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FIE ARCHITECTURAL

AUGUST 1939

IT MIGHT HAVE BEEN A GIGANTIC BALL OF NOISE

THE DESIGNERS of the Perisphere and their consultants, when creating the setting for "The City of Tomorrow," quickly came face to face with an age-old problem: Domes and spheres have long been famous for echoes, disturbing reverberations, bad acoustics.

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Editor, Howard Myers; Managing Editor, Ruth Goodhue; Associates, Paul Grotz, Joseph C. Hazen, Jr., George Nelson, Henry H. Saylor, Henry Wright; Assistants, John Beinert, Anna De Cormis, Barbara Hunt, Richard E. Saunders, Madelaine Thatcher, Alian Woodle. THE AucMITTECTURAL FOULM is published by Time Inc., Henry R. Luce, President; Roy E. Larsen, Eric Hodgins, P. I. Prentice, Vice Presidents; Charles L. Stillman, Vice President and Treasurer, Publication and Subscription Office, Eric Ave., F & G Streets, Philadelphia, Pa. Subscriptions may also be sent to 330 East 22nd Street, Chicago, Illinois. Executive, Editorial and Advertising Offices, Time & Life Building, Reckefeller Center, New York, Business Manager, H. A. Richer, Advertising Manager, George P. Shutt, Address all editorial correspondence to Time & Life Building, Reckefeller Center, New York, Ycariy subscription, Office International Copyright Convention. All rights reserved under Pan American Copyright Convention. Copyright, 1933, by Time Inc. VOLUME 71-NUMBER TWO

MONTH IN B

PERMITS

Residential \$116.3

TOTAL 192.9

Non-residential ...

Additions, repairs.

BUILDING STATISTICS. One of Building's weakest points is the dearth of reliable statistics relating to its operations. Those statistics that are available come from many divergent sources and, due to their various bases, are frequently unrelated. Most important, these statistics are seldom brought together and presented in a comprehensible form for the consumption of the general public.

Mindful of these shortcomings, THE FORUM this month revises its presentation of Building's statistics. From thirteen fact-finding agencies it has corralled all available and reliable statistics, has presented them in chart and tabular form on a single page (see page 144). To keep the industry well informed about the trend of its operations, THE FORUM will include this comprehensive statistical page in each successive issue.

This month's statistics covering the factors which affect building activity point to increased operations in later months. Thus, the trend of building permits (tabulation, right) is up, mortgages selected for FHA appraisal are up, building material

BUILDING BEFORE TNEC. "To make a full and complete study and investigation with respect to . . . monopoly and concentration of economic power in and financial control over production and distribution of goods and services . . ."such is the colossal duty imposed by Congress on three Senators, three Representatives and members of six Federal departments and agencies.* Officially called

the "Temporary National Economic Committee" but popularly dubbed the "Monopoly Committee," these dozen men last month discharged their duty as far as the building industry is concerned, then promptly adjourned for the summer.

Still smarting from the verbal spanking they received when the Department of Justice outlined its proposed trust-busting attack on the industry, Building bigwigs trained an attentive ear on the Committee's hearings. In the testimony of fellow bigwigs and Government officials they hoped to find a clue to the trust-busters' plan of attack. But, ears were trained in vain. All Building heard was a series of facts and figures, problems and panaceas, accusations and refutations that it had heard many times before. When representatives of the various branches of

* Departments: Justice, Treasury, Labor and Commerce; Agencies: SEC and Federal Trade Commission.

Building admitted that there were traderestraints and price-fixing in the industry, they hastened to add that the faults were with the other fellows. And, when the Department of Justice took the stand, it spoke in generalities, named no names, requested that other witnesses do likewise. Reason: the trust-busters thought it wise to keep the specific objects of their busting in the dark until they had time to sharpen their axes. Deference of the Committee to this Department of Justice wish extinguished all the expected fireworks before they were set off.

Nevertheless, as a comprehensive forum on Building, TNEC's hearings are significant. Organized by a Government housing expert, Peter Stone, and directed by the Treasury Department's Joseph J. O'Connell, as counsel for the Committee, the hearings covered the testimony and cross examination of 29 witnesses, kept the Senate Caucus Room humming for the best part of a month. Most of the statements dealt with Building's proverbial ailments and equally proverbial cures. Some are noteworthy:

Dr. Isador Lubin of the Bureau of Labor Statistics opened the hearings with proof that only 15 per cent of today's houses are built for families who can afford to pay \$2,000 to \$4,000-despite the fact that these families constitute 52 per cent

other direction are levels below last y This year's larg for contracts awar	gage increase factor and marriages—both at ear's. e building volume is reflected in the figures ded, mortgages recorded and the employment ides—all of them surpass the figures for 1938.
here were trade-	of Home Building's market. (ARCH.
in the industry,	FORUM, Apr. 1939, p. 234). Interesting
t the faults were	was his estimate that the mere mainte-
And, when the	nance of housing facilities near present
ook the stand, it	levels would call for the construction of

about 525,000 dwelling units per year.

Monthly data

Apr. '39

+ 38.0%

+12.9

- 0.6

+23.8

stock prices are up, payrolls are up, with housing costs, fore-

closures and mortgage interest rates down. Operating in the

Comparison with

May '38

+ 85 3%

+55.4

+16.9

+62.5

May 1939

(millions)

45.6

31.0

(Source: U. S. Dept. of Labor)

1939

\$453.4

230.8

140.4

824.6

First five months

(millions) with 1938

Comparison

+45.7%

+ 8.5

+ 5.9

+25.3

(1938 production: 347,000 units.) Robert L. Davison, Pierce Foundation's director of housing research, expanded Lubin's statement by showing that the U.S. automobile industry meets 80 per cent of its low priced market (ARCH. FORUM, July, 1939, p. 4). More important was his argument that to lower the carrying costs of a house, interest and amortization charges should be reduced. Thus, while a 20 per cent cut in material costs and a 20 per cent cut in labor costs reduces monthly fixed charges only 9.33 and 4.67 per cent, respectively, a comparable cut in interest and amortization costs lowers fixed charges by 16.69 per cent. Davison's recall to the witness chair to make suggestions for increased governmental research into the technical side of Building presages some expansion of Federal activities in this important field.

Allen H. Dawson and Carleton A. Smith, prominent Chicago residential contractors, gave some of the little testimony offered concerning restrictive practices of building material dealers and building trades. Chief complaint was that a Cook County deal-

Associated Pres



LABOR'S TRACY

2



RESEARCH'S DAVISON



FINANCE'S BODFISH



BUSINESS' WOOD

THE



ARNOLD

ARCHITECTURAL



TNEC'S O'CONNELL

0 R U M

Whoops!



• Dirty finger marks seem to appear on the walls of the best regulated homes. And Masonite Colored Board makes such blemishes the least of a housewife's worries. This new Masonite Product has a special, satin-like finish that is washable.

All gone!



Neutral soap and damp cloth are all that are needed to remove finger and other normal dirt
marks from Masonite Colored Board. In addition to this lasting color surface, Masonite Colored
Board offers not only valuable insulating properties but also real structural rigidity.

Masonite Colored Board is washable!



• Masonite washable Colored Board is available in today's four most popular home colors — oyster white, ivory, green, buff. It is low in cost . . . easy to apply . . . and will give years of service. Of course, you want a free sample and full details about this modern wall and ceiling material. Mail the coupon today.



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Oyster White	Vory	Green	🗔 Buff
Name			
Address			
City		State	

THE ARCHITECTURAL FORUM

AL Published monthly by Time Inc., Henry R. Luce, President, Publication Office, Eric Ave., F & G St., Phila., Pa. Yearly Subscription: U. S. A. Insular Possessions, Canada and Cuba, \$4.00. Foreign Countries in the Postal Union, \$6.00. Single issues, Including Reference Numbers, \$1.00. Entered as Second Class Matter at the Post Office at Philadelphia, Pa., under the Act of March 3, 1879. Additional entry at New York, N. Y. Copyright, 1939, Time Inc, Spiral Binding U. S. Pat. Nos. 1516932 and 1942026. Other Patents Pending.

VOLUME 71 Number 2

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ers association prevented them from buying many materials directly from manufacturers (they mentioned sand, gravel, cement, lime, tile, brick, plumbing and heating equipment).

R. R. Rogers, vice president of the Prudential Insurance Co. of America, broke down mortgage interest costs into three parts: cost of money, 3.85 per cent; cost of risk, 0.48 per cent; cost of doing business, 0.5 per cent.

Morton Bodfish, executive vice president of the U. S. Building and Loan League, raised the third part of Mr. Rogers interest breakdown to 2 per cent, gave it as the reason for the 5 to $5\frac{1}{2}$ per cent rate charged by the majority of building and loan associations (Rogers' total was 4.83 per cent). Other noteworthy Bodfish opinions: Due to the abundance of credit, ... we seem to be heading into another 'financing boom' . . . (but) we are not in line for a building boom as yet . . . It is still cheaper to rent . . . or to buy an existing house than it is either to build or buy a new one. . .". Bodfish recommendations: 1) taper off activities of the RFC Mortgage Company and the Federal National Mortgage Association, 2) limit FHA mortgage insurance to new construction, 3) study homestead tax exemption with an eye to equalizing taxes, 4) discontinue the postal saving system or invest postal savings in home financing institutions, not banks, 5) discontinue "lavish advertising program" for the the sale of baby bonds, and 6) confine public housing activities strictly to slum clearance. He wound up his testimony by stating that, since interest rates were continually going down, the financial institutions of the Nation are the heroes of housing. Indicating the culprits, he pointed one finger at material dealers, another at labor.

Henry Bruere, president of New York City's Bowery Savings Bank, reminded the Committee that his institution is putting \$10 million into FHA insured mortgages at 4¹/₄ per cent. (Авсн. Forum, Apr. 1939, p. 4). Evidence of still more buck-passing was his opinion that mass production, careful planning and enforcement of FHA standards would depress costs and boost volume faster and further than additional interest rate cutting.

Thurman Arnold, Assistant U. S. Attorney General, disappointed his audience by delivering practically the same speech he gave on two previous occasions-once in California, once in New York City. (ARCH. FORUM, June 1939. p. 2). Prior to outlining his forthcoming broad attack upon restraints of trade in the building industry, he excused himself from mentioning names and places. The excuse: "It is obviously unwise to use the present hearings in a way which would warn violators of the law that their particular practices are under investigation or to give such violators a chance to claim immunity as a condition of testifying before this committee."

General Robert E. Wood, Chairman of the Board of Sears Roebuck and Co., however, made some flat accusations. Chief complaint was that Chicago's building trades unions would not let him build houses for his workers if he equipped them with his own plumbing fixtures. He built some houses in Kankakee (III.) at \$3,400, but could not build them in Chicago for less than \$4,800. The Kankakee houses were built by union labor—the Chicago houses were not built at all.

