

AMERICAN ARCHITECT

ANNUAL FORECAST NUMBER

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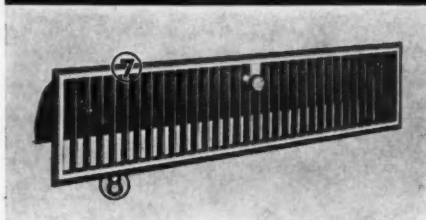
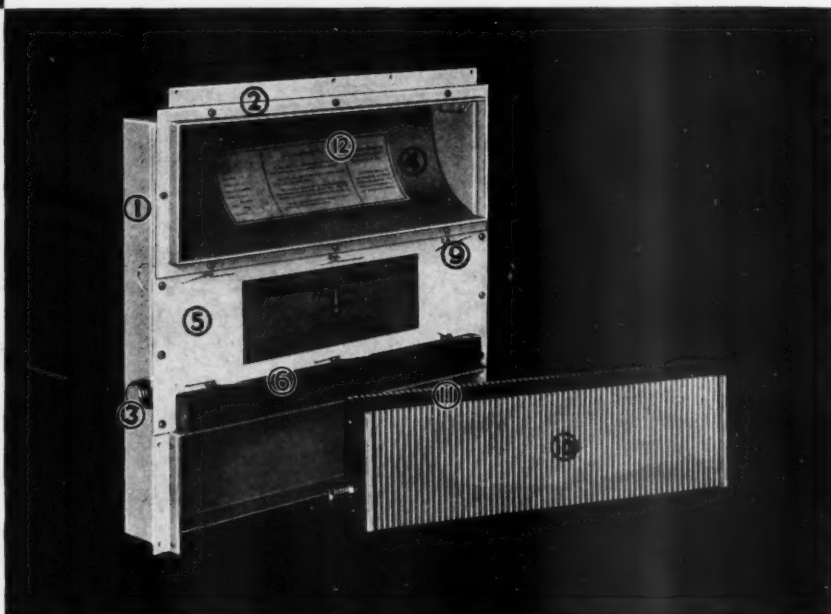


COMPLETE and READY TO INSTALL WITHIN THE WALL



*...scientifically engineered
for proper heating results*

1. Sheet steel cabinet scientifically designed to maintain proper ratings and capacities.
2. Cabinet flanged at edges to provide means for securely fastening cabinet to building construction.
3. Temporary cap to protect radiator opening and threads from damage before installation.
4. Shield to protect heating element during construction—prevents dirt and plaster from dropping into heating element and impairing heating efficiency.
5. Sturdy front panel construction prevents damage of plaster due to pressure.
6. Wood strip above inlet opening provides for nailing.
7. Grille and damper unit fastened to frame itself and not screwed to a wood brick or plaster.
8. Felt strips to prevent leakage around grille.
9. Wire ties on front of cabinet for direct fastening of metal lath.
10. Patented Wedge Core Heating Element—light, strong, compact, free from joints to fail and leak or parts that can rust or get out of order.
11. Free air passage through radiator assures quick, uniform heating of air.
12. Instructions on correct installation.



Competent architects are avoiding "built on the job" and makeshift methods of concealed radiation. They know that only a scientifically designed, properly installed unit can produce the heating results their clients have a right to expect.

One unit, the Herman Nelson Invisible Radiator, is giving such results in thousands of installations throughout

the country. Many architects recognize it as by far the most practical concealed unit ever built.

The Herman Nelson Invisible Radiator is carefully designed according to proved principles of heating. It is sturdily built and furnished as a complete unit—ready for installation.

Note, above, some of the many features that set the Herman Nelson Invisible Radiator apart from all other heating units. For further information, get in touch with our nearest sales office or write us. The Herman Nelson Corporation, Moline, Illinois.

HERMAN NELSON *Invisible* RADIATOR

Factory at Moline, Ill. Sales and service offices in principal cities

Manufactured by the originators and pioneers of Univent Ventilation, the Her-Nel-Co System of Ventilation, the Invisible Radiator, and other heating and ventilating innovations that have received world-wide recognition.

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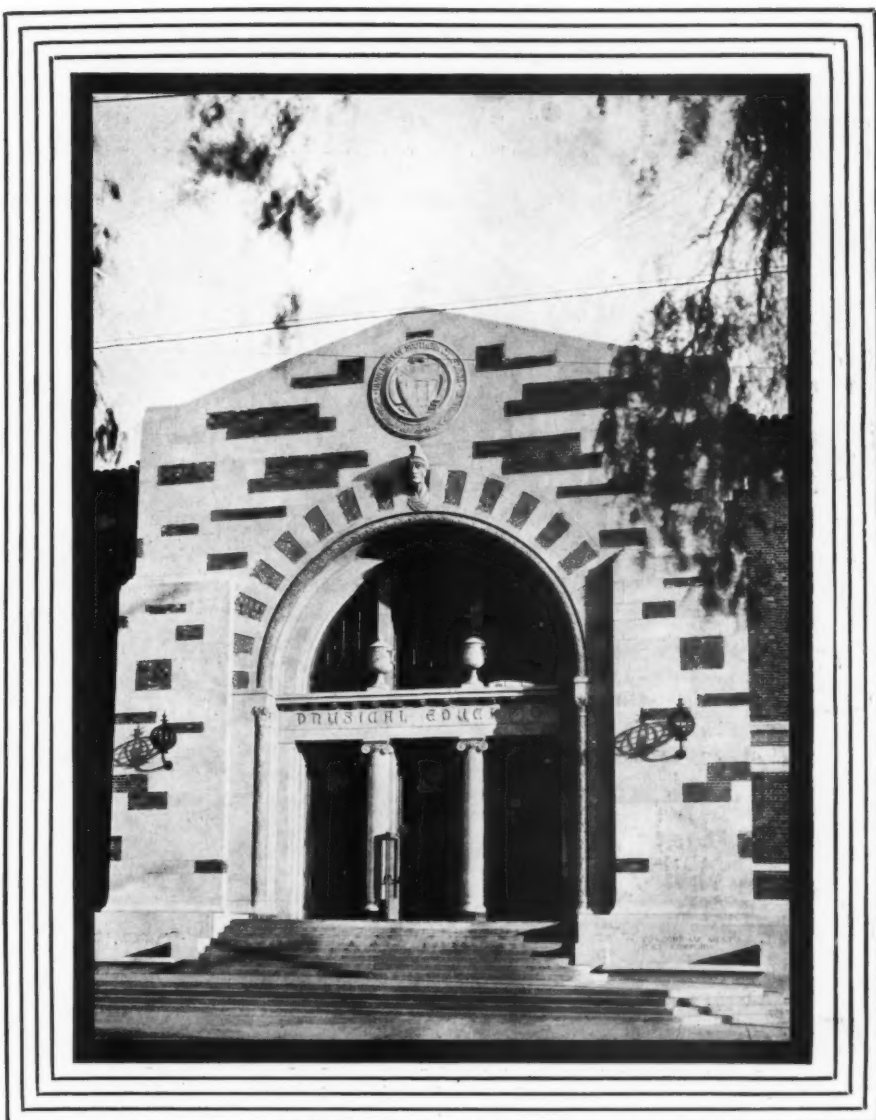
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BEAUTY
SUPPLEMENTED
by
LASTING UTILITY



Physical Education Building of The University of Southern California, at Los Angeles.
Architects—John & Donald B. Parkinson

While beauty is here evidenced in every architectural detail, beneath it lies the rugged strength of enduring utility--unseen but equally important.

The casual eye may see only the superficial exterior but the architect and engineer see those hidden details that give permanence to the beauty of their creation. They see not only the lights and fixtures and elevators--they visualize the vast electrical wiring system which makes them both beautiful and useful. They appreciate the necessity for lifetime permanence in this hidden detail--and specify Youngstown-Buckeye-Conduit. THE YOUNGSTOWN SHEET AND TUBE COMPANY

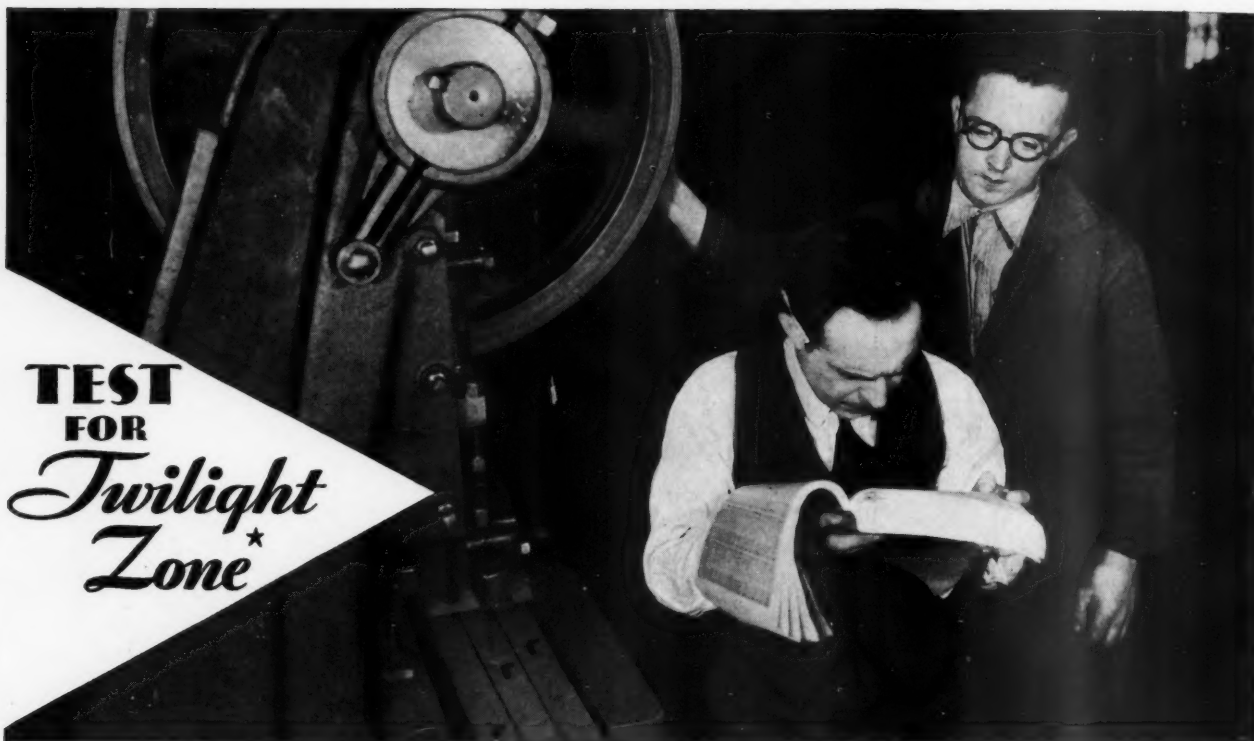
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ARCHITECTS GET THE BLAME FOR INEFFICIENT LIGHTING



TEST FOR *Twilight* Zone[★]

A GRAVE responsibility rests on the shoulders of the architect of an industrial plant. If the lighting is not adequate (and records show that 87% of all industrial plants are inadequately lighted) here is what happens. Employees are only 75% to 85% as efficient. Accidents are tripled. Materials wasted through rejections are quadrupled. These are cold statistics, the result of an investigation by a great engineering society.

★ TWILIGHT ZONE

The deceptive half-light between obvious darkness and scientifically correct illumination. A simple phone book test at a worker's bench quickly shows whether it is present or not. If the type is hard to read, and the book must be drawn close to the face to make it out, Twilight Zone is present. Try this test yourself.



Even if enough light is supplied there always remains the risk of glare and dangerous shadows. These alone in one plant produced a loss of 25% in production per man, as was proved when this glare and shadow problem was solved by lighting engineers.

Lighting is a highly technical subject. You have a hundred other problems of your own to solve. The surest and simplest way to be certain the specifications for lighting in your plans are right is to consult with illuminating engineers of your

local light and power company or the Westinghouse organization. There will be no fee or obligation.

Don't let your clients suddenly discover, after your job is done, that their lighting facilities are not the best. You get the blame, whether justly or not. Write the Commercial Engineering Dept. of the Westinghouse Lamp Co., 150 Broadway, New York City, for booklet on correct industrial illumination. Just address your request to Bureau 15.

Westinghouse Mazda Lamps

American Architect, published monthly by International Publications, Inc., 57th Street at 8th Avenue, New York, N. Y.; Yearly subscription \$5.00. Entered as second class matter, April 5th, 1926, at the Post Office, at New York, N. Y., under the act of March 3rd, 1879. Issue number 2607, dated May, 1932.



MEDUSA WHITE PORTLAND CEMENT



Protects CLEVELAND'S TEMPLE OF MUSIC

● Severance Hall, Cleveland's far-famed Temple of Music, is protected from stains and discoloration by the use of Medusa *WATERPROOFED* White Portland Cement. ● Medusa originated the first white Portland Cement a quarter-century ago. Its use has been steadily increasing in those buildings where architectural merit must be matched by structural integrity. White or colored

concrete—in many forms—is now being used in almost every type of building, because it produces results that are as attractive as they are permanent. Severance Hall was designed by Walker & Weeks, architects, and built by Crowell & Little Construction Company.

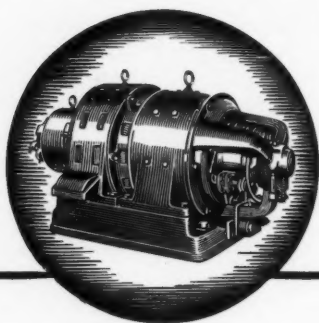
MEDUSA PORTLAND CEMENT CO., 1002 Engineers Building, Cleveland, Ohio

MEDUSA

WATERPROOFED PORTLAND CEMENTS
White and Gray

Originated by Medusa—Proved by Time

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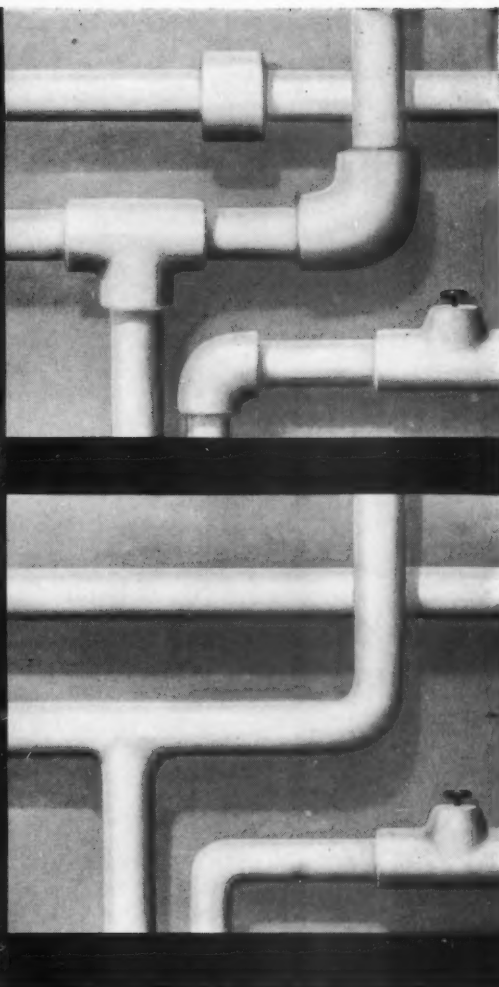


There are written and unwritten specifications. The ones by which size and shape and breadth and depth are regulated are the written specifications. The ones upon which prestige is built are the unwritten specifications. Speed, load, car size, controls, such terms as these are familiar in the written specifications for an elevator. Safety, satisfactory service, economy of operation, long life, these are associated with the unwritten specifications of an elevator manufactured by Otis. . . . Otis Elevator Company.

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AMERICAN ARCHITECT

IT'S
INSULATING THE
B-u-m-p-s
That is expensive



WELED piping is cheaper to insulate because it has no bulky joints which require special jackets.

Welded joints are practically flush with the surface of the pipe. They can be covered with standard insulation. No extra costs are involved. No extra time is consumed. And, once covered, they are permanently covered. Properly welded pipe joints never leak.

Low erection cost of insulation is only one of the many advantages of oxy-acetylene welded piping. For architects, engineers, and specification writers who are looking for a better method of installing piping at lower cost, we have prepared a short, interesting book, "Oxwelded Construction for Modern Piping Services." Write for your copy today. We will send it without cost or obligation on your part.



This picture shows the smooth, strong joint produced by oxy-acetylene welding. How oxwelding and cutting simplify piping installation is clearly shown in a new series of motion pictures now available for free distribution. Your professional or trade organization will find these pictures interesting and helpful. Write for release details.



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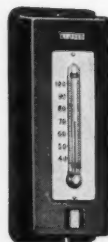
JOHNSON Heat and Humidity Control



30 Johnson Branches Insure Convenient, Quick Service Anywhere, Any Time. Each Johnson Installation Made By Johnson Mechanics Only. Every Johnson Installation Given Annual inspection.

The All-Metal System, The All-perfect Graduated Control Of Valves And Damper. The Dual Thermostat (Two Temperature) or (Night And Day) Control, Fuel Saving 25 to 40 per cent.

ACCURACY · DEPENDABILITY · SERVICE
PERMANENCE



Illustrating View of
E. J. Sweetland Residence
Piedmont, California
Equipped with Johnson Control
FREDERICK H. REIMERS
San Francisco, Architect

THE THOROUGHLY COMPLETE SYSTEM OF HEAT AND HUMIDITY CONTROL

The Johnson Thermostat on the wall of each room operates the valve on the heat supply of each room, automatically furnishing the temperature each room individually requires, and independent of all other rooms of the building. Included, are also Johnson Thermostats for controlling the valves and dampers of the building's ventilating system, and Johnson Humidostats for the control of the humidity. The Johnson system is the one accepted hygienically correct principle and mechanically right method of temperature regulation, the thoroughly complete system of control . . . and installed in thousands of various buildings since 1885: its accuracy, dependability and permanence proven.

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507 E. Michigan St. Established 1885 Milwaukee, Wis.

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Chicago	Detroit	New York	San Francisco	Vancouver, B. C.

Gas Light Company Building, Milwaukee, Wisconsin. All direct radiation controlled by Johnson Dual (Night and Day) Thermostats: divided into 5 groups, each group controlled by Dual Clock, as follows: Basement; 1st, 2nd, 3rd floors; 4th, 5th, 6th and 17th floors; 8th, 9th, 12th, 15th and 16th floors; 11th and 12th floors; 13th and 14th floors: heat regulated night and day according to varying uses of each group of floors and rooms. Three supply ventilation (fan) systems are likewise Johnson Controlled.

Canada Permanent Building, Toronto, Canada. 101 room type Johnson Thermostats control 208 Syphon radiator valves on direct radiators. Johnson 2-point multiple thermostat controls valves on tempering coils on ventilating system. Johnson 3-point multiple thermostat controls valves and bypass damper on reheater coils. Johnson pneumatic switches control fresh air and return air dampers and foul air dampers; Johnson insertion type humidostat for control of humidity.

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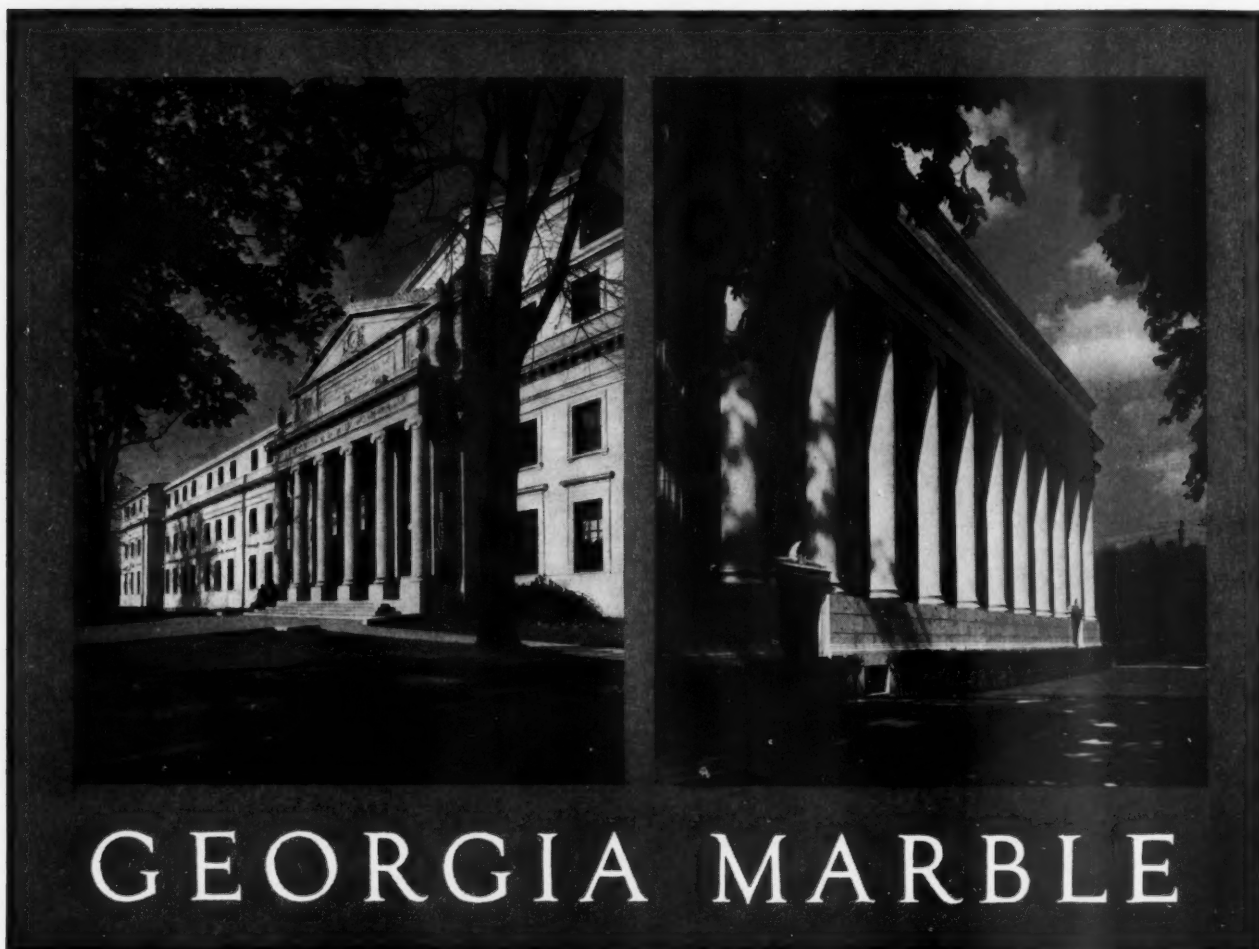
REGULAR BELL TELEPHONES



in the superintendent's and gardener's cottages. TAYLOR AND LEVI, Architects, New York City. OTTO E. GOLDSCHMIDT, Consulting Engineer, New York City. For full efficiency, such arrangements should be carefully planned in advance.



A superior product plus our facilities to quarry, finish, deliver and erect . . won this marble contract



GEORGIA MARBLE

DELAWARE COUNTY COURT HOUSE, MEDIA, PENNA.

CLARENCE W. BRAZER, architect for the old building, erected in 1913, and for the present additions.

Left. South facade looking west. *Right.* East end colonnade (entirely new).

ALL of the exterior marble work of the new portions of the Court House at Media is Georgia Marble. This work consists of the addition of a large wing at each end, a third story to the old building and a law library extending above the roof of the center portion.

It was not by mere chance that Georgia Marble was chosen for this extensive and important piece of work. The appearance, quality, and durability of the

THE GEORGIA MARBLE COMPANY

Tate, Georgia

NEW YORK . . 1328 Broadway
ATLANTA . 814 Bona Allen Bldg.
CHICAGO . 648 Builders' Bldg.
CLEVELAND . 1200 Keith Bldg.
DALLAS . . 622 Construction
Industries Bldg.

marble, the ability of the producers to quarry, finish, deliver, and erect the marble for such a large contract were considered most carefully by those responsible for the finished building.

Our operations extend beyond working the marble from our nine active quarries in Georgia. We take contracts for both interior and exterior work in any combination of marbles necessary to carry out the architect's design and color scheme.

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*Designed for
kitchen duty...*

'Streamline' Sinks

of heavy gauge

MONEL METAL

● Monel Metal "Streamline" Sinks are real kitchen sinks in every sense of the word! Made in standardized kitchen models and sizes, they represent the collective ideas of leading authorities on kitchen equipment...domestic engineers, architects, decorators and housewives.

These silvery sinks should not be confused with any metal sink you have ever seen before. Modern, yet conventional in design, they were created to bring women the kind of kitchen beauty and convenience they have always wanted. Made in one piece of heavy gauge Monel Metal, they are strong, tough and rigid...built to endure a lifetime of severest kitchen use. Hard knocks, heavy impacts and repeated cleaning will not impair their lustrous, harmonizing beauty.

... new low prices!

Monel Metal "Streamline" kitchen sinks are now available at new prices. Volume production and wider distribution have made possible reductions ranging from \$15 to \$30. These new price levels bring Monel Metal "Streamline" Sinks within reach of the home owner of average means. They enable you to plan kitchens at moderate cost that are "Modern as Tomorrow"!

You should have these new, low prices on file in your office for ready reference. We'll gladly send them, together with current Monel Metal Sink literature. Write today.



Double drain board Monel Metal "Streamline" Kitchen Sinks. Made in nominal sizes of 72" x 21" and 60" x 21". Monel Metal "Streamline" Sinks are also available in single drain board and corner sink models in standardized sizes.

Eight Reasons why you should specify Monel Metal "Streamline" Kitchen Sinks:

- 1** Rich, lustrous beauty... with a satiny, glass-smooth surface.
- 2** Rust-proof... highly resistant to corrosion... easy to clean and keep clean.
- 3** Solid metal clear through, with no coating to chip, crack or wear off. Steel-like strength gives lifetime durability.
- 4** Neutral, silver tone that blends with any kitchen color scheme. Gives new freedom to kitchen decoration.
- 5** 10 standardized models and 6 standardized sizes. A model and size for any type of kitchen.
- 6** 31% more working space than an ordinary sink of same nominal size.
- 7** One-piece construction of heavy gauge Monel Metal. No joints or seams. Reinforced and sound-deadened.
- 8** Standardized construction and quantity production bring prices within reach of the average purse. Monel Metal "Streamline" Sinks are now \$15 to \$30 lower.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET NEW YORK, N. Y.

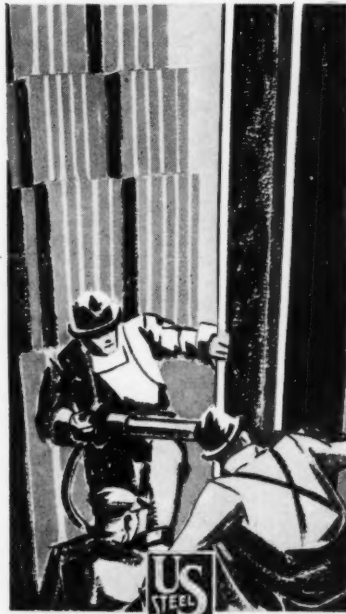


Monel Metal is a registered trade mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.



CINCINNATI is soon to have its latch-string on a new front door more in keeping with its reputation as "THE HOSPITABLE CITY." A dream of decades is materializing in this magnificent Union Depot, now under construction, to be completed in the early summer of 1933. FELDHEIMER & WAGNER are the *Architects*; R. C. MAHON COMPANY, *Fabricators*; COL. HENRY M. WAITE, *Chief Engineer*; JAMES STEWART COMPANY, *General Contractors*

Cincinnati's NEW FRONT DOOR



FROM the moment of their introduction CB Sections have been accorded a hearty reception in CINCINNATI. All important construction in this city in recent years has incorporated CB's, and now in this \$42,000,000 project, CB Sections again play a prominent role. Such partiality indicates the adequacy of CB Sections to the needs of architects and designers . . .



CARNEGIE STEEL COMPANY - PITTSBURGH

Subsidiary of United States Steel Corporation

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CB SECTIONS

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AMERICAN ARCHITECT

Volume CXXXXI
Number 2607

AMERICAN ARCHITECT

(Trade-mark registered, U. S. Patent Office)

FOUNDED 1876

MAY
1932



This Month's Cover

JANUS

THE Roman god Janus is pictured on this month's cover. Janus was the god after whom the month of "January" was named, he always having been pictured as possessing two faces. One face looked back at the past year, the other looked towards the future. So the portrait of this god was taken as an ideal subject for this, the First Annual Forecast Number of American Architect.

Ernest Born, the artist, has given the subject a whimsical touch in that the backward looking face is done in a technique of the traditional school whereas the forward looking face is drawn in the modern manner.

Mr. Born is well known in architectural circles for his renderings. At the 1930 Exhibition of the Architectural League of New York he was awarded the Birch Burdett Long Memorial Prize for rendering in consideration of his fine drawings, sound knowledge of composition and skill in presentation.

BENJAMIN FRANKLIN BETTS, A.I.A., Editor

ERNEST EBERHARD, *Managing Editor* WALTER E. DEXTER, *Advertising Manager*

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Next Month

Beginning with the June issue, AMERICAN ARCHITECT will be increased in size by the addition of thirty-two pages in which will be shown photographs and drawings of various types of building. These will be in addition to the usual number of text pages now printed

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Save the surface and you save all - *Dutch Boy*



● Rhodes Medical Arts Building, Tacoma, Wash. Dutch Boy White-Lead used for interiors of this building. C. Dahl & Company, Tacoma, painting contractor. Mr. Dahl writes: "I feel it my duty to convey to you my word of praise for the wonderful results obtained on this job, and highly recommend Dutch Boy to all who are looking for results first."

DUTCH BOY WINS PRAISE FOR ANOTHER PAINT JOB WELL DONE

● This time it's Tacoma's beautiful new Rhodes Medical Arts Building. Here, after Dutch Boy and other paint materials had been thoroughly tested, Dutch Boy was given the job.

That this confidence was not misplaced is borne out by the words of Mr. C. Dahl, the decorator who did the work. "I feel it is my duty", writes Mr. Dahl, "to convey to you my word of praise for the wonderful results obtained and highly recommend Dutch Boy to all."

It's the same all over the country. For new painting or repainting, those responsible for the work know that they can rely implicitly on Dutch Boy to give a finish that combines attractive appearance with maximum durability. They know also that Dutch Boy holds down maintenance costs because it is readily washable. It keeps its "good looks"

through long periods of service and repeated washings.

What's more, this time-proved paint material is extremely adaptable. Dutch Boy can be easily tinted to any color the requirements dictate. In fact, Dutch Boy makes it possible to get just the tint you want.

Furthermore, you can use Dutch Boy White-Lead for any kind of surface... for wood, plaster, wall board or metal... for undercoatings for enamel, and for plastic paint. With it, you can produce all kinds of effects, ranging from flat and eggshell finishes to the popular blended and mottled treatments.

Through our Department of Color Research and Decoration you can obtain the assistance of men who have had years of experience in solving troublesome decorative problems. This Depart-

ment will be glad to advise you on the selection of color schemes for specific purposes and also give you valuable information about paints for both interior and exterior use. Simply address your inquiries to the Department of Color Research and Decoration, care of our nearest branch.

NATIONAL LEAD COMPANY

111 Broadway, New York; 116 Oak Street, Buffalo; 900 West 18th Street, Chicago; 659 Freeman Avenue, Cincinnati; 820 West Superior Avenue, Cleveland; 722 Chestnut Street, St. Louis; 2240 Twenty-fourth Street, San Francisco; National-Boston Lead Company, 800 Albany Street, Boston; National Lead & Oil Company of Pennsylvania, 316 Fourth Avenue, Pittsburgh; John T. Lewis & Bros. Co., Widener Bldg., Philadelphia.

The well-known brand of Carter White-Lead is also made by National Lead Company. In purchasing either Carter or Dutch Boy White-Lead, the buyer is assured of obtaining white-lead of the highest quality.



DUTCH BOY WHITE-LEAD

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Leadership Will Safeguard the Future

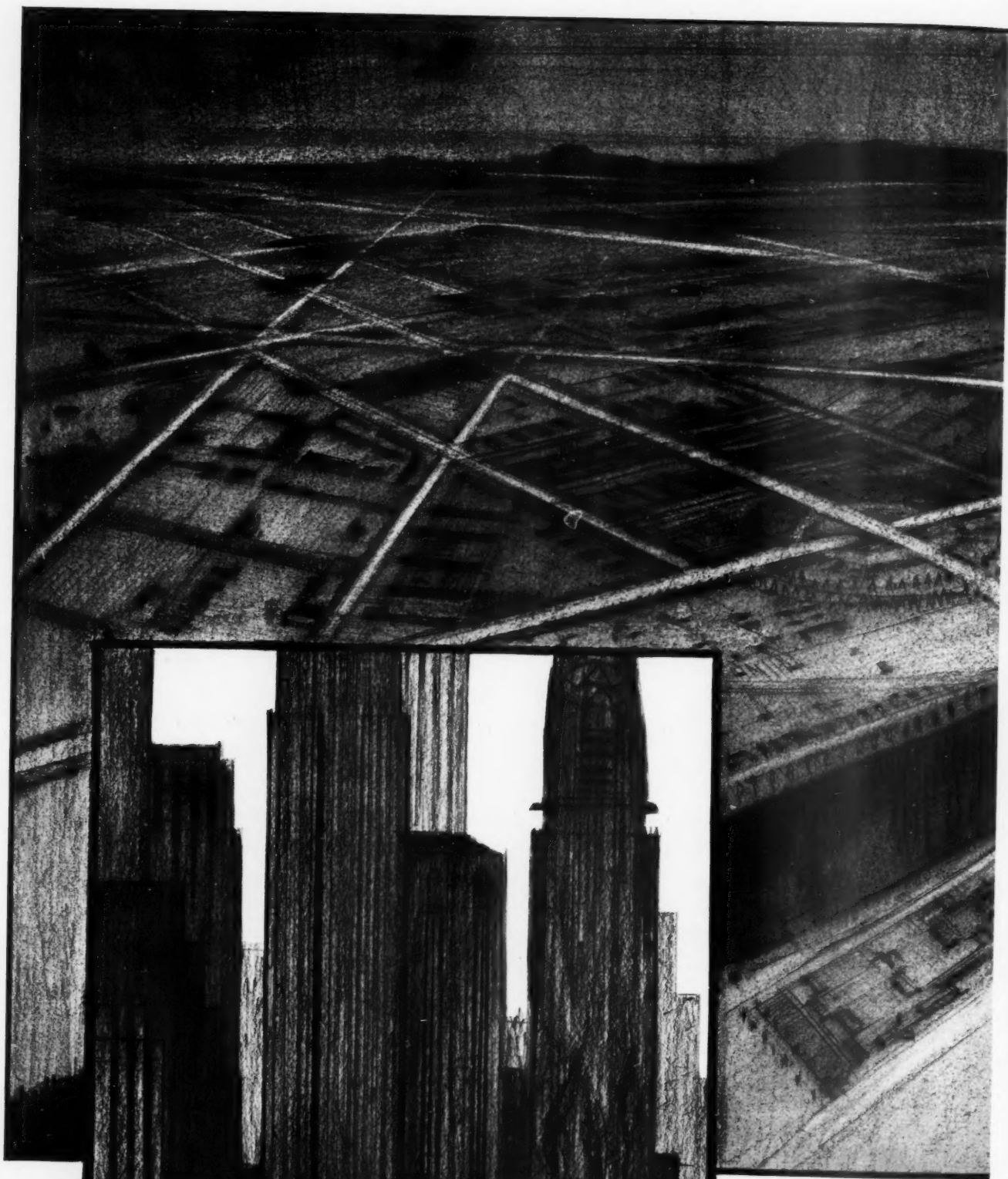
BY BENJAMIN F. BETTS, A.I.A.

NO one can foretell with certainty what the future of the architectural profession may be. Yet every architect knows changing economic conditions and business practices must inevitably influence the future of everyone. This fact, combined with the ever-increasing number of practicing architects and new competition in recent years from without the profession, provides something to think about.

ARCHITECTS observing the trend of the times have asked themselves whether or not the profession may look with confidence to a bright future. Will the functions of the architect gradually be absorbed by engineers, contractors or others in the building industry? Will the profession awake some day to find that it is merely an employe of large building organizations—a cog in the wheels of industry? Are we going to see numerous architectural offices combined with the result that many small and average sized offices will be gradually eliminated? All have been recurring questions of the past five years. It is possible that some or all of these things may happen. At the present time architects hold in their own hands control of the profession's destiny. Control lies in maintaining leadership.

THE nation and individual communities are faced with grave problems. Many of these need the leadership of men who understand planning, building construction and how to coordinate group activities. No one has greater capacity in this direction than has the architect. Leadership of the profession can be maintained if architects will make evident their interest in community affairs; set in motion the machinery that will bring about proper organization of the building industry; make a determined effort to give the public decent adequate housing, properly financed and well built at a cost that the average person can afford; and inform the public as to what constitutes good planning and construction, its value and how it can be obtained.

LEADERSHIP in questions of the day can preserve the security of the profession's position. The architect will always be needed. No one will ever supplant him as the master builder and coordinator of building activities. Only the architect can render unprejudiced advice to those who build. Nothing can be substituted for his training, experience, judicial position or executive responsibility. There is no one else qualified to give the service rendered by the architect. The profession need not worry about the future . . . if it will maintain leadership.



TODAY...TO

On the

» » BY



MORROW

Illustrations by
Ernest Born

Following Pages a Story of "America Tomorrow"

FRANK LLOYD WRIGHT

FOR MAY 1932

15

America Tomorrow



"We must choose between

A more sensible proceeding is to *let the automobile take the city to the country.*

The city has today only about one-third the motor car men it will inevitably have. And congestion, as it is, is nothing at all to what it must become when the city-man is the success he will be if promises are kept. His success means a car. His family and the family of his increase are dreaming of it now and envying the neighbor who has one or two—or three.

SIX million people may mean several million private cars, at least; perhaps a quarter of a million trucks and as many more machines for distribution and delivery; a half million buses; hundreds of thousands of taxicabs. Roughly calculate the mass in your imagination, get the people out of the subways and into their own cars, and add to the total the other items with room enough for each moving unit to function. You will find that the mass, in the space left for it, would completely bury Manhattan, skyscrapers and all. Even were the village streets double-decked or triple-decked at a cost of several billion dollars, such machine success as we have a right to expect would still not only obstruct, but kill traffic.

Why deck the village streets? Why not let nature take her course? Let the citizens take the billions the decking would cost them to buy motor cars and get more out of living by a more natural and fruitful life by the acre, instead of 1000 to the "hectare" or by the square foot.

It is in the nature of the automobile that the city spreads out thus and far away. It is in the nature of flying that the city should disappear. It is in the nature of universal electrification that the city should not exist.

Centralization by way of the city has had a big long day, but the tides of the machine age are setting in against it. Decentralization and reintegration are the need and the purpose of the machine age.

The mobilization of the body, volatilizing of voice and thought, make the city as troublesome to life as static is to the radio.

Monarchy was centralization. The city is centralization. Our capitalistic system, as it stands to fall, is centralization. And centralization is no longer practical. Buildings were once forts, and cities were fortifications. Democracy makes the fort a mockery. And modern warfare, having taken to the air overhead, makes concentration in cities only nuclei for wholesale murder, invitations to destruction, in any future war.

Democracy as integration is practical. Even integration along the center line, the great highway, is too obvious. Integration over the surface of the whole country is ideal.

Once more humanity has overcome a physical disability by a mechanical appliance. The town or country man gets more joy now out of this release that has

WHICH would you give up first, the city or the automobile, if you had to choose between moving away into more ordered green spaciousness to keep your mobilization or remain on "the hard," in the herd, where you must eventually give it up?

You will have to choose before very long. The traffic problem in any busy city is practically unsolvable. Destroying the present city and beginning all over again—or even much to modify it—costs too much to be regarded as a probability.

Vested interests, once invested, cannot be divested. They cannot agree.

What use in the super-imaginings of super-specialists, super-space makers for rent, to enable super-landlords to have and to hold the super-concentration of super-millions of people to make super-millions of artificial dollars?

The instinct of the amorphous herd warms with the swarm. But the swarm will take wing—or to wheels, which is much the same thing—because increased facilities of lateral movement are comparative to flight, a fond human dream realized. The individual's horizon has widened by means of the ubiquitous motor car. A ride up high into the air in any elevator only shows the man how far he can go on the ground now—and where. A view of the horizon gives him the desire to go. He goes and his horizon widens as he goes. Enough blind-alley nonsense has been talked by skyscraperites about congestion, trying to obscure the simple issues and enable them to make more feudal towers for new feudal lords or else wiping the city out as it stands only to reconstruct the towers for the lords a little further apart.

BY FRANK LLOYD WRIGHT

the automobile and the vertical city"

come to him by way of increased capacity for lateral movement than he ever knew before in the history of his race.

And the release is at work upon his character. You could multiply and pile him up in cells ad infinitum when he got this release. And he is still dazed by his new freedom, like a bird the door of whose cage has been opened. It takes some time for him to know that he can fly—he has really never learned, perhaps.

But when he realizes he is free, and learns, he's gone. And after all, *he* is the city. So the city is going where and as he goes and is gone.

The present form of automobile is crude and imitative compared to the varied forms it will soon take. The Usonian network of hard roads is only just beginning to be built. The major part of the present road system is, say, no more than five years old; the flying-machine is only in more or less crude experimental form; transmissions of sight and sound are experimental or in their infancy. And, yet, the railroad today is already too slow, too clumsy, and too limited.

Both production and distribution may now take place where both happen to stand to best advantage, with no expensive delays in the to and fro, and few or no expensive back and forth hauls to charge up to the consumer. No waste motion to pay for. Fresh produce every hour may now be direct. The same applies to human transport. Highway travel is growing interesting again, swifter and more desirable because it is more spontaneous. Transport is getting down within reach of everybody, at last.

It isn't difficult to see the great architectural highway with its roadside markets, super-service stations, fine schools and playgrounds, small, integrated, intensive farming units, great automobile objectives and fine homes winding up the beautiful natural features of the landscape into the Broadacre City of the future.

It requires little imagination to see all this new release of human activity soon integrated into economic systems eliminating the waste of time and motion and human stricture now inevitably imposed on man's life by great centralization, whether as city or factory, finance, university, or school. It requires very little imagination to see travel becoming more and more general, within the reach of everyone as adventure and romance with nature.

But, more important, the human environment of life and work, too, may be once more spacious, free and integrated as a whole with more facility for human intercourse and enjoyment of life on a larger scale; a scale of Usonian freedom undreamed of in any American city. Any home may once more be a delightfully varied, fruitful association with the nature of the ground upon which it is erected.

Suppose objectionable mechanical elements of travel are entirely removed, as they are rapidly being removed. The telephone poles are down—they are already needless. Landscaping has healed both cuts and fills made in constructing great highways. Fine bridges and noble viaducts become fine architecture. Beguiling resorts grow by the beautiful native features along the wayside and are famous for beauty, hospitality, and entertainment.

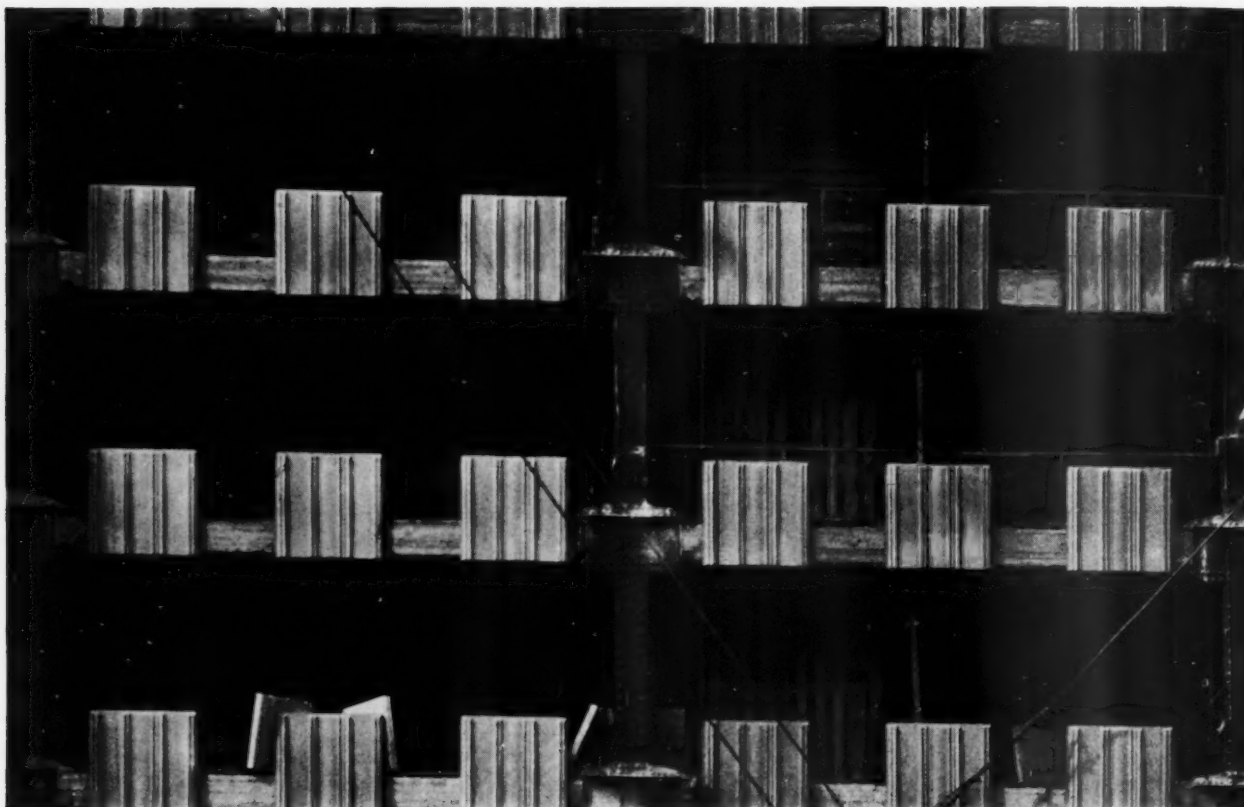
The splendid highways going anywhere or everywhere are thronged with life manifesting itself not in standardized machines of a monotonous type, but in as many forms as are suited to the many needs of the many individuals. Carbon monoxide is eliminated. Noise no more. Swift singles, doubles, quads, and sextettes seen as safe, swift, comfortable machines. Gaiety is in the fleet and charm returning to the road. Public plane-stations are set every twenty miles and take off from the highways with varied, safe, self-contained, swift, mechanical units: hundreds of private planes safely flying overhead without noise.

NOW come various integrated roadside markets; and suitable service stations, containing everything for travel-comfort; other markets pertaining to certain manufacturers or classes of product are scattered but integrated, as links of a chain, in appropriate place en route to anywhere. The farm units and the factories that produce are within a ten mile radius (ten minutes) of each market and within walking distance of the homes of the workers. An interchange of products is easily had by continuous movement each way without waste motion to charge up to the consumer.

As a man sits in his car, by turning a manifold, the modern newspaper opens to him by way of sight and sound. He learns where the day's specialties are to be had as he goes, and sees with his own eyes the plenty of the earth in attractive places—free to seek the best of everything. His home is his center to which all this is integral, integrated not only with all other homes spontaneously, instantaneously, but within a hundred and fifty mile radius (two hours wheeling); or he may cross the continent for conference by air in a few hours. Life a fluid, flowing where it is willing or it wills.

