CRANBROOK INSTITUTE OF SCIENCE BUILDING
A distinguished architect demonstrates that the academic building can dispense with the traditional approach.

DETOUR EDISON BUILDING
Scientific control of light, noise, and air in a utility company's new headquarters.

APARTMENT HOUSE
Air conditioning brings new problems and new solutions to the apartment house field.

PLUS
A distinguished group of architects, artists and scientists make their debut as editors.

FLORIDA ARCHITECTURE
An outstanding U. S. resort center turns to modern for its new residences and commercial buildings.

TWO HOUSES
Continuing the series of small house case studies.

EXHIBITIONS
Two exhibitions in California and Massachusetts; one designed for and both designed by architects.

PRODUCTS & PRACTICE
Welding: a new way to do a better job at lower cost.

THE INTEGRATED HOUSE
Pre-cut Framing: Los Angeles lumbermen and builders cooperate in plan which saves money for both.

BUILDING MONEY
Engineering puts low cost housing on a conveyor belt, builds 300 houses in 50 working days . . . Mortgage costs under a microscope . . . Houston's trilliplet modern apartments . . . NAREB and the building and loaners convene . . . Small house cost trend . . . The Lambert Plan for in-between housing . . . Remodeling of an apartment with a past . . . Seattle's second-hand home market.

MONTH IN BUILDING

THE ARCHITECT'S WORLD
Thought, contention, discussion, reminiscence from architectural minds that are also vocal.

THE DIARY
Comment, news, personalities from an architectural observer.

FORUM OF EVENTS
Bureau of Standards research . . . A pictorial record of news—significant, informative or merely entertaining.

LETTERS

BOOKS
in Government's housing program and announced that he had found a loophole in the preceding year (see above).

Most salient fact borne out by this month's statistics is that the dollar volume of permits for the first nine months of the current year has broken through the 1937 level by a small but significant one-half of 1 per cent—the first time since an unseasonal January volume of New York City permits succumbed the national 1937 level.

As of October, the cumulative volume of total contracts, whose fluctuations lag behind permits by as much as three months, was only 0.2 per cent shy of the 1937 level.

IN-BETWEEN HOUSING. After a talk with his housing lieutenants, President Roosevelt month ago called in the press, announced that he had found a loophole in Government's housing program and that he planned to fill it. He noted that the U. S. Housing Authority was financing projects to rent at $5 per room per month and downward, that the Federal Housing Administration was fostering projects to rent at $10 and upward, that no one was supplying housing in between these rental brackets. Further presidential comments indicated that legislation might he planned to fill it. He noted that the U. S. Housing Authority was financing projects to rent at $5 per room per month and downward, that the Federal Housing Administration was fostering projects to rent at $10 and upward, that no one was supplying housing in between these rental brackets. Further presidential comments indicated that legislation might be proposed at the next Congress which would lure investment to construction of the lacking in-between housing. The bait: a guaranteed income of from 3 to 3 1/2 per cent. The prey: individual investors who have $1,000 to $10,000 of cash on hand but who are afraid of Wall Street's securities.

Although the President emphasized that no such plan had as yet been devised, speculation was that it would approach the Lambert Plan in mechanics, but he stripped of some of its tax exemption features (see page 486). Meanwhile, the Lambert Plan, operating at Princeton, N. J., was housing low incomers at 65 cents (plus heat) per room, was netting its sponsors a tidy 4 per cent return on his investment.

Prospect of further Government entry into the housing field prompted the Metropolitan League of Savings and Loan Associations in tri-annual conference at New York City last month to send to President Roosevelt a telegraphic reminder that the Nation's savings and associations had for years been fulflling at least half of his desire—a 3 per cent return on housing investments for savers.

ENTENTE. "Widespread interest mortgage lending is indicated by the cent entry into the field in New York City of several stock exchange brokerage houses, investment houses and the counter dealers who have created special departments for the negotiation of mortgages insured by the Federal Housing Administrator. The demand for these mortgages . . . is such that upon purchasing the mortgages the investor must pay a premium of at least two points according to the last euro quotation."—President Bernard Hogan, the Greater New York Savings Bank.

"Two-thirds of the market to which building industry catered during the 1920's has now disappeared. In its place has come . . . a greater number of families who want houses . . . but can afford only if they are low cost."—Wilson Compton, Secretary-manager of the National Lumber Manufacturers Association.

"There is not and probably will not be any mass housing when applied to secp
RUTH'S BRIDGE CLUB DISCOVERS MASONITE

HELEN—Have you ever seen a lovelier home?

JANE—It's certainly the last word in modern houses.

MARCIA—I think the walls and ceilings are beautiful!

RUTH—You're right, Helen. You'd be amazed at how really inexpensive all these modern effects are with MASONITE Products. And they're a joy to me—they're so easy to keep clean.

MARCIA—You've started something now, Ruth. We're all going to tell our husbands about MASONITE Products as soon as we get home.

• Ruth's cheery living-room combines streamlined beauty with practical utility. The walls and ceilings are MASONITE QUARTERBOARD. The walls are grooved with a smart block pattern. The built-in desk, table and bookshelves are MASONITE TEMPERED PRESSWOOD.

When your clients build or remodel, naturally they want the modern advantages of MASONITE Products. Be sure you know all about the permanent, expensive-looking results these grainless boards can produce—at a saving. MASONITE dealers can help your clients arrange new-building and remodeling loans under F. H. A.

FREE SAMPLES

MASONITE THE WONDER WOOD OF A THOUSAND USES A MISSISSIPPI PRODUCT

SOLD BY LUMBER DEALERS EVERYWHERE

MASONITE CORPORATION, Dept. AF-12

111 W. Washington St., Chicago, Ill.

Please send me FREE samples and complete information about MASONITE—the Wonder Wood of a Thousand Uses.

Name

Address

City State

Copyright 1938, Masonite Corporation
rate family houses (as produced in England). To think so is simply construction manure."—President William H. Evans of Southern California’s Building Contractors Association.

Such comments as these added some interest to the Construction Industry Conference of the U. S. Chamber of Commerce held at the Nation’s capital in late October. What was more interesting was a Conference side-show where, for the first time, leaders of Building’s Capital and Labor sat down together to talk about labor relations and their effect on construction activity.

No attempt was made to solve the labor problem in a day, but several noteworthy advances were made. Labor assumed a more approachable mood; the desirability of eliminating jurisdictional disputes was frankly discussed and generally agreed upon by both ends of the table; a plan was sought (but not found) for keeping Labor’s wages and manufacturers’ prices from going up. Since the view was taken that current wages and prices are not unreasonable, emphasis was placed upon their stability rather than their reduction. The fact that many wage contracts will expire at year-end lends significance to this phase of the discussion.

No wild promises and predictions came from the meeting. Its biggest achievement was establishment of Capital and Labor’s “entente cordiale” or, perhaps, the unanimous adoption of a resolution requesting that the Chamber of Commerce call another similar meeting in the near future. Meanwhile, Labor’s leaders have over the important issues at hand, employers’ representatives discuss the questions with their respective trade associations, and Building waits.

FREAK TO INDUSTRY. Some years ago spun glass was exhibited in small-time circuses and roving carnivals along with their retinue of freaks. Lion-mouthed barking dogs displayed to local yokels a fair damsel clad in a gown made “wholly and solely of glass.” Span glass was news.

Month ago, spun glass was again news. Two big-time manufacturers, Owens-Illinois Glass Co. and Corning Glass Works, announced that with seven years and 85 million of research they had developed spun glass (which they now call fiber glass) from a carnival freak into a useful product for the construction, household equipment, electric power and refrigeration industries. And, the announcement was copped with the formation of Owens-Corning Fiberglas Corp., the appointment of Corning’s President Amory Houghton as chairman of the board and Owens-Illinois’ recently resigned Vice President Harold Boeschenstein as president. Jointly financed by both parents but a corporation part of neither, the new corporation will produce a variety of fiber glass products, enter a field dominated largely by makers of organic textiles.

A glass rod of spider-web thinness is not much to look at, but a fabric of many such rods has a world of possibilities. Use of this lightweight, small-bulk, flexible material as electrical insulation will decrease the size of electrical motors. Being impervious to acids, it holds much for the manufacturers of batteries. As a temperature insulator, it may compete with long-established materials in refrigerator, stove and home insulation.

With one eye cocked on these and other uses of fiber glass, Corning and Owens-Illinois with the other eye look over the head of the new corporation, see a new U. S. industry.

EARNINGS. Reflecting improved general business sentiment and increased building activity, in particular, third-quarter earnings of the manufacturers who supply Building’s staples present a rosier picture than was painted in either of the preceding two quarters. While incomes of most companies are still far behind those of a year ago, seven stand out as bettering the 1937 record: Certain-teed Products, Indiana Furnace, National Gypsum, Reliance Manufacturing, Stone and Webster and U. S. Gypsum.

A 1938-1937 comparison of the third-quarter earnings of these and other companies follows:

<table>
<thead>
<tr>
<th>Company</th>
<th>Earnings 1938</th>
<th>Earnings 1937</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Gypsum</td>
<td>1,067,765</td>
<td>1,450,580</td>
</tr>
<tr>
<td>Indiana Furnace</td>
<td>808,698</td>
<td>891,280</td>
</tr>
<tr>
<td>Certain-teed Products</td>
<td>925,305</td>
<td>1,190,125</td>
</tr>
<tr>
<td>U. S. Gypsum</td>
<td>581,345</td>
<td>581,345</td>
</tr>
<tr>
<td>Reliance Manufacturing</td>
<td>941,275</td>
<td>941,275</td>
</tr>
<tr>
<td>Standard Sanitary</td>
<td>911,275</td>
<td>911,275</td>
</tr>
<tr>
<td>Architectural Home</td>
<td>911,275</td>
<td>911,275</td>
</tr>
<tr>
<td>Long Beach</td>
<td>911,275</td>
<td>911,275</td>
</tr>
<tr>
<td>Libbey-Owens-Illinois Glass</td>
<td>830,586</td>
<td>830,586</td>
</tr>
<tr>
<td>Lone Star Cement</td>
<td>3,300,585</td>
<td>3,300,585</td>
</tr>
<tr>
<td>Masonite Corp.</td>
<td>114,474</td>
<td>114,474</td>
</tr>
<tr>
<td>Minneapolis-Honeywell Regulator</td>
<td>333,305</td>
<td>333,305</td>
</tr>
<tr>
<td>National Gypsum</td>
<td>1,435,975</td>
<td>1,527,975</td>
</tr>
<tr>
<td>Ontario Steel</td>
<td>481,625</td>
<td>481,625</td>
</tr>
<tr>
<td>Ohio Steel</td>
<td>2,589,975</td>
<td>2,589,975</td>
</tr>
<tr>
<td>Owens-Illinois</td>
<td>2,589,975</td>
<td>2,589,975</td>
</tr>
<tr>
<td>National Steel</td>
<td>2,589,975</td>
<td>2,589,975</td>
</tr>
<tr>
<td>Otis Elevator</td>
<td>2,589,975</td>
<td>2,589,975</td>
</tr>
<tr>
<td>Otis Steel</td>
<td>2,589,975</td>
<td>2,589,975</td>
</tr>
<tr>
<td>Reliance Mfg.</td>
<td>941,275</td>
<td>941,275</td>
</tr>
<tr>
<td>Republic Steel</td>
<td>941,275</td>
<td>941,275</td>
</tr>
<tr>
<td>Revere Copper &amp; Brass</td>
<td>941,275</td>
<td>941,275</td>
</tr>
<tr>
<td>Reynolds Metals</td>
<td>323,915</td>
<td>323,915</td>
</tr>
<tr>
<td>Ruberoid</td>
<td>345,375</td>
<td>345,375</td>
</tr>
<tr>
<td>Stone and Webster</td>
<td>192,695</td>
<td>192,695</td>
</tr>
<tr>
<td>Timken Roller Bearing</td>
<td>217,907</td>
<td>217,907</td>
</tr>
<tr>
<td>Traneos Steel</td>
<td>250,893*</td>
<td>250,893*</td>
</tr>
<tr>
<td>U. S. Gypsum</td>
<td>1,067,765</td>
<td>1,450,580</td>
</tr>
<tr>
<td>Wheeling Steel</td>
<td>808,698</td>
<td>808,698</td>
</tr>
<tr>
<td>Yale &amp; Towne</td>
<td>175,375*</td>
<td>175,375*</td>
</tr>
<tr>
<td>Youngstown Sheet &amp; Tube</td>
<td>275,546*</td>
<td>3,386,386*</td>
</tr>
</tbody>
</table>
PROBABLY no architectural office in America designs more theaters, or modernizes more theaters, than that of John Eberson, New York. And in most of the Eberson jobs for the past several years a very effective use has been made of Formica inlaid doors . . . They have a striking theatrical quality that adapts them perfectly in appearance to this use; they have durability; they are easily kept clean and attractive with a minimum of polishing; and best of all they are very moderate in price as good doors go . . . All types of color treatments are available and if you require something subdued and untheatrical, that is available, too. Let us send you our literature about doors.

THE FORMICA INSULATION COMPANY
4651 Spring Grove Avenue, Cincinnati, Ohio
FOR BUILDING PURPOSES
$10,000 IN PRIZES!
FOR BUILDERS AND THEIR ARCHITECTS

Enter the American Gas Association’s All-Gas Home Building Competition now. Fill out your entry blank and get the free booklet which contains all the information you need.

MAIL ENTRY COUPON NOW!

Competition Director, American Gas Association, 420 Lexington Ave., N. Y. C.

Date

Last Name_________ First_________ State

Address
(Please print)

City

I wish to enter A.G.A. Builders’ Competition. I am a builder

Note: Architects or designers may enter homes in this contest with the written permission of the builder.

Kindly forward complete details.

Signature

Let Gas Do the 4 Big Jobs
COOKING
WATER HEATING
REFRIGERATION
HOUSE HEATING

The American Gas Association Testing Laboratories

Up-to-the-minute gas appliances will help you plan, build, and sell your next home. Architects, builders, and home-owners now know that “Gas for the 4 Big Jobs” keeps operating costs down—lifts convenience, efficiency, and comfort higher than ever.

Build an All-Gas Home

The Architectural Forum
It is but good business to be penny wise in building a home or apartment, as well as in all things else, but—saving a few cents or dollars on the initial cost of vitally important items—the piping system, for instance—at the expense of enduring quality, is false economy.

Every Architect, Building Manager or Realtor knows that a reliable piping system for plumbing and heating is one of the most important factors in the building. It is a surprising fact that a great deal of thought and money is frequently spent on outward appearances, while vital matters are quite often taken for granted. Of course, the home should be modern in design, its kitchen, bathroom and laundry fixtures should be handsome and conveniently located ... but unfortunately, good looks do not assure good service.

The efficiency of these modern fixtures and the very livability of the home itself depend upon a permanently reliable piping system for the plumbing and heating—in a word—A STREAMLINE COPPER PIPE AND FITTINGS SYSTEM.

A STREAMLINE Piping System cannot rust, clog or leak. It is a trouble-free system that will always provide efficient service without costly and annoying interruptions or replacements.

Even the first cost of STREAMLINE Copper Pipe is but slightly higher than one of rustable materials, and in the long run it costs much less. Its first cost is the lost one. For efficiency and economy, as well as appearance and added resale value, investigate STREAMLINE before you decide.

Send for Catalog A. Your request will bring it by return mail.
WHY FORMED METAL PLUMBING WARE WAS CHOSEN FOR THIS LOW-COST HOME

Photos courtesy Gunnison Housing Corporation, Inc.

ARCHITECTS and builders know that, within limitations, the materials and equipment of today's low-cost home must be every bit as substantial as those intended for the higher brackets. Formed Metal Plumbing Ware is a good example. These new-day fixtures are colorful and highly styled, pleasing to the owner's eye, as durable as the house itself, and a definite aid in selling a speculatively built house.

Those are some few of the reasons that influenced the choice of Formed Metal Plumbing Ware for this $5000 house. By the same reasoning it is as appropriate for higher priced homes, even right up to the top. Naturally, its greater strength coupled with lighter weight has significance during installation and after.

And every dollar spent for Formed Metal Plumbing Ware is an investment in lifetime loveliness. The beautiful, high-glaze, porcelain enamel finish of these fixtures is fused on ARMCO Ingot Iron, the base metal especially processed to bond tenaciously with porcelain enamel. The presence of this premium-quality enameling iron is vouched for by the well-known Armco label attached to every piece.

If your files do not contain complete information on Formed Metal Plumbing Ware for bathrooms, kitchens and laundries, write us for it today. The American Rolling Mill Company, 3501 Curtis Street, Middletown, Ohio.

ARMCO INGOT IRON A NAME KNOWN TO MILLIONS
architecture has always held an equality in the company of the Fine Arts. In its antiquity to minister to the human need as perceived no vulgar disqualification, it only another excellence, another ability. It was by this beneficent function that its roots reached so deep into the life of the generations and won acceptance for it as the unerring witness of the past. In the service of that utility it is ever the especial gift of Architecture to find other satisfactions for the spirit through a gracious rendering of beauty, and it was by the enterprise of this imagination through the free play of racial impermanency that the world has been enriched with so diversified and romantic a heritage.

If we would intelligently comprehend a present predicament we must recall that historically Art was largely the product of geographical isolations. In the symbolism of the atlas, Europe was a mosaic of definitive civilizations each of which shaped its architecture and the other elements of its culture with relative independence of its immediate neighbor. Into that static world Science introduced the steamboat and the telegraph, and life began beating to a new tempo. The quick exchange of thought and the movement of population soon made an end of our national privacies and there paled out at us the revelation of all the wonderful things that had lain in dusty exclusion through the centuries. History lost its perspective, and the artistic ingenerations of the past were now thrust into our everyday consciousness. The architect called himself to speak in many tongues and our streets were filled with echoes of strange societies. So accustomed did we come to the anomaly of it that we rarely questioned why architecture was content to be an art of reminiscence. In our more thoughtful moments, it is true, we had an amused wonder that so constant a civilization could commit itself with complete unreserve to the inspiration of antiquity.

Dramatic modification was first implicit in the advent of steel from whose thin, nervous and amazingly capable genius sprang the skyscraper, the dynamic verticality of which immediately caught the world’s imagination. As a responsible civic unit the limits of its validity are still a subject of controversy. In the tumultuous island of Manhattan where it has contributed so magnificent a drama, it is particularly notable that its orderly relation to a rational city organization is yet to be established. Early experiments in its design had sought more or less timid compromise with tradition, but an aesthetic was finally found for it which expressed with complete felicity the presence of the strange anatomy behind the walls. In this achievement America made its first distinctive contribution to the architecture of the world. Here was an incipient modernism of our own, emerging out of indigenous conditions in a just relationship of architecture and engineering.

There are those who believe that we were on the way to becoming a temperate people when the advance was interrupted by the violent impact of Prohibition. Our architectural evolution appears to have encountered a like shock. We had paused in our progress at the completion of the skyscraper, not yet ready to admit the claims of other problems to scientific approach. We found ourselves now confronted by a philosophy of startling realism which, after a tender germination in America, is returning to us with pious emphasis from Europe. This connotes an architecture of complete independence of tradition which, deriving out of the properties of modern materials, shall be limited to a stark functional rationality. Its protagonists differ much as to its implications, but the most revolutionary of them has given us the disturbing dictum that the architect of tradition is damned and that the engineer is saved by virtue of the infallibility of his mathematics. The mind of the engineer, it is held, is incapable of distraction, that of the architect is cluttered up with historic images. The one whose business it is does not produce architecture, the other unconsciously achieves it.

Our puzzlement extends as we remark the fortuity with which the philosophy is adjusted to the contradictory genius of the new media. These, for instance, obviously make for an embarrassing thinness of wall, so a principle is now proclaimed that architecture is not the walls but the modeling of interior space, though it is clearly the walls of history and not the space which have so intelligently survived. They do not lend themselves to monumental expressions, so the monument is dismissed as an archaic fashion. Their logic does not allow of the play of personality, so personality is now an invalidated idea and man is merely a mathematical unit of society.

Nowhere is this new philosophy more impressive than in the facility with which it disposes of the last forty centuries. We had been taught to look respectfully upon that accomplishment. Throughout that spacious history man fashioned the memoirs of his intellectual and spiritual life in an architecture of poignant eloquence. What he built was particularly the proof of his high imaginings, for in building he had been taught to look respectfully upon the infallibility of his own illusions of it. In a discriminating
evaluation, however, much is perceived that is still pertinent not as invitation to apish reproduction, of which we have had enough, but as stimulus to its generation. Here pre-eminently is presented the claim to that classic system of order, refinement and sound proportion which, independently of rhetorical superficialities, will always be valid to an architecture of nobility. Till now America has been comparatively inhospitable to the new realism. It was when Europe thought us too materialistic for the sentimenatities of art. It is resentful now that we should seem to reject an artistic philosophy so tolerant of our published inadequacies. The Humanity with which we are acquainted is too tenacious of its laws and penates to settle down comfortably in the arid and antisepctic sitting rooms which are prescribed by the mechanistic domesticities. In New England, the impact with the Colonial tradition is filled with implications which the Stuarts and Venetian rays, incapable of so cruel a condescension, would be forced to retire abruptly from daily intimacy to the protected gravity of institutions. And the exchange of our cherished highboys and winged chairs and other proud comfortablenesses for a furniture that steel can enter, a violation which offends more than the pride of ancestry.

The measure of satisfaction which we are promised in the new architecture is coldly limited to a perception of the austerity with which it indicates its purpose. Form must not only derive from function but end there. No abstract or rhetorical felicity is admitted with which to veil the structural nudity. In this immediacy of expression, the hazard of ugliness is clearly not contemplated. Indeed, neither the word nor the idea is encountered in the new thesis, though ugliness may not be dismissed without dismissing beauty too.

The functionalism of the past, for functionalism is no new idea, was a bigger challenge to a compromise between the trappings of tradition for a space to sit contemplating in its skin.

The Southern California Chapter, A.I.A., never an active sponsor of efforts to provide a special form of architectural service for the builder of the small house, recently looked into the Memphis Plan. As a result of a questionnaire sent by that Chapter to the architects of Memphis, The Bulletin of the Chapter summarizes their findings in part as follows:

Southern California Speaks:

"The investigation indicated that the existence of one stock-plan setup engenders the formation of others. Some architects who are not included in the original 'plan,' or those who become dissatisfied with its operation, start competitive 'plan factories,' and soon the community is pervaded with the 'stock-plan' concept of architectural services and supported in the belief that normal architectural services are too costly.

"Evidently contractors and material men turn to the Memphis Plan as a source of stock-plan material, and after purchasing a set of plans, copy and cheapen them—then use them without reference to the architect who prepared the original design.

"The statements in favor of the Plan for the most part, followed the usual pattern—the architectural profession 'owes it to the community,' has a duty to the small home owner who cannot afford, etc., although none of them explained why those members of the profession who can least afford it 'owe' something to the community.

Need we forget that our inherited beauty was wrought in bricks and stone of which the world has still a plenty? Before consigning history to the waste basket we need more assurance of modernity's competency. No doubt eclecticism has given us a surfeit of old sentiments again, and we did not wait for the moderates to reveal the horrors of it. But if we now reject over a developing independence, it is only not to lie beneath an architecture of excessive imagery and of that has none at all. In Scandinavia we have impressive instance of an attitude which is making its own terms with modernity, while conserving the flavor of its picturesque traditions, a modernism of charm, of toleration, of independence.

We are not forgetful that architecture is a living art whose concern is to manifest with intimacy the genius of its day. This must ever be the measure of its worthiness. In that enterprise we look for testimony of our ideals no less than a testament of our style. We have found a vernacular adequate to the topological challenges of modern realism. Are we then to relinquish the higher enterprise which is too poor to interpret? A few centuries ago Science took over the universe and relegated Religion to the level of an archaic emotion. Now, when signs are not wanting of a reconciliation of that mentious conflict, men are capable of a sufficiently reconstructing civilizations without the spiritualities. The vividness of these experiments will bring to us only more dramatically the significance of the frustration. Out of the bitterness of that conscious distance are derived the new wisdom and a new authority. With a stored faith in old sanctities he should bring now to the building a concept of order and justice more worthy of the spiritual destiny of which beauty in art after all but the symbol of his eternal striving.
licity, while those members of the profession who reject small residences and concentrate on more profitable work do so to the owner's general, such service covers complete

1. It is difficult to learn a great deal about such matters from a distance, but the data obtained are sufficient to show that the Memphis Plan is by no means the key millennium that has been described. The average citizen believes that the Southern California chapter, A.I.A., has conducted a "purge" of Memphis architects and published the names and addresses of those engaged in its aims and purposes. Here, the Memphis architect is only one of the divisions of the entire building industry participating. He could have stayed out of the picture; can now withdraw and the world of small house construction would continue just as it has since the beginning. The licensed architects, unfortunately, were not the only vendors of architectural services here, so when our friend from Southern California discusses "satisfactory methods of rendering architectural services for small houses," he must consider the other sources, as well as other divisions of the industry, to say nothing of the public.

2. "The Memphis bureau was not 'devised our ideas on the small house problem to

Walter R. McCornack Speaks:

From an article in The Octagon for November, 1938:

"The architectural profession is sadly lacking in its contacts with the average citizen and finds itself handicapped in public understanding and sympathy with its objectives and its true worth. . . .

"A profession carries with it certain obligations for service—on a basis more clearly defined than one finds in the commercial fields. The obligations of the professional man are not to be measured by the financial benefits to be derived from his practice.