Willard L. Thorp, a Department of Commerce economist and Hopkins' lieutenant, underlined the importance of freight costs in certain building materials. In the sand and gravel industry, for instance, freight accounts for 56.7 per cent of the materials' total value at its destination.

D. W. Tracy, president of AFL's International Brotherhood of Electrical Workers, was treated gently by the Committee, was spared the searching questions asked other witnesses. In brief, he denied that union wage rates were too high, insisted that the building trades were not retarding progress and shrugged his shoulders when asked about the possibilities of a guaranteed annual wage for building labor. To vindicate AFL of any responsibility for high costs in the residential field, Tracy made it clear that only 10 per cent of the Nation's small houses are built by union labor. Interesting was his claim that, while for years labor and materials have shared equally in building's dollar, today labor gets 35 cents, materials, 65 cents. His reason: machines and fabricated materials are replacing man power on the site. He did not add that the reason for this replacement was the high cost of skilled site labor, but his testimony was a virtual admission of this point. Also interesting was Tracy's admission that inside electrical workers last year earned an average of \$1,545-the highest since 1929.

Henry J. Eckstein, president of Foresta Factors, educated the Committee on a proposal for Government "yield insurance" of large scale rental housing projects. (ARCH. FORUM, July 1939, p. 4).

Gerard B. Lambert, capitalist and retired Listerine manufacturer, discussed his low cost (\$3,000 per unit), low rent (\$6.25 per room per month) housing project in Princeton, N. J. (ARCH. FORUM, Dec. 1938, p. 486).

Dr. Theodore J. Kreps, economic consultant to TNEC, summarized the evidence, added some observations of his own. Three of them are particularly significant: 1) If the Nation is to rely on second-hand housing for the low income groups, "those now buying new houses would have to do so once every four years." 2) Economist Kreps admits that there exist "local tie-ups, reciprocity arrangements" between material dealers and contractors and between other branches of the industry and that they frequently make for higher costs. But, he stated that "the stimulus to achieve profitable restraints is an organic part of the industrial disorganization of home building." Furthermore, despite the impending Department of Justice program, he feels that with respect to these restraints "even if broken up by competition or Government action they will tend to grow back much in the way a man's beard grows out again after each morning's shave." 3) Placing additional emphasis upon the interest rate situation, he showed that cutting labor wages in half would not reduce carrying charges on a house as much as would a drop from 5 to 4 per cent in interest rates.

In sum, certain facts are apparent from a study of the TNEC hearings, highlighted in the preceding paragraphs:

1—The Committee stepped gingerly as far as labor is concerned—nothing was done to place in the records a general estimate of the effect of restrictive labor practices. 2—But, the Committee did tread heavily upon interest rates by trying to show that they should be reduced below current levels, especially since the FHA and the FHLBB have removed the "risk" element from the cost of home mortgage money.

3—Nothing was produced that will prompt the committee to suggest any legislative cure-alls to Congress, although "to make recommendation to Congress with respect to legislation" was one of the stated purposes of the Committee.

4—No facts were given by witnesses which can be fabricated into cannon balls by Trust-buster Arnold, although many building industry people felt that this would be the case. Nothing was developed about which Mr. Arnold did not already know.

5—Finally, despite the foregoing negatives, the hearings did serve a purpose. It may be that, as a result of them, the Department of Commerce will be able to sell Congress on the wisdom of larger appropriations for its Construction Economics Section to use in the search of additional Building facts and figures. Furthermore, while most of the testimony concerning malpractices had been heard before, its re-airing will probably prompt a clean-up campaign from within the industry.

BUILDING BEFORE JUSTICE.

Whether or not the TNEC hearings (page 2) prompt Building to "be good until Christmas," the U. S. Department of Justice has made up its mind to keep it "good" from Christmas on. During recent months U. S. Attorney General Frank Murphy and Assistant Thurman Arnold have been broadcasting their proposed attack upon restraints of trade in the building industry. Each successive broadcast has become a little more specific in its (Continued on page 38)



ELEVATORS



Formica "Realwood" sheets installed with metal moldings make possible some handsome effects on walls. Such an installation was recently made at the Hotel Astor, New York, where Formica in a Lacewood grain produced a very attractive and thoroughly modern treatment of the walls.

Formica "Realwood" has incorporated in it a thin veneer of actual wood resulting in a genuine wood grain. This wood has a more perfect finish than has ever been possible by other processes and one that is so inert chemically that it will not spot, or stain, and can be washed with cleaning solutions that would destroy other wood finishes.

Let us send you the facts.

The Formica Insulation Co., 4620 Spring Grove Ave., Cincinnati, Ohio **FOR**





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ANTHRACITE speaks for itself in "The White Room," one of the features of the Anthracite World's Fair Exhibit. "The White Room" is both animate and articulate—has action and speaks. Concealed voices tell in a quick and easily understood dialog, why Anthracite provides such healthful heat by the even temperature that avoids "cold seventy." Synchronized lights show, graphically, the points so clearly explained by the unseen voices. Walls, ceiling, furniture and draperies of spotless white tell even better than words, the story of Anthracite's cleanliness.

Every architect and builder should see this

Every architect, every contractor and builder should see this whole exhibit . . . See the hand of comfort,

This Seal of Approval appears on equipment only after a representative sample has satisfactorily passed rigid and impartial tests at the Anthracite Industries, Inc., Laboratories.



the wall of protection, the hall of manufacturers with varied types of Anthracite equipment on display. See it not only because it may tell you something new about Anthracite—but also because it is sure to tell you something new about the absorbing interest the public has in Anthracite. Thousands of families are seeing, through this Exhibit at this World's Fair, how efficient, how economical and how *convenient* Anthracite is. They are turning this new knowledge to profit by making hundreds of purchases every week, of Anthracite equipment for the homes that you design and build.

ANTHRACITE INDUSTRIES, Inc. Chrysler Building New York, N. Y.



PROGRAM OF COMPETITION

\$ 15,000 in prizes



IN A SERIES OF FOUR

incorporating the use of a versatile building material

INSULUX GLASS BLOCK

REGISTRATION to enter Competition No. 2 or No. 3 is all that is needed for continuous participation. It ensures your receiving the technical information needed, and title lettering. It does not obligate you to submit drawings.

Write Henry H. Saylor, A.I.A., Professional Adviser, 9 Rockefeller Plaza, New York, N. Y., indicating your entry as architect, architectural designer, or architectural draftsman.

There is still time to enter Competition No. 2; it closes at midnight of August 21, 1939. Registration may be made by wire to the New York address, and program (which may be seen in THE FORUM for May, page 21) and data will be sent by return mail.

CONDUCTED BY THE ARCHITECTURAL FORUM FOR OWENS-ILLINOIS GLASS COMPANY

THE PROBLEM

Dellside Dairy, now housed in a commonplace loft building in Wisconsin, has prospered and must expand. Our client, the dairy owner, has a rectangular plot of land lying between a well traveled highway and a secondary road. On this site he wants to put up a plant that will combine his processing operations with a retail milk bar seating 25 persons, and proclaim to the passing motorists that Dellside Dairy is the last word in sanitary merchandising of dairy products. Naturally, the client has in mind the advantages of Insulux Glass Block as a means of reducing condensation, as lowering maintenance costs of light-transmitting areas, as an aid in easy cleaning, and as reducing the cooling load through the reduction of solar heat penetration. Its obvious attention value, by day and by night, is well known to him. He looks also for a development of other ingenious and appropriate uses of the material.

The site measures 150' on the highway, facing southwest, and its depth to the parallel road in the rear is 180'. The land slopes away from the highway, its rear boundary being 10' below the front.

Twenty-four trucks ply their milk routes and must be housed on the site. Additional room should be made for six automobiles belonging to the staff.

Raw milk is brought in—6,000 gals. per day—and weighed, tested, pasteurized, processed. Ninety per cent will be processed and bottled as milk; the rest will be made into by-products.

Short routes for its course through the plant mean economy in pumping and in cleaning and sterilizing. Our client has given us the accompanying diagram as representing space requirements and their relationships.



The figures represent square feet of floor space desired in the dairy processes, the arrows indicating the flow lines

It may be possible to have the receiving, can washing and laboratory on a level higher than the other operating departments, which would eliminate one pumping operation, but with that exception all other operating

SUBJECT : A DAIRY \$2,500 IN PRIZES. Closes November 20, 1939

This competition has been approved as a Secondary Competition by the Special Committee for Secondary Competitions for the territory of the New York Chapter, American Institute of Architects. Full participation is permitted to all Institute members.

activities may well be on one floor level. Receiving must perforce be separate from processing and the latter separate from bottle washing. The boiler room cannot be near the cold storage room. Employees' washroom with showers and lockers must be isolated from all milk handling departments. The processing rooms will have a 16' ceiling, the cold storage room 9'. Loading of output will be done through several small doors or chutes from the cold room, and an adjoining platform will receive the empty bottles returned by the trucks. Air conditioning is desired throughout, both for sanitation and comfort.

To aid in spreading the gospel of modern dairying a lecture room to seat 100 is desired, and some provision should be made for visitors to watch pasteurizing and bottle operations behind glass.

There is need for office space for the managing owner, a superintendent, and five women employees; also a drivers' room, with lockers and showers close by. There will be washrooms for employees and for visitors. Provision should be made for visitors' parking space on the grounds.

THE PRIZES: For each of the four competitions there will be awarded eight cash prizes as follows: First Prize, \$1,000; Second Prize, \$750; Third Prize, \$250; Fourth Prize, \$100; Fifth Prize, \$100; Sixth Prize, \$100; Seventh Prize, \$100; and Eighth Prize, \$100. Checks will be mailed to the prize winners by THE ARCHITECTURAL FORUM within one week after each judgment.

GRAND PRIZES. Competitors are encouraged to continuous participation in this series through an offer of Grand Prizes. These do not call for a final competitive effort but will be awarded automatically on the basis of points scored in the four quarterly competitions. A winner of a First Prize in one or more of these is given 100 points credits for each; Second Prize brings 80 points; Third, 63; Fourth, 49; Fifth, 38; Sixth, 30; Seventh, 25; and Eighth, 23 points.

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8										т	н	E	A	R	с	н	I.	T	E (c	τυ	R	A	L	F	0	R	U	м

Immediately after the awards have been made for the Fourth Competition, Grand Prizes will be awarded in the following amounts: First Grand Prize, \$1,500; Second Grand Prize, \$1,250; Third Grand Prize, \$1,000; Fourth Grand Prize, \$750; and Fifth Grand Prize, \$500. In the event of ties in the scores for Grand Prizes, duplicate prizes will be awarded. Checks will be mailed to the Grand Prize winners by THE ARCHITECTURAL FORUM immediately after the scores have been computed.

1. AUTHORITY

Owens-Illinois Glass Company has delegated to THE ARCHI-TECTURAL FORUM authority to conduct a competition for the purposes above outlined, including the publication of the premiated designs; and has appointed as Professional Adviser, Henry H. Saylor, A.I.A., 9 Rockefeller Plaza, New York, N. Y.