Business has taken on a different complexion. It is a form of freedom, and architecture bursts into bloom. There is no prevailing style, but the common sense of the age flowers into new forms in new materials. New ideas of life take imaginative shape. Gardens abound, and the countryside is a great park in which the integrated three, five, and ten-acre farms are things of beauty in themselves, a coveted basis for a rich life. Man's association with his animals takes on a better quality in architectural surroundings. Spaciousness, trees, flowers and buildings appropriate

(Continued on page 76)



LAZARNICK

Aluminum spandrels of Radio City fastened to the steel frame suggest a transitional change in the development from curtain wall construction to a skeleton frame and prefabricated metal panel construction

Radical Changes In Metal Are Taking Place

BY HARRISON GILL

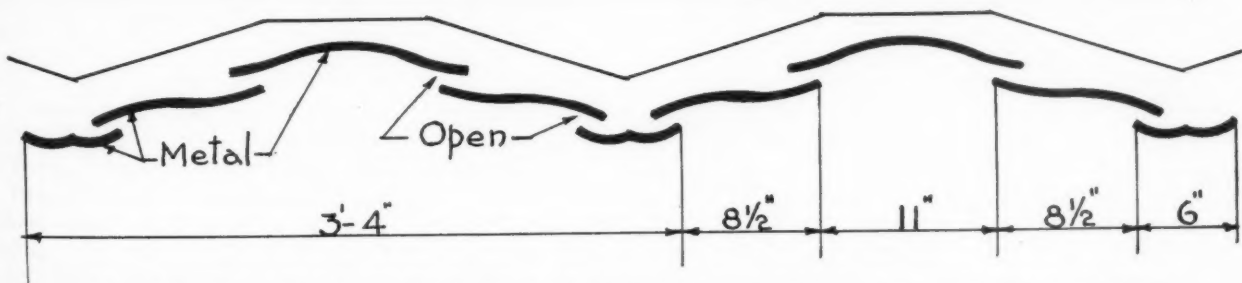
Consulting architect specializing in metal work

MANY designers think of their metal work as an ornamental detail. Usually it is a detail which has a useful function to perform, but it is studied and considered primarily as an ornament and embellishment. Modern architects in Europe and elsewhere, who call themselves Internationalists, have ignored such use of metal religiously; to ignore it is a fundamental article of their faith. As a consequence any progress or development which may come in the near future in the ornamental use of metals will probably be confined to this side of the Atlantic. So many experiments are being made in the use of copper alloys, with or without nickel, as well as on aluminum and the stainless steels, that something will undoubtedly result to color and enhance the architecture of future years.

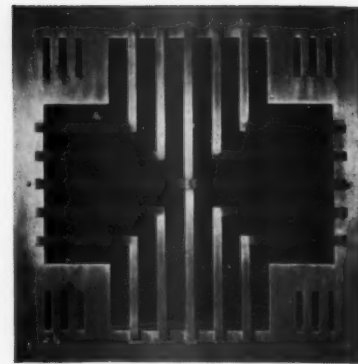
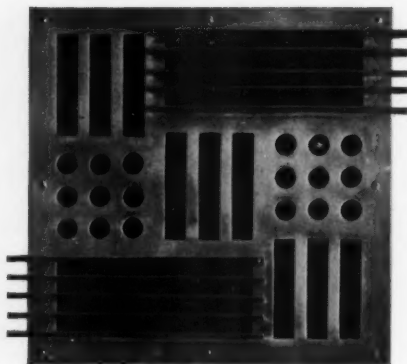
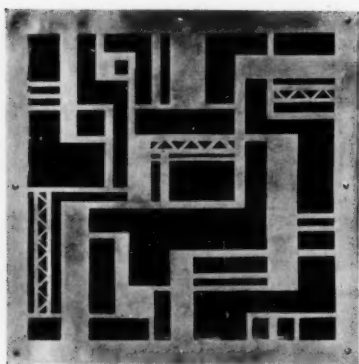
There is, however, another side of the development

which may be more far-reaching in its ultimate effect on the appearance of our buildings. When metal is used as an exterior or interior wall surfacing material it ceases to be merely an accessory and becomes an integral and essential part of the building fabric. Most of the imagination and ingenuity which is being brought to bear on this problem is also of American origin. In fact more can be learned about trends and tendencies in metal work by spending a few days in any of our large cities than can be seen in six months in Europe.

The history of our architectural metal work goes back to Colonial times, when the weakened medieval craft traditions still retained sufficient vigor to produce intimate hardware and an occasional grille. The exuberant revival of the smithcraft in England during the eighteenth century found its less imposing counterpart in America, only to be overthrown by the Adam and



All metal ceiling with integral lighting in the Bal Tabarin, San Francisco, which in possibly more simplified form is destined to wide use in many types of buildings. J. R. Miller and T. L. Pflueger, architects



PRINGLE & BOOTH

Illustrating a type of machine craftsmanship adaptable to metal which will supplant much of the heavy cast work of recent years. Grilles of cut-out sheet metal with applied bars and fins used in the Eaton Store, Toronto, Canada. Ross and McDonald, architects; Sproat and Rolph, associate architects

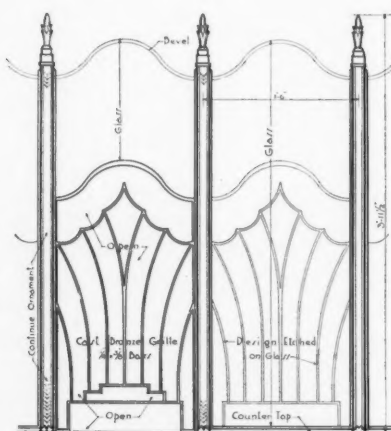
neo-grec influences, which inaugurated the era of the iron founders.

There were some bright spots in the cast iron period, with its occasional craming and imaginative examples, but it could not survive the taste of the second half of the nineteenth century. The forty years of pseudo-archeological metal work from which we are slowly emerging produced almost nothing of permanent value. Wrought iron and casting were jumbled together in the vain attempts of the metal shops to reproduce impossible designs. Bronze grilles often imitated wrought iron motives or else were cast from uninspired models. Sculptors of ability considered architectural ornament beneath their dignity, as indeed it was when one considers the type of thing they would have been required to do. Power processes were never employed sincerely but only to create a semblance of hand technique.

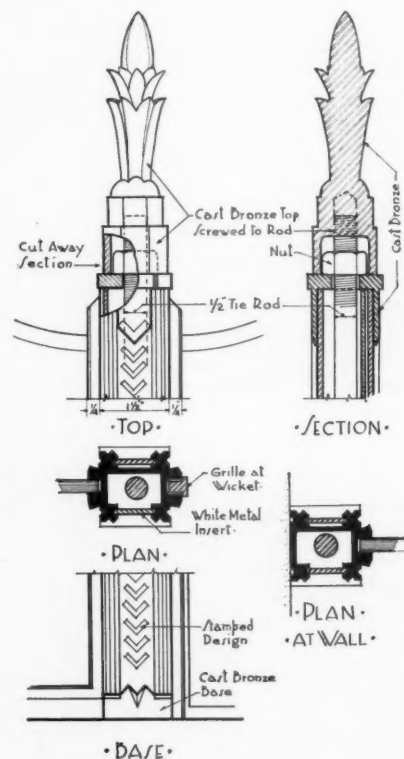
All fine metal work begins with a mastery of the basic means of forming and assembling, and predicated upon this familiarity comes the later elaboration of ornament. The metal work of the immediate future will first of all mean a greater use of power machine methods of forming and assembly.

While architects were toying with scholarly revivals and making painstaking measured drawings, the ingenious mill workers and inventors, true heirs and descendants of the medieval craftsman, were laying the foundations for the ornamental metal work of the future. The first mill to roll sheets, using steam power exclusively, was built in Waterbury in 1851 and in the same year Hayden of Connecticut perfected copper spinning. New machines were later invented and built, to be driven by belts from shafts which rotated by steam or electrical power, until the whole equipment of the modern mill and machine shop was developed.

Electric welding, electro-chemical and heat processes



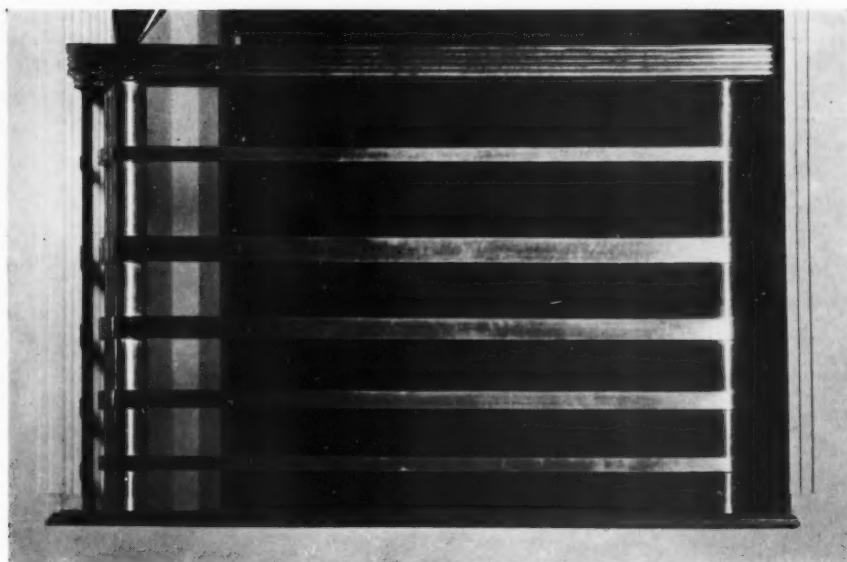
MACHINE CRAFTSMANSHIP in a counter screen in the Telephone and Telegraph Building, York, Pa. Note the proportions of the single extruded posts (shown in black) and the "hub-cap" finial which screws on to the structural tie-rod. Construction and design developed by Harrison Gill in collaboration with J. A. Dempwolf, architect, and the Wm. H. Jackson Co., metal craftsmen



have been added to the purely mechanical elements of a technique which finds no precedent in any other age. These processes will exert an influence which will far outweigh any personal idiosyncrasies of individual designers and yet are sufficiently flexible to embody within their limitations the characteristic expression of an original, creative mind. A modern art of metal work *will not* spring into being full-fledged, for we have so much *to learn* and so much *to unlearn*.

THE primary aim of experimental work being carried on today, and a tendency which will have far-reaching effects, is the realization of the desirability of lightness. The metal can be spread over larger areas without increasing the amount being used; savings accrue from reduced transportation costs; increased speed of erection from having less dead weight to handle at the site.

Lightness being desirable from every economic



PRINGLE & BOOTH

A direct and obvious use of stock members using tubes and flat strips of monel metal and depending for effect upon proportion rather than ornament. A balcony rail in the Eaton Store, Toronto

The use of aluminum for architectural sculpture will increase on buildings as its light weight offers advantages in handling. Board of Trade Building, Chicago. Holabird and Root, architects

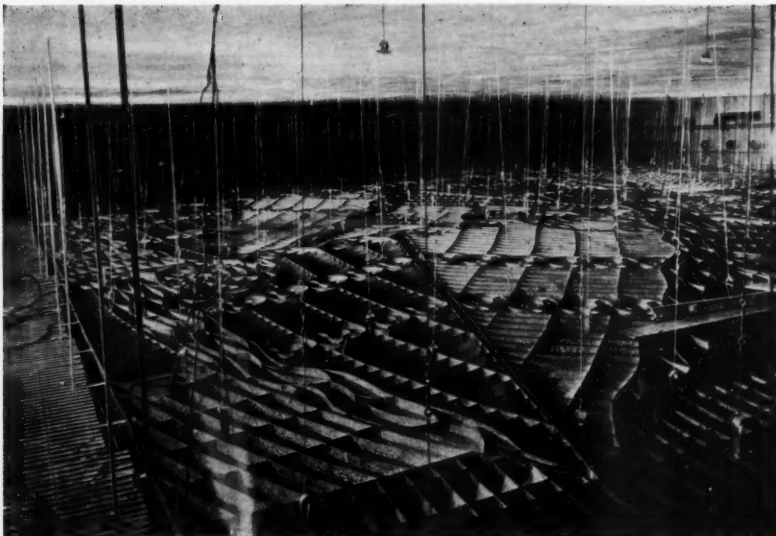


The acetylene torch permits new possibilities in wrought iron, which seems to adapt itself to every change in style. Doors from the S.S. Paris; designed by R. Subes, iron craftsman



PRINGLE & BOOTH

The tendency for simplicity is illustrated by these doors of glass panels and flush metal. The hardware adds contrast without going beyond functional requirements. Eaton Store, Toronto

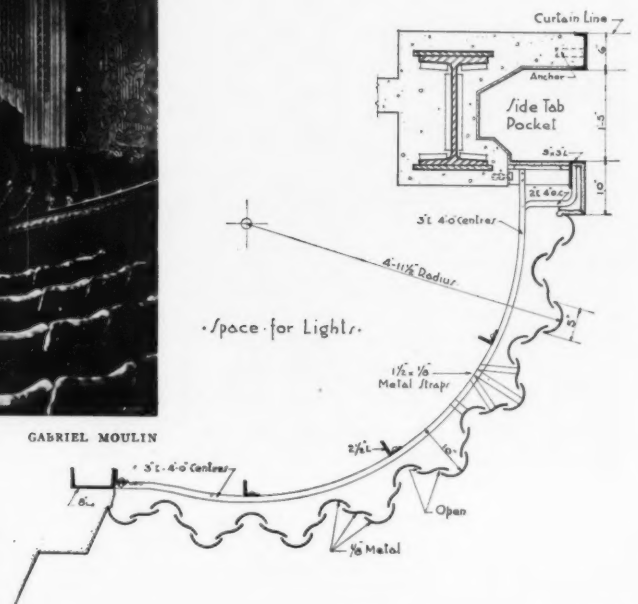


Galvanized iron sheets have been widely used in the Paramount Theatre, Oakland, Cal. At left is detail of construction of finished ceiling shown in upper right of lower illustration



PROSCENIUM of the Paramount Theatre, Oakland, Cal. It is composed of bent sheet metal strips which are lighted from behind. A detail of the proscenium is shown at the right. J. R. Miller and T. L. Pflueger, architects

GABRIEL MOULIN



consideration, it will be reflected in design. Sheet work will be used obviously as sheet work, without feeling any necessity for hiding the fact that it meets the functional requirements.

IN the design of doors, partitions and cabinets it will mean a greater use of flush leaves and surfaces on which the placing of hardware will be thrown into prominent consideration, so much so that visible hardware will have to be designed with more imagination and feeling than it has been in the various attempts of recent years to be modern.

The deeply rooted idea that a fine heating grille must be thick to be pleasing will gradually crumble and woven wire, sheer pierced and embossed sheets will come into use even for pretentious buildings. Sheet metal for walls and ceilings will have some popularity, especially where cleaning is an important consideration.

The ceiling or upper wall, designed with integral lighting units, will reach the point where fixtures as a separately designed and installed feature will no longer be used for certain types of interiors. Ceilings of spotwelded fins and (Continued on page 100)



GABRIEL MOULIN

A SYMPHONY OF METAL WORK in the lobby of the Paramount Theatre, Oakland, Cal. The ceiling shows the highly decorative effect of galvanized sheet, the construction of which is similar to that shown at the top of the facing page. J. R. Miller and T. L. Pflueger, architects

How We Will Live—

» » » An Analysis of Today's Their Probable Influence Upon

By JAMES DALTON

Industrial Editor of "Motor," and an outstanding authority on practical economics

RELATIONSHIP between general economics and housing is as close as a marriage bond. The character of the average home, in fact, is an unfailing index to the standard of living. Any economic convulsion of more than transitory importance contracts or expands family purchasing power, the sum total of which represents national buying capacity.

Such a cataclysmic depression as that which has prevailed for two and a half years cannot fail to exert an influence which will be felt for a generation. This would be true even though recovery were to start tomorrow.

Long range economic forecasting is hazardous because it involves many purely speculative considerations. Given certain sets of conditions, however, definite results must follow. For nearly two decades the United States has been leading a highly abnormal existence. With the beginning of the World War, as the major source of supplies for the combatants and later as a participant, we entered a period of unprecedented but largely fictitious prosperity.

Except for a transitory deflation in 1920-21 and a few insignificant recessions somewhat later, we continued until the fall of 1929 to climb to ever dizzy heights. In our unrestrained enthusiasm we ignored danger signals which should have been perfectly obvious, and so plunged off the precipice. Until six months ago most of those who survived the fall had been groping around for gyroscopes which would lift them straight to another mountain top.

Broadly speaking we have had an era of hard times in the United States about every twenty years. The climb from the bottom to a new peak has been long, slow and arduous. Each one of these periods has brought profound economic and social changes. It would be puerile to believe that the one in which we now are enmeshed will be less productive.

After the United States emerged from the World War it had two great wants which it then had abundant wealth to satisfy. One of them was for the automobile—individual transportation—which until then had been beyond the financial reach of the average family. The other was for construction of all kinds.

The result was a ten year building boom which never had been paralleled in any country. While residential

construction was not entirely disregarded, of course, principal emphasis was placed upon the most palatial types of apartment houses, hotels, stores, office buildings, churches, schools and public buildings.

Little attention was paid to the potential supply of tenants. It was the theory that occupants of older buildings would move into new ones. The inevitable result was that supply far exceeded demand and it was exceedingly difficult to pay operating costs and carrying charges on high cost structures.

Within a few months after the 1929 debacle it became obvious that substantial rental concessions would be necessary to obtain tenants. As much resistance as possible was offered to this downward revision but much costly construction soon began to find its way into the hands of bondholders. This process of deflation now is well under way but we still have a long way to go, however, in the deflation of city real estate of all kinds.

One of the significant phases of the high cost building boom was that it intensified centralization in "business centers" and "exclusive" residential sections, bringing almost fabulous land values which now have been sadly shrunk.

CENTRALIZATION NOT NEEDED FOR PAST 200 YEARS

AN amazing feature of our urban life has been its continued centralization more than two centuries after there ceased to be any need for central stockades to protect inhabitants from bands of marauding Indians and fifteen years after universal use of the motor car had eliminated the necessity for concentrated accessibility.

For the first time since an Austrian grand duke was slain at Sarajevo we now have time to catch our breath and assess the futility of the frantic race we ran so many years for wealth which slipped from our fingers before we had time to enjoy it. We have entered a new period of economic stabilization at lower levels and it is a condition which will prevail for years rather than months.

In the present situation are a few certainties, more probabilities and many uncertainties. Those who make the most of the first two categories will be the most likely to profit. Here are a few of the certainties:

1. Deflation will continue until real estate, rentals, professional services and other elements in the cost of living come into line with all other thoroughly deflated commodities.

2. The cost of living must fall definitely into adjustment with reduced incomes from salaries, wages, bonds, mortgages, real estate and dividends.

and Build-Tomorrow

Economic Conditions and the Construction Industry

3. Prosperity of industrial and agricultural areas must be more closely balanced.

4. Wholesale and retail prices, salaries and wages will continue to move in a gently undulating but gradually upward direction at levels not far above those which prevail after deflation is completed for a period of years as they did so long before they began skyrocketing in 1916.

5. Another jazz era in American life has about run its course and it will not be resumed until we again move into a period of abnormal prosperity and profits.

After two years of adversity, with more in the foreground, the average American family is rapidly readjusting its viewpoint of what makes life worth living. It is formulating new standards of values and a new catalogue of wants. It is trying to shut out the blatantries of jazz. It is thinking more of books and flowers, of peace and understanding friendships, of harmonies and neighborliness, of leisure and culture and, perhaps, of God.

These are among the certainties and they lead us to the probabilities. Inasmuch as these latent characteristics are coming to the surface it is logical to assume that before long they will begin really to clamor for expression. If, as and when they do they may require a new habitat to make them vocal and effective.

The nerve-racking intricacies of urban life, with the craze for speed and white lights, the biggest this and the greatest that, with still greater populations the main goal, seem to have reached a peak in 1929. Here and there are to be found indications that centralization is to be followed by decentralization. A back to the farm movement of substantial proportions, the fruit of industrial depression, is an accomplished fact. Rural life gives far greater assurance against cold and hunger.

AUTOMOBILE NOW MAKING DECENTRALIZATION POSSIBLE

WITHOUT the motor car, decentralization would be impossible but with individual transportation within the reach of almost everyone, it is not only a possible but a probable development so far as housing is concerned and it must not be forgotten that all other types of construction are the direct result of communities of homes. They follow rather than lead.

If it can be accepted as probable—and we believe it can—that a large segment of the American people are preparing to change their living habits because of economic necessity and mental readjustment, it follows naturally that they will change their habitat so far as it is possible.

This, in our opinion, should be both a challenge and an inspiration to architects, builders and a new generation of real estate developers. The value of farm lands has been deflated, perhaps permanently, and real estate in congested urban areas is going through the same painful process.

We can visualize no need now or in the early future for a large amount of city building even with labor and materials costs thoroughly deflated. The ebb and flow of urban land and building values is too rapid to make them an attractive investment. With lax zoning restrictions this is true of even residential construction. The neighborhood which may justify a substantial home investment today may change its character completely in a few years and make that home a liability rather than an asset.

GREATER SECURITY IN DECENTRALIZED DEVELOPMENTS

IT seems far more likely that investors—and there never will be any lack of them—will seek greater security for their families and their funds in decentralized community developments which the motor car will make accessible even though other forms of transportation may be lacking and which soon will attract to them services which will make them self-contained.

With a gradual relaxation of credit restrictions, the construction stream will not be permanently blocked. All building costs, with the exception of official wage rates, are sharply lower than they were two years ago. In some places unions already have accepted pay cuts and they will shortly become general. As a matter of fact many workers are accepting less than the union scale to get employment and they are operating much more efficiently. Materials, supplies and labor still are far too high, however, and must be brought down to depression levels.

Inasmuch as central city construction will involve so many uncertainties for a long time to come it is logical to expect the next important developments to be in suburban and semi-suburban areas. Once the movement gets under way it will progress rapidly.

While consideration of the direction it will take must be purely speculative, certain conclusions may be drawn with a reasonable degree of safety. With building costs as low as they soon will be investors and home builders will seek locations where potential enhancement of land values will make them secure over a period of years against any probable adverse developments. The sections which will benefit chiefly from this trend will be:

1. Unexploited outlying urban areas which lend themselves readily to residential (Continued on page 88)

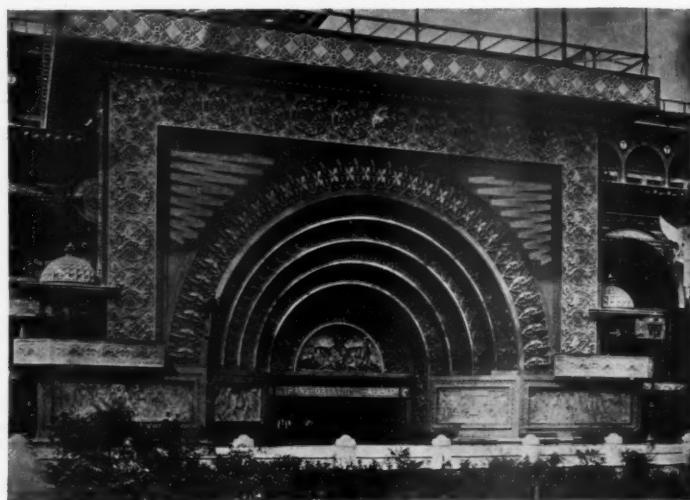
Expositions Always Influence Architecture

By LOUIS SKIDMORE
Chief of Design, "A Century of
Progress" International Exposition

Photographs courtesy of the Chicago
Art Institute and "A Century of
Progress" International Exposition



1876 . . . Forerunner of the jig-saw period



1893 . . . Classic, but Sullivan revolted

It is far simpler to tell where we were yesterday than to gauge precisely whither we may be going tomorrow. This is as true of architecture as it is of musical composition, finance, or automobile manufacturing. The role of a prophet is hazardous.

To cover American architectural trends of the past sixty years, especially as they relate to expositions and were influenced by them, to pause for a view of our situation at present and then to peer another score of years into the future, obviously has its limitations. Certain things must necessarily be sketched. Others, which many may think are vitally patent, must be omitted entirely.

In the discussion of various expositions of the past, it should be borne in mind that any judgments one way or another are purely architectural. They do not consider exhibits, attractions, attendance, or relative success or failure.

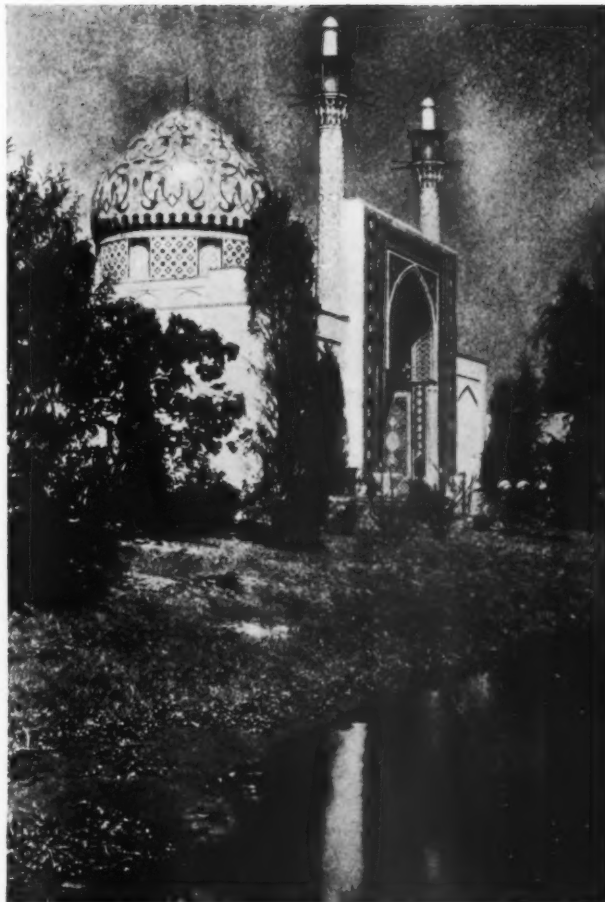
By looking out of the nearest window and reflecting on the buildings visible, one can see to a rather faithful extent what the results of the past have been. Memories and illustrations of past expositions and knowledge of the architecture which followed must supply the background which it is not possible here to review completely.

In 1876 a great exposition was held in Philadelphia in commemoration of the centennial of the signing of the Declaration of Independence. In the light of today, the architecture of that Fair may seem curious. It

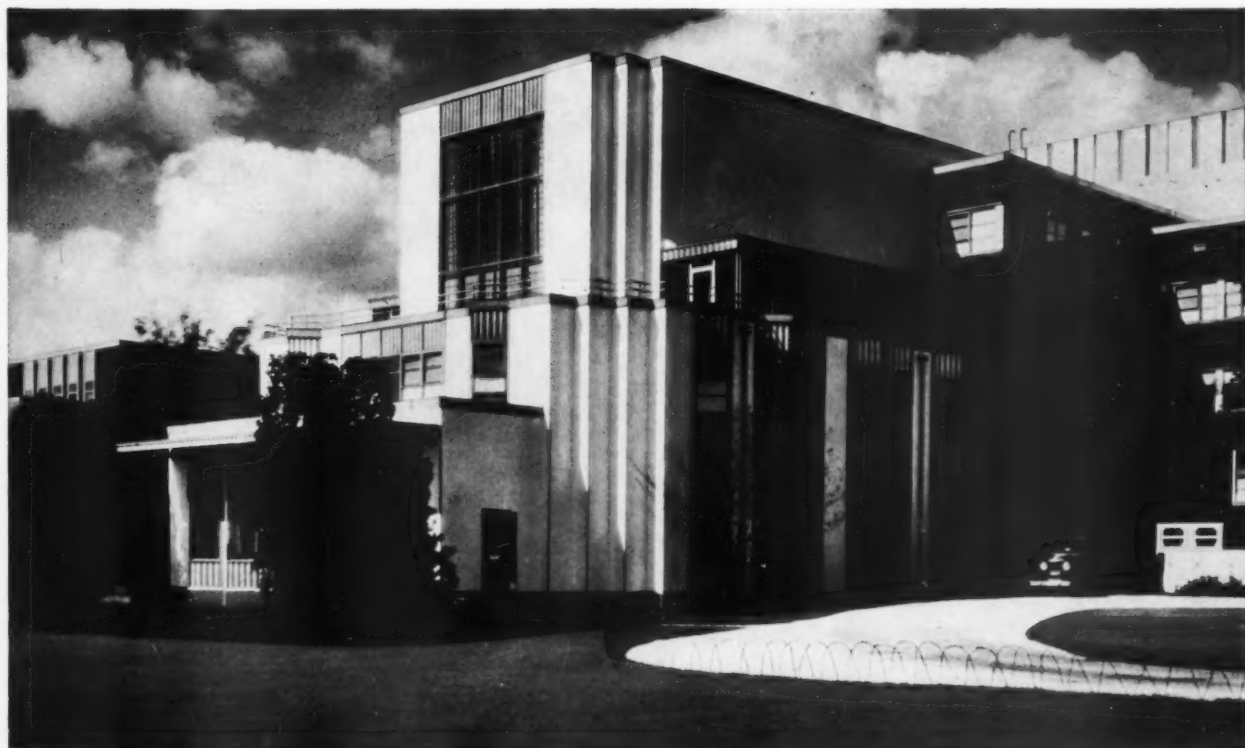
was mid-victorian in character and replete with jig-saw ornament. Yet it was an honest, straightforward expression of the American people of that day. Whether we today like it or dislike it, or consider it naive, it possessed a quality that was good, healthy and natural.

In the period following the Philadelphia Centennial, Americans in increasing numbers began to travel and study abroad. They became more and more impressed and influenced by the beauties of classical and period architecture. They became, to a large extent, self-conscious regarding the architecture of their own country. Returning, semi-sophisticated, to the United States, they felt urged to reproduce the masterpieces of Europe. Chateaux were transported to American cities as town houses. Roman bath designs became railroad stations. Greek temples became post offices or banks. Palaces became apartment houses.

By 1893, the classic style had developed and been popularized. In that year occurred the World's Columbian Exposition—Chicago's first World's Fair. This exposition provided its architects with an opportunity for assembling in a most opportune setting, the best features of classic, eclectic architecture. The opportunity was afforded to do so without the restrictions which placing individual buildings in cities imposed. It permitted a chance to develop a spectacle of impressive unity and symmetry and of magnificent vistas—the most effective elements of this type of architecture.

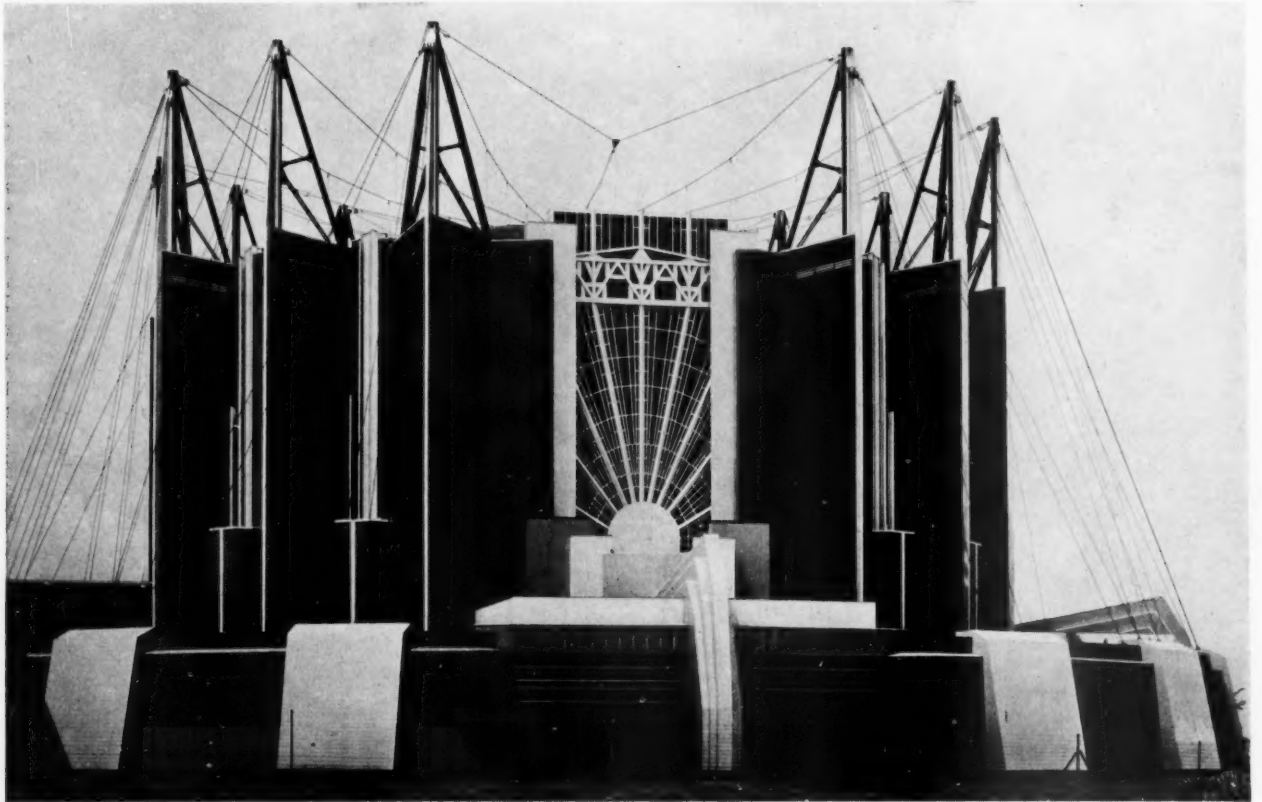


1915 . . . Still classic, but Mullgardt sounded a new note 1926 . . . Indications of a definite break with the past



1933 . . . A new architecture crystallized through economic considerations and construction innovations

Chicago's World's Fair Will Make



The suspension bridge principle of support receives its first important application to architecture in the dome of the Travel and Transport Building. Supporting cables run from the tops of steel towers. Edward H. Bennett, Hubert Burnham and John A. Holabird, architects

In this grand ensemble of the classic, one exception stood out. It was the work of Louis Sullivan in the design of the Transportation Building. There was a genuinely original concept that was distinctly different from the design of the others. It indicated that Sullivan was not merely recasting the glories of Rome or Greece, but was creating something of his own. Sullivan, it is said, aroused more offense than satisfaction among the architects of that day. It is interesting to note, however, that he was the only member of the architectural commission awarded a medal by the French who were the patrons of the eclectic school. Today, nearly forty years afterward, his ideas still live and his daring still finds expression. To many he is known as the father of *modern* architecture.

The Chicago World's Fair of 1893 definitely set the pace for the architecture of the generation that followed it. Other expositions which came at intervals thereafter served as a stimulus to keep alive the classical tradition. What might be characterized as a "World's Fair" type of architecture thus developed.

The dominating architectural element of the Pan-American Exposition in Buffalo in 1901 was classical, as was that of the Louisiana Purchase Exposition in St. Louis in 1904. The Panama-Pacific Exposition in San Francisco in 1915 was largely of this character. In it,

however, as in the Chicago Fair of 1893, the work of one of the architects, Louis C. Mullgardt, indicated an original concept, a revolt from the complete domination of the classic.

The San Diego Exposition of 1915 was an example of a well-nigh perfect job done by one man—Bertram Goodhue. The architecture was Spanish and perhaps sectionalized, but its effect in the exposition was one of superlative beauty. It was an answer, but by no means a complete one, to the question of whether expositions, generally, should have just one architect, or a group. It is generally agreed that as an exposition is essentially a testing or proving ground for ideas, it will be more representative and develop more lasting results if its architecture is in the hands of a number of men with individual ideas.

IN the architecture of the Sesqui-Centennial Exposition in Philadelphia in 1926, there was an indication in a number of the buildings of a definite break with the past.

Successful as was the effect of the classical architecture in exposition settings, it is obvious it has not made American cities beautiful. The exception to this is Washington, D. C., and there is a question in the minds of many architects (Continued on page 78)

a Definite Break With The Past



Detail of Travel and Transport Building, which is 125 feet high and 200 feet across. This is the largest unobstructed area ever enclosed beneath a roof

Forces That Influence the

BY FREDERICK L. ACKERMAN, F.A.I.A.

Architectural Consultant for Munsey Park, Radburn and Sunnyside; Advisor to the City Planning Commission of Providence, R. I.; Chairman of "Better Homes in America" Competition

THE future of architecture is so completely obscured by the opaque screen of current events that it seems utterly futile to attempt a forecast. It would be more in keeping with the times to speculate upon the outcome, and let the matter go at that.

However, it may be worth while to turn the powerful, revealing flood-lights of liquidation upon the rapidly moving train of architectural events of the last decade. We might conceivably find that what we took to be a rapidly accelerating forward movement in urban planning and architecture was, when observed from the standpoint of the common welfare, merely acceleration in reverse.

When Adam Smith brought out "The Wealth of Nations" it was assumed that he was proposing a theory to cover current events. As we now see it he was, instead, describing an industrial scheme and an economic system that had already been replaced. In much the same way, those who now suggest that the professional functions of the architect are likely to give way to methods of business enterprise are voicing what is in large measure an item of history. Such a statement is certainly historical so far as concerns the design of structures promoted for speculative ends, for the last decade witnessed a profound change in the position of the architect and in the nature of the functions performed by him in this field of work.

It may be said that the technical work of the office was carried in much the same manner as before: drawings were prepared and structures were erected. The work differed in respect to a higher velocity of execution and in magnitude; and it was said that greater and more glorious things were being accomplished in the name of architecture and art. Exhilarated by the onrush of events which was defined as *progress*, and desirous of sharing in the gains and glory, no small proportion of the profession readily surrendered its advisory and judicial functions.

A change of deeper significance than the introduction of a new architectural idiom and the stepped forms of towering buildings serves to mark off the last decade from earlier periods. During this decade of high velocities a fundamental change took place in the nature of the forces motivating the production of buildings. It is, of course, true that prospects of gains to be derived from sale have in times past motivated the erection of *speculative* buildings. But prior to this Post War Era, speculative builders took account of probable effective demand and acted accordingly. During the last decade, however, need and effective demand played little or no part in the promotion of structures representing in total an investment of many billions of dollars. Need, that

is to say the utility of these structures, entered into the program not as a requirement but as a remote and highly *speculative* probability.

Apparently the facts as to their utter uselessness had to be dramatized by such events as followed October 1929 before it occurred to us to use simple arithmetic to measure the accumulated excess of commercial floor space which was found to total millions of square feet—and how many apartments, no one knows. This excess had been built up in our urban centers where the known annual rate of absorption had never exceeded one-tenth of the accumulating surplus. The tremendous surge of activity surrounding the erection of these structures was utterly unrelated to consideration of use; and strange as it may seem, it was during this period that the theory of utility and functional expression revived and burst into flower.

The bulk of this excess *functional* architecture was in truth functional only in a most peculiar and limited sense. The structures served the end of floating some billions of real estate bonds and of jeopardizing the utility of and the investment in a very large amount of property adjacent to these new creations.

AND it was during this decade that no less than an empire of land was subdivided and furnished with roads and utilities. Some of this empire was *improved* with structures of a character beyond which the aims of flimsiness dared not venture. For the greater part, however, these speculative ventures in improvement served later to fill banks with frozen assets to the point of bursting and to leave behind the migrations of installment owners that settled upon them—a wake of blighted areas.

It may be said that this reference to the past has no place in a statement that set out to deal with the future. What the future holds in store for the profession turns upon the nature of the forces that will continue to motivate community development and the production of buildings.

At the close of the last decade one finds that a fairly well defined theory of architecture had been formulated and that it is now being called upon to render service in an attempt to clear the way for a resumption of building. The theory runs to the effect that *progress* requires the continuous production of buildings in which new materials and methods may be tried out under the rules of *functionalism* and that it would be in the interest of progress and the common welfare were we to wreck these structures after some twenty years and make way for new ideas, materials and processes.

This new theory of architecture which postulates the

Profession's Future

need for stimulating the rate of obsolescence and replacement is merely a rationalization of the necessity, as viewed by financial business, of providing an outlet for an excess industrial capacity which had been created under the guidance of the same speculative urge that gave rise to an excess of commercial structures, hotels, multi-family habitations, land subdivisions, and others.

This theory of architecture was cradled with the New Era economists and so it was assumed that progress depended upon increasing the volume and velocity of the stream of loan credit issued in respect to the production of new buildings. Apparently it never occurred to the sponsors that replacement involves amortization of the values representing the obsolete and that failure to first amortize would merely create the necessity for liquidation.

Not until the spokesmen for *progress* come forward with a workable plan of freeing the future from bearing the burden of the unamortized values of the past will their proposals give promise of other than a repetition of the phase of progress in which we are at the moment involved.

Despite all our endless talk about the planning of communities they continue to grow in response to the exigencies of speculation. Where communities should be located, how they should expand and develop; when and where structures to house the various functions of the community should be erected—these questions are disposed of by a method that is the mathematical equivalent of shuffling. In spite of our effort to restore order, our environment takes on a more confused and chaotic character by reason of the retention of this random element.

So one comes to the matter of the future, after a glance at the immediate past, with a feeling of hesitation. One even hesitates to suggest that events *seem* to be moving in a given direction.

YET one cannot ignore the wistful attitude of Christendom toward one more glorious decade of magnificent speculation. If it is humanly possible, we will guide events in that direction.

But even with the sails of enterprise unfurled in a strong breeze of speculation, we would find ourselves headed for storms that are due to break upon the introduction of technological changes. The research laboratories of industry and of foundations are at the moment almost frantically engaged in devising what would amount to a revolutionary change in the complex interlocking processes of production. New materials, new machines, new automatic processes of fabrication, new techniques of delivery and erection that are taking shape



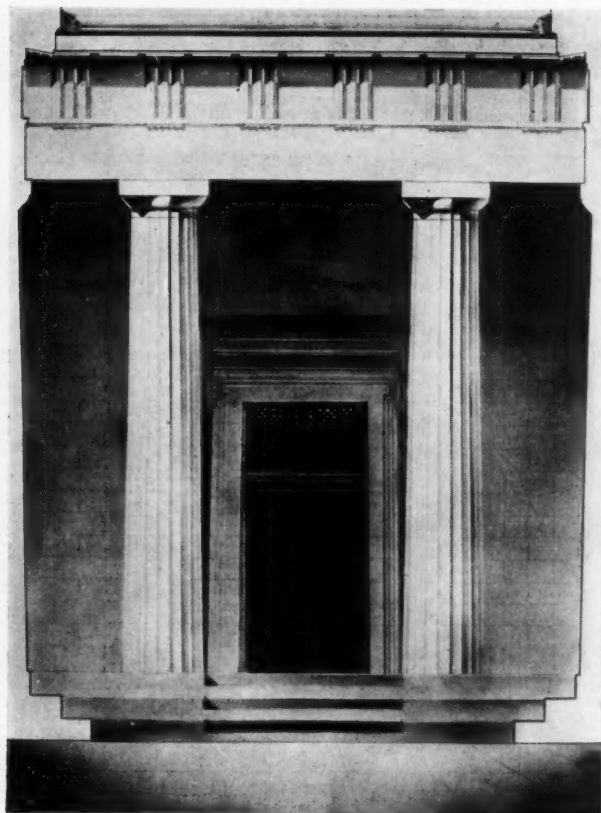
PIRIE MAC DONALD

under the guidance of research would require but a fraction of the manpower now required in achieving a given result. If and when we emerge from the present state of depression, we will find that machine technology has entered a new phase.

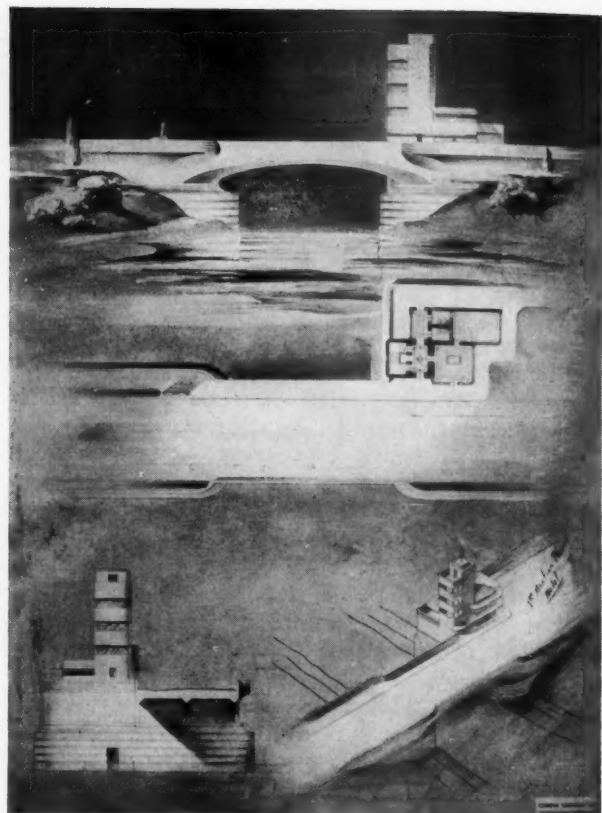
AT the present time the building industry and its far-flung hinterland of fabrication are concentrated upon the problem of producing habitations for the common man at an expenditure of but a fraction of the manpower and energy currently employed. One may very properly applaud the effort to put an end to the depression and at the same time provide some millions of habitations for those who are in need of them. But one may at the same time view with alarm this same effort when account is taken of the condition of "technological" unemployment that would unavoidably follow the application of an industrial technique that would eliminate jobs for men who need them quite as badly as they need houses.

Lest this observation be construed as altogether bearish in its implications, it should be pointed out that the state of alarm arises out of the fact that such a revolutionary change as is envisaged by the current experiment must be accompanied by an equally revolutionary change in our system of distribution—that is to say, in our economic system. Those who are engaged in the work are concerning themselves with but one-half of the problem. The vast army of workers that would be left on the industrial side-lines by these technological innovations must be taken into consideration. Only through the industrial activity of those replaced by machines and automatic processes, and through the purchasing power derived from their work, may we operate the proposed technology.

So, it is quite possible to say that before this new technique of production takes effect, our present economic order will have passed. (Continued on page 120)



The fundamentals of practical design applied in a problem combining archaeology and "optical exploitation" of circulation



Students are taught the logical use of materials as in this solution where the bridge is obviously of reinforced concrete

Architectural Education

BY DR. LEWIS F. PILCHER, A.I.A.

Professor of Architecture at Pennsylvania State College and formerly State Architect of New York . . .