"All professions have definite obligations to the public and the failure of any
of them to recognize and accept those obligations will bring about governmental action. It is well that there is a division of opinion with regard to the social service problem at the moment, but it is essential that these differences should relate to the method of extending service to those of low income and not revolve around the profit to ourselves.

"It is obvious that no professional man can operate without profit, but somewhere along the line some means will no doubt be found to maintain a fair profit and at the same time reduce the cost to the consumer.

"The Housing Committee does not propose to ask The Institute to indorse a detailed plan applicable to every community. It believes that chapters and individuals should be free to act within the basic regulations of The Institute—but with the chief objective—service to all of the home owners in the United States. When we have done that we shall have the long desired support of public opinion.

"A special committee under the chairmanship of C. Herrick Hammond, of Chicago, and consisting of six Institute members and three members of the Producers' Council, in cooperation with Governmental agencies, is undertaking a study of ways and means for finding a method for providing architectural service, including supervision, for the great mass of the American public who do not now have the advantage of such service.

"Building public confidence in the profession by extending architectural service to all the building public is a goal well worth all the hard work necessary to reach a conclusion.

"If we fail to prosecute this study we may find ourselves before Congress fighting for our existence."

THE ROYAL ACADEMY EXHIBITION

Condensed from anonymous comment in The Architect and Building News, London, May 6, 1938

By way of getting a fresh slant on the Royal Academy Exhibition we took a foreigner to the private view. Not, to be quite candid, a real foreigner; we did take a real foreigner once, and all he did was to murmur "hopeless, hopeless," under his breath, and ask why the English lacked objectivity. Our fictitious alien was more courteous. He was willing to learn. And he asked the questions we hoped he would ask. Here is part of our conversation.

Fictitious Alien: What a beautiful exhibition!

Ourselves: We do not think so. We think it is dreary. All well-informed people in this country think it is dreary.

F. A.: I think so, too, but I wish to be polite.

O.: Of course.

F. A.: I wish to be polite; but I wish also to learn. Please show me the works of your most famous architects.

Scanning the walls we spotted a dozen likely frames—a Lutyens monument, a Baker church, a Cooper crematorium, a Curtis Green bank... We indicated them to the alien.

F. A.: Magnificent!

O.: Nonsense; why don't you say what you mean?

F. A.: Because you English have artistic standards which I do not appreciate and I am confident that by those standards these designs are truly beautiful.

O.: That is absurd. Explain yourself.

F. A.: You are too brusque. Besides, I am afraid of the police.

O.: This is a free country, and you may say what you think. Indeed, you must.

F. A.: It is not easy, but I will try. You see, when I look at a new building, my mind works like this. I do not say at once, is this a good building? I say, first, what school does it belong to? Then, is it a good school? Then, is the building a good example of its school? I believe that in architecture, just as in painting and music, a work is never autonomous; it is part of a movement, or it is nothing.

O.: Obviously, Taine elaborated that notion many years ago. What are you getting at?

F. A.: I am getting at this. I look at the designs of your academicians and I say to myself, what is it that unites these gentlemen in one Academy? To what school of ideas do they belong? What allegiance do they owe to tradition, to each other? For a foreigner, you know, these questions are really very puzzling.

If your Academy has (as I cannot really believe) no loyalties, if it is not a school of design as it was in the old classical times, how can it keep the respect which your State and your public accord it? For I am bound to confess that some of the designs you show me, charming and original as they are, seem to be the product, not of a coherent school of designers but, if I dare say so, of individuals and amateurs.

O.: Come, come, you can't mean that.

F. A.: Oh, but please do not misunderstand me. Amateurs are very wonderful people. All the great revolutions in architecture have been made by them. Only what is strange is to find so many amateurs united—and in an Academy, of all places! Tell me, now, do your Royal Academicians admire each other's works, or only their own?

O.: That is an embarrassing question, but you can be sure they are all very fair-minded people who know a good thing when they see it. In England, like in all other countries, the fair plays fair, and you know. So our Academy is made up of artists who have very different views as to what art is about. Their views, mind you, are far from definite, and the only thing they really agree about is that the_differs what is known as the modern movement.

F. A.: But you just said they were fair-minded.

O.: That is exactly why they don't like it. The modern movement, as you know, tends to eliminate individualism, so it gives the critic little or nothing to find fault with, as to what art is about. Their views, mind you, are far from definite, and the only thing they really agree about is that the modern movement.

F. A.: Who is Professor Richardson?

O.: A celebrated satirist and antiquarian. Also an eminent architect. Here is one of his works—a factory at Rushden.

F. A.: But it is very modern. It reminds me of the best work of the French school.

O.: Precisely. Now look at this church at Greenford by the same designer.

F. A.: Gothic!

O.: Yes, Gothic. And now take a look at this school in North London, also by Richardson, Modern again, with a whiff of the academic. Yet I could show you buildings by this same Professor Richardson that are faultlessly classical as anything by DuCane or Schinkel.

F. A.: Are all your Academicians as unaccountable as this one?

O.: Not quite. Most of them stick to something between Neo-Grec and Greek, adding a Dutch or Southern flavor to taste. A few of them, as you see, have even taken a turn for the Italian Romanesque, while others are very keen on Sweden.

F. A.: But tell me, which of these distinguished designers is most admired by the young architects and the students of the Academy?

O.: None of them is very much idolized. You see, the fashion of the movement never offers the students the work at Burlington House.

F. A.: Why not?

O.: For three reasons, two of them good, one bad. The bad reason is that it is supposed to be rather grand to despise the Academy. The good reasons are these. The first, that they would probably not go in, and the second is that although the modern movement.

The second is that the tradition of participation in the architectural room is discouraging. What do you think of it?
At this point we were interrupted by a gentleman in a red and gold dressing gown who informed us that the gallery was about to close. Our friend, supposing him to be one of the Academicians, asked him amiably enough, whether he was for the Roman, the Gothic, the Swedish, or all three.

**EVEN THE BROTHERS ADAM**

In a letter dated March 8, 1783, there is a bit of gossip which indicates that even such eminent architects as the Brothers Adams, professional practice was not of a bed of roses. "A Special Just is, I am told panelled over, at the Asizes at Maidstone, an action brought by Lord Mahon against the Adanns, who had been employed to over a house with their Patent Plaister that was to last for ever, which would drop off in a very short time. Whether the judge will be heard before Justices Gould Buci and consisted of two large rooms con­ nected by a short wide passageway. All the windows opened upon interior courts. The rent and all expenses were assumed by the members, for it was practically a club. The Patrons were paid an honorarium and only visited the atelier once or twice a week for criticism and advice. Discipline was maintained by elective officers called Maître and all the cleaning, rough work, pulling the charrettes (carts) loaded with drawings for exhibition and errands for the Anciens, was performed by new members. The only furniture consisted of the drawing boards and stools. There was quite an extensive library of decrepit and stained books. The illumination was entirely furnished by empty beer bottles and two rusty stoves furnished what little heat we got.

"Absolute silence prevailed during the visit of the Patron. He proceeded from one board to another and delivered his criticism or advice to the benefit of all. If the Patron paused in the morning and commented it was understood that the project was not deemed of sufficient merit to justify further development.

"The routine of work was oddly at variance with that of American schools and colleges. Every two months you went en loge, that is you entered a cell armed only with paper, pencils, paints and drawing instruments and were given a problem in architecture to work out. You could have no assistance and guardians patrolled the corridors to see that you received none. You generally got down to work about nine o'clock in the morning and were given until five to finish. After taking a tracing of your solution you turned in the original sketch and departed. Nobody did much work for a week or so afterward, and this was the time you de­ voted to social duties, sketching trips or amusements. Gradually the atelier would fill up with students develop their sketching and making their careful rendus. As the time approached for the delivery of the drawings for judgment, the pace grew faster and faster until towards the end you were working not only all day but many of the nights and finally all night. The workings of the members of the Patrons were a series of wild disorder, shoutings, tense tempers and confusion until, about five minutes before the gates of the school were closed, the still wet drawings would be loaded into the charrettes and the wild rush through the streets would begin.

The attitude of the members of the atelier towards each other was uniformly kind and helpful, and a Prik de Rome man would cheerfully drop his own work and devote an hour to embellishing with foliage and entourage the up to that time absolutely uninspired conception of a nouveau. In fact, it was generally understood that you learned more from the strong men in the atelier than you did from the patron."

"The life of the atelier, however, was far from a constant grind, even when its activities were intense. The French students were capable of the hardest, most sustained effort, but, as Mr. McGuire writes, "they played equally as hard, and every so often during the day would drop all work and relax with some absolutely ridiculous mock trial, duel, or game."
singing was practically unceasing. Among the numerous celebrations I recall especially the last of all the afternoon, when we spent all the afternoon erecting a pit out of drawing boards in anticipation of a grand chasse aux rats. One student brought over from America his celebrated terrier "Dash" and the rest of us procured tremendous sewer rats. It was very exciting while it lasted and we were fortunately able to save the dog."

Outside the atelier, there was plenty of diversion. Nor, in spite of the constant competition, was there any real antagonism between students of different ateliers. In the social atmosphere of Paris, friendship blossomed, and Americans from other ateliers joined their compatriots from the Atelier Daumet-Girault. In later years other ateliers became more popular among Americans, particularly the Atelier Laloux. Enthusiasm and community of interest were the only qualifications necessary for the joyous gatherings of the American students.

"What a congenial group this was," writes Mr. McGuire, "that for better than two years remained in intimate friendly contact. Occasionally a group of two or three might leave for Greece, Spain, England, or even for America, but in two or three months they would be back again as if drawn by invisible wires. They lived in the same houses, worked and played together, dined together, travelled and argued together and borrowed each other's books, tobacco and clothes and danced, dined, and visited together on the Right Bank."

"Their ages ranged from twenty-two to twenty-eight. Practically all were college graduates, and although few were wealthy, all had funds sufficient for their modest needs, and all were absolutely footloose and could do as they pleased, and somehow were never pleased to do anything unworthy or small."

"After having had a club table at Du-val's Les Deux Magots, Blots and various other restaurants we finally settled down in the entresol of the Cafe d'Orsay on the Quai d'Orsay, a very celebrated old restaurant where we occupied the same room from which Edward VII in his gay youth had been forced to escape by means of the window when the police raided the place. Here we would meet twice a day, sometimes only five or six, but generally a dozen and occasionally as many as twenty.

"From those social gatherings at the Cafe d'Orsay came the impetus which led to the American Beaux-Arts. Discussion turned often to the condition of architectural teaching in America, to the crying need for radical change and the immense benefits which would result from the introduction of the Beaux-Arts methods. Desirous of keeping in touch with each other after their return to America and of organizing some sort of society for that purpose, the Americans were even more desirous of using that society to give to their country something of the inspiration which the Ecole des Beaux-Arts had been to them. "Not only did we want," wrote Whitney Warren years after, "to keep the old crowd together with all its joyous memories; we wished also to continue our teachings and traditions, to keep the flame alive and to hand on the torch to those who were to come after us in our own country. . . . At these meetings in the Cafe d'Orsay we made ardent vows to accomplish our high purpose."

ARCHITECT, BUREAU AND CIVIL SERVICE

With the exception of ways and means of bringing about a unification of the architects in New York State, the recent Convention of the New York State Association of Architects dealt most vigorously with the conflict between private architect and governmental bureau. In an address on this subject Wesley S. Bessell spoke in part as follows:

"Many years ago we had what we called the Boston Tea Party. The reason was taxation without representation. Today we are faced with taxation and usurpation, and what we need is another Boston Tea Party to throw overboard packages of government bureaus.

"If the Federal Government is serious in its endeavor to start the wheels of private industry moving, why does it not cease usurping our functions, and distribute this architectural work over the country where it will help re-establish offices, help the men of the profession to make a living, and enable them to pay an income tax—that tax to be used in governing us and not to be used for the purpose of establishing more bureaus?"

"The Government has usurped our profession, and now claims that its way is cheaper. By the same token would it not also be cheaper for the Government to become contractors? Would it not be cheaper for the Government to take over every business it has anything to do with, and then—without tax return, the Government could pay itself while all of us look on and do nothing?"

Civil Service Speaks:

Quoting from a report of the New York State Convention from the news columns of The Chief, The Civil Employees' Weekly:

"The predominant note sounded throughout each session of the Convention was the small fees and little business of the private architects and how they should be increased. "It has been the Guild's (Civil Service Technical Guild) policy to settle disputes by arbitration. To further this end, the Guild has been conferring with representatives of the Professional Engineering Society to solve the problem of private engineers vs. civil service engineers. As to the architectural association, there is apparently no need for cooperation, as shown by the stand they have taken."

"If the private architects want to test their legislative strength, the Civil Service Technical Guild, assisted by their parent bodies, the Civil Service Forum, and the powerful State Civil Service Association is prepared to meet the test.

"We are happy that they have hastened the hour because their stand is now revealed. The Technical Guild can now proceed to complete its 1929 legislative program."

One Union Speaks:

Excerpts from a press release by the Federation of Architects, Engineers, Chemists and Technicians:

"The charges that government bureaus and agencies of architects and designers were harmful to the architectural profession, made in the Convention of the New York State Association of Architects, were criticized by the F.A.E.C.T., as superficial, incorrect and actually harmful to the best interests of architects today."

"Martin Cooper, F.A.E.C.T. legislative representative, pointed out that the ravages of unemployment among architects and engineers were greatly ameliorated by government agencies which also have been able to carry out programs of public works and construction. 'It is a universally recognized fact,' Cooper states, 'that without government aid, housing construction could never have become a reality. Private industry, while useful and helpful in many other ways, could not and did not want to undertake such developments.'"

"The charge that 'architects also fine work they have been accustomed to is now being performed by federal, State, county and municipal agencies and bureaus,' made by Richmond H. Shreve, President of the New York State Association of Architects, was characterized by Mr. Cooper as 'typical of the last cry of the die-hards who would defend their own interests against the great tide of progress in the interests of the majority.'"

"Government bureaus have not displaced private architects; they have utilized those who could find no place in private offices."

* To which contention the architects undoubtedly agree; they have been the undoubted victims of designing these works, not financing them —Eo.
THE DIARY

Monday, October 17.—The recent Atlantic Coast hurricane seems to have added to new knowledge in this matter of the way of tall buildings. In the early days of the Empire State Building there was, believe, a long pendulum which permitted accurate observations, but it has since been discarded as unnecessary. There has been, of course, any likelihood that any hurricane that visited us could really endanger those tall structures. The agent of safety with which they are strengthened is far too large for that. Nevertheless, there remains the psychological effect of sway on the human being, and that cannot be disregarded. Up here in the top of Time & Life Building, thirty-third story, the hurricane seemed to us merely like an unusually hard driving rain. It was not until I went down to the street afterwards that the real force of the blow was evident. A revolving door in the west front had blown in. The whole street of a nearby bookshop had been blown down, and there was plenty to show that a real hurricane had gone by. I hear that in at least two or three of the all office buildings there was fainting, sickly sickness, and an approach to hysteria on the part of women employees. If it induced by just that trifling excess over the comfort point of the human machine.

Tuesday, October 18.—Hearing that Grey Nurnam, perhaps best known over here as having designed the R.I.B.A. Building in London, had arrived on the “Norman,” I tried to see him. The best I could do was to get a note from him that he had just hopped over to study American taste in decorations for interiors in connection with his work on the new “Queen Elizabeth,” and had barely alighted in New York before he was off again for London.

Wednesday, October 19.—New Jersey has one well defined ideas about how its professional men should conduct themselves. The State passed a law in 1933 prohibiting dentists from advertising their names or the character of their services. Upholding the law yesterday, the New Jersey Supreme Court held that “the practice of dentistry is not a business, but a privilege, and the practice thereof is subject to State regulation in the interest of the public. It is proper that the State should take steps to prevent licensed dentists from resorting to the well known practice of charlatans and quacks.” This is perhaps a straw in the wind indicating the public’s attitude toward the conduct of not one profession alone, but of others.

Thursday, October 20.—Claude Bragdon was even more startling in a luncheon talk today at The League than in his writings on the relationship between beauty and mathematics. He had to confess the findings of years into a few minutes’ talk, with the result not only of whetting his hearers’ appetites for more, but of a convincing assurance. Not having time to lead us through all the steps he had trod, he could pour into our minds the concentration of evidence and conviction. If it is possible to put all this into a word, it is this: The marvelous intricacies and precise relationships of mathematics delight the human mind; graphic repetition of these relationships, whether obvious or largely submerged, delight the eye.

Saturday, October 22.—If you must use the Great Seal of the United States in your embellishment of public buildings, keep it off the floor. Someone inlaid a couple of aluminum reproductions of the Great Seal in the floor of the Newark Federal Building, with the result that the Boy Scouts threatened to encircle the emblems to keep the feet of pedestrians from defacing them.

Monday, October 21.—A lot of sculptors, both famous and budding, met tonight in Rockefeller Center to see the entries in a competition for a panel over the Associated Press Building. There were words of wisdom from A. A. Weinman, Leo Friedlander, Ulic Ellerhusen, John Gregory, Wheeler Williams, and Malvina Hoffman among others. In the remarks there appeared a general tendency to recognize the difficulties of achieving proper scale in sculptures on stark modern buildings. One contention of the sculptors, not fully satisfied in rebuttal by Leon Solon and Wallace Harrison—director of the competition and architect of the building respectively—was that no competition of this sort could be properly judged without close reference of the sketch models with a model of the building itself, or at least a large part of it surrounding the sculpture’s location.

Tuesday, October 25.—Architects are supposed to die poor. That tradition apparently had not gotten around to the late Arnold W. Brunner, one time president of The Architectural League of New York. The other day a tidy sum of about $40,000 came to The League after Mrs. Brunner’s death, for the establishment of scholarships in Arnold Brunner’s name. A committee appointed to administer the fund had the happy thought, incidentally, that since there were enough scholarships in existence for the benefit of students, this one might be devoted to the good of the adult practitioner. This year’s income, I believe, is to go in aid of efforts to unite the architects of New York State in one body.

The late John Russell Pope left a net estate of $730,081. The value of his interest in his architectural firm was set by the appraisers at $141,067.

Thursday, October 27.—Today may become a famous milestone in New York State’s architectural history. For the first time a gathering of all the architects in the State was attempted. It was a small beginning, with a total registration of something over 550, but it was a start of what might conceivably turn out to be real unification of the profession in New York State, with a voice of its own.

Friday, October 31.—Out of a lot of learned papers read before the Convention of New York State architects two topics stand out pre-eminent as of greatest apparent interest to those who attended. One, the steady march toward bureaucracy in nation, State, county, municipality, with its devastating effects upon the private practitioner; the need for welding together all the diverse sections and self-isolated groups so that the voice of the architect may be heard in public councils. Charles C. Platt sounded a popular note in pointing out that other branches of public and professional life were equally affected by the march toward bureaucracy, and that our interests and theirs could best be served by broad cooperative action.

Saturday, October 29.—The attendance dwindled rapidly today even with some
of the Convention's most important work ahead of it. Individuals began to cut for the Cloisters, the World's Fair, and other current attractions, there were not many hours left for speeches and debate—and probably that was just as well too.

Monday, October 31.—Caught up with a lot of invitations to exhibitions today, most of which seemed to be for the purpose of displaying furniture and furnishings. The world of furniture design seems to be as much at sea as architecture these days. When it attempts to copy the past it becomes merely banal; when it tries to avoid the past entirely it usually becomes merely ludicrous. I am sure I don't know the answer.

Tuesday, November 1.—Four men sitting on a wood pile today found a way of building new housing for New York in the congested slum areas. Hitherto it has been felt—and England's experience bears this out—that land could be found for low-rent housing only in the outskirts. An unforbearable hurdle had to be set up by the Housing Administrator, Nathan Straus, in fixing $1.50 as the maximum price that could be paid per square foot for land in a slum clearance project. Land at that price is not to be had in the heart of Manhattan's slums. On the wood pile today, however, Nathan Straus, Senator Wagner, New York's Building Commissioner Alfred Rheinstein, and New York's Controller Joseph McGoldrick found a formula under which $19,500,000 worth of new housing is to be built on New York's lower East Side.

Wednesday, November 2.—In spite of the rather troublous outburst through several voices at the recent State Convention of architects, there is a hint in the air of harmony between the profession and the Civil Service men. Around a luncheon table at The League today we were vehemently arguing this point, half of those present in favor of a belligerent attitude—"all or nothing"—the other half maintaining that possibly half a loaf is better than none. Argument from the latter point of view ran to the effect that it is perfectly natural that the janitorial draftsman, convinced that he never will become an independent architect, should have his eye always on the possibility of personal economic security. Civil Service work under a municipal, county, State, or federal bureau provides as much of such security as is in sight. This class is steadily and inevitably growing in numbers. It has a voice on the ballot far more powerful than the voice of the independent practitioner. Is it likely, therefore, that the bureau idea will fade? From the viewpoint of the independent architect, is it better to go down in defeat fighting for a cause, than to attempt to find some middle course between the abandonment of the bureau aid for public works, and on the other hand, the steady diminishing of independent practice?

Thursday, November 3.—Today Henry Wright and I tried to tell a large gathering of savins and loan bankers something about the construction and design of the individual dwelling. The audience at least was polite and seemed to think it was learning something about a problem in which the bankers in these last few years finds an important stake.

Monday, November 7.—Alvar Aalto, Finnish architect, struggled valiantly with a comparatively strange topic in a lecture this evening in the architect's approach to a problem. Differing radically from LeCorbusier in his dictum that the house should be a machine for living, Aalto maintains that our greatest trouble has been that the house was just that, a machine. The way out of that, he thinks, lies through a better harmonizing the design. I was glad to see that Aalto also fears the deadly monotony of parallel blocks which are conspicuous in many of our site layouts for large scale housing. This chief among the architects of Finland has hope rather than fear in the prospect of progressive standardization. He provided that standardization extends to comparatively small parts rather than the whole. His simple thought particularly apt: Nature adopts complete standardization in the use of cells throughout the vegetable kingdom, yet with this use of duplicate cells she produces all the marvels of the floral kingdom.

Wednesday, November 9.—Frank Lloyd Wright at Williamsburg the other day said: "What has been done for you, or to you, here in Williamsburg has advanced our cause of modern, organic architecture greatly, but not in the way it was intended. . . . I have long ceased to take off my hat to our forefathers, seeing what a mess they left us." Answer by Miss Margie Hoskins, a member of the junior class at William and Mary: "Mr. Wright has some good ideas, but I still want that little white house with the picket fence when I say 'yes'."

Friday, November 11.—Henry J. Barden down from Toronto looking about for a few set pieces to embellish the biennial architectural exhibition of next February. The Canadian architects, and the public generally, seem to take their architectural exhibitions seriously. Held in the Art Museum, the exhibition is opened by the Governor General of the Dominion and attended by from 25,300 to 30,000 visitors.

Saturday, November 12.—Some weeks ago I was talking with Howard E. O'Leary who designs motor cars, regarding the painting matter of color. Fashions in automobile colors do not change rapidly. The do, however, vary geographically. But there has always led throughout the U.S., and curiously enough it fluctuates with the economic curve—people buy more black cars when times are not so good. In New England the buyers normally prefer blue, dark gray, maroons, and dark blue. California goes to the other extreme: here black has never led, the noblest light colors predominating. In the last five years the one outstanding development in automobile color is the introduction of automobile powder, creating a metallic sheen at the finish. Recently in this group of metallic finishes, certain gunmetal shades have run as high as 40 per cent of the total production.

Monday, November 15.—News of personnel changes in the educational field probably should have considerable weight in our estimates of the course that architectural education is taking. A long time editor of The Architectural Record and a strenuous fundamentalist, goes to Carnegie Tech. Miiss von der Rohé assumes the direction of Armour Institute, to which Mrs. Ogden Armour has just given $30,000. Wallace K. Harrison undertook some months ago to show the students at Yale, and now William Parsons, of Bennett, Parsons & From Chicago, has been added to Yale's architectural faculty, specializing in town planning. At M.I.T. the moving of the Architectural Department from its original home on Boylston Street into the new home of the Institute in Cambridge, will it be closely surrounded by engineers, has at least the possibility of some change in attitude.

Tuesday, November 15.—It is interesting to speculate on just how much a accomplishment will be recorded as a result of man's sporadic efforts to control the nation's architecture. Mr. Hitler is prescribing what his nation shall build. There are strong forces in our own country that would prevent the City of Washington from having any important public building that does not conform to the classical style that has been established. And now Mexico is trying to see what can be done to keep modern architecture out of the Plaza da la Constitucion. It is a difficult task indeed, this attempt to stop architecture from writing the history of the present building. Nor do I see particularly worth the effort expended when one recalls that some of the most interesting and charming groups of the present are widely in style and show unmistakably the onward march of building thought over a wide expanse of years.
In which we

Practice *what we Preach*

These views are of two of our new buildings at the Leeds, Alabama, plant of Universal Atlas. We think you'll agree that they are good examples of how architectural concrete may be used in constructing industrial buildings.

Architectural concrete opens new avenues of architectural beauty to industrial construction (as well as to public, residential and commercial construction), and usually at a saving in cost. For with architectural concrete, structural parts and ornamentations are cast as a unit. Result: distinctive buildings of moderate cost that are unsurpassed in strength, permanence, fire safety — and that require little or no upkeep.

**MAIL COUPON TODAY** for interesting facts on this important new development, and further examples of how architectural concrete is being used. Universal Atlas Cement Co. (United States Steel Corporation Subsidiary), 135 East 42nd Street, New York City.