2. COMPETITORS

This competition and the fourth one that completes the series are open to all architects, architectural designers and architectural draftsmen in the Western Hemisphere, except employees of Owens-Illinois Glass Company and of THE ARCHITECTURAL FORUM. A competitor may submit as many drawings as he likes in any or all of the competitions, and is eligible to win any number of awards.

3. JURY OF AWARDS

The following architects have agreed to act as a Jury in Competition No. 3, and their decisions shall be final. (Any Juror in this series is eligible to compete in any of these competitions except that one for which he is serving as a judge.)

ALFRED A. HAHN, Toledo ALBERT KAHN, Detroit J. BYERS HAYS, Cleveland ROBERT H. MACDONALD, Montreal CHARLES T. INGHAM, Pittsburgh WALTER R. MCCORNACK, Cambridge ELLEL SAARINEN, Cranbrook

4. EXAMINATION OF DESIGNS

The Professional Adviser will examine the designs to ascertain whether they comply with the mandatory requirements of the program, and will report to the Jury any instances of failure so to do. The Jury will satisfy itself of the accuracy of such report, and will place out of competition and make no award to any design which does not comply with these mandatory requirements. The Jury for Competition No. 3 will meet in the City of Cleveland within three weeks after the closing date, and carefully study the program and the eligible designs, and will make the awards before opening the envelopes which contain the names of the competitors.

5. REPORT OF THE JURY

UGUST

Announcement of the awards, as detailed above, will be made

1 9 3 9

in a later issue of THE ARCHITECTURAL FORUM, and to the successful competitors by telegraph immediately after the judgment.

6. EXHIBITION AND PUBLICATION

No drawings will be exhibited or published until after the awards of the Jury in each competition. All prize-winning designs will be published, with the names and addresses of their authors. Owens-Illinois Glass Company shall have the right also to publish additional designs other than those awarded prizes, accompanied by the names and addresses of their authors. As it is the intention of the Company to exhibit the prize-winning designs, and possibly many of the others, in cities throughout the country, covering an indefinite period of time, no drawings will be returned, except as follows: any competitor, other than a prize winner or one whose drawing has been selected by the sponsor for exhibition, who prefers the return of his drawing may enclose in the envelope containing his name and address a request to return by express, collect, insured for \$50. Neither Owens-Illinois Glass Company, nor THE ARCHI-TECTUAL FORUM, nor the Professional Adviser, however, accepts any responsibility for their safe return beyond that of exercising reasonable care in packing and shipment.

7. COMMUNICATIONS

Every intending competitor is required to register his intention to enter the series of competitions (the registration does not obligate him to submit an entry), advising the Professional Adviser at the New York address by mail, giving name, address and classifying himself as an architect, an architectural designer, or an architectural draftsman. Acknowledgment of this entry will be made by sending printed titles to be pasted on the mounts, and a booklet giving technical information about Insulux Glass Block. Those who have already registered for Competition No. 1 or No. 2 need not register again. It will be impossible to answer requests for additional information or for interpretation of the terms of the program.

8. ANONYMITY (Mandatory)

The name or names of competitors shall not appear on the drawings; the only mark of identification shall be a nom-deplume or device placed in the lower right corner of the mount, below the border line. On an opaque white envelope, pasted securely on the back of the mount, this same nom-de-plume or device shall appear, and sealed in the envelope shall be the name and address of the competitor; if an entry is the joint work of more than one designer, the name and address of each shall be enclosed, also instructions as to how, in the event of an award, a check shall be drawn. No competitor shall directly or indirectly reveal the identity of his design or hold any communication regarding the competition with Owens-Illinois Glass Company, or with any member of the Jury, or (except as provided in Section 7) with the Professional Adviser. It is under-

G	L	Α	S	S	B	L	0	С	К	С	0	М	P	E	Т	I	Т	I	0	N

stood that in submitting a design each competitor thereby affirms that he has complied with these provisions in regard to anonymity, and agrees that any violation of them renders his entry hors concours. The Professional Adviser will number the drawings as a further means of identification by the Jury; the sealed envelopes shall be opened by the Professional Adviser after the Jury's selection has been made, and in the Jury's presence.

9. DELIVERY OF DRAWINGS (Mandatory)

Drawings submitted in Competition No. 3 shall be securely wrapped, flat, addressed as follows: Professional Adviser, Insulux Competition No. 3, c/o THE ARCHITECTURAL FORUM, 820 Hanna Building, Cleveland, Ohio, and forwarded to this address not later than midnight November 20, 1939. All entries must reach the Professional Adviser with all charges paid, including duty levied on those from outside the United States. Post Office date stamps or express company dated receipts indicating receipt of the drawings on or before the above date and hour, will be accepted as evidence of compliance with this provision, except that no drawing received after the judgment has started will be considered. Entries delivered by hand must be at the above address on or before the date and hour given.

10. DRAWINGS (Mandatory)

The design of each competitor shall be presented on one sheet of white illustration board 20" x 30" over all; the arrangement of drawings on the board shall be such that the 30" dimension is the vertical; all shall be inside a single line border 1" inside

of each edge. A printed title (see Section 7) is to extend across the bottom just inside the border line.

Undiluted black ink only shall be used throughout, and the use of air brush or fine spatter work is prohibited; the lines and incidental lettering should be capable of reduction without loss of legibility when the board is photographed down to a height of 10". The following drawings are required, no more, no less.

- a) Plot plan at 1/32" scale.
- b) Floor plan or plans at 1/16" scale.
- c) A section through the building at 1/16'' scale.
- d) Pen-and-ink rendered perspective of exterior; assume the picture plane as passing through the nearest corner of the building, and the vertical dimensions thereof shall be drawn at the scale of $\frac{1}{8}'' = 1'$.
- e) 1 exterior detail wherein Insulux Glass Block is used, showing construction-not less than $\frac{1}{2}$ " scale nor larger than 1" scale.
- f) 1 interior detail wherein Insulux Glass Block is usednot less than $\frac{1}{2}$ " scale nor larger than 1" scale.

g) Prepare an adequate, but brief typewritten statement explaining why Insulux was used where shown and why the particular face design or designs were selected. Place this typewritten statement in an envelope bearing the word "statement" and the nom-de-plume or device mentioned in Section 8. If the entry is sent by express or delivered by hand, attach this envelope to the back of the mount. However, if the entry is sent by mail, to avoid the necessity of paying first class postage on the drawing, this envelope may be enclosed in another envelope, and mailed separately to the Professional Adviser at the Cleveland address. If name and address of sender is required by postal or express authorities, to preserve anonymity, use the name and address of the Professional Adviser.

The Winners ______Awards in Competition No. 1, A Small House, were made by the Jury which met at Chicago in June. Drawings of the eight prize winners, with short biographical notes of the com-petitors and specific comment and criticism by the Jury, appeared in THE ARCHITECTURAL FORUM for July. A Newspaper Plant for a busy city of 100,000 population. Here is a fairly common architectural problem, one that

Here is a fairly common architectural problem, one that might confront almost any practitioner. As in the case of the Dairy Plant, the technical requirements have been carefully worked out in detail. The various departmental space requirements and the relationships of these parts to one another are to be graphically shown in the program which will appear in a later issue of The Architectural Forum.



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* See also pages 7 and 9 in the Brixment Handbook.



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FORUM OF EVENTS

TWO CENTURIES OF ARCHITECTURE IN RHODE ISLAND



Best of the seventeenth century work, the Eleazar Arnold house (1687), Great Road, Lincoln. Model by Brown University students.



Joseph Brown also designed this John Brown house, most famous New England mansion of the late eighteenth century.



Tully Bowen house (1852), Providence, by Thomas A. Tefft—an Italianate mansion much copied.



Photographs from the Museum of Art,

Rhode Island School of Design

Eighteenth century "Gothick" in St. John's Cathedral, by John Holden Greene.



Of the eighteenth century Colonial group, the Joseph Brown house (1774) in Providence; its entrance has been lowered

To show the Fair-visiting pilgrims the whole story of Rhode Island architecture, the Museum of Art of the Rhode Island School of Design stages its summer exhibition, open through September. The photographs, enlargements 24 x 40 in. and 30 x 40 in. are arranged in seven sections. The first deals with the earliest extant remains, including a characteristic example of the later seventeenth century, Eleazar Arnold house, and the unique Old Stone Mill in Newport. The second section is concerned with the eighteenth century Colonial from about 1690 to just after the Revolution. The third section deals with the period of the Early Republic, 1790-1830. A fourth section shows early industrial architecture, the textile mills and mill villages of Rhode Island, the birthplace of the textile industry in America, including the Lippitt Mill here illustrated. The fifth section deals with the confused decades of the mid-nineteenth century. Emphasizing particularly the sequence of Newport mansions, the sixth section contains "manor houses" of Richardson and McKim, Mead & White, the "chateaux" and "palaces" of Hunt, which Henry James called "white elephants." Although the twentieth century section includes prominent examples of traditional architecture; most of the material deals with the modern buildings of the last decades.

A book, published simultaneously with the exhibition—"Rhode Island Architecture," by Henry-Russell Hitchcock, Jr. has about 70 full page plates selected from the photographs in the show, some interesting old plans, and an analytical text dealing with the subject under the seven headings.



Lippitt Mill (1809), in Pawtuxet Valley, with clerestory monitor and belfry tower, despite its five stories, still held to the domestic scale in windows. Professor Hitchcock writes that the workmanship is solid and fine, less pretentious than most other architecture of the time.



Richard M. Hunt's Ochre Court (1881-91), marking the Newport chateau period of romantic archæology. Notwithstanding the size and grandeur of these manor houses and palaces, they are built on suburban lots rather than on wide acres.



Rhode Island's State House (1895-1901) at Providence—McKim, Mead & White's academic design in full flower. Hitchcock: "It is not Roman, nor Italian, nor French, nor English, and certainly not American Colonial, although its inspiration is nominally from the work of the Early Republic. ... It is as international as an epic in Esperanto."



And of today, again for the Brown family, Richard Neutra's house for the John Nicholas Browns on Fisher's Island.

FORUM OF EVE,NTS



Photo: Treasury Department Art Projects



Sculpture of Never-Never Land,—Sculptor Edgar Miller created these whimsical animals for the children's court of Jane Addams Houses, Chicago. Holabird & Root, architects.



Prophet of Yesterday.—Robida in 1882 thought that by 1952 large cities, overcrowded, would build restaurants atop high buildings—Notre Dame for instance; and that houses would be pivoted for sunshine. Obviously, Robida was no mean seer.



Banker to White Wings.—Family of the late Otto H. Kahn has sold his Long Island chateau (Delano & Aldrich, architects) and 427 acres for a song to New York's Department of Sanitation employes for pensioners and vacation frolics. The white wings like their bargain but neighbors do not, and Huntington bewails loss of \$25,000 in taxes.



Furniture Concentration.—Out of Chicago's Summer Furniture Market comes this combination of nearly everything needed in the nursery. When all is closed, it is important to remember where one left the baby.