Illustrations are reproductions of work done by students of architecture at Pennsylvania State College

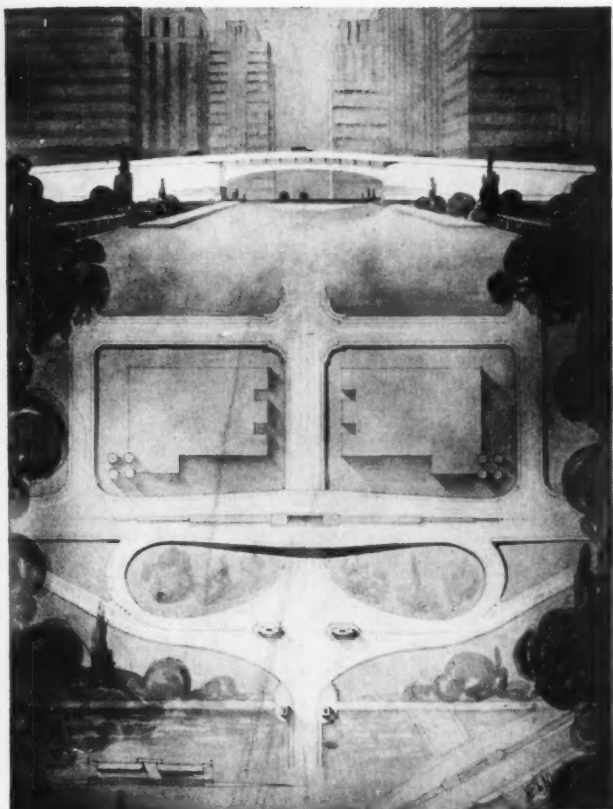
INSTITUTIONAL lethargy and the coils of war confusion held back architectural education the past quarter of a century. The spark of initiative and cultural influence exerted by the great protagonist of formal school training, Professor William R. Ware, had almost vanished by 1905. He gave unselfishly of his great talents to pilot architectural training on a true course. Those who were developed under his instruction and influence constitute an American Pantheon of architectural achievement in both practice and education. Contact with the personality and methodology of this great leader trained men to be architects and enabled them to carry on the business of architecture.

The erotic note of medal hunting and the exploitive cupidity of competing schools, whose success and support was measured by the yard stick of registration,

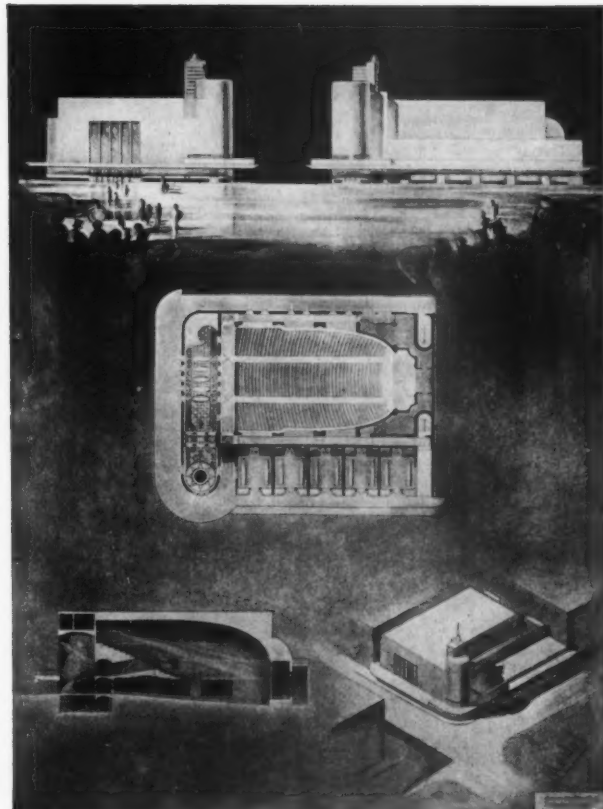
have not obscured the essential elements that the student should be imbued with—an appreciation of human nature, the differing ideals of his own day and the form and effect of new developments due to changing conditions in public taste and materials.

The counsel of Dr. Ware is today the beacon that will be the safest to follow. He advised, "distrust the science which, in our present state of ignorance, undertakes to foretell or to control the architectural weather. All we can be sure of is that the architect of the future will be good or bad, noble or ignoble, fair or foul, according to the personal character and professional powers of men who have it in hand. All we can undertake to do is, if possible, to inspire the young men who come under our hand with a certain measure of good sense and good taste, teaching them by precept and by the example of history, that in art as in life, temperance and refinement of conduct come from firmness of mind and elevation of spirit, and that these are the only sure means of these ends."

During the era when many of the nation's great leaders in productive architecture were prepared for their careers there was no question of the advantage of a four or a five year curriculum. It was advised that an



Solution of a practical problem separating through and cross traffic near a large city and providing for speed and safety



Circulation and the building laws governing a building devoted to large assemblages are solved in this theatre problem

Is at the Crossroads

undergraduate course in Arts and Science, leading to the degree of A. B., would be of inestimable advantage in further professional work which required aptitude in expressing and structurally recording the logical realities of human behaviour.

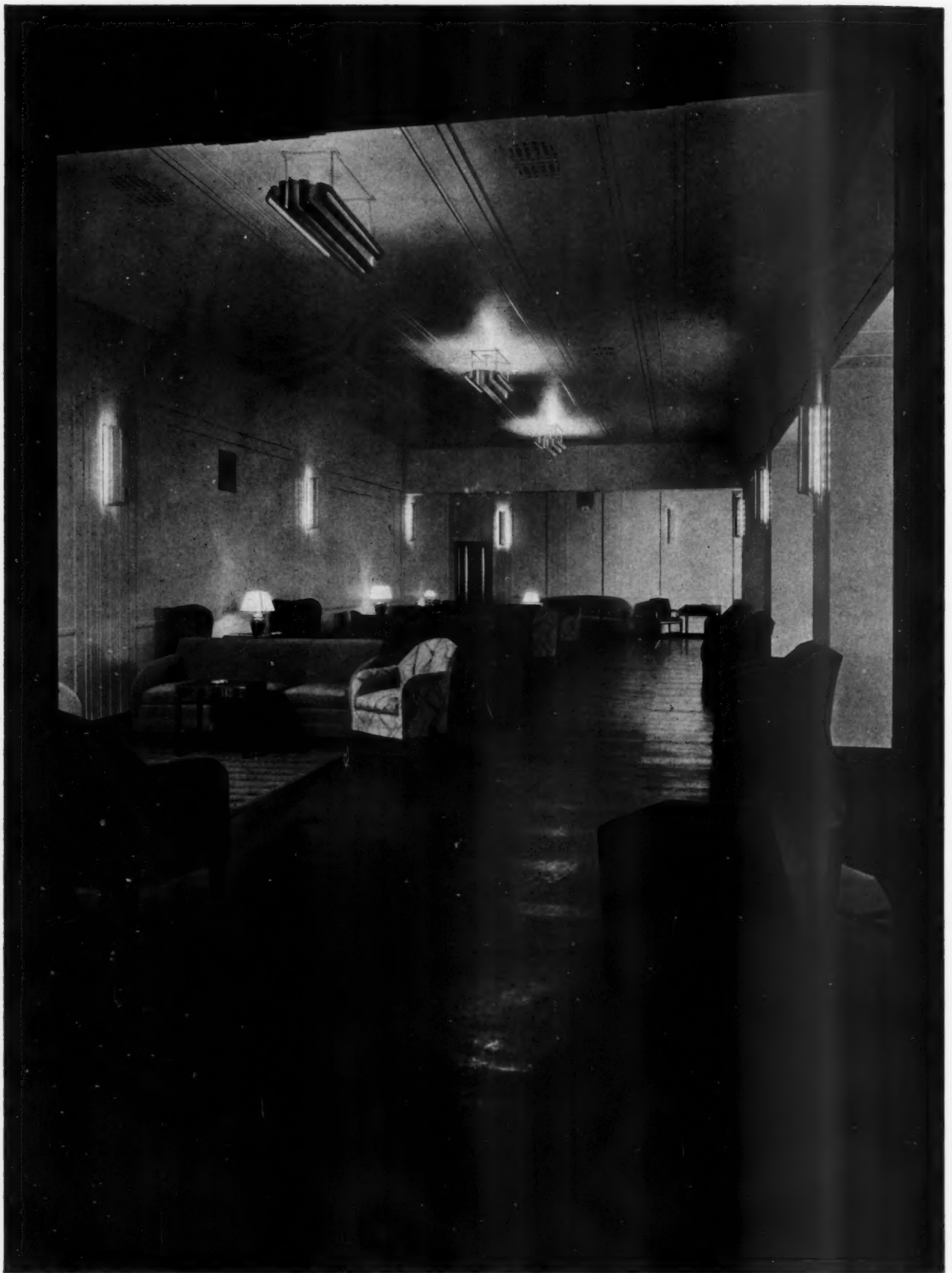
Some years ago the leading architectural schools grouped themselves together in an Association of Collegiate Schools. Minimum curriculum requirements were geared to the denomination of an opportunist blend of cultural, technical and studio subjects. By a foreseeing group of three Deans, it was advanced that, if the architectural curriculum should be extended to five years, the ingredient of culture, which constituted such a dynamic element in Dr. Ware's Scholastic program for developing men who could practice architecture, could be emphasized. With this aim the five year architectural course was instituted in several institutions at a great additional expense in equipment and teaching personnel, and a twenty-five per cent increase in cost to the student. The land grant institutions, fortunately or unfortunately, could not join in the five year course crusade. In the Association, controversy concerning the benefits of the change has been rife and severe. Among the exponents, the extended system has been frankly

used by some institutions to augment the technical side of the work to ensure the development of prize winners; other institutions have taken advantage of the extra year to increase the culture content of their courses. The result is that there exist two varieties of five year courses and two varieties of four year courses—Architectural and Architectural Engineering. All lead to the baccalaureate degree.

It has been demonstrated that undergraduate work will serve to inculcate into the minds of students the habit of creating cultured compositions. At the end of this period the point of view of the student will have matured. Graduate facilities along the several lines of administration, construction and design should be provided and administered by a faculty of a character nationally recognized as qualified to direct the interested professional student along the lines of productive work.

As it is, in many locations the five year system has spelled failure, and there is an undercurrent of bitterness running through the preparatory years that is growing into a state of revolt. Such an attitude is to be expected when the course followed has been circumscribed by formulae and

(Continued on page 98)



NYHOLM & LINCOLN

MODERN LIGHTING can be applied to any interior treatment. The source of illumination is concealed. Fixtures which are required for decorative reasons may be utilized, as in the lighting of a lounge in the Long Island Heights Building of the New York Telephone Company. Voorhees, Gmelin & Walker, architects

Future Illuminants and Their Application

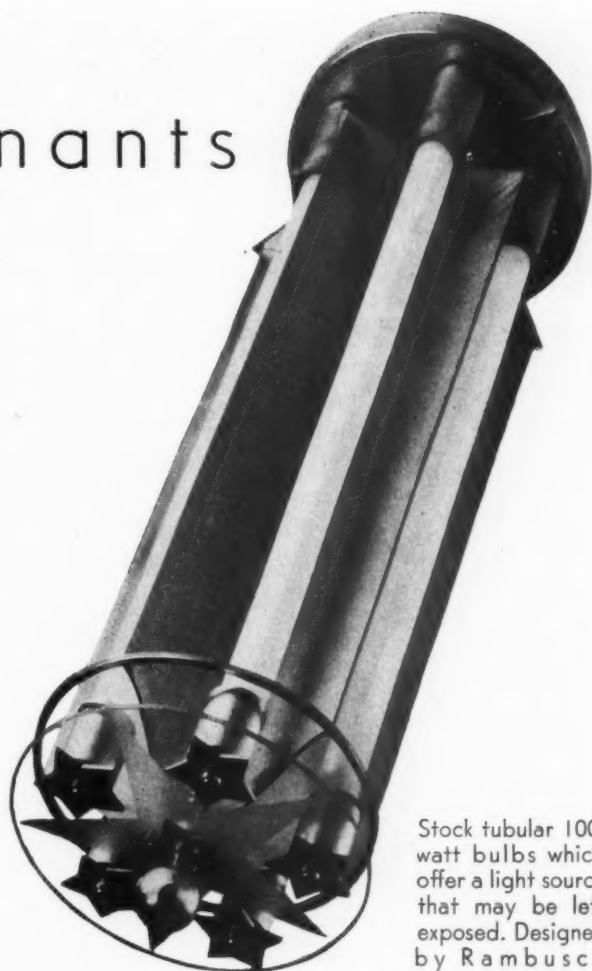
By A. L. POWELL

Manager Eastern Office, Nela Park Engineering Department of the General Electric Company, and Chairman, Committee on Light in Architecture and Decoration of the Illuminating Engineers Society

FOR countless ages man obtained light, after the sun had set, through consuming some substance by fire—the torch, the olive oil lamp, the candle, the whale oil and kerosene oil lamps, and finally the gas burner. It is natural, therefore, that in applying artificial light there should be an inherent tendency to think in terms of flame illuminants. These required that the light source be placed at some distance from inflammable material, that it be exposed in the open to obtain a supply of air, and that a means be provided for taking care of the products of combustion.

With the advent of electricity, commercially available, lighting was revolutionized. The earliest form of electric lighting was by rather huge, cumbersome arc lamps. These were not generally applicable to interiors. When Edison perfected the incandescent lamp, however, electric lighting as we now know it had its birth. These first lamps were utilized in much the same manner as the light sources which they replaced and it has taken more than fifty years for the world to realize that the application of electric lamps requires a different technique. When one stops to consider the question he realizes how ridiculous it is to try to use large, globular bulbs emitting rather huge quantities of light in the same manner as that of the tiny flickering candle flame.

Since the introduction of the incandescent lamp remarkable developments have taken place. These have all been in the direction of greater efficiency, obtaining more light from the same power. The light has become more white and the source constantly more brilliant. Research engineers have been continually in search of filament material which has a higher melting point—permitting a more efficient lamp to be made. Thus far nothing has been found which is better than tungsten wire. There seems to be no indication that something better will be discovered. In the present lamps the filament is being operated as near its melting point as practically possible and, unless some radical discovery is made, there seems to be no likelihood that we may



Stock tubular 100-watt bulbs which offer a light source that may be left exposed. Designed by Rambusch

anticipate outstanding developments or improvement in incandescent lamps.

Today each size and type of lamp is made as efficient as it is humanly possible to make it. In other words, it gives as much light per watt of power input as can be obtained with what knowledge the best minds possess. A very complete range of sizes for operation on ordinary circuits is at our disposal extending from the tiny 6-watt (4 candlepower) to the 50,000-watt (150,000 candlepower). They are available in many shapes and sizes of bulbs from the small pear shaped affair, 1 inch long, to the extended tube, 3 feet in length.

There is another means of producing light by electricity which does offer great opportunities. This is the discharge through rarefied gases, the so-called gaseous conduction lamps. These are not very new, for everyone will recall seeing the so-called "Cooper Hewitt" and "Moore" lights of twenty-five years ago, but these early forms apparently did not exhaust possibilities along this line. New gases have been discovered and applied and we see in electric signs the familiar red of neon, the blue and green of mercury, the pinkish white of helium, and the pure white of carbon dioxide.

Theoretically, it is possible to produce light much more efficiently by this method than through incandescence. During the last few years there have been many rumors and wild claims to the effect that gaseous tube lighting was at the state where it could be applied



THE CEILING has no painted decoration, the patterns being a lighting effect secured by incorporating metallic cutouts in the indirect illuminating fixture. Julliard School of Music; A. L. Harmon, architect

Color shadow patterns of any tint become the decoration, Lotus Garden, Cleveland. Walker and Weeks, architects

for all conditions. A study of the situation indicates that this is by no means the case for there are many practical difficulties yet to be overcome. It may be that some investigator will discover a means of overcoming the obstacles which seem to stand in the way.

Each of these gaseous discharge lamps emits light of a pronounced color and with them colored flux can be obtained much more efficiently than with incandescent

lamps and color screens. There is no question that when certain bothersome problems of operation and construction are solved gaseous tube lighting will find a real place in decorative interiors.

It is easy to visualize a huge hall with its ceiling covered with diffusing boxes arranged in geometric forms. Red, green, blue and yellow light sources placed inside of these boxes will create a huge, colorful mosaic. The

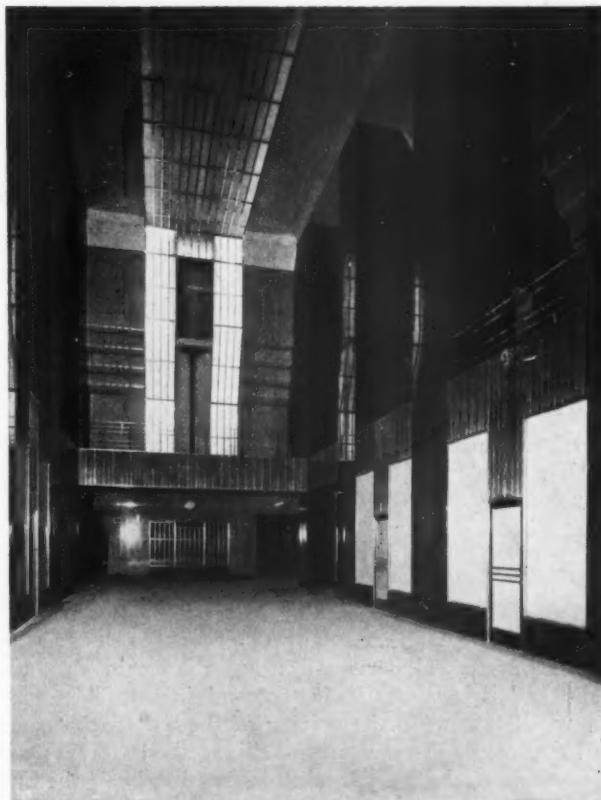


A LUMINOUS BOX of molded glass held by bronze strips provides the lighting source for the Directors' Room in the Integrity Trust Company Building, Paul Cret, architect. Each section contains five 75-watt lamps

Luminous boxes on side wall and ceiling follow the decorative scheme so that the lighting equipment becomes part of the structure itself. Lobby of the Chicago Board of Trade Building, Holabird and Root, architects

light coming down will mix and the resultant illumination on the audience will be approximately white. The same principle will be utilized in huge luminous fixtures where different parts are of different colors and, again, the mixing will occur before the light strikes the surface to be illuminated. Such effects are relatively near at hand, but they obviously have only limited application.

There is another phase of lighting development which warrants careful attention. From the sun, in addition to heat and light, we receive a certain amount of invisible radiation known as ultra-violet. This has been proven to be beneficial from a health-maintaining standpoint. Ordinary window glass absorbs this radiation and common artificial light sources do not emit it. There have been developed several types of lamp which give the desirable type of ultra-violet radiation in addition to visible light. It is practical to equip with such lamps schools, offices and other areas where persons remain indoors for appreciable periods. (*Continued on page 92*)



How Can We Establish a Fair Fee?

By M. H. FURBRINGER, A.I.A.

Chairman Committee on Schedule of Charges, A.I.A.; member, Board of Directors, A.I.A.; member of the firm of Jones and Furbringer, Memphis

It has been said that no one today would question the cost of the service of the architect of the Parthenon, no matter how much he had been paid. But we do not have to single out the one building which scholars of every age have conceded as Earth's most perfect gem to justify the fee an architect should receive for his services, because countless other buildings of all periods of the world's history bear ample proof of the wisdom of having employed the talent which has produced these monuments. Perhaps this fact was not conceded at the time and no doubt both the methods of charging for architectural services and the amount paid these architects was disputed, for history records few instances in which practitioners were men of great wealth, or at least derived large incomes from the practice of their profession.

How architects charged for their services and what was the amount of their remuneration during the epoch immediately preceding the present era, I admit I do not know. I do not know when the practice of basing an architect's charges on a percentage of the cost of the project started, or what methods were used before even this custom came into vogue. I do know, however, that architects have for many years used this system in computing their fee, and until a comparatively recent time it was the only method generally used and accepted. It was natural therefore that, as individual practitioners banded together and formed a national organization, an attempt should be made to adopt a schedule of recommended charges based on current practice, in order to place the profession on as nearly as possible a sound business basis.

The wisdom of this procedure in the light of subsequent events may be questioned by some, but at least it did what I presume its original proponents desired and expected it would do, and certainly it gave the public some conception of an architect's costs and the proper remuneration he was entitled to receive. It remains a moot question if, under any other system of charging for architectural services during the years that this system has been in use, better conditions would prevail now. It is true, in the opinion of the writer, that some of the attacks directed toward this method now are well founded; on the other hand, it is questionable if the time

is propitious for a wholesale abandoning of a system which has served a useful purpose and has been slowly developed over a long period of time.

If the profession should suddenly abandon the present system and adopt another method, sound as that method may be in theory, we would probably be like a ship at sea without a rudder. A schedule of charges, no matter how impractical in its application in numerous cases, does, after all, establish a fair remuneration for the services rendered. While the schedule of minimum charges, as recommended by the Institute, is offered as a guide only, it is in its application that the most pronounced irregularities occur and rather in its abuse than in its use is it justly criticised. I doubt if those responsible for developing a schedule of charges on a percentage of the cost of the work ever conceived of any one basing their charges on the same rate for domestic work as they would for industrial buildings. Because an architect was fortunate in having some work of each group mentioned above, and has made a profit during the time he was engaged on this combined work, he cannot justify his charges, that is, if based on the same rate, to the client for whom he was employed to design a warehouse.

In its practical application of course this does not occur often, because architects as well as the public have been and still are prone to accept the minimum rate as the maximum and the scaling is usually down instead of up. The continued abuse of the system of charging on a percentage of the cost is made possible on account of a condition which is being rapidly corrected, and which must be entirely corrected before any method which it is possible to develop can be satisfactory.

Comparatively few, or I might say distressingly few, architects keep or maintain an accurate accounting system of costs of office practice. In view of the progress which has been made in the business administration of architects' practice, it remains a hidden secret how any office can function under the handicap which the lack of a cost accounting system must impose on those who do not have one.

If standardization has in the opinion of some been carried too far, I doubt if this criticism could be di-

A COST KEEPING SYSTEM for architects must be developed and standardized
 COMPARISON OF COSTS with other offices, large and small, should be possible
 FREQUENT USURPATION of the architect's function is encountered from other agencies
 LEADERSHIP of the profession must be established through proper business practices
 MINIMUM PERCENTAGE recommended by the Institute is too often taken as the maximum by both architect and client
 COST PLUS FEE system is becoming increasingly popular

rected toward a cost account system as yet neither perfected nor generally adopted by architects. Recent investigations have convinced me that we must do two things in this regard; first, develop a system by which architects can ascertain their office costs and then include in such a system a method of comparing these costs with those of all offices, both large and small. Only then can a schedule of charges, based on the percentage of the cost, be recommended as sound.

During the past few years a number of architects have adopted other systems of charging for their services and having attained a fair amount of success under the methods they use, recommend their system for universal adoption. They fail, however, to take into consideration certain conditions which must be recognized before their systems can be adapted to the practice of individual offices.

It may be amazing to some practitioners to learn that those architects who base their charges on a fee plus cost basis report that in many cases the total commission paid them by their clients is less than the minimum charges recommended by the Institute. In the opinion of those who use this method, this fact proves the unsoundness of a system which assumes to prescribe a rate for every office and under all conditions. When an architect accepts as his fee a certain stipulated sum and the client agrees to pay this, plus the cost of drafting and overhead, it may be assumed that an ideal arrangement has been entered into between both parties. No difficulties or obstacles should be encountered under this plan if the architect has correctly estimated the fee which his experience and ability entitle him to receive and if he can satisfy his client that his office is operated economically, and the system of bookkeeping correctly administered.

The commission under this method is approximately estimated on a basis of dividing the charges into three divisions or percentages of the total commission: the cost of the drafting, overhead expense, and the fee or profit which the architect believes he is entitled to receive, based upon his experience, ability and the importance of the project on which his commission is based. Obviously other conditions may enter into the last of these three items, such as, for instance, the amount of

work on hand at the time; therefore, at best the profit or fee can only be an approximation and cannot be determined on a percentage of the cost of the project.

The drawback to the universal adoption of this method of charging for services, ideal as it may be in many cases, is the danger of inaccurately estimating the time on which the fee is based. Years of experience, of course, will minimize this danger, especially if the general character of work is along the same lines. On the other hand, the client has only a vague idea of what the final commission will be, and this fact may lead to disappointments and controversies. After all a satisfied clientele is essential to maintaining an architectural practice.

UNDER the complex conditions of contemporary architectural practice, it is necessary that we carefully analyze the methods under which we operate our offices. Competition with other agencies which have developed in the last few years is keen. In some instances, the line of demarcation between an engineering and an architectural problem is slight, and the employment of an architect or engineer equally defensible. If we wish to retain leadership in the building industry, we must so conduct our practice that our position will not be questioned. Construction and building organizations have in many cases usurped the architect's function by supplying the services usually furnished by the architectural profession, and while we may contend the results speak for themselves, nevertheless this condition does exist, and can be combated only if the members of the profession develop the business side of their practice as efficiently as they have the aesthetic.

No architect can render adequate service unless he is paid accordingly. At the same time, he cannot justify a rate for one class of work on the plea that he loses money on other classifications. This is unsound in theory and principle. A moment's reflection will convince anyone that each building should carry its own share of cost and profit.

I believe these facts are now generally recognized and that architects themselves are basing their charges for services on a sounder business basis than has been true in the past, but not until (Continued on page 80)



REHNQUIST

Bricks of heat-resisting Pyrex glass are a recent development in the building field. The wavy pattern obscures vision and serves as prisms to transmit light from a wide angle. At left is a glass grille, one of several designs used on two ships of the Cuba Mail Steamship Company

Structural and Decorative Trends In Glass

By WALTER D. TEAGUE

Design Consultant, Corning Glass Works

TWENTY years ago a learned gentleman was writing that in the whole history of the world there had been but two really distinct styles of architecture: one dependent on the use of massive blocks held in place by their own weight (Egypt, Greece); and another in which little blocks are bonded together by a different material (the Gothic period and almost everything since).

To reduce architecture so precisely to its essence in building technique showed admirable insight. With so much to his credit a sheltered Oxonian may be forgiven for ignoring certain new materials, then already widely used in less static communities; materials, however, which bid fair to break the history of architecture sharply into two classifications quite different from his: the period of heavy and the period of light construction.

Big blocks and little blocks and concrete all bear one curse: weight. Weight is earth-bound and unwieldy; weight means mass and mass means shadow. Our remote ancestors took refuge in caves, and, human inertia being what it is, it is not surprising that we have been resigned to more or less cavelike dwellings ever

since. The first windows were an accident—chinks in the walls. They have remained essentially that until the present day. They could be nothing else in vast difficult masses of masonry.

But if there is any such thing as human progress it most certainly is out of the shadows and into the light—literally as well as figuratively. At heart we are all sun worshippers, and in this age we are frankly and happily confessing our faith. We live in the open as much as we can, and we seek to break down the distinction between indoors and out. Gloomy dwellings were not our choice, but the painful consequence of our primitive technique. Today we have the means to enclose ourselves in walls that are only as much walls as we please: they can be transparent, translucent or opaque in whatever proportions we prefer.

Steel and glass are the materials of the new architecture. Frank Lloyd Wright, who is following the precedent of other Messiahs and writing gospels, lists "four limitless new resources" as determining the architecture of today and the future: the first of these is a "super-material, Glass." Metals he lumps second



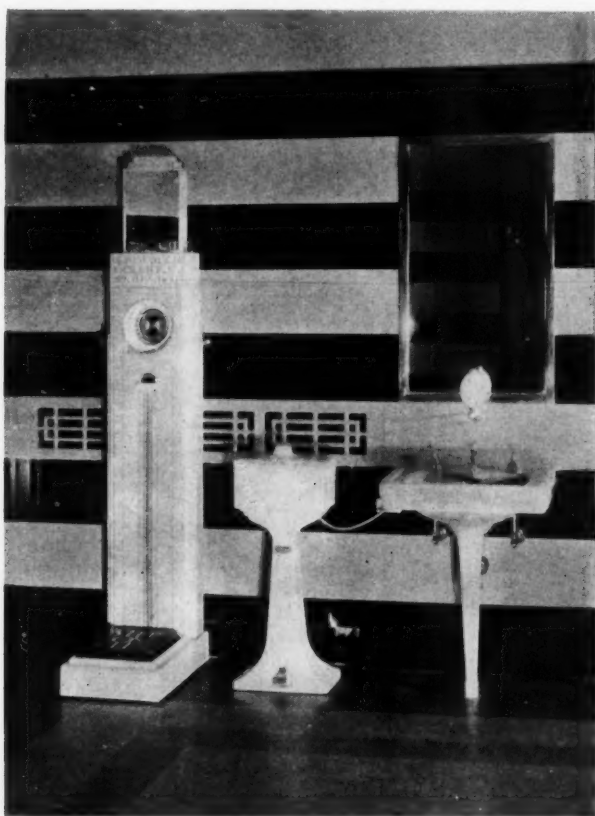
SIGURD FISCHER

SMALL UNITS OF CAST GLASS are combined not only to produce an effective ceiling but also to conceal the source of light in the lobby of 530 Seventh Avenue, New York. Ely Jacques Kahn, architect



MUSEUM OF MODERN ART

To minimize the distinction between indoors and outdoors the plate glass walls of this living room bring the gardens into intimate relationship with the interior. The Tugendat house, Czechoslovakia; Mies van der Rohe, architect



The use of colored structural glass is developing new effects as illustrated by the use of Vitrolite in the men's room in the Southtown Theatre, Chicago. Rapp and Rapp, architects

under their attribute of "Tenuity." And the order is just, for the ultimate point of these tenuous skeletons of steel is that they liberate enclosing walls from the function of burden-bearing, and by the cantilever method of construction free these walls as well from all interruptions in the form of pillars and beams. Walls thus become simply curtains protecting us from the weather, and it is dawning upon us that even these imprisoning curtains may be invisible, if we choose. It is this gorgeous conception which is shaping our new architecture into its most beautiful and most characteristic forms, and will produce those "shimmering fabrics" of tomorrow which Wright foresees, "iridescent by day, luminous by night, imperishable."

AS long ago as 1855 the glass and metal structure became a reality in London's Crystal Palace, but builders were slow to avail themselves of the new freedom which these materials offered. Even after the development of the skeleton building, for more than a generation walls continued to be of masonry, and windows continued to be holes; and the great majority of structures built today still have these archaic characteristics. You may be treated any day in the streets of New York to the spectacle of workmen, high up on a delicate web of steel, stacking little bricks on little bricks to close the panels between pillars and beams; stacking them as it has been done for thousands of years, damply, heavily, inefficiently so far as their primary function of insulating against the elements is concerned. The persistence of this practise, when we have such a wide range of more effective and more economical materials and know so much about the physics of insulation, is

» » » LIGHT, AIR AND EFFECTIVE



MUSEUM OF MODERN ART

"The Glass Box"—a transparent bubble of glass and steel—indicates a growing appreciation by architects of the economic value of light. Workshops of the Bauhaus School, Dessau, Germany. Designed by Walter Gropius

practical testimony to our innate loyalty to precedent.

But in recent years architects throughout the world have been experimenting, boldly or cautiously, with more advanced methods of building and freer systems of fenestration. In 1914 Walter Gropius built at Stuttgart structures which were transparent bubbles of steel and glass, the steel framing being reduced to its limit of attenuation. His later Bauhaus at Dessau, a technical school with the requirements of a factory, has been nicknamed the "Glass Box," and is just that. The famous Stallkirche, first erected for the Pressa Exposition at Cologne, by Professor Otto Bartning, is a roof supported on a series of steel I-beams, the panels between being wholly of translucent glass set in geometrical patterns and confined to a color range of soft grays: the result is an interior that confers a major religious experience. These instances stand at opposite poles of functional requirement, and in the range between them, scores of equally brilliant experiments have been successful.

The most valuable advances have so far been in the field of industrial buildings. Where light has a real economic value, architects naturally have been most ready to see the logic of admitting all the light there is. Hence factory and shop construction has led the way in developing the technique of glass and metal building. From the Van Nelle Factory in Rotterdam to the new plant of the General Electric Company in Pittsfield, Massachusetts, there are numberless purely industrial plants that have in them few traces of the old architecture, and many forecasts of the new. Their all-glass walls have been devised for utilitarian reasons alone, but the technique so (Continued on page 110)



MUSEUM OF MODERN ART

Translucent screens give privacy in a row of houses in Berlin, Germany, where an unusual amount of window space provides the maximum of light and air. Luckhardt and Ankor, architects

ARCHITECTURE SECURED WITH GLASS

Clients Will Demand

The public is discovering that pure

BY ESTEN BOLLING

WITHIN the last few years the general public has become "air conscious." That is, it has discovered air conditioning. This has been brought about through the scientific conditioning of motion picture and animate theatres, restaurants and grills, department and other stores and, more recently, offices, railway cars and ships. Through these installations the public "saw for itself" what air conditioning means—discovered that air, the breath of life, is also the governor of health and comfort. Coincidentally it discovered that something could be done about it. That there was some sort of practical magic called air conditioning which could make air a mighty agent of comfort and health as well as the carrier of that oxygen without which life ceases so hurriedly.

Pause for a moment and think of those two basic human necessities, air and water. The problems of pure water supply have been studied by able engineers for generations and millions upon millions of dollars have been spent to provide pure water in abundance within the habitations of civilized people. Until very recently little or nothing has been done to provide purified, properly conditioned air. Yet air is relatively far more requisite to life than water since without it we live but a few moments, whereas we can exist without water for many days! Air serves not only as the carrier of oxygen, it may serve as the bearer of pollution, disease and death, just as water may. It is fundamental, then, that the air we breathe so continuously and copiously be pure. The more we congregate in cities the greater is the need for purifying the air about us.

But air also serves us as the carrier of heat and of moisture. Except in the case of radiant heat—a method receiving attention in England and to some extent here—when we say "heating" we think of heating the occupants of a building, but the heating equipment is designed to heat the air, which then conveys the heat to the occupants.

Then, next, the air carries varying percentages of moisture—humidity. Unquestionable research has established the relationship of this moisture to our comfort and our health. It is known that too-dry, overheated air is deleterious to health, irritating and uncomfortable. And it is beginning to be generally known, as engineers have long known, that excessive moisture is more directly the cause of summer discomfort and enervation than are high temperatures.

Air conditioning contemplates all three of these factors

—purification, temperature, humidity—and adds the obvious fourth, uniform distribution of the conditioned air.

It should, then, be definitely understood that air conditioning, properly defined, means the accurate, effective control of *four* factors: purity, temperature, humidity and distribution. Any system which neglects any *one* of these factors may not properly be termed an air conditioning system.

Unfortunately, a system capable of controlling all these factors in winter, when heating is required, may have no provision for temperature control in summer, when refrigeration is required. Such an apparatus is truly an air conditioning system in winter but in summer it becomes a mere ventilating system.

Because of the acceptance of the evils and deficiencies of winter heating, which were regarded as being infinitely better than "being too cold," the public gave little thought to winter conditioning.

SUMMER COOLING GAVE IMPETUS TO CONDITIONING

BUT summer cooling! Ah! There was a spectacular achievement that offered comforting relief from the sweltering temperature and humidity of summer. The movie theatres, theretofore closed or operating at low return during the summer "slump," began to do more business in the summer than in the former peaks of the winter season. The public acclaimed—and became interested.

Then came the inevitable era of exaggeration, which still persists despite all efforts. The owners of air conditioned theatres, restaurants, stores, or what not, began to ballyhoo that their places were "never above 70"—"twenty degrees cooler inside."

This was unfortunate because it misled the public and delayed general appreciation of the all-important fact that in summer cooling the essential accomplishment is dehumidification and that temperature reduction is but incidental, the most desirable temperature being nearly always much less than 10° below that prevailing outdoors.

A realization of these salient facts is most important to the future of air conditioning, since the smaller unit equipment now becoming available is capable of doing a good job of dehumidifying but may not, indeed must not, to be practical, possess sufficient air volume capacity to maintain temperatures greatly below those outdoors. The investigator of such cooling equipment, whether architect or client, must be taught that the criterion of its performance is not temperature but *condition*—that is, temperature *and* relative humidity relatedly. During the last year or so the public has begun to appreciate

Air Conditioning

air is as important as pure water . . .

the fact that air conditioning does mean more than mere relief from summer heat, that it means not only comfort but health throughout the winter. The public is rapidly becoming conscious of the term "humidity"—and of its significance. It is now beginning to demand "heat and humidity" whereas it formerly thought only of "heat."

And industry, as usual, is anticipating these demands by offering many devices more or less capable of fulfilling them.

The tremendous advances of the last few years are ascribable partly to that opportunity for development brought about by the depression, which relaxed routine pressure, and partly by the evolution of new methods and equipment which foster applications hitherto restricted.

Other great stimuli to progress have accrued from the expiration of patents, the collection and dissemination of vital data by the American Society of Heating & Ventilating Engineers, and the availability of college or industrially trained engineers.

In the early days of air conditioning the applications being wholly industrial, the "central station" type of equipment, in large units, most effectively met the requirements. And for many years this type of equipment received undivided attention. It has been brought to a very high degree of perfection and is today adequate for every conceivable requirement to which it is applicable.

Within the last few years the potentialities unlocked by smaller and "unitized" equipment have received careful consideration and the result has been the development of a varied, extremely versatile group of unit apparatus. This equipment, being applicable to smaller installations and relatively inexpensive, has vastly extended the scope of air conditioning, both industrially and in "conditioning for comfort."

UNIT EQUIPMENT WIDENS FIELD

SUCH unit equipment is readily applicable in literally thousands of instances where central station apparatus could not even be considered.

It is far less costly. It may be, usually, installed without ducts—or with very simple, inexpensive ducts—in such manner that it is easily removable and, therefore, may be purchased by those who occupy rented premises.

Such unit equipment may be had so "finished" that it may be installed in any conspicuous position without concealment, and means have been found to make it so quiet that sound is no longer a factor.

This unit apparatus may be had for winter conditioning only, i.e., heating, humidifying, purifying, dis-

tributing; or for summer conditioning only, i.e., cooling, dehumidifying, purifying, distributing; or for both services.

Where refrigeration is required, small automatic units, utilizing various approved refrigerants, are available, and almost any requirement, industrial or "for comfort," can be met satisfactorily. This includes a wide array of installations, from a "dog wagon" to a pretentious restaurant, from the smallest print shop to a large job press.

DEVELOPMENT OF HEAT SURFACES

It should be pointed out that most of the unit equipment owes its development to the perfection of lightweight noncorrodible extended heat-surface, which is exceedingly compact and readily usable for both heating and cooling—steam for heating; cold water, brine or directly-expanded refrigerant for cooling, either within the same heat-surface. Part of the credit must, of course, go to the "dry" or viscous oil-coated filter, which further helped to obviate the necessity of the water spray.

There is no requirement of the architect or engineer, whether for winter or summer conditioning of small or large spaces which cannot be met by unit equipment now available.

In addition to unit equipment certain specialized units have been developed and made available for specific requirements.

There are numbers of highly developed schoolroom units embodying automatic temperature and humidity regulation, adequate circulation and the controlled introduction of outdoor air. Such units do not embody cooling provision, since this is not required in schools.

There are several systems for small theatres, one of which employs the very effective "ejector system" of distribution, whereby high-velocity jets of air from the fan induce by ejection the circulation of from three to five times as much room air.

There is a remarkably ingenious system for hotels and office buildings which combines both the unit and the central station principles affording complete winter and summer conditioning. This system utilizes high velocity air in very small ducts, minimizing the problems of incorporation in modern multi-story buildings, and affords flexible regulation at the option of the individual room occupant.

Then there are a considerable number of unit heaters-coolers which, in addition to winter heat provide summer cooling and humidification.

The summer of 1932 will witness the initial widespread offering of these units (Continued on page 117)

Every House Will Have Its Own Theatre

Developments in radio, television and moving
pictures will affect residential planning

By LEE McCANNE

Radio Engineer in Charge of Telektor Division
Stromberg-Carlson Telephone Manufacturing Company

MANY laymen today are thinking about television, home talking movies, short wave radio and changes in the phonograph, and their effect upon radio broadcast receiving equipment. As the smoke screen clears away from each new entertainment instrument it becomes increasingly clear that it will supplement but not supplant the broadcast receiver, and that each can make good use of the audio amplifier of the receiver, just as the electrical phonograph does today.

An influence which entertainment instruments will have on homes of the future is the probable development of some room of the house as the "theatre" of the home. Its walls will be lined with printed books, talking books, motion picture film humidors and possibly phonograph records on book shelves and racks. Its windows will be capable of quick curtaining to provide semi-darkness. It will contain the picture screen for home talking pictures and television, with a loud speaker located below or behind the screen in order that the actors' voices will come from the natural direction. The room will be furnished with comfortable chairs for members of the household and guests. Space in this room will be at a premium and all unnecessary equipment will be located elsewhere. As the instruments are introduced, they will be connected to the remotely controlled radio system, which will distribute the sound for all. Remote control, while primarily largely a matter of convenience, will result in the more widespread practice of concealing the essential apparatus. This practice will in turn make the appearance of the apparatus cabinet of secondary importance.

The complete home will probably have the following electrical instruments for recreating musical programs:

1. Radio broadcast receiver.
2. Short wave receiver.
3. Automatic record-changing phonograph.
4. Talking Movies.

These await the establishment of good film libraries, with low rentals, for a much wider acceptance.

5. "Talking Books."

Europe in general and Austria in particular are far in advance of America in this development. "Talking Books" are sound recordings, without pictures, on film. The film can be narrow strips of glossy white paper, or transparent Cellophane or Kodapak. They can be printed in ink, by contact methods, instead of expensive photographic processes. Soon they will teach us language lessons with perfect pronunciation and inflections, tell fairy stories to the children, dramatize plays for us with no eye-strain, and educate the blind.

6. Television.

We may also have electrical instruments for *creating* music, such as

1. The electric organ-piano.
2. A carillon of chimes.

It is obvious that such an imposing array of instruments cannot all be housed in one cabinet. Indeed, it may be difficult to accommodate them all in one room. Looking forward toward this situation, certain radio manufacturers already have improved remote control devices to the point where the radio broadcast receiver today may be operated from a distance. The radio receiver may be located in any room or rooms at will. More remarkable still, the radio apparatus, housed in a protective steel locker, may now be placed in any out-of-the-way but accessible place if it is found desirable to do so.

SINCE remote control of radio apparatus is already upon us, but so new as not to be generally understood, it may not be amiss to briefly describe the operation of a typical system. The radio receiver may be housed in a cabinet and provided with manual control knobs, or it may be concealed in a steel locker with only a tuning knob provided for initial adjustments, and thereafter operated by remote control. In either case, a motor unit is fitted to the back of the receiver chassis which carries all motors and gears. A remote control box having a flat, flexible ribbon of wires which can be laid under rugs, or bent inconspicuously over table edges



DESIGNED BY FRANCIS KEALLY

ONE ROOM will become an entertainment center with remote controlled apparatus. There will be built-in loud speakers for radio, talking books, talking pictures and phonograph. The walls will have a motion picture or television screen and be lined with printed books, talking books, motion picture film humidors and phonograph records

and will not twist or kink, is connected directly into this motor unit, or into baseboard outlets which are connected by intercommunicating telephone type lead-covered cable to the motor unit. The control circuits operate at low voltage and do not require conduit. Control of the system may also be had at small panels mounted on the wall with the intercommunicating cable brought directly to the panel, and no exposed cordage. As many as one hundred control positions may be provided. From each control position it is possible to:

1. Start or stop the radio or an electrical phonograph.
2. Control volume of either the radio or phonograph.
3. Switch as many as four loud speakers "on" or "off" from each control position.
4. Tune silently and automatically to eight stations.
5. Tune silently to all other stations, with a visual tuning meter to indicate when the receiver is tuned accurately.
6. Tune to a powerful local station from a weak distant station without change of volume.

If the system employs no more than four loud speakers of the type which draws current from an A. C. line, it is possible to turn them all off in the same operation which stops the radio or phonograph. "Master"

control is possible at the manual knobs of a console type radio receiver, where the operator may take control of everything but the switching on and off of loud speakers, away from other operators at remote positions.

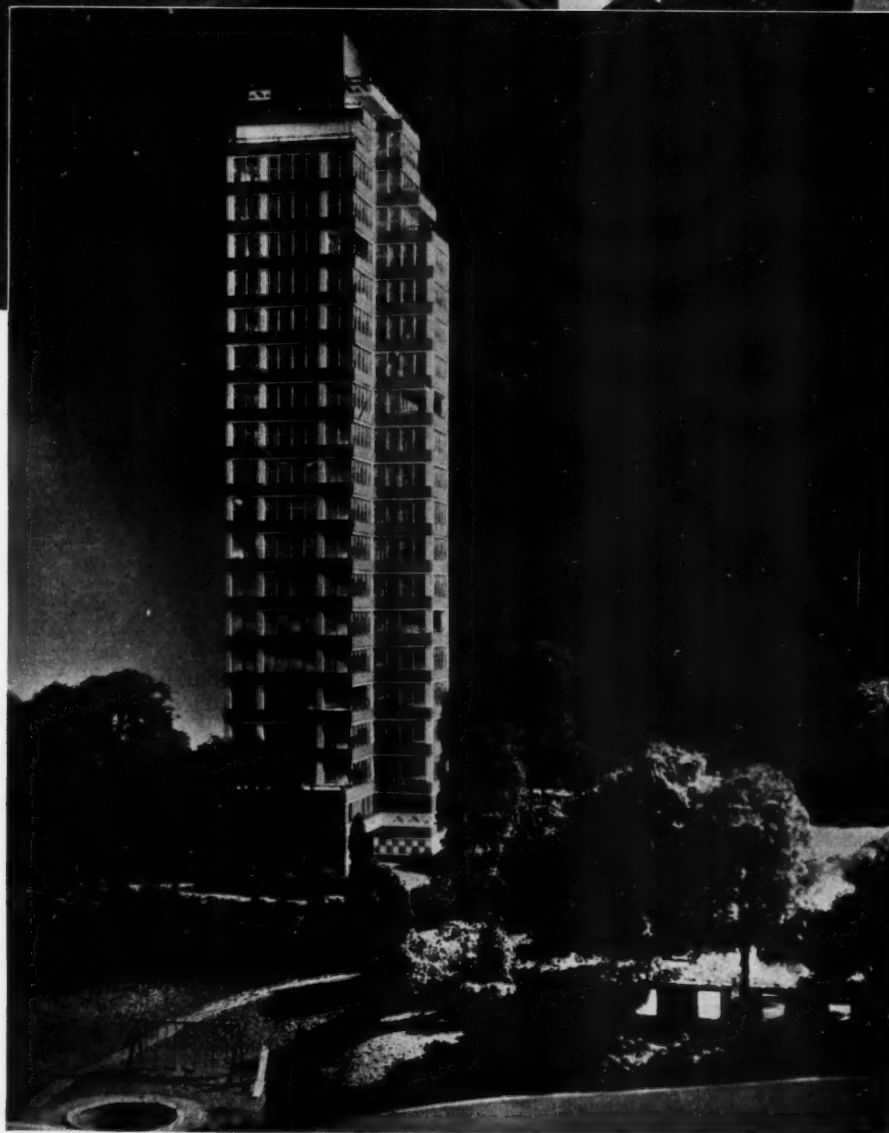
AUTOMATIC record-changing phonographs are now capable of providing nearly a three-hour program without attention or repetition. The cabinets have been improved to muffle mechanical noises formerly so objectionable when the listener was in the same room as the instrument. Remote control of the phonograph makes it possible to divorce the phonograph from the radio cabinet and even to remove it from the living-rooms. Nevertheless, for convenience in reloading the record magazine, the phonograph should not be removed too far from these rooms.

It is probable that the phonograph instrument will ultimately come to rest in a small end table cabinet against the wall, or beside an easy chair. It will plug into a baseboard outlet receptacle for connections to the distant radio receiver.