**UNIVERSAL ATLAS Cement Co.**
135 East 42nd Street, New York City

Please send me further information on Architectural Concrete.

<table>
<thead>
<tr>
<th>Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>State</td>
</tr>
</tbody>
</table>

*Architectural concrete office building of the Leeds, Alabama, plant of the Universal Atlas Cement Co. Exterior surface was given a rubbed finish after the plywood forms were removed.*

Machine shop and change house. A year’s perfect safety record won us the P.C.A. Safety Trophy shown in the foreground.

Universal Atlas

CEMENTS

DECEMBER 1938
In sharp contrast to the dead hand of outworn building codes which retard the natural progress of building technology, the U. S. Department of Commerce, through its National Bureau of Standards, is now actively applying technical research in the building industry. With numerous federal agencies active in a broad building program, the need for authoritative information on materials and methods particularly in low cost housing, brought about the appointment of a representative group to cooperate with the Bureau of Standards in technical research. Under the chairmanship of Harold D. Hyneman, this group includes C. W. Chamberlain of the Procurement Division, Peck Blauke of HOLC, Walter Junge of FHA, Charles E. Mayette of PWA, Vincent Phelan of the National Bureau of Standards, George W. Trayer of the Forest Service, Capt. Esmere J. Waters of the Quartermaster Corps, War Department. Conduct of the program is in the hands of a committee of Bureau division chiefs with H. L. Dryden as chairman and coordinator. General objective: “To furnish to Government agencies, the building industry, and the public, technical information from every available source on engineering properties of building materials as incorporated in the structural elements and equipment of a house, with particular reference to low cost housing and including new materials, equipment and methods of construction as well as those already in use.” Present law termates the work by July, 1940, but program is likely to be extended. Findings are being recorded in printed reports.

Weathering tests of bituminous roofing
A. H. Stang, H. L. Dryden, H. L. Whittemore

Impact test of cinder block wall
Brick cavity wall under compression

A. floor after transverse
Announcing the New...

*VARIABLE CAPACITY MECHANICAL PRESSURE ATOMIZING BURNER*

A development in the burning of liquid fuel which provides:

1. **UNLIMITED FIRING RANGE**—
   - without change of burner tips
   - without change in oil delivery pressure
   - without change in angle of spray
   - without loss of atomizing efficiency

2. **AUTOMATIC CONTROL**—
   - without loss of efficiency over all firing ranges

STEAM requirements can be instantly and automatically followed, under all conditions, with maximum speed, economy and accuracy.

The Todd Variable Capacity Burner utilizes the basic principles of standard-type, mechanical pressure atomizing burners but is distinguished by its exclusive “varying range” feature. It saves fuel—reduces maintenance charges—increases plant efficiency. It has been subjected to the most rigid and exhaustive laboratory tests, and many installations are now in satisfactory use.

Although the new Todd Variable Capacity Burner is a combustion engineering triumph, it is but one of many Todd achievements. Todd service is world-famous and comprises the design and manufacture of the correct size and type of combustion equipment for every marine, commercial or industrial need. If you have a combustion problem—look to Todd for the answer!

**Todd Combustion Equipment, Inc.**

Division of Todd Shipyards Corporation

601 West 26th Street, New York City

DECEMBER 1938
Now it can be seen. With the excavation of a big hole in Manhattan's rock, Holland House (above, left), young member of the Rockefeller Center family, the public gets a break. "Sidewalk Superintendents' Club" is open to all, has no "keep moving" by-law; there even a slot-box for suggestions, shelter from sun or rain. Inspecting it the moment are the members of Pittsburgh Glass Institute Competition 76 (whose findings will be fully recorded in these pages next month) welcomed George J. Atwell, founder of the Club, whose company is digging the big hole.

A Work of Anticipation is Paul Nelson's title for his suspended house, which critic says borrows a swing motif from the jungle. It is "designed on a hypothesis that assumes a more perfect social system wherein the development of the individual would be essential for collective culture." What looks like expanded metal lathing, the exterior wall is inoxidable metal tubing, electrically welded, and supported non-shatterable glass. The model must be seen to be appreciated—if then.

Parking 1,000 Cars. With Detroit's high per capita car ownership, her citizens would rather ride in their own than in a projected PWA subway. An alternative project for increasing employment is a double-deck parking structure, designed by Engineer James B. Steep and Architects Giffels & Vallet for Cadillac Square, just off the main retail business district. Possible changes in the local building code might bring the per-car cost to $80. Private capital may step in to build, turning the property over to the city within ten years.
Brightness, Quietness, Dignity, Attractiveness and Privacy are important attributes of office buildings that use INSULUX to Light — the modern way. Owens-Illinois INSULUX does all the things expected of an office partition, and does them better. Because it transmits light, and at the same time deadens sound, corridors and hallways may be lighted with borrowed light without the usual high sound transmission. In many office buildings, this INSULUX feature has also reduced lighting costs considerably. INSULUX is easily cleaned, requires no decoration, increases rental value of property and it can be taken down and re-erected with a high percentage of salvage. These features, and others equally practical, make INSULUX Glass Block the ideal office building material. A wealth of structural data and case histories of successful office installations are available on your request. Use the coupon. Owens-Illinois Glass Company, Toledo, O.
Mr. and Mrs. Antonin Raymond, who have come back to practice architecture in America after seventeen years in Japan. With them they bring an international reputation for their houses, churches, clubs, schools, factories, banks, furniture, textiles, and accessories.

Goldfish Bowl, Oversize. Stopping the motor tourist on the new Ocean Shore Boulevard between St. Augustine and Daytona is this double oceanarium. Larger tank of the two is a polygon 100 ft. long, 50 ft. wide, 18 ft. deep. Through more than 200 portholes in the sides of the tanks the spectator may see and photograph many forms of marine life. Architects: John Walter Wood and Fred Henderich; engineer, M. F. Hackbrack.

On Lookout Mountain. A Museum Memorial to the late Adolph S. Ochs, publisher of The Chattanooga Times and The New York Times, will shortly be erected through the acceptance of the project by the National Park Service. Contributions and a bequest provide materials; some of the labor will be by Civilian Conservation Corps. Designed by the National Park Service with William Crutefield as associate architect.

Starting a New Washington Group. Below, study for a projected building to house the offices of the Social Security Board and the Railroad Retirement Board, one of a group of structures to cost $142,500,000 and to be built at Independence Avenue and the Mall in Washington. This is one of the last buildings in the design of which the late Charles Z. Klauder had a controlling hand, acting as consulting architect with the Procurement Division.

Golf and Air Conditioning. Six hundred holes of golf in four days and in eight cities across the continent was the marathon of J. Smith Ferebee, made possible through the fact that The Trane Co. wanted to broadcast with emphasis the message, "Buy air conditioning through your architect—engineer—contractor." Mr. Reuben N. Trane and Mr. Ferebee, taking off from Los Angeles.
"Beauty," says Plato, "is certainly a soft, smooth, slippery thing, and therefore, of a nature which easily slips in and permeates our souls."

In another sense, also, beauty is slippery... it easily slips away unless it is zealously guarded and protected.

For many years, one of the most faithful guardians of architectural beauty has been Dutch Boy White-Lead. On millions of homes and public buildings, this trustworthy paint has given proof of its ability to give long service under the most difficult conditions.

Every application of Dutch Boy White-Lead is a custom-made paint job—mixed to suit the special requirements of the surface to be painted—tinted to the exact shade you and your client desire. By specifying Dutch Boy White-Lead, you secure that combination of beauty and durability which is a fundamental objective of good architecture.
LETTERS

Home Floor Show
Forum: ... As usual, Mr. Wright's design is the most "modern." Possibly his clients have "modern" ears so that the combined living and recreation room (like a club) can quite comfortably take care of a quiet chat at one fireplace, popping corn at the other, relaxed reading on the built-in settle, or idly playing the piano, with ping pong, radio, dancing or games in the recreation room portion. The dining room is very well placed for the floor show. That might also be said for the parents' bedroom—without even the formality of arising; just move the screens. That's real comfort—and quite "modern." And think of the waste basket for early retirement.

It's really surprising that another unique feature was overlooked. Think of the opportunity afforded of a sliding floor panel in the guest bedroom upstairs, with a splendid view of the entertainment below—of course, through a one way view glass panel.

Honda, Ore.

H. A. Herzog

Dear Diary
Forum: Congratulations on the new home for The Diary. Good copy like good music belongs in a place like Carnegie Hall—or Radio City.

New York, N. Y.

FABER BUBBEN

Plus Forum:
Forum: Please add my name to your subscription list for your new magazine PLUS and send me the bill.

Baltimore, Md.

IVAN RIGBY

To Forum subscriber Rigby, appreciation for his interest, but no bill to him nor to 27,000 other Forum subscribers who receive PLUS in this issue (page 433) as part of their Forum subscription—Ed.

Forum:
Forum: For God's sake you guys, don't throw this thing into the waste basket before reading it. It's NOT an application for a job. I only want to say "thank you" very clumsily....

Though an artist and painter by passionate avocation, this writer... feels The Architectural Forum not architectural alone but a vigorously and energetically alert, clever, open-minded, and splendidly managed forum for the art and culture of American living. Of a very conservative turn of mind, perhaps, with regard to social and national philosophy and its practical implications, this unworthy scribe nevertheless now enthusiastically welcomes the addition of controversial-exploratory PLUS to the rich and stimulating pages of your magazine. The budding future has a democratic minority right to be discussed from your forum. That's only wise conservatism!

Thanks too, for inclusion of excellent Architect's World. The Diary is very enjoyable. Tell Frank Lloyd Wright, the Honorable and Revered One, that we love him and... ("Diary," Nov. 23, Thurs. Sept. 29) that he need not worry about "utility of speech or... individual action." "The tide carries us on; he is definitely a great force that makes tide come and go. I, and others I know, all persons he never heard of and need not hear of, feel the ripples or waves of his tide force-part several times a year! As for you, oh, most esteemed Editors, you erected yourself an unforgettable monument with your Frank Lloyd Wright issue, which is a jewel on our shelves. One does not have to agree slavishly with everything in the work full speed even under these conditions. He started in February and completed the entire project for the October, I think I should call this project to your special attention... While the Dixon Company took over this job, some foundation work had been done by day labor under another architect and the plans, which had to be revised were not complete when the work was started. As they proceeded the foundations and structural steel were under going revision but the contractor pushed the work full speed even under these conditions. He started in February and completed the entire project for the October issue. At times there were a thousand workmen on the job. This general contractor, Mr. L. E. Dixon, is one of the best in the country and his monuments will endure long after we have all passed away. He is a young man but in a few short years he has built everything from a modest house to the large Olympic Coliseum...mention these facts to support my argument that general contractors are entitled to full credit for their works even when they are presented from the architectural standpoint....

P. S. Allow me to throw my chest out while adding, that the glorious name of penny cent, freakish as it may sound, is a true Americanism, a bold lightning shortcut to the 10-mile name of Robert Henry Pennel Centurion.

The Forum anticipates more comments pro and con PLUS, unveiled this month—Ed.

What This Country Needs...
Forum: ... In my opinion, the question of Low Cost Housing is a joke. The Government has been sending out so much literature for the lower third of the common people, but practically nothing is being done to help them. Most of the Government's low cost houses cost approximately $1,500 per room. Builders find it practically impossible to build cheaply.

Vice President Marshall said years ago, "What this country needs is a good five cent cigar." What I believe this country needs is a good livable house for $3,000.

Croydon, Pa.

OTTO HUFF, JR.

Let all Forum subscribers consider themselves a Committee of One to report to the Editors meritorious examples of low cost single family homes. Such news will have profound editorial attention—Ed.

Credit
Forum: Because of my personal knowledge of the remarkable achievement of L. E. Dixon Company, general contractor of the Hollywood Turf Club, featured in your Forum of October, I think I should call this project to your special attention...

When the Dixon Company took over this job, some foundation work had been done by day labor under another architect and the plans, which had to be revised were not complete when the work was started. As they proceeded the foundations and structural steel were under going revision but the contractor pushed the work full speed even under these conditions. He started in February and completed the entire project for the October issue. At times there were a thousand workmen on the job. This general contractor, Mr. L. E. Dixon, is one of the best in the country and his monuments will endure long after we have all passed away. He is a young man but in a few short years he has built everything from a modest house to the large Olympic Coliseum...mention these facts to support my argument that general contractors are entitled to full credit for their works even when they are presented from the architectural standpoint:...

F. J. CONNOLLY
Manager
Associated General Contractors of America
Los Angeles, Calif.

Henceforth, THE FORUM will make every effort to mention the names of general contractors in connection with the major buildings it publishes.

While on the subject of the Hollywood Turf Club, credit should be given Royal Metal Manufacturing Co. which supplied the Club with Turf Chairs.—Ed.

Erratum
In publishing the Georges Wilmet house in its November issue, The Forum failed to state that Mr. Wilmet was the designer—Ed.
OUTSTANDING PERFORMANCE
for removing seepage water

for modernizing hot water heating systems

PENBERTHY AUTOMATIC CELLAR DRAINER
(Water or Steam operated)
Made in 6 sizes

PENBERTHY AUTOMATIC ELECTRIC SUMP PUMP
Made in 6 sizes

PENBERTHY PRESSURE AND RELIEF CONTROL
Made in 3 Models

PENBERTHY RELIEF VALVE
Made in 14 Models
Including Dead End Type

PENBERTHY REDUCING VALVE
Made in 9 Models

Advanced and rugged design, copper and bronze construction throughout, and careful workmanship are responsible for the demonstrated superiority of these Penberthy pumps wherever seepage water accumulates. Leading jobbers stock Penberthy products.

Penberthy Hot Water Heating Specialties are constructed of high grade steam bronze. Their design and workmanship are also of exceptional quality throughout. Your jobber will gladly give you complete information and supply your needs.

PENBERTHY INJECTOR COMPANY
Manufacturers of QUALITY PRODUCTS Since 1886
DETROIT, MICHIGAN • Canadian Plant, Windsor, Ont.

**THE DESIGN OF NURSERY AND ELEMENTARY SCHOOLS**


Compulsory education in England begins at the age of five and ends at fourteen; the present system provides three types of schools to cover this period: infant schools (ages five to seven), junior schools (seven to eleven), and senior schools. In addition, local authorities may provide nursery schools for pre-school children. The government's objective is eventually to provide separate buildings for each of these types.

This book covers the entire range of nursery and elementary schools, and the examples it illustrates are not only applicable to American practice, despite the differences between the English educational system and ours, but it also shows a great many instances of improvements over accepted U.S. standards of school design. The authors obviously hold no brief for traditional architecture, and to supplement their collection of modern English work they have included a number of excellent European examples. The result is a reference book which is unique in its field.

A number of factors are responsible for the high level reached in many of the new English schools. One is that the educational authorities, faced with almost insoluble problems in the reconditioning of obsolete buildings, are in favor of designs flexible enough to permit changes which may be required in the future. In such circumstances the modern architect clearly has a great advantage. Another factor is the growing influence of the young architects, many of whom are now getting school work. A third, indicated by the authors, is that England's school reforms have almost invariably coincided with England's wars, at which times alarmingly low averages of health and intelligence were discovered in recruits; the uncertainty of the past few years has again aroused the government's interest in methods of improving the quality of its future soldiers.

The material is divided into sections according to school types. Each section is illustrated by plans and photographs, and there is an impressive amount of additional data. In some cases a complete school is shown, but more frequently the illustrations have been selected to show a specific unit. Two of the schools shown in detailed form are illustrated at the left. Hubert Bennett's open-air school was built to accommodate 135 defective children from nursery to senior school age, and has classrooms which can be completely opened on three sides. The private nursery school at Dulwich, whose designers were formerly members of the London firm of Tecton, represents another effort to link the classrooms as closely as possible with the outdoor play areas. While a very small building, consisting of only two classrooms, an entry, and a kitchen, it is a very good example of thoughtful, conscientious planning. The text describes the various elements in the school plan, their lighting, heating, furnishing, ventilation, wall, floor and ceiling finishes, and equipment. Diagrams give furniture sizes for children of various ages, playground sizes, and other information. While in some instances the authors' recommendations do not fit American methods, most of the material is definitely usable. The book is not only well documented and beautifully presented, but it provides another strong vindication of modern architectural theory as applied in practice.
DIRECTIO~AL LINES IN LINOLEUM

"steer" customers to displays

YOU CAN STEP UP THE SALES POWER OF STORE INTERIORS WITH COLORFUL FLOORS OF ARMSTRONG'S LINOLEUM

HELP your clients to better business. Give them floors that invite customers to enter and subtly guide their steps to counters and displays. Example: this skillfully designed floor of Armstrong's Linoleum in the Bachelor's Shop, Berkeley, Cal., where the directional line is canary yellow on a field of terra cotta plain linoleum.

It's easy to plan sales-building floors with Armstrong's Linoleum. This flooring lends itself to almost any scheme your pencil can sketch. Trade-marks and other designs are easily reproduced from more than seventy distinctive colors.

Your clients will also appreciate the other practical advantages of Armstrong's Linoleum. Reasonable in first cost, these floors are exceptionally economical to maintain. Their resilience makes for underfoot quiet and comfort. And they are long-wearing because the rich, clear colors run through the full thickness of the composition.

For full information, consult Sweet's or write to Armstrong Cork Co., Building Materials Division, 1203 State Street, Lancaster, Pa.

For commercial use, Armstrong manufactures the only complete line of resilient floors: Linoleum, Cork Tile, Rubber Tile, Asphalt Tile, and Linotile (Oil-Bonded). Therefore our Architectural Service Bureau is in a position to give you unbiased suggestions as to the best type for specific requirements.

RUBBER TILE • LINOTILE (OIL-BONDED) • ASPHALT TILE

Armstrong's LINOLEUM

and RESILIENT, NON-CERAMIC TILES

CORK TILE • LINOWALL • ACOUSTICAL CEILINGS

DECEMBER 1938
Architects in the West have watched with interest the remodeling of the San Francisco building now called the Central Tower. The old Claus Spreckels Building (it was also known as the Call Building) now dominates the skyline with its six new floors and modern dress. The remodeling presented a tough problem to Otis engineers, for the work was carried on with two elevators in service all the time. The demolition of the old dome and the erection of the new floors was carried on simultaneously and successfully. The elevator modernization included changing the gearless traction machines to Otis Finger-Tip Signal Control with Unit-Multi-Voltage Control. The three machines were raised to serve the twenty-first floor, having previously served the eighteenth floor with two cars and the seventeenth floor with one car.

Most golfers—and particularly those who shoot over a hundred—will tell you that they play the game for exercise. But even a golfer can get too much exercise, so the Pittsburgh Field Club has installed an Otis Elevator to carry its members from the 17th green to the 18th tee, a vertical distance of 70 feet. This is undoubtedly the first elevator ever installed on a golf course. The installation consists of a steel tower connecting with a bridge structure about 270 feet long, running from the tower to the tee. The elevator has full automatic push-button control, with an automatic reversal arrangement so that as soon as the players have left the elevator at the upper level it will automatically return to the lower landing to receive the next group of passengers. This elevator is, incidentally, a fine example of the adaptability of Otis equipment.

We here in the United States are proud of the scope of our mechanical equipment—and apt to be a little smug about our superiority—so it’s interesting to note the alertness of many foreign countries to new mechanical developments. For instance, would you guess that—after the United States and Canada—there are more Otis Signal-Control elevators in Brazil than in any other country? And that South Africa follows along closely? Brazil has 61 installations, South Africa 53, Australia 40, Japan 39, Great Britain 36, and on down to Peru, Puerto Rico, and the Philippine Islands, which have two each.

Perhaps you don’t follow the ponies, but if you did we’d recommend that you become a member of the Argentine Jockey Club in Buenos Aires. Their new grandstand, the Hipodromo de la Plata, is the first structure of its kind with Escalator equipment. There are two 3-foot Escalators in the members’ stand, serving between the ground and the second level of the grandstand. Of course, there are plenty of interesting Escalator installations in this country too. For instance, those which serve the patrons of the International Casino, New York night club. And those which carry passengers to the pier of the Italian Line, on the North River, New York City.
This residence, at Old Greenwich, Conn., is really two houses in one. One is a "Cape Codder" and the other is a "Salt Box." Each is a valuable Early American home at least 200 years old. Mr. Gale H. Carter is the owner. Architect: Chas. E. Kent, Heating Engineer: Chas. E. Scott, both of New York City.

Air conditioning is supplied by a "split" system, with approved Anthracite watertube steel boiler and approved Anthracite stoker.

20TH CENTURY HEAT in an 18th CENTURY HOUSE

Mr. Carter searched all New England for perfect examples of 18th Century American homes. He found not one, but two—bought them, transported them from their original sites to Old Greenwich, Connecticut, where they were re-erected as a harmonious residence. These rare and valuable examples of fine architecture deserved the best, safest, and most dependable heat. Mr. Carter states why he chose Anthracite:

"I desired air conditioning to protect the rare old panelling and my antique furniture. I selected Anthracite as fuel because it is clean. I rejected oil because I don’t like the dirtiness of oil smoke. It forms a film on the furniture, and furthermore, gets on the leaves of my old trees. Now that Anthracite can be handled conveniently and economically, it is much to be preferred."

When preparing plans for new homes or for modernizing old ones, remember that there were 7 reasons why Anthracite was selected as the fuel to heat this valuable, matchless architectural gem. With the whole field of heating fuels from which to select, the owner of this "perfect home" chose Anthracite. With Anthracite, as with no other fuel, you can provide your clients with all 7 essentials of heating satisfaction. The wide variety of modern Anthracite equipment is described in a book which we will be glad to mail upon request. Anthracite Industries, Inc., Chrysler Building, New York.

This Seal of Approval appears on Anthracite equipment only after it has passed the most rigid tests in the heating field.

Save with ANTHRACITE (HARD COAL) THE ONLY 7 STAR FUEL

DECEMBER 1938
Trane engineering knowledge, in collaboration with Architects, Engineers and Contractors, enables us to offer the greatest line of Unit Heaters. Trane manufactures a limitless variety of sizes and styles to meet your every requirement. Old-fashioned cast iron pipe coils and radiators—yes, and even ordinary unit heaters have passed out of the picture. Trane Unit Heaters, with their many advantages, are constantly broadening the field of unit heater application. Not only factories, and garages, but shops, offices, lunch rooms, dance halls as well. Any space is a prospect for some type of Trane unit heater. Only a line like the great Trane line can provide the exact type.

There are huge Trane Torridor Blower Type Units for the delivery of large quantities of heated air. There are Model "N" Propeller Type Unit Heaters which have solved heat problems in factories and commercial establishments the country over . . .

And, in the amazing Projection Unit Heater there is the most advanced development in years and years—for loss of heat, at ceilings, is now licked, and what was formerly wasted heat is put to work down at the floor level where it belongs.

The scope of installations of Trane Unit Heating Equipment is interesting information for every Engineer and Contractor. We urge you to write and ask for Unit Heater Bulletin No. S-327. In it you will find an answer for new building or remodeling requirements.

Because of the exclusive Trane feature known as "Balanced Pressure" Trane Traps will withstand extremely severe operating conditions. A rupture due to pressure differences is a physical impossibility with Trane Traps.

Trane engineering knowledge, in collaboration with Architects, Engineers and Contractors, enables us to offer the greatest line of Unit Heaters. And, in the amazing Projection Unit Heater there is the most advanced development in years and years—for loss of heat, at ceilings, is now licked, and what was formerly wasted heat is put to work down at the floor level where it belongs.

The scope of installations of Trane Unit Heating Equipment is interesting information for every Engineer and Contractor. We urge you to write and ask for Unit Heater Bulletin No. S-327. In it you will find an answer for new building or remodeling requirements.

Because of the exclusive Trane feature known as "Balanced Pressure" Trane Traps will withstand extremely severe operating conditions. A rupture due to pressure differences is a physical impossibility with Trane Traps.
PITTSBURGH GLASS INSTITUTE announces

THE WINNERS IN ITS 1958 COMPETITION FOR EXECUTED EXAMPLES OF THE USE OF GLASS IN ARCHITECTURE, DECORATION AND RELATED SUBJECTS

GRAND PRIZE:
Edward D. Stone, Carl Koch, Jr., Associated Architects, New York City, for residence of Mr. and Mrs. A. J. Koch, Cambridge, Massachusetts.

HOUSES costing under $12,000
- Prize: Harwell Hamilton Harris, Carl Anderson, Los Angeles
- Mention: Clarence W. W. Mayhew, Oakland, Cal.
- Mention: George Patton Simonds, Hayward, Cal.

HOUSES costing over $12,000
- Prize: Edward D. Stone, Carl Koch, Jr., New York City
- Mention: Kenneth Day, Philadelphia
- Mention: Richard J. Neutra, P. Pflueger, Los Angeles

HOTELS, APARTMENTS
- Prize: Harbin F. Hunter, Los Angeles
- No mentions awarded

MANUFACTURING PLANTS
- Prize: Albert J. Daniels, Shrewsbury, Mass.
- No mentions awarded

SCHOOLS, COLLEGES, ETC.
- Prize: Alfred Kastner, Washington, D. C.
- Mention: Richard J. Neutra, Los Angeles

INSTITUTIONAL BUILDINGS
- Prize: Viorarine and Samuel Homsey, Wilmington, Del.
- No mentions awarded

PUBLIC BUILDINGS
- No awards

DOMESTIC INTERIORS
- Prize: J. R. Davidson, Los Angeles
- Mention: Gregory Ain, Los Angeles
- Mention: Robert Hiden, Los Angeles

COMMERCIAL INTERIORS
- Prize: Walker and Gillette, New York City
- Mention: Amos Parrish and Co., Inc., New York City
- Mention: J. R. Davidson, West Los Angeles

ACCESSORIES
- Prize: Reinhard and Hofmeister, New York City
- Mention: Gustav Jensen, New York City

The Pittsburgh Glass Institute offers its congratulations to the competitors who were selected for awards by the Jury composed of: Gardner A. Dailey, Architect, San Francisco; Albert Kahn, Architect, Detroit; William A. Kimbel, Interior Decorator, New York; William Lescaze (Chairman), Architect, New York; Raymond Loewy, Industrial Designer, New York; Paul R. MacAlister, Interior Decorator, New York; Competition Advisor: Howard Myers, Editor, THE ARCHITECTURAL FORUM.