(Forum of Events continued on page 42)

"Gracious! Are these the stairs?"

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THE ARCHITECT'S WORLD

THE ARCHITECT OF TOMORROW

By H. S. Goodhart-Rendel

PRESIDENT, ROYAL INSTITUTE OF BRITISH ARCHITECTS

Excerpts from an address to students, delivered at the R.I.B.A., London, January 23, 1939

What I want to examine with you this evening is whether or not the "architect," in Waterhouse's* sense, is threatened with extinction. This is obviously a matter of great concern to you since your training is thought by many to imply the assumption that he is and must continue to be the normal master of building works. Is he that in fact? He is not. More building is still said to be done without any architect than with one, and yet more building certainly is done with an architect than used to be. We all hope for and work for the time when the employment of an architect of some kind will be universal or nearly so. But of what kind? There can never be enough complete architects, of men self-sufficient in every capacity required of them, to undertake the responsibility for all the building that will be done. I do not believe, however, that self-sufficiency in every required capacity is necessary for a good master of building works: and if your training makes you good masters of building works it will have given you the right to be called architects and to feel pride in your calling. Some of you will be satisfied with that, some will not; neither those who are nor those who are not will have any right to disparage the others.

*

The architects of the Italian and French Renaissances whose names and designs are familiar to us were men responsible for important works, some of which they actually conducted, some of which they did not. Many of them were painters or sculptors, and none of them worked in conditions sufficiently like our own for his examples to be to us of much practical value. Unimportant building works in their day were conducted by men now nameless and unidentifiable who would certainly have been surprised had the title *architect* been conferred upon them.

The architects of the eighteenth century in our own country were very rarely painters or sculptors and were often not particularly skilled in architecture. Certainly we had our Vanburgh, our Hawksmoor, our Chambers, our Adam, and a few others, but the large majority was made

* Alfred Waterhouse in an essay on the manysidedness of the ideal practitioner. up of men near to our notion of clerks of works, who could concoct a design from Palladian textbooks if no design were supplied to them by their employers, and who knew enough of architectural conventions to control the proposals made by masons, joiners and plasterworkers for ornamental detail.

During the same century in Italy and France the artist-architect, if I may so call him-the architect who is primarily a designer of architecture-had become generally established, and in the early nineteenth century he came to be no less prevalent in England. At that time, too, he began to intervene more and more in the production of small and unimportant buildings of the kind that hitherto had been left to the practitioner with less pretensions. Finally, in the early years of Queen Victoria's reign, the pretensions of all kinds of architects began to level up, until in Waterhouse's time almost all would have claimed to conform to his specification, to be as many-sided as he demanded. The claim may seldom have been supported by evidence, but in most cases was probably made honestly.

Now what actually was this Admirable Crichton, this average respectable architect of the 60 years preceding the last war? He was a trustworthy master of building works, of works that were much simpler and less hurried than such works are at present. He had a rule-of-thumb knowledge of building science and perhaps a better acquaintance with simple engineering than that possessed by the average architect in our own age of consultant specialists. He was a just taskmaster on the job and an honorable servant to his employer. He was highly susceptible to changes in architectural fashion and exhibited annually, at the Royal Academy, perspective drawings of designs in which these changes were faithfully reflected. These drawings were made by a hireling, and so, in many cases, were the designs.

It is only in this last particular that such an architect seems to me to have fallen short of what should have been expected of him. I deprecate the professional incapacity on the part of the architect to which such designing by proxy is due. And that brings me to the kernel of all that I am saying to you tonight.

An architect must be highly skilled in

designing. Skill in design is his raison d'etre and without it he makes no sense at all as a member of society. It is in a category entirely different from that of his other aptitudes-his scientific knowledge, his engineering knowledge, his business experience. In all of those he would be surpassed by scientific, by engineering, by commercial specialists, were it not that his own architectural, orderly outlook gives him a power in those especial provinces that the specialist has not. Skill in design gives universal ability. Learn it first and you thereby learn how to learn everything else. The modern architect claims, and I think justifiably, that his proper contribution to human welfare includes the planning of many other things besides buildings. His claim, however, is justified only by his mastery of his own job, and without that mastery he will be only a presumptuous and unauthorized meddler in other people's affairs.

*

I said a few minutes ago that a good master of building works had a right to call himself an architect, and to be proud of his calling. I have just said that an architect must be highly skilled in design, and you will therefore deduce that without high skill in design a man cannot in my opinion be a good master of building works. This deduction may be a little surprising, but I believe you will accept it if you weigh the term master and think what it connotes. In a clerk of works designing skill is unnecessary, but a clerk of works cannot claim to be an architect. A good many of the eighteenth century British architects were no more than clerks of works, but the word architect was then loosely used. A clerk of works has responsibility only for how a thing is done, whereas a master of works has responsibility for what it is that is done. He may not have the creative inspiration that would win for him the title artist, he may but adopt and develop designs that he owes to tradition, to observation of contemporary work, or to directions received from his employer. But he must have skill, skill, skill; otherwise his mastership is based on false pretences.

The necessity of architectural skill in an architect might seem so obvious as to need no statement, but you will find that many shallow thinkers lose sight of it. In its place they put knowledge and forget that to possess information is not to know how to use it. A man can make investigations all his life without ever learning how to investigate. Unless he knows how to use facts when he has ascertained them he will have no guide as to which facts are worth ascertaining and which are not, and his brain will become no tidy storehouse but rather a jackdaw's nest of aimless pilferings.

*

What exactly do I mean by "skill in designing"? I mean, first, the power of mentally analyzing a program and classing its requirements in the order of their relative importance. I mean, next, the power of making a pattern of spaces and solids in which those requirements in their proper order are each exactly satisfied. That pattern also must meet all the exigencies of logical construction and must have the unity that arrives with the consistent observance of geometric laws. I mean, again, the power of choosing rightly from available forms those forms that best express a building's nature to the eye of the beholder. I mean above all the acquired sensitiveness to small variations of shape and size that enables a designer to keep a design what is called "in scale": which is to say that every part of a complex whole is properly related to every other part.

Skill, according to this definition, is possessed by different architects in different degrees—that goes almost without saying. It is usually not possessed in a very high degree by those who are most anxious to convince you that other things are equally important. Without that skill an architect is not a person having any real claim to be heard on matters of town and regional planning, of preparation for national defense, of setting the stage for social amelioration; he is merely an outsider butting into other people's special provinces and making a fool of himself.

Given a profession of architects all skilled at their jobs, in what way are their services likely to be chiefly employed? I feel no certainty, personally. about the likelihood or unlikelihood of future architects forming themselves more generally than they do at present into groups or large firms. I feel no certainty as to whether the commonest architect in the future will be paid by salary, with his jobs found for him, or paid by scale with a sporting license to hunt jobs for himself. I feel no certainty as to whether architecture and civil engineering will remain separate professions indefinitely, or whether they will again become the one profession from which each has sprung. I feel no certainty as to whether our chief work in the near future will be rebuilding what has outlived its use or rebuilding what an enemy has violently destroyed. In none of these things can I predict what is going to happen, but I know what I wish should happen, what I hope for.

I hope that the tendency of architects to trade together in groups will increase. I think that this practice brings disadvantages that are all avoidable and advantages that can be gained in no other way. To take the disadvantages first, the group is beset by temptations toward a specialization that is good for the group commercially and bad for the individual intellectually, resulting in an eventual output of stock products that are just as good and no better than they need be to find a market. One man may do the schools, another man the hospitals, another housing, none of them ever sharpening his wits by tackling anything else. Worse still, the specialization may be not in jobs but in functions; one man may do all the planning, another the steelwork, another the dressing up, and yet another the pursuit and capture of potential employers. A group so organized can be useful in producing standardized work of very decent quality, but its members narrow as they age, and ought in the public interest to be liquidated by the State every five years and replaced by new.

Protection against these dangers of specialization, however, is not difficult. A group of architects, each with his special subject, can pool not only their expenses and receipts, but their ideas, can be as it were a parliament. One of them must be master, since business cannot be run by majority vote without delay and confusion. For every design also one man must be responsible, since architecture is an art and not a manufacture.

*

The advantages offered by groups are patent. Private architectural practice is precarious and combination lessens its risks. The pooled knowledge of several men's special subjects will be more than could be found in any one man's head.

Groups will be paid by scale, architectural departments by salary. Most of what I have said about the group applies also to the department, but with two essential differences. In the first place, the department will be hierarchical rather than egalitarian, the architects in it will be graded in position and authority. In the second place, work will come to it automatically and will not have to be sought in the open market or by means of competitions. I hope that success will crown the efforts being made by many of the big men in this branch of our profession to remove its admitted defects. That the name of the designer responsible for each building should always be published is a goal toward which great progress has already been made. That there should always be one designer responsible for each building and working with all allowable freedom is another principle that is gaining acceptance. A great many of you, after comparing the prospects offered by private practice and by salaried practice, will probably decide in favor of the salaried. To those that so decide I say, "Take care that the department you enter is one that provides you not only with a means of living but with something to live for. There are departments in which your powers will get full scope and recognition, and in these you may be as happy as any architect alive. There are others that you would regret having entered."

*

The eventual union between the professions of architecture and of civil engineering is a long-distance hope of mine, but one on which I set great store. While the post-Renaissance convention of architecture held, divorce between the two professions was understandable if not defensible; there were only certain things the haughty art was prepared to do, and the ways of doing them were well known and not such as to necessitate much consultation. Now that architecture has set out upon one of her periodic voyages of discovery, the exploration of all constructional possibilities is regarded as not only lawful but expedient. Such exploration can be made by an architect and an engineer hand in hand, but I cannot help thinking it could be made better still by a man who combined the two rôles in himself. It is to such men that we probably owe the masterpieces of the Middle Ages and a few of the remarkable works of today. Neither profession, however, is yet ready for unification with the other; architects in general are not yet sufficiently awake to the true logic of construction, nor engineers to the science of orderly design. A partnership between two friends, one of either profession, is however, perfectly possible already, and is an arrangement I would gladly see becoming usual

FRANK LLOYD WRIGHT TAKES ENGLAND

From editorial comment in The Architects' Journal, May 11, 1939

By the time this *Journal* appears the third of the four Sulgrave Manor sermons—for sermons they are, being concerned with architecture by way of nature and the art of living—will have been delivered by Frank Lloyd Wright at the R.I.B.A. At the evening meeting last Friday the audience overflowed into the aisles. The white-haired prophet was in form, disciples and disbelievers spellbound by his natural dignity, his obvious sincerity, his easy manner—or rather, his lack of anything so superficial as a manner. He has an irresistibly persuasive voice, mellow, smooth-flowing.