Future home entertainment instruments will make use of sound, either as the major part of the program or for sound effects synchronized (*Continued on page 121*)



MUSEUM OF
MODERN ART



Horizontal and vertical expressions of solutions of housing compared. Above is the Rothenberg development, Kassel, Germany, designed by Otto Haesler. Here the single apartment block ceases to have architectural meaning except as part of a larger whole; individual expressions will be found in interior development

At left, model of an apartment house in the country. It was designed by Raymond Hood



A new architecture developed when the Romans applied the Greek post and lintel as ornament for an arcuated wall

The Evolution of a New Architecture

By LEOPOLD ARNAUD

REVIEWING the history of man's efforts, it is interesting to realize that he has never in any one age produced anything entirely new. Applying his energy to the development of his inheritance, he has, little by little, in a slow process of evolution, produced results different from his original possessions, and currently termed *new*. The fruit of this gradual development of continuous evolution is the only work worthy of serving as a foundation for the future. The *novel* as opposed to the *new* is dangerously apt to be ephemeral and merely a temporary fad.

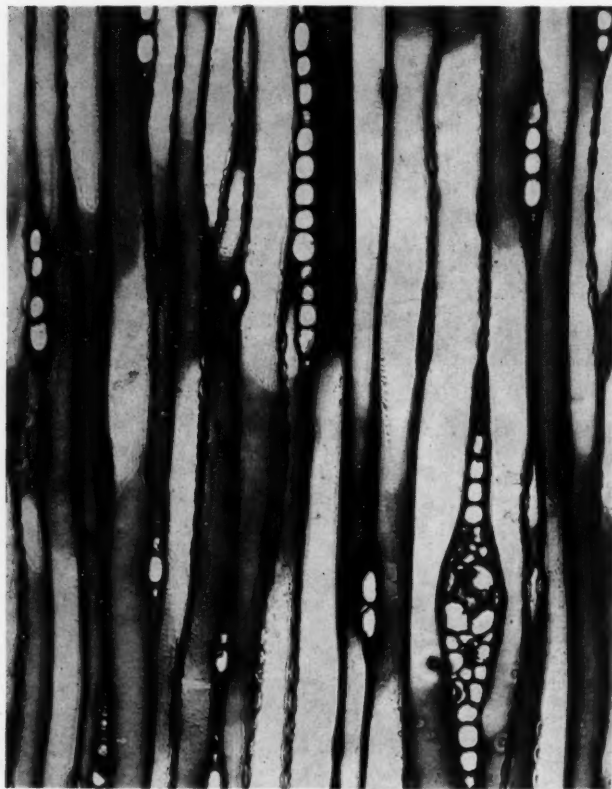
When the Romans developed their architecture and applied thereto as surface decoration the post and lintel construction of the Greeks, they were adapting to their then modern work forms which had been known for centuries. New problems, however, were treated in an entirely new manner. The structural principle, the masterly planning and the conception of the composition, were wholly different. The Roman artist was nevertheless basing his forms on the solid foundation of precedent—on Greek and Etruscan prototypes—interpreted in Roman, a *modern manner*. This architecture was universal if ever there was a universal architecture; yet real differences in conception and execution are

plainly evident between one Roman province and another.

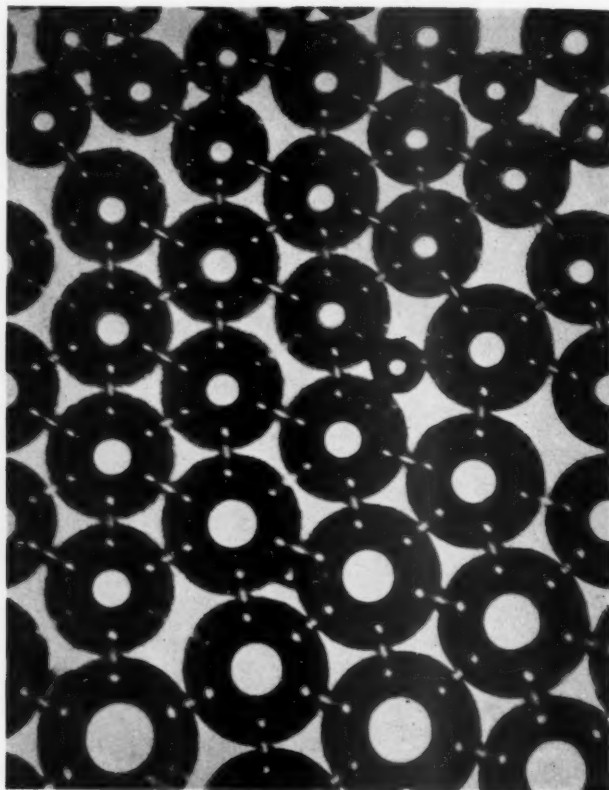
When the Longobardi—not yet Lombards—strove to construct the temples of their newly acquired Christian religion in a fireproof manner, and to vault them in stone, they based their work on Roman models, and tried conscientiously to reproduce the great architecture of their predecessors. Changing it slightly to meet their structural and aesthetic requirements, they developed an architecture, then thoroughly modern, entirely different from Roman work, which spread through Europe changing in detail as the taste and artistic ability of localities varied.

When the medieval builder, a highly developed artist, conceived his project, it was not with the wanton idea of doing something different, but rather of improving upon the work of his forefathers, of solving in a better way the problems left to him by the Romanesque architects. In so doing, he developed a new, different and inspiring architecture, unlike any the world had seen, yet clearly and definitely attached to all preceding styles. Emanating from France and England, the Gothic manner spread over the Western World; but the examples in each country are definitely naturalized and

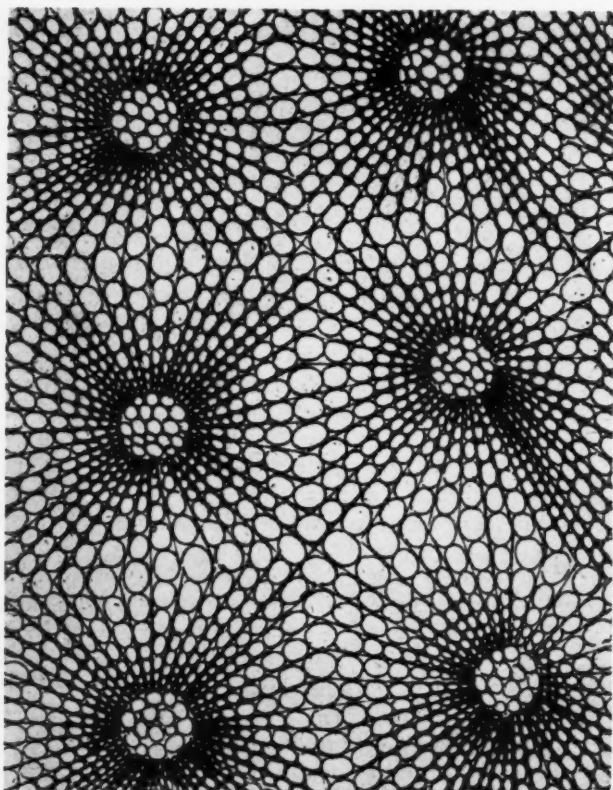
Photo Micrographs Offer Inspiration



Slash pine. Enlarged about 150 diameters



Soap bubbles. Enlarged about 133 diameters



Section of a pear enlarged about 23 diameters. From "The Anatomy of Plants" by Nehemiah Grew, published in 1682

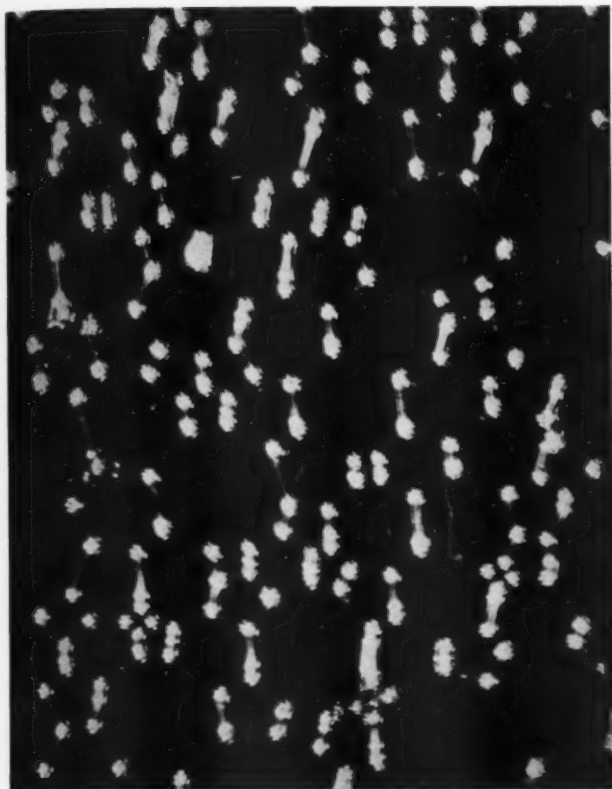
all of their local characteristics are readily recognized.

When the Renaissance artist reverted to Rome, it was not as a copyist, as many believe; he was primarily seeking inspiration. The structural principles of the Romans were not revived. And despite scorn for Gothic work, medieval methods of construction and ornamentation long continued to be used. Is there any doubt when looking at a building as to whether it is Roman or Renaissance? The young Englishman, Frenchman or Spaniard, returning to his native land after years of study in Italy, did not servilely reproduce what he had learned there. Thus the Renaissance, like other historic periods, evolved slowly, and developed both national and chronological subdivisions.

In the light of history, what may be expected of present and future building? Good architecture is today what it always has been: current social requirements truthfully expressed in current building materials and methods. Inasmuch as some materials are the same as those previously used, and some methods are an outgrowth of principles followed in the past, our architecture is traditional; and inasmuch as some methods and materials are distinctly new our architecture is experimental. It is the marriage of the traditional with the experimental, which produces the healthy child, modernism.

At present, much confusion is caused by the vociferations of the extremists. Fearful of being copyists, they insist upon departure, for which they formulate

For The Design Of New Ornament



A. TENNYSON BEALS

Soap bubbles. Enlarged about 133 diameters



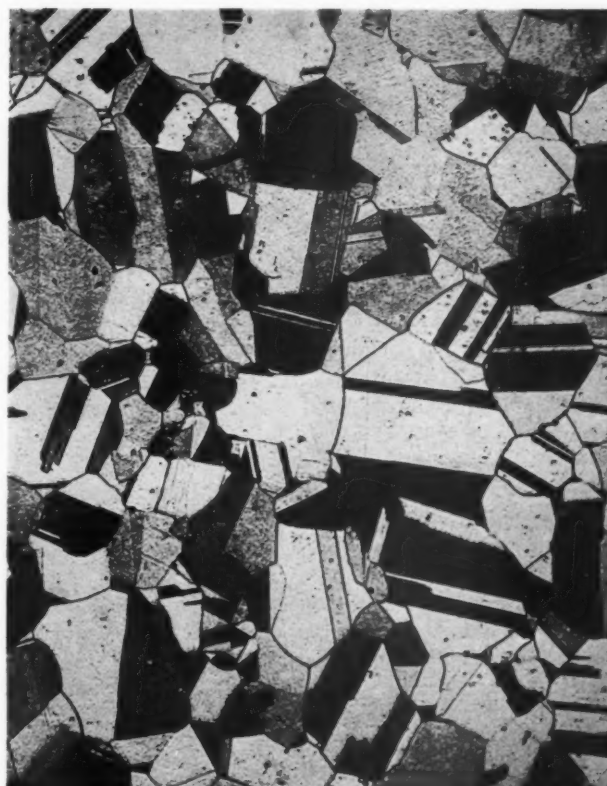
A. TENNYSON BEALS

Tartaric acid crystals. Enlarged about 166 diameters

rules rigid enough to stunt the movement or render it hieratic at its inception. Or, they overemphasize certain aspects, good in themselves, such as verticality, horizontality and functionalism. Yet extremists must not be condemned, for many of their ideas are creative, and they do effectively prod the conservatives. A consideration of their premises, together with a refutation of their exaggerations, is advisable.

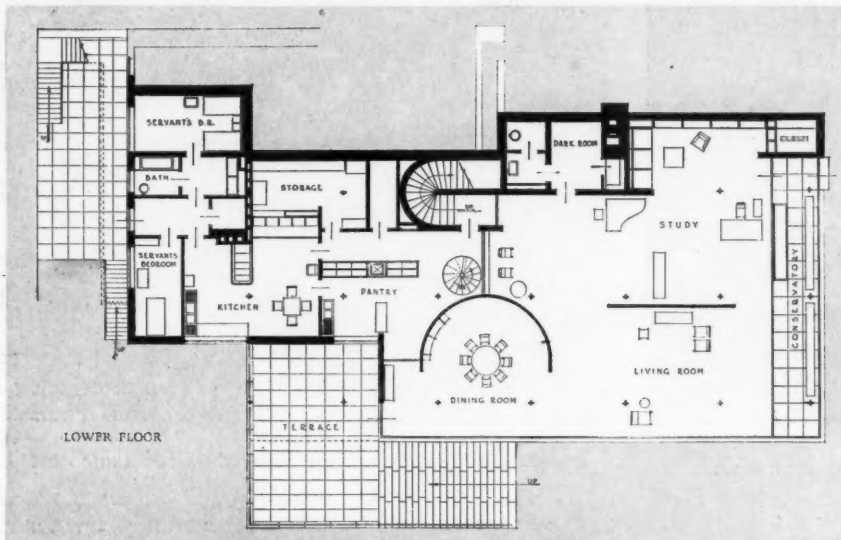
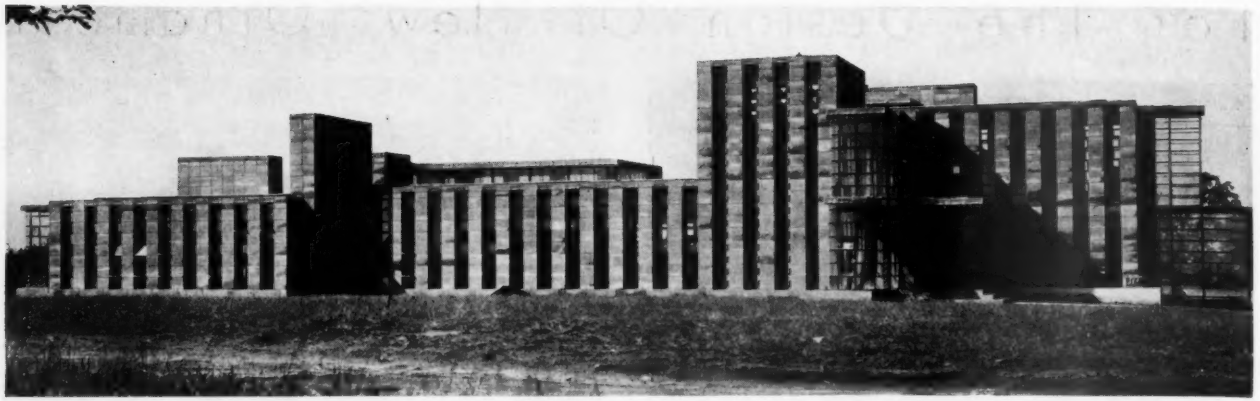
A much used hinge, upon which controversy turns, is the subject of ornamentation.

DESIRE for decoration is a fundamental craving in man and he has always applied it to architecture as well as to the more homely articles of daily use. Every phase of his development is recorded by his efforts in ornamentation; its eradication therefore would be a misdirected effort. The reasons given by the extremists for this proscription are weak. It is maintained with justice that ornament, gross in design and roughly executed by the machine, detracts from, rather than adds to, the chaste beauty produced by fineness of form and relation of plane surfaces. But, if the period is fertile enough to produce artists capable of conceiving good proportion and design, it should also produce artists having sufficient creative genius to compose fine ornament. If the age of handicraft has passed, a method of ornamentation adaptable to the machine must be found and the machine must not be used to imitate handicraft.



AMERICAN BRASS COMPANY

Grain structure of brass in its annealed—soft—condition. . . Enlarged about 200 diameters



IS THIS A FACTORY? The idea of "composing an exterior" rather than expressing a plan has led to as false an expression as "screen fronts" which these designers scorn to copy. Residence at Tulsa, Okla. Frank Lloyd Wright, architect

All privacy is eliminated in this open plan with insufficient interior partitions. Tugendat residence in Czechoslovakia. Mies van der Rohe, architect

Contemporary ornament is too often developed either by lazily reusing hackneyed historic motifs, or by combining intricate geometric forms which invariably resolve themselves into combinations of triangles.

There is still a wealth of inspiration to be derived from nature. As the ancients used the lotus, vine and acanthus, as the medievalist used the cabbage, parsley and young shoots, so we, in a machine and scientific age, can resort to nature and use not only visible forms and patterns but also those revealed by the powerful eye of the microscope. Photo micrographs are revelations of beautiful design.

Taste has chastened since the decadence of the Renaissance, and we demand now that decoration be used with discrimination. We can sympathize with the modernist who protests against ornament, sprinkled freely like pepper over an otherwise tasteless composition, but to banish it completely seems arbitrary and ruthless. Variety produced by discreet use of light and shade and by juxtaposition of forms is a legitimate means of producing interest. To suppress these possibilities, and to substitute unrelieved and unrefined surfaces, is indeed regrettable.

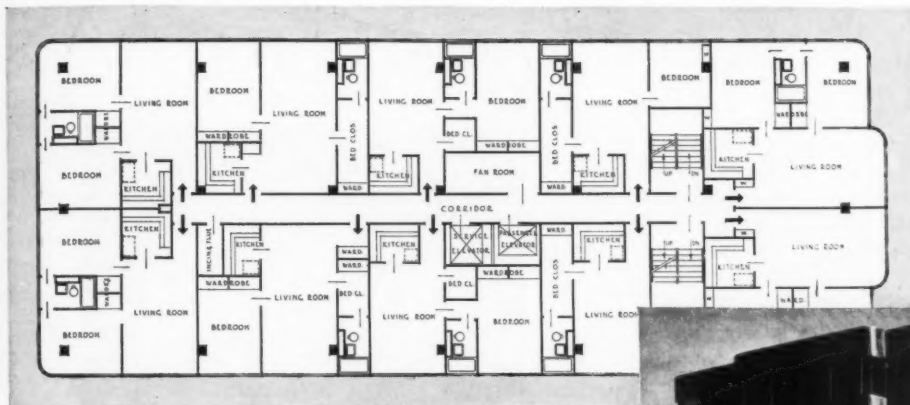
Fresh themes for decoration can also be found in the abundance of new materials available today. These materials are powerful agents in reviving a feeling for textures and a taste for polychromy, so debased and

stifled during the past century. The truthful and effective use of these new materials for surface and construction is as important a factor in the evolution of a new architecture as is the factor of changed social requirements.

THE tall building, the most spectacular expression of contemporary architecture, being a favorite subject for controversy, its advantages and disadvantages—social and financial—are familiar, and need not be enumerated here. But what will be the fate of the skyscraper if commercial and civic centres break up into lesser units? Conservation of ground space is only one of the reasons for its existence and the increased facility of operating a single unit will persist even in smaller communities, so the tall building has good life probability.

The windowless building, however, at present only a theory, will probably remain in this nebulous form—except in the case of structures of special nature, requiring unvarying temperature, special lighting or air conditioning and therefore not conforming to the general rule.

Despite the inadequacy of the window to supply light and air, and the concomitant development of artificial illumination and ventilation, the psychological makeup of man demands an opening in his enclosure. As the tendencies toward increased out-of-door activities and



NO ATTEMPT was apparently made to express the plan in the exterior of the Lux Apartments, Evanston, Ill. Bowman Brothers, architects. Exhibited at Museum of Modern Art



The plan of this twelfth century chateau is self-evident and well expressed by the exterior. Fenestration, masses and changes in planes indicate the use or nature of the space enclosed



VAN ANDA

added fenestration in the dwelling develop, he will be still more accustomed to extend his vision. Despite the artificialities of civilization, human nature continues to be as strong a factor in architectural development as economy or scientific improvement.

The modernist is deeply concerned with the subject of adequate planning and its truthful external expression. This is a sound trend in contemporary work, yet it is a revival rather than a new development. Its worth was proved by the logic and beauty of medieval building. But planning today has new potentialities by reason of the marvelous flexibility of new materials. Fitting the envelop to this plan, a highly expressive composition will result, sometimes symmetric, sometimes asymmetric, as the interior disposition demands.

Then churches will not be mistaken for hospitals and dwellings composed of vari-shaped and vari-sized rooms will not be mistaken for factories with great unbroken floor areas. At this point the extremist gives evidence of confusion, for while he is impressed with his dissertations on "flexible asymmetry" he is at the same time obsessed with some fixed idea such as horizontality, and in consequence warps his facade to achieve some certain linear design. In so doing he produces as untruthful a screen front as did his predecessors whom he scorns to copy.

The dwelling, at present a curious combination of

anachronisms and modern developments, is definitely in a period of rapid transition. The romantic house is doomed; the quaint English cottage or the picturesque French farm house with sleeping porch and garage appendages will presently be as outmoded as cupolas and jig-saw decorations. The problems of the future are already upon us and demand serious consideration.

THOUGH we have learned to use radios, vacuum cleaners, quick-lunch counters and country clubhouses, the house in its essentials remains today what it always has been—"a shelter devoted primarily to the functions of reproduction, nutrition and recreation," which is Lewis Mumford's definition of the modern habitat. The future house may develop as apartment or as detached dwelling, but in both cases it will be part of a community group. The advantages of this system in services, playgrounds, and so forth, have often been explained at length. External individuality of the house will be sacrificed to the group but this does not imply that personal originality must atrophy in consequence. An outlet may be found in the adornment of the house within doors, and interior architecture will have a greater importance.

It is regrettable that the layman sees, as the only alternative to his romantic dwelling, an unadorned, concrete, metal railed, flat

(Continued on page 114)

General Contracting As

It is only recently that general contractors have had the temerity to outline their functions. Following the example set by The American Institute of Architects, The Associated General Contractors of America recently prepared a leaflet describing "The Functions of A General Contractor—What he does and How he does it."

We realize that we are in the process of evolution as constructors, and that the trend of construction is indeed complex and the industry itself quite complicated. Man is inclined to be traditional and it takes much prodding and leadership to get him out of the ruts of his forefathers. This applies to our thinking as well as our relationship not only with each other, but with architects, engineers and subcontractors as well.

Speculative builders have been doing most of the spectacular building in our large cities and yet they also are somewhat bound by the timorous viewpoint of their tenants. The "temperamental turpitude" of architects is also involved in frantic efforts to produce the novel modernistic and yet beautiful structures distinctive of the age. Many architects today still have the inner feeling that "the king can do no wrong." Yet in the work of the world we find many designers as knaves who can do no right. Both tendencies complicate the whole spirit of mutual cooperation.

Leaders in design and construction all know in a large way that cooperation of all elements of the construction industry is vital to successful enterprise. Yet we find ourselves upon many occasions so beset by jealousies and so harassed by detail, that we almost give up in despair of accomplishing the fine things which broad vision indicates are so clearly possible. We are hopeful, however, that trade schools alternating with apprenticeships will create better craftsmen, and that as construction courses are introduced into our universities, there will be created better constructors. Between the two, much will be accomplished.

Realizing the trend of the day, our national association has gone so far as to set up a Code of Ethics for Consulting Constructors. In large specialized structures which must be completed within a short period of time, experienced men, wherever they reside in the nation, should be open to consultation by their fellow constructors or interested owners.

The construction industry has reached a new stage in its development. Together with other industries, we are enveloped in a machine age. With all the power operated construction equipment now available we can construct in five days at eight hours a day, all the construction that Americans can buy. Machinery has made possible volume construction at such low unit prices that we have developed additional markets for construction heretofore unassailable. The scientific tendency of the times is to produce still more efficient machinery which will in due time again warrant increased demands for construction per capita.

Simultaneously, there is introduced the problem of providing for those men displaced by the introduction



STRAUSS

ALBERT P. GREENSFELDER, president, Associated General Contractors of America; past president, American Society of Engineering Contractors; chairman, City Plan Commission of University City, Missouri; and president of the Fruin-Colnon Contracting Co., St. Louis

of new mechanical devices. History furnishes plenty of evidence that an ultimate increase of employment results from the greater use of labor-saving devices. In the interim, however, labor so displaced temporarily suffers during readjustment. The time element seemingly, therefore, would enter into this problem of adjustment. Some solution will undoubtedly be found for the care and support of labor so displaced. Whether the outcome will be displacement at a certain percentage a year or equivalent maintenance remains to be seen.

THE introduction of power shovels, on the other hand, has permitted winter excavation where heretofore all-year round employment has been impracticable. The production of construction twelve months in a year is necessary to induce skilled labor to remain in the construction field. It has been demonstrated that it is *custom and not climate* which still governs the seasonal program. Since we cannot change the climate, we must modify present customs. We have taken it for granted, heretofore, in this democratic country of ours that projects could be executed with or without proper qualification being made within the construction industry either in design or construction. Today, we are faced with the problem of prequalification. Whether registration of architects or licensing of contractors is the answer only the coming years can tell. Intertwined with this problem is the selection of registration officials themselves and the integrity and reasonableness with which they

It May Be . . . By A. P. Greensfelder

THE MACHINE AGE has taken hold of the construction industry

CHEAPER AND BETTER building will warrant more construction per capita

BETTER CRAFTSMEN and builders are being developed by the schools

YEAR 'ROUND building is necessary to keep skilled workers in the trades

PREQUALIFICATION of bidders is a problem to be solved

BUSINESS HAZARDS are being removed

BIPARTY BONDS will protect owner and contractor

CONSOLIDATION is a tendency observed throughout industry

MAJOR DESIGN ORGANIZATIONS may be formed of architects and engineers grouped together

"CHAINS" OF CONTRACTING organizations may be formed

NEW LAWS will influence construction and design

STRUCTURAL COMMISSIONS to pass upon "permits of necessity and convenience" may be warranted

CONFIDENCE OF INVESTORS in buildings must be restored

NO DREAMS have yet painted the size and variety of the structures of tomorrow

officiate. Political subservience or interference is likely to have a bearing on the problem's equitable solution.

It is being realized more and more that constructors are being unnecessarily subjected to business hazards. Various types of business insurance are consequently being evolved to balance the scale. Quantity survey bureaus are insurance against errors in arithmetic on the left hand side of the bidding column, and cost keeping should eventually provide for the proper unit prices on the right hand side of the column. A more general recognition of overhead expense including job overhead, general overhead, cost of getting and doing business, taxes, insurance, construction equipment rental and depreciation are being better understood and applied.

Architects cannot dodge the responsibility of preparing complete plans and comprehensive specifications which insure against omissions. A revision of the Fourth Edition form of Contract of the American Institute of Architects now in the hands of a joint committee should presently insure the adoption of a more equitable form of contract.

The adoption of Biparty Bonds providing protection of the owner for the performance of the contractor and the protection of the contractor by providing for payment by the owner, is undoubtedly equitable. The introduction of a new form of "Structure Insurance" providing an "all risk coverage, for loss or damage however caused" during the erection of a structure is now being written.

Consolidation seems to be the spirit of the times, as groups in other industries have discovered. It would seem that the construction industry is now likely to pursue this tendency. Perhaps this will mean the grouping of specialized architects and engineers into major designing organizations. It may be that "chains" of contracting organizations from coast to coast will also be evolved. This would seem a more logical trend rather than that the designers should embrace construction or the constructors should produce designs.

ON the other hand, there is much evidence of cooperative encouragement between these two elements. Designers and constructors together can cooperate for the betterment of both. There is no longer any need for suspicion of motive between the two. There should be coordination of forces of genius in the profession of design and leadership in the business of construction. Instead of friendly antagonists they may become co-operating protagonists. It is our hope that the new Construction League of the United States under the leadership of such prominent architects as Robert D. Kohn of New York, Ernest J. Russell of St. Louis and others may accomplish much along these lines.

For some unknown reason, competition is presumably taken for granted as the sound method of selecting contractors. Even with proper prequalification this does not necessarily serve as the best method of selection. More and more it is being recognized (*Continued on page 113*)



A circle illuminated from behind and made part of the shaving mirror and combined with sliding glass and mirror doors is but one of the developments resulting from a study of the bathroom as a working unit. All fixtures shown were designed by George Sakier for the American Radiator and Standard Sanitary Corporation

Expected Improvements

MODERN plumbing endeavors to serve the cleansing needs within the building and has done a remarkably good job when you consider that very little, if any, research has been done on the problem as a whole. In the last thirty years, improvements have been made on specific devices and accessories with no major improvements of a fundamental nature. Even modest homes today have two or more bathrooms with a fairly complete list of fixtures. The shower bath is very popular with the tub bath having but limited use. Special fixtures such as bidets, dental lavatories, etc., are found only in general use in the larger homes having four or more bathrooms. The china water closet with sanitary open front seat are in common use with emphasis being placed on quiet operation. Sound absorption and control is at present a very live subject and is being applied to plumbing systems in only a small way.

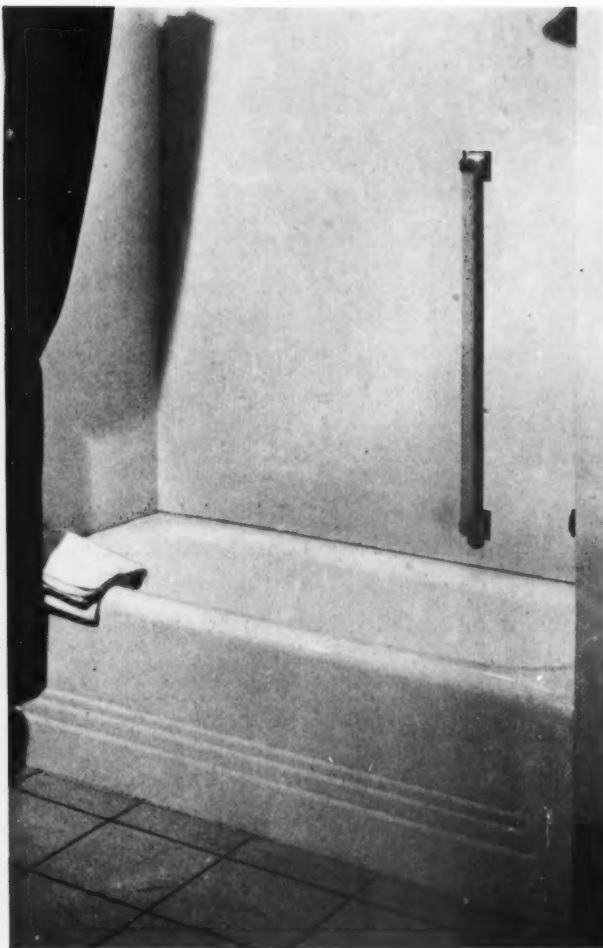
Present day water supply systems, both hot and cold,

are being constructed almost entirely of non-ferrous metals with copper tubing coming into quite general use. The waste and vent systems are of several materials such as cast iron pipe with lead caulked joints and steel or wrought iron pipes with screwed joints. We have not yet developed a wholly satisfactory material and method for constructing this piping considering durability, expansion, gas tightness, cost and other characteristics.

In the future, office buildings will have a large number of small toilet rooms scattered throughout the building. There is now a definite trend away from the older practice of localizing all women's toilets on one floor to sound planning with smaller toilets for women located on every floor. This change is due to the increasing employment of women in business and realization of the economic and physiological factors. The localized toilets place an appreciable load upon the elevator system in transporting the women to and from their offices



Study of the lavatory has resulted in a modern fixture that is cheaper than the pedestal type. The faucet handles are well designed to fit the hand



DANA B. MERRILL

A vertical non-slip grip bar is a new and practical development which is intended to afford greater safety in connection with the use of bath tubs

In Plumbing

By DEXTER J. PURINTON

Associate in charge of design
Voorhees, Gmelin and Walker, architects

as well as wasting considerable time away from their desks. There is also involved the problem of smoking during working hours as it has been well established that where smoking is prohibited in the office, employees—men and women—visit toilets much more frequently to snatch a few puffs.

THE home of the future will have bathrooms which will have complete facilities for bodily care including dressing, exercise and hygienic devices. It seems doubtful if any really new fixtures will be developed as after all the bodily functions have not changed materially in the centuries, but many improvements will be made in the present variety of fixtures with ease of use, cleanliness, quietness, and appearance being more emphasized. Beauty and plumbing may seem far apart and unfortunately this is so but more attention is and will be given to appearance so that the bathroom of the future will be a truly attractive and colorful room. One manu-

facturer of plumbing fixtures is endeavoring to popularize the bidet in connection with the closet for use in modern homes.

Water piping, both hot and cold, in newer homes, will be of copper or possibly brass, and waste and vent piping of cast iron with screwed fittings. Two firms are now developing cast iron screw pipe. Special anti-siphon traps will undoubtedly be in common use in the future with the partial elimination of venting systems although some back venting will always be desirable. The preassembly of bathroom piping is being further developed and in the future piping will be shipped to the building complete with only the major connections to be made to the water, waste and vent stacks in the field. The heating of hot water in the future will undoubtedly be by automatic means using electricity as the fuel, and, in the case of apartment houses, possibly the heater will be near the fixture served with the electricity taken from the tenant's meter. (Continued on p. 119)

A Plan to Handle Federal Architecture

An Interview by Tirrell J. Ferrenz, A.I.A., With
C. HERRICK HAMMOND, F.A.I.A.
State Architect of Illinois; Past President, A.I.A.

Create a Department of Public Works with an Assistant Secretary in charge of all architectural work

Appoint an architect of highest qualifications as Assistant Secretary

Provide budgetary limitations on scope of office activities

Select private architects with help of advisory commissions

CURRENT commercial conditions and the increased burden of taxes have resulted in business interests awakening to the belief that many of the bureaucratic and other activities of the federal government have outlived their usefulness or outgrown their purpose and should now be curtailed or discontinued. Sensible business men are not demanding that necessary public work or public improvement be abandoned, but they have a growing conviction that the recovery of prosperity and happiness can be materially furthered by a return to the fundamental American ideals of liberty and personal initiative.

The battle which has centered around the expanding scope of the office of the Supervising Architect of the Treasury has caused many good people to ponder whether or not it is possible to create a better system for handling the design of federal buildings than the method now in existence. One group brings up the bogey of architectural misfits, which frequently result from the award of work on the patronage system, while another group is unable to contemplate the efficient operation of any work or utility under direct government control.

In this dilemma, it is refreshing to find that one of our most populous states is handling a large volume of public construction with marked success. We, accordingly, approached C. Herrick Hammond, Supervising Architect of the State of Illinois, with the distinct feeling that here was an opportunity to obtain an authoritative viewpoint which might lead to a solution of the perplexing problem. A past president of the American Institute of Architects, a man of wide interests and high ideals—a busy man even in these days—we found him gracious as always and willing to answer our questions

on how governmental architecture might be handled to advantage.

It was apparent that Mr. Hammond believes that current dissatisfaction is not due entirely to inherent defects in the system as it now exists, but, rather, to a misunderstanding of the facts relating to the operation of the Supervising Architect's office.

"The prime requisite for success in any undertaking of this nature," he said, "is to have a qualified architect with executive ability at its head. The men who have charge of the actual architectural work at present are highly capable, but the thought is that the Supervising Architect himself should be a real architect by training, experience and reputation and not an architect merely by virtue of official position.

"Judging technical matters is the province of a qualified technician. Well-balanced thought on design, a clear conception of the functional requirements of various types of structures, and a grasp of the problems of business administration involved in building construction are all highly essential for the effective handling of architectural work. To discharge properly the various duties of an office of such importance as that of the Supervising Architect of the Treasury requires an advanced degree of technical proficiency coupled with administrative ability of a high order. These qualifications are not unusual in the architectural profession but are quite generally found in the possession of successful architects everywhere. It is not strange therefore that members of the architectural profession should feel humiliated so long as their national government cannot show forth in such an important position the best talent that the profession affords.

"There are those," he continued, "who believe that a layman should be the administrative head of any bureau which has such broad scope and deals with so many problems of a varied nature. This would be entirely feasible under the proposed plan for a new Department of Public Works as approved by the Institute. That plan placed the new department under a cabinet officer with an architect as Assistant Secretary in charge of all architectural work. Such recognition would attract distinguished men who would be willing to make a great sacrifice to accept a position of that character."

Many foreign countries function in some such manner. It is significant that various bills have been introduced into Congress from time to time creating a Department

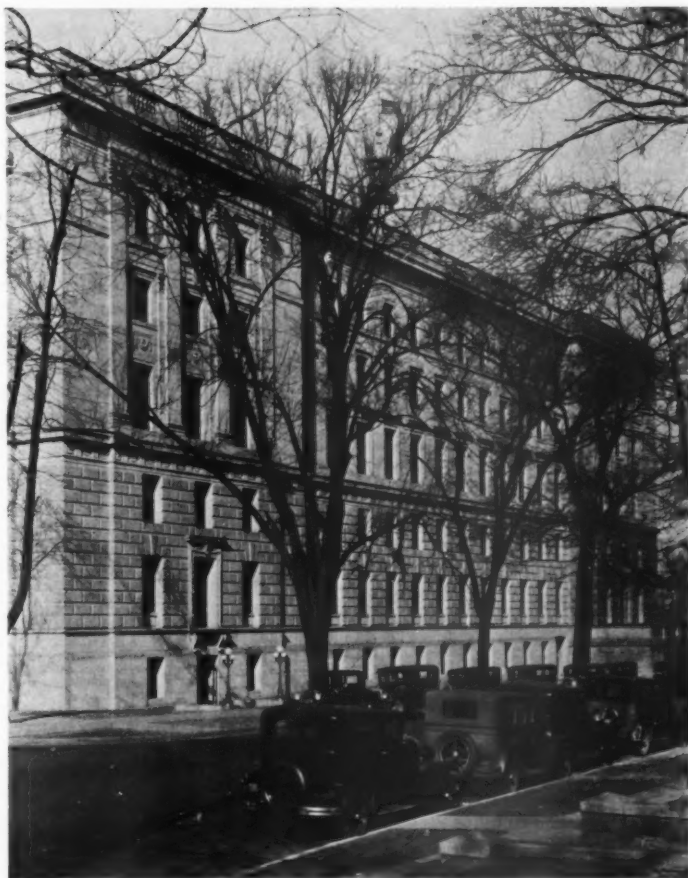


of Public Works. The Jones-Reavis Bill of 1926 received the Institute's support. The Wyant Bill of 1928 met with determined opposition and was finally dropped after an extensive hearing. The desirability of a Department of Public Works was emphasized by the Institute as late as the San Antonio Convention last year. However, the early adoption of such a measure is problematical. Like all bills which require an uprooting of the existing order of affairs, the task of bringing the conflicting interests into harmony is of Herculean proportions. Meantime, the vital question remains as to how conditions can be ameliorated now.

NEXT to proper administrative control, in Mr. Hammond's belief, comes the selection of capable personnel. Some believe that civil service limits for employes of the Supervising Architect's office are too low to attract capable men. Undoubtedly the situation could be improved by an increase in salaries, although present economic conditions make it possible to secure a much finer personnel than would be possible during normal times. In any office containing several hundred men, the matter of organization and capable management becomes increasingly important. The continual shoving through of jobs in volume without full allowance of time for careful study is certain to breed indifference and produce mediocrity. In combating this condition, the necessity of a proper *esprit de corps* cannot be over-emphasized.

Many architects believe that architectural bureaus should be restricted to the development of programs, to the letting of contracts, and to the supervision of work. They believe that the preparation of plans and specifications should be entrusted entirely to architects in private practise. The arguments in support of this proposition have been given wide publicity and need not be repeated here. It is a question upon which much can be said for both sides.

Experience in the handling of Public Works in Illinois has been illuminating in many respects. During the past three years of Mr. Hammond's administration,



Government architecture does not need to be standardized. **AT TOP** is the Illinois Soldiers' Orphans' Home, Normal, Ill. C. Herrick Hammond, supervising architect. **BELOW**, annex to Centennial Memorial Building, Springfield, Ill. N. Max Dunning, architect; C. H. Hammond, supervising architect

contracts have been awarded for construction work amounting to approximately seventeen and a half million dollars. The great variety of projects and the versatility required of the Division of Architecture and Engineering may be visualized from the following list of departments engaged in the administration of buildings:

1. *Department of Public Welfare*—asylums, hospitals, orphans' homes,

(Continued on page 94)

Future Heating Will Simulate

BY RICHARD A. WOLFF, M.E.

President of Wolff & Munier, Inc., past president of New York Chapter of the American Society of Heating and Ventilating Engineers and chairman of Standards Committee of Heating and Piping Contractors National Association

MAN has done his best to improve upon nature's original method of heating. But now we are beginning to turn our thoughts away from the man-conceived systems so popular during recent years. We are tending back to nature's own system of heating, which brings a cheerful warm glow that is conducive to keeping air in its naturally healthful state.

As man learned to live in caves and dwellings, he began to think of ways to heat them so that they might be more comfortable. First efforts were naturally crude and smoky, often consisting of no more than a fire built in a great hall with a hole in the roof. Later efforts sought to make things more comfortable by getting rid of the smoke. Stoves soon confined the flames; chimneys took the smoke out without letting the rain in; the heat source was relegated to a separate room and the warm air carried where desired. Then came the modern systems, with trim boilers and efficient radiators tucked away behind grilles to make the heating element less conspicuous.

TREND HAS BEEN AWAY FROM RADIANT HEAT

FOR years the trend of all heating development was away from natural *radiant* heat—the type of heat provided by the sun—and towards *convected* heat—result of passing air over a warm surface. Such radiant heat as was given out by exposed radiators became practically eliminated as radiators retreated behind grilles. And, as heat became more and more of the convected type, the heated air became more and more unhealthful through the baking out of its natural moisture. Out of the necessity for healthful air was born the idea of humidity control—as it is called—which seeks to put back into the warmed air moisture which has been baked out of it. But still the idea of convected heat persists—and may continue to persist for years to come.

Along with the idea of getting radiators out of sight developed the idea of thermostatic control. This was originally an idea applied to large buildings, which have been responsible for so many of our devices for comfort and health. At first one thermostat was made to serve the entire house. But this, as regards an ideal temperature in every room, soon proved not to fully serve the comfort requirements of the owner. And so the idea of individual thermostats for every room began to develop.

Developments in convected heat indicate that greater efficiency is on the way. For instance a hot water heating system is being installed in the new sixty-seven story Cities Service Building, New York. In some cities, individual heating plants are being eliminated and

steam furnished through mains from a central plant.

A new line of thought is making use of electric vacuum radiators filled with a chemical which vaporizes quickly so that the radiator will begin to give off heat within 55 seconds after turning on the current. Such tendencies may result in considerable fuel savings and even eliminate all necessity for chimneys.

But convection systems of heating, besides drying the air, have the fundamental fault of generally giving off enough radiant heat to make the air uncomfortably warm near the heat source. Space is therefore wasted, for one does not usually place furniture against a radiator even when the heating element is concealed.

Thus *comfort*, which is the aim of all heating, is not perfectly served by any system of convected heat, which keeps air in motion, wastes space, and makes it necessary to replace moisture which has been baked out.

Radiant heat has none of these disadvantages. It heats as the sun heats, warming objects in the room rather than the air itself. The air becomes heated only through reflection and secondary convection—that is, by passing over the heated solids and picking up some heat in that way. There are no side wall heating fixtures, visible or invisible. Thus all wall space becomes usable.

In radiant heating systems—quite new in this country, though now comparatively an old story in England—the structure of the building itself is warmed by pipes—embedded in the plaster—through which water at relatively low temperature is pumped. These coils, being embedded in the construction, give a radiant type of heat which is similar to the warm cheerful glow of the sun.

A HEATING SYSTEM THAT CUTS FUEL COSTS 50%

IN England, this system—called panel heating—has quite a vogue. Experience over a period of years has shown an average fuel saving of 50 per cent as compared with a high grade steam direct radiation system. In the United States, two installations of panel heating have been made. The first is in the British Embassy at Washington, described in the November 1930 issue of *American Architect*, for which Sir Edwin Lutyens was the architect. Several tests have been made of this job to determine the comfort at various degrees of temperature; 62 degrees has been found to be an entirely comfortable temperature and comparable to 70 degrees with a convection system; 66 degrees gives the impression of serious overheating.

In such systems, the water is kept at a comparatively low temperature. In a residence in New York City,

Nature

for which Walker and Gillette were the architects, on the coldest day in 1931 the water entered the system at 108 degrees and returned to the boiler at 104 degrees. During the winter of 1930-31, the water temperature of the British Embassy installation was never above 115 degrees and most of the time was about 95 degrees.

Of course when a room is comfortably heated by radiant heat at 62 degrees the relative humidity is higher than when heated to the same temperature by convected heat. This is one of the major reasons for economy of operation. Installation costs run about 15 per cent higher than a good steam or vacuum installation with some of the radiators enclosed. Extra heavy steel pipe is used with all joints welded. As the pipe is concealed in the construction and the system is always full of water there is no danger of corrosion.

ELECTRIC PADS IN CEILING CONSTRUCTION

A VERY recent development in England makes use of electric pads concealed in the ceiling construction. Another development in factory heating in that country makes use of steel sheets suspended from the ceiling and heated electrically, radiant and convected heat thus being utilized.

I see a distinct use for gas as a fuel. Excellent regulation can be obtained with gas, which compensates to some extent for its additional cost, and I think that some day the rate will be low enough to compare favorably with the cost of coal and oil. At the present time, the cost of generating electricity, except in certain localities, is too expensive to be practical but it may be possible that improvements in heating elements and more efficient generation will bring the cost down so that it will become generally available and popular as a fuel.

Already there are signs that just such developments are quite likely to take place—and not in the distant future, either. There is at present on the market a system of heating which makes use of electricity during off-peak hours—that is, heat is stored up in the water storage tanks at such times of the day or night as electricity is cheapest.

As to the future, my guess is that convection heating systems will gradually be replaced by radiant heat systems. Looking still further into the future, I predict that hot water radiant heating systems will be replaced by electric radiant systems. Perhaps the day will come when we will have no heat generating plant in the building but, just as we obtain sound by turning on the radio switch, we may push a button and have heat of just the proper temperature flow into our homes.



Architectural possibilities are revealed in this desk made of Bakelite and metal in reception room of E. R. Squibb & Sons. Robert Heller, interior decorator; Ely Jacques Kahn, architect

On facing page is an unusual use of wood veneers developed by the Flexwood Company. World's Fair Administration Building. Designed by David Leavitt; Bennett, Burnham and Holabird, architects



SIGURD FISCHER

RESEARCH is Preparing

THE successful architect must adjust himself to whatever circumstances obtain in the erection of any structure, but his effort is to erect a building satisfactory for the use to which it is to be put, sufficiently permanent for the requirements, and withal pleasing in its appearance. He is interested in art, in utility, and in the permanence of his work. To express his ideas he must draw upon a large variety of materials. If the variety is not great, he is limited in his possibilities, and he turns therefore to new things, with the expectation of finding something that will meet a special requirement. In the provision of new building materials, the improvement of older ones, and in the perfection of means whereby well-known materials can be used, the research laboratories have made and will continue to make major contributions to architecture.