May we thank again the many hundreds of architects, designers and interior decorators who, by their enthusiastic response, have made this competition such a notable success.

The premiated designs, together with the report of the Jury will be published in the January 1939 issue of THE ARCHITECTURAL FORUM.

PITTSBURGH GLASS INSTITUTE
LIBERAL USE OF RUSTLESS METAL
Makes Any Store Front Design More Effective

SEE ZOURI FOR:
- THE COMPLETE STORE FRONT INCLUDING—
- SASH AND BARS
- AWNING BARS
- ENTRANCE DOORS
- PILASTERS
- MOULDINGS
- METAL SIGN LETTERS
- PANELING
- ORNAMENTAL WORK

Glass Protection
To be safe, plate glass must be handled and held with care! That's why the new ZOURI Extruded Sash and Bars as well as the famous Rolled Safety Key set construction are designed to provide FULL CUSHION GRIP on glass. This important feature assures maximum protection against the danger and expense of glass breakage—protection vital to the satisfaction of owner and merchant.

Important to architects and builders is the modern demand for more attractive store fronts. That's why store front designers are turning to the liberal use of ZOURI Rustless Metal—for its life and lustre, for rich lasting beauty, and for interesting lines and contrasts. Zouri offers a complete line of store front construction in either rolled or extruded metal. In most cases striking effects may be obtained by the use of standard sections, which are carried in stock. In others, ZOURI fabricates special architectural metal work in aluminum, bronze or stainless steel—to face the entire front with modern metal, to produce doors or metal letters in harmony with the store front design, or to satisfy any modern demand. A 14-page catalog is at your disposal in SWEET'S. See your ZOURI distributor or write direct to ZOURI STORE FRONTS, NILES, MICH., for full size details.
MAN OF THE MONTH  . . . not inhibited, 100 per cent inhabited (page 486)

BUILDING OF THE MONTH  . . . from father to son to Milles (page 418)

PRODUCT OF THE MONTH  . . . Martians who work in whispers (page 471)
When the first buildings at Cranbrook Academy were completed, they attracted countrywide attention for the refreshing manner in which they met the problem of educational buildings. Omitting any consideration of the masterly handling of a large plan, Cranbrook was of immediate importance because it demonstrated beyond the possibility of refutation that Collegiate Gothic was neither the ultimate, nor even a particularly good expression for U.S. academic architecture. In the buildings that followed there was no repetition, but a steady development toward simpler forms, with new materials used wherever they seemed suitable. Typical of this later work is the Institute of Science building, devoted to research in the natural sciences.
Academy, Bloomfield Hills, Michigan
Asymmetrical in plan, it has a large entrance porch at the southeast corner, adjacent to the driveway and reflected in the pool whose playful sculptures are by Carl Milles. The museum character of the first floor is expressed on the exterior, its blank walls relying entirely on the texture of the brickwork for their effect. The offices, classrooms, and laboratories on the second floor are lighted by regularly spaced windows and by walls of glass block.
Interiors are reduced to the simplest possible terms, with all interest concentrated on the exhibits. Even more than the exterior these rooms suggest the impersonal, detached nature of the sciences for whose study the building was erected. The rear view of the building shown on page 424, is an excellent illustration of the completely three-dimensional character of the design.
CONSTRUCTION OUTLINE:

FOUNDATIONS: Concrete wall footings. Waterproofing—membrane around basement walls.


ROOF: Built-up, gravel surfaced. 20-year bond.

SHEET METAL WORK: Flashing and gutters—copper. Ducts—galvanized iron.

INSULATION: Roofs—Celotex Corp.


FLOOR COVERINGS: Basement and first floor—black terrazzo. Upper floors—gray linoleum.

FURNISHINGS: Museum cases—Art Metal Construction Co.


PLUMBING: Hot and cold water pipes—copper.

An important factor in the design of the Edison Company’s new building was the almost universal requirement of large unobstructed spaces. Most of the offices, the repair shops, drafting room, sales and demonstration rooms and many of the services fell into this category. As a result the building more closely resembles the typical loft structure than an office building.

The structure is of standard concrete beam and slab construction up to and including the first floor; above it is of structural steel. The floor slabs are of cinder ash concrete, developed by the Detroit Edison Company, which makes use of the fine ash and crushed cinders from its own boilers. It is claimed that this material has greater plasticity and about three times the elasticity of standard concrete. Another innovation was the use of concrete block made with ash from the Cottrell precipitators used in the company’s powdered fuel plant; the blocks are used for permanent partitions, inner facing of outside walls, have a finish somewhat like polished slate, and are said to be suitable for painting.

One of the most interesting features of the building is the ceiling design, which takes care of the conditioned air supply, acoustical treatment and the high-intensity lighting installation in a remarkably efficient and attractive manner. Plaster coffers about 4 ft. square and 1½ in. deep take the lighting fixtures, each of which uses nine 300-watt lamps. Air is introduced into the rooms through the perforated metal ceiling.

The glass block is set in stone frames with an aluminum angle used at the exterior head section. As a result the materials requiring painting are few, and within easy reach. The glass block has a special cutting designed to reduce glare without too much loss in light transmission; the heat loss is said to be about that of a double window.

Cubage: 3,139,000. Area per floor: 29,800 sq. ft. About 82.5 per cent of total area is usable.
CONSTRUCTION OUTLINE


ELEVATORS: Three passenger and one freight elevators, Otis Elevator Co.

FLOOR COVERINGS: Shops, offices and corridors—1/2 in. asphalt tile; trucking areas—3/16 in. asphalt tile, David E. Kennedy. Lobby—dark Travertine.


PAINTING: Interiors—Walls—3 coats lead and oil, Trim—1 prime coat, 2 coats synthetic enamel. All paints by Acme White Lead & Color Works.


Built to provide arrangements for living in units of two, three and four rooms, this apartment house is one of the few erected within the last few years which shows any important changes from standard practice. The entire building is air conditioned, and glass block admits a sufficiency of natural daylight; the windows open the rooms to the view, and were required by the building regulations. The omission of radiators from exterior walls, and the need for concentrating conditioning spaces at the center of the building presented problems whose solutions are illustrated in the plans and details. In addition to the technical excellence of the building, its external appearance deserves comment. Completely expressive and admirably organized, it is a distinguished addition to the growing list of good modern work in the apartment house field.
AIR CONDITIONING: All rooms in all apartments are completely air conditioned and provided with filtered, heated, humidified, and cooled air. Tenant has complete control of air conditions in apartment by winter thermostat, humidistat, cooling thermostat, and summer-winter switch. Entire system specially designed by Sullivan A. S. Patorno, Mechanical Engineer. Apartments have individual fresh air intakes. Exhaust air from kitchens and bathrooms is discharged at the roof mechanically, and not recirculated. Air heated by steam and cooled by water; water is cooled by Freon gas compressors and cooling tower. Apartments equipped with independent unit air conditioner located in air conditioning room on same floor. All equipment, such as unit conditioners, steam pipes, chilled water pipes, drain lines, and humidifying piping is exposed in air conditioning rooms, can be easily checked and repaired, and is accessible only to the apartment employees through the public halls. There are no pipes or equipment in any of the apartment rooms.
construction outline

structure: Exterior walls—4 in. face brick, parged against 12 in. reenforced concrete walls, concrete 8 in. at window sills, 6 in. under sills. Interior partitions—gypsum block and clay tile between halls and apartments, 2 in. solid lath and plaster inside apartments; clay tile at baths. Columns—reinforced concrete, same thickness as exterior wall on street fronts. Floor construction—2-way flat concrete slabs, girders at partitions and in minor spaces. Ceilings in living rooms—treated for acoustics with Limpet, Acoustical Installations Co.; in other rooms plaster. Kitchens, baths, halls, foyers and dining alcove ceilings—suspended on metal lath. All ducts concealed in ceiling furring.

roof: Concrete flat slabs and promenade tile over fill and Barrett Co. 20-year built-up roofing.


insulation: Roofs—1 in. of Limpet blown on ceilings under all roofs. Acoustical Insulations Co. Sound insulation: Between apartment walls—3 in. gypsum block with 1 in. Cabot’s Quilt, Samuel Cabot, Inc., attached to one side. Ceilings of Public Hall—1 1/2 in. U. S. Gypsum Co.’s Acoustone D.


stairs and elevators: Steel stairs, colored cement treads, Master Builders Co., Elevators—1 passenger and 1 service having unit multi-voltage duplex collective control with buzzer for attendant, Otis Elevator Co.


wall coverings: Bathrooms—ceramic tile around tubs. Part of entrance lobby—Formica, Formica Insulation Co.

furnishings: Linoleum kitchen counter tops and cabinets—Murphy Door Bed Co.


special equipment: Mail chutes—Chicago Mail chute Co. Venetian blinds—aluminum slats, Chicago Venetian Blind Co.

plus • In all the controversy that has revolved around the subject of modern architecture, one small fact has gone unobserved: Modern, as with all architecture today, has its extremists, its moderates, and its conservatives. Far from being a reflection on the movement, however, this lack of unanimity bears testimony to its strength and long standing. • The characteristic of Modern’s vigor is its dynamic, highly controversial quality, and it is not necessary to look far back to see that revolutionary developments of yesterday are the commonplaces of today. And so, presumably, for tomorrow • Because extremism minority opinion can so quickly become majority fact, because out of the “wildest” theories often come the most vital ideas, because the Forum in name intends to remain a forum in fact, PLUS now appears to add opinion, exploration and new controversy to reporting • To PLUS and its editors, The Architectural Forum offers its best wishes—and a free hand.
Contents:

Toward a Unity of the Constructive Arts by N. Gabo page 3

Can Expositions Survive? by Dr. S. Giedion " 7

Habitation
House by H. Elte " 12
Mobile House by Alfred Claus " 12
House by William Muschenheim " 13
Hotel Goolland by J. Duiker " 14
Apartment House by Jean Ginsberg " 16

Typography and Layout by Herbert Matter

Collaborators:
In its present state the relationship between architecture and art cannot be clearly defined. Nevertheless this problem is not an insoluble one. Certainly it is not a problem peculiar to our period alone, but one that has arisen many times in the history of architecture and art. It seems to me to have been quite satisfactorily solved in the past; why, then, should not our own generation find its solution for our own time?

Architecture was always the product of a highly developed state of society. Only in those periods of human history which attained a high social organization and social consciousness was there an exactly defined architecture. The period in which we are now living has anything but an exact or definite social organization or consciousness. Architecture, as well as art, has always passed through two stages of development: the stage of ideas and the stage of achievement. To reach the stage of achievement, art and architecture need the collective encouragement of a society; they are the expression of a collective mind. On the other hand, to be effective ideas in art and architecture need a latent ideal. The architecture of our time has not yet reached the stage of achievement, we are still living today in the stage of ideas. The key to the solution lies in the question of what our ideal is.

Even a superficial survey of our time would convince us that the ideal of art and architecture can be no other than the ideal which animates the whole spirit of our intellectual researches. These researches are directed toward finding a way out of the obvious state of spiritual and social anarchy in which we now live. Our towns are overcrowded, our streets are narrow, our dwellings are decayed: we would be heading for a hopeless pessimism if we were not aware that, from the beginning of the twentieth century, the younger generation of architects and artists has been indefatigably striving and working for a remedy and release from the unfortunate inheritance of the preceding century. It is even possible to state that they are not working in vain for they have succeeded in reaching a clear ideal which is leading them in a straight and constructive direction. This ideal is to create a dignified frame for a more perfected social and spiritual life conducted and based upon stable universal principles.

The younger generation of artists, the “abstract and constructive artists” have exactly this ideal. There is no difference between the ideal of a constructive art and the constructive functional architecture of today. It is clear that this is the point from which to set out on a search for the answer
to the question: "What is the relationship between art and architecture today?" We must avoid the mistake made by our predecessors who considered art as something to be applied to architecture. The relationship between constructive art and constructive architecture is by no means that of adaptation, since neither one should serve the other. History offers many illustrations to prove that such a point of view is erroneous. Such a relationship is a sign of degeneration in art and architecture. For instance, the clear exemplification of the last century when architecture was architecture in name only, merely a conglomerate of more or less complicated, more or less naive, planless, disconnected buildings of an occasionally decorative stylishness, or a deliberately skillful ugliness. All this stylelessness, planlessness and ugliness was not the fault of the art and architecture of that century but the fault of a styleless, planless and ugly time when no one knew what he wanted and everyone felt that he knew more than the other because someone was supposed to have known it before. Such a period could not possibly produce architecture; it could only produce a supreme instance of how architecture should not be done. It is no wonder that the inner contact between art and architecture at the end of that century completely disappeared.

There are other examples that show the true relationship between art and architecture. When we look at the epochs which have left us great architecture we see a complete unity between the two. A caryatid in the Erechtheum, the statue of Athena in the Parthenon, the Sphinx in front of the pyramids, are as truly architecture as any purely architectural building is sculpture. A fresco of Pompeii, an ikon in a Byzantine temple, or a sacred image in a Gothic church, is as much a part of the wall on which it is placed as the wall itself is part of the image. It was not deliberate intention which brought the art and the architecture of those epochs to such a unity, but the guiding spirit, the constructive ideal of their time which enabled the artists and the architects to arrive at this accord.

Likewise in our time, a contemporary architectural construction, constructive architecture, is not intended to be a formalistic enterprise with a design to fit a chosen volume or form. A piece of constructive architecture must be an organism fully grown from within. It is above all a construction in space, erected from the inside, devised and organized according to the inner dynamics of all the events and all the forms of action connected with the life of that organism. The constructive architect plans his edifice from a central inner point where the most essential part, the human body, is placed. From this point all the vital projections radiate toward the exterior. Constructive sculpture bears the same characteristics for it is a manifestation of the same concept of space. A constructive sculptor no longer tries to force his images into a given, static scheme. He tries rather to materialize the images of his inner impulses, projecting them from one vital central point in space and making them radiate toward the outside in an open, free and unlimited volume, so that the final lines of these projections form the organic skin of an imaginary organism.

Since there is a basis for a common spirit in present day art and architecture, we can be confident that these two artistic disciplines have every chance to advance hand in hand. Furthermore, the constructive architecture of today cannot ignore the necessity of art or consider it as a superfluous element. One of the most important bases of the constructive architecture is its pure functionalism. But function in architecture has esthetic as well as material and technical aspects. A building is more than a dwelling place; it exists in space and, as such, it acts in space and has an influence on the emotions of the human beings. As soon as the constructive architect, who is a consistent functionalist, realizes this esthetic function of his architecture, a close cooperation between constructive artists and architects will become inevitable.
Constructions in space
by Dr. S. Giedion

Our whole way of living has become dependent upon industrial production. This is true as regards the forms of contemporary life as well as the earning of our livelihood. What made the industrial development possible? Industrial development only became possible after the abolition of guild restrictions. The corporations (guilds) originated as a protection to citizens against the feudal system. Each guild had a well-organized administration and definite regulations. At first there were but few guilds: for example, in Paris of the thirteenth century, there were about a hundred. But the guilds grew rapidly in number. The reason for this was the increasingly complicated division of labor as well as the interest the state had in founding new guilds, whose privileges were only granted by the king after the payment of very high taxes. The exclusiveness of the guilds continued to grow. Merchandise, composed of materials which belonged to the sphere of more than one guild, could only be furnished by masters who were members of the particular guilds producing the component parts. The public was entirely in the hands of the guilds. The producers could raise prices ad libitum. New inventions, not born in the spirit of handicraft but based upon new scientific discoveries, could either not be made known at all or only under a variety of guises. Due to their complicated mechanical manufacture, the new processes cut more and more into the rights of diverse guilds. The difficulties which confronted the inventor of printed wallpaper in the last years of the eighteenth century are typical.

March 17, 1791

"La proclamation de la liberté du travail." This means that every French citizen is given the right to select a profession, his work or a trade according to his desires and can pursue it wherever he chooses. It is in the proclamation of the liberté du travail—the freedom of trade—and in the almost simultaneous granting of a protection of patents (1780-1791) that the development of industrial production on the continent lies. England had long ago taken the lead. Its revolution had been over in the seventeenth century and with the revolution the power of the guilds had also been broken. In the middle of the eighteenth century public opinion already violently demanded also the formal abolition of the guilds by Parliament, since they were harmful to the development of industry and since they were also a contradiction to reason as well as to liberty, to which every English citizen had a claim. Through such measures England was in an advantageous position for an incomparable industrial ascent which could not be rivaled during an entire century.

The first "Exposition des produits de l'industrie" on the Champs de Mars in Paris was opened in September 1788. It was more than nine years after the abolition of guild restrictions that the first industrial exposition was organized. What formerly was suppressed and discouraged was now nurtured and well cared for, namely, industry and invention: "Ces arts avaient pour pu encore se développer à cause des entraves sans nombre. Mais la liberté les vengeait . . . Sous l'épice de la liberté, les arts utiles étaient appelés à un brillant avenir." A truly new spectacle was to be offered to the people and this was to occur in the same place in which all national festivals had taken place since the beginning of the revolution, namely, in the Champs de Mars. Only a few weeks earlier the Eikonothek, the Venus of Medici and the Apollo of Belvedere were exhibited here. General Bonaparte had brought them back from Italy. The "première exposition des produits de l'industrie Française" was supposed to fill out the last days of the sixth republican year, which was to end September 21.

The extent of this enterprise, which was the beginning of that vast movement of exhibitions during the nineteenth century, was rather modest: 110 exhibitors. This exhibition not only contained articles of luxury but also articles of daily use, such as watches, safes, clocks, wallpapers, textiles, cotton-threads produced by machinery, etc. The principle of the exhibition, of placing products, industrial products, in the foreground, which was developed here for the first time in history, held undisputed importance for more than a century. The highly creative character was likewise maintained as long as the great expositions remained an event and a focus which were able to influence the development of industry.

Eleven expositions were organized in France from 1798 to 1848. In their development, and the slow but steady conquest of each branch of industry, one can discern the beginning of our present-day tendencies. Number of participants: in 1798—110; in 1806—1,122. They are followed by the Napoleonic wars.

**Exhibitions of World Trade and Industry.** A condition for the national exhibitions of industry as arranged especially in France during the first half of the past century was the official abolition of the compulsory obligation to belong to a guild. A condition for World Exhibitions (or Universal Exhibits as they were at first called) was the principle of Free Trade. There was no reason for lining up the products of the whole world unless those products could be bought the world over, unchecked by customs barriers, contingents, import or export prohibitions. In the form it took at that time, Free Trade was the product of the liberal conception of economy: free communications, free trade, improvement of production and performance through competition.
London. The First World Fair. Hardly two years after the greatest French National Exhibition of Paris 1849, the Exhibition of World Industry was opened at the Crystal Palace in London's Hyde Park on May 1, 1851. At once the number of exhibitors increased fourfold. How was it possible to create that gigantic organism, for which no precedent and no experience existed, within such a surprisingly short period? The English themselves were surprised by their success. The event may be explained partly by the fact that the development of more than half a century of industrial work had matured suddenly and was ready for a performance of such proportions. It is evident that even in a country of great caution and prudence, developments can occur by leaps and bounds. But this is certainly not a satisfactory explanation. There was a force behind that exhibition’s formation that accomplished things that had never been done before.

Unlike the French exhibitions, initiative and financing came from purely private sources. The principle of the exhibition was to be: to line up world production for comparison, stimulation and instruction. It followed, in outline, the last French exhibition and included:
1) Raw materials, 2) Industrial equipment: Machinery and Inventions, 3) Finished products, 4) Art (Applied art and sculpture, but no paintings).

The genesis of this first great exhibition permits a deep insight into the courage and spirit of enterprise in the years preceding and after 1850, although it is impossible to give a detailed description of it in this summary. Briefly, the exhibition was held under the patronage of Prince Consort Albert, Sir Henry Cole, expert and official, cooperated with him. Gottfried Semper, a young German architect who had left Germany because of his political convictions, worked with Sir Henry Cole.

What were the aims of the exhibition aside from increased exports which resulted precisely a year later? The Prince Consort replied to that in 1850: “None will doubt that we are living in a most remarkable period of transition, laboring forcefully toward that great aim indicated everywhere by history: the union of the human race ... Gentlemen, the exhibition of 1851 shall give a vivid picture of the stage at which humanity has arrived in the solution of that great task.”

A competition for the building of the exhibition was without result in spite of 233 entries. In May 1850 the prize jury itself worked out a project—a brick structure with a large domed hall—which was also ruled out. Then a contractor submitted the project of a gardener, Joseph Paxton (1801-1865). After its construction contemporaries declared that “this Crystal Palace will mark a new style in building, a revolution in architecture.”

The fact that a project of such extraordinary audacity was not shoved aside as fantastic gives us an insight into the power and self-confidence of that period. The promoters began work without a business-like contract, without any down-payment, or any legal obligation on the part of the Commission. Building time: survey began—end of July 1850; construction started—end of September 1850, opening—May 1, 1851.

The impression: “We see a fine network of lines without any clue to proportions. It is evident that even in a country of great caution and prudence, developments can occur by leaps and bounds. But this is certainly not a satisfactory explanation. There was a force behind that exhibition’s formation that accomplished things that had never been done before.”

edge of the laws of color composition and the use of materials, produced with “a few simple tools,” the most primitive instruments and, on the other hand, industrial possibilities of a yet unknown extent and at the same time perplexity and uncertainty as to their use. Contemporaries recognized this disparity immediately and expressed it clearly: “When English industry wanted to create a pretentious show-piece, it was done by exaggerating to the extreme a style of decoration that was already considered to be in bad taste.” From that contrast between exotically artistic and industrially unsound products, it became clear to a Gottfried Semper that an ornamental disguise was not the solution and that the development of form was more important. Many roundabout ways were tried until after five decades a thoroughgoing reform became effective. But the picture of a man who had been thrown off his balance and was therefore as little able to find his own pattern of living as he was to find a form for the objects surrounding him, was for the first time fully recognized in London, 1851.

Paris. At a time of great prosperity, between 1851 and 1889, the great exhibitions with their quickly built and quickly dismantled buildings are at the same time the best exponents of the architecture of that period. They become experimental stations for new industrial building methods. The history of iron construction and the history of exhibitions was written simultaneously. The whole domain of human labor was to be included, all parts of it, and embraced all phases and periods: agriculture, industry, machines (shown in action), raw materials, finished products, arts, applied art. Still, each exhibition has its own individuality, but it is impossible to trace that chapter in detail within the limits of this survey. However, there are no more important or more revealing events that could testify to the character of that epoch. The history of exhibitions became the history of a tradition upon which our very being is based—materially as well as spiritually.

The principle of exhibitions remains the same: Industry is being observed most scrupulously, as it changes from year to year, from decade to decade, increases, enlists new help and resources. At the same time an account is rendered of the modifications and trends in the building and furnishing of the house, iron building materials to tableware. For France 1855 meant a stimulus for increased industrial development. The Palais de l’Industrie with its span of 48 meters (160 ft.) may have surpassed London 1851 in boldness of construction, but the monumental steel encasing of the building later (London 1882, Chicago 1893) becomes an unfortunate example.

The Paris Exhibition of 1867 occupies a singular position. Napoleon III appointed as its director the engineer and economist Frederic Le Play, an outstanding expert on European labor conditions, who previously had traveled for a quarter of a century all over the continent from England to Russia. He largely determined the program and the form of the exhibition, as well as the organization of the building. In its form the building was intended to symbolize the globe. The form of the Champ de Mars forced the circle into an oval with the long axis of 500 meters (1,667 ft.) and the short axis 386 meters (1,283 ft.) respectively. Within the concentrically arranged spaces all countries contributed to special themes! In the high interior gallery—arts, in the following narrow gallery—applied arts (printing); in the third gallery—furniture and other household equipment; in the fourth gallery—clothing, textiles and related industries; in the fifth gallery—raw and finished materials; and finally in the last covered gallery, which had a span of 35 meters (117 ft.) more than twice the size of all the others—all industrial machinery. On the park side, in the exterior open gallery, surrounded by a projecting roof (an architectural innovation), food-stuffs, fresh and conserved, and restaurants were accommodated. A

tenth group, distributed over all parts of the Exhibition, must be ascribed to Le Play's influence. Its title was: "Objects which shall especially serve the improvement of the physical and moral standards of the nations..." A methodical collection of low-priced furniture, clothing, foodstuffs from all parts of the world was included, as well as model apartments for factory workers in town and country, the progress of education, etc. At that period France led Europe for the last time. The success of the exposition could not be questioned. The number of visitors was more than twice that at the first London and Paris enterprises of this kind. Its size was four times that of the Exhibition of 1855, and instead of the deficit of that time, a profit of 2,300,000 francs was made.