Frank Lloyd Wright is nothing if not

merican. But far from typically Amercan, of course, if such a state of being xists. We are apt to forget, because of he tie of language, that Americans are foreigners." Americans have an idiom not nly in an expression of their speech but a the expression of their being. They have o taboos, for instance, about communiating what might be termed a naturexperience: they don't mind, most of hem, admitting to a romantic reflex if hey feel that way. We do. When Frank loyd Wright tells us he was born in the rairie, "out in the long grasses," we shift neasily in our seats. When he talks of a uilding growing "out of the earth into he light" we get slightly clammy. But e gets away with it, for the good reason hat he believes it and lives it. His lyrical hilosophy, with its robust American tang, omes out full strength in his buildings. Ie remains the Walt Whitman of archiecture. An individualist.

We are inclined to sneer at the romantic lement in architecture at the moment. But we need to watch out. We cannot, or our good, banish this element from ur natural experience. Neither, alas, can we manufacture it.

The intensely metropolitanized environnent of England tends to develop in us langerously superficial intellectualities. Even sociological problems, which have inpired so much English work in recent rears, now are kept wrapped up in intelectual cellophane. We are getting numb. We don't know the real feel of the goods. We must learn to *feel* again, as well as o argue.

Frank Lloyd Wright has come along ust at the right moment. The romantic actor needed re-emphasizing. (Or, if that vord is still too dangerous, the *intuitive* element.) Frank Lloyd Wright is adminstering, if he'll forgive British crudity, a strong and necessary dose of salts. Pernaps he yet can save English progressives rom a new stylistic constipation.

The influence of Wright's work on Eurobean architects was described in the ournal last week by Nikolaus Pevsner. Though his monographs have been well known and well studied in the schools for nany years, England, lagging behind rchitecturally as usual, has taken a short eut and has arrived, very late, by way of Gropius and Le Corbusier rather than Wright. Consequently, having missed most of the earlier experience, she is now in langer of backsliding to another eclectiism, a stylism—a fifty-eighth variety, as Wright puts it, for the architectural garpage heap. Wright, of course, accuses Le Corbusier of being a stylist, creating a new esthetic-superficial, inorganic.

America, as is well known, has been even less directly influenced by Wright than has England. America has developed what she chooses to call the international *style* second-hand from Europe, and the best of her contemporary buildings certainly have no trace of an indigenous character—one of the essential ingredients of Wright's inspired work, whether in prairie, desert or suburb.

The latest phase of Wright's work—the "House on the Mesa" project, the houses designed for "Broadacre City," the executed house called "Fallingwater" shows his line of development converging with that which originated in Europe The line *converges*, having never crossed. For through all the fifty years of pioneering, Wright has progressed alone. Originator of the "free plan" principle and the idea of "bringing the garden into the house," Wright nevertheless in his earlier phase designed essentially in mass rather than in volume. Now, though he still clings to his "of the earth" idea, his work shows more of the quality of lightness and space.

To most of us, this laboring the "of the earth" idea is a weakness. Today, when so many building materials are synthetic, the natural effect of most buildings must be to *contrast* with their terrain, not to grow out of it. Is there not something to be said for the idea (equally romantic?) of a light and graceful building, poised on the earth like a visiting seagull? But he will be remembered for at least two fundamental innovations, both of which we still talk about today as if we

which we still talk about today as if we had just invented them ourselves. One was

the garden-into-the-house idea, the free plan; the other, consistent with it in the wider field of regional planning, was the decentralization principle, which he began to preach as soon as the motor-car assumed social significance. Later he developed it in his book, "The Disappearing City."

His latest development of this theme, the famous model of Broadacre City made by the Taliesin Fellowship in their Arizona encampment, somewhat overstates the case for decentralization. (It is planned on the basis of one acre to every family, so making every man an amateur agriculturist.) Broadacre City is not so well balanced sociologically as the Berkshire project of our own School of Planning. Nevertheless, in the realm of regional planning, Wright, walking again his own path alone, begins to converge with the newly developing "geotechnic" school of thought so ably propounded by Lewis Mumford.

So, after many tireless years of preaching, words and deeds, to the heathen, Frank Lloyd Wright should feel that at last he has gained disciples. To us in England he brings not merely a warning but a fresh line of thought—even to the youngest of us who thought we were way ahead of the times.

THANKS TO THE CHINESE

By Grace Norman-Wilcox

Condensed from California Arts & Architecture, March, 1938

The Chinese were casting fine bronze ritual vessels while you and I were proudly calling ourselves Structural Artists because we had learned to hew a round log into a square beam. The Chinese were making small objects of cast glass, for burial in graves, twenty centuries before we could even make glass in sheets large enough for mirrors or window-panes. There were Chinese masters in the art of carved lacquer-work while we were still getting by with a rude paint made of buttermilk and red oxide of iron.

In regular cycles, Chinese "revivals" have revitalized Occidental design and taste. From the opulent Charles II to thrifty Queen Victoria, from elaborate Chippendale to the clean-limbed "moderne," China has supplied a bright pickinggarden. The word "chinoiserie" has become a commonplace, to indicate the perennial evidences of our borrowing.

When we pay into three or four figures for single examples of the earlier English ceramics, do we remember that these wares were only an attempt to imitate the true hard-paste porcelain China had been producing for seven or eight centuries? The very name itself is a corruption of "podcellana," meaning sea-shell, which the early Portuguese traders had used to describe the shell-like wares of China.

Or perhaps we think of the brocades,

the rich damasks, the fine lampas and embroidery of the Mediterranean. Well, the secret of silk-culture and silk-weaving had to be smuggled out of China to Byzantium, fourteen hundred years ago, by hiding silkworm cocoons in the pilgrim's staff. Even the word silk comes from "Seras," the ancient name for the Chinese people. The Japanese, too, learned silkculture from the Chinese. And so grateful were they to the Japanese princess who stole the guarded secret, that she became a deity!

*

We speak of the "ancient" craft guild of pewtering, in medieval Europe. But the Chinese had cast small pewter figures and models, for burial with the dead, since before the time of Christ. When Europe was little more than beginning, the Ming dynasty pewterers of China were already inlaying their work with fine patterns of brass or copper.

When we comb the markets for our "antique" Sandwich glass of 70 or 80 years ago, we forget that the Chinese have ten centuries or more of glassworking tradition. While we boast of "new" enamels, we forget that they were discovered, and discarded, by the Chinese centuries ago. Everything we do, it sometimes seems, has been done before, and better, by the Chinese.

But the Chinese never really permit themselves to remind us of our debt. They remain serene—and maybe a little contemptuous, underneath, of our attempts to imitate the arts we understand so superficially, and adopt so lightly.

THEY SAY-

"If I were asked to build a building in London—which God forbid!—I should not know what to do."—FRANK LLOYD WRIGHT.

"The architect who comes away from the New York World's Fair is more confused than enlightened."—HARVEY WILEY COR-BETT.

"Housing is still the one field in which the opportunity to rectify mistakes is smallest and in which the temptation to do something silly is greatest."—CHARLES ABRAMS.

"Whatever success I have been able to obtain is entirely due to our system of open competition."—PERCY THOMAS, past president, R.I.B.A., on the occasion of his receiving the Royal Gold Medal.

"Beauty must come back to the useful arts, and the distinction between the fine and the useful arts be forgotten. If history were truly told, if life were nobly spent, it would be no longer easy or possible to distinguish the one from the other."—RALPH WALDO EMERSON.

"Public men and other leaders still talk of home ownership as being necessary to the salvation of empires just as presidents and monarchs still talk of large families and still urge the couple on a thousand a year to have ten children."—DR. ROBERT W. KELSO, University of Michigan.

"Architects who have aimed at acquiring manual skill without scholarship have never been able to reach a position of authority to correspond to their pains, while those who relied only upon theories and scholarship were obviously hunting the shadow, not the substance. . . . One who professes himself an architect should be well versed in both directions."— VITRUVIUS, First Century B. C.

"The more I visit housing projects, the more I am impressed by the fact that housing is not just a question of improving an economic situation . . . not just a question of giving people better shelter for less money. . . . The aim is to encourage certain habits and situations by making it easy to live according to certain standards set up in the home environment."—ELEANOR ROOSEVELT.

MARGINAL NOTES ON ARCHITECTURE

By William Lescaze

Excerpts from an article in The Virginia Quarterly Review, Spring, 1939

All the great architectures of the past-Greek, Renaissance, Gothic-have had in common definite characteristics which made them "architecture," which transcended their external forms. Characteristic No. 1: every great architecture has been, first of all, essentially of its own time, growing out of the life of that time, constructing edifices for people living at that time, for their requirements at that time. Characteristic No. 2: every great architecture has made use of the materials available at that time. Characteristic No. 3: every great architecture has made use of the methods of construction known at that time. It is the combination of these characteristics, the knowledge of the time, the understanding of the people and of the requirements of that time, the use of materials of that time according to the methods of construction of that time, which has resulted in forms often so beautiful, forms in each period so different, and each telling in its own particular language the story of its own time. Note that this has been true regardless of the time-fourth, twelfth, or eighteenth centuries; regardless of the requirementstemple, cathedral, or palace; regardless of the materials-brick, marble, or stone. Why could it not be equally true today, in our time, the twentieth century, regardless of the requirements-apartment house, post office, or school building, regardless of the materials-concrete, steel, or glass? Of course it is still true today.

CONFUSION

Not long ago a manufacturer advertised nationally: "'New American' is a house designed from the inside out." So far it sounds all right. Somebody had learned that much from elementary architecture. But then confusion entered: "Its exterior may be any architectural style you wish -Georgian, French or English Colonial, or Modern-as you please!" This doesn't make sense. Everyone can see that a house cannot possibly be truthfully designed from the inside out and at the same time have any one of a number of exteriors. As a matter of fact, just the opposite process is suggested here: you are first asked to take a fancy to one type of exterior. Having started that way-the wrong wayyou get an incongruous house, since obviously its interior will be more or less arranged for requirements of today, and its exterior will be Georgian, while the really good Georgian house had a Georgian interior and a Georgian exterior.

MATERIALS

It is an error to attribute to new materials the advent of modern architecture. It is another error to think that modern architecture means necessarily a building of reenforced concrete or large surfaces of glass. New materials per se do not suggest new forms, but they do make new forms feasible. All the Pullman cars built of steel were at first grained to look like wood. None of the many prefabricated houses brought forth a single new form. Since different materials possess different properties, they are seldom interchangeable. Materials and the knowledge of their properties are, in fact, part of design. Selection dictated by one factor alone is rare, although cost is perhaps the one which influences most decisions.

It is always the same story. You have got to analyze the requirements of architectural problems and you have got to be able to organize them. The measure of your talent is the quality of the design which, in the process, you have given to that organized solution. Obviously, with each line you fix on the paper there must be in your mind an intent of the form and an apprehension of the material.

Forms

Walt Whitman said: "You shall no longer take things at second or third hand, nor look through the eyes of the dead, nor feed on the specters in the books." It is about time we did begin in earnest to build for the man who is alive today, for the America which is here today-to build good modern architecture. Its forms are bound to be different from those of the past-not for the sake, however, of being different. That's childish. But who can pretend that our requirements today resemble at all the requirements of fifty years ago? Not only have the requirements of our people changed, but also their social habits, their modes of living. In addition, our materials and our methods of construction have changed. No wonder, then, if the forms most appropriate to the requirements of our time are not likely to resemble the forms of the past. The most appropriate ones will be the most beautiful.