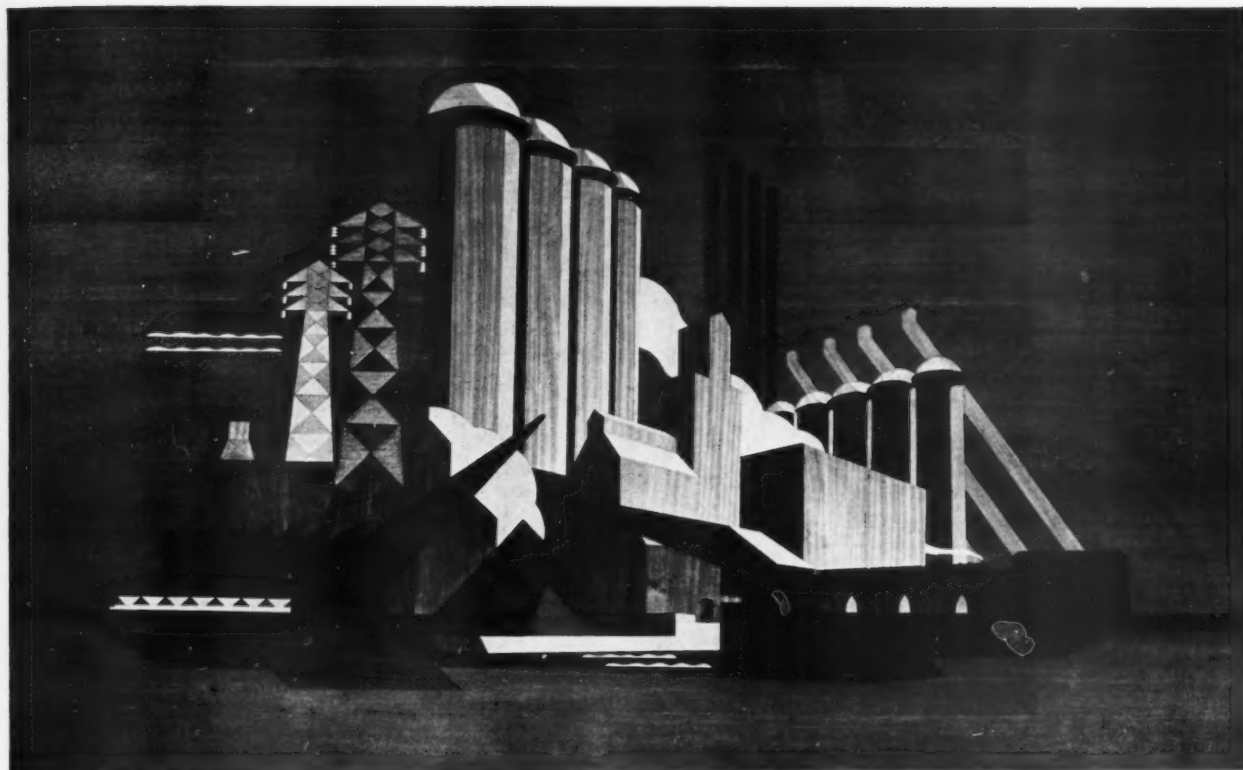
It is unnecessary to refer at length to changes in architecture made possible by the development of structural steel, concrete, terra cotta, and numerous other things not found in nature but shaped to meet building needs through the work of the research laboratory. In recent years there have been notable improvements in the alloys which have been synthesized to meet building needs. Alloy steels resistant to rust and corrosion to a degree heretofore unknown have offered a medium more permanent for structural purposes and one requiring less maintenance and replacement costs when used as decoration combined with utility. The distinctive features of the Chrysler and the Empire State Buildings are in a

great measure due to the extensive use of such alloys.

Where the alloys themselves have not been indicated, the success of chromium plating, developed after years of research, has meant a new color shade as well as a surface, capable of giving great protection to underlying metals, approaching the service of the metals themselves. Concurrent with this development has come an increasing variety of light and strong metals employing aluminum and magnesium in combination with copper, manganese, and other alloying elements. Furthermore these admirable light alloys are reaching a price level where they can be seriously considered for more than decorative purposes.

It is not at all unlikely that the future will find structural members of considerable size being made from these light strong alloys in preference to the much heavier steel. They have already proved their reliability in aircraft, and the strains which under certain circumstances must develop in so giant a structure as the Akron are surely comparable to those which exist in some buildings.

LIGHT alloys find their way into equipment such as furniture, where by new methods surfaces are prepared finished in colors to suit the scheme of interior decoration. They also lend themselves to the production of highly efficient radiators and similar services. As extruded material they offer many advantages and as they can be worked very much as other metals they suffer no marked limitation due to handling. Useful because



HEDRICH BLESSING STUDIO

New Wonders

By DR. HARRISON E. HOWE
Editor of Industrial & Engineering Chemistry

of their lightness and structural strength, they also offer color and decorative possibilities.

Welding, another procedure of increasing importance to architecture, has gone forward, thanks to research, and is now to be seen in structures of both the residence and office building type, while the same general procedure has facilitated demolition, repairs, and changes in structures beyond anything known heretofore.

Besides the structural interest there is that of protection through surface coatings. This has been a long and tortuous procedure, but today we find added to the ways so well known for generations coatings involving the synthetic resins and still more recently a synthetic drying oil, a by-product in the development of the new synthetic rubber. Depending as most of them do upon evaporation or polymerization due to light and air, rather than upon changes to produce the hard resistant film, these new coatings introduce advantages in the types of pigments that may be employed. They may be expected therefore to result in a more satisfactory range of shades and colors with a higher adaptability even when exposed to adverse weather and wearing conditions.

The synthetic drying oil to which reference has been made promises great advantages in protecting surfaces against acid fumes, contact with alkalis, and similar severe conditions resulting in protection far beyond the initial cost of this material, a derivative of acetylene gas.

Yet another new protection is to be had in the deposition of rubber, very similar to the process employed in electrotyping one metal upon another. Rubber plat-

ing is due to the present-day ability to bring to our doors rubber latex substantially unchanged as it came from the rubber tree. Fortunately the necessary compounding materials plate on with the rubber particles, and subsequent vulcanization gives a surface protected by soft or hard rubber, as may be desired. In this manner such a coating can now be applied satisfactorily under conditions which heretofore made the use of rubber coatings impracticable, if not impossible.

THE new synthetic rubber, known as Du Prene, also a derivative of acetylene, has been available in quantity for experimentation too short a time to tell us much of its ultimate utility to the architect. Its smaller particle size, the possibility of polymerization without a vulcanizing agent like sulfur, superior resistance to oxidation and to solution in petroleum products open up a variety of possible applications that look very promising, to say the least. We have seen a wide development of rubber flooring, but architecture has not yet reached the ultimate in the use of rubber or in other materials capable of lessening noise and thereby making for conditions less trying upon nerve and muscle.

Other types of insulation are important in this connection, for any development which will aid in quieting a city will some day be looked upon as a most important accomplishment. Besides preparing rubber compounds at low cost and in such form as to assist in this program, research has brought out the various sorts of wall and insulating boards well known (Continued on page 85)

. . . As It Looks

Radio Opens Garage Doors

IMAGINE your astonishment at driving with a friend up to his garage and having the lights go on and the doors fly open through merely pressing a button in the automobile! That is now capable of actual accomplishment, for a device to accomplish that very thing has been placed on the market.

Electric Decoration

ELECTRIC light may soon take the place of more conventional wall coverings, according to Major H. S. Bennion, engineering director of the National Electric Light Association. He said that at the Chicago World's Fair color schemes would be used which would be maintained by electricity, functioning even in daylight. The process is still partly in the developmental stage.

Tomorrow's Cities

THE battle of what is going to happen to our cities continues. The question, "Is the high building doomed or will we see higher structures in our future cities than anything yet built," offers food for speculation to nimble minds. Claude Bragdon has said that "when Radio City is finished the era of skyscrapers in New York will be over." Clarence Stein claims that large cities will some day be a thing of the past, for they are an antique, worn out machine. On the other hand, William Orr Ludlow has said that modern inventions and materials make the age-old necessity of horizontal buildings a thing of the past and that the future holds great possibilities for the tall building.

If the A.I.A. Advertises

IF the A. I. A. ever starts to advertise, there will be plenty of criticism, no matter what is done. Headquarters will be deluged with advice, most of it based on personal opinion and little of it on known facts. Architects who contributed with the expectation that within a couple of months they would have to hire more draftsmen will be vociferously disappointed. Others who regard the national campaign as merely making their own salespath easier—if they work a little harder—will find themselves rewarded to their fullest expectation. There will be a strong tendency for architects to put their claims on paper publicly—with the result that they will be forced to begin to live up to those claims. The public will begin to appreciate architectural service and to apply the yardstick of understanding. As a natural consequence, service will tend to be better and better. The right type of advertising campaign, backed up by chapter and individual effort, would do more to make the entire profession as ethical and capable as its most ardent proponents would wish than countless years of working unheralded and unsung.

Colored Glass For Kitchens

FLIES and similar insects are repelled by glass of various special colors, according to Professor J. W. Munro of the Imperial College of Science and Technology, London. He states that the majority of insects prefer white light and will shun rooms fitted with red or yellow glass; blue glass is most disliked. Will the fly nuisance in dining rooms and kitchens be eliminated by colored glass and will the most successful restaurant architects be those most skilled in their decorative use of blue?

New Light Sources

TODAY'S incandescent lamp is capable of few if any radical improvements even though its light-producing efficiency is less than 10%. Other light sources must be developed if there is to be much future increase in efficiency. Sodium-vapor lamps are the most efficient artificial light source yet produced but there is still much to do before they become commercially practicable.

Wren Knew About It

LEOPOLD ARNAUD writing in this issue on the evolution of a new architecture refers to the possibility of utilizing photo micrographs of natural forms as inspiration for new ornament. One illustration on page 50 is a microscopic drawing of the section of a pear, reproduced from "The Anatomy of Plants" by Nehemiah Grew. This volume was published in 1682 under the authorization of Sir Christopher Wren, who was at that time president of the Royal Society. The present Royal Institute of British Architects is an offshoot of the original Royal Society. The book recently came into the possession of A. Tennyson Beals, a photographer residing in New York. The illustrations would seem to make the old saying "There is nothing new under the sun" apropos, only the drawings of yesterday have been replaced by the photographs of today.

Fireproof Awnings

NO one group of men know better the practical and aesthetic value of simplicity and the difficulty of its accomplishment than do architects. The obvious is too often obscured by custom and careless thinking. The truth of this is demonstrated by a new application of asbestos cloth. Building owners have suffered for years the annoyance of having the usefulness of awnings impaired or totally destroyed by lighted cigars, cigarettes and matches tossed out of open windows above them. Until recently no one thought of making awnings of asbestos cloth. It was too simple and too obvious, for certainly the idea presents no manufacturing difficulties not easily overcome. This application of asbestos should mean much to owners and the asbestos industry.

to the Editors . .

New Profession Developing

INDUSTRY is today thinking more about the appearance of its products than at any time in history. Perhaps this is because mechanical developments are well advanced in every line and many manufacturers have come to realize that beauty in appearance is the only thing they can add in competition with others. Very many also find that beauty does not add to the cost of the product and may add to the profits.

This field of development work requires a person of unusual qualifications, combining imagination, practicality, business acumen, mechanical ability with a strong sense of what constitutes good design and how it is achieved.

Paper for Concrete Forms

ALTHOUGH we generally think of paper as something on which to write or draw, yet it has a wide variety of uses including car wheels, forks, trays, and so on. One of the latest, reported by Ernest O. Brostrom, architect, Kansas City, Mo., concerns its structural use in buildings. A new development makes use of paper as a mold for reinforced concrete. The molds or forms remain for the life of the building and are claimed to provide waterproofing and insulation. Certainly many old materials are being used in many new ways.

Bathrooms In Units

BATHROOMS and kitchens may shortly be delivered to the building in units, complete with wall, floor and ceiling finishes and all the usual fixtures and fittings, according to Andrew J. Eken of Starrett Brothers & Eken, Inc. Maybe the day is not far off when the man desirous of owning a building will merely put in a telephone call and have it delivered to the site all ready for occupancy including a hole in which to put the foundation.

Flexible Partitioning

ONE of the major developments of interior construction has been the development of partitions that may be moved around at will and yet are fireproof and soundproof. The development of this idea in office buildings has been a necessary one in order to take care of the wide variation of tenant's wants. Yet why should not this same idea be applied to apartment houses? It is simple enough to establish the necessary service lines and build the apartments as demand requires. Those desiring a large living room and a bed room may have them; those better satisfied by a smaller living room and two bedrooms could have their wants quickly attended too—and all in the same space. How many apartment houses with four, five and six rooms—and many vacancies—would find their income augmented were it possible to turn them into two and three room apartments—and back again—as demand changed.

New World's Highest

A BUILDING higher than the Empire State Building is proposed by the Doherty interests. It will be located near the Battery. Talk had been that the economic height had been reached with the Empire State. Yet here is a new and higher building proposed in a city where there is at present plenty of office space in new buildings. There is always a market, though, for something better—as witness certain new apartment houses in New York which are better than 90% rented.

Sugar In Your Mortar?

INDUSTRIAL chemists of the Mellon Institute for Industrial Research told the Sugar Division of the American Chemical Society that a little sugar dissolved in the gauging water of mortar makes the mortar stronger and more durable, and adds but little to the cost. It is said that this fact was known to and used by the Romans. It presages a new market for the sugar industry—and provides the newspaper writers with many a squib.

Grant Should Remain

THE development of our National Capital is a matter of pride and interest to all citizens and of especial interest to all architects. The work of the National Capital Park and Planning Commission is an important factor in safeguarding the integrity of the Washington Plan. In recent years it has been particularly fortunate that this commission has had as its executive officer a man of such calibre as Colonel U. S. Grant, 3rd.

Colonel Grant has acted in his present capacity as a military assignment since 1926. His first assignment was extended by the War Department at the President's request until the completion of the Arlington Memorial Bridge. His Washington assignment is nearing its end. The War Department will not reassign him to Washington since the Department policy is against Washington assignments of more than four years.

Colonel Grant has proven himself to be an executive of superior ability. He is probably now more familiar with the plan of Washington and the ramifications of maintaining a sound policy in its development than any other person. He has proven himself too capable an administrator to permit of his being returned to military routine or allowed, like his predecessors, to enter civil life. If the system can not hold the man best fitted for the job, then there is obviously need for a change in the system.

The profession should immediately take steps to safeguard the future of Washington by urging the retention of Colonel Grant in his present office, or, if a bill organizing a Department of Public Works is passed—Colonel U. S. Grant would be a worthy person to head that department. Based upon proven competence, his appointment to either office can be safely advocated.

Prefabricated Buildings Will Bring Lower Costs

By ARTHUR TAPPAN NORTH, A.I.A.

who is investigating the prefabrication of steel houses in connection with the research for the Chicago World's Fair

THE development of mass-produced shop-fabricated buildings is inevitable because of an evil situation affecting social and economic welfare that demands a cure. Such a situation is described in the authoritative statement that "less than half the homes in America measure up to minimum standards of health and decency." If we recognize the right of every human being to enjoy comfortable and sanitary housing, the demand for the cure of this condition cannot be evaded. Unfortunately, the correction of this evil situation cannot be accomplished by municipal, state or federal agencies because the providing of housing is not a governmental function in America.

This deplorable condition will continue until the business of producing proper housing is made to be a profitable enterprise for private capital investment. Altruistic or humanistic desires and intentions have no effect—the production of decent housing must be made to pay. That is the problem which confronts us.

The unnecessarily high cost of building construction is burdensome to persons included in the high-income brackets and it is prohibitive to home ownership or occupancy to those who are included in the low-income brackets. There are two cures: a great, though improbable, increase in low-bracket incomes sufficient to offset the high cost of construction, or a radical reduction in the present cost of construction. The accomplishment of a radical reduction in building construction cost is now engaging the serious attention of many individuals and several manufacturing corporations. The certainty of success is predicated upon manufacturing experiences which have demonstrated that mass-production, machine-made products have been improved greatly in quality and reduced materially in cost.

What, then, will constitute the mass-production, machine-made, low-cost building? Obviously, it must be substantial, durable, weather-proof, insulated, fire-resistive and of attractive appearance. To break down the problem: the cost of building construction is resolved into two elements, materials and labor; labor is required for both the production and installation of materials. The existing materials, the inorganic metal and mineral, and the organic substances, are adaptable to all needs, but it may be necessary to produce them in new forms and combinations in order to reduce their cost as raw materials and the cost of labor involved.

One or all of the characteristics of size, shape and weight of most existing materials are such that their production and installation in buildings require an excessive amount of labor. The kind and disposition of materials used in the structure must be determined before

the detailed method of their production is considered.

Building materials occupy space and when properly combined they constitute a structure. It is more economical to use large sized building units of correctly proportioned size, shape and weight because they occupy greater space than the small sized units now in use and their installation is made with a corresponding reduction in labor cost. A building, above the foundations, consists of exterior walls, floors, partitions, ceilings and roofs, and large sized units can be made that are suitable for these parts. The heating, plumbing and lighting equipment, doors, windows and other items are accessories to the structure.

STRUCTURAL stability is obtained either by making the exterior walls, floors and roofs of sufficient strength to resist all of the stresses due to weight and wind pressures, or by using a skeleton frame that supports the total weight of the structure and contents and resists the wind pressures. There are several advantages to be derived from using skeleton frame construction: The wall, floor, roof and other structural units will have much smaller stresses to resist and can be larger and lighter; the frame can be designed so that every part is utilized to the best advantage and for its sole intended purpose, thus eliminating waste. For fire-resistive, cyclone and earthquake-proof construction a steel structural frame is desirable because of its comparatively light weight and small dimensions per unit of strength ease of fabrication and quickness of erection regardless of temperature conditions.

The exterior wall units of the mass-production, shop-fabricated building must have sufficient strength to resist safely the wind pressures and other stresses incident to a non load-bearing wall; they must be resistant to the destructive action of the elements, durable, adequately insulated to prevent temperature and sound transmission and have an inner surface suitable for painting, wall paper or other decorations.

These units can be from 3'0" to 4'0" wide and full story height, securely attached to the structural frame by bolts or other mechanical devices and the joints made weather-proof. The unit consists of three parts: exterior finish, insulating medium and interior finish. Double units can be used if heating and plumbing pipes and conduits are to be concealed. In low-cost houses, the conduits can be imbedded in the insulating medium and the steam pipes left exposed to serve as radiating surface. Window and door frames can be incorporated in the unit when fabricated.

The majority of persons, perhaps everybody, have



CHICAGO ARCHITECTURAL PHOTOGRAPHING CO.

Prefabricated steel units being attached to the steel framework of walls and roof of the dome of the Travel and Transport Building at the Chicago World's Fair

preconceived notions about the appearance of buildings, especially dwellings, and any pronounced change in appearance is certain to arouse what is termed "sales resistance." It is an indisputable fact that changes in architectural styles in dwellings are less easily accomplished than in other buildings, because the house is regarded as a more or less permanent investment while manufacturers and exploiters of other things have preached the doctrine of quick obsolescence and the necessity for the new. The certainty of developing a popular building of this type lies in the diversity of possible designs and materials.

Color and texture, with weatherproofness, are the determining factors in public acceptance and are the only safe bases for selection. For the outer finish we have the inorganic metals and minerals such as rustless or enameled sheet steel, oxidized or lead-coated sheet copper, cast or rolled aluminum; or cement, stucco, slabs of marble, slate or stone, burned clay; and the organic materials such as wood, pressed wall boards protected by paint, laminated Bakelite, Bakelite resinol in colors, and other materials. This facing must be attached to a material having the requisite strength and insulating properties such as that of cork board or the numerous insulating materials now manufactured; or aerated or solid gypsum, aerocrete, porous burned clay

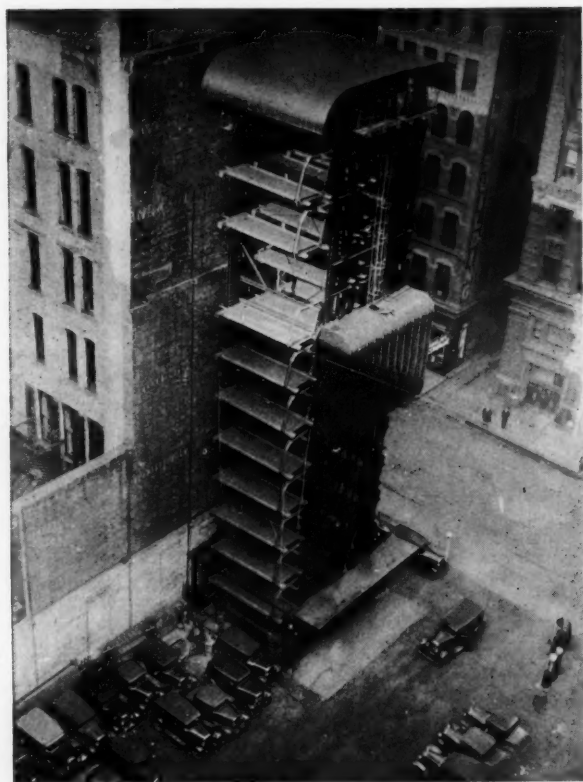
or other suitable inorganic material. The inner surface of the unit can be such that it may be painted, calso-mined, papered or without plastering.

Interior partition units can extend from floor to ceiling, be readily removable for reerection as desired to change the room arrangement; be non load-bearing, contain door frames where needed, insulated for sound rather than temperature transmission and have surfaces suitable for decoration without plastering.

THERE are numerous types of floor construction, mostly of a type that are built in place, a method that requires either some form of centering or time for attaining strength, methods that delay completion and require great labor costs. A floor unit *can* be so manufactured that it will have sufficient strength, be light in weight, have sound insulating quality and an under-surface finished for decorating, and be supported on top of or between and encasing steel floor beams. The upper surface can be finished as desired—wood, cork, rubber tile, etc. The ceiling and roof units can be fabricated in a similar manner, each being designated for its particular purposes.

The erection of the structural frame, and installation of the wall, floor, partition and roof units can be completed within a few days; the (Continued on page 90)

WHAT ARCHITECTS



WESTINGHOUSE
The first installation of a vertical parking machine has been made in Chicago, Ill.

IT is not unlikely that in America group practice among architects of the first water on huge projects may become more common as time progresses," according to G. Evans Mitchell, A. I. A., who states that "it has occurred on several civic developments already, notably those of St. Louis and Chicago, and at the present time is being employed on a large scale on Rockefeller City in New York. Such procedure will necessitate a slightly different sales psychology, for there will be more minds to synchronize, more tastes to humor, more questions to answer and more time lost in attaining results from a material man's standpoint."

A NEW type of residential building is predicted by Electus D. Litchfield, A. I. A. Instead of fine residential properties being cut up into small lots or built up with low apartment houses, he urges that tall apartments be erected but that they only be permitted to occupy a small part of the ground. Thus the same number of people would be housed but the natural beauty of the country would be retained.

THE Cincinnati Chapter, A. I. A., is cooperating with the Hamilton County League of Building Associations to raise the standard of domestic architecture. The League is establishing a supervision of construction service. Design criticism will be part of this service. This criticism will be made by an advisory committee

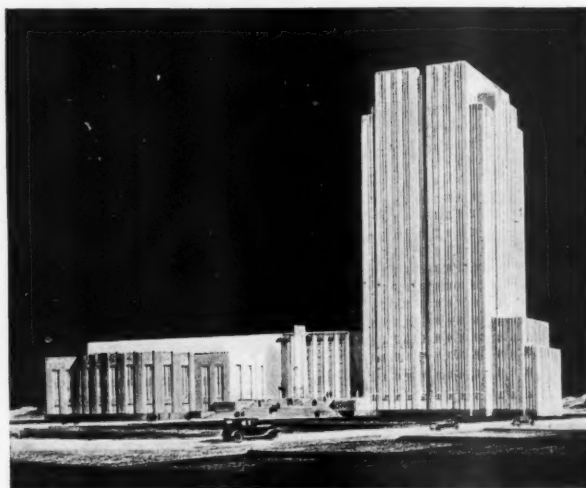
Group Practice Among Architects

Cleveland Architects Cooperate
With Building and Loan on Design

New Type Residential Building Predicted

appointed by the Chapter. The duties of this committee will be to suggest changes in the plan or design which will improve the character of the structure. It is expected that better built and better designed structures will be erected with resulting better financial risks. Supervision of construction by building and loan associations has been tried and proven successful in Shreveport, La., New York City and Oklahoma City. Associations in New Jersey are organizing to provide a similar service.

THE real difficulty in bringing small building work to architects is the problem of educating the public to better taste in designs and to an appreciation of the better values of buildings planned by architects, according



ACME
Design for the State Capitol Building to be erected in Bismark, North Dakota. Designed by Joseph Bell de Remer and W. F. Kurke; Holabird and Root, associate architects

to the Small Buildings Committee of the State Association of California Architects.

THE Sixty-fifth annual convention of the American Institute of Architects was held April 27-29 at the Mayflower Hotel in Washington. Among the subjects scheduled under discussion were Institute endorsement of the Architects Small House Service Bureau, federal employment of private architects and unification of the

ARE TALKING ABOUT

New Way to Distribute School Work

Why More Small Houses Are
Not Designed by Architects

Government and Private Architects



New two-tone effect in stucco. Surface is finished with two coats of portland cement paint, the base coat being bronze rust and the finish coat the color of creamed coffee. Only the high points of the texture received the second coat. Office of E. J. Mehren, president, Portland Cement Association



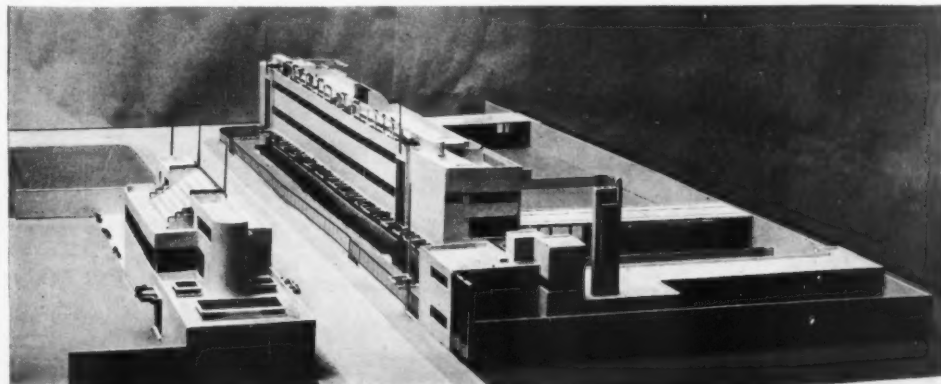
WURTS

A light is placed underneath the table in this coupon room so that dropped bonds or other papers may be easily noticed. Central Hanover Bank and Trust Company, New York City. Cross and Cross, architects. This is one of the newer developments which is resulting in more useful buildings

profession. One session was devoted to "What can an architect do in time of depression?" At another session the national housing problem from the economic standpoint was discussed.

IN an address before the Western Society of Engineers L. A. Hawkins of the General Electric Research Laboratory said, "Prophecy is dangerous, but the way it

looks to us in the laboratory is this: it is true that in the incandescent lamp we have probably reached the limit, approximate limit, so far as efficiency goes. Edison said the same thing thirty-one years ago, and events promptly proved him wrong, and events may prove wrong the statement I have just made. But we have today a firmer basis for that statement than any one could have had thirty-one years ago." (Continued on page 122)



BORNEY

A new solution for an educational building in a suburb of Paris. Includes a gymnasium, cinema room, showers, and radio installation in every classroom. Designed by Andre Lurcat

Sound Will Be Controlled

By DAYTON C. MILLER

Case School of Applied Science
President Acoustical Society of America

THE science of sound control is of such completeness that, using materials now available, the architect can secure any desired acoustic conditions and these can be specified with certainty in advance of construction. Advantage should be taken of the photographic method of studying sound propagation in small models of the proposed designs. In many instances, it will be possible so to adjust dimensions, shapes, materials and furnishings that perfect acoustic conditions will result without the application of special acoustic treatment. Adequate study of these problems in the very beginning of plans for a building will usually secure complete acoustic control with little or no extra cost.

Such study is done by means of simple apparatus as shown in the illustration at the top of the facing page. At the extreme left of this illustration is the light source which, shining through a plaster model of a section or plan of the auditorium to be studied, casts a shadow on a photographic plate placed at the extreme right. The tubes in the plaster model furnish a sound spark gap to make sound and start the wave. Felt is placed on the bottom of the model to simulate the audience. This apparatus makes it possible to study reflections, echoes and reverberations by means of the "sound pulse."

Heretofore, architectural acoustics has been concerned mostly with large churches, concert halls, and public auditoriums, and sometimes theatres. The necessity for sound control in motion-picture sound-recording studios, and in theatres where sound pictures are exhibited, needs no argument; it is unfortunate that much work of this kind has been done hurriedly and in an unskillful manner. The acoustic treatment of broadcasting studios is of the utmost importance and must be given more thorough scientific consideration than it has yet received.

Rooms and booths in music stores where instruments such as pianos are displayed must be carefully planned; often a high grade instrument is demonstrated under acoustic conditions that make it sound "cheap." Likewise music rooms in private residences should be designed and furnished according to the principles which will give good musical effects. Actual instances are known where a first class piano has been refused by its prospective purchaser when heard in his home, the cause being that his music room acoustically "killed" the good tone-quality of the instrument. The current adoption of rigid structural materials for monster buildings, with fire-proof and sanitary qualities, has made it necessary to consider the acoustic properties of every room in which human beings live and work.

It has been shown by actual tests that the acoustic

treatment of large offices increases the efficiency of some departments as much as 45% and in the least favorable cases the increase in work done is thirty per cent. Business men are only beginning to appreciate these facts; a greatly increased application of acoustic methods may be expected in this direction.

It is equally certain that the acoustic consideration of many factories as regards the prevention of noise at machines and the absorption of noise and its insulation would add greatly to efficiency and would result in considerable cost reduction.

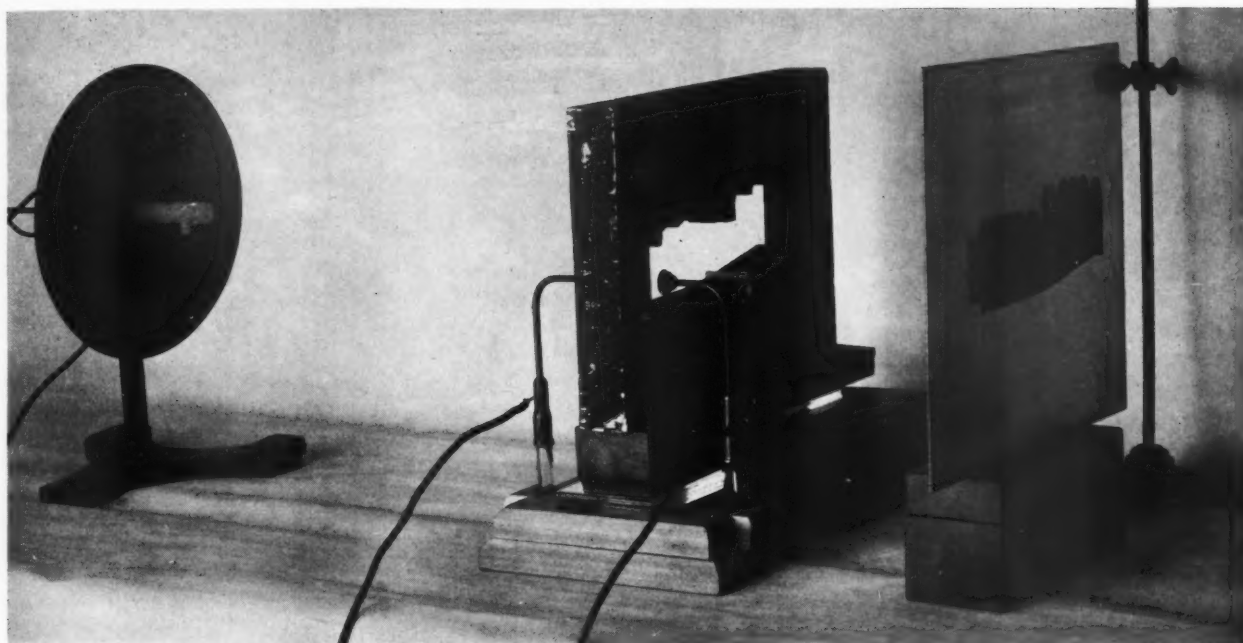
The time has come when the floors and walls of hotels and apartment houses should be really sound-proof and the same is true of the partitions between so-called private offices. The architect and the acoustical engineer must provide such construction as will secure privacy.

A CLOSELY related subject for immediate consideration is the prevention of street noises; such noise as cannot be prevented must be taken into account in the acoustic specifications for rooms into which such noise may come. It is possible to reduce the annoyance from such sources to a minimum.

The specification of the acoustic qualities of a room by reference to the "optimum time" of reverberation, while based upon fundamental physical and physiological effects, is more or less a matter of individual opinion. The criteria differ according to the uses of the room. The public, being accustomed to listen in excessively reverberant rooms, has accepted as satisfactory less reverberant rooms which may still be too reverberant. Having experienced increased pleasure and comfort in less reverberant rooms, there is a desire for further acoustic relief. It is probable that there will be a "revision downward" in all optimum times, especially for concert halls. The room which is best suited for speech is also best for music; such a room does reveal poor musical technique, but with perfect performance the music is certainly most effective in the less reverberant room.

For centuries the ritualistic form of religious service has predominated and this was more effective in the old reverberant cathedral than it would have been in a room which conformed to our new acoustic criteria. The general public was not accustomed to the philosophic consideration of questions of religion or politics. Theatres used for dramatic performances largely secured the necessary acoustic properties "automatically" because of their conventional design and furnishings. Concert halls did not require the critical adjustments of acoustics that are now desired. The comparatively few

In Every Room



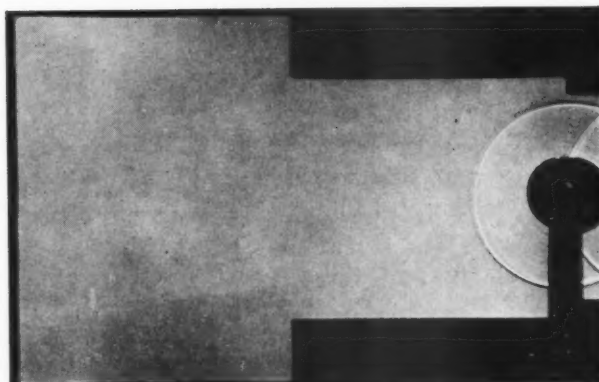
public speakers were gifted orators with adequate elocutionary training.

Today, as never before, people gather in large numbers to listen to "connected discourse" on all kinds of subjects with which we may be quite unfamiliar and, at the same time, most of the speakers have voices quite inadequate to the public platform and are wholly untrained. Thus the demands for ideal hearing conditions are enormously increased.

Radio broadcasting will have a great influence upon the acoustics of auditoriums. People are becoming accustomed to listening to speeches in their own homes, where they are not greatly influenced by extravagant oratorical flights. Individuals in great numbers are being encouraged to make speeches and are being trained before the microphone, thus the old style of elocution suitable for large rooms is being displaced. Even our few great orators are now speaking everywhere before the microphone with its amplifiers in the auditorium. This not only renders the old oratory unnecessary, but it is positively unsuitable. This means that the acoustical engineer must use a design essentially different from that heretofore required.

It is predicted that the speaker of the future, including the pulpit orator, will use a more logical, intimate personal tone of voice as though talking to a small group of friends close at hand; this voice, of moderate strength but of excellent tone-quality, will be amplified and reproduced and will be so directed that it will be easily audible throughout even the largest auditorium *provided* that the acoustical design is adapted to this amplified voice. This will, in general, require *more* and not less acoustic treatment.

Heretofore the acoustical engineer has been mostly concerned with the absorption (Continued on page 116)



An apparatus for the study of acoustics is shown at the top of the page. The middle illustration is a floor plan showing the main and reflected wave on the way to the audience. At bottom is a section showing the main wave and reflections developing reverberation

THE READERS Have a Word to Say

• MORE LATERAL STRENGTH REQUIRED IN REINFORCED CONCRETE

Editor, AMERICAN ARCHITECT:

A READING of Mr. Woodward's article in the January issue of the AMERICAN ARCHITECT brings to mind another little matter of which I have written in the following paragraphs.

Several recent occurrences in New England have brought out the fact that all of the building codes so far examined, while full of detail as to the design of reinforced concrete members for vertical loading, are yet silent on the provision to be made for lateral stresses.

In fact, as will be shown presently, the very provisions made in the codes for vertical loading permit designing which results in rather important lateral stresses, though no means for resisting those lateral stresses are required.

As is well known, the usual requirement for calculating the bending moment in reinforced concrete members is that the following formulae shall be used, uniform loading assumed in each instance:

- | | |
|--|---------------------|
| 1. Simply supported at both ends | $\frac{WL}{8} = M$ |
| 2. Simply supported at one end, | |
| restrained at other end | $\frac{WL}{10} = M$ |
| 3. Restrained at both ends, | |
| or continuously supported | $\frac{WL}{12} = M$ |

In simple language, the reason for allowing the larger divisor, with consequent smaller moment, is the assumption that, either by restraining the ends or by continuous construction, the upper fibers of the member are made to resist tensile stresses at the support and thus to aid in reducing deflection at the center of the span.

The assumption is absolutely correct, so long as the anchorage into an adjoining span or into the support is strong enough to resist the pulling out tendency created by the downward deflection at the center of the span. When the anchorage does not possess this strength, regardless of the formula used in the design, the deflection will take place just as though the member were simply supported at the end having the weak anchorage.

This was strikingly brought out in one recent building, where we were called in after the reinforced concrete construction was all in place and it was noticed that the spandrels had begun to bow inward slightly.

There was no question that the work had been installed in accordance with the structural drawings, which had been prepared by an engineer of considerable ex-

perience in reinforced concrete design and, furthermore, the design when checked in accordance with any building code which we have been able to find was more than adequate.

Briefly described, the construction was as follows:

The spandrel was 8 inches wide by 48 inches deep, with a span of 21 feet 8 inches and its ends rested on brick walls.

Framing into it was a ribbed concrete roof construction consisting of a 2 inch top slab with 8 x 6 ribs or joists.

Calculation of the negative moments, in reality the pull of the upper fibres to get free from their anchorage in the spandrel, showed their total to be 81,000 inch lbs., while the spandrel was shown to have a horizontal resisting moment in its upper section of only 30,000 inch lbs.

Since the upper, or negative, bars of the joists were so well anchored into the spandrel that they could not pull out, the spandrel being laterally weak, deflected.

If this particular building were the only one in which such a deflection had occurred, it might not be worth mentioning, but there have been several instances which have come to my attention wherein the same thing has happened, both in flat slab construction and in ribbed slab construction.

The moral would seem to be this:

Building codes should require, and engineers should design so, that whenever reinforced concrete members framing into another member are designed as having their ends restrained, then the supporting member must be designed so that it possesses sufficient lateral strength, in the plane in which the other members are supported, to resist all of their negative bending moments without deflection. Sincerely yours.—Chas. F. Dingman, architectural engineer, Palmer, Mass.

• COOPERATION BRINGS PLENTY OF MONEY FOR MODERNIZING

Editor, AMERICAN ARCHITECT:

IT is a generally well known fact that today the building dollar will purchase all the way from about 20% to 50% more than it did some four or five years ago. This fact is substantiated by a survey of costs covering the United States.

It is also a known fact that there are not as many building dollars in circulation today as there were four or five years ago.

Today brings us in view of many disgruntled and disheartened architects, real estate brokers and builders, all of whom are trying to find building money for their various and sundry "prospective deals."

Many new enterprises have failed in their infancy, some even failing to develop at all. . . . Why? Because the public, who represent most of the money that is needed for new construction, are now holding

worthless bonds on many overfinanced projects that were built during our "boom period."

The public cannot be expected to plunge in deeper and buy more building bonds for more new projects until the tangled mass of difficulties has been ironed out properly, but the public will use good sound judgment and keep their present property holdings in first class repair.

We are facing an era of modernization of these present property holdings, and there is plenty of money available for this work, providing we incorporate sound financing, intelligent planning, and a good job of construction.

One can readily see the need of a much closer cooperation on the part of our architects, contractors and our real estate brokers, a cooperation that will not merely satisfy our own individual selfish end, but a cooperation that will keep in the minds of all that primarily we must remember the interests of the owner, and not even advise him to venture upon investing building dollars unless the return to him with fair profit is inevitable.

The writer believes that with this plan put into actual practice, we shall soon see the building dollars appearing on the horizon again, in sufficient quantities to enable our building industry to stand up on its legs again, and live normally without any great amount of new construction.—*R. K. Melville, formerly field superintendent with Holabird & Root, architects, and now a general contractor, Chicago.*

• HOW RUSSIAN ARCHITECTS WORK

ALBERT KAHN, who has done considerable work in Russia, was asked by the editor of *AMERICAN ARCHITECT* to tell what the difference is between practice in Russia and practice in the United States. His reply follows.

Editor, AMERICAN ARCHITECT:

I can hardly see how anyone could write about a "Russian architectural office as compared with the average office in the United States," since there is no "average" Russian architectural office. A number of Russian architects head groups and take charge of work. All is Government work and all are Government employees. There is no private practice.

While in Moscow, I visited one such Governmental group. Their principal work at the time was the design of the new Lenin Library there. There evidently was no system whatever. I was shown sketch plans and exteriors, as yet only partially developed. Nonetheless, I saw a few days later a very large reinforced concrete frame, six or seven stories high, fenced in and idle. Upon inquiry I learned that this was the structural frame for the new Lenin Library. Strangely enough, it had been built without developed architectural plans. Much of the distinctly Russian architectural work is carried on in just such an unsystematic manner.

Take the new Soviet Palace about to be erected. You know of the competition, of course. In the management of this operation no scheme such as we know of is being followed. I was called in on this project while in Moscow and learned that their plan was to invite and pay a number of men to submit studies for

this building in accordance with the set program. They expected to purchase others of the competitive designs submitted. Thereafter, however, the plan was to combine such parts of the various designs purchased into a composite and this they intended to do with their own staff—certainly a curious method—and it will be interesting to watch the results.

It is just because of the lack of proper organization in planning buildings that the Soviet Government is employing several foreign firms to prepare plans for various types of buildings, especially such as must be built promptly. Ernest May of Frankfurt is making several town lay-outs, also the plans for their buildings. Corbusier of France, I understand, is doing some work in Russia, as is Eric Mendelsohn of Berlin. Our firm, as you know, was chosen to design industrial buildings throughout Russia, with offices in Moscow, Leningrad and Kiev. We have twenty-four men (architects, structural and mechanical engineers) over there who not only direct the preparation of sketches and working drawings, but also teach the young Russians—men and women—our methods of preparing plans.

A comparison of Russian practice with American is, therefore, quite impossible. There is no Russian practice.—*Albert Kahn, F. A. I. A., Detroit, Mich.*

• OFFERS TO COOPERATE ON BUILDING SURVEY

Editor, AMERICAN ARCHITECT:

I APPRECIATE very much your editorial in the last *AMERICAN ARCHITECT* on "The Building Industry Needs to Know Where It's At."

I hope this suggestion will be taken seriously by some organizations in position to take some action along the lines you have indicated. If any such action is inaugurated, we will be very happy to place at the disposal of the movement the data which we may have on the church building field which may be pertinent. Incidentally, the heads of some of the larger church architectural bureaus have estimated that Protestant churches alone need to spend immediately \$500,000,000 on church buildings and that this expenditure would by no means put the churches on a par of efficiency with the school houses of the country.

More power to you, and may you speedily reach the heaven to which all good editors aspire, which is, I understand, to be taken seriously!—*Wayne G. Miller, director Department of Church Planning, Christian Herald, New York.*

• SPIRAL RAMPS FOR GARAGES

Editor, AMERICAN ARCHITECT:

ON page 46 of your February issue is an item, "Spiral Ramps for Garages." The principal features of this garage have been well known for some time and are covered by patents, we having built several of these garages.

One of these garages which we have built is located in Washington and the ramp is in the same section of the building, the lot lines of which are fifty feet with inside clearance of forty-seven feet. Practically all passenger automobiles can go up or down this ramp.—*Richard Irvin, architect and engineer, Pittsburgh, Pa.*

• PREVENTING BUILDING ORGIES

Editor, AMERICAN ARCHITECT:

IF data of a type that you suggest in your able editorial in April AMERICAN ARCHITECT had been available, it would have gone a long way toward preventing the recent unwarranted building orgy. Over-extended building owners and investors in real estate securities are now paying the penalty for their unbridled optimism. Under these circumstances, the question naturally arises, "What can be done in future to prevent a repetition of present abnormal conditions in the building industry?" You have given your readers an answer in your editorial where you say "with reliable figures showing space available in various classes and types of existing buildings, unsatisfied demands for space, buildings in course of construction, buildings demolished and buildings needing modernizing, new buildings could be erected safely in any class where a demand was shown to exist."

You again hit the nail on the head when you say "a building industry inventory is a matter of importance to individual localities rather than of national moment. For this reason the necessary figures can be developed and used by any locality without waiting for a national movement to be started." Are you aware that a national movement along these lines actually has been started? The Realty Finance Committee of the National Conference on Construction, of which I happen to be a member, already has appointed a subcommittee to consider the wisdom of securing data of the type referred to in your editorial. In my opinion, however, the securing of these data is a task which is impossible of accomplishment on the part of a sub-committee rendering only voluntary services. Furthermore, such a task probably is unnecessary inasmuch as miscellaneous statistics on most of the required factors have already been compiled by local organizations. For these and other reasons, the co-ordination of miscellaneous data for specific localities could be undertaken by committees of local architects who, as you suggest, might well start a movement of this kind without waiting for results from a national organization.

A 250-page survey of home financing in the City of Cleveland, prepared by Robinson Newcomb for the Division of Building and Housing of the Bureau of Standards of the Department of Commerce, might well serve as a guide for any group in coordinating statistical information for ready reference after it has been acquired piecemeal.—Charles H. Lench, *Architect*, 110 West 34th Street, New York.

• DEPRESSION CAUSED BY PRICES THAT ARE TOO HIGH

Editor, AMERICAN ARCHITECT:

REFERRING to your editorial, "The Building Industry Needs to Know Where It Is At," published in the April issue of the AMERICAN ARCHITECT.

It would be a gigantic task to compile data of the floor spaces of houses, factories, garages, etc., that are available for use at any period of time. Furthermore, the value of such data is doubtful, especially during a period of uneconomic conditions.

The present depression is not caused by an over-production of houses or factories, but because the cost of them is beyond reason. The prices charged are out

of proportion to the value received. Stabilize the cost, and you will stabilize the demand for construction.

The only way that the cost of construction can be stabilized is by having the prices based upon an accurate construction survey and having this data published freely for the use of the construction buyer and seller. After costs have been stabilized, surveys of the demand could be prepared. This would be useful in forecasting the market under economic conditions. Who are more suited to carry on the work of forecasting costs than construction surveyors?

The automobile industry does not complain about the market. It produces improved cars at more economical prices each year, and the public buys cars instead of houses greatly because automobile production costs are based on accurate construction surveys and designs.

It seems to us that it is about time that architects awoke to the value of having construction surveys prepared for their own sakes even if they "don't give a hang" about their clients.

We hope that you will be kind enough to publish this letter.—G. Szmak, *Managing Engineer, Construction Survey Co.*, 101 Park Ave., N. Y.

• CREDIT ON TULSA CHURCH

A NUMBER of letters have been received from subscribers to AMERICAN ARCHITECT concerning the name of the architect of the church at Tulsa illustrated on page 25 of the March issue. The design of the church was attributed to Miss Adah Robinson. The credit line on this building should read, Rush, Endacott & Rush, architects, designed by Bruce Goff.