Philadelphia. A visit because of the appearance of America as a factor in the field of world trade. Not an imitation of Paris or London. A new principle is put into effect: The division into pavilions, a principle that was followed afterward in Chicago 1893, in Paris 1900, and again on regularly. The reason is the increasing scope and specialization of industry which demands segregation into single buildings. All buildings at this exhibition still preserved a sympathetic and primitive colonial style and, with the exception of the Art Pavilion, were built of iron, glass and wood.

Paris. At this occasion the whole Champs de Mars was taken up by the main buildings. This led to an extension beyond the Seine river and the erection of the Trocadero. The exposition was to show the world that France was carrying on in spite of the defeat in 1870.

Eiffel had his hand in the huge glass-covered buildings with their projecting blinds. The great halls of machinery which stretched back at a right angle to Eiffel's projecting hall, introduced a new principle of construction and anticipated 1889. "The acme at this time was contributed by the Orient with the art of Japan and China." (J. Lessing, 1878.) Stronger than ever before, eastern products of ancient handicraft were placed side by side with cardboard pianos and those characterless luxury pieces from the cabinet makers of Faubourg St. Antoine. New methods were shown by England. "The English are beginning to form their objects purely according to modern principles of construction. After having rid themselves of the memory of older traditions..." (Lessing, 1878.)

Paris. Gradually progress from 1878 to 1889 was so tremendous that visitors were stirred to the utmost by the boldness of the Eiffel tower and the Halle des Machines. The 300 meter (1,000 ft) tower, built in 17 months, and the Gallerie des Machines with a length of 420 meters (1,400 ft) and a span of 111 meters (370 ft) attained a standard which has since been unexcelled. 1889 is the culminating point and the end of the development.

This time again, the program was not devised by architects. It remained, as it should, in the hands of theoreticians. Sociologist and Ex-Minister Jules Simon was responsible for the theme section of the exposition—"The History of Labor and Industry" (L'Histoire du Travail). He well knew that it would be a mistake to stress enlightenment: "The visitor does not come to study science; while he does not dislike instruction through entertainment, the main thing he is trying to find is distraction and relaxation." (L'Exposition de Paris 1889, vol. III, p. 98.) The bazaar, the street in Cairo took the place of serious oriental participation. The success of the "Rue du Caire" with its donkeys imported from Egypt competed with the success of the Halle des Machines. In 1900 that "Rue du Caire" became a medieval village "Vieux Paris" and will be part of a town even in 1937—"Quartier Regional."

Chicago. When we saw the great buildings of 1893, not bound by time and chance, must have been full of hopes. Prophetic words were spoken: Here came new times, a new era is dawning. Fundamentally Franz Jourdain and Octave Mirbeau, who spoke these words, were right. But not for the moment. The Chicago World's Fair of 1893 conscientiously turned away from the spirit expressed by the great constructions of 1889. Not Eiffel's spirit dominated the "marble" pavilions on Lake Michigan, but the spirit of the Paris Academy. Nobody would have expected a "Halle des Machines" behind the cupola of Santa Maria della Salute, combined with a pollution portico and the facades of the Place de la Concorde. The influence of this exposition upon American city architecture can hardly be overestimated.
Paris near the end of World Expositions in their customary sense. Industry had become a matter of course: it is no longer a sensational feature for exhibitions. Besides, it has become so specialized and is covering so much ground that it cannot be confined into the frame of a single exhibition. The "Palais des Machines" of 1889 still stands, but its interiors are altered, and a hall has been added, the "Palais de l'Electricité," where artificial waterfalls are illuminated electrically at night. Electricity on a grand scale is the theme of this exhibition.

The main part of the exposition is situated on the now classic Champs de Mars. The Esplanade des Invalides is added and the two are connected by the Street of the Nations. Its palaces are built in the style considered nationally significant for the exhibiting country. Germany is represented by late medieval town halls, other countries by Baroque and Renaissance buildings. Outside the city, in the Vincennes forest, agriculture and forestry are shown. The system of pavilions has become prevalent, as in Chicago 1893. A new building material is being used—reinforced concrete. But it is no longer apparent. It is hidden by the stone facades of the Grand Palais and the Petit Palais.

Decadence usually seems to be connected with signs of fatigue. The decadence of expositions is demonstrated by an indifference which surprised contemporaries. Big industry led the way. In London 1851, Paris 1857, Philadelphia 1876, Krupp's giant guns were the sensation. When Berlin, after 1800, intended to hold the first German World Exposition, it was this same Krupp who declared that he "needs no exhibition publicity and that therefore the organization of such an exposition must be regarded as useless and without purpose." The exposition was not held.

Special Exhibitions. The Period that follows is one of specialized exhibitions. They had been in existence all through the century, but now these shows, appealing to certain groups only, occupy the front rank. The International Electricity Exhibitions of Brussels of 1925, Barcelona 1927, International Fur Exhibition, Exhibitions for Health and Hygiene, Press Exhibition (Pressa, Cologne) and others. In addition there are annual showings by those industries appealing to the public at large. Again Paris is the center:

Salon de l'Automobile, Salon de l'Aviation, Salon du Radio, etc. Since the World War, Trade and Sample Fairs became more and more popular.

New Beginnings. As soon as industrial production lost its explosive power, a need was felt to make up for the neglect in the treatment of human problems. It began at the periphery with an improvement in taste. After the London exhibition of 1851, Semper tried, with good examples, to readjust the taste of the industrialists which had completely grown out of bounds. Various slogans were distributed until around 1900 a definite reform was noted in the field of applied art: The individual and the time were to be harmoniously united. It is clear that applied arts in this connection interest us because they are closely allied with the private surroundings of man. The need for new forms appears first in the small object, the piece of furniture, the house, then in the organism of the community and the general mode of living. That is the point we have arrived at today. For example, the repeated attempts of the Darmstadt art colony after 1891 are more important than the entertainment provided by the various industrial exhibits shown at World Expositions after 1900.

Darmstadt 1901; German Exhibition of Applied Arts, Dresden 1906; the foundation in 1907 of the "Deutsche Werkbund" and its two most important events, Cologne 1914 and Stuttgart 1927; the Swedish Exhibition, Stockholm 1930—all these are steps toward giving form and backbone to our present-day uncertain way of living. The next stage in this development is clear: The problem of harmoniously uniting man and time cannot be superficially treated. We must from now on tackle the modes and standards of living in their entity.

Do exhibitions still possess vitality? An entirely new type of exhibition, corresponding to changed circumstances, is developing. Fragments of it will be found in three sections of the Paris World Exposition of 1937. That type of exhibition is no longer interested in a "thematic" alignment of production. It very consciously takes as a starting point the needs and desires of man, subjects everything to that principle. Because the question that touches peoples and nations most deeply today is not: "How and how much can we produce?" but "How can we manage not to lose control over production?"
habitation

Project for a folding mobile house by Alfred Claus. Wood cabin in Bergen designed by H. Elte.
The Hotel Goldiland and the Avco broadcasting station were the last contributions of Dukler before his death. Its open plan, rooms with terraces overlooking a raised garden, its wide unobstructed view permitted by the fan-shaped exterior court and a happy fusion of the indoors and the enclosed spaces are characteristic features of this building.
APARTMENT HOUSE IN PARIS
BY JEAN GINSBERG AND FRANCOIS HEEP

Present obsolete system of city planning often reduces urban architecture to a facade problem. A typical example is the above building with fifteen two-room apartments facing street and court. Here partitions and openings are designed to give a certain illusion of space.
FLORIDA, particularly the southern part, was the scene some twelve years ago, of one of the wildest land booms in this country's history. Today it is solidly established as one of the great U. S. resort centers. Miami, the largest city in this area, has a yearly influx of tourists equal to its permanent population, and it has gone to great lengths to cater to their comforts and whims. Nowhere is this mixture of big-city and resort-city character more clearly reflected than in its architecture. Without previous architectural tradition, South Florida towns at the close of the last century were built of wood in a modified jigsaw style. With the building of the great Flagler hotels in Miami and Palm Beach the resort character of the region was established, and as tourists began to come in from all parts of the country, the expression of their heterogeneous tastes came with them. Pictures of Miami in 1920 show some of the results: left-over Victorian Gothic and Romanesque; traces of Southern Colonial; Renaissance revivals brought in by Stanford White and others; the prairie style from the Middle West. Others introduced even more exotic forms. Upon this hodge-podge descended the boom and the new vogue for "Spanish." Addison Mizner in Palm Beach was probably the greatest influence, although his costly and painstaking antiquarianisms were only for the very rich. The average building used stucco on frame with as much pseudo-Spanish detail as the owner could afford. More enterprising developers varied the scene with Dutch, English, French, Italian, even Chinese "villages" which consisted of groups of five or six houses. The collapse of the boom left South Florida prostrate, and the depression which followed drove all thoughts of resorts from the minds of former tourists.

When building began again, about four years later, new building laws provided a sounder basis for construction, but the resort character remained and today the fad is "modern." It is a modern that is far too often a mere grafting of a new type of skin on the same old frame, and as such will probably follow its predecessors. In the growing understanding of the nature of modern planning, however, there is the basis for an architecture in Florida that is both local in character and contemporary. The examples on the following pages illustrate the best of the present work in and around Miami, and indicate the probable future trend.
The most valuable shopping street in Miami Beach is the location of this building. In explaining their solution, the architects state that "the depth of the lot and the demand for small shops makes the shopping court a highly practical feature. As the site is only four blocks from the beach the hotel is financially feasible, although it could not be as expensively constructed as those on the ocean front. It was given a side entrance because of the greater value of the shops facing on Lincoln road. Provision has been made for two additional floors of business offices over the shops, these offices to be reached by elevator from the arcade."
CONSTRUCTION OUTLINE

FOUNDATIONS: Reinforced concrete piling and grade beams. Waterproofing—Sec Integral for concrete, stucco and mortar. Sec Mfg. 


ROOF: Flat built-up with gravel top. Certain-teed Products Corp.


ELEVATORS: Equipment by Otis Elevator Co.

FLOOR COVERINGS: Hotel rooms—carpet. Restaurant, kitchen, etc.—linoleum. Bathroom floors—tile, Robertson Art Tile Co.

WALL COVERINGS: Structural glass in baths, remainder plaster. Real estate office—Texbord, Celotex Corp.


HARDWARE: Supplied by Schlage Lock Co.


The Tides Hotel is a good example of the prevailing style trend in Florida as applied to the numerous establishments of this sort which have been erected for tourists. The night view above shows a simple mass, adequate fenestration, and a characteristically imposing entrance. It will be noted, from the other illustrations, that the "modernistic" touches to be found in most recent Florida work are by no means absent here; they have been definitely subordinated, however, to the well-organized general design.
CONSTRUCTION OUTLINE


ROOFS: Bonded, 5-ply built-up roofing. The Philip Carey Co. Decks—covered with promenade tile.

GLASS BLOCKS: By Owens-Illinois Glass Co.


FLOOR COVERINGS: Bedrooms and halls—carpet.

WALL COVERINGS: Bathrooms—tile wainscot.

WOODWORK: Trim, cabinets and exterior doors—cypress. Interior doors—fir.

HARDWARE: Supplied by Schlage Lock Co.


BATHROOM EQUIPMENT: All fixtures—Kohler Co.


This building was designed to house a small architectural office which employs about ten draftsmen during peak periods. Provisions for a future library and additional private offices have also been made. The unusual exterior was the result of several factors: the architect wished his office to indicate the general character of his work, and it is located in an area which when developed will be primarily residential.
CONSTRUCTION OUTLINE

FOUNDATIONS: Spread footings of reinforced concrete.

STRUCTURE: Exterior walls—\( \frac{1}{2} \) in. stucco, 8 in. concrete block; inside—\( \frac{3}{4} \) in. wood furring, \( \frac{1}{4} \) in. lath and plaster, frame partitions plastered both sides. Floor construction—(1st) reinforced concrete slab on fill; (2nd) wood joist, pine sub-floor, oak finished floor. Ceiling—Temlok insulating tile, Armstrong Cork Co.

ROOF: Ten-year bonded tar and gravel.

SHEET METAL WORK: Flashing—16 oz. soft rolled copper.


WALL COVERINGS: One wall of general office Masonite Corp. Presdwood, painted; one wall of private office \( \frac{1}{4} \) in. cork board; remainder—painted plaster.

FURNISHINGS: General office: Desk, tables and cabinet—special design; benches and chairs—Thonet Bros. Private office—all furnishings special, East Coast Millwork & Fixture Co.


AIR CONDITIONING: Provision made for future installation of Chrysler Air-Temp complete air conditioning system.
The Goldwasser shop occupies the corner and a large portion of one wing of this store building. The nature of the merchandise on sale, in this case women's apparel, is well suggested by the design of the building, whose large windows, carefully controlled signs, and general air of luxurious simplicity are in complete harmony with their function.

CONSTRUCTION OUTLINE

FOUNDATIONS: Precast concrete piling.
ROOF: Wood rafters, wood sheathing, 10-year bonded felt and gravel. Philip Carey Co.
WINDOW: Store front construction—Desco, Detroit Show Case Co., extruded aluminum.
FURNISHINGS: By National Show Case Co.
HARDWARE: Supplied by Sargant & Co.
PAINTING: All material by E. I. du Pont de Nemours & Co.
Built expressly for two well-known entertainers, this bar and restaurant was designed to create a pleasant, intimate atmosphere, and was provided with terraces which allow the seating capacity to be doubled when necessary. The architect states that he attempted "to suggest the tropical location without staged effects, and in a contemporary manner." The highly successful interior is briefly but adequately explained by "tired of chromium modern."

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—concrete blocks stuccoed outside; interiors—plastered and furred with 1 x 2 wood strips. Structural steel—I-beams with exposed wood joists and wood casing on beams. Floor construction—quarry tile, 3 x 9 in., laid herringbone pattern, B. Mifflin Hood Co.

ROOF: Gravel and 10-year built-up rag felt, Johns-Manville.


FURNISHINGS: Reed furniture in bar and loggias, solid wood in dining room.

HARDWARE: Supplied by Schlage Lock Co.


VENTILATION: Exhaust fan—American Coolair Co.
Robert G. Jähkelka, Architect

This two-story apartment building is one of the most common of the residential types in Miami. Built as a rule on 50-foot lots, there are hundreds of similar structures, varying only slightly in plan, general appearance, and size. The example illustrated here, one of the best of its kind, is of particular interest for its flexibility in plan. The use of a balcony for circulation on the second floor, with separate entrances to each room, makes it possible to furnish apartments in many combinations from a single bedroom and bath to larger suites without the necessity for alterations of any kind.
The combination of modern features with those of the more conventional southern houses is to be seen in most Florida small houses of recent years. A case in point is this one-story residence. Convenient in plan, it groups the bedrooms and bath around a small private passageway, has living and dining rooms of adequate size, and provides a generous porch for year-round outdoor living.

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—concrete block, tucso surface; inside furring and plaster. Interior partitions—wood frame and plaster. Floor construction—oak throughout except kitchen and bath.

ROOF: Two layers of 30 lb. felt and No. 90 white plate surfaced felt.


HARDWARE: Supplied by Yale & Towne Mfg. Co.


BATHROOM EQUIPMENT: All fixtures by Standard Sanitary Mfg. Co.

PLUMBING: Hot and cold water pipes—steel, A. M. Byers Co.

HEATING: Solar Water Heater Co. system for hot water. 80 gal. tank located in chimney; wood burning fireplace in living room, wall heater in bathroom. Kitchen and bath mechanically venti- lated by fan located in garage.

DECEMBER 1938

459
The trend in modern domestic architecture in Florida, as already noted, is to combine features of both traditional and modern types. The clients in this case wanted a modern house, but something less uncompromising than examples they had seen in Europe. Chief of the problems presented was the existence of a view on one side of the property and the prevailing wind from the other. The result was a long, narrow plan, with the major rooms extending the full width of the house, the service wing runs along the north property line.
LIVING ROOM

CONSTRUCTION OUTLINE

FOUNDATION: Precast concrete piles, reenforced concrete grade beams and slab, waterproofed with Sec, Sec Mfg. Co.


ROOF: Wood rafters, wood sheathing covered with 30 lb. saturated felt and 85 lb. slate saturated felt; Ludowici-Celadon Co. pointed-weight Bermuda white interlocking tile. Decks—15-year bonded tar and gravel roof and wood slat sectional floor.

CHIMNEY: Cement brick with terra cotta lining; Heatilator fireplace, Heatilator Co.

SHEET METAL WORK: Flashing, gutters and leaders—36 oz. soft rolled copper. Ducts—26 gauge galvanized Armco Ingot iron, American Rolling Mill Co.


PAINTING: Interior walls and ceilings—Velumina Wall Hide, Pittsburgh Plate Glass Co. Sash—enamel, Pratt & Lambert, Inc.

ELECTRICAL INSTALLATION: Wiring system—galvanized steel tube, 30 per cent Para rubber covered wire. Switches—Tumbler.


HEATING: Electric heaters in all rooms, Thermador Electric Mfg. Co.
The merits of the open plan in the Florida climate cannot be questioned, and its advantages are well illustrated here. View and ventilation are both provided for in all important rooms, and the living possibilities of the dining-living-recreation room arrangement are obvious. The placing of the recreation room was conditioned by the view, although one might, on this basis, question the location of the guest bath. The exterior shows the typical plain surfaces and low-pitched roof, the latter being white as a means of insulation. Ample terraces on both floors give full opportunity for outdoor living.
CONSTRUCTION OUTLINE

FOUNDATION: Walls—reinforced concrete piles and grade beams. Waterproofing—concrete, stucco and mortar integral, Sec M Co.


ROOF: White shingle tile over main portion. Ludowici-Celadon Co. Decks—two piles of 4" x 4" covered with red quarry tiles laid in sand.


INSULATION: All ceilings—metalized rock lath, U. S. Gypsum Co.


STAIRS: Treads and risers—precast terrazzo slabs.


PLUMBING: Soil pipes—cast iron. Hot and cold water pipes—copper.

A conventional small house, economical in its use of space and planned for convenient circulation. Its most successful features are the generous entrance hall, connection of the garage to this hall, location of the lavatory, and the placing of the dining room where it overlooks the rear garden. Some of the difficulties that arise where a one and a half story scheme is used are apparent in the second floor plan, whose irregularity is a necessary result of the docked ceilings and dormer windows. Cost: $11,000.

CONSTRUCTION OUTLINE

STRUCTURE: Wood frame construction with brick veneer.
ROOF: Covered with wood shingles, Seattle Cedar Lumber Mfg. Co.
HARDWARE: Special design. Colonial brass, Sargent & Co.
HEATING: Sunbeam forced warm air system, gas fired, Fox Furnace Co.
The impact of modern ideas on traditional house forms has already produced a number of examples whose significance, as part of the contemporary trend, should not be underestimated. These architectural hybrids have been most common in California, where a whole school of younger architects is rapidly developing a modern, regional domestic type. This new house in Long Island suggests that the same can be done in the East. Based on familiar precedent it shows that the advantages of modern planning and fenestration can be provided in a manner which will not offend the conservative client. The plan is particularly well studied on the upper level where children, parents, and servants are given ample space and privacy. On the floor below the arrangement shows equal care in planning. A major feature is the living room window, which runs from wall to wall and up to the ceiling; the overhang provides needed protection against the summer sun. The designer eliminated the need for shutters as a decorative accent by painting the walls dark and the trim white, a 200-year-old device which is as appropriate today as ever.

**CONSTRUCTION OUTLINE**

**STRUCTURE:**
- Exterior walls—clapboard. 15 lb. felt, sheathing, studs. Ecod lath and plaster, Reynolds Corp.

**INSULATION:**
- Outside walls and attic floor—4 in. rock wool, Johns-Manville.

**WINDOWS:**
- Double hung, Curtis Companies, Inc.: casement—Hope's Windows, Inc. and Anderson Corp. Glass—single strength, Pittsburgh Plate Glass Co.

**FLOORS:**
- Living room—asphalt tile. Thomas Moulding Co.

**WALL COVERINGS:**
- Library—birch plywood. U. S. Plywood Corp.
- Bathrooms—Marlite. Marsh Wall Products Co.

**WOODWORK:**

**ELECTRICAL INSTALLATION:**
- Cables—Bryant Electric Co. Fixtures—Lightolier Co. and Gruber Bros.

**KITCHEN EQUIPMENT:**

**BATHROOM EQUIPMENT:**

**HEATING AND AIR CONDITIONING:**
- Oil burner—Delco Frigidaire Corp. Hot water heater—Taco Heaters, Inc.
Most architectural exhibitions are more remarkable for what they are not than for what they are. So familiar is the tasteless collection of small mounted photographs in the average exhibit of architecture that the San Francisco Museum of Art refused to release any space for this show until it was convinced that it would be properly designed and of a nature to interest the general public. The result, under the direction of Ernest Born, was far more than a properly designed exhibition. Inspired in its simplicity, it consists of a series of plywood panels laid out on a sawtooth plan, with a blueprint, caption, and photographs illustrating each job. A definite layout for each section was made, and photographs of the proper size were ordered: a complete reversal of the usual practice of fitting together whatever available material there might be. Not the least important outcome of the exhibition is the fact that the public, popularly supposed to have no interest in architectural shows, came in such numbers that the closing date was postponed for two weeks.
The theme of this exhibition of the Associate Industries of Massachusetts was a preview of the New York World's Fair. Held during the association's annual meeting, this ingenious exhibit was open for only 5 hours. It presented a problem, therefore, quite different from that of a display of longer duration; low cost and ease of installation were major requirements. The designers used white corrugated paper to cover the walls of the room; small exhibits were shown in niches formed by long corrugations made of blue paper; manufacturers' names were placed on standard glass frames as a further means of giving unity to the exhibition design. Space was also allocated for a small display of modern architecture; the center illustration shows the architects' prize-winning design for the American Gas Association small house competition.
WELDING

Welding is still a mystery to most architects, and a good many seem content to let it remain one. Designers who pride themselves on their expert knowledge of wood joinery and stone jointing have left the field of welding to the engineer, who—as often happens—is running away with it. Some of the new forms in structural steel which he has worked out through welding seem destined to make design history. No other new technique has opened up so many interesting new possibilities.

Many of the advantages attributed to welding, such as silent erection, greater speed, lighter weight, and increased rigidity, are of little direct interest to the designer. What he does find important are the simplified connections, elimination of unsightly rivets and protruding brackets, and the general improvement in appearance possible in welded work of all kinds, from exposed structural steel to almost every type of metal work used in buildings. For these reasons, the alert designer is prejudiced in favor of welding at the outset. It is glad to learn that welding saves up to 35 per cent of the steel in trusses and plate girders, from 5 to 10 per cent in steel framework, cuts fabricating costs, and speeds delivery. Thus welding appeals to everyone connected with building as a new way to do a better job at lower cost.

It goes without saying that this picture is not entirely one-sided. Like all forms of structural work, welding suffers from the lack of a positive, non-destructive test, with the added difficulty that in welding the human factor is all important: no amount of safety can be put into the design of a connection which cannot be canceled by careless or unskilled workmanship. Then, too, the very increased rigidity which results from welding creates a new structural problem by setting up secondary stresses which must be considered by the designer, especially in the case of the dynamic and moving loads encountered in some classes of work.

More important than any of these, however, has been the inertia of the building industry. Held back by code restrictions and the general resistance to new ideas which characterizes the building field, welding was slow in getting started. But once underway, it went ahead all the faster. With the adoption of New York City's new code for welding, with the successful completion of more than 200 welded-frame structures in the U.S., one 20 stories in height, and with its theoretical savings now a matter of established fact, welding is sure to prove a prominent feature of Building's skyline of 1939.

(Continued on next page, text on page 473)
WELDING IN BUILDING

TWO BASIC TYPES . . .

ONE ASSOCIATED PROCESS . . .

Electric Arc
Oxy-Acetylene
Gas Cutting

SEVERAL VARIATIONS . . .

Diagrams showing the essential characteristics of the four welding processes most used in building. A description and the principal application of each is given on the opposite page.

FILLET WELD
OPEN SQUARE
SINGLE VEE
DOUBLE VEE
U-JOINT

Fundamental forms of various welds. Fillet welds are used for lap joints, butt welds where material is aligned. Butt welds of all types usually require a certain amount of "reinforcement," that is, must be somewhat thicker on one or both sides than the materials which they connect, in order to develop its full strength.

MANY APPLICATIONS . . .

Roof Arches:
Structural Connections:
Attaching Floor and Roof Decks:

1. Welded roof arches, assembled from standard I-beam and plate sections; equipment: General Electric Co.
2. Welding rigid-frame beams (shown complete on page 474); equipment: Wilson Welder and Metals Corp.
3. Splicing columns in welded frame; equipment: Lincoln Electric Co.
METHODS

The term welding is properly applied to any "localized consolidation of metals by means of heat." Technically, welding processes are divided into two main groups: plastic welding, in which the metals are united by pressure without weld metal, and fluid (fusion) welding, in which they are joined by weld metal without pressure. In building, however, the distinction between the two principal fluid methods: gas torch and electric arc welding is more important. The only other process used to any extent in building belongs in the plastic group and is called "electric resistance" welding. Not used in the building field are the plastic and fluid "chemical reaction" types and forge welding.

Metal-Arc Welding obtains the necessary heat from an electric arc formed between an electrode and the parts to be welded, the electrode furnishing the welding metal. Both direct and alternating current are employed, with the former most widely used. Transformers or generators driven by internal combustion or electric motors supply the current. Since it has been found that more heat is liberated on the positive side of an electric arc than on its negative side, this terminal is usually attached to the parts to be welded, which since they are usually more massive than the electrode, require more heat. In welding thin materials, and using some covered electrodes, this procedure is reversed, giving rise to the expression "reversed polarity welding." Metal arc welding is principally used in structural steel connections.