Credo

Here is a given method which makes sense. Here is a way which is honest and direct. Here is an architecture which says yes to life and understands life. What soil more fertile than America for such virtues: twentieth century beauty, honesty, straightforwardness? Where else is life as actively lived or as highly valued as in America? Do we not know yet our own civilization, its strength, its achievements? Are we not aware of this independent, this self-governed, self-sustaining democracy? We do know what it means to be an American, a free and clear-thinking man of the twentieth century. We also know that he deserves, and that he is capable of, an equally free, equally clearthinking architecture, built for his use, expressive of himself, his ideas, his ideals. his own time.

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THE DIARY

Strong Vel. Saylor

Friday, June 16 .- With this experience in arranging over 700 entries in the Insulux Glass Block Competition No. 1, I feel moved to climb to a house top and shout a few remarks about architectural competitions in general. Why is it that competitors, judging from their offerings, will not read a program? They were required in this particular competition to render perspective in pen and ink, yet some of them sent in wash drawings. The composition on the sheet required that the longer dimension of the latter be the vertical, yet some made it the horizontal. A mandatory paragraph regarding drawings listed those required, and added, "no more and no less;" yet some persist in giving more, some less. Another provision of the program called for a statement as to the use of the material which, it seemed, carried with it the indication that this statement was to be used by the jury in arriving at a judgment. Nevertheless many of these statements were signed with the competitor's name and address, ignoring the anonymity provision. Even in the matter of sheet dimensions-a field where the architect should not make mistakes-entries appeared on smaller and larger sheets; also on paper, though stiff board was specifically required. And perhaps the most tragic oversight of all was for the competitor to omit enclosing his name and address in the sealed envelope bearing his nom-de-plume. The moral of this sermon is, read the program, and check every item in it.

*

Tuesday, June 20.—Overheard in a gallery of contemporary paintings, The Museum of Modern Art, New York, words spoken by a lady with a lorgnette, "Oh, I like that—I hope to heaven it's good!"

Friday, June 23.-Two callers today from widely separated home bases-Hamilton Beatty from Madison, Wis., and Harold Willerup from Copenhagen, Denmark. Madison has a growing community of modern houses in a woodland setting, most of them designed by Strang & Beatty under the name Planning Associates. We were asking about the cost of such houses in comparison with the traditional typesone of the hurdles of the modern house apparently being the fact that they frequently seem to cost more. Beatty claims that the contrary is true in his experience, and that as a matter of fact the modern house, free of its stylistic clichés, is shelter at the lowest cost compatible with convenience and desirability.

Tuesday, June 27 .- James C. Mackenzie has a rather interesting theory regarding architectural influences in American history. Looking back at the early days, our factory architecture, such as one found around New England ports, was obviously derived from our house architecture. Here were the same size windows, to some extent the same details, and a complacent failure to differentiate between the activities of living and working. As the years went on, we finally tackled the job of the factory, and quite recently have done rather well with it. With the thought, however, that possibly American architects have a single-track mind, Mackenzie feels now that our houses are being influenced by our factories. Horizontal bands of windows, flat roofs, stark walls have proved excellent for factory use, so we try to make our houses assimilate the same motifs.

*

Friday, June 30.—Ralph Walker tells me he is going to Japan to see what all these converts to the early Japanese architecture are so enthusiastic about.

Washington, Thursday, July 6 .- In looking over the Smithsonian competition drawings today with Phil Maher, he was disturbed over what seems to him a recent change in architectural analysis. Probably most architects will agree with him in believing that the problem of designing a beautiful building is more difficult than the problem of coordinating its many functions and space relationships to make a workable whole. Maher feels that in our analysis of architectural designs today we are prone to measure the success of the design by how well a building works rather than how pleasing it is to visit. We are apt to lay great stress on saving half a dozen steps in a plan, whereas the saving of those steps may produce a building that people generally will not care to visit-few steps or many.

This evening some 400 men and women celebrated at a banquet the 103rd anniversary of the founding of the Supervising Architect's Office. See page 46.

Monday, July 10.—Robert de Graff, who has recently jostled the publishing world with the production of popular classics and best-selling fiction at twenty-five cents the volume, tells us that this is his contribution to the problem of the condensed modern library for the functional modern house.

Wednesday, July 12 .- In Washington recently, Sir Kenneth Clark, the energetic director of The National Museum, London, spoke at the annual dinner of the American Federation of Art. I gathered that Sir Kenneth has something of a grudge against the decorators. He believes that they are largely instrumental in lessening the acquisition of paintings by the public. Possibly we would be buying and hanging in our own homes a lot more of the contemporary work-the comparatively few of these that each of us may like-if our interior decorators were not so insistent upon bare walls. Perhaps after all, the choice of bare walls is no more the fault of the decorators than it is of the public, reacting from the time when any square foot of interior wall surface beckoned a painting, a print, or even an informal photograph of Aunt Mary and Uncle Tom on their honeymoon.

Friday, July 14.-We had a foretaste of John Gloag's enthusiasm upon his visit to the World's Fair before he sailed back to England. Gloag thought it was the best Fair he had ever seen-better than Glasgow, Stockholm, Brussels and Paris. Now that he is back in England telling them about it, the English architectural editors are inclined to mistrust his judgment: "Bigger, certainly; more ingenious, perhaps; but surely not so well designed? There seems to be a few distinguished buildings, mostly the foreign pavilions, but the rest appear to be oppressively modernistic, and hopelessly out of scale, a series of rounded shapes as soft and unformed as the face of a young novelist."

Saturday, July 15.—It had to be someone sooner or later, and it happens to have been Alfonso Laurent Cik, a Yugoslav architect, who is publicly charged with making life unbearable through a modern version of art. In Barcelona the other day, his death was demanded for painting the walls of prison cells "with weird, big and little, black and white cubes and multicolored circles." Within these cells scores of Nationalists are said to have been left to the torture of their eyes in an effort to gain information of Franco's military movements. Well, some of us, out of jail, are not so happy either.

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LETTERS

World Fairs

Forum:

... I could not resist sending this letter of wholesome praise for your June World's Fair Souvenir issue of THE ARCHITECTURAL FORUM.

To say the least, it is magnificent and should be an inspiration to every one of your subscribers the country over to see, and learn, no matter what the cost, for the returns to them would be more than tenfold, and we could continue to prove to the world as we have so ably done at these Fairs that America still leads the world in the builders' forward march in a pageantry of design, materials, and structure that is colorful, desirable, and durable.

I have made ten trips to the New York World's Fair so far to study its splendor and therefore know whereof I speak. In conclusion, once again, I salute THE ARCHITECTURAL FORUM and say it is a privilege and a pleasure to be one of your subscribers.

IRVING KOPLO

Forum.

Philadelphia, Pa.

Atrocious inaccuracy in the pages of THE ARCHITECTURAL FORUM, such as "Fraser's 150 ft. Statue of Washington" on yellow insert sheet following page 48 of your June issue and "Silver lions which flank the entrance" on Great Britain page, make me doubtful of future accuracy of forthcoming issues of THE ARCHITECTURAL FORUM, for which I have just sent you my renewal subscription. The Washington statue is approximately 65 ft. high including its base. The lions flanking the entrance are golden. The word "atrocious" is your own on page following page 452.

JOHN S. VAN GILDER

Knoxville, Tenn.

To many Americans it is impossible to exaggerate the size of George Washington. However such patriotic sentiments have no place in research. Re British lions, the rumor persists that these Monarchs of the Empire were off the gold standard when FORUM research was made.—Ep.

Forum:

I want to thank you for the magnificent Fair issue of THE FORUM. Although every special issue of THE FORUM seems to be better than the preceding one, I believe you have outdone yourself both editorially and photographically, in the handling of this particularly difficult assignment. It is an outstanding record of 1939 design trends, which, I am certain, will be of great value in our reference library. ROBERT HELLER

New York, N. Y.

30

Forum:

... I wish to say that I consider the World's Fair issue of THE FORUM the most outstanding one that I have seen in some time. Congratulations!

NORMAN E. PIETAN Fairmont, Minn.

Forum:

... I am surprised and disappointed that no architectural credit is mentioned in your illustrations of the Federal Building and the Court of Peace at the New York World's Fair. I believe that THE FORUM is always fair in giving credit where credit is due, and it seems unfortunate, to me, not to be listed as the architect for this group of buildings, when mention has been made for practically all other buildings including the corresponding Federal Building at the San Francisco Fair. . . .

... The working drawings and specifications of the Federal Building, and also the preliminary working drawings for the eight other buildings, forming the Court of Peace, were completed in the Office of the Supervising Architect, Procurement Division, and I was the architect...

HOWARD L. CHENEY

Chicago, Ill.

To Architect Cheney profound apologies for an inexcusable error of omission in failing to credit this much admired work—Ep.

Forum:

This will express appreciation of your generous showing of the Yerba Buena Club at the Golden Gate International Exposition. The landscaping both inside and out forms a very major part of the design and I should like to ask that credit be given for this to the Misses Worn of San Francisco. The plant material is so well chosen and placed that I wish all might see it.

WILLIAM WILSON WURSTER San Francisco, Calif.

Pigeons

Forum:

Has any method been developed among owners of public buildings, banks, and office buildings to keep pigeons off the facade of the buildings. We are having trouble with pigeons soiling the steps below, the facade, and occasionally annoying some of our customers. Of course we do not want to harm the pigeons, but the damage is becoming more and more pronounced. . . .

BERT H. WHITE

Liberty Bank Buffalo, N. Y. After consultation with pigeonproofing experts THE FORUM submits the following report on pigeonproofing methods:

If the pigeon menace is serious, a permit to trap the birds is obtained from the Board of Health. The Society for the Prevention of Cruelty to Animals then steps in, patiently catches the pigeons in humane traps, releases them at some distant point or, if their condition warrants it, humanely disposes of them. Common or "rat pigeons" will not return if freed twenty miles from their original home. However, if enticed by food, other pigeons will take over the building, and the trapping process must be continued.

The alternate solution, a more expensive but surer one, is to install a patented appliance of sheet metal studded with points sharp enough to prevent pigeons from roosting, not so sharp as to injure them. This method is endorsed by the Building Superintendent of the N. Y. Public Library who has found that it prevents pigeon-damage to the building and has resulted in a notable saving of clothing. It is also approved by the S.P.C.A. Developed by Stanley's Roofing & Sheet Metal Works, 523 West 184th St., New York City, it is in use on several New York buildings, among them the Union Square branch of the Morris Plan Industrial Bank and Grant's Tomb.