The editors of AMERICAN ARCHITECT regret the error in credit and are glad to take this opportunity of printing a correction.

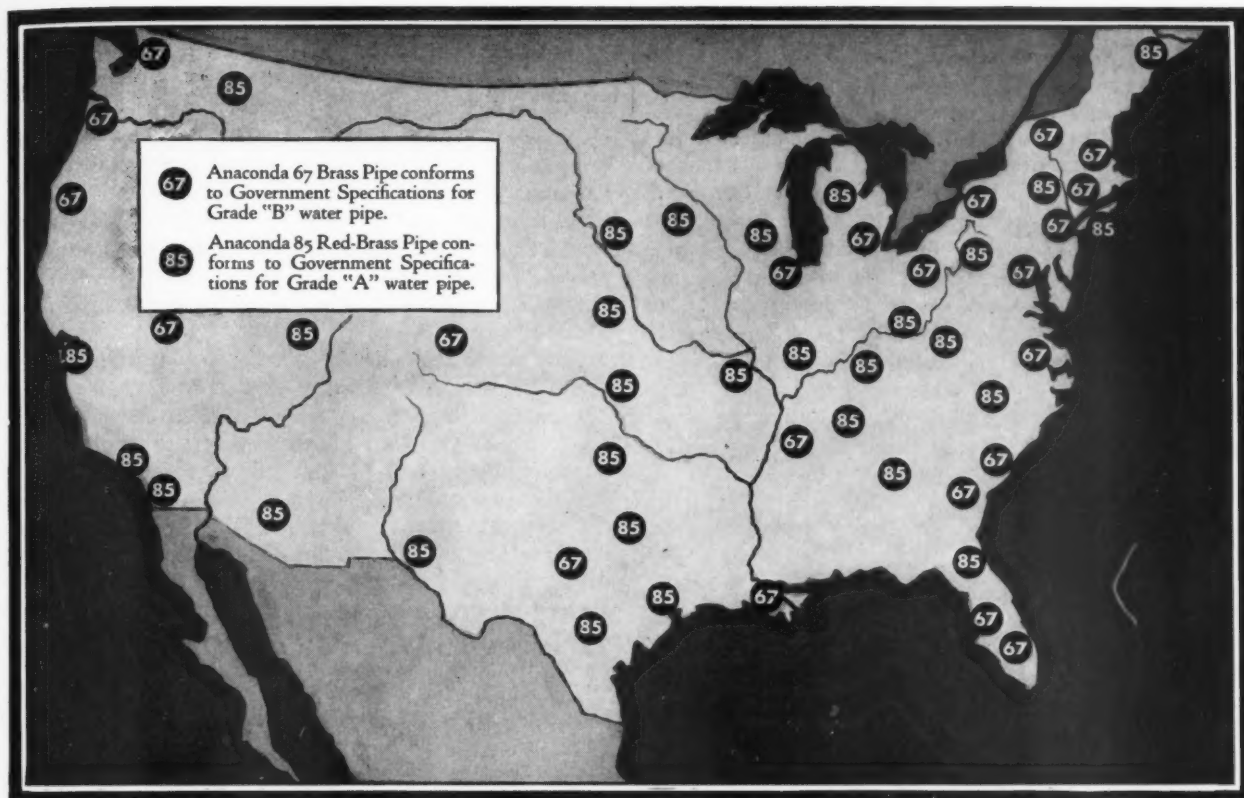
Public Interest Must Be Awakened

SPEAKING of Public Taste, The Architects' Journal of London says, "How can we best get him (the man in the street) to help us; and how learn to sift out the wheat from the chaff?"

"Many will say at once that our course must be to educate the public; but, remembering how easily the artifice of education can be directed counter to the healthy instinct, we need think twice, and then again, before we take the temper out of such a homely but serviceable instrument.

"We must be careful to avoid an attempt to dictate to the public what we consider they ought to like and what dislike. The education, if any, must be directed towards stripping the trimmings from the essentials, and leaving the fundamental truths of building bare for all to see. But the chief effort must be made to awaken interest and break up that fatal apathy which threatens to destroy all professions of taste in all but the cultured, in whom natural taste struggles against convention.

"We want the man in the street to fight ugliness with indignation as well as ridicule. We want him to enjoy beauty rather than patronize it. And we can do a very great deal towards this by sheer propaganda—a public insistence upon the social importance of architecture and building generally (if there is any difference at all between the two)."



WATER DATA . . . to help you select the most economical pipe

OUR TECHNICAL DEPARTMENT has analyzed the water supplies of many American cities, and is constantly engaged in studying reports of water conditions in all parts of the country. This data enables the Department to recommend the alloy of Anaconda Brass Pipe best suited to meet local water conditions in more than 300 communities. In addition, the Department is prepared to cooperate with architects, water works engineers and plumbing contractors in determining the characters of water supplies with which we are not familiar.

When specifying pipe it is well to consider that water only normally corrosive today, may, through treatment to insure

purity or softness, become highly corrosive. Another consideration of importance is that urban growth often necessitates the tapping of new water supplies. Even within a radius of 25 miles, water supplies may differ greatly in their corrosive effect on pipe.

Anaconda 67 Brass Pipe, which contains 67% of Copper, is recommended for use under normally corrosive conditions. For highly corrosive water, Anaconda 85 Red-Brass Pipe, containing 85% of Copper, is offered as the best corrosion-resisting pipe commercially obtainable at moderate cost.



THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Offices and Agencies in Principal Cities

ANACONDA BRASS PIPE

America Tomorrow by Frank Lloyd Wright

(Continued from page 17)

for everyone according to his need, his nature, or his love of life. Trees, streams, a mountain or a range of hills, may become shrines, beauty to be conserved as something beyond advertising.

Well—no architect may say how far man's liberation may go, by the proper use of the mechanical means which have been developed during the last century. His imagination is needed more than ever to harness modern machines to higher ideals in order to get out of them what they have to give to expanded human life here on earth.

BUT where architecture is concerned, machines will remain machines only. The beauty that every well-designed, well-balanced machine has, has given, afresh, the sensible basis for a more sentient life. But no one tries to make machines look like something else. So why try to make buildings for sentient life look like machines?

A new idea of luxury and beauty has arrived in this twentieth century quite naturally. Power applied to purpose is the clear modern basis of such aesthetic expression as is either useful and operative or seen as luxury. But luxury consists in *the appropriate use and the limitation of machinery by way of supreme imagination in the new patterns of our new life*. Simplicity is organic and significant. Or there is no great life and so no great architecture.

It has been discovered that any single mechanical unit may be infinitely repeated in construction, and yet afford infinite variety along lines conceived by imaginations loving beauty. It has been discovered that standardization, however severe it may be, is no bar whatever to greater freedom in self-expression than was ever known before if placed in the hands of creative architects.

Why shouldn't mankind be allowed this freedom? Why should vested interests hang on to him, to milk him as cattle are herded and lined up in stanchions to be milked? The skyscraper as the typical expression of the city is the human stable, stalls filled with the herd, all to be milked by the system that keeps the animals docile by such fodder as it puts into the manger and such warmth as the crowd instills into the crowd.

Many in the herd of human beings have sunk so low as to seem to like it. But the bovines, too, stand waiting at the gate.

The bovines, rich in instinct, lack this divine quality . . . Imagination. Imagination is our divinity. It alone is what the human herd needs to distinguish and save it from the fate of all other herds, human or animal.

In the nature of this traffic problem lies the liberation, and soon, of such human enslavement as the dying centralization, called the city, stands to exploit or else in its nature lies the further degradation of humanity. In this collision of mechanical factors a new element of human freedom is seen caught and is held in confusion for a moment against its new and greater interest—to serve the will and the selfish act of the specious rent-maker while the confusion lasts.

Rent! The citizen's life is a form of rent. More rent for land, more rent for money. And now rent for the

society-owned machine—all gratuitous forms of fortune that built the city keeping mankind busy there as he goes patiently to and fro in this rent business on his own time, to make more opportunities for him to pay more rent to build more gratuitous fortunes for gratuitous public "benefactors."

Is the man himself now for rent? His life a form of rent?

Is it any wonder the "system" gets out of gear once every so often and stalls until he can make up his mind? The landlord himself is suspicious of his own form of fortune. He fears it will not be so easy to get more as it was to get what he has. And he lays it, all but the small change, on the table to demand gold and hides the gold away. He is the victim of the traffic problem in another form. He is on the opposite side of the same shield. And not so much better off. The same collision between human interests and financial interests affects and ruins him. Why not, landlord, go with the tenant to the country? But not as a landlord, or it will begin all over again.

The struggle is on.

The traffic problem will be solved as architecture, but not as verticality. It will be solved by the horizontal line, indefinitely extended, the flat-plane expanded into the broadacre region as the Broadacre City. Twentieth century life not only seems likely to dissolve the city into the country—there is no other city possible to the Future if the *machine age* has any future.

Buildings Must Have Both Sense and Sentiment

IT is a mere truism to say that architecture must conform to the life of the people who make it. Our buildings are the concrete expression of our civilization. If we believe that civilization means merely a state of affairs in which the material wants of life are satisfied, then sense and not sentiment is all that is needed in our buildings, and architecture becomes a thing of the past. But if we believe that civilization means a state of affairs in which spiritual values have their say, then sense must be joined to sentiment, so that our buildings will be in tune with the higher spiritual values of life.—Hon. H. A. Pakington, A. R. I. B. A.

COMPETITION NEWS

DESIGNS for the Chrysler Corporation's building and exhibit at the Century of Progress International Exposition have been submitted in a competition among a selected list of architects. Kenneth Franzheim, A.I.A., is architectural advisor.

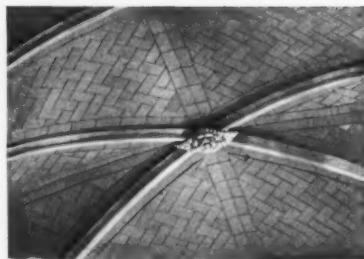
A competition to prove that filling stations may be made beautiful is being conducted among the unemployed architects and draftsmen of New York City by the Architects Emergency Committee of the Region of New York.

For the Buildings of tomorrow

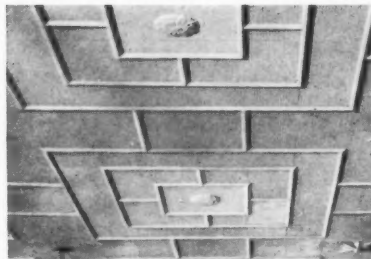
Acousti-Celotex
provides
Design, Decoration
and *Quiet*



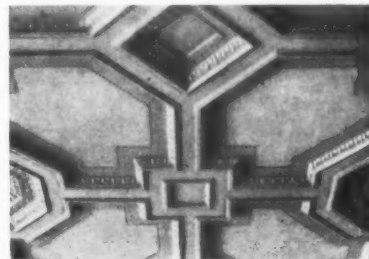
Beauty as well as sound absorption in Acousti-Celotex. Security-First National Bank of Los Angeles, San Pedro Branch, San Pedro, Cal. Architect, Alfred F. Priest.



Architectural design achieved in Acousti-Celotex. Church of Our Lady of Sorrows, South Orange, N. J. Architects, Maginnis & Walsh, Boston.



Acousti-Celotex brings beauty as well as quiet. Pacific Telephone & Telegraph Co., Salem, Ore. Architects, A. E. Doyle & Associates.



Formal design in Acousti-Celotex. Second Church of Christ Scientist, Hartford, Conn. Architect, Isaac A. Allen, Jr., Inc.

In the architectural and building sense, it is difficult to conceive a single material that serves so well the artistic and the practical as Acousti-Celotex sound absorbing tiles.

The place for Acousti-Celotex is on the ceiling, where it reduces reverberation and the "echo" of noise, and provides quiet.

It belongs in offices, in large business work rooms, in banking rooms, in theatres and auditoriums, in churches and schools and hospitals—wherever quiet is a desirable quality and wherever there is an acoustical problem.

Instead of placing restriction upon creative ability in design and decoration, it opens new avenues for ingenuity and for artistic effects.

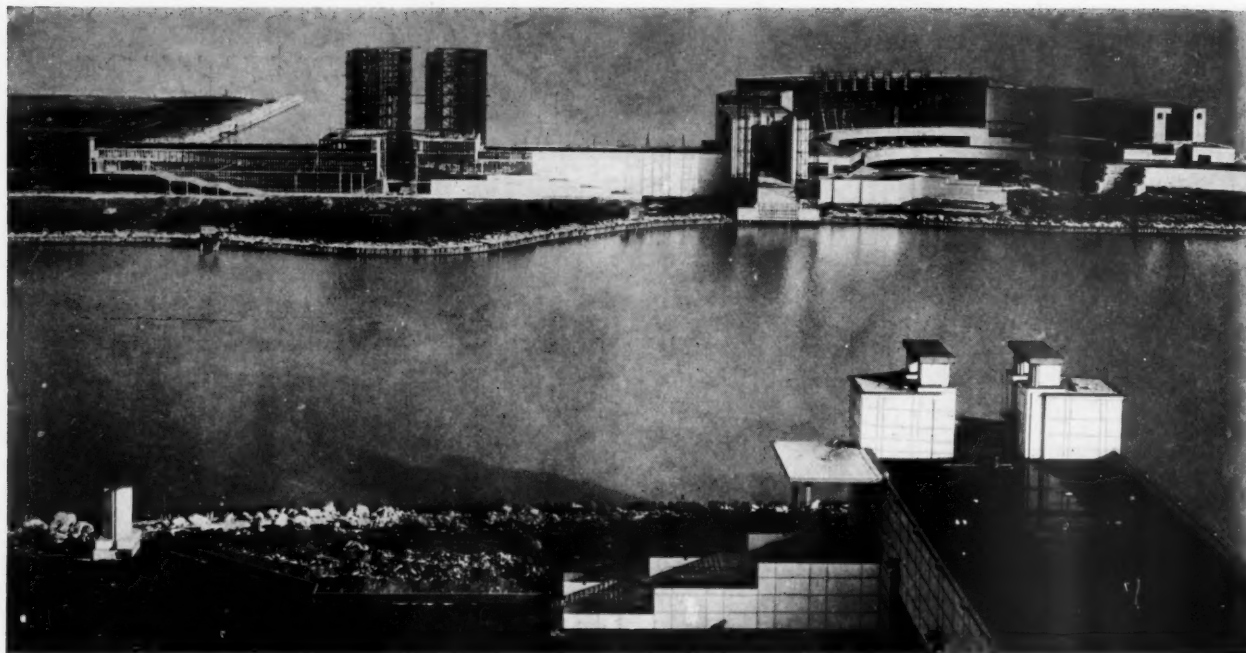
Painting and repainting fail to impair the high sound absorbing value or the permanence of Acousti-Celotex.

Acousti-Celotex is sold and installed by Acousti-Celotex contracting engineers. The Celotex Company, 919 North Michigan Avenue, Chicago, Illinois. Sales distributors throughout the world. In Canada: Alexander Murray & Co., Ltd., Montreal.

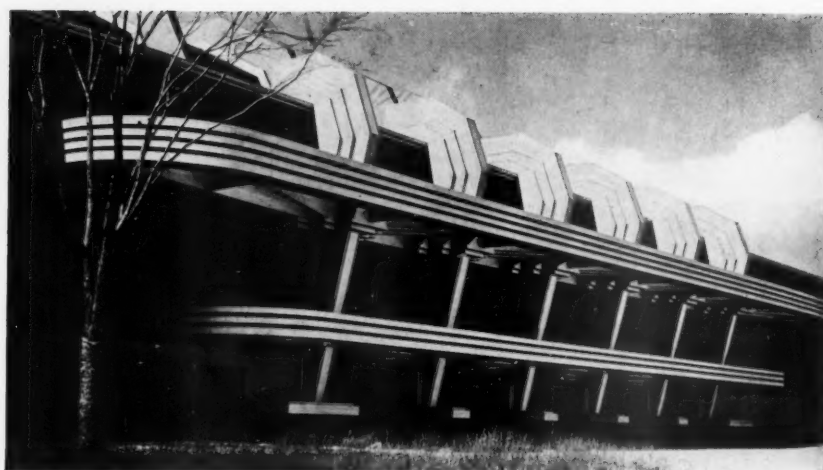
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ACOUSTI-CELOTEX
TRADE MARK REGISTERED U.S. PATENT OFFICE

Acoustical Products for Every Purpose . . . Acousti-Celotex Cane Fibre Tile . . . Acousti-Celotex Mineral Fibre Tile . . . Kalite Sound Absorbing Plaster . . . Write for full information

The catalog of any advertiser will be sent on request. Use post card on page 101.



Above—Electrical Group, for which Raymond Hood is the architect, as seen from the Hall of Science, Paul Cret, architect. At left—Steamship Hall, part of the Travel and Transport Building, which will house exhibits of steamship and marine transportation. J. A. Holabird, H. Burnham, and E. H. Bennett, architects



Expositions Have Always Influenced Architecture

(Continued from page 28)

whether the rigidity in style of the buildings is practical for the modern purposes to which they are put. Through no fault of the sponsors of the classical style they have not had the same control over the ensemble and layout of cities as they have had over the architecture of individual buildings. Individual efforts have been very good in some cases. But balance and symmetry in ensemble and great vistas have not been present. In most instances the result has been an incongruous grouping of archaeological styles.

Today we have emerged from the classicism of the past generation and are developing a logical architecture, and we hope a beautiful one, the complete results of which are not yet apparent.

The architecture of A Century of Progress Exposition—Chicago's 1933 World's Fair is an expression of this trend to cast adrift from the past. It is following

no pattern or groove of former expositions, making no effort merely to reproduce the classic. It depends for its character and effectiveness on planes and surfaces—the results of architectural requirements. Rather than produce an exuberance of plaster, ornament and decoration, making a complete show or picture before the gates are open, the architects of the 1933 World's Fair have considered in their design the added pattern of large crowds of people moving against this background on varying levels as part of the decorative scheme.

There is a sincere effort toward simplicity in the design of this exposition, toward a healthy expression of naturalness, toward an honest functioning of the buildings. Innovations are not being made merely for the sake of change or novelty. There may be important consequences to the future in the simplicity and cleanness of line in the Fair buildings.

(Continued on page 80)

The
**MAGNIFICENT
National Newark
Building**

**The National Newark Building
Newark, New Jersey**

Architect: John H. & Wilson C. Ely, Newark, N. J. *Htg. & Vent. Engr.:* Meyer, Strong & Jones, Inc., New York City. *General Contractor:* Starrett Brothers & Eken, Inc., New York City. *Heating Contractor:* Baker, Smith & Co., New York City. *Plumbing Contractor:* Jaehnig & Peoples, Inc., Newark, N. J.

"Every commercial convenience and luxury that modern architecture can provide" is incorporated in the new National Newark Building. Fronting on three streets at the heart of Newark and rising to a height of thirty-four stories, the building assures to its tenants permanent advantages of sunlight and ventilation.

Every effort has been made to embody the best and the most practical in planning, in style, and in building construction and equipment, conforming with the ambition and pride of the growing, progressive, and successful city that Newark is.

The makers of NATIONAL Pipe record with satisfaction the name of the National Newark Building to be added to the long list of distinguished buildings in which, for the major uses of pipe, NATIONAL has been installed. Every such choice reconfirms NATIONAL as—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY, Pittsburgh, Pa.
Subsidiary of United  States Steel Corporation

NATIONAL PIPE

The architectural plans for the Fair are in the hands of Harvey Wiley Corbett, Paul Philippe Cret, Edward H. Bennett, John A. Holabird, Hubert Burnham, Raymond Hood, Arthur Brown, Jr., and Ralph T. Walker—men who are among those who have had the greatest influence on the architecture of America today.

The architecture must take into account its primary function—that of housing an exposition. It must consider the movement of great masses of people into, through and out of the grounds with comfort and safety. It must produce a compact, integral machine that will function in every part. It must provide an attractive setting for exhibits that will reflect the scientific and industrial progress of the past century.

Present day economics determines, to a large extent, the architecture. This exposition is the first in history that has not been built with the aid of government subsidies. The buildings must pay for themselves through the sale of exhibit space. The need for economy in building practice has permitted no opportunity for architectural effects in the traditional manner. It has placed the architects squarely in the position of making an honest effort with the materials at hand. Much of the material used is fabricated in shops, thereby reducing waste in material and labor on the job.

Practical reasons have dictated many innovations. For example, in general the exhibition buildings will be windowless. This is not merely a stunt or trick. Everybody familiar with exhibitions knows that sunlight for day-time illumination is a variable factor. By eliminating windows, artificial light may be used. Thus the architect and the exhibitor have constant control over the light regardless of the time or kind of day. Such an arrangement effects important economies in construction. Sash and window glass cost as much in a temporary exposition building as they cost in a permanent building. Walls can be erected much more economically in a temporary structure than in a permanent one.

The 1933 World's Fair gives the architects of this era an opportunity to test and develop new ideas in much the same way as the World's Fair of 1893 gave the architects of that day an opportunity to express the classical. Time alone will tell whether the influence of the present exposition will be as marked in the future as the one of '93 was in the generation following it. The 1933 World's Fair will represent in one form or another the aspirations of the generation that is building it. It may not be completely revolutionary to those who have followed the trend of architecture in recent years. But to most laymen, it will be new and different and revealing as an evidence of the fact that architecture is making a great effort to keep abreast of science.

NO prediction can be made as to the effects of this exposition on pure design of the future, that is, whether it will be all glass and steel; vertical or horizontal; or a combination of both. It is highly probable, however, that the exposition will have an important effect on the economics of commercial building in the future. With the rapid improvement of interior mechanical equipment such as ventilating, heating, air conditioning, interior communication and transportation, and with the rapid obsolescence of location, commercial buildings become outmoded within a comparatively few years. The foundation and structure are built for permanence, involving a large investment that rapidly depreciates. The structure of the 1933 World's Fair buildings offers a definite hope that a building practice will result that will produce commercial structures which will be designed to last no longer than their mechanical equipment and which will permit of economical demolition. By this means a marked saving in building cost would result which would bring the costs of production in the construction industry more in line with production costs in other industries.

How Can We Establish A Fair Fee?

(Continued from page 39)

they know what their services cost them will architects charge or obtain an adequate fee commensurate with the responsibility they assume, the ability required and the years of preparation necessary to serve their clients' interests.

WE are more vitally interested in present and future trends than past conditions, and while the subject of proper remuneration for architectural service is not a new problem, it is nevertheless receiving serious consideration and the matter is now being attacked as any common business subject should be, that is, it is being discussed in the light of experience and without fear or prejudice. On the one hand, the members of the architectural profession cannot, and I am confident will not, agree to a lower standard of service than they have been rendering. At the same time they realize that adequate service cannot be furnished on a basis of pay insufficient to include a margin of profit.

I am of the opinion that for some time to come the American Institute of Architects should continue to issue a schedule of charges based upon the percentage of cost system and that both architects and clients will find the rates designated in the recently revised document fair and reasonable to both parties. I believe the cost plus fee system now in use in many offices throughout the country has many advantages over the percentage of cost system which are not apparent until closely studied, and I think I see a slow but gradual drift to this method of charging for service. But let me repeat: no system of charges can ever be justified unless and until architects generally adopt a system of cost accounting in their offices. When this is done, one less reason for criticism of the business methods of architects' practice will exist, adequate remuneration will be demanded and paid, and experience and ability will receive their reward and the quibble over which system of charging for services is best will have been brought to a close.



ENTRANCE CORRIDORS OF WESTERN UNION BUILDING
New York City

VOORHEES, GELIN & WALKER
Architects

INDICATING THE VERSATILITY AND ADAPTATION OF GUASTAVINO
TIMBREL TILE OR ALL MASONRY CEILING VAULTS WITH
SOFFIT TILE TO MATCH THE SIDE WALLS

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ETERNIT GOTHIC SPECIFICATIONS

Full size shingles—12" wide x 16" high.

Random widths—5", 6" and 7".

Tapered with approximately $\frac{5}{16}$ " butts.

Applied with 7" exposure; spaced $\frac{1}{8}$ " apart.

171 shingles per square; approximate weight 525 lbs.

Use 6" wide shingles in Boston Hip method for finishing Hips and Ridges.

Ten colors as illustrated in panels below.



Colonial Gray



Slate Gray



Quarry Blue



Jade Green



Dark Green

ETERNIT GOTHIC~

A Beautiful New Asbestos Shingle

TEXTURED LIKE RUGGED ROCK

MELLOW COLORS • TAPERED CONSTRUCTION •
HEAVY BUTTS • DEEP SHADOWS • RANDOM WIDTHS
• AGE-ENDURING • FIRE-PROOF • MODERATELY PRICED

HERE'S good news for architects and developers! Eternit presents the GOTHIC—a tapered Asbestos Cement shingle that changes all existing ideas of roof beauty, individuality, durability and economy.

Gothic's rugged texture so rare in beauty, resembles natural rock, carved by years of exposure to the elements. Varying lights and shadows of the texture are enhanced by tapered construction and heavy butts.

Charming colors of lasting beauty are offered—soft and rich—like those found only in the most expensive roofs which time has mellowed. The possi-

bilities for blends to fit any color scheme are practically limitless.

Random widths are available and nail holes are punched through the rock-like slabs so that butts may be staggered if desired. Thus in every detail the Eternit GOTHIC lends itself to architectural requirements for producing roofs of age-old charm and individuality.

No expense has been spared to make the GOTHIC the type of shingle that will appeal to you. Samples are now ready for mailing—also the architect's descriptive folder. Write or telephone for both.

Eternit

ASBESTOS CEMENT SHINGLES

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Offices: BALTIMORE, MD., CHICAGO, ILL., ERIE, PA.

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Purple



Tile Red



Buff



Weathered Copper



Dark Brown



MODERNISTIC SERIES—PLATE 12

THE HOME of Stark Marble & Tile, Inc.,
Canton, Ohio — modern in construction, and
at the same time well adapted for the business

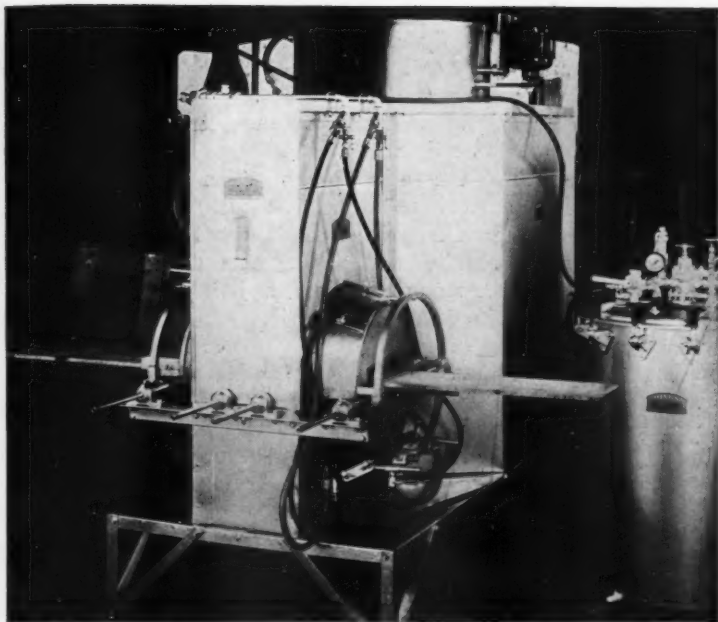
it represents. Unusual marble effects are secured through
the dark greens of Verde Antique, the reds of Oriental,
and the lighter variegated tones of Royal Antique. Marble
is combined with glass to provide the best of lighting
conditions. The building was designed by Firestone &
Christman of Canton.

VERMONT MARBLE COMPANY—PROCTOR, VERMONT

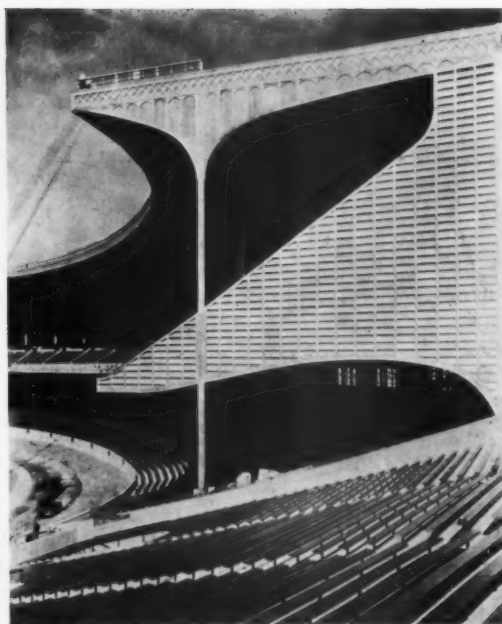
Branches in the larger cities

See Sweet's Catalog for Specifications and Other Data

VERMONT MARBLE

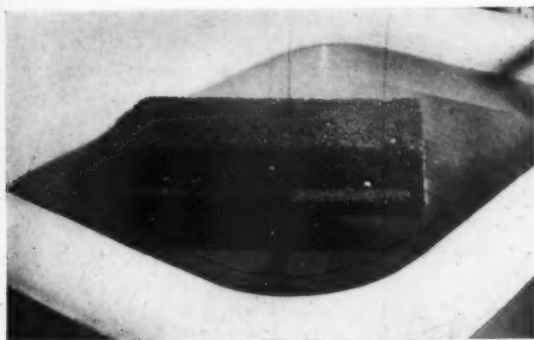


Now lumber is machined primed with aluminum paint at the mill. One of the many developments which are improving old materials and enabling them better to compete with the new



JOHNSTON & JOHNSTON

A new aluminum alloy, 4S, is intermediate between the common alloys and those heat treated. Cleveland Municipal Stadium



HALBRAN

Efforts are being made to reduce the weight of construction materials. This "floating brick" is one of the latest; it is from Burgess Laboratories Right: Synthetic materials such as Micarta offer new possibilities in wall surface treatments



Research Is Preparing New Wonders

(Continued from page 63)

as efficient in decreasing the rapidity of temperature changes and in providing the type of medium which reduces noise by the absorption rather than by the reflection of sound waves. These same boards, together with the newer types of cork insulation, the several fireproof materials, of gypsum, of diatomaceous earth, and of asbestos, all fit into this newer problem of control along with sound, heat and humidity. There is a great deal of research back of all these new products, some of which we now convey to place by air. Others are molded. Some appear to be applied as plaster, and yet others in sheet or board form.

The control of heat, humidity, light, and sound in the structure of tomorrow offers some of the greatest opportunities to architecture. Research continues to do

its part on air conditioning, and we know that there are now many installations by means of which man is prepared to control the weather, light, and sound within certain restricted areas. We shall not be satisfied until even the modest dwelling can afford these obvious advantages.

Important in this connection is the further development of acoustics, hindered in the past not only through lack of appreciation and inability to solve the problems, but because research had not then provided materials which the architect could use and still have in mind both permanency and beauty. These obstacles have been largely overcome, and it is to be devoutly hoped that in the structures of the future no one will have cause to remark that architects seem to be able

to provide everything except satisfactory acoustics and ventilation.

The control of light is far simpler than heretofore, and now that vacuum blocks of glass are to be available, it should be possible further to control the weather within a room and at the same time have maximum natural lighting. The molding of these vacuum blocks, which form a satisfactory insulating medium, makes possible such a configuration of the surface as either to provide transparency or translucency with privacy. Possible applications of such a building material are intriguing, whether we consider interior partitions or outside walls. The low cost per pound of glass worked from modern tank furnaces and with modern molding machinery would seem to promise attractive prices along with other advantages. Unquestionably we have still far to go before we make the most of what glass offers in construction.

ALUMINUM in recent years has offered a particularly active field for research and development. Notable has been the successful development of aluminum bronze powder which is particularly useful in priming lumber. A promising development has been that of 4 S alloy which has physical properties intermediate between the common alloys and heat-treated strong aluminum alloys, and with corrosion-resisting qualities somewhat similar to commercially pure aluminum. Among other developments in this field are those of coloring aluminum by plating, dyeing and oxidizing, satisfactory technique for gas and electric welding of aluminum, the application of aluminum for ultra-violet radiation and aluminum foil insulation.

Two other new building media have offered themselves. One is large-sized burned clay bricks of low specific gravity, and one-fifth weight of ordinary brick, providing good walls of unusually light weight, and high heat-insulating quality. The other has to do with decoration, namely, a material called Flexwood. The latter is an attractive possibility in very thin veneers of natural woods so mounted on a flexible base that they can be made to conform to rounded and sharp corners and to practically any surface where a heavy wall paper could be permanently attached. They require a smooth wall for their mounting, but when in place give the beauty of the wood panel without some of its disadvantages. Other research in progress promises the possibility of rendering attractive soft woods as dense as the harder species, so that the grain and color effects of the former may be used with advantages associated with the latter.

ONE of the most appreciated of the new building materials from the research laboratory has been the growing family of synthetic resins. Any discussion of the contributions of research to architecture will be quite incomplete without some reference to this group of amazing plastics. The pioneer, Bakelite, is a condensation product of phenol and formaldehyde, and it remains one of the most important in this whole series. Others are made by the condensation of glyptal and phthalic anhydride, of urea or thiourea with formaldehyde. The casein of skim milk has contributed to another line of plastics.

The cresols have not been overlooked, nor has acetylene, which is one of the raw materials in producing

vinyl acetate or Vinylite. The list of raw materials might be greatly extended and under one trade name or another several hundred of these synthetic plastics are now offered. Their uses are as diverse as their variety and in general each one seems best suited to a particular application, while competing with other members of the series for still other uses.

The resins have been most welcome because they are of high dielectric strength, can be readily molded so as to require no finishing cuts or grinding, metal parts can be molded in place, and they offer practically the whole range of color possibilities. They are offered in sheets, in tubes, in rods, and in the form of powders, where they are the binders for inert materials out of which powder an unbelievable variety of molded products is made. In certain solvents they form the basis of some of our most successful protective coatings, and in powder form they find their way as adhesives in the preparation of veneers and in similar uses. They form the basis of laminated products in which the other materials are sheets of paper or cloth.

From such it is easy to pass into large sheets which compete with wood for use in the manufacture of furniture, in the finishing of railway cars, in the construction of partitions, and in many other places where color and nonabsorptive material and glossy or satin finish, a thin sheet or a heavy block, with or without metal imbedded for decoration or utility, offer attractive possibilities. As these plastics have been developed the research laboratories have been successful in concurrently devising methods making possible lower costs of the raw materials.

IN the early history of the phenol formaldehyde series, the phenol was the by-product of coal distillation and was principally imported. Today the phenol or some modification of the original carboic acid is synthesized to far better advantage. Similarly the formaldehyde required was made by oxidizing wood alcohol derived solely from the destructive distillation of hard wood. Today, pure methanol, the modern name of wood alcohol, is a synthetic product derived from carbon monoxide and hydrogen. In both cases the costs of raw materials have been lowered and the choice of sources for the raw materials greatly extended. One result has been a variety of resins for special purposes available at attractive prices.

Recording and control devices become useful features of some types of buildings. The perfection of the photoelectric tube, commonly known as the electric eye, enters into the distant control of power plants, serves automatically to operate doors, and will be used one of these days in important buildings to control illumination. This will be accomplished by using the photoelectric tube to actuate the lighting systems, turning them on when the natural illumination falls below a predetermined point and extinguishing lights when no longer needed. Such tubes are already in use to announce when heating plants are inefficiently managed, and smoke is discharged into the air. They are also in use as parts of protective systems, for when used with infra-red light, for example, they will cause burglar alarms to sound, doors to close, and a room to be flooded with illumination, should an arm even in pitch darkness be extended

(Continued on page 88)

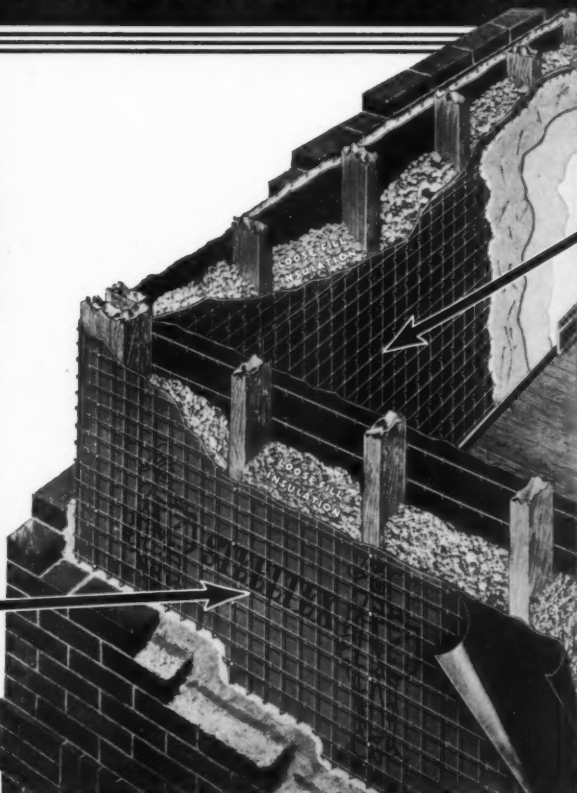
IT TAKES *STEELTEX*...inside and outside TO BUILD THE *SUPER-WALL*



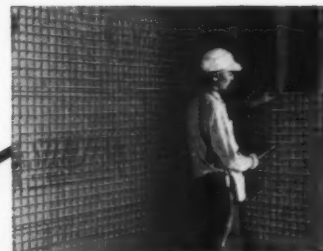
STEELTEX 38-16 is wrapped around in shingle fashion, and nailed direct to wood studding. STEELTEX has three-ply water-proofed membrane backing integral with wire reinforcing mesh.



Bricks are laid one inch away from STEELTEX 38-16. This one-inch space is filled in with bricklayer's cement-mortar,—the galvanized, copper-bearing wire reinforcing mesh of STEELTEX becomes embedded in this back-up slab.



The STEELTEX SUPER-WALL is constructed with brick, stone, or stucco finish, or a combination of two or all three, as desired.



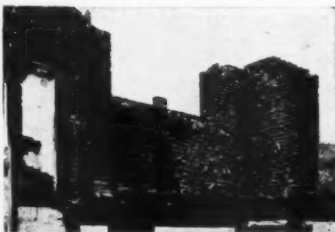
Sheets of Ribbed STEELTEX Lath for interior plaster are nailed direct to the wood frame studding. Rib stiffeners, fibrous backing and wire reinforcing mesh give Ribbed STEELTEX board-like rigidity.



Ribbed STEELTEX Lath holds the wet plaster with instant bonding action. Plaster flows under and around the galvanized, copper-bearing wire reinforcing mesh which becomes completely embedded,—giving lifetime walls and ceilings.

Authorities agree that the *STEELTEX SUPER-WALL* is the latest development in BUILDING CONSTRUCTION

The *STEELTEX SUPER-WALL* gives reinforced brick construction for the outside walls and reinforced plaster construction for the inside walls,—and, in addition, provides insulation,—waterproofing,—damp-proofing,—is fire resistive,—has high sound resistance,—vermin proofness,—is economical in construction costs,—and yet only standard builders' methods and materials are employed.



(At left) Ordinary brick veneer construction is drafty, hard to heat, damp; fire gains headway due to air spaces creating flue action between sheathing and unprotected studs.

(At left, below) STEELTEX Super-Wall withstood heavy stream for 48 hours without showing any water penetration on reverse side,—ordinary wall leaks almost immediately.

(Below) STEELTEX and one inch cement applied direct to studs is twice as strong as diagonal sheathing and siding.



STEELTEX 38-16 is used for the exterior sheathing and reinforcement, while Ribbed *STEELTEX* Lath is the base and reinforcement for interior plaster. Inside and outside walls are not only blanketed against heat and cold with efficient insulating materials, but encased with an embedded network of steel wire (square welded mesh) which acts to take up the stresses and strains in every direction,—giving the entire structure greater strength than is obtained through ordinary methods.

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toward the combination of a safe or some other vital point in a protective system. Used as counting devices and in many other ways, this marvel, which is the result of cooperative work between the electrical engineer and the chemist, will find ways to do continually without tiring and with greater accuracy many important pieces of work for which we have heretofore depended solely upon man.

The above is indicative in a measure of the sort of contributions which research makes to architecture. However important they may be, or how valuable, we may confidently expect other members in such a series to come from the laboratories in almost continual procession. Efforts continue to make glass less fragile or to find an acceptable substitute for glass, to increase the strength of the alloys of steel, so that smaller cross-

sections will perform the same service, and to increase the strength of the lighter metals, that they may be the better able to compete. The alloys most potent in resisting corrosion are still expensive. It is the hope to find less expensive ones. However successful our protective coatings, they still have their shortcomings and the research worker is continually seeking to improve them.

There is no reason to believe that the ultimate has been reached in the variety of building materials, and the same may be said for whatever interests the architect, whether it be for building, for decoration, for control, or for protection. Research has gone a long way toward providing means by which the individual may achieve complete expression. Such constructive work continues even now.

How Will We Live and Build Tomorrow

(Continued from page 25)

development for communities of industrial employees, "white collar" workers or junior executives.

2. Low-cost suburban districts which possess the requisites to make them attractive to home builders but which thus far have suffered from arrested development.

3. Virtually new suburban or semi-rural sections which can be made attractive in many ways.

ONE distressing result of the long continued depression will be concentration of wage and clerical workers within the limits of cities. During the period of abnormal prosperity, which made individual transportation possible for them for the first time, many thousands of such families migrated to outlying districts. Now their earning capacity has been reduced to a point where they can no longer own automobiles and they must move back to places where other modes of transportation are readily available.

Generally speaking the trend towards decentralization will be led by the executive and professional family which probably was moderately wealthy, or at least well-to-do, three years ago and which still has a substantial, assured income. It has become necessary for them to reduce living costs, however, and they are being lured by a desire for peace apart from city noise and rackets.

A home in which they can maintain the standards to which they have become accustomed will cost far less than it would two years ago, either on a purchase or rental basis. They are likely to demand such conveniences as oil burners and refrigeration in addition to electric light and an adequate water supply to make modern plumbing possible.

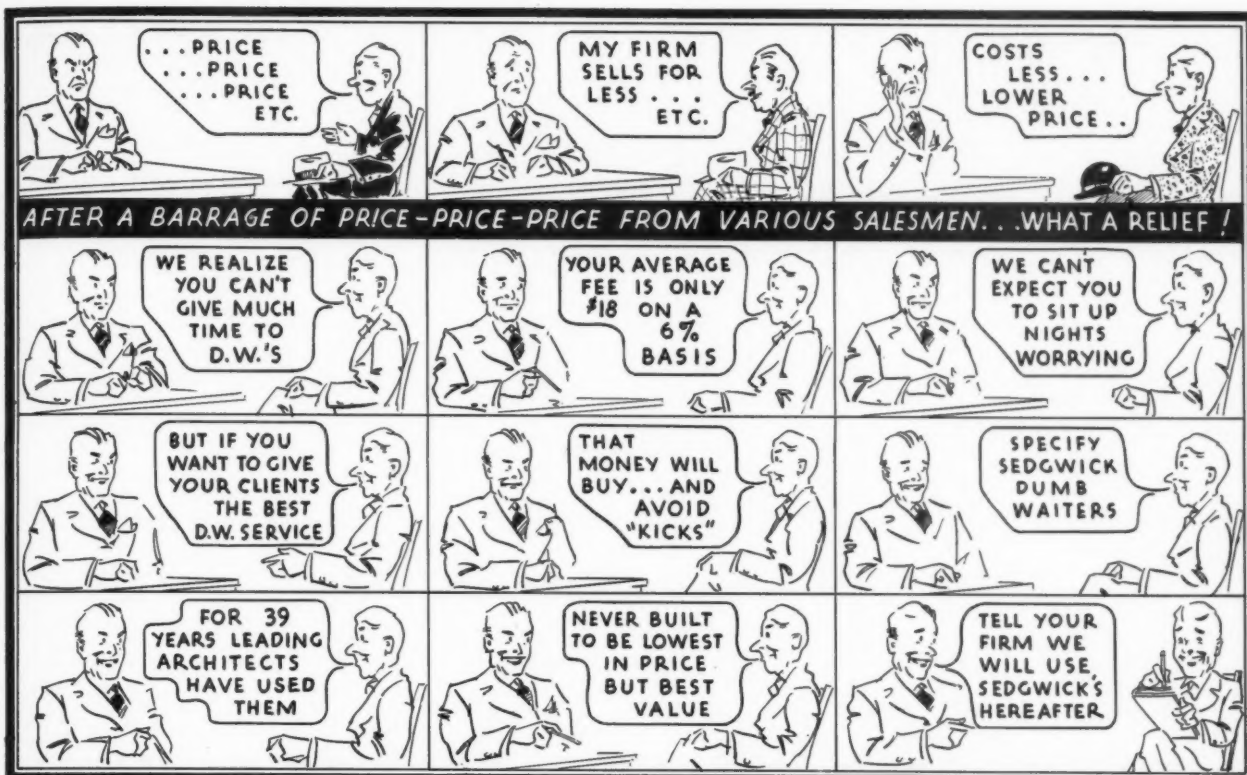
They will require garages and space for both flower and vegetable gardens. They also will insist upon homes not built according to a cut and dried architectural pattern. It will make no great difference to them if they are 15 or 20 miles from a trading center or a railroad station. Their cars will make such a distance insignificant.

Services of all kinds, professional as well as mercantile, automatically follow communities of home builders. They may serve trading areas radiating a good many miles in all directions. All their customers, patients and clients will own automobiles and ample parking facilities must be provided. Eventually there will be no need for anything more than an occasional trip to the city for any kind of service and in the long swing there will be no real necessity even for such periodical excursions. Low operating costs will make it possible to provide city quality and service at a lower price, especially on a "cash and carry" basis.

As decentralization progresses it will be found that a large proportion of the industrial concerns now concentrated in urban areas can operate with a lower overhead and a smaller labor turn-over in outlying communities which will become settlements of contented factory workers reducing living costs by tilling gardens of their own and saving money on staples by buying in larger quantities and storing them in cellars.

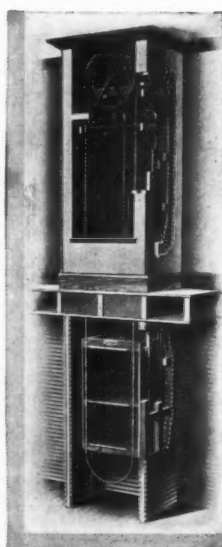
IF this movement develops as it seems likely it will a new type of construction will emerge. With land values low, buildings will spread out with a greater ground area, instead of climbing into the air. The saving in construction costs will more than offset the price of additional real estate. Countrysides will bloom with attractive homes, with flowering gardens, and spic and span communities.

America's depressions never have failed to provide ultimate compensation for the human misery they have left in their wake. Today's hard times will not have been in vain if tomorrow brings us healthier, happier, saner, sounder living conditions for a large fraction of our population. Prosperity for the architect and builder who has the imagination and the courage to gauge the future accurately may be just around the corner. Adversity never is lacking in opportunities for those who deserve success.



