saves water and gardener bills. It eliminates sprinkler upkeep. It means perfect irrigation at merely a turn of a control valve.

Free Architectural Service
Our engineers will prepare plans from your blueprints. Write for the booklet, AIA 38-h.

Thompson Sprinkling Systems

Mail the Coupon

THOMPSON MFG. CO.
2251 East 7th Street, Los Angeles, Calif.

Without obligation, send me your technical booklet, AIA 38-h.

Name ........................................
Address ....................................
City and State .................................

Door and Window Frames
Andersen Frame Corp.

Doors—Art Metal Const. Co.
Bayley, William, Company
Compound & Pyrovo Door Co.
Cornell Iron Works, Inc.
Dahlstrom Metallic Door Co.
Detroit Steel Products Co.
Genfire Steel Company
Hamlin, Irving
Hyde-Murphy Co.
Informational Casement Co.
Peelle Company, The
Richmond Fireproof Door Co.
Sanymetal Products Co.
Security Fire Door Co.
Thorp Fire Proof Door Company
United Metal Products Co.
Wheeler-Osgood Co.
Wilson, J. G., Corp.

Drains
Josam Mfg. Co.

Drawing Inks
Higgins, Chas. M., & Co.

Dumbwaiters—Matot, D. A., Co.
Sodwick Machine Works

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The Architectural Record, August, 1929
Rust-resistant Pipe of TONCAN Iron
Defeats the Menace of Rust and Corrosion

WITHIN the walls of great buildings, rust wages an ever-vicious warfare on the vast network of hidden pipes. Steam pipes, water pipes, electrical conduits, all are subject to the same unrelenting attack.

But today, architects, builders, men of vision, erecting for permanence specify pipe of enduring Toncan Iron. After all, there is no sounder economy.

Toncan shows amazing resistance to rust and corrosion. For generations it has withstood punishment that would have quickly ruined ordinary ferrous metals. But Toncan endures. Gutters, flashings, cornices, ventilators and all other exposed metal parts are prolonged indefinitely when made from this durable alloy of pure iron, copper and molybdenum.

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Many years of experience in the field have taught us that every building involves a different engineering problem of sound control, and that the "Stevens System" based on the breaking of solid contacts and the combining of proper materials will provide satisfactory conditions.

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The Architectural Record, August, 1929
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THE SPENCER TURBINE CO.
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REPRESENTATIVES IN 50 CITIES

The Architectural Record, August, 1929
Architects will be interested in the use of RACKLE ARTSTONE to accentuate structural design, relieve dark areas and add delicate touches of tracery in this church—the First M. E. Church at Bedford, Ohio, for which Herman W. Maurer is the architect. RACKLE ARTSTONE is admirably adapted to almost any undertaking and any type of building, whether large or small. May we tell you more about its possibilities?

Our catalogue is in Sweet's — pages A348-349

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The Architectural Record, August, 1929
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press the button
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In Morton, Pa.

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From this comes Balanced Lighting, the key-note of the Graybar Lighting Line—the yardstick employed by Graybar Lighting Engineers in selecting, from all types of fixtures, the best fixture for a given purpose.

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The Architectural Record, August, 1929
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with immediate action the SAFETY RULES and Recommendations as published by the Bureau of Standards, U.S. Department of Commerce in Handbook No. 7.

The Bull Dog Electric Products Company recognizes the inconsistency of recommending Safety Enclosed Switches and at the same time offering for sale dangerous Live Face Panelboards and Switchboards.

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OVER 25 YEARS OF RESEARCH AND DEVELOPMENT

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The Architectural Record, August, 1929
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The Architectural Record, August, 1929
Very Few Architects have ever done this

In 1921 McKim, Mead & White, eminent New York architects, were commissioned to construct the pictured power house for the Adirondack Power & Light Corporation, Amsterdam, New York. Medusa Waterproofed White Portland Cement was used as it was the one structural material that would answer all requirements and still retain the massive dignity and clean, sharp-cut lines called for by the plans.

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But any architect could do it—and be positive of the quality of the concrete

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Manufacturer of Medium Gray Portland Cement (Plain and Waterproofed); Medium Waterproofing (Powder or Paste); Medusa White Portland Cement (Plain and Waterproofed); Medusa Portland Cement Paint and Medusa-Mix Masonry Cement

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