Two other methods have been tried by depigeoners and discarded as unsatisfactory: 1) enclosing projections with wire mesh, 2) spreading chemicals on the projections. Pigeons get caught in the wire mesh. This constitutes a cruelty and the S.P.C.A. will see to it that the mesh is removed. Further, an enmeshed pigeon has been known to draw large crowds of angry pigeon-defenders who disperse only after the costly operation of freeing the bird under the supervision of the fire and police departments.

Of the chemicals, the non-poisonous disinfectants depend on their odor to discourage pigeon settlements. Unfortunately, the odor is so pungent that it serves to deter humans far more readily than pigeons. Another drawback is the difficulty in maintaining an adequate application of the mixture because a) rain dissolves it, b) the pigeons eat it.—ED.

Proud

Forum:

... We wish to register a complaint. The E. L. Walbridge job which you feature in the May issue, was supplied entirely by this company—lumber, millwork, building material, hardware and paint. It took us nineteen months to deliver the material. The job is located 31 miles from the railroad in a mountainous section. In all of that time we never delayed the job once and never had any item rejected. The architect complimented us highly on service and quality. We feel very proud of this....

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- J. Sarvis, Architect. Auburn Prison (N. Y.). William E.
- Haugaard, Architect.
- Central School, Glencoe, III. Arm-strong, Furst & Tilton, Architects. Veterans Barracks, Bath, N.Y.

Refugio Co. Hospital, Texas. Hedrick & Lindsley & I. H.Dunbar, Arch. Hillsdale Hospital, Hillsdale, Mich. L. J. Sarvis, Architect.

- West Lafayette High School, Lafayette, Ind. Walter Scholer, Arch.
- Hawthorn & Irving Schools, Bozeman, Mont. Fred. F. Willson, Arch.
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- Williamsburg Restoration, Williamsburg, Virginia.

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Earle S. Draper, Theodore B. Parker, Harry B. Tour, Roland A. Wank

In this issue THE FORUM tells for the first time the story of the planning of TVA. With many of the following pages devoted to its works it is to be regretted that but this brief mention can be made of its men.

TVA is a large organization. Over 1,000 engineers, to single out but one technical group, are employed on its staff. For most of the material illustrated in this issue two branches of the organization are primarily responsible. Site planning and architectural design of non-engineering structures are carried on in the **Department of Regional Planning Studies**, under the direction of Earle S. Draper. Town planning and site development plans are prepared in the **Community Planning Division** of that department, under Carroll A. Towne, Chief. Plans are reviewed by Tracy B. Augur, Chief of the Planning Staff, and Roland A. Wank, member of the Planning Staff and Principal Architect. Architectural design of all non-engineering works is entrusted to the same division, under the direct or consulting supervision of the Principal Architect.

Large engineering projects (dams, locks, powerhouses, bridges) are the primary responsibility of the engineering departments, under Theodore B. Parker, Chief Engineer, Carl A. Bock and Barton M. Jones, Consulting Engineers, and Harry A. Hageman, Chief Design Engineer. The architectural aspects of engineering projects are handled in collaboration between Roland A. Wank, whose primary responsibilities are design and general consultancy, and Harry B. Tour, Head Architect, who supervises the production and coordination of architectural working drawings, specifications and inspection. Special mention should be made of Ross M. Riegel, Head Hydraulic Engineer, who was in direct charge of engineering plans for the Norris and Wheeler dams, Raymond A. Hopkins, Head Electrical Engineer, who supervised all illuminating work, and Erwin Harsch, Senior Bridge Engineer, responsible for the highway structures shown. The Bureau of Reclamation and its consulting architect, Gordon B. Kaufmann, also collaborated on the Norris and Wheeler dams. Albert I. Brady, Louis Grandgent, Charles I. Barber and Richard Alger occupied key positions at various times in connection with architectural work.

Displays and murals which appear on some of the work shown are by the Graphic Arts Section, under the leadership of Charles Krutch, who was also responsible for the greater part of the photographs used in this article.

-The Editors


If, sometime in the summer of 1933, a flyer had climbed into his plane at Paducah, and made a leisurely trip following the Tennessee River for 650 twisting miles, he would have seen a sluggish stream, heavy with brown silt, pushing its load down to the Mississippi. He would have passed over hundreds of miles of river bottom too shallow for even the smallest commercial vessel. He would have seen only two plants—Wilson and Hale's Bar—where a fraction of the Tennessee's 500-foot drop was being used for power. On the bottomlands and around the towns he might have seen marks of the spring floods; on the hillsides, the tattered shacks of the nation's poorest farmers. He would have seen scarcely a single farmhouse with a coat of paint on it.

Had he been an agronomist he would have known that the color of the river meant a freight worth countless millions sweeping itself into the Gulf of Mexico, that the gullies meant land destroyed almost beyond hope of rehabilitation, that no humans, however industrious, could maintain any reasonable standard of living on this land. Worse still, he would have known that to wring out a miserable existence these farmers were destroying what was left of the land as surely

as if they had set out to dynamite away every last foot of fertile topsoil.

)OHIO RIVER

In less than a day's easy flying the plane would have passed through the heart of a valley 40,000 miles square, pieced together out of the fragments of seven States, the home of 2,000,000 people, most of whom live on small farms. Even on such a swift trip, from a vantage point a mile up, many reasons for the creation of the Tennessee Valley Authority on May 18 of that year would have been apparent.

Pictures Inc.

MOUTH

WILSON DAM

HALES BAR DAM

Should this same flight be repeated around 1945, hardly a recognizable sign of the former course will remain. For one thing, the river will have practically disappeared. From the dam at Gilbertsville a lake will extend for 184 miles, its edges reaching like fingers into hundreds of tree-lined coves. Its water will no longer be red with silt. From Pickwick, another lake, this time for 53 miles. From Wilson, Wheeler, Hale's Bar, Chickamauga, Watt's Bar, Coulter Shoals—more lakes, a practically continuous chain for more than 600 miles. Up in the hills, the two great flood storage dams of Norris and Hiwassee, and behind them lakes dotted with pleasure boats and fringed with parks. Through lock after lock, freight vessels from the Great Lakes and the Gulf of Mexico, going up and down a channel never less than nine feet deep. In the rural districts, a new sight: in addition to the great high-tension network, a cluster of small lines carrying power and a new way of living to the farms. On the land, many of the gullies will be gone, with check dams and young trees beginning the slow process of rebuilding the soil; on the farms, the fantastic curled shape of terraces, winding around the sides of the hills, holding back the water and the topsoil. The river will be tamed, and there will be no more floods. Today, if you fly east and northeast from Pickwick, you can already see some of these things.



This is something new in our country: the unified development of a region. In a dozen control buildings a handful of men will sit, and as they push buttons and turn switches the river will do as they wish. Wilson will call Norris in the dry season and say "send down some water; the channel is getting low." At Norris the sluice gates will open and let down the water. During the mosquito breeding season orders will go down the river: "Lower the reservoirs six inches." Again the gates will open and the water level will sink. The larvae of the mosquitoes will be left high in the sun to die, and malaria will be less of a menace to the Valley. Hundreds of rainfall stations, some completely automatic, will send daily reports to the men at the dams, and far in advance of the flood season the great storage reservoirs at Norris and Hiwassee will go down to make room for the coming flood waters. These will be held back to help the towns on the middle Mississippi. Throughout the Valley, thousands of men are already working in this coordinated plan: TVA agronomists, specialists from the Department of Agriculture, experts from the land grant colleges of the seven States, foresters, geologists, farmers, power and mechanical engineers, all patiently working to a common end: to keep the soil on the land, and the water in the rivers; to develop new types of soil-conserving crops; to find ways of using power to improve the lives of the people; to further the development of new industries to make work for the surplus agricultural population. This is the unified regional plan. It is a high point in man's ancient struggle to turn the forces of Nature to his own ends.











BACKGROUND FOR A REGIONAL PLAN

The Tennessee Valley was in the undisturbed possession of the Cherokees and Chickasaws until the latter part of the eighteenth century. Small in numbers (perhaps 16,000), the Indians had a natural economy whose demands did not strain the resources of the land. They had Federal treaties securing their rights to the land. With the coming of the whites, whose rustic virtues were equalled only by their greed for land and envy of the prosperity of an "inferior" race, came murder, robbery, concentration camps, and in 1835, expulsion of the natives. This change in the life of the Valley is not the most savory part of U. S. history, nor is it unique. Its present importance is that it marked the beginning of the destruction of the land.

Corn was the main crop of the whites, and with an initial abundance of land, it became the practice to abandon fields ruined by the corn, and to clear new ones. With almost sub-tropical conditions the Valley became known for its agricultural wealth, and the big cotton planters began to come, acquiring the holdings of smaller farmers who were pushed farther and farther back into the unproductive hill country. The building of the railroad in 1850 further intensified the degree of exploitation, and the Valley took on a definitely colonial character, raising only crops for export, depending on the outside for its most elementary needs. By 1880 it would have been apparent, to anyone who had bothered to notice, that the squandering of resources was leading to ruin. Corn and cotton destroyed the soil; over-cutting in the forests let loose millions of tons of water to erode the abandoned fields. No fund, obviously, was set aside for depreciation, and the wealth was drained out as surely as if the Valley had been India, or Mexico, or Ireland. The peak of this "prosperity" was reached in 1910. Today the blast furnaces no longer exist, lumber production has dropped to one-third, coal to about three-quarters. Much of the mineral wealth is still in the soil; the land on top presents the most serious problem: according to University of Tennessee estimates, some 14,000,000 acres have lost 75 to 100 per cent of their topsoil. For an indication of the extent of this destruction these figures can be compared with the 8,000,000 acres of crop land reported in 1929.

The pattern of the Tennessee Valley is an extreme example of a familiar U. S. story: first the settlers pushed out the Indians, then, when it was safe, the big planters squeezed out the settlers, and the lumbermen stripped the forests and the coal operators skimmed the cream off the mines. Now they are all ruined and the people must pay the bill—a bill that need never have been presented. By 1933 it became apparent that there were two ways to pay the bill, with little possibility of further delay: a permanent dole for the stranded population, or rehabilitation. The Congress, in creating the Tennessee Valley Authority, chose the latter.

The history of TVA antedates the New Deal by something over a century. Improvement of the river as a navigable waterway was recommended by Calhoun in 1824, and a few canals were built. Between 1852 and 1918 no fewer than 27 surveys of the river and its tributaries were authorized. A report of the National Waterways Commission in 1906 established the major outlines of TVA by recommending the construction of multiple-purpose dams for flood control, navigation and power. Five years later these outlines were filled in by a comprehensive law providing for the reforestation of certain watersheds. After the Muscle Shoals development there was a deluge of bills most of which proposed to turn this plant over to private operators. The only two which got through both houses of Congress, however, were in all important respects prototypes of the present TVA act; they were vetoed. One hundred years of sporadic activity had left the river far from navigable, and finally, in 1930, an Army project for a complete series of navigation dams was authorized. Three years later TVA took over. A major reason for this long preoccupation with the Valley is indicated by the fact that of nine locations recommended for munitions plants during the last war, eight were in this region.