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Prefabricated Buildings Will Bring Lower Costs

(Continued from page 67)

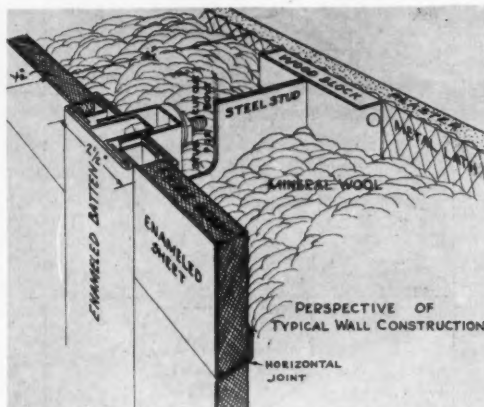
main items of field labor time being for the installation of the heating, plumbing and electrical units; floor finish, doors, windows, kitchen equipment and decorations. The units can be set with a light portable or motor truck derrick. The majority of the units can be of such weight and size that two men can handle them. It is probable that the ordinary six or eight room house could be erected complete within fourteen to twenty-one days after the foundations were completed, and the low-cost house of three to four rooms within ten days.

The units can be fabricated in a permanent shop, or, if operations are extensive, they can be fabricated in the field if protected from rain and frost. The unit can be made practically an assembling of parts made of one or more materials manufactured elsewhere.

It has been suggested that some types of unit construction might be assembled and finished on an assembly belt similar to those used in automobile assembly plants. It is not beyond possibility that such methods may be employed in the mass-production of houses. However, the "magic belt" process must be predicated upon duplication in large numbers of one design, which is improbable. There is a demand, and it is psychologically a necessity, for some measure of individuality in a house which sets it apart from the automobile, refrigerator or fashionable garment.

There is nothing to prevent the construction of a wide variety of designs, conforming closely to those now in use if desired. Certain ornamental features would be prohibitive in cost but another and less costly ornamentation can be designed. Houses of this type of construction can be designed that will be consistent with the materials used and methods of manufacturing, and, while dissimilar in many ways from the present day house, they can be of equal or superior architectural quality. Their success will depend largely upon the element of appearance and it is expected that many types will fail to be accepted because the manufacturers will consider their development as purely an engineering and scientific project, overlooking the essential cooperation of the best architectural talent available.

Without attempting to define it, architectural quality is a characteristic of buildings that is sufficiently well established to be easily recognized as good, bad or indifferent. Objections to the quality of many machine-made products are too often well-founded but the objections should lie against the person who controls the machine rather than the machine itself. The finest quality of artistry is found in many machine products; that same fine quality is possible in machine-made buildings.



A new type of prefabricated construction making use of porcelain enameled sheets for the exterior of a house being erected by the Ferro Enamel Corporation in Cleveland. Charles Bacon Rowley and Associates, architects

The mass-production, shop-fabricated house is especially suitable for the low-cost market and if built without the useless basement it can well come within the purchasing power of the low-income bracket. The method can be applied also to the largest and finest finished houses with a resultant saving in construction cost. This variety of design requires merely a variation in the unit sizes for which the shop drawings can be made as easily and quickly as those for cut stone or other detailed construction.

The elimination of masons and plasterers in this type of construction, although they are retained in the types of construction which will always be employed for certain kinds and grades of buildings, will result in opposition by the trade unions. But civilization is a state of constant change else we would be as unchangeable as the aboriginal barbarian.

New social and economic conditions compel certain readjustments in order to promote and conserve public welfare and some of these readjustments affect labor. If labor realizes the inevitableness of the changes, it can readjust itself without loss. It is probable that new unions will be formed for fabricating and erecting the units of construction, as well paid as the unions of today. While a large number of labor hours are eliminated in each project by mass-production methods, the stimulus of reduced costs will cause a greater volume of building construction which will employ, though differently, the same number of men.

THE present wage scale of bricklayers and plasterers is about \$14 per day and of laborers about \$8 a day. The amount of their product is limited by the size, shape and character of the materials and the antiquated methods of installing them—how, then, can a person who earns from \$3 to \$5 per day own a home constructed by such high-priced labor? If we accord to those in the low-income bracket the right to own a home, we must devise a method of construction that is purchasable from low incomes. This can be accomplished by a perfected method of mass-production, shop-fabricated construction without reducing wages because labor can be made so much more productive, the cost of construction reduced, quality improved and all can profit.

The foregoing analysis of the mass-production building has been confined principally to the dwelling house, but there is nothing in the method described to preclude its use in the apartment house, office building, hotel or other buildings. It is thought to have certain elements of practicability that can be used successfully in this economic necessity—the mass-production, shop-fabricated building.

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Future Illuminants

(Continued from page 37)

This has been aptly termed dual-purpose lighting. Numerous varieties of fixtures are on the market which contain, in addition to the ordinary lamps for general lighting, the so-called "sun-lamp" which emits these healthful rays. It is not necessary to expose oneself to this radiation continuously. In operation these auxiliary lamps are turned on for definite periods each day. This practice has a sound basis and will unquestionably continue to grow.

From the time of the introduction of incandescent lamps until five or six years ago, they were treated very much in the same manner as candles or oil lamps. Electric lighting fixtures to a great degree were either old style candle or gas chandeliers or various forms of lanterns. It seems strange that designers of luminaires did not realize that the incandescent lamp was a radically new thing, susceptible to a wide variety of treatment and requiring an entirely different technique of application. It remained for a group of so-called modernists to cast aside the shackles of tradition in lighting and begin to develop new forms.

The first modern fixtures exhibited in the Paris Exposition of 1925 were crude and in many cases actually ugly. There was evidence that their creators had made a strenuous attempt to avoid the use of anything which had been applied in the past. The whole movement was reactionary and the pendulum made a wide swing. It was apparent that many of these designs would not live, but they did accomplish a good for they were so extreme as to attract attention and make people think about lighting.

IN the broad sense, modern lighting equipment is by no means confined to the use of planes and frosted glass arranged in geometric figures, but can be broadly defined as equipment which enables a modern light source, incandescent lamp, to be used effectively. This puts no limit on the possibilities of the new movement.

Fortunately, the pendulum has now swung to normal. Designers have discovered that modern lighting is not confined to so-called modern interiors. It can be applied to advantage in any interior treatment. The secret is, to conceal the actual source of light in some ingenious manner and then if necessary incorporate in the details of decoration of the luminaire those elements which are intimately associated with tradition. This practice requires greater ingenuity than the old practice of merely copying in detail period fixtures or of conceiving something of a radically startling nature. The designer must cleverly arrange the component parts. He must have a knowledge of the fundamental principles of the utilization of light. He must know what types of reflecting equipment are available and how they work, and at the same time be thoroughly grounded in the traditions of the past.

In the past it was the custom to wait until a building was practically complete and then select "lighting fixtures." This practice is fundamentally wrong and some very incongruous effects result. Lighting should be

planned as an integral part of the structure and when provided for in this manner, good results can be obtained.

Most of our discussion has been confined to the interior illumination of a building, yet light is being applied more and more to building exteriors. Some very unsatisfactory results are obtained when structures essentially designed for their daylight appearance are unskillfully floodlighted. There is often an unnatural reversal of shadows and weird distortion.

IN designing new buildings, architects must give greater consideration to the problem of their appearance when lighted after nightfall. It behooves the architect who looks to the future to so plan and ornament the building that it will be pleasing by day and not noticeably disfigured or distorted if floodlighted. This will involve some compromises but at best architecture always involves the question of compromise.

Good results are possible, if the architect in planning the building makes provision for its exterior illumination. He can provide accessible places for mounting and concealing projectors. He can make sure there is adequate framing for the support of the equipment and ample capacity in wiring to supply the necessary current.

In this way the architect can supervise the design of the lighting and study its effect through the use of models. Floodlighting gives him a new tool with which to work, one with which he can transform the structure into something new when night falls. It is a medium which appeals to the imagination, for delicate, subtle effects, carefully controlled, or contrasts of light and shade, are at one's command. Motion and color effects can be obtained, particularly with the new thyatron control devices which are now in practical application. When gaseous conductor sources which produce colored light very efficiently are made more practical, unquestionably suitable reflecting equipment will be developed for their use and polychromatic floodlighting will be more widely used.

Mention should be made of one factor which is all too often neglected, namely, the question of wiring. What does it profit an architect to conceive a magnificent scheme and an entirely original effect if the wires carrying the current to the lamp are not large enough to permit the lamp to burn at proper voltage and give its full light?

The standards of illumination are constantly rising. The future will demand higher levels of illumination. This will require more wattage, more wattage means greater capacity in the electric circuits. The designer who plans for the future must not think in terms of today's standards, but of tomorrow's.

THE Gargoyle Club of Saint Paul, Minn., recently held an exhibition of architectural work. This was held in the new First National Bank Building. Several local building industries cooperated with displays.

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- The Nebraska State Capitol Lincoln, Nebraska
(House of Representatives Ceiling—House Lounge Ceiling)
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HILDRETH MEIERE, DESIGNER
- The Ohio State Office Building Columbus, Ohio
HARRY HAKE, ARCHITECT
- Westchester County Office Building White Plains, N.Y.
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- Horn and Hardart Restaurants (3) New York City
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A Plan to Handle Federal Architecture

(Continued from page 59)

- penitentiaries, reformatories, penal farms.
2. *Department of Public Works and Buildings*—state parks and monuments.
3. *Department of Registration and Education*—five normal colleges.
4. *Military and Naval Department*—armories.
5. *Division of Mines and Minerals*—Mine rescue stations.
6. *Department of Conservation*—game farms and fish hatcheries.
7. *Department of Agriculture*—state fair grounds and buildings.

There should also be included the work required by the State Capitol building group and executive mansion.

WHILE the Supervising Architect of Illinois is charged with a responsibility for the construction work for all of these departments, not all of the projects included in the above mentioned expenditure have been designed by Mr. Hammond's office. Ten independent offices have been selected at various times and thirty-eight buildings have been designed in cooperation with these architects. To a certain extent, the selection of these offices arises more or less automatically in that the functioning of the Supervising Architect's office proceeds under budgetary appropriations for office expense, which limit rather definitely the amount of designing to be undertaken.

Where office funds are restricted or become exhausted, additional buildings which are authorized must of necessity be handled by independent architects, in which case the architect's fee is a direct charge against the appropriation for the building. The fee for such work is four and one-half per cent but does not include mechanical plans and specifications, letting contracts and issuing certificates; neither is any supervision required, except that on work costing in excess of \$250,000 the private architect must furnish a clerk-of-works at his own expense. While it is rather difficult to keep accurate cost records on individual jobs under this dual method of operating, the experience in Illinois has shown that there is no truth in the belief that work can be done cheaper and more expeditiously by independent architects than a central office under sound management.

Mr. Hammond stated that the Treasury Department undoubtedly now has a budget of some sort set up for the Supervising Architect's office.

"If that office were operated on a budgetary limitation such as referred to above," he remarked, "the matter of allocating projects to individual offices would become entirely discretionary with the Supervising Architect within the restrictions set by Congress. There would immediately be a premium on efficient operation as any undue increase in cost would result in throwing additional work to outside offices. As it works out with us, this method provides a rather effective deterrent to political pressure as no advance information is available as to what projects, if any, are available for outside handling. Likewise, the necessity for making an annual

or biennial appropriation to fit the contemplated work in itself tends to provide a check on the development of an unwieldy bureaucratic office, such as business interests are objecting to so strenuously at present.

"If this budgetary limitation is coupled with some precise method of selecting private architects on a basis of character and proven ability, the defects in the present system will be largely eliminated. While we have no Advisory Committee on the selection of architects for our state work, the greater volume and widespread distribution of federal projects would seem to make some such agency necessary.

"Up to date this work has fortunately been under the direction of a man like former Secretary Mellon, a patron of arts, who has a full appreciation of the advantages of securing the best architectural talent available. The development of the *Triangle* in Washington on the basis of recommendations from a Board of Architectural Advisors seems especially satisfactory. The idea embodied in this Board might be enlarged to cover the entire country, or there might be some such set-up as the Fine Arts Commission, with appointees recommended by the American Institute of Architects, the American Engineering Council and other qualified professional bodies. A reliable agency of this character would be of invaluable assistance in making worthy selections and in freeing the office from party intrigue and charges of discrimination.

"The important thing now is to provide for a continuance of the commendable selections of representative architects which have been made to date."

DEATHS

COLONEL WILLIAM A. STARRETT died March 25. He was president of The Starrett Corporation, New York. Colonel Starrett was born in 1877 in Lawrence, Kansas. All of his brothers became builders and architects. He matriculated from the University of Michigan. In 1898 he joined his brother Paul in the newly opened New York office of the George A. Fuller Company. In 1901 he joined his brothers Theodore and Ralph in the formation of the Thompson-Starrett Company, where he acted as vice president. In 1913 he joined his brother Goldwin and others to form the architectural firm of Starrett and Van Vleck. During the World War he served as Chairman of the Construction Committee of the War Industries Board. In 1919 he went to Japan as a vice president of the George A. Fuller Company, where he introduced the modern steel frame building especially designed to withstand earthquake shocks. In 1922 he joined his brother Paul and Andrew J. Eken in forming Starrett Brothers, Inc., now known as Starrett Brothers and Eken, Inc., in which he was serving as vice president at the time of his death. In 1929 he became president of the newly formed Starrett Corporation, which was a holding company embracing Starrett Brothers and Eken, the Starrett Investing Company and a number of other interests.

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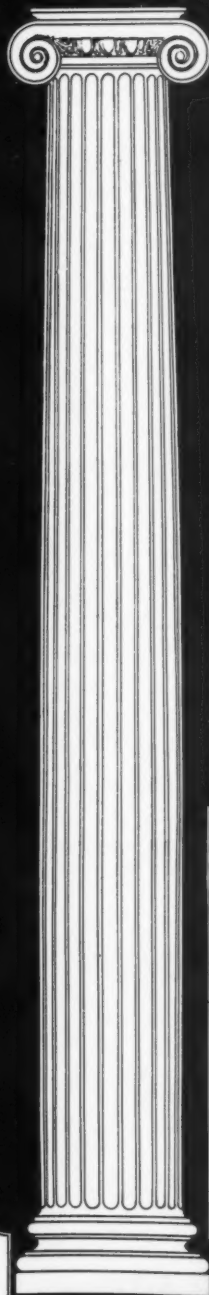
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Small House
Service Bureau?



The catalog of any advertiser will be sent on request. Use post card on page 101.

AMERICAN ARCHITECT

So we asked 11,000 Architects

The continued endorsement of the Architect's Small House Service Bureau by the American Institute of Architects is a subject of much concern to the architects of the country.

Many believe that this work of the Bureau is a distinct contribution toward the betterment of the profession. Many others believe it is not. At no time, however, has the question been put to a poll. AMERICAN ARCHITECT, believing that an expression of opinion on this important subject is necessary, is conducting at its own expense a national referendum on the Small House Service Bureau.

Eleven thousand architects have been asked by AMERICAN ARCHITECT whether the A. I. A. endorsement should be continued or stopped. The degree of universal interest can only be judged by the vast number of votes being returned.

The complete tabulation and story of this National Referendum will appear exclusively in AMERICAN ARCHITECT for June. If you have not returned your ballot—do so now.

AMERICAN ARCHITECT

57th Street at Eighth Avenue, New York

Architectural Education Is at the Crossroads

(Continued from page 33)

felicitous rhythm, and, having completed it, the student is suddenly confronted with an unoccupied future. To him the mystery of design was a matter of archaeological and foreign metaphor and not based on contemporary logic.

The architectural student, today, must realize that in order to grasp the real conception of the existing intricately organized civilization he must ally himself with the engineering profession, with construction and building material experts, and administrative advisers in real estate control and economics. He should be led to a point where he will be able to analyze a given problem to the end of giving, graphically, a comprehensive presentation to our emotions of the functional, aesthetic and executive capabilities of the problem.

The study of architectural history should be undertaken from the point of view of the men who made the monuments that index its great epochs. In this exercise, carried through the first three years, is the difference in value to the architect of architectural history over archaeology. This work, if regarded as a research in cause and effect of an epoch, will stimulate the imagination of the student along many constructive lines.

THE wave of enthusiasm for designing in the mode of functional styles has temporarily swept the emotional young student away from the moorings of the precept that "the proper approach to modern solutions is through a study of the solution of the past." This uncontrolled modernist phase concept is already passing.

The groping productions of the international, starkly efficient machine type have the same relation to the mechanistic lyricisms of Reinhard, Hood, Howe and their associates as the cryptic cablegram has to literature. The student should be brought into personal contact with the creative masters of his locality; only by this means—and the practitioners owe the debt to their successors—can he be brought to understand the fertility and initiative of the minds of the men who bring into being the great projects that present themselves so conspicuously. To rival such distinctive structures is the urge of the architectural student. Such personal contact is of incalculable influence.

The school training in architecture is at the crossroads. One path leads to future sterilization of creative imagery and a substitution of decorative modes and vacillating opinion and conjecture for the broad qualifications of artistic liberty.

The other pathway fosters, even at the risk of exaggerating it, the spark of individuality and native vigor, which is the divine birthright of every man. The aim is to endow the student with purposeful productive capacity—to confirm, in his judgment of composition, the essential expression of his environment, chastening his mental vision with the refinements born of a sympathetic appreciation and comprehension of the culture that characterized the great epochs of civilization, and guard him against the profligacy of illogically digested contemporary "isms."

The general adoption of this latter philosophy is bound to have a stimulating effect upon the whole controversy, for in the final analysis the architect must create the forms which his compositions define. It is a most ironic commentary upon educational method, the fundamental principles of which must be apperception and interest, that the student should be the experimentive subject, in preparation for a profession in which construction is the goal of design and therefore its beginning.

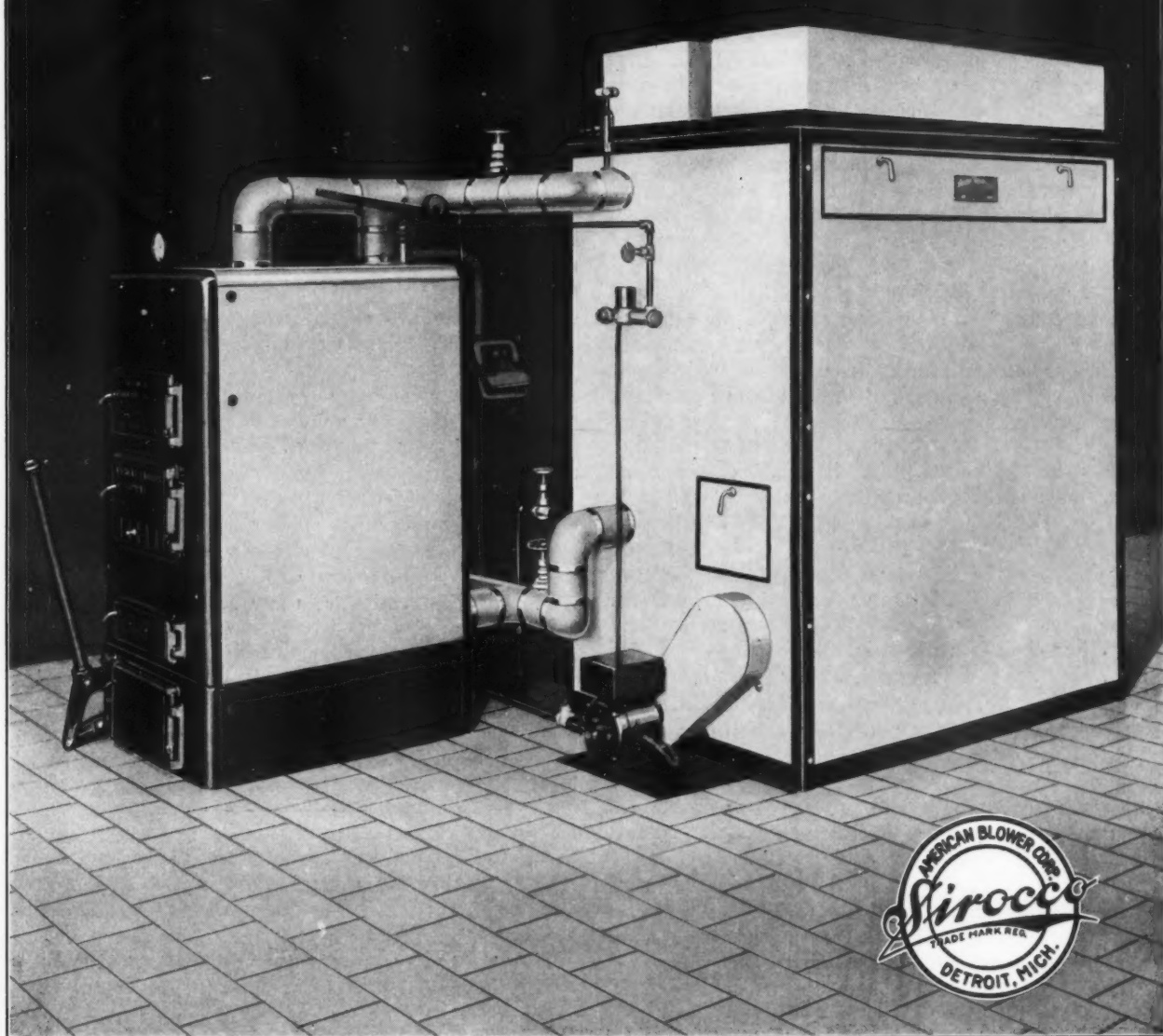
ON the work of independent thinkers the advance of human activity depends. The mechanization of a man's first conscious acts establishes his habits. It is axiomatic, therefore, that in the architectural curricula, progressive exercise should be introduced from the very beginning of his schooling in order to make sure of giving the student, under the direction of the most experienced men on the staff, confidence in and habitual use of his creative faculties.

Several billions of dollars are spent each year in the United States for construction. Buildings which are adequately planned and artistically expressed are few and far between. Careless plan and inexperienced, inadequate consideration of construction needs and possibilities are the bases of an unnecessary waste of hundreds of millions of dollars each year and the cause and index of a careless national art sense.

To alleviate this condition, during the past fifty years a gradually increasing effort has been undertaken and financed by the majority of states and leading universities and colleges of the country to provide an educational system which would produce a group of citizens adequately equipped to plan and efficiently design construction work—domestic, public, commercial and industrial—to the end that such projects could fulfill their purpose and characterfully show, with artistic meaning, the essentials of each problem. In fine, the reason for the fact of the expensive schools of architecture, spreading from coast to coast and from Canada to the Gulf, is to provide a means of cure for one of the greatest elements of economic and moral waste existing in the nation: for, with the exception of agriculture, architecture in its various phases touches more points in the lives of human beings than any other group of activities.

HOW ideas may be made popular is revealed in the news that a demonstration campaign is to be inaugurated for the purpose of inducing women to smoke cigars. The Tampa Cigar Manufacturers have arranged with four comely young women to visit restaurants in pairs, have lunch and nonchalantly light cigars. It is said that many women smoke cigars—but not in public. The association hopes to break down that prejudice with many new sales resulting. Will the time come when architects must design a built-in humidor for every boudoir?

SIROCCO . . . STANDARD OF THE WORLD



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Radical Changes in Metal Are Taking Place

(Continued from page 23)

corrugations will be developed to break up sound waves in an auditorium more effectively than the sound absorbing materials in use today. Such ceilings employing combinations of metallic colors and rhythmic compositions in form will be installed in a fraction of the time required to build, finish and light a ceiling today. A few fastenings and electrical connections will be all the work done at the building.

The metal work of the future will fall into various categories depending on how it is made. There will be parts of the building specially fabricated from mill-formed material by machine shop methods, which will more nearly approach the generic principles of the work of former ages, but utterly different as to the details of craft and in appearance. Much of the metal work, however, will be chosen from stock units manufactured in large quantities.

ONE item after another has been added to the list of things which architects select and specify but do not design for each new building. In this direction the end is not yet in sight. Special designs for individual units will be made for large buildings but they will be repeated hundreds or thousands of times. Smaller structures will make more use of stock elements.

No other class of materials lends itself so well and in so many forms to modern manufacturing methods as do metals. Combined with glass and scientific insulation materials they may form the basis of an architecture which goes far beyond the present use of metals for special details. The interest and thought which is being concentrated on the all-metal house is significant. No doubt such structures will soon pass the experimental stage.

The extensive use of metal on the exterior will concentrate interest on weathering qualities and natural patinas will be used more than they are today. Highly polished raw metals will lose their present vogue for the outside of buildings, excepting the stainless steel group which are the only ones truly suited to such treatment. Lead coated sheets and rolled zinc will be used far more than is imagined at present. The changes

will be revolutionary in the process and technique of building.

Among the many alloys being used today there is no reason to imagine that any one of them will in time supplant the others, for each has its proper place and use. The copper alloys, supplemented by aluminum, will retain their present lead as being ideal for cast work, though casting as a process will become less important as a means of decorating our architecture.

In the race for supremacy among the so-called white metals aluminum, nickel-copper and stainless steel are not adaptable to all purposes. The considerations of color, workability and corrosion resistance will determine the fields to which each is best suited.

The high nickel-coppers have a unique richness of color but poor corrosion resistance, which will relegate them primarily to interior use. Ease of fabrication will encourage a wide use of aluminum where its susceptibility to partial corrosion is not a handicap. The stainless steels will not reach a wide use until knowledge of their limitations is better understood by both designers and fabricators. When the great strength of these is fully realized they will be used in much thinner sheets than is practicable in any other metal and at the same time exploit their corrosion resistance, which is higher than any other commercial alloy.

The next few years will see such a wide and varied use of metals in architecture that the "ornamental metal work" will be the primary consideration in the design of a large proportion of all industrial and commercial buildings.

EXISTING conditions have had their effect on rentals. Among other things they have been responsible for the development of a trend toward "flexible leases." Such leases permit expansion or contraction of space at reasonable time intervals according to a tenant's needs. Such leases should interest architects at the present time. Leases of this kind mean complications for the building owner in normal times, but at present it solves problems which confront both owners and tenants.



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NEW CATALOGS . . .

Readers of AMERICAN ARCHITECT may secure without cost any or all of the manufacturers' catalogs described on this and the following page by mailing the prepaid post card printed below after writing the numbers of the catalogs wanted. Distribution of catalogs to draftsmen and students is optional with the manufacturers

DESCO STORE FRONT CONSTRUCTION

425 . . . Full size details of Desco store front made of copper, bronze and aluminum alloy and manufactured by the Detroit Show Case Co., Detroit, are shown in this folder. A. I. A. file 26 b 1.

TRUSCON FERROCLAD STRUCTURAL PANELS

426 . . . Semi-rigid and rigid structural and insulation materials in board form are described in this folder issued by the Truscon Steel Company, Youngstown, Ohio, which explains and gives construction details about Ferroclad. This is a rigid structural panel shop-fabricated by cementing under pressure a metal facing sheet to one or both sides of a board form core material.

STEEL SHEET PILING

427 . . . A bulletin giving a report of the condition of steel sheet piling after 19 years of service in the Monongahela River at Pittsburgh. Issued by the Carnegie Steel Company, Pittsburgh.

COMBINED REFRIGERATING UNITS

428 . . . Describes the Frick combined refrigerating unit for meat markets, dairies, hotels, restaurants, club houses, etc. Illustrates operation of units. Issued by the Frick Company, Waynesboro, Pa.

SMITH & WESSON FLUSH VALVE

429 . . . Catalog illustrating and describing the flush valves made by Smith & Wesson, Inc., Springfield, Mass. Illustrates their use in connection with various types of equipment.

FLOODLIGHTING FOR HOMES AND ESTATES

430 . . . Folder issued by the General Electric Co., Bridgeport, Conn., and illustrating and describing this company's floodlighting units as applied to residential work.

THE CUTLER MAIL CHUTE

431 . . . Booklet illustrating various types of mail chutes made by the Cutler Mail Chute Co., Rochester, N. Y., and stock designs in mail boxes.

MARBLE SHRINES

432 . . . Booklet with illustrations of memorials, mausoleums, etc., in which Vermont marble has been used. Issued by Vermont Marble Co., Proctor, Vt.

FOR MAY 1932

FIREPROOF ROOFS FOR WIDE SPANS

433 . . . Booklet illustrating and describing concrete "shell domes" and "barrel shell roofs" for permanent large building construction where there are wide spans without intermediate columns. System developed under German patents for which Roberts and Schaefer Co., Wrigley Building, Chicago, have the American rights. Gives suggestions in design by this system. A. I. A. file 4 e 1.

JUST BETWEEN YOU AND THE WEATHER

434 . . . Illustrated booklet issued by the United States Mineral Wool Company, New York, discussing the advantages of mineral wool. Explains how to estimate quantity necessary.

ILCO BLOUNT DOOR CHECK

435 . . . Catalog A of the Independent Lock Co., Fitchburg, Mass., illustrating and describing the door checks and closers made by this company.

T-TRI-LOK BRIDGE FLOOR CONSTRUCTION

436 . . . Booklet giving considerable data on the design of bridge floors by the T-Tri-Lok bridge floor construction system of the Carnegie Steel Co., Pittsburgh.

NATIONAL USS STAINLESS AND HEAT RESISTING PIPE AND TUBES

437 . . . Illustrated booklet giving information about stainless and heat resisting alloy steels in relation to pipes and tubes and the products of this type made by the National Tube Co., Pittsburgh, Pa.

CAST IRON VERANDAS

438 . . . Pictures of cast iron details and verandas of cast iron are shown in this booklet issued by the Smyser-Royer Company, Philadelphia.

ESCALATORS AND DOUBLE-DECK ELEVATORS

439 . . . The installation of escalators and double-deck elevators in the new building for the Cities Service Company, New York, are illustrated and described in this booklet of the Otis Elevator Co., New York. Auxiliary equipment used is also explained.

POLISHED PLATE GLASS

440 . . . How glass the size of large store fronts is made is explained in this booklet of Libby-Owens-Ford Glass Co., Toledo, Ohio.

HOW TO MAKE GOOD WATERPROOFED CONCRETE

441 . . . This is explained in a booklet issued by the Medusa Portland Cement Co., Cleveland, Ohio. It explains why concrete and mortar should be waterproofed, the advantages of a mill mixed waterproofed concrete, concrete and masonry below grade, the use of waterproofed portland cement in mortar for brickwork, concrete and stonework, etc. A. I. A. file 4.

MILCOR METAL BASES, WINDOW TRIM AND STOOLS WITH EXPANSION WINGS

442 . . . Booklet illustrating and describing a new development of the Milcor Steel Company, Canton, Ohio, which is stated to largely eliminate plaster cracks. A. I. A. file 16 a 3.

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AMERICAN ARCHITECT
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May, 1932

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These NEW Catalogs may be obtained through AMERICAN ARCHITECT

SEDGWICK MECHANICAL SERVANTS

443 . . . Dumb waiters, fuel lifts, trunk lifts and individual elevators are described in this illustrated booklet issued by the Sedgwick Machine Works, New York.

HOW HOTELS ARE MEETING

OBSOLESCENCE AND COMPETITION

444 . . . "Before and after" pictures of the elevators in the Raleigh Hotel, Washington, D. C. Issued by the Otis Elevator Co., New York.

THE ART OF STAINED GLASS

445 . . . Pictures of stained glass windows made by Rambusch, New York, together with a paper written by Harold Wm. Rambusch on this subject, which gives the elementary reasons for stained glass and its successful use in medieval church architecture.

BANISHING THE TWILIGHT ZONE FROM MODERN BUILDINGS

446 . . . A discussion of present day principles and practice in the interior lighting of modern buildings by J. Paul Teller, manager Interior Lighting Section Westinghouse Electric & Mfg. Co., and S. G. Hibben, manager Commercial Engineering Department of the Westinghouse Lamp Co. Issued by the Westinghouse Lamp Co., New York. A. I. A. file 31 f 232.

THE BOILER BURNER BOOK

447 . . . Oil heating and the type of boilers suited to it are discussed in this booklet issued by the H. B. Smith Co., Westfield, Mass. Also included are engineering data concerning the combustion of oil, tables giving cubical contents of rooms, formulae for heat loss from buildings, and similar data.

FRICK ICE SKATING RINKS

448 . . . Bulletin issued by the Frick Company, Waynesboro, Pa., illustrating

and describing equipment necessary for making ice in ice skating rinks. Type of floor to carry ice is discussed.

HAUSERMAN MOVABLE STEEL PARTITIONS

449 . . . Office building and industrial movable steel partitions are illustrated in this booklet issued by the E. F. Hauserman Co., Cleveland, Ohio. Gives construction details and specifications.

TO KEEP YOU SAFE

450 . . . Folder describing safety glass made by Libby-Owens-Ford Glass Co., Toledo, Ohio, which is suitable for various places in hospitals and other types of buildings.

MODERN DOMESTIC SERVING EQUIPMENT

451 . . . A manual on the use of monel metal in kitchens, pantries and laundries issued by the International Nickel Co., New York. Contains illustrations of many installations. Discusses forms and finishes. Gives specification data for modern domestic service equipment. A. I. A. file 35 c 1.

WHEN MASONRY IS GLASS

452 . . . A catalog of structural glass masonry construction issued by the Structural Glass Corp., New York, which illustrates the various types of glass blocks made by this company. Gives details of construction showing the use of representative structural glass units. A. I. A. file 11 j.

PROGRAM SERVICE

453 . . . Illustrated booklet issued by the Stromberg-Carlson Telephone Manufacturing Co., Rochester, N. Y., describing the various types of radio and phonograph apparatus made by this company and suitable for use in hospitals, hotels, residences and other types of buildings.

ROLSCREENS OF PELLA

454 . . . Booklet illustrating different types of window treatments in which Rolscreens made by the Rolscreen Company, Pella, Iowa, are used. The illustrations are well chosen and provocative of ideas. Gives construction, specifications and full size sections. A. I. A. file 35 p 1.

ETERNIT GOTHIC

455 . . . Folder illustrating and describing a new tapered asbestos shingle placed on the market by Eternit, a division of the Ruberoid Co., New York, called Eternit Gothic.

CHENEY INTERLOCKING THRU-WALL FLASHING

456 . . . Catalog describing wall flashings made by the Cheney Company, Winchester, Mass., and particularly a new type furnished with counterflashing. A. I. A. file 12 h 1.

STEELTEX FOR REINFORCED BRICK CONSTRUCTION

457 . . . Illustrated folder describing a type of brick veneer construction making use of Steeltex made by the National Steel Fabric Co., Union Trust Building, Pittsburgh, Pa. Also discusses this company's lathing details dealing with partitions, suspended ceilings, etc. A. I. A. file 4 e 25.

TIMBREL ARCH CONSTRUCTION

458 . . . Booklet of R. Guastavino Co., New York, containing detail drawings and pictures of various masonry vaults, other interiors, ornament cast in acoustic plaster, surfaces obtainable in Akoustolith, specifications and other data.

WESTINGHOUSE ELECTRIC ELEVATOR APPARATUS

459 . . . Booklet of the Westinghouse Electric Elevator Company, Chicago, illustrating and describing the elevators made by this company. Explains the new light-ray operated device to prevent doors closing when passengers are entering or leaving, detail drawings of hall lanterns and similar data.

SIROCCO CONDITIONER

460 . . . A new air conditioning and heating apparatus is described in this booklet of the American Blower Corp., Detroit, Mich., which illustrates and describes this new apparatus. Pictures of typical installations are given, also piping diagrams, wiring instructions, etc.

MEDUSA FLOOR COATING

461 . . . Illustrated booklet describing a new floor paint made by the Medusa Products Company, Cleveland, explaining how it is used. This paint is for use over concrete or wood and is stated to be exceptionally resistant to wear.

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NEW MATERIALS & EQUIPMENT

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New G-E Switches

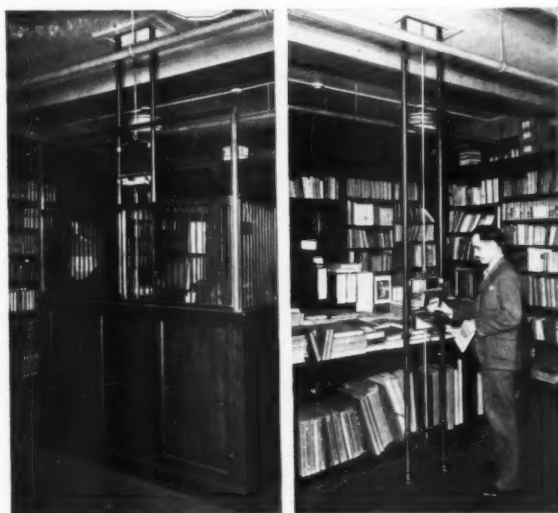
55M The General Electric Company, Bridgeport, Conn., have just placed on the market sixteen different combination switches to meet practically every wiring requirement. Two or three switches in one switch box can now be installed in the same space that ordinarily one switch would occupy. These switches are made in combinations of single pole, double pole, three or four way units.

Convectofin Takes the Place of Radiators

56M A new type of heater to replace the usual type of steam radiator in any two-pipe steam, vapor or vacuum heating system and built of Anaconda copper has been placed on the market by the Commodore Heaters Corp., 11 West 42nd Street, New York. It is called "Convectofin" and operates on the convection principle and not by radiation.

New Model of Rolscreens

57M Rolscreens Model 50 is a new product made by the Rolscreen Company, Pella, Iowa. This model is particularly for use in moderate cost construction. It is half length and covers the lower half of the window when double hung windows are used. It fits on the outside of the windows.



Correspondence Lift for Light Weight Articles

58M A correspondence lift designed for between-floor handling of mail, telegrams, vouchers, money, books and other light weight articles is being marketed by the Sedgwick Machine Works, New York. The carrier, which is all metal, is available in several styles for specific uses. Rubber cushioned "limits" at top and bottom of run assure quiet operation.



Sinks of Monel Metal

59M Kitchen sinks of monel metal are now standardized and a typical installation is shown in the accompanying illustration. They come in several different styles and sizes and are built over a sound-deadening composition which is resilient enough to soften impacts and thus reduced dish breakage. Made by the International Nickel Co., New York.

Acoustical Ornament and Materials

60M Ornament cast in acoustic casting plaster or Akoustolith sound absorbing stone is being offered by R. Guastavino Co., New York, for use in masonry vaults in connection with this company's Timbrel Tile. These materials come in forms which are not only suitable for use in connection with traditional forms of architecture but also offer a selection suitable to the modern trend. Also included is special metal deposit tile in both Ceramic and Akoustolith.

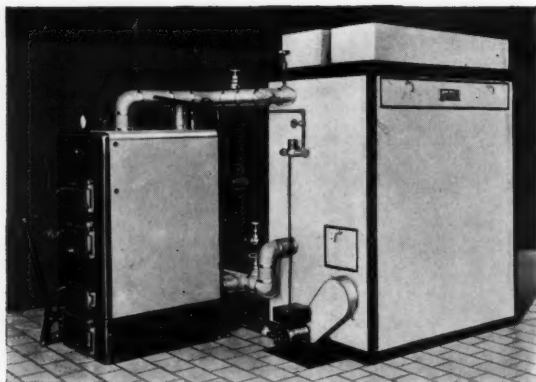
G-E Flame Resisting Code Wire

61M A new product just placed on the market by the General Electric Co., Bridgeport, Conn., is the G-E Flame Resisting Code Wire which is stated to be fully up to the standard of G-E code wires and has the additional property of resisting fire.

New Line of Metal Bases, Window Trim, Etc.

62M A new line of metal bases, window trim and stools with expansion wings has been placed on the market by the Milcor Steel Company, Canton, Ohio. The bases are stated to provide a positive and permanent bond which eliminates any possibility of cleavage cracks at the joining of plaster and base.

To Get More Information, Use Post Card on "Catalog Insert" Preceding

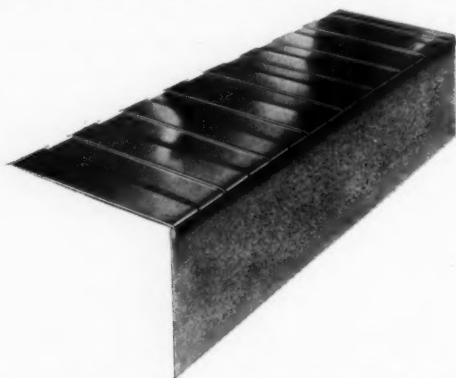


Air Conditioning for the Home

63M A conditioner especially adapted to residential purposes has been placed on the market by the American Blower Corp., Detroit, Mich. It is known as the "Sirocco" conditioner and cools in summer and warms and humidifies in winter, cleaning the air at all times. The control is portable so that it may be moved to compensate for changing conditions in a building.

Built-In Radio and Phonograph Parts for the Small Home

64M A type of sound system custom-made for several years has recently been developed with standardized radio and phonograph parts which fit together in a variety of combinations and are priced to be suitable for the man building a \$20,000 residence. This system, called the "Telektor," is made by the Stromberg-Carlson Telephone Manufacturing Co., Rochester, N. Y., and provides for installation of complete radio, multi-record phonograph and loud speaker apparatus built into the construction if desired.

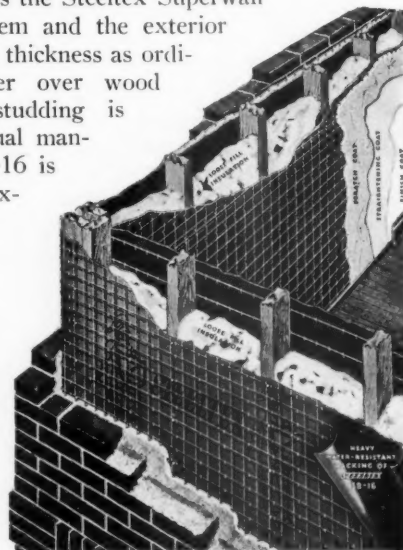


Interlocking Thru-Wall Flashing

65M Cheney flashing of copper has been combined with a flexible counter-flashing face which is called Type 12. This prevents wall seepage, does not break the bond, allows the use of a felt base flashing and eliminates all soldering or nailing. Standard strips are made 40 inches wide and in all wall widths up to 34 inches. The flexible counterflashing face on standard strips is 12 inches deep but is made special up to 36 inches. This counterflashing is a special heavy canvas saturated and coated on both sides with a special asphalt and attractively surfaced with a finely crushed mineral. Made by the Cheney Company, Winchester.

Plaster Base for New Type Brick Veneer Construction

66M A type of construction making use of Steeltex plaster base and used in connection with brick veneer is shown in the accompanying illustration. The system is known as the Steeltex Superwall Construction System and the exterior walls are the same thickness as ordinary brick veneer over wood frame. Wood studding is erected in the usual manner. Steeltex 38-16 is applied to the exterior and nailed to the studding; brick is laid one inch away from the Steeltex. As each course of brick is laid the one-inch space is filled with mortar which becomes reinforced with the Steeltex, the water-resistant backing of which prevents the infiltration of air and moisture. Loose-fill insulation is placed between the exterior Steeltex 38-16 and the interior Steeltex lath which latter is furnished with ribs to keep it away from the studs to permit keying of mortar. Steeltex lath is also used for the ceilings. It is stated that this interior construction permits ordinary movement without affecting the plaster. Made by the National Steel Fabric Company, Union Trust Building, Pittsburgh, Pa.



Westinghouse Geared Elevators

67M A new type of geared elevator suitable for both passenger and freight purposes has just been placed on the market by the Westinghouse Electric Elevator Company, Chicago. The machines are of the unit type and are made in pairs, one machine with a large sheave and proper motor for normal passenger service, and the same machine with a smaller sheave and proper motor and gear for freight service. This arrangement is desirable from a manufacturing standpoint and is an advantage to the purchaser where both freight and passenger service can be met by similar machines. This line is designed to give minimum deflection and positive gear alignment. New and effective methods are used to maintain the gear center and the original high efficiency. Lubrication has been simplified and made positive. Machines have been designed for long cable life, long gear life and maximum accessibility.

Structural Glass Units

68M Various structural glass units are now available through the Structural Glass Corp., New York. They come in different styles according to the purpose to be served. Some are solid, others hollow. For either vertical or horizontal use. A "vacuum glass" brick is stated to provide negligible heat loss, present no condensation problem, and to exclude sound or heat.

To Get More Information, Use Post Card on "Catalog Insert" Preceding

AMERICAN ARCHITECT

New Tapered Asbestos Shingle

69M Eternit Gothic is the name of a new tapered asbestos shingle placed on the market by Eternit, a division of the Ruberoid Company, New York. The texture resembles quarried slate. The shingles come in regular and random widths and are so punched that the butts may be staggered. They may be had in ten colors.

New Extruded Aluminum Skylights

70M A new type of extruded aluminum skylight has been placed on the market by the Milcor Company, Canton, Ohio. The development is made possible through the use of Alcoa aluminum extruded into one-piece sections having many structural advantages. Heads of the aluminum bolts are slipped into the re-

cessed groove at the top to their desired positions where they firmly grip the cap when the bolt is applied. Condensation gutters are integral with the bar, as are other necessary factors, eliminating all welding, mitering and fitting.

Floor Coating for Concrete and Wood Floors

71M A floor coating containing a pigment which is three times harder than steel and that insures resistance against normal abrasion and wear on concrete and wood floors has recently been announced by the Medusa Products Co., Cleveland, Ohio. Only one coat is required over previously painted surfaces or over Medusa Primer. The paint is made in light gray, dark gray, tile red, brown and black.

Architecture Needs To Be Publicized

THERE are not many ways in which the profession of architecture can lay its claims to recognition before the general public—its clients. The possibility of direct advertising, which has occasionally floated before the eyes of architects wearied with waiting, can be gauged by observing the effects of the competition of direct advertising in the world at large, a sight as unedifying as anything that democracy has yet produced. There are no architects seriously hoping for any benefits from such a policy.

Yet we all hope, and most of us will agree, that if people really understood the nature of a good architect's work and of the services he performs, we should be content to regard that as publicity exactly fitting our case. Architectural publicity is a form of education without which there can be no architecture worthy the name. In the eighteenth century there was a very clear understanding of an architect's functions, and good architecture resulted. The nineteenth century produced a

large new order that could not rise to the conception of architecture, and the profession, though augmented in numbers, no longer represented the mass of the building public, and became the servants of a minority. This state of un-health has continued into the twentieth century, assuming different proportions, increasing somewhat in vitality, but remaining to this day unbalanced and out of key with the spirit of the times. . . .

Many other things remain to us to do, within our own body as in the world outside. We have our own standards to raise and our own vulgarities to subdue.

The principles of true structure are not yet with us entirely. We have not yet a full and live tradition of right modern building, and the sphere of architecture is still too narrow. These things we can establish in the facts of building, to be tested and approved. Unless they are to be realized as part of our plan for the future, all other publicity is but a beating of the air.—The Architects' Journal, England.

Building Efficiency and Design

"AN intelligent examination of our buildings in both our towns and rural areas shows that little consideration has been given to really economical building. Attention has been given to camouflaging the structure rather than to its improvement. Although the introduction of the steel frame and reinforced concrete has changed the very essence of structure, we still insist on trying to make our buildings appear like those of previous ages, when the building materials were brick and stone, and at a very considerable cost. By compromise we appear to be shelving all our most urgent problems. In ordinary times it may have been possible, by much discomfort perhaps, to put off the solutions for a considerable period of time, but as under present economic conditions we have to compete with

other and more progressive nations, we must either put our house in order or fail.

"Ever since the Renaissance, architecture seems to have been mainly a matter of aesthetics. I cannot see how any progress can be made on aesthetic lines, for is not our taste formed by our environment—an environment consisting of things which have already happened? . . .

"Buildings should be designed as efficient machines rather than monuments to ourselves, and then, perhaps, we should evolve forms of beauty—related to our own times—such as have been achieved in other fields of construction, such as aeroplanes, ships and railway engines, though none of these things have been designed from an aesthetic point of view."—Joseph Emberton in The Architects' Journal of London.