Oxy-Acetylene (Gas) Welding obtains its heat from a torch burning a mixture of acetylene and oxygen, welding metal from a separate welding rod similar to the electrode used in metal-arc welding. Gauges and regulators on pressure tanks afford control of gas pressures and mixing, which takes place in the torch. Gas welding is mostly employed in the fabrication and erection of miscellaneous metal work, piping, pipe rails, etc.

Carbon-Arc Welding is similar to gas welding in that a separate welding rod is used, and to metal arc welding in that an electric arc is used as the source of heat. In welding thin materials, the arc is sometimes used to melt the parts and fuse them together without the addition of filler metal from a welding rod.

Resistance Welding is accomplished by passing an alternating current of high amperage and low voltage through metals while under pressure and using the heat produced at the point of contact to fuse the metal together. Resistance welding is used in the shop fabrication of metal work, especially for sheet metal. Types. Two fundamental types are employed in welding: butt and fillet welds. Butt welds are used for connections with the material in alignment, fillet welds for lap and angle joints. Typical fillet welds, and a few of the butt welds in common use, are shown on the opposite page.

Gas Cutting is closely allied with gas welding, and employs substantially the same equipment. Gas cutting may be done by hand on the job or may be machine guided. In either case a surprising degree of accuracy can be maintained, and in machine guided cutting complex shapes may be rapidly cut from templates.

TYPICAL CONNECTIONS . . .

Above: Typical connections in welded steel frame. Clips are shop-welded to one member, job-welded to form connection. Below, left: Welded connection in truss showing simplified construction and improved appearance; equipment: Metal & Thermit Corporation; right: sample showing use of patent welding seat which develops wedge-like fit between members prior to welding, Van Rensselaer P. Saxe, C.E.
Another form of gas cutting, known as flame machining, employs the cutting torch at an angle so that the cut does not extend all the way through the piece, may be used in the preparation of material for butt welding.

**TESTS AND INSPECTION**

The biggest problem in welded structural work is the problem of adequate tests and inspection. The strength developed by a weld connection depends largely on the skill of the welder, and it has long been recognized that the future of structural steel welding depends upon prequalification of welders and rigid inspection of finished work. This problem, however, is rapidly being solved.

The code now in force in New York City, for example, provides for certification of the welder on the basis of a standardized qualification test, revocation of the certificate for negligence, defines the responsibilities of welding foremen, contractor, architect, and engineer, and calls for inspection, with daily reports, by an approved independent inspection agency. Under this system, all connections are marked for identification, so that in the event of poor workmanship or failure responsibility may be traced all the way back to the welder who did the work.

Qualification tests usually call for several types of welds made in various operating positions, which are then tested to the point of ultimate failure. Welders must demonstrate their ability to make satisfactory connections in each operating position before certification.

There is no method of testing welds comparable to the simple "tapping" test given to riveted work, but adequate inspection can assure good workmanship if properly carried out. In boiler and machine work, various exacting tests, designed to show up subsurface flaws in the weld metal—such as X-ray, Gamma-ray and magnetic tests and inspection with a stethoscope—are employed, but in structural work careful visual inspection, coupled with observation of the welder at work, has been found adequate. Standard qualification tests and inspection techniques for structural work have been developed by The American Welding Society and are rapidly being improved, as are the welding materials and data upon which the engineer must base his design of connections.

1. Vertical leg of welded roof arch, formed from rolled I-beam section by splitting and cutting away portions of web and bending flange welding on additional web pieces. 2. Diagonal-grid roof and floor construction made possible by monolithic welded connections. 3. Right frame sawtooth roof construction, illustrating the clean cut structural forms which result from the use of welded joints.
THE INTEGRATED HOUSE

Since April, 1937, when THE FORUM published its original research study, The Integrated House, many experimental projects incorporating the basic ideas advanced in the study have been carried out. Most noteworthy among these—because of its comprehensive character—was the development of Modern Housing of Washington, Inc., described in the November, 1937 issue. Another has been reported in Letters (July 1937, p. 34). A third is described in Building Homey (p. 287). In order to provide a medium for the presentation of further developments of this kind in an easily recognizable form, THE FORUM hereby inaugurates a page devoted to them exclusively.

PRE-CUT FRAMING

Los Angeles plan unites contractors and lumbermen, benefits both.

To more than 500 top-flight Los Angeles building contractors early last September went the offer that has been approved by the West Coast Lumbermen’s Association, the Building Contractors Association of Southern California, and the Lumber and Allied Products Institute of Los Angeles. Object: to test a new pre-cut framing plan. Essence of the plan was its two-fold purpose: 1) to provide the builder with framing members pre-cut to exact size and packaged for convenient use and 2) to afford the lumber dealer an opportunity to select better portions of No. 3 common lumber for sale in the more profitable No. 2 classification and to enlarge the market for otherwise slow-moving lengths.

On paper, the plan’s originator, Los Angeles Builder Paul De Huff, had already shown that his scheme would save money for all concerned. What remained undetermined was whether or not these theoretical savings could be realized in run-of-the-mill practice, and if so, how much could actually be saved.

Ready last month was Builder De Huff’s advance report on stop-watch studies of several otherwise ordinary building operations carried out according to his method. Conclusions: an indicated construction cost saving upwards of $10 per thousand board feet of wall and partition framing, or about $30 per house without counting reduced overhead; added mill costs, No. 2 common, pre-cut and ready for delivery, normal. To those accustomed to thinking in thousand—or at least hundred—dollar items, the probable overall saving of about $800 per house which these figures indicate may seem like small change, but the importance of the scheme rests not on this but on its far-reaching applicability. In sharp contrast with most systems of prefabrication, the Los Angeles plan promises positive initial savings in terms of the typical-size building operation, may be used to advantage almost anywhere. And $800 per house, multiplied by the number of frame houses built annually in the U. S., is big money indeed.

TIME-STUDY DATA

Basis of these figures is a comparison between a series of carefully checked time-studies and the average for ordinary (all hand-sawn) practice as given by various authorities. With the latter taken as a base man-hours of framing labor per 1,000 ft. of materials, pre-cutting showed a job-saving of more than ten man-hours per 1,000 board feet, according to the following typical breakdown:

Job: 23-unit one-story project, built under FHA insured loan and located within 25 miles of Los Angeles.

Conditions: Plates random length cut in place. Members between plates delivered pre-cut to exact fit, bundled and marked (Continued on next page)

Right: Pre-Cutting Sequence. 1. Random length lumber spotted for sawyer, Carrier used to move stock from yard to cutting table. 2. Cutting table. Sawyer-grader cuts low grade stock to maximum advantage. Arrows indicate selective stops which permit rapid, precise gauging. 3. Pre-cut lengths. Cart is provided for each length. Helper also keeps tally and disengages the proper selective stop as soon as all pieces of any length have been cut. 4. Layout area. Handcarts located for convenient assembly of bundles.
for openings. Plates laid off for openings and studs by template.

Segregation: Study confined to two typi-
cal units.

Time Study:

<table>
<thead>
<tr>
<th>Description</th>
<th>Linear ft.</th>
<th>Board ft.</th>
<th>Man Hours per 1000 Board Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double plate layout</td>
<td>260</td>
<td>347</td>
<td>1.5 4.32</td>
</tr>
<tr>
<td>Second top plate</td>
<td>190</td>
<td>173</td>
<td>2.0 11.97</td>
</tr>
<tr>
<td>Assembling, raising, plumbing, temporary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bracing stud walls</td>
<td></td>
<td>1,986</td>
<td>26.0 13.10</td>
</tr>
<tr>
<td>Totals and Average</td>
<td></td>
<td>2,159</td>
<td>29.5 13.68</td>
</tr>
<tr>
<td>Estimated Saving</td>
<td></td>
<td>21.3</td>
<td>13.32</td>
</tr>
</tbody>
</table>

That this saving was due to the pre-cutting and not to the scale of the operation was later demonstrated in the construction of H. Roy Kelley's Los Angeles LIFE house, where the savings on a total of but 2,300 board feet of framing were slightly higher.

PRE-CUTTING COSTS

To the lumberman, the advantage of furnishing pre-cut framing members at the price usually charged for stock mill lengths depends upon the fact that it is then possible to sell the better portions of No. 3 common lumber at a higher price in the No. 2 grade. Whether this works out is determined by three factors: the price differential between the two grades, the cost of cutting and handling the material, and the amount of waste involved. That pre-cutting affords an opportunity to cut mill waste to a minimum, dispose of slow-moving short lengths, has proved in practice to offer considerable benefits to the dealer is shown in the following cost study of a typical 7,500 board foot order, cut in Los Angeles on October 17, gave the following box score:

Average Piece Length: 2 ft. 8 in.

Number of Finished Pieces: 2,236.

Equipment: Permanent mill equipment consisting of 16 in. overhead swing saw, 2 ft. free roller table with toggle stop, Dolly-carts for racking cut lengths according to size.

Conditions: Material delivered within reach of sawyer-grader in carrier loads. Sawyer provided with complete exact-dimension list of finished pieces required. Sawyer instructed to fill order by cutting No. 1 common and better grade lengths from 30 ft. lengths of yard stock. No. 3 common Douglas Fir. Helper "tailed" saw and sorted cuts into proper dolly-carts.

Segregation: 3,563 bd. ft. (bundled items)

Cost Study

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost per 1000 Bd. ft.</th>
<th>Hourly Man- Cos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grading and Cutting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grader-Sawyer</td>
<td>$0.82</td>
<td>$0.33</td>
</tr>
<tr>
<td>Helper</td>
<td>$0.65</td>
<td>$0.25</td>
</tr>
<tr>
<td>Piece and Grade Marking,</td>
<td>$0.65</td>
<td>$0.25</td>
</tr>
<tr>
<td>Assemble, Bundle &amp; Stencil</td>
<td>$0.65</td>
<td>$0.25</td>
</tr>
<tr>
<td>Total</td>
<td>$4.54</td>
<td>$1.54</td>
</tr>
</tbody>
</table>

ENGINEERING TAKES A FLING

At Building's toughest problem, puts low cost housing on a conveyor belt.

Gilbert-Varker has a system and a yen for steel construction.

Six houses per day for 50 consecutive working days is big building in any man's language. An organization that can boast such a record is at least a prototype of the long-awaited big building corporation. Right now, in Clairton, Pa., both the record and the prototype are being established. The former, a 300 house subdivision in the $4,000-$5,000 price bracket, known as Colonial Village and being aimed principally at steel workers but not nanced by their employer, is an example of company housing's up-and-coming successor. The latter is the Pennsylvania Housing Corp., whose construction team of Gilbert-Varker, Inc., has temporarily departed from the ranks of heavy engineering to teach large scale home builders the blue of neat organization and management, to preach the conversion of home building into home assembly.

Aside from its size and rapid, systematic instruction, Colonial Village commands the spotlight on two additional counts: 1) it is the first FHA project whose houses may be either sold or rented; 2) these houses, much to the liking of Carnegie-Illinois Steel Corp., contain three times as much steel as the customary house of the same size. Sum total of all its newsmaking characteristics points to Colonial Village as the most significant subdivision in the U. S. today.

Market. Like most other subdivisions, Colonial Village is a speculative proposition—at mid-month about 50 houses were sold before completion. But, unlike many others, it was undertaken to supply a very definite market. Situated nine miles southeast of Pittsburgh, Clairton is a town of steel mills, and bulk of its 12,000 population is steel workers. Furthermore, with the recent completion of Carnegie-Illinois' 860,000,000 Irvin Works, three miles down the Monongahela River, Clairton's population is due to expand with about 1,000 families.

Obligated to a certain extent to do something about this expansion, Carnegie-Illinois year ago researched the local housing problem, found there to be an immediate shortage of 2,000 houses in the eight principal communities within a five-mile radius of the Irvin Works, not counting the needed shelter for workers who will be attracted by the opening of the new plant. It was also determined that these communities had an annual replacement requirement totaling at least 300 houses.

Recognizing the existence of this housing problem but preferring not to participate directly in any residential building program, Carnegie-Illinois was ready to cooperate with outside interests in any plausible solution. To them last winter came Messrs. Gilbert and Varker with such a solution. Since their approach to the problem seemed sound and since the only favor they asked was an option on some U. S. Steel Corp. land at Clairton, they were accorded a hearing. Theirs was a new plan based on long experience. Fifty-year-old Engineer Royce W. Gilbert had worked with Stone & Webster Co. (twelve years), with McArthur Brothers, New York City contractors, then with Boston's Chase & Gilbert Inc. These years
of experience in heavy construction (apartment houses, hotels, industrial plants, etc.) were punctuated, especially during Depression, with experiments in low-cost housing and prefabrication. In 1937 Gilbert teamed up with 44-year-old Engineer William M. Varker, who, in addition to serving as an engineer for Pennsylvania Railroad's Construction Department, had administered the new-business and financial departments of William Macy Stanton Co., Philadelphia architects, and Chase & Gilbert, Inc. In the new firm he occupies the position of Vice President and Treasurer under President Gilbert.

Site. After an extensive survey, Gilbert-Varker chose the Clairton site for their housing project. No other in the vicinity of the Irvin Works was found to be as favorable in price and buildable area as this 540-acre Clairton tract owned by two U. S. Steel Corp. subsidiaries, Carnegie Land Co. and Carnegie Natural Gas Co. High and to windward of the steel mills, it was 70 per cent buildable. Other points in its favor: It is served by a network of roads leading in five minutes to Clairton's business center, in ten minutes to the Irvin Works, in 15 minutes to Pittsburgh; main trunk gas, water, and electric lines were readily available.

Having secured an option on 92 acres of this property, Gilbert and Varker in late February set about to perfect their solution. Their Engineering Department prepared all working drawings for development of the virgin site. Sloping terrain necessitated much cutting and filling, and to minimize costs an economic balance between the two was prudently worked out. Back filling was kept to a minimum. The steep slope of many lots precluded the building of houses upon them; they were set aside as park areas. As finally platted (see page 479), the site included lots for 300 houses with 55 per cent of the 92 acres being set aside for parks, playgrounds, streets, walks and a community center.

Coincident with this land planning, Gilbert-Varker's Purchasing Department was evolving a systematic delivery and expediting schedule. Construction was broken down into its various phases which were to be handled by specialized crews. Production of these crews was estimated and a time sequence chart worked out which permitted the Department to determine on exactly what dates the various materials should be shipped by manufacturers whose cooperation and suggestions were solicited. When specifications were drawn, they were requested to submit competitive bids.

Product. Specifications were not prepared, however, until the Architectural Department had spent many an overtime day producing house designs. A Gilbert consultant for four years, Architect W. Sanford Full of Boston worked in collaboration with Pittsburgh's Architect Lawrence H. Rank. To hold down construction costs, they limited their 300 houses to two basic designs: one of five rooms, the other of six. But, to avoid monotonous similarity, they adapted 40 exterior variations to these two basic plans. The means: different color schemes, orientation, fenestration, front entrance hoods and porches and a wide variety of colors for roofs and exterior trim.

Tangible evidence of the close association of Gilbert-Varker with Carnegie-Illinois during the project’s planning stages is the fact that the final specifications of the Architects Full and Rank included a steel quantity of over 7,000 lbs. of steel items per house compared with the 2,580 lbs. used in the average small dwelling. Like almost any other wide-awake corporation, Carnegie-Illinois is continually seeking new outlets for its product, and it naturally pumped for as much steel as practicable in the Gilbert-Varker houses. Long experience in heavy construction had taught their builders the value of steel as a building material. Having decided to use it in their houses, they set up two rigid requirements to be met by all steel items: 1) that they be competitive in price with conventional materials, and 2) that they equal or surpass in performance the materials they replace.

In return, Carnegie-Illinois bent every effort to get fabricating companies to design new housing applications of steel to meet Gilbert-Varker requirements and to submit bids on the Clairton project. Results of these efforts are seen in the many new uses of steel embodied in the houses: particularly clothes closets, stairs, framing members, trim, and a multitude of peculiar enamelled parts (see below). At other result: construction of the 300 house will bring a 95-ton order to the steel industry.

<table>
<thead>
<tr>
<th>Room</th>
<th>5-room House</th>
<th>6-room House</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of land and improvement</td>
<td>$620</td>
<td>$700</td>
</tr>
<tr>
<td>Cost of house (incl. architectural and engineering fees)</td>
<td>$3,900</td>
<td>$3,300</td>
</tr>
<tr>
<td>Financing and carrying charges</td>
<td>$120</td>
<td>$140</td>
</tr>
<tr>
<td>Selling cost</td>
<td>$140</td>
<td>$160</td>
</tr>
<tr>
<td>Profit</td>
<td>$420</td>
<td>$500</td>
</tr>
<tr>
<td>Total</td>
<td>$4,200</td>
<td>$4,800</td>
</tr>
</tbody>
</table>

* Estimate of the American Iron & Steel Institute, less weight of cast iron, wrought iron, copper and zinc items.

TYPICAL COST BREAKDOWN
Ninety-two acres of rolling Clairton land (above) constitute Gilbert-Varker’s theater of operations. The 300 lots cover 45 per cent of the land. Pictured to the left: a row of steel-trimmed houses ready for the public; a tar-papered group ready for winter finishing. Below: basic floor plans from which came 90 five-room units, 204 six-room units of varying exterior appearance.

Materials. Construction of the 300 houses got under way at mid-September. From then on, Colonial Village has been the scene of beehive activity with an average of six houses being started per day and as many as ten per day during peak operations. Secret of this speed in construction and assembly of steel windows is the planning technique introduced by the engineers, the ingenious use of materials and the conversion of as much building as possible into assembly. Thus, a monolithic concrete floor slab eliminates the necessity for the concrete crews to return to the plot after construction of foundation walls to pour the cellar floors; and its upset footer adds an extra 5 in. of basement wall height which, in turn, makes possible a minimum ceiling height without the cutting of blocks. Light, easily handled, terra cotta tiles make up these basement walls. Atop them is bolted a steel sill with welded spacer tabs at proper intervals to serve as templates for conventional 2 x 4 studs of standard 16 ft. lengths (see detail pictures, page 480). Similar steel ribbon pieces are used to align and support second floor joists. Combined with complete precutting of all framing members, these steel templates obviate the use of the carpenter’s hand saw except for the trimming of plywood sheets which sheath both interior and exterior of the houses. By the same token, need for the familiar carpenter’s rule has virtually been done away with.

Interesting economy is effected in the construction and assembly of steel windows of the familiar casement type. Built up of steel sash set in an insulated steel trim, they do not require addition of sills or moldings after installation. Designed especially for Gilbert & Varker, they come completely assembled with windows and locking hardware attached at the factory. Furthermore, each frame is delivered in

* Gilbert-Varker’s use of steel sills and stud tabs (or lugs) corresponds closely in principle to the construction method advanced by Tim Forum in the presentation of its “Integrated House” (Arch. Forum, April, 1937). It corresponds still more closely to the procedure followed by Modern Housing of Washington, Inc. (Arch. Forum, Nov., 1937, p. 19 et seq.)
side a 2 x 4 in. wood enclosure, is therefore easily installed as a unit by toenailing the enclosing 2 x 4's to adjacent studs.

Staircases, also of steel, are installed with equal ease. Four bolts and five minutes' time do the trick. Linoleum treads are included in the finishing touches. Factory-assembled steel closets with baked-on finish are delivered to the site complete with hooks, shelf, reinforced steel doors hung with a continuous, piano hinge. Doors and trim of the prefabricated closets are quickly installed after the walls are finished. In lieu of tile-setting in the bathroom, installation of nine large porcelain enameled steel panels, serving as a template for fixtures and a grille for enclosed radiators, form the customary 3 ft. dado, waterproof the wall to the height of the shower over the tub.

Most ingenious cost-reducing, custom-made material used on the interior of the Gilbert-Varker houses is the wall covering. Composed of a chemically neutral, dry felt base coated with a factory-finished and tinted resin surface, it measures 3/32 in. in thickness. More than a wallpaper, it is ordered in rolls ceiling-height in width, is therefore easily applied to the walls in one continuous, horizontal strip. Two strips cover the ceiling. All base and cove moldings, as well as door bucks, are made of steel, factory finished in color.

Exteriors of the Gilbert-Varker houses feature materials which will require a minimum of maintenance. Asphalt and asbestos cement shingles cover the roof and sides, respectively; all other exposed materials are of metal, the following being porcelain enameled steel: cornices, shutters, cornerboards, rake pieces, and front entrance hoods. Lead-coated steel gutters and down-spouts also require no paint.

**Delivery-Assembly.** Equally significant as the use of many new materials at Colonial Village has been the delivery and assembly of all materials. In practically every case, the materials move from manufacturer to site. To put this movement on a "conveyor-belt" basis, an analysis of Gilbert-Varker's transportation and delivery requirements was made by the Pennsylvania Railroad and a special expeditor was assigned to the job to see that the movement of several hundred cars of freight was properly scheduled and maintained. Manufacturers are supplied with a plot plan of the site on which the houses are keyed, and a time schedule specifying on what dates material deliveries to individual houses are expected. Example of the operation of this unique system is the arrival at each house, as it is framed in, of one package containing all its necessary hardware, another containing all its plumbing fixtures, another containing all lighting equipment even to the proper length of cables, etc. The function of local material dealers is principally one of service.

(Continued on page 36)
Staircase of steel is installed by four men in five minutes. Sound-deadening linoleum reads will come later.

Steel windows, enameled and self-flashing, are delivered in wood surround, inserted into frame as a unit.

Exterior trim includes steel cornice, cornerboards, rake pieces. Short, self-flashing sections are easily installed.

Sheet steel insulation is forced between studs, stapled to exterior sheathing. It reflects heat from small radiator.

Wall covering, ceiling-height in width, is secured to plywood sheathing. Steel base and cove moldings finish it off.

Steel closet, complete with hooks and shelf, is assembled at factory, inserted into wall recess, finished with steel door and trim.

ELECTRICAL INSTALLATION: Wiring and switches—Iron City Electric Co. Fixtures—semi-indirect with plastic shades, Chase Brass & Copper Co.


HEATING: Two gas-fired hot water systems. 1) American Radiator and Standard Sanitary Co. in 96 houses, 2) Air Devices Corp. in 204 houses. Furnace—Taco Heaters, Inc. Radiators—copper fin-type, Tuttle and Bailey, Inc.


WALL COVERINGS: Bathroom—18 gauge, 36 x 42 in. colored enameled steel panels, Ingram-Richardson Mfg. Co.


MORTGAGE COSTS MICROSCOPED

by Mortgage Banking's tenth man. A statistical comparison of conventional and monthly payment loans.

Every mortgage lender would like to know more exactly how much it costs to make and service loans and how much of his employees' time it takes. Nine out of ten of them are pretty much at sea. A tenth is Mortgage Banker Irvin Jacobs who told MBA conventioneers this fall (Arch. Forum, Nov. 1938, p. 410) just how much his company ferrets out. And well he needed, for the firm of Irvin Jacobs and Co., one of Chicago's largest, has a corporate finger on every phase of its mortgage operations.

Method. Although most directly applicable to a large mortgage brokerage business, Jacobs' cost analysis system has its lesson for any mortgage banker.

First step was to divide his business between the two general mortgage types: 1) conventional loans with semiannual or quarterly payments of interest and principal, or both, and 2) monthly payment loans. Jacobs found that 80 per cent of his business was in conventional loans, the average size of which was $824,400. Monthly payment loans ran smaller, averaged $7,100.

All expenses were then broken down between these two mortgage types, but a necessary preliminary step, and valuable in itself, was analysis of cost of the company's four operating divisions: buying, selling, closing, and servicing of mortgages. When the cost of each one of these steps is known, any broker, by an empirical formula, can then divide those costs between his conventional and monthly payment mortgages.

To arrive at just a summation of expenses among the operating divisions, Irvin Jacobs first required that his staff, from office boy to executive, make daily reports of how they spent their time during the first eight months of this year. This gave a basis for allocating salaries, which he found constituted two-thirds of total expenses, to the proper operating division.

The remaining third, made up of every cost from advertising to unemployment insurance, was similarly allocated. Next step was to determine how much it cost to route each type of mortgage through the four operating divisions.

Acquisition Cost. First three of those company divisions fall under the general head of acquisition and cover the period from the first application for a loan through sale of the mortgage to a client, to final acquisition of title. As the amount of this work per month is approximately the same for both conventional and monthly payment mortgages, logical basis of comparison was the time it takes to acquire them.

The company studied their loans made during eighteen months ending June 30, 1938, found that conventional loans required an average of five months, eight days to close, that monthly payment loans required four months, fifteen days. These two elapsed times are in the ratio of 1 to 5.84—the basis for apportioning acquisition costs.

During the first eight months of this year, the average acquisition cost of all mortgages was $828. Applying the above ratio, average cost of conventional mortgages was $345; of monthly payment mortgages, $282. Breakdown of these two costs by the three operating divisions that come under acquisition is shown in the first part of the table below.

A striking check on departmental efficiency is afforded by this method of tabulation. If any division of a mortgage company was theoretically discontinued, its work re-apportioned, and the costs per mortgage re-analyzed, the economic justification for that division would be found. Thus, by eliminating the real estate sales and management departments, Irvin Jacobs found that average total mortgage costs would rise from $827 to $856.

### AVERAGE MORTGAGE LOAN STATISTICS

<table>
<thead>
<tr>
<th>Loan term (yrs.-mo.)</th>
<th>Conventional</th>
<th>Monthly Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-10</td>
<td>$328</td>
<td>$1,031</td>
</tr>
<tr>
<td>Time (hrs.)</td>
<td>89</td>
<td>413</td>
</tr>
<tr>
<td>Cost</td>
<td>$345.14</td>
<td>$294.55</td>
</tr>
<tr>
<td>Collection</td>
<td>4.44 hrs.</td>
<td>23.66 hrs.</td>
</tr>
<tr>
<td>Taxes</td>
<td>1.44 %</td>
<td>6.74 %</td>
</tr>
<tr>
<td>Insurance</td>
<td>2.23 %</td>
<td>7.38 %</td>
</tr>
<tr>
<td>Banking</td>
<td>40 %</td>
<td>2.40 %</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1.75 %</td>
<td>6.07 %</td>
</tr>
<tr>
<td>Total</td>
<td>10.26 hrs.</td>
<td>40.65 hrs.</td>
</tr>
<tr>
<td>Cost</td>
<td>$11.86</td>
<td>$46.99</td>
</tr>
</tbody>
</table>

### SERVING (per year):

<table>
<thead>
<tr>
<th>Time:</th>
<th>Conventional</th>
<th>Monthly Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection</td>
<td>4.44 hrs.</td>
<td>23.66 hrs.</td>
</tr>
<tr>
<td>Taxes</td>
<td>1.44 %</td>
<td>6.74 %</td>
</tr>
<tr>
<td>Insurance</td>
<td>2.23 %</td>
<td>7.38 %</td>
</tr>
<tr>
<td>Banking</td>
<td>40 %</td>
<td>2.40 %</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1.75 %</td>
<td>6.07 %</td>
</tr>
<tr>
<td>Total</td>
<td>10.26 hrs.</td>
<td>40.65 hrs.</td>
</tr>
<tr>
<td>Cost</td>
<td>$11.86</td>
<td>$46.99</td>
</tr>
</tbody>
</table>

PROCEDURAL STEPS. 89 413

**Servicing Cost.** Unexpected pitfall of many a mortgage lender has been his failure to provide for the cost of servicing loans once they were acquired. Servicing costs depend, of course, on the average length of time loans are outstanding. Life of conventional loans of the Company averages seven years, ten months; monthly payment loans average fifteen years, eight months. As monthly payment mortgages are normally need more attention than ones handled as little as twice a year, procedural steps vary greatly. Jacobs' study showed that the average conventional type required 89 procedural steps or 10.26 hours; the average monthly payment type, 413 steps, or 40.65 hours.

This does not, however, give a basis for apportioning the cost of servicing between the two mortgage types. To do that, Irvin Jacobs used as a basis the cost of making collections and found that the unit cost of servicing conventional mortgage loans is $81.86 per year and of monthly payment loans, $46.99 per year.

**Analysis.** These findings make possible a statistical, and therefore significant, comparison of conventional and monthly payment mortgages. Thus, although the monthly payment mortgage costs less to acquire, the yearly cost of servicing it and its longer life make it more expensive to the lending institution; to Irvin Jacobs and Co., the average total cost of a conventional loan is $838; of the monthly payment loan, $1,051. Logically, that total cost is progressively reduced as the time it remains outstanding is shortened. When a monthly payment mortgage is refinanced after 50 per cent of the principal has been repaid, the cost to the company drops to $806.

While the annual cost of servicing remains constant during the life of a monthly payment loan, income derived from that loan declines as the principal amount is repaid. Therefore, a method of reserving a part of that income for future needs is imperative. To do it, Jacobs determines the average monthly income during the life of a loan and puts any part of actual income in excess of that average into a reserve fund. That reserve will carry the loan when income has dropped below the monthly average.

While the actual figures produced by Analyst Jacobs hold little significance for Mortgage Banking in general (they will vary from company to company according to operating policies), a comparative analysis of them is valuable to the business, giving a factual basis for estimating brokerage charges. It also points to the increased time and money involved in writing FHA-insured mortgages and the need for establishing a servicing reserve.

Furthermore, if other mortgage banker wisely undertake a similar study, the Jacobs' original will serve as an interesting check on company efficiency.
ARDEN APARTMENTS

modern in Houston, one high in rents.

Turning its back on neighboring uses, the garden apartment has reached new high in real estate rudeness, but is also setting a record as a real estate investment. With its eye on the latter, Houston Subdivider William E. White built North Boulevard Manor, a coup of three modern apartments with 12 apartments each, faced on their n central garden. But whereas Dutch colonial in Teaneck, N. J. (ARCH. FORUM, Aug. 1938, p. 164), has proved 100 per cent popular, Modern in Texas has been minor disappointment. Only 83 per cent of the apartments are rented, despite growing Houston's need for space. Parent reason why North Boulevard Manor was not a sellout is that its $700 came high for Houston prices, in when tempted by built-in radios and bars.

Also tempting and worthy of national interest is the project's general appearance as designed by Architect F. E. Johnson. The plan is simple in that three buildings, all twelve apartments, are alike. Each apartment is heated by an individual gas heater in the living room in an arrangement that satisfies in the mild climate, particularly when abetted by built-in ventilating fans.

Cost. North Boulevard Manor cost only 1/4 cents per cubic foot to build. And it may be attributed, in part, to unity of units which simplified construction, to the low slanting roof which down on waste space. Total cost was $5,000. To that, Builder White adds $600 as the value of the 155 x 145 ft. His cash outlay, however, was $87,8 the remaining $55,000, or 48 per cent of the total investment, including land, was financed by the Prudential Life Insurance Co., sans FHA insurance.

White's estimate of operating costs is $47 yearly, doled out as follows: taxes, 90; insurance, $235; junior service, 90; water, $144; public light, $108; precipitation, $600 (kept low by steel elements, copper roof, tile lobby). In friction, he will amortize the insurance company's 5 per cent loan over a period of sixteen years by means of, roughly, $400 yearly payments.

As the apartments are all alike, the is very little from $875 to $875 a month. Income with 100 per cent occupancy would be $90,700 a year, enough pay all expenses, give its owner an 11 cent return on his investment of cash land. With the present 17 per cent va

E E M BE R 193 R B U I L D I NG M O N E Y
get an airing at two November conventions—NAREB in Milwaukee; U. S. Building and Loan League in Chicago.

A small German band did most of the welcoming as the National Association of Real Estate Boards last month rolled into beer-famous Milwaukee on a fleet of special trains. Official welcoming committee for this 31st annual convention was the Wisconsin delegation, but it was busy celebrating the outcome of the State elections which that night brought to Wisconsin the rout of the La Follette dynasty, the election of Republican Julius P. ("The Just") Heil as governor.

Day after the election, convention delegates cheered the optimism of Retiring President Joseph W. Catharine, cheered still louder next day when Governor-elect Heil made an unscheduled appearance on the rostrum. Winning more applause than any other speaker, he demanded that the political appointment of tax assessors cease, that property income be considered in assessing real estate. Questioned Manufacturer Heil: "Why not take the income of a property over a period of ten years and base the tax valuation on the average? When times get bad, reduce valuations; in good times, put them up. But make them responsive to economic conditions." He bowed out with a whacking attack on Wisconsin's building and loan associations and the suggestion that they put their houses in order "or else."

While a bevy of astonished building and loan men, most of whom had voted for Heil two days before, closed in on the Governor-elect back stage, Executive Secretary Carl Taylor of the Wisconsin Building and Loan League took the floor affirmatively to debate homestead tax exemption with Graham Aldis of the National Association of Building Owners and Managers. Although the ensuing argument produced the convention's noisiest general session, it did not sway NAREB from its neutral position—over-all tax limitation on realty levies.

Next noisiest session came when Representative Wright D. Patman argued in defense of his proposed legislation to tax chain stores out of existence with Professor Paul D. Nystrom, Columbia University's retail store authority. Realtors sided with the professor when it was pointed out that property owners collect $400 million in annual rent from the chains, that the chains have 27,000 fewer branches in operation today than in 1927 and that independently operated stores have increased from 1,450,000 to 1,580,000 during the same period.

Representatives of three Government agencies spoke at the convention; two of them left with pats on the back, one with a rap on the head. Thus, the realtors commended the Federal Housing Administration but sent back FHA's Victor N. Fleming with the request that the National Housing Act be modified "to make possible after July 1, 1939 the granting of insurance on mortgages on existing dwellings on the same basis as on new dwellings, so that sound properties built prior to January 1, 1937 will not be compelled to enter the real estate market at a marked disadvantage." Also urged was continuation of the Act's Title I, scheduled to expire next July. Work of the Home Owners' Loan Corp., as expounded by Deputy Manager Harold Lee, was praised and agitation for a reduction of its interest rates from 3 to 3 ½ per cent was frowned upon.

Rap came to U. S. Housing Administrator Nathan Straus. After he addressed the convention on the comparatively low dwelling costs obtained in USHA projects thus far and on the need for efficient management of these projects, NAREB's "seriously questioned the wisdom and effectiveness of his program in that it was building on unimproved land (instead of cleared slum land), competing with private building, and providing above-minimum dwelling facilities. Alternative vaguely suggested by NAREB's housing committee was that slum clearance be effected by neighborhood reconstruction corporations in cooperation with Government agencies.
Having enjoyed a week of genial weather, (Milwaukee's synonym for "southern spirituality"), but not having learned to pronounce it, NAREB's 1,165 delegates took tent, went home.

The week following, on November 16, the Building and Loan League, 1,500 strong, assembled Chicago for its 46th annual convention. Less militant toward New Deal isolation than NAREB, it voiced praise for the 24,000 cubic foot house.

Some variations in cubic foot costs of more.

The House on Which Costs Are Reported is a detached 6-room home of 24,000 cubic feet volume. Living room, dining room, kitchen, and lavatory on first floor; 3 bedrooms and bath on second floor; 1 garage, an unfinished cellar, an unfinished occupancy. It includes all fundamental features, refrigerators, water heaters, ranges, garages, washing machines, screens, weathersipping, and current wage rates are obtained from the same contractors and builders.

Washington's Beltz suggested a fight for lower real estate levies as the best way to recreate the home ownership ideal for the next generation.

Despite this pessimistic note, the convention's general tone was one of optimism. And rightly so; the League's associations currently claim about 35 per cent of all U. S. institutional mortgage lending business.

To hold their share of this business, Speaker Leo T. Crowley, chairman of the Federal Deposit Insurance Corp., advised building and loan associations to cut their dividend rates, said "dividends much in excess of 3 per cent are hazardous."

Reason: a two point spread should exist between what an association receives on loans and what it pays for the money it lends, and today's mortgage carries 5 per cent interest. He held that, since the maximum rate insured banks are permitted to pay on time and savings deposits is 5 1/2 per cent (and the average is lower), associations should have no trouble obtaining long-term savings at a dividend rate of 3-3/4 per cent. The League's Board of Directors and Executive Council endorsed his recommendations.

Last event on the three-day program was election of officers. At the top of the slate was placed Clarence T. Riese of Kansas City, Kan., as President; at the bottom, Hard-worker Morton Bosfield, re-elected Executive Vice President.

Houses another step in level ground.

Current evidence that the trend of inflation costs is in a state of hesitance came last month as the Federal Home Loan Bank Board compared the cost of building its hypothetical house in October with that of July. Of the nineteen samples during both months, nine reported a decline in composite labor and material costs, another nine reported an increase and one indicated that costs were changed.

In cubic foot costs of more than two mills were registered by only 4 of the cities during the three month period. Thus, in FHLBB's New York District, cost of Buffalo's house advanced ten mills, Newark's advanced three and Albany's dropped four. The other significant change occurred in the Portland District where cost of the standard house in Boise, Idaho, rose six mills. Percentage-wise, the largest rise in price was Albany's; amounted to only 2.7 per cent.

Average cost in the nineteen reporting cities was 24.8 cents per cubic foot, or 2.72 for the $4,000 cubic foot house tabulated in column three.

The House on Which Costs Are Reported is a detached 6-room home of 24,000 cubic feet volume. Living room, dining room, kitchen, and lavatory on floor; 3 bedrooms and bath on second floor; 1 garage, an unfinished cellar, an unfinished occupancy. It includes all fundamental features, refrigerators, water heaters, ranges, garages, washing machines, screens, weathersipping, and current wage rates are obtained from the same contractors and builders.
LOW INCOMERS AND CAPITALISTS

have a niche in the Lambert Housing Plan. A guinea pig project rents at $6.25 per room, returns investment at 4 per cent.

Heavily the snap of Presidential fingers, Washington housing mentors month ago hot-footed it to the White House, encircled Mr. Roosevelt for one of his informal chats. In that circle the President saw a new face, heard a new plan. The face was that of 38-year-old Millionaire Gerard Barnes Lambert, who since spring has served inconspicuously as volunteer associate of FHA Administrator Stewart McDonald. The plan, also Lambert's, was to attract private enterprise into housing construction through elimination of speculation and guarantee of reasonably high investment return; to attract low income families through the erection of new dwellings to rent at $5 to $10 per room per month.

To prove that this plan was no idle dream, its creator pointed a proud finger at Princeton, N. J., where today a $30,000 project is providing ten families with shelter at $6.25 per room and Lambert with a steady 4 per cent income.

Plan. Housing is a Lambert hobby. As director and one-time president of the Lambert Pharmacal Company, he has gained fame and a fortune via Listerine. Part of this fortune he invested in the Gerard B. Lambert Co., a dealer in lumber and cotton; part in J-boats, part in books on housing, and still another part, though not the last, he wanted to invest in housing.

Lambert's hobby thus assumed business proportions. From his books, from Princeton Economist Winfield W. Bleder and from FHA Economist J. M. Daiger he learned a thousand facts of housing life which these stalwarts had developed in special administrative studies. Among them was the fact that of the Nation's twelve million urban rental families, four million pay rent of less than $5 per room per month, five million pay from $5 to $10, and three million pay more than $10. Believing that the first group was the field for the U. S. Housing Authority program (although as presently financed, it will take care of only about 150,000 families) and that the last group would be provided for by large scale rental projects with FHA's mortgage insurance, Houser Lambert logically decided to tackle the great middle group.

To give that tackle the necessary below-the-knee effectiveness, Lambert devised a plan (and it will remain only a plan until enabling legislation is enacted) for national application that would make $5 to $10 rents profitable as well as possible and make the housing business attractive to private enterprise. Biggest wheel in the plan's general mechanics is establishment of a new type of corporation to be recognized and regulated under Federal law and called, for lack of a better name, "investment housing corporation." They would sell securities to the public to build housing projects with the proceeds and maintain and manage the projects until they have paid for themselves. At such time, projects would be turned over to the municipality.

Rent Reduction. Securities of the corporations would be limited to a maximum turnover of 4 per cent and no profit beyond this income could accrue to the corporation or the individual investor. The corporation would receive annually from each project fixed sums sufficient to repay invested capital over a period of years and yield 4 per cent on money still invested in the property in any one year. When all capital has been returned and interest paid, the project is to become the community's. (If the dwelling units were built for sale instead of for rent, the project would become the property of the occupants.)

Since the community will ultimately own a revenue producing asset, it is logical to suppose that most any enterprise United City would waive taxes on the property while it is being operated by the corporation. Eventual release of title would eliminate any possibility of speculation on the part of the corporations.

A plan for private enterprise, it nevertheless allows the Government to put...
finger in here and there. Any earnings remaining in the corporation's coffers after provision each year for interest charges, amortization, maintenance, and reserves would be paid as a tax to the Treasury Department. Government would get the corporation's accumulated reserve when title to its project is transferred; also, any surplus cash remaining after a corporation's dissolution or liquidation.

Such is the manner in which profits and, in turn, speculation, would be eliminated and rents reduced.

Capital Attraction. In addition to the advantages of a steady 4 per cent income, three other inducements are proposed which would make private investment in this type of housing an attractive venture: 1) While the financing plan entails no mortgages, it is reasonable to believe that the FHA might be authorized to insure the investments of these corporations; 2) Housing in many States could be built under existing legislation permitting local housing authorities to issue bonds exempt from Federal, State and municipal taxation. 3) In view of the social and economic benefits which these investments in housing would produce, the Federal government might consider the elimination or reduction of individual surtaxes on incomes derived from money invested in housing.

When Lambert mentioned this possibility at the White House chat, the President, currently engineering an attack on all forms of tax evasion, countered with a negative wag of his head.

Project. To prove that low rent housing can be accomplished profitably even without the added benefits of the plan's necessary legislation and to give the investing public something concrete to work with while this legislation is being considered, Houser Lambert last summer conceived a project for his own home town, Princeton, N. J. It does not purport to be an example of what will be done under his plan, for in this local scheme he, himself, took the part of the investment housing corporation, supplied all necessary cash. With $8,000 he purchased a 150 x 225 ft. lot near the Negro quarter, and with $28,000 he built ten one-story, four-room dwellings in rowhouse fashion from plans developed by the FHA and polished up by New York Architects Robert I. Powell and Alexander P. Morgan, whose fees are not included in the cost. Construction began August 6; three months later the project was ready for occupancy by tenants earning less than $125 per month.

Following closely the principles of his national plan, Lambert interested the local housing authority in the project, agreed to swap it for $80,000 of 4 per cent tax-free bonds, to be redeemed in part annually for the next 28 years, at which time amortization will be complete and the project will become the property of the borough. In return for this delayed gift, property taxes ($40 per year, or $1,200 during the 28-year period of amortization) have been waived.

Proof that the plan's mechanics have produced Lambert's requisite of low rents is the rate established for the Princeton project: $6.25 per room, $25 per dwelling unit (plus heat). Annual gross rent from the project will be $8,000. Of this amount $1,800 will go each year to Bondholder Lambert as interest and return of principal ($1,200 as 4 per cent interest, $600 as amortization for the first year; and in successive years, smaller dollar amounts of interest, larger amounts of principal). The remaining two-fifths of gross revenue ($1,200, or $810 per apartment per month) will be used for operation and upkeep of the project. If tenants help minimize maintenance expenses by promptly paying rents and by contributing labor for gardening, minor repairs, etc., they may be rewarded at year's end with rent rebates equal to the differential between actual maintenance expenses and the amount set aside for each apartment.

Salient fact is that the Princeton project's low rents are the direct result of cost reduction. Lambert used union labor throughout, ran up extras for rushing the project's completion. He did not skimp on materials (as witness brick veneer walls, oak floors, and slate roofs), for fortune of the project depends to a great extent upon minimum depreciation. A success at Princeton, the Lambert Plan should prove still more successful if and when adopted on a national basis. Investment housing corporations employing the plan's rent-reducing financial mechanisms could also reduce costs through large scale operations and research.
AN APARTMENT WITH A PAST

turned inside out to satisfy New York City tenants. Elaborate Alwyn Court was a total loss, now more than pays its way.

With wide vaults, conservatories, billiard and music rooms, Alwyn Court was among the most opulent apartment buildings in pre-war New York City. But along with antiques, sars and red plush, its day passed, and it turned from a money-making investment into a boarded-up liability. To turn it back again, Dry Dock Savings Institution, owner, tore out the 22 huge suites of 14 to 34 rooms, put in 75 compact modern apartments of three to five rooms, left the rococo exterior practically untouched. Result was a jump in occupancy from zero before to 92 per cent after, and Dry Dock proudly shifted Alwyn Court into their income producing portfolio, what with $1,377,460 in annual rents.

Paradox is, however, that although most evidence of the past was removed in order to attract tenants, the aura of the past remained, was a ponderable factor in tenant acceptance. Alwyn Court was built in 1908 in a fashionable neighborhood one block south of Central Park. Wealthy families of that day dined and wined at home, demanded apartment space comparable to that of individual mansions, and Alwyn Court supplied it. Suites were so large they came only two to a floor.

The Court proved popular and profitable until the 1920's when one by one the tenants moved out in search of more compact, less expensive quarters. The end came in 1938 when the last tenant left, and the building was boarded up—a complete liability with $899,000 in yearly taxes and an unpaid mortgage. In the same year, Dry Dock Savings Institution, as mortgagee, foreclosed, spent two years in search of a method of rehabilitation.

Alternatives. In that search it explored four possible paths to total or partial resurrection of its investment: demolition, outright sale, sale with purchase money mortgage plus a loan for remodeling, and reconditioning as owner-builder. The first three were ruled out as either impossible or unprofitable, the fourth was adopted when Edgar Ellinger, owner and builder on New York's East Side, submitted his ideas for remodeling the interior. He proposed that the exterior be left alone in spite of its over-ornamentation because, 1) it could not be removed without completely demolishing the structure, and 2) the carving was careful, expert work, looked rich and expensive from street level. So, only outside change was to remove the overhanging cornice.

Remodeling. All that the wreckers left of the interior were the steel frames and floor arches. Major structural change necessary to rebuilding was a shift of elevators so they would serve the center, rather than only one end, of public corridors. This, in turn, meant moving the main entrance from the corner of the building around to one side.

Into the skeleton of the building Architect Louis S. Weeks fitted apartments in place of the original 22 suites, turned the servants quarters on the roof into three penthouse apartments, complete with private terraces. Living quarters resulting from this transformation have the large room sizes of the original, have the same spacious 10½ ft. ceiling heights. These proved attractive to tenants where as a large number of rooms had not; 85 per cent of the apartments were accepted from floor plans; 92 per cent, rented within one month after completion. Evidence that the Ellinger analysis of tenant preferences hit the gong is that at least 50 per cent of the tenants left larger apartment go to reconstructed Alwyn Court.

To help attract those tenants, Dry Dock spent $5,000 for advertising over a period of six months, opened a model apartment. Ads were published in daily newspapers and in the New Yorker magazine. Further, the romance attached to the old Alwyn Court made news; it was the subject of seventeen features in New York papers.

Finances. Original cost of Alwyn Court to Dry Dock Savings Institution was $883,334. Components of that cost were mortgage debt due, $869,257; cost of foreclosure, $1,000; unpaid taxes, $15,000, miscellaneous, $498, when to it is added the $500,000 cost of remodeling. Dry Dock's investment totals $1.4 million. In the original Alwyn Court rents began at $6,500. In the new, they begin at $1,250, go to $4,000. Total rents this year amount to $1,377,460. Operating expenses in contrast, total an estimated $910,000— including interest, overhead, and $26,375 in taxes, which are based on an assessed valuation of $900,000. Thus, when 100 per cent rented, Alwyn Court's net return is approximately $57,690 yearly.

AN APARTMENT WITH A PAST

Spacious rooms highlight plans both before and after remodeling, but average apartment size was cut from twenty-four to four rooms. The central court daylights new public corridors instead of maids' rooms and galleries.
Here’s a new design tool for Architects...

FLUORESCENT LIGHTING
WITH NEW G-E FLUORESCENT MAZDA LAMPS

Fluorescent lighting with the new General Electric MAZDA lamps offers architects an exciting new instrument for designing commercial, industrial, and display lighting. Here’s why:

MORE LIGHT... COOLER—The new G-E Fluorescent MAZDA lamps give from 3 to 200 times more light than incandescent lamps of the same wattage and color. For the same amount of light, they are 50% cooler, and so put less burden on air cooling systems.

NEW INDOOR DAYLIGHT—The daylight Fluorescent lamp provides the closest approach to real daylight ever produced at high efficiency and low cost. With this new lamp, you can almost bring “daylight” indoors. It will be particularly useful wherever color discrimination is important.

BRILLIANT NEW COLORS—these lamps available in red, gold, pink, blue, green, and warm white, offer a wide range of decorative application for theatres, specialty shops, night clubs, displays, and many other places.

ADAPTABLE TO MODERN ARCHITECTURE—Fluorescent lamps lend themselves to most forms of modern architecture. They provide a linear distribution of light at maximum efficiency.

Mail coupon or write today for your free copy of G-E’s new illustrated booklet giving useful information about G-E Fluorescent MAZDA Lamps. General Electric Co., Dept. 166-AF, Nela Park, Cleveland, Ohio.

Because these lamps are 50% cooler they lend themselves to installations where heat must be avoided.

Fluorescent lamps can be used for indirect lighting by using an inverted trough.
SECONDHAND HOUSES

go for less than $2,000 in Seattle's 1938 market.

A survey of Seattle house sales during the first half of 1938 showed County Assessor Roy B. Misener how his valuations compared with sales prices. But of more general interest, it also pointed out in what cost bracket the secondhand home market lies and, most emphatically, what types of houses are satisfying that market.

With the help of the WPA, 1,443 home sales were analyzed, representing 90 per cent of the total sales made during the first six months of this year. Sales of houses constructed after January 1, 1938, and deals in escrow and unrecorded were excluded.

Most startling fact revealed by the survey is that Seattleers are buying more homes priced between $1,000 and $2,000 than at any other price. In that range 506 sales were made. There were also 131 sales of houses costing less than $1,000. At the opposite extreme, only 186 houses were sold for more than $3,000; only 23 for more than $10,000.

With such low sales prices predominating, it is small wonder that the most popular down payment was only $1,000, that 36 per cent of such payments were below that figure. And, it is logical to assume that most of the lower priced sales entailed no down payment at all; only 597 down payments were recorded for the 1,443 sales.

For their money, 88 per cent of Seattle purchasers got a frame house, and chances were four-to-one that it was over ten years old; two-to-three that its age was 20 years or more. Only 43 of the houses sold were new.

Most popular size was five rooms with the volume of purchases tapering off in both directions as the number of rooms increased and decreased. Seventy per cent of the purchasers bought homes with from four to six rooms.

The secondhand Seattle house was found most frequently on a 40-foot lot, although 50-footers ranked a close second.