There Is No Modern Architecture

IN a paper read before the Manchester Society of Architects, England, A. B. Knapp-Fisher, F. R. I. B. A., said, "Art, unlike science, is like a boomerang, so we must be careful of such labels as 'modern.' The work of today is all modern in a sense: some of it is good, most of it is deplorably bad; you can't make it good by calling it modern, as some people seem to believe or at least hope. There is no modern architecture. Art in its full sense knows no age, no era, and recognizes no time or label. Architecture is different from the other arts in that it is an art-cum-science-cum-business; it is an art of needs and means dependent on economic, social, and scientific movements, discoveries, and influences; its necessary dependance on these things, these essentials, is today tempting some to divorce it from art.

"For some time, chiefly since the war, there has been, as you all know, a desire to get rid of frills, of shams and shibboleths, to be frank in our work, to see beauty in honest expression of purpose, a striving to get back to first principles, and a wish to put into practice Thomson's dictum that 'Loveliness needs not the foreign aid of ornament, but is when unadorned, adorned the most.'

"There is the eternal controversy of Modern versus Traditional. Cannot we once and for all reduce this stupid warfare to the level of Euclid's *quod est absurdum*? The Classics of Architecture, of any art, are not there to be copied or avoided; they are a training ground for perceptions and faculties for which there is a use to be found on a much wider field—the past is and must be a living thing, not a fetter or a weight to original thought, but something to be naturally absorbed in a living present. Be careful of these labels of Modern and Traditional, which are so cramping and restrictive in their use and only allow you to travel in one direction.

"A great master doesn't need to resort to functionalism or tradition; his work will naturally embrace all essentials—leaving out what is non-essential. He won't consciously strive after any particular effect or issue; he will be in tune with values other than material ones. But the great masters are few and far between, and we are swamped by the works of smaller minds and little ability. Let us in Architecture move with the times, and look ahead; let us combine with the Doctor and the Engineer and the Artist to make life a lovely thing."

The Economics of Small House Design Must Be Known

WHAT have we to offer the prospective builder of a small house? It is important to know what more we can give than he gets at present, and what we can give him that no one else can possibly give.

Probably one of the most useful avenues of approach will be a new exploitation of modern materials and compact planning, with the object of working out a type of small house in which, quite incontestably, the architect will provide more convenient and economically-disposed space than can be found in the normal cheap house today. It may be said that the public, knowing what it wants, will not want that. But on the other hand, it is hard to prove that the new materials and improved domestic machines do not call for some rearrangement in general structure, into which they will fall with greater economy, and give thereby such satisfaction as cannot fail to find a public.

One thing is certain, and that is that we cannot go on building the type of small house that the jerry-builder thinks he too can build, and does so plausibly enough to find ready buyers. If we are to live by our brains and training, and not by prestige alone, we are bound to apply them to this problem, and as bound, we believe, to find some salvation in the mastery of a new technique.

That is a long course to which we must apply ourselves. The other and no less important is to know how we may become the architect of the small house in the near future. . . .

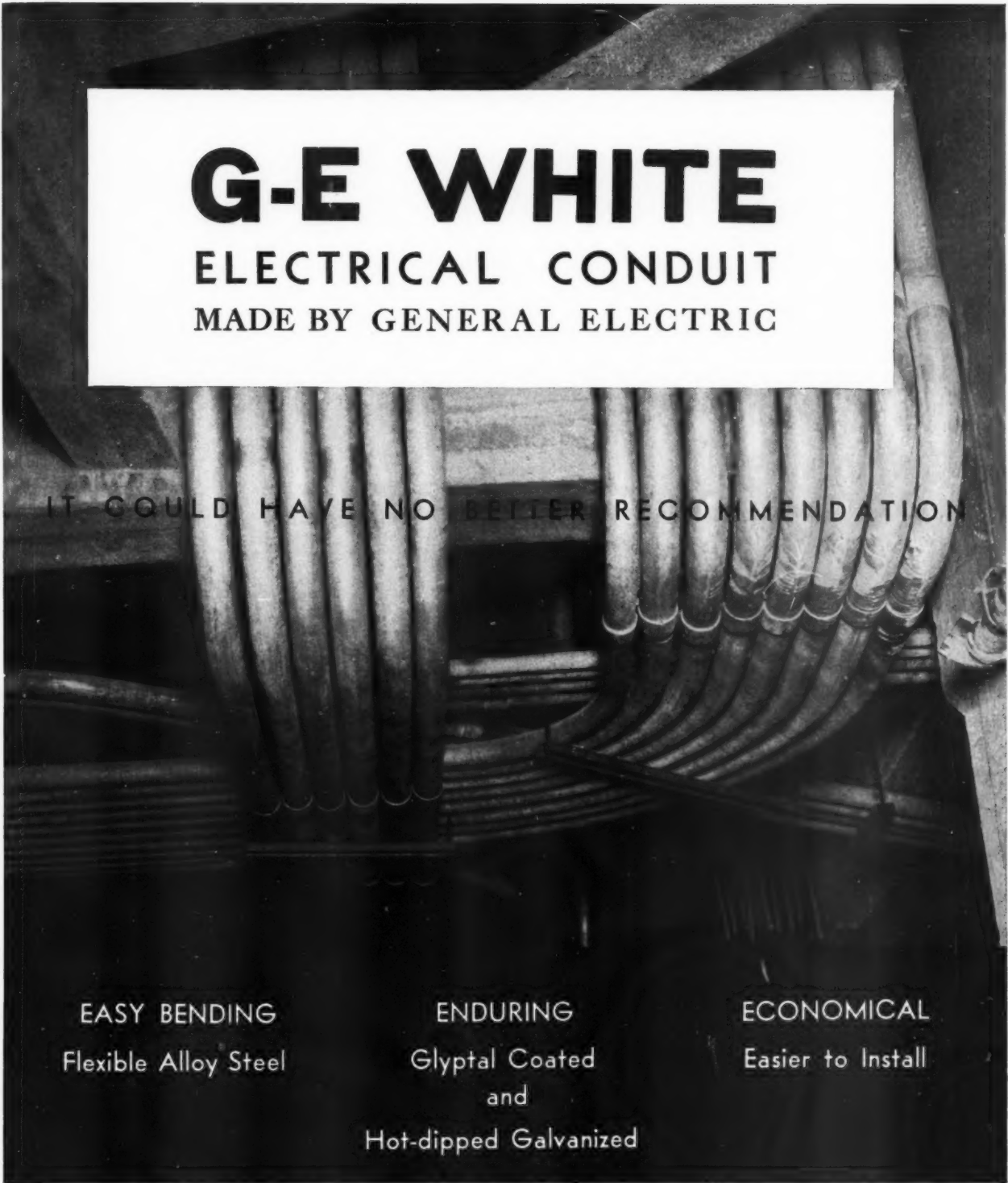
Concerning the virtues of the architect-built house,

we are quite clear. Of the *economics* of small-house designing we would know a deal more.—From The Architects' Journal of London.

Color in Architecture

A GREAT knowledge of theory cannot alone produce great color decoration; a sense of suitability of pattern, of quality of finish and of material is equally important. It is extraordinary how frequently 'suitability' seems to be ignored, yet it is a primary condition. The decoration of buildings or rooms used for short intervals may have greater strength or less subtlety of color than those in use for long periods, e.g., a cinema or casino may have a more exuberant scheme of color than a living or bed room.—L. H. Bucknell, F. R. I. B. A., in a paper read before the Sheffield, South Yorkshire and District Society of Architects and Surveyors.

WE have recommended to our distributors that they turn over to local architects the work of designing homes and that they discontinue the use of stock plans entirely." So states W. D. Sawler of the Morgan Woodwork Organization in a letter to Clarence H. Tabor, Jr., president of the Architects League of Northern New Jersey. The theory that the stock-plan is a tree which does not always bear its expected kind of fruit is apparently gaining in favor.



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Boston Architects May Help Eliminate Bid Shopping

THE Boston Building Congress has submitted a statement to the Boston Society of Architects concerning the elimination of shopping of bids. The statement follows:

The welfare and adequate remuneration of the subcontractor affect the interests of the owner since they affect the character of the work. Contractors, as a rule, will not produce adequate work for inadequate payment.

Hand in hand with cut prices goes cut quality; hand in hand with delayed payments and other impositions, go delayed progress and skimping of effect.

A wide range of quality in resultant work is possible, in spite of any practicable supervision. The best security an owner can have is a competent contractor performing a contract for an adequate price. Any procedure that tends to lower the average competency of the contractors employed, and that tends to force them to function under the financial handicaps of delayed payments and inadequate prices, is an inevitable jeopardy of the owner's interests and leads inevitably to inferior work, delays, litigation and increased maintenance charges.

No method should be established that will in any way impair the single responsibility of the general contractor for the complete performance of his contract, or that will restrict legitimate competition among competent and responsible bidders. Competency is not proven by ability to secure a bond, and every contract that has to invoke the bond involves loss to the owner.

We recommend that together with his proposal, every general contractor be required to submit on the form

prepared by the architect, a list of the names of the subcontractors proposed for the portions of the work designated, and that the successful bidder, by the proposal, shall agree and shall be required in all cases, to employ the subcontractors so named, excepting only such as are rejected by the architect as unfit, and that for these the contractor be required to submit others that are satisfactory.

It is strongly emphasized that the procedure indicated will accomplish its purpose only if the architect insists upon the use of the subcontractors named in the proposal, if they are satisfactory.

We believe this recommendation is sound and will be to the best interest of the owner and architect, and will in no way affect the single responsibility of the general contractor. We believe it will tend largely to eliminate the shopping of subbids, and that this will tend to improve the interest of the subcontractor in the work, with a resultant improvement in the quality of the work produced, which is to the interest of the owner.

While the practice of shopping of subbids is more flagrant in public work, we know that it exists in private work where the architect's procedure does not tend to make it impossible. Its prevention lies wholly in the hands of the architect, as he, by his procedure, can eliminate the conditions under which shopping can be carried on. If he, on the other hand, creates the conditions under which it thrives, he cannot properly, or to any purpose, blame the contractors and subcontractors who, in the face of undesirable competition, adopt similar undesirable practices in self-defense.

Engineers License Necessary

A CLEAN-CUT case of an engineer qualified by training to practice engineering but unlicensed in the state where he was practicing has been decided against the engineer, according to the Engineering News Record. The point at issue is one which has given concern to proponents of license laws ever since licensing was first proposed, and one which until now has been purposely avoided in most states. In the few cases of license law violation that have gone to court heretofore the issue has centered on incompetence. The case in point is one brought by the state of New York against Domenico Briganti, a civil engineer educated at an Italian university. He was charged with practicing engineering and (through use of the term civil engineer on his letterhead) holding himself out as able to practice, without being licensed to practice. In defense of the use of the title civil engineer Mr. Briganti claimed that he had a right to such use because of the degree conferred upon him. This view was rejected by the court. It held that use of the title is in direct violation of the law; that if permitted it would lead to needless confusion. While

this decision is from an inferior court it serves as a clear indication that an engineer, regardless of his qualifications, may not with impunity continue to practice engineering in states where license laws are in effect, nor may he use titles tending to give the impression that he is licensed to practice. More important still, the decision makes it clear that the unqualified man cannot circumvent the law by avoiding the direct use of the descriptive term (in this case "professional engineer") used in the law to describe the man licensed to practice under its provisions.

IN an address before a group of lumbermen A. C. Gauen of Collinsville, Illinois, said, "Competitive methods are forcing us to a finer degree of merchandizing the full merits of our product." The professions are rapidly learning that this is not true of industry alone. The fact is being continually forced upon architects that they too have a merchandizing problem—one in which the full merits of their service must be made known.

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DOES NOT BREAK THE BOND

Structural and Decorative Trends in Glass

(Continued from page 43)

highly developed in them will ultimately serve the ends of aesthetics and luxurious living as well.

Where an entire wall of glass is not wanted, the cantilever method of construction has made it possible to free the window space of all interrupting piers, and so to extend the windows in horizontal bands across or around the buildings. Thus originated one of the familiar resources of the new architecture, adapted to big and little buildings, factories, shops and homes.

THE future fenestration of residences is forecast in the practise of the architects of the "International School," who are guided wholly by practical considerations and not at all by rule. In their houses, windows are placed where light is needed, and if that need is great or a view is particularly fine, the areas of glass are limited only by the dimensions of the rooms. Thus delightful living conditions, and a peculiarly dynamic type of exterior design, are both attained. Le Corbusier's Savoye house at Poissy-sur-Seine is an example among many: its elevations are cut by long banded openings, and a second-story living room is separated from the terrace on which it opens only by sliding panels of plate glass, from floor to ceiling.

The all-glass house is only a step beyond. Given a metal skeleton to support it, there is almost no function in building which this most beautiful of materials cannot perform. It need not be confined to windows: spandrels and panels may also be of glass, opaque or translucent. They may be plates, set double to reduce the radiation of indoor heat. Or they may be built of glass bricks. Materials for both are available as a result of the scientific research by which progressive glass manufacturers are constantly extending the use and the usefulness of their products. It is worth while to examine some of these new facilities which industrial development is offering to architecture.

After two years of research and experiment there has just been placed on the market the first American-made glass brick or construction block. Here is the material for those "shimmering fabrics" of which Wright dreams. This hollow block, about twice the volume of an ordinary brick, bears on its face a wave design of sinusoidal curves which makes seeing through it impossible. At the same time these waves serve as prisms to gather and transmit the light from a wide angle, and as a result a wall of these blocks sparkles and shimmers softly with an ever-changing radiance.

Although intended primarily for non-load-bearing walls, these blocks have a load-bearing value of 4,700 pounds per square inch. Locked together and bonded with a mortar of portland cement and fine sharp sand, they make a wall impervious to moisture and with an insulating value about equal to that of ordinary masonry of equal thickness. They are made of the Pyrex type of glass which has high heat-resisting properties, and will come unscathed through fires in which ordinary glass melts and flows. In fact, a wall of these blocks has been heated to 1700° Fahrenheit and impacted with

a stream of cold water from a firehose, with no more damage than a checking of the surface! Here is a super-material, indeed.

The producers of plate glass are making their contributions, too. The use of plate glass in windows where cost is not a primary consideration undoubtedly will increase, because of its superiority to ordinary window glass. The latter, whether produced as a flat drawn sheet or by the obsolete cylinder method, always shows a certain amount of distortion due to waviness, and in some degree to varying thickness of the sheet. Plate glass, by contrast, having true optical surfaces, ground plane and high polish, effects no distortion whatever of objects seen through or reflected from it. As it is now possible to obtain plate glass in thicknesses comparable to window glass, a difference in cost is the only advantage of the latter.

Where hazards of breakage are great, laminated glass or a product known as a case-hardened glass are available. In interiors exposed to strong sunlight, for instance, the structural use of ordinary plate glass in black or opaque colors is inadvisable: it absorbs the sun's heat very rapidly, and if a portion of a sheet should be in shadow and the rest not, a strain is set up which inevitably results in breakage. There are other special uses for which the case-hardened product, having a heat resistance ten times and a tensile strength four times that of normal plate, is adapted: the underwater illumination of swimming pools, for instance, where one surface of the glass is subjected to increasing heat while the other is in contact with cool water. Ordinary glass will not stand such a strain.

AMONG new developments is a new type of plate known as Water White, which is a clear white color in any section. It not only does not distort the light rays but gives an exceptionally clear transmission of all the various wave-lengths of visible rays: in other words, it transmits colors as accurately as lines. There is also Flesh Tinted Glass which in mirrors flatters one's complexion. Science may occasionally condescend to be merely ingratiating!

Not only in exteriors, but in interiors as well, the "super-material" is gaining ground both structurally and decoratively. Glass bricks, for instance, open up fascinating possibilities: a bathroom whose walls are radiant and sparkling with unseen lights concealed behind them; halls with luminous floors; rooms lighted at night from delicately iridescent sections of the walls.

Structural Glass has corresponding possibilities of its own. It is a heavy opaque plate made in a variety of colors, and already widely used in toilet and bathroom installations. But there is no reason why architects should not avail themselves of its extraordinary beauty in the panelling of other rooms than those into which its sanitary virtues first introduced it. In fact, certain decorators in Paris have created apartments wholly lined—walls, ceilings and floors—with opaque glass and mirrors.

(Continued on page 112)

PICTURE WINDOWS

This fascinating subject, one of increasing interest to those who build fine homes, demands glass of the very highest quality. The immense lights illustrated, as well as many others in equally appropriate surroundings, are L·O·F Polished Plate Glass. They are surely evidence that the architect's specifications will be met with a product which cannot fail to achieve the results you desire.



CAMP Huttridge, the Adirondack home of Mr. and Mrs. Edward F. Hutton, was designed and constructed by William Baumgarten and Company of New York. It contains four Picture Windows of L·O·F Polished Plate Glass, each one 20' wide by 7' high. The plan, plus the quality of the glass



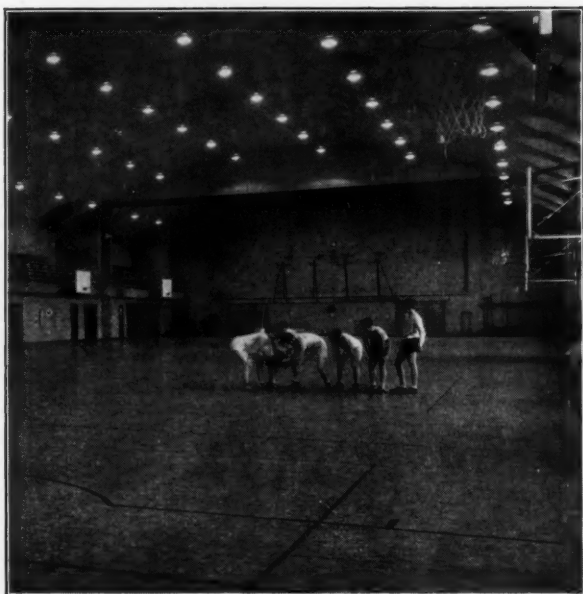
which was furnished by the Dwelle-Kaiser Company, L·O·F distributors in Buffalo, makes the rugged beauty of the mountains an integral part of the house itself.

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Opaque structural glass is supplied under such trade names as Vitrolite or Carrara Glass, and will figure prominently in buildings of the future. It is produced in a variety of plain and agate colors. Remarkable advances have recently been made in the beauty of surface and colors that make this material fit in particularly well with modern design trends. Interesting decorative effects can be secured by gradations of sandblast tones and color inlays.

New installation methods make structural glass entirely practical for many uses heretofore reserved for many other and older materials. It has advantages from a sanitary standpoint in being easily kept clean, it is impervious to moisture, ordinary acids and other deteriorating influences and can be used for either interior or exterior purposes.

For purely decorative uses, an architectural glass has been developed by the Corning Glass Works. Frederick Carder, for many years art director of the firm, who is not only an eminent artist but one of the world's great authorities on glass, has given his attention to the development of what is in reality sculptured glass. Cast in panels and columns of a variety of shapes and sizes, both in solid reliefs and in pierced grilles, the beautiful products of Mr. Carder's art have a wide range of adaptability. They may be built into lighting fixtures, screens, grilles, or wall panels, and can be illuminated either from behind, or, with striking effect, from above or below. Light and glass, two of the most beautiful aesthetic mediums of this age, are thus brought together in combined use to each other's enhancement.

THE art of decorating plate glass with acid-etched or sandblasted designs has been greatly advanced in recent years and places another resource at the architect's command. It is now possible to obtain the most delicate or the deepest type of carving, yielding exquisite modelling and beautiful definition of line. The designers of Paris have shown what can be achieved in this delicate type of bas relief sculpture.

In furniture too, not only the beauty but the practical virtues of glass have won it increasing popularity. In crystal, mirrored, black or colored plate, its cleanliness and resistance to heat and liquids are as desirable as its loveliness. Soon we may see much of our more prosaic home equipment—bathtubs, lavatories and sinks, for instance—undergo a sea change and emerge in new beauty, cast in glass. And glass pipes will enable us to eliminate the hidden horrors that lurk in our so-called "sanitary" plumbing.

In fact the all-glass house—except for its reinforcing skeleton of steel—is an immediate possibility. Glass inside and out, glass furniture and equipment, colorful, translucent, hygienic, this house of the future which yet is so near will realize the most fantastic dream of the most rhapsodical of our modern architects. And if the house, why not the garden too? Why not houses within houses? In a structure of steel and glass our gardens may be beautiful the year around, and we may walk out of our open doors to take tea on the lawn under a blossoming tree, while all the landscape outside is white with snow. Stranger things than this have happened.

General Contracting As It May Be

(Continued from page 55)

that "one good job deserves another" and contractors are being selected on the basis of good past performance.

Justice implies a just price for service rendered. A premium for performance is better than a penalty for non-performance. Good bidding practice and a sound incentive for quality production within a time limit is a proper form of reward. A "sliding construction fee" encourages cooperative results for the benefit of the public and satisfaction of both designers and producers. On private work it provides an arrangement where interests are mutual instead of diametrically opposite. It provides the proper spur to initiative and coordination. Our language does not include adequacy of words to convey exactitude of specifications, or permit the comprehensive use of many new materials and methods which are being rapidly introduced. The sliding fee form of contract also considers the human equation of the inspector selected to interpret the proper fulfillment in design and construction of a building.

Another field for exploration is just what limitation if any shall be placed upon construction of buildings. Perhaps under the American Constitution it will always be proper for an American citizen to build what he wants, and where and when he wants it, provided he does not solicit funds from the public to care for the

building. We have gradually learned to abide by certain zoning, safety and building code restrictions. Where public funds are invited, however, we may have to set up "Structural Commissions" similar to the Public Service Commissions now serving the public with relation to public utilities. It does not take much stretch of imagination to view a hotel, office building or an apartment as a public utility. It may presently come to pass that "permits of necessity and convenience" will be warranted for such structures. Such permits will not only require satisfactory evidence of the why and what, but the when and where. The one consideration against the requirements of such permits is the human limitation of the commissions. Who shall say whether a modern hotel is necessary or whether a new office building in an uptown section of a city will be convenient?

On the other hand, the construction industry faces today, more than ever in its history, the need of re-inspiring confidence of investors in construction securities. Perhaps we shall have to provide adequate insurance against the rapid obsolescence or depreciation of building investments. Such insurance must take into consideration local characteristics, customs and demands.

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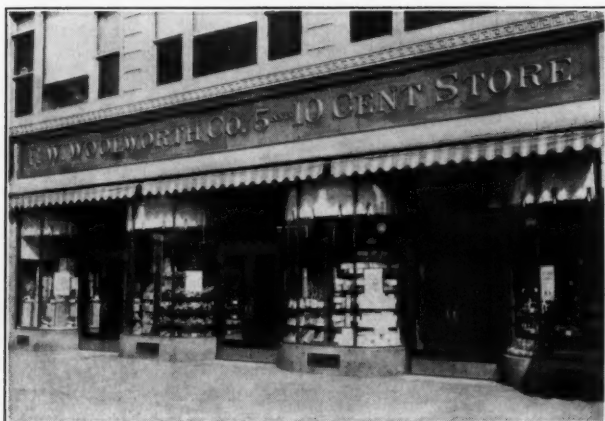
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safeguarded, if we would again obtain large amounts of capital to permit the modernizing of our present buildings and the production of desirable new ones. As Colonel W. A. Starrett of New York so well said: "The production of better housing facilities is the one immediate vital need of America." The elimination of grade crossings on our highways, the coordination of transportation facilities, the production of more diversified educational units and the erection of more beautiful public buildings must also receive proper consideration.

Constructors of tomorrow will face these problems with the same ingenuity which has hitherto permitted them to erect in America the wonderful structures that architects have evolved from their dreams. Through cooperation of endeavors and coordination of efforts the generations to come will produce structures of magnitude and variety far beyond even the present dreams of those who read this article.

The Evolution of a New Architecture

(Continued from page 53)

roofed box. Standardization to this extent is unnecessary.

Though the fine qualities of concrete walls and flat roofs are conceded, it does not follow that brick, stone, clapboards, and gables can no longer be used to advantage.

In providing too much window space and insufficient interior partitions, the extremists are making sad mistakes. Man is a mass of paradoxes; a gregarious animal, he definitely requires privacy and though the home is used to house the family as a unit, it must at the same time provide some isolation for its various inmates. In such open houses quiet thinking would be an impossibility. Whereas the spirit of reflection and contemplation is not considered characteristic of our age, there are nevertheless some who indulge in this luxury, and it is to be hoped that their kind will multiply.

Another exaggeration in the name of standardization is to interpret literally the title "International Style," sometimes applied to work in the present modern manner. Understood thus, it stands for a style which will universally be given identical expression for the reason that the principles and materials used will be identical. Such uniformity should not and can not be. It did not appear in past periods. When the principles of a new manner spread from country to country, the interpretation differed in each place consequent to the influences of nationality, topography and climate. This uniformity will not appear now, for these same influences are as potent as ever. Perhaps this scientific age will develop, sometime in the future, a world peopled by men socially, intellectually, linguistically and racially homogeneous. In that day a true international style may be possible; but even then, the polar regions and tropics, mountains and plains, will not be equalized.

Understanding that it is the interaction of many influences which produces a style, we can say with Anatole France, "Let us be wise enough to recognize that our works are far from being exclusively our own." We are children of our day; yet, however important the present may seem to us, it is but an interlude between the past and the future.

PERSONALS

TOWNSEND, STEINLE & KASKELL, INC., architects, have removed to 190 Riverside Drive, New York.

MILLER & YEAGER, architects, Terra Haute, Ind., state that all their catalogs have been destroyed by fire and that they would like to receive from manufacturers and fabricators catalogs, handbooks, etc.

TANNER AND MABRY is the name of an architectural firm organized at Houston, Texas. It is composed of John R. Tanner, B.S. Arch., D.P.L.G., and Armon E. Mabry, B.S., C.E., D.P.L.G.

R. F. RICE has opened an architectural office at 30 North Dearborn Street, Chicago, Ill., and desires manufacturers' catalogs.

REXFORD NEWCOMB, for the past fourteen years professor of the history of architecture at the University of Illinois, has been appointed Dean of the newly established College of Fine and Applied Arts.

ISADORE NAFTALI has opened an office for the practice of architecture at 665 Newark Ave., Jersey City, N. J. He desires manufacturers' catalogs.

TALBOT F. HAMLIN, A. I. A., 19 West 44th Street, New York, will be in charge of a tour to be made during the coming summer for the study of architecture. The tour will visit Paris, Germany, Austria, Stockholm and Copenhagen. Mr. Hamlin is lecturer on the history of architecture at Columbia University.

DR. HENDRIK PETRUS BERLAGE, Holland, has been awarded the Royal Gold Medal for Architecture, given annually by the Royal Institute of British Architects, for his services to architecture and town planning.

ERWOOD P. EIDEN, architect, formerly associated with George M. Lindsley, has opened offices at 1814 Arvin Drive, Glendale, Cal.

JAY I. ENGLISH, 57 Glendale Ave., Toronto, Canada, has just become a registered architect and desires catalogs, etc., from manufacturers.

HERBERT M. STERN announces that he will continue the practice of architecture at 401 Hiram Sibley Building, Rochester, N. Y., in the offices formerly occupied by Arnold & Stern, architects. Clarence A. Damuth and Alan Dailey will continue their association with the office.

EUGENE SCHOEN has been appointed associate professor of interior architecture at New York University.

GEORGE D. RIDDLE, architect, has removed his offices to 2826 Cedar Ave., Long Beach, Cal.

T. WALKER GAGGIN, architect, is continuing the practice of architecture at the First Trust & Deposit Building, Syracuse, N. Y., the firm of Gaggin & Gaggin having been dissolved.

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Sound Will Be Controlled in Every Room

(Continued from page 71)

of sound in a room, this sound being that which originated in the room or that which entered the room from an outside source. The time has come when attention must be given to the prevention of unnecessary sounds and noises and to the prevention of the passage of sounds necessarily produced in one place into other spaces and rooms.

The engineering development of air conditioning will call for closed windows and doors, and will require better heat insulation; this may be combined with both sound insulation and sound absorption. This will certainly bring about a new type of acoustical specification for office and school rooms and perhaps for factories. In some instances, more sound treatment of interior surfaces will be required, while at other times less sound absorption will be needed, but the necessity for consideration by the acoustical engineer will be more important than before. It may be pointed out that the presence of artificial ventilation will have no appreciable effect upon acoustic conditions; such ventilation will in no way correct acoustic defects.

When Professor Wallace Sabine wrote his first paper on acoustics, which was published in *AMERICAN ARCHITECT* in 1900, the only material available for special acoustic treatment was hair felt, which might be covered with an unpainted thin fabric. Since then many products having acoustic properties have been developed, and any desired acoustic condition can now be secured, but the mechanical characteristics of many of these materials fail to satisfy the architectural requirements.

JUDGING from the general trend of building construction, a considerable change in the materials for acoustic treatment may be expected. Both the owner of a building and the architect are justified in demanding that the scientist and engineer shall develop materials which are wholly satisfactory from structural, sanitary, and decorative considerations, and which shall be durable and not liable to alteration of the acoustic qualities. Exposed surfaces of fibrous or friable materials are not satisfactory, and improved methods of adapting wood and metal and ceramic materials are certain to be made available. All visible acoustic surfaces must be capable of being decorated with oil paints or otherwise without diminution of their acoustic properties.

Following the trend of construction in public buildings, the use of acoustic plasters will probably disappear. It is also certain that it will be possible to select materials of suitable acoustic properties and to apply them so that the cost will not be appreciably greater than when non-acoustic materials are employed.

The constant evolution and revolution in architectural and engineering practices, to keep pace with changing world conditions, require that the science of acoustics shall change, and that it shall not only be more effective, but that it shall also develop new methods of procedure. To the writer it seems that a new era in acoustical engineering is about to begin, and that many seemingly unrelated influences are really combining to bring this about.

The catalog of any advertiser will be sent on request. Use post card on page 101.

AMERICAN ARCHITECT

Clients Will Demand Air Conditioning

(Continued from page 45)

(some of them are for cooling only) and by the fall of 1932 we should know much more about their potentialities.

It is, of course, well known that methods of mechanical refrigeration especially adapted to air conditioning have been developed and made available. Notable among these is centrifugal refrigeration—quiet, long-lived and so perfectly automatic that practically no expert attention is required, while the highest efficiencies are obtained.

Simplified, inexpensive, highly practical equipment for both summer and winter conditioning of even the smallest houses will soon be available. This equipment will perform adequately all the necessary functions and yet require no more attention than old-fashioned "radiator" heating. It will cost but little more than such antedated equipment.

What will all this mean to the architect?

Just this—air conditioning is ready to become his magic servant. Just as new methods and materials of construction have contributed to structural art, so can air conditioning contribute to the human value of his structures, whether these be industrial, public or residential. The time is near at hand when buildings not air conditioned will be classed as obsolete.

While in many industries air conditioning has proved indispensable, it is the realm of "human" applications—for comfort and health—that embraces the most interesting aspects of the future.

It is certain that air conditioning either complete or modified will shortly become standard equipment in even the most modest homes. Some equipment is available now. Other equipment will become available in the near future. And still other and more improved apparatus will come with a demand for it.

Perhaps the most outstanding application of air conditioning will be in the hospital. Contemplate for a moment that this will mean—optimum conditions in the operating room and in the convalescing rooms; complete banishment of discomfort and vitiation due to atmospheric conditions, so that the patient's recovery is not retarded by such effects but expedited.

The office building and the hotel of the immediate future must include air conditioning as an essential factor of initial design. The utilization of air conditioning will enable the prescient architect to go about his designing unfettered by the erstwhile necessity of "ventilating shafts," "light wells," "outside exposures" and such considerations. Interior, windowless rooms can be made more comfortable, healthful, desirable than "outside rooms" by means of air conditioning and modern lighting, embodying perhaps sunray lamps more advantageous than direct exposure.

The time is not far distant when air conditioning will spread about us its benign influence throughout our entire lives. Our homes will be conditioned, our offices, factories, stores, places of recreation and our conveyances, subways, street cars, busses, even private automobiles, even as railway cars and ships are now conditioned!



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Why Discriminate Against the Architect?

It is only at times of economic depression such as this through which we are passing that we are disposed to take stock of the conditions under which we live, with the object of bringing about needed reforms and, as self preservation is the first law of nature, we do so, not so much from altruistic motives but because of dire necessity.

The present economic depression which is world-wide has taught us one fundamental lesson—that national boundaries no longer provide security from the economic ills which affect our neighbors. . . . Old forms of government are being taxed to the breaking point to cope with the new conditions, but radical changes in government and economic systems must be made if the new world, which has been created by such unparalleled scientific and industrial changes, is to be successfully governed.

It was formerly the object of every nation to maintain a favorable balance of trade in order that her currency might be at a premium in the world's markets; that is to say, that other countries must pay in gold rather than in kind for the commodities purchased from the favored nation. The fallacy of such a policy is evident from the position which is occupied to-day by the United States. The treasuries are filled with the world's gold, but the factories are idle. The Canadian dollar is worth only eighty cents in New York funds, and as a result Canadian dollars are being spent at home and the American factories remain idle.

It is high time that our governments recognized the application of this same principle, in distributing to architects in private practice commissions to plan and supervise the construction of public buildings; why the architect, who is a tax-payer, should be discriminated against and his services usurped by governments which he helps to maintain, is difficult to understand. . . .

The chief object of present governments throughout the world would appear to be that of restoring agricultural, industrial and commercial activities which would result in happier economic conditions. To this end an intelligent observer would expect to see the producer or the potential producer predominate in the councils of state. He might reasonably expect to find among elected representatives trained economists who would function with the authority of legislators as well as in an advisory capacity. Also he would expect to find architects and engineers experienced in supervising expenditures of large sums of money in conformity to the laws of structural economics. As it is, you can each answer for yourselves from what profession most elected servants of the public are derived. They are not even from the ranks of the producers. It is perhaps only natural that so many legislators should be selected from the legal profession, for traditionally government was largely a matter of law making. Today, conditions are different and government has become chiefly concerned with the economic life of the state.—From an address by James H. Craig, President of the Ontario Association of Architects, before the Ottawa Chapter, O. A. A.

A COURSE in real estate is now offered as one of the extension courses of Columbia University.

Expected Improvements in Plumbing

(Continued from page 57)

The office and public building of the future will have the same variety of fixtures as are in general use today with the possible addition of urinals for women. One large firm is now doing development work in an attempt to produce a sanitary and economic fixture. Much research and development should be done to produce more sanitary toilet rooms, particularly in public places, and probably all fixtures will be so designed that legs and similar cleaning impediments will be entirely removed.

Plumbing systems also include several other functions not mentioned above such as drinking water systems which in the future will be very simple, as filtering and cooling will be by semi-portable self-contained automatic units. Centralized liquid soap systems are not uncommon at this time and will be further developed if satisfactory rentals can be obtained. Vacuum cleaning has been developed in the last few years to a high degree of efficiency and every building in the future will have a complete centralized vacuum cleaning system with a liberal number of outlets in all sections. In very high buildings, intermediate tanks will be restricted in number as fixtures are being developed to operate under higher and higher water pressures. Tank locations will probably be determined by fire-fighting requirements in connection with desirable fire-pump location.

Toilet and bathroom accessories are becoming more important and in the future these rooms will be planned to take care of paper holders, towel cabinets, waste baskets, air dryers, mirrors, shelves, etc. The future will show a greater consideration for sanitary fixtures and accessories such as pedal operated valves and toilet doors which can be opened without handling a knob which may have been soiled by the preceding user. The modern therapeutic lamps, both ultra-violet and the infra-red, may be common bathroom accessories.

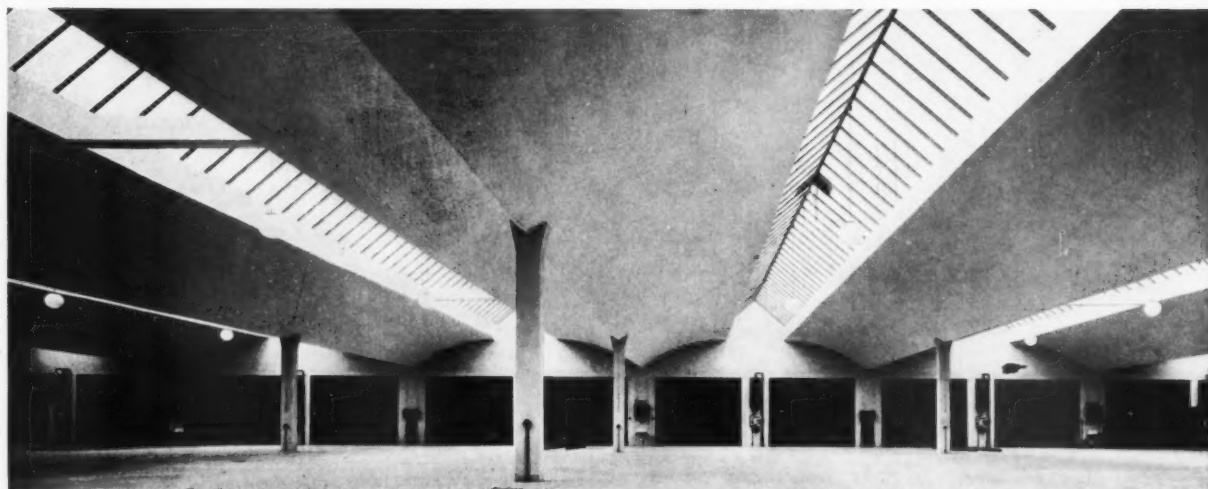
A few of the plumbing items to be carefully considered in planning buildings today are:

1. Size and arrangement of toilet and bathrooms for convenient use.
2. Color and texture of walls and fixtures.
3. Methods of sound control.
4. Detail arrangement of accessories.
5. Provision for piping and access.
6. Outside water supply and sewage disposal.

THE first complete apartment house installation of sunlamps in bathrooms is being made in the Edgewater Apartments, Lakewood, Ohio. The units may be used independently or in combination with the regular bathroom lighting fixtures.

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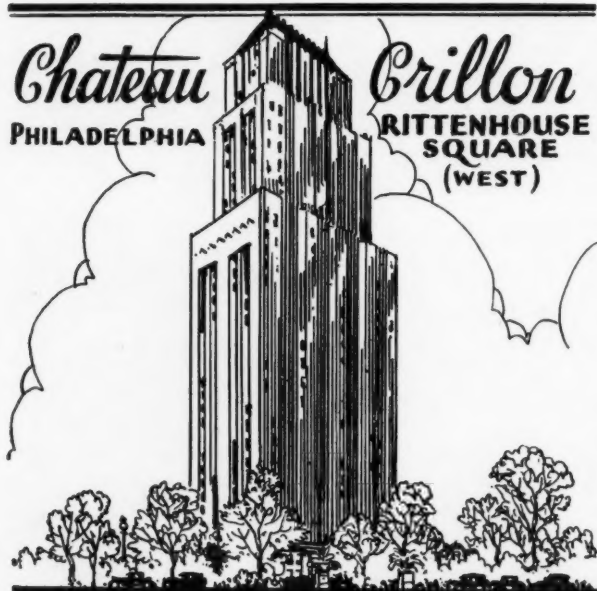
Forces That Influence the Profession's Future

(Continued from page 31)

For it should be obvious that the current scheme cannot stand the strain of an appreciable increase in the rate of technological unemployment that has already developed within it.

But while this new technology is in its experimental stage, structures will be erected by current methods under the guidance of the aims of speculation. This suggests that, in all probability, such structures will be less durable, that they will be more perfectly functional in respect to the needs of financial business and less so in respect to the common welfare. It means that, with the nature and direction of growth of communities determined by the exigencies of speculation, it follows that the processes of shuffling will continue. As functions and elements are added, communities will grow more confused in their arrangement and pattern.

Meanwhile those who continue to advocate the antiquated ideas of prevision—a durable, stable environment, will be pointed out as having been moved in their pleading by the spirit of romantic past. Not much attention will be paid to them although their arguments might well be construed as a warning against the subordination of the greatest of the arts to a speculative venture which might, upon a future occasion of forced liquidation, initiate the downfall of the present order.



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SEPTIC TANK CO.

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Every House Will Have Its Own Theatre

(Continued from page 47)

to pictures. All of these instruments require identical sound amplifier and loud speaker equipment and it is more economical as well as more satisfactory to provide one *high quality* sound system to serve the needs of all.

Two things seem certain: the home of the future will contain a good sound projector, centrally located, and it will have a *built-in system* of loud speakers to serve individual rooms.

Good sound projectors are large—too large for cabinets. They must be built into walls or ceilings. When built into ceilings, types of speakers now available usually project a foot or two through the floor above. Fortunately a dynamic speaker unit on the end of a horn may be "boxed in" in a small case, lined with hair-felt or other good sound absorbent material, without seriously impairing the tone quality. Where the room above the loud speaker is finished and occupied, the speaker case may be made to serve as a table or stand. Surprisingly little sound will be heard in this room. For best acoustical results, dynamic speakers mounted in cabinets or in flat surfaces must never be "boxed in" too tightly, neither in front of nor behind the diaphragm.

Better sound proofing of private rooms, and the desire by some individuals for entertainment, while others do not wish to be disturbed, will lead to a system of loud speakers built into walls or housed in cabinets for distributing sound to these rooms.

Inasmuch as loud speaker units in flat surfaces should

not be "boxed in" it is necessary to install the unit in a recess on one side of the partition, with a framed-in hole about 10 inches square in the partition, concealed by a grille.

LLOUD SPEAKER units of shallow depth design are now coming into favor, being installed inside the partition with grilles on both sides opening into fairly large enclosures such as two rooms, or a room and its bathroom, or a room and its wardrobe closet. This is now possible in partitions of six inch or greater thickness, or in thinner partitions, where the grille on at least one side can be slightly projected into the room.

The perfected remote control of today centralizes the controls of a whole system, incorporating a broadcast receiver, record-changing phonograph and extension loud speakers, for convenient and reliable adjustment. It will take but the conversion of two "speaker" control push-buttons, or two station buttons in each control box to extend remote control to the Talking Book instrument, when it arrives. Due to the delicate adjustment or the constant attendance of an operator required for other devices such as television, talking movies, short wave radio, or the electric piano, it is doubtful that remote control will ever be extended to them and, indeed, except for the switching on and off of loud speakers, it appears that remote control for these services should not be required.



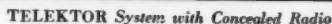
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"Good Housekeeping does not sell building plans. Requests for information about houses illustrated on these pages or in our bulletins are referred to the architect."

This statement, which appears on page 54 in May GOOD HOUSEKEEPING, briefly but clearly defines the policy of Good Housekeeping Studio of Architecture and Furnishings.

Good Housekeeping publishes monthly articles on the design and construction of houses for one reason only: To increase the public's appreciation

of good domestic architecture and the value of the architect's services.

From the interest with which these articles are received by Good Housekeeping's 1,850,000 readers we believe that this magazine is doing more to promote successfully the cause of good domestic architecture than any other magazine of large circulation.

GOOD HOUSEKEEPING

Everywoman's Magazine

The catalog of any advertiser will be sent on request. Use post card on page 101.

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BEGINNING IN JUNE . . .

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TO ITS REGULAR EDITORIAL
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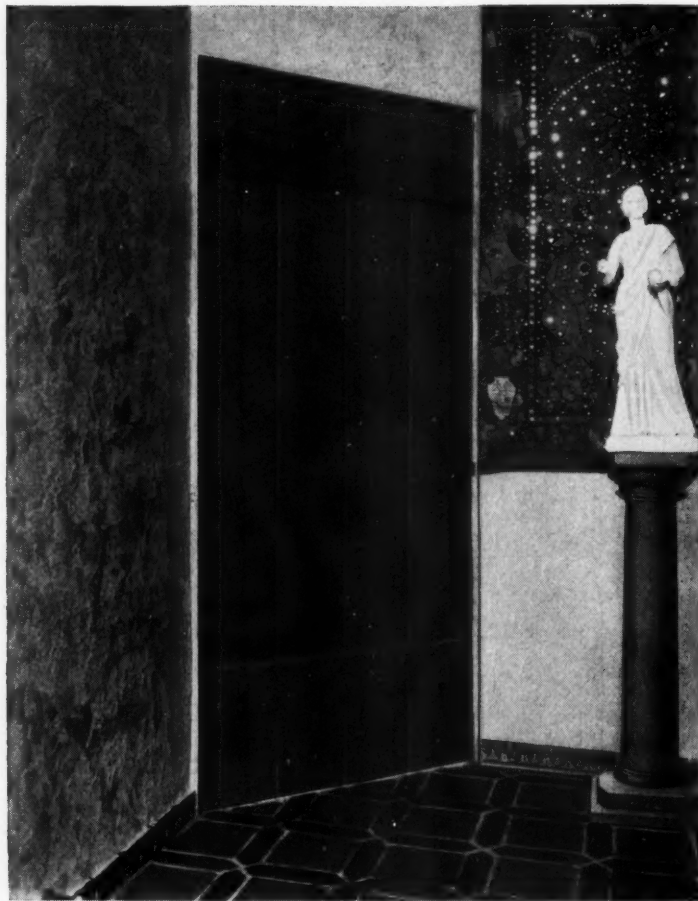
- The design of this valve will interest promoters of such construction as large commercial buildings, hotels, schools, institutions, and factories.
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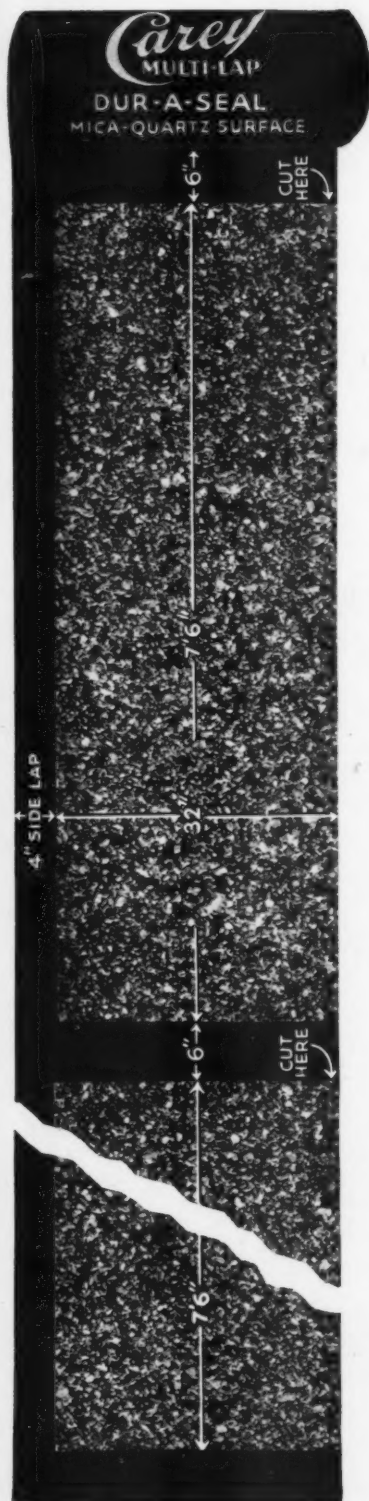
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See Carey Section—Sweet's 1932 Architectural Catalog

The drawing below shows the application of Carey Dur-a-Seal. Detail indicates the construction of Carey Master Built-Up Roof Specification No. 5.



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