A Service That's Easy to

JUSTIFY

THERE'S just one reason for changing a service you're already providing for the occupants of your buildings. It's to add something to the comfort, convenience and satisfaction of your tenants.

And on this score you'll have plenty of justification for adopting Ivory Dispenser service for your washrooms.

For Ivory Dispensers make the task of washing face and hands more convenient, more agreeable, more generally satisfactory than is possible with old-fashioned dispensers.

These smartly designed dispensers deliver Ivory Soap— one of America's best liked soaps. Ivory is famous for its purity, rich lather and gentleness. It's safe for face as well as hands.

Here is a service that is bound to please—that will add generously to tenant good-will—that costs little to install, little to maintain. A letter or postcard will bring you full details.


delivers America's favorite soap
IVORY SOAP
in flakes or granules

EASY TO INSTALL!
EASY TO REFILL!

Procter & Gamble Cincinnati, Ohio

IVORY SOAP DISPENSERS
Eight distinctive Features
OF PITTCO STORE FRONT SASH

1. Cushion Grip on Glass. The metal surfaces which contact the sides of the glass act as a yielding cushion, absorbing shocks.

2. Fixed Supporting Block. Non-ferrous metal supporting blocks are firmly wedged in groove, thus preventing tipping, rocking or sliding out of line during setting of glass.

3. Adjustable to Various Glass Thicknesses. Glass-holding units and face members are self-adjusting to various glass thicknesses without tilting inward or outward.

4. Installation Operations All from Outside. Both glass and sash are set from outside by standard wood or machine screws. No special keys or tools required.

5. Corner Cleat to Assure Tight Mitre. Heavy metal cleats are used at the corners to secure mitres against spreading due to expansion or contraction.

6. Expansion is Controlled. Expansion in long lengths of aluminum is controlled by combining expansion cap, cleats and rosette screws. See also 5.

7. Protection for Carrara. A sturdy, square-cut, continuous metal flange projects over edge of Carrara, shielding the area which is most vulnerable.

8. True Setting Edge. The outer edge of inner member serves as a true, unvarying line to which face of Carrara or similar material is set.

Write for complete information on Pittco Store Front Metal... and for our file of detail drawings of various applications. Address Pittsburgh Plate Glass Company, 2143X, Grant Bldg., Pittsburgh, Pa.
Aside from greatly increasing the comfort of the owner, Moncrief Winter Air Conditioning adds to the value of a house in many ways. The basement is made freely available for any use desired. Clean, properly humidified air preserves the house and its furnishings. And warm air conditioning requires no accessories to take up space in the various rooms or to interfere with the arrangement of furniture. Whether the house be large or small, Moncrief can supply a unit of exactly the size and economy. Beautifully finished in the modern mode.

Write for illustrated literature and data sheets.

THE HENRY FURNACE & FOUNDRY CO.
3485 E. 49th Street
Cleveland, Ohio

ENGINEERING'S FLING
(Continued from page 480)

ice, thereby providing additional assurance that delivery schedules will be maintained.

For the pre-cutting of all lumber, local dealers set up a saw mill at a nearby railroad siding. Here, as the lumber comes in by the carload lot, a saw crew cuts and notches it to specifications, assembles all the studs, rafters, joists, etc., necessary for each house, and at the proper time delivers this complete bill of material to each individual site.

As far as labor is concerned (peak employment amounted to about 400 men), Colonial Village is 100 per cent unionized. With the exception of a few minor jurisdictional disputes quickly ironed out by the crafts, work has progressed without a hitch.

Thanks to construction loan procedure, Gilbert-Varker, Inc., is able to pay its laborers regularly without the necessity of keeping a large amount of cash on hand. Twice a month they estimate the amount of work accomplished during the preceding two weeks, and the data to FHA’s Washington Office together with receipts showing that all material and labor charges have been paid up to the beginning of that period. FHA checks the report, sends a release notice to the New York Life Insurance Co. as mortgagee who, in turn, advances the necessary cash to the builders. By year-end when the 300th house is scheduled to be completed and landscaped, the mortgagee will have advanced all of its $1,050,000 loan, including the 10 per cent which it withholds from each bi-monthly payment pending completion of the project and its final acceptance by FHA.

Disposal. Established as the FHA’s first “release clause project,” Colonial Village is unique in its rental-sales policy. In the main, it is a rental project and, as approved by the FHA, rents have been set at $8 per room per month—$40 for the standard five-room house, $48 for its six-room sister. However, by virtue of the release clause, an individual may purchase a new house and lot for 10 per cent down (plus transfer fees, title investigation charges, etc.) and a 25-year amortized mortgage for the balance. Upon such a purchase, the house and lot are released from the blanket mortgage and an individual mortgage is written. These individual mortgages range from $3,600 on the $4,000 minimum valuation to $1,700 on the maximum valuation of $5,225. They will be assumed by the holder of the blanket mortgage.

Interesting is the fact that, while rents are $40 and $48, the low and high of carrying charges on the same houses under the sales plan are just under $828 and $85 per month, respectively, including interest amortization, mortgage insurance, fire insurance and taxes.

Public reaction to this rental-sales plan has not yet been tested. To prepare the houses for the approach of winter, activity through November was concentrated upon enclosing them; so, by mid-month only 28 of the 300 units had been wholly completed. In view of this condition and the fact that the Pennsylvania Housing Corp. has to date released no publicity, the sale of 300 houses is far from discouraging.

Furthermore, since the Irvin Works has still to begin full operations, the anticipated demand for the houses has yet to come.

While the houses are well constructed and should be exceptionally inexpensive to maintain they are probably more house than the lower income group of steel workers can economically afford. However, chances are that Gilbert-Varker ingenuity and experience evident in building the 300 houses will lead to further economies in later units which will meet the needs of the lower income workers as effectively as the present houses serve the middle and upper income groups.

So sure are Gilbert-Varker and the Pennsylvania Housing Corp. that their houses will go like hot cakes, they hopefully refer to Colonial Village as project No. 1, are actively planning two more 500-house subdivisions in the Pittsburgh neighborhood.

Regardless of public reaction to Colonial Village and the outcome of these plans for the future, Pittsburgh has produced a highly significant subdivision, Big Builders Gilbert and Varker have demonstrated a system of construction worth aping. And, Carnegie-Illinois’ proofing of steel fabricators has developed some new building materials which, with proving, may cause at least a minor revolution in home design.
If windows are to be for practical use rather than decorative, and serve their purpose of light transmission, then why not specify one pane, or the undivided windows? In a test conducted by The Pittsburgh Testing Laboratories, it was found that the undivided window transmits from 8% to 30% more light than the divided window. And also there is less eye strain with an undivided window.

Consider the advantages of the one pane window and specify Clearlite Quality Glass.

**Clearlite**

**EASY ON THE EYES**

Fine Glass For Fine Buildings

**FOURCO GLASS CO.**

General Offices: CLARKSBURG, W. VA.

Branch Sales Offices

NEW YORK • CHICAGO • DETROIT • FT. SMITH, ARK.

---

**WE’VE GOT A REAL ASSET IN THIS GOOD-LOOKING ASPHALT TILE FLOOR**

**RIGHT! AND IT’S MADE BY JOHNS-MANVILLE ...SURE TO GIVE EXTRA-LONG SERVICE**

Make your floors easy on the eye and on the feet—and you’ve added an important asset to every room. Surprisingly enough, it can be done at comparatively low cost with positive assurance of years of wear with J-M Asphalt Tile.

The free book shown above tells the whole story. It tells why J-M Asphalt Tile is quiet, easy to clean, hard to wear out. It illustrates many of the beautiful colors and patterns in which J-M Asphalt Tile is supplied... shows how they may be adapted to any decorative ideas. It offers interesting new ideas for decorative floors for every type of building. Send for your free copy and specification data. Mail the coupon.

---

J-M Asphalt Tile is sold only by approved J-M Flooring Contractors. There is one near you... ready to show you samples of this unusual flooring material. Consult your classified telephone book under “Flooring” and look for the J-M Insignia.

UNLIMITED DECORATIVE EFFECTS, such as this and the patterns at the top of the page, are possible with J-M Asphalt Tile Flooring. And this material is resilient and durable, requires little, if any, upkeep.

**JOHNS-MANVILLE**

**ASPHALT TILE FLOORING**

JOHNS-MANVILLE, Dept. AP12, 22 East 40th Street, New York City

Send me your free book and specifications on J-M Asphalt Tile Flooring.

Name: ____________________________

Address: __________________________

City __________________________ State ____
FORUM OF EVENTS

COMPETITIONS

Sponsored by the Alumni of the American Academy in Rome. Collaborative competition in memory of Robert W. Gardner. Problem: summer theater. Awards: $800 to the team whose design ranks first; additional prizes to the amount of $200 and mentions. Closing February 11, 1939. Details may be had from Association of the Alumni, American Academy in Rome, 101 Park Ave., New York, N. Y.

American Academy in Rome announces its annual competitions for Fellowships in architecture, landscape architecture, painting, sculpture, musical composition, and classical studies. Stipend of each fellowship $1,250 a year plus $300 for transportation, and $800 to $300 for incidental expenses. Entries close February 1, 1939. Further details may be had from American Academy in Rome, 101 Park Ave., New York, N. Y.

Sponsored by American National Theater and Academy, an architectural competition for a great festival theater on the campus of William and Mary, Williamsburg, Va. Closing date for entries: January 31, 1939. Cash prizes, $500, $300, $200, and five citations of $100 each. The following architects with remuneration of $400 each have been invited to compete: Goodwin & Stone, New York; Walter Gropius, Cambridge, Mass.; Michael Hare, New York; Harrison & Fouilhoux, New York; Richard Neutra, Los Angeles. Further information and blanks may be obtained from Kenneth K. Stowell, professional adviser, The Architectural Record, 110 West 40th St., New York, N. Y.

Lowell M. Palmer Fellowship in Architecture: to enable a student of unusual promise to undertake advanced study at Princeton. The Palmer Fellow is exempt from tuition fees, and receives a stipend of $700. Applications with supporting documents must be received not later than March 1, 1939. Application blanks and further details from Secretary, School of Architecture, Princeton University, Princeton, N. J.

James Harrison Steedman Memorial Fellowship in Architecture: an award of $1,500 to assist qualified architectural graduates in a year abroad. Open to all graduates of recognized architectural schools between the ages of 21 and 33 who have had at least a year's practical work in the office of a St. Louis architect. Closing date for applications January 30, 1939. Further details and blanks may be obtained from Secretary, School of Architecture, Washington University, St. Louis, Mo.

EDUCATION

The Charles Eliot Norton Lectures at Harvard will be given this year by Dr. Siegfried Giedion, a Swiss engineer and Doctor of Art, since 1928 General Secretary of the International Congresses of Contemporary Architecture.

Edward Langley Scholarships: The A.I.A. will receive proposals of candidates from January 1 to March 1, 1939. Scholarships are open to all persons engaged in the practice of architecture. Grants are limited to ten with no stipend exceeding $1,500. Details of the conditions will be found in The Octagon for November 1938, or may be obtained from the A.I.A., 1741 New York Avenue, Washington, D. C.

POPULAR!

for very sound reasons

Virginia Black Serpentine has become increasingly popular for facing, bulkheads, and spandrel panels because it supplies the demand for a black exterior material which can be installed at moderate cost and on which upkeep will be negligible.

Virginia Black Serpentine has a rich, deep, satiny finish, not reflective or mirror-like. It has great toughness, and density, and can be cut into sections as thin as 1/8". Installations show a diversity of design treatments for re-modeling operations as well as new construction. It is being used quite widely on interiors also, for base, door trim, pilasters, mantel-facings, hearths, etc.

A set of samples, conveniently boxed, showing the range of stone, including mottled dark blues and greens from the Alberene quarries will be sent gladly. The Alberene Stone Corp. of Virginia, 419 Fourth Avenue, New York, Quarries and Mills at Schuyler, Va. Sales offices in principal cities.
BEFORE IT IS TOO LATE
AND WHEN YOU COMPARE BE SURE YOU GET THE FACTS

The time to be sure you recommend and specify the right heating equipment is before it is installed. It isn’t necessary for you to take anyone’s word for it—you can prove to yourself whether or not the equipment that goes into the houses you design is beautiful, efficient and dependable. The obviously apparent facts prove Janitrol superiority beyond any shadow of doubt.

MAKE AN ANALYSIS
Compare, point by point, Janitrol equipment with any other make offered. Only in Janitrol will you find a one-piece, self-leveling base—floating blower and motor mountings—seal-tight, non-leakable joints—Janitrol advanced engineering and design.

SPECIFY THE "CA"

Here is the unit to specify for complete client satisfaction. Beautiful, modern cabinet design and appearance, coupled with exclusive Janitrol operating and installation features, protect you and build your reputation for care in the selection of quality materials. Write Department "F" for complete details.

It’s what you DON’T see that makes the difference in ROBINSON Lap-Lok Wall Coping

Robinson Lap-Lok Wall Coping is far more pleasing in appearance than ordinary copings. But that’s only half the story. It’s the hidden Lap-Lok features of design... features that can’t be seen when the coping is in place... that make it so superior to other wall copings.

Lap-Lok is designed on a new principle. At the joints, the lap is entirely concealed. Thus there are no unsightly raised joints to mar the smooth, unbroken line of the parapet wall. At the sides, a simple feature of design locks the coping firmly in place and prevents the falling of either coping or bricks.

These features of Robinson Lap-Lok Coping make it much easier and faster to install; and they protect the wall permanently from disintegration from any cause whatever. They also improve the appearance of the wall... and of the building... whether it be a residence, apartment, or business structure.

You will please your client... save him time, money, and costly repairs... by specifying not just "wall coping", but "Robinson Lap-Lok Wall Coping" for your next building. Mail the coupon below for a folder which gives complete information on this newest development in wall copings. No cost, of course, and no obligation.

Janitrol
WINTER AIR CONDITIONER
SURFACE COMBUSTION CORPORATION, TOLEDO, OHIO

DECEMBER 1938
The Ric-Wil Co.

40 Rie-wil, with Dry-paC as.xures over 90/! efficiency on the line.

iiiMilalion or sectional pipe covering is optional.

Steam Jobs by Specifying

Ric-Wil, basic engineering superiority. Complete service on layout, manufacture, and installation.

MACKLANBURG-DUNCAN COMPANY
MFRS. OKLAHOMA CITY, U.S.A.
Hotel Victor, famed for good service, now adds the finest in floor service — with this beautiful installation of fine terrazzo.

Here is flooring that has everything: attractive, durable, of moderate cost, inexpensive to maintain — flooring you “refinish” with water and a mop! For fine terrazzo never loses its original freshness. It is made of white cement and colored marble chips that never fade, never surrender their rich beauty. Patterns in a fine terrazzo job are clean-cut. There are no blurry, ill-defined edges in even the most colorful design.

In planning terrazzo jobs, do not overlook the importance of white Portland cement matrix. Only with white cement can you get exact color control, minute pattern reproduction. Only with white can you create a fine terrazzo job which you can be sure will be faithful to specifications.

And you can be sure of quality when you specify Atlas White for your terrazzo jobs. Atlas White (plain and waterprooofed) is pure white. It exceeds specification requirements for Portland cement strength. It assures fine terrazzo at its best. Universal Atlas Cement Co. (United States Steel Corporation Subsidiary), 135 East 42nd Street, New York.

FINE TERRAZZO

SPECIFY

ATLAS WHITE PORTLAND CEMENT

WRITE FOR FREE BOOKLET SHOWING 24 TRUE-COLOR SPECIMENS OF FINE TERRAZZO

Excellent Floor Service too!

"I've had 15 years' experience with Eagle White Lead" says E. W. Holmok, Cleveland—"and, believe me, I'm sold on it. Costs me only $2.19 a gallon* all mixed and ready to apply."

*Based on national average cost of Eagle White Lead and Linseed Oil.

THE EAGLE-PICHER LEAD COMPANY
Picher, Cincinnati, Ohio

On and Off Advantage
of the
Yello-Jacket BURNHAM
That Stings The Fuel Bill

If you burn oil, you can have the burner either jacket enclosed or not. If you start by burning coal, and want to switch to oil, it's as simple as simple. Should you decide to burn neither one, but use gas, you are still in an enviable position. No matter what the fuel this new Burnham Yello-Jacket Boiler stings the fuel bill.

Not shown in 1938 Sweet's, but will be in the 1939 edition. So send for catalog.

BURNHAM BOILER CORPORATION
Irvington, N.Y.
Zanesville, Ohio

You can still get additional copies of the

FRANK LLOYD WRIGHT
Special January Issue of The FORUM

Foreseeing the tremendous popularity of Mr. Wright's issue, the publishers have provided an extra copy edition to fill the demand for additional copy orders from FORUM subscribers, as well as orders from their friends and associates in architecture and building.

Professional and journalistic comment mark this special Wright issue of The FORUM as the most important architectural document ever published in America. Here is the first and only record in print of what we have come to call the Modern Movement, from its inception to its present-day interpretation. In more than 100 pages of photographs, plans and drawings you will see architecture as thoroughly indigenous to America as the earth and rocks from which it springs.

To get your extra copies of the Wright edition use this coupon.

Please send me __________ copies of the FRANK LLOYD WRIGHT issue of The FORUM for which I enclose payment of $2.00 per copy.

Name:_________________________

Street:________________________

City:__________________________ State:________________________

THE ARCHITECTURAL FORUM, Time & Life Building, Rockefeller Center, New York City
Use HERZIM Edging Mouldings

The ideal mouldings for sink top, counter and table edging. Available from stock with openings ranging from 3/4" to 1 3/8". The section shown is but one style of the many shown in our new catalog—which covers all types of mouldings for the building trades, in stainless steel and aluminum.

The HERZIM line includes the patented HERZIM Filler mouldings; bead and linoleum insert mouldings, stair nosings, wall board and wall tile mouldings—as well as angles and tees.

Write today for CATALOG
HERRON-ZIMMERS
Moulding Company
3904 E. Outer Drive
DETROIT, MICHIGAN

Overhead Door Corporation
Hartford City, Indiana

Use HERZIM Edging Mouldings

New Economy! New Efficiency!
in heat for smaller homes!

Now PAYNE PRESENTS THE NEW GAS-FIRED F.A.U.*
(Forced Air Unit)

HEATS IN WINTER VENTILATES IN SUMMER

No longer need the small-home owner put up with makeshift heating. Now architects and builders are meeting his urgent need for efficient heat—healthv heat—economical heat—with the powerful Payne F.A.U. Here is a modern winter air conditioner—plus a cooling summer ventilator.

CHECK F.A.U.'S OUTSTANDING FEATURES

• Save basement excavation—$150 to $200 minimum. The F.A.U., amazingly small—only 4 feet square—can be placed on the service porch, in the kitchen or in a convenient closet.

• F.A.U. works all year 'round. In summer months powerful blowers (operating independently of heating system) provide c-o-o-l-i-n-g ventilation.

• Simplest, new low-cost installation in homes already built or building.

• Instant heat in every room when wanted. Forced air heat warms right now! Same amount of gas goes three times farther than in gravity furnaces.

• Payne circulation system eliminates the discomfort and waste of cold floors—hot ceilings.

• Mounted on rubber—quiet as a summer zephyr.

See a Payne dealer or write for information.

In Miss Edna Kirby's all-glass home at Riverside Ranchos, California (Claude Norris, architect) the heating problem was solved with a Payne F.A.U. installation on service porch, shown above.
The advertising pages of THE ARCHITECTURAL FORUM have become the recognized marketplace for architects and all others engaged in building. Each month these pages offer the most complete guide to materials, equipment and services to be found in any magazine. A house or any other building could be built completely of products advertised in THE FORUM. While it is not possible for a magazine to certify building products, it is possible to open its pages only to those manufacturers whose reputation merits confidence. This THE FORUM does.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberene Stone Corporation of Virginia</td>
<td>38</td>
</tr>
<tr>
<td>American Gas Association</td>
<td>6</td>
</tr>
<tr>
<td>American Rolling Mill Company, The</td>
<td>8</td>
</tr>
<tr>
<td>Anthracite Industries, Inc.</td>
<td>29</td>
</tr>
<tr>
<td>Armstrong Cork Products Company</td>
<td>27</td>
</tr>
<tr>
<td>Burnham Boiler Corporation</td>
<td>Opp. p. 41</td>
</tr>
<tr>
<td>Celotex Corporation, The</td>
<td>Cover II</td>
</tr>
<tr>
<td>Eagle-Picher Lead Company, The</td>
<td>Opp. p. 41</td>
</tr>
<tr>
<td>Formica Insulation Company, The</td>
<td>5</td>
</tr>
<tr>
<td>Fourno Glass Co.</td>
<td>37</td>
</tr>
<tr>
<td>General Electric Company</td>
<td>33, Cover IV</td>
</tr>
<tr>
<td>Henry Furnace &amp; Foundry Company, The</td>
<td>36</td>
</tr>
<tr>
<td>Herron-Zimmers Moulding Co.</td>
<td>41</td>
</tr>
<tr>
<td>Johns-Manville</td>
<td>37</td>
</tr>
<tr>
<td>Kimberly-Clark Corporation</td>
<td>40</td>
</tr>
<tr>
<td>Macklanburg-Duncan Company</td>
<td>40</td>
</tr>
<tr>
<td>Masonite Corporation</td>
<td>3</td>
</tr>
<tr>
<td>National Lead Company</td>
<td>24</td>
</tr>
<tr>
<td>Otis Elevator Company</td>
<td>29</td>
</tr>
<tr>
<td>Overhead Door Corporation</td>
<td>4</td>
</tr>
<tr>
<td>Owens-Illinois Glass Company</td>
<td>2</td>
</tr>
<tr>
<td>Payne Furnace &amp; Supply Co., Inc.</td>
<td>4</td>
</tr>
<tr>
<td>Penberthy Injector Company</td>
<td>2</td>
</tr>
<tr>
<td>Pittsburgh Plate Glass Company</td>
<td>31, 35, 41</td>
</tr>
<tr>
<td>Procter &amp; Gamble</td>
<td>2</td>
</tr>
<tr>
<td>Ric-Wil Co., The</td>
<td>4</td>
</tr>
<tr>
<td>Robinson Clay Products Company</td>
<td>3</td>
</tr>
<tr>
<td>Streamline Pipe &amp; Fittings Co.</td>
<td>5</td>
</tr>
<tr>
<td>Surface Combustion Company</td>
<td>5</td>
</tr>
<tr>
<td>Todd Combustion Equipment, Inc.</td>
<td>1</td>
</tr>
<tr>
<td>Trane Company, The</td>
<td>3</td>
</tr>
<tr>
<td>Truscon Steel Company</td>
<td>Cover I</td>
</tr>
<tr>
<td>United States Plywood Corporation</td>
<td>4</td>
</tr>
<tr>
<td>United States Steel Corporation</td>
<td>17, Opp. p. 4</td>
</tr>
<tr>
<td>Universal Atlas Cement Co.</td>
<td>17, Opp. p. 4</td>
</tr>
<tr>
<td>(United States Steel Corporation Subsidiary)</td>
<td></td>
</tr>
<tr>
<td>Victor Electric Products, Inc.</td>
<td>Opp. p. 4</td>
</tr>
<tr>
<td>Zouri Store Fronts</td>
<td>3</td>
</tr>
</tbody>
</table>
Orientalwood Flexwood flush treatment, elevator lobby, Kraft-Phoenix Cheese Corporation’s new office building, Chicago; over 5,000 sq. ft. of Flexwood used for lobbies and offices, 6th, 7th and 8th floors; Mundie, Jennion, Bourke and Havens, Architects.

... for today’s Finest Modern Wood Treatments

The installation above is a typical example of the way architects and designers are using natural, exotic woods in facile form to create fine wood interiors. Modern design calls for sheer, unbroken surfaces both flat and curved. Speed is the order of the day in construction as in most other things. Flexwood meets these requirements, and since more than forty rare woods are available, the designer is offered a selection of tones and figures to meet practically every decorative or color scheme. The use of Flexwood places no limitations on creative skill and its cost puts no strain on the normal budget. In fact, wood in no other form approaches Flexwood in cost, ease and speed of application in modern wood treatment. Samples, and data on Flexwood are yours for the asking.

UNITED STATES PLYWOOD CORPORATION, 103 PARK AVE., NEW YORK
Manufacturers of Flexwood, Plywood, Armorply, and kindred products
For BEST RESULTS with Structural Glass

start with a Polished Finish!

CARRARA Structural Glass has but one type of finish... the best. Every piece produced, whatever its thickness or color, is mechanically ground and polished, like fine plate glass, to a mirror-like, reflective surface.

Just as the ground and polished surfaces of plate glass are essential for best results where you are working with large panes of transparent glass, so, in structural glass jobs, where slabs are usually quite large, a structural glass with Carrara's ground and polished finish is inevitably far superior.

Carrara's permanence, sanitation and exceptionally easy cleaning assure a long life of beauty and service with very low maintenance cost. Its polished surfaces are so true that all lippage at joints is eliminated. Whether used for toilet room walls and partitions, or for decorative purposes in the large building or the home, you will find this quality glass an effective tool to work with. We urge you to write for our free book of information entitled "Carrara, the Modern Structural Glass." Address Pittsburgh Corning Corporation, 2330 A Grant Bldg., Pittsburgh, Pa., manufacturers of Carrara Structural Glass and PC Glass Blocks.

Distributed by
PITTSBURGH PLATE GLASS COMPANY

and by W. P. Fuller & Co. on the Pacific Coast