There are a number of ways of making a river navigable. One can build many low dams or a few high ones. Both of these possibilities were envisioned in the Army reports. The small dams are less costly than the large ones, but they are good only for navigation. A third proposal made by the Army suggested that since dams were to be built anyway, it might be well to consider flood control and electric power too. As we have just seen, this idea was far from new. The reasons were obvious: even small savings in property damage on the Tennessee and Mississippi run into the millions, and these could in all fairness be charged against the increased cost of the project; also power is easy to obtain once a dam is built, and provides an income for its amortization. The instructions of Congress to the TVA included provision for all three purposes and a fourth activity was recommended: the study of ways and means of rehabilitating the Valley and its people.

It is one thing to build a series of dams for navigation or power; it is quite another when the program is expanded to the stage of a regional plan, and this difference is not only one of size, but of kind. In remodeling a region according to a unified scheme of development, no action can be considered except as part of the total activity.

Darwin once suggested that the amount of red clover in a neighborhood might depend to an appreciable extent on the number of cats, an apparently fantastic sequence he explained by the fact that cats eat field mice, the mice eat the bees' nests, and the bees pollinate the clover. Any change in this dynamic natural balance would be felt all along the line. A regional plan works in somewhat the same fashion. Thus the preoccupation of TVA engineers with the problem of silt in storage reservoirs was partly responsible for the development of a new quick-freezing process for berries and fruits; the construction of a high storage dam led to the introduction of trout fishing; a program of flood control produced a zoning ordinance in Guntersville, Alabama. Again the seemingly unrelated sequences become clear only as one follows the intermediate steps.

This is the important thing about regional planning: all activities are inescapably interlocked, and no action can be isolated. The tremendous job of the planner, who must be a collective entity, not an individual, is to make all elements in the program work to effect a predetermined result. This is the most exciting and significant fact in TVA.



PICTURE OF A REGIONAL PLAN

The regional plan begins with land and people and ends with them. This diagram attempts to indicate something of what happens in between, the major activities and their rather complex relationships.

Big as TVA is, its plan is bigger. Thus, while it controls the design and building of its dams, storage reservoirs and power stations, it must share control of navigation with the Army. It can further soil conservation only by persuasion, and by cooperation with a host of local and national agencies. Ingenious new machines and processes, developed by TVA engineers in collaboration with the State colleges, will appear to help the farmer only if manufacturers can be persuaded to make them. Industries, vitally important to the plan, can only be stimulated. Its power will help the Valley farmer only if he can be shown how to raise his income. Public understanding and cooperative action are indispensable for improved education, health and government. All of which means slow progress and an elaborate organizational apparatus.

Such is the logic of the regional plan, however, that it ultimately compels collaboration between the most diverse interests, simply because it is to their advantage. Thus the industries are beginning to appear; the farmers are building community refrigerators and diversifying their crops and terracing their land; manufacturers are making new farm tools (and using TVA's soil conservation propaganda to sell them); and terminals are going up on the river.

The plan is not an instrument of regimentation or coercion; it is merely a guide to action. Today, with the work half done, under the handicaps of inexperience, apathy and opposition, it has already begun to work.

THE PROGRAM IN ACTION

TVA has completed six years of existence, and its main program is better than half finished. There is already enough to indicate the scope and diversity of a regional plan in operation:

DAMS: Norris, Wheeler and Pickwick dams have been completed; Guntersville, Chickamauga and Hiwassee are approaching completion; two others are in earlier stages of construction. By 1945 the reconstruction of the river should be substantially completed.

POWER: About 6,600 miles of rural lines, 84 per cent of which go to areas not previously served; 1,500 miles of high voltage lines; 105,800 domestic consumers, about one-third of whom live on farms or in villages. Valley people, despite the country's lowest incomes, now use 58 per cent more current than in 1929, compared to a 22 per cent increase for the nation.

FERTILIZER: Munitions plants at Wilson Dam have been adapted to make new, highly concentrated phosphatic fertilizers, now being tested by experiment stations in 40 States and by 25,000 farmers in 20 States. The purpose is soil and water conservation, and defense. Phosphorus, vital for munitions, was never available in sufficient quantities during the last war.

REFORESTATION: Some 84,000,000 seedlings planted on 60,000 gullied, abandoned acres. Most were planted by CCC boys, 5,000,000 by the farmers. TVA nurseries produce 24,000,000 seedlings annually.

AGRICULTURAL INDUSTRIES: In cooperation with State land grant universities, machines and processes have been developed to boost low rural incomes and to help save the soil. They include a low cost corrugated seeder, community refrigerators, hay-driers, a new quick-freezing process, improved cotton seed oil extraction equipment.

COMMUNITIES: At Norris, Pickwick, Wheeler, other dam sites. The Authority manages about 1,000 single houses, 22 dormitories, schools, water systems, fire stations, sewage disposal systems, roads, streets, walks. Assistance in replanning or rebuilding a half dozen towns affected by the new reservoirs.

EDUCATIONAL: Courses given in cooperation with local schools and State universities. In one year, over 5,000 classes for adults on subjects ranging from simple vocational training to regional planning and engineering. More than 6,000 meetings for job training. The basic policy is to train the personnel to fill technical and executive positions where possible.

RECREATION: Over 1,500,000 visitors last year, suggesting the tourist industry as a new source of Valley income. Norris reservoir alone has about 1,800 pleasure craft. Parks with facilities for swimming, boating, riding, camping, picnics, etc., are built as demonstrations. Land is leased to State and local park agencies at nominal sums and to private concessionaires. About six parks of considerable size have been completed.

This is the program in action. It has directly involved 12,000 to 16,000 people in the work, twice as many farmers, thousands of workers in outside manufacturing centers where most of TVA's \$20,000,000 worth of annual purchases are made. Indirectly it has affected almost the entire population of the Valley and its surrounding territory.

"Make no little plans," said Daniel Burnham in the booming '90s; and many there were who made big ones. But it remained for TVA, half a century later, to make the biggest—and to make it work.



DAMS The correct placing of dams is the ticklish job of the Project Planning Bureau. Surveys of sites are made to determine optimum topographical and geological conditions; these are then checked against the nine-foot channel requirement in the Act. Dam heights determine flood storage levels in the reservoirs, and these must be balanced against damages to communities, farm lands, highways and railroads. In the location and design of locks the Army has a controlling voice. Power as a by-product of flood control must be considered in relation to the entire development as well as to individual dams. Capital investment must be balanced not only against flood control benefits, navigation facilities and general economic benefits to the region, but also against income from power sales.

Working with so varied and complex a set of factors, this bureau is of basic importance in the regional plan. Not only do its activities set in motion a chain of consequences reaching out to affect the entire planning structure, but as part of this structure it must anticipate the consequences well in advance. Once a dam is up there is little that can be done about mistakes.









NORRIS All but two of TVA's dams are main river dams -long, comparatively low structures with a lock at one end and a powerhouse at the other. More dramatic, for sheer concentrated bulk of gray concrete, are the high flood-storage dams such as Norris, located not on the Tennessee but on its tributaries, whose function is to impound immense quantities of water during the flood season and to release it downriver during the dry summer months. Because the lives of such structures as these are counted in centuries, great efforts have been made by TVA designers to eliminate features which would tend to "date" them, such as the absurd pseudo-Classic elements which mar the otherwise handsome dam at Muscle Shoals. And because these are public structures, to be operated by the people in their own interests for generations to come, the element of maintenance takes on new significance. The result of both considerations at TVA has been the simplest, most durable and most functional expression possible. The perfect harmony between dam and auxiliary structures, illustrated on the opposite page, indicates the success of the collaboration between the engineers and the architects.





The treatment of the immediate vicinity of the dam is indicated by the plan. Wheeler community is small, with one group of houses along the edge of the lake and another on a nearby hill. The service building contains the community store, a gas station, and small municipal offices. Recreational facilities for tourists and inhabitants of nearby towns are provided about half a mile below the dam.





PICKWICK The tremendous earth dam, shown in the air view and on the opposite page, is the most distinctive feature of Pickwick dam, and was necessitated by the low plain which forms one side of the river. The general scheme follows that of other main-river dams such as Wheeler, with powerhouse and lock on opposite sides of the river; this separation is made whenever objectionable cross-currents at the lock entrance cannot be prevented.

Completed only recently, Pickwick shows a number of design improvements over its predecessors. The twin buildings for visitors, visible at the left end of the earth embankment, are handsome, simple structures which fit well into their surroundings. The streamlined gantry cranes, shown in several of the photographs, represent a drastic change from those used at Wheeler. Perhaps the most exciting elements to be found at Pickwick are the various steel structures, typical of which is the beautifully designed unloading crane on the opposite page. The powerhouse above is about one-third of its ultimate length.











GUNTERSVILLE It will be noted, after an examination of the preceding pages, that not only have certain design improvements been made in subsequent dams, but that features found satisfactory have been standardized and repeated. The cranes developed for Pickwick, for example, have been used again at Guntersville and will probably be repeated on the remaining projects. A yellowish brick was used for the powerhouse above. The color is far from satisfactory in combination with the gray concrete. Further experimentation with materials is indicated by a decision to use limestone slabs on future structures. Another example of effective standardization is the lock control building shown at the left. With only slight modifications it has been repeated at Chickamauga.



HIWASSEE DAM



CHICKAMAUGA

HIWASSEE dam, now under construction, is TVA's second floodstorage dam. Somewhat higher than Norris, it is roughly similar in design, the main difference being the use of an outdoor powerhouse. The small building at the foot of the dam will house offices, a control room, and visitors' reception and rest rooms. Chickamauga dam, shown in the air view at the left, is now approaching completion. Located on a narrow stretch of river near Chattanooga, it is quite like Guntersville in design and arrangement, and smaller than the dams at Pickwick and Wheeler. **DAMS AND DESIGN** Only the smallest part of a dam is "designed" in the usual sense. The spillways, piers, railings, cranes, transformers, lock entrances and other elements are highly functional products of engineering calculations and production limitations. Because the engineer, like the architect and artist, has a strongly disciplined sense of order, and because the purely functional is generally esthetically satisfying, these dams and their adjuncts are over-whelmingly beautiful. Even the plans have something of the same quality. Such objects as are shown on this page make up a new grammar of design which cannot be disregarded by the architect.



















The illustrations here show elements designed by TVA architects. Their esthetic kinship with those on the preceding page will be immediately apparent. "Design" when applied to the work of the architects means not a superficial beautification, but a continuation of the process of organization. The streamlined gantry crane (1), for instance, produced appreciable savings in machinery maintenance. The water tower and gauge-house (2 and 3) are now standard on all projects. An ingenious lamp housing (4), was designed to fit standard pipe railings. The roadway at Wheeler (5) shows railings of standard steel shapes, highly simplified lighting standards. Even in a memorial drinking fountain (6) at Norris, the same design quality is in evidence.











POWERHOUSES built for the public differ noticeably from those con-

structed by private utilities. Since the owners are the American people, of whom several millions have already come to look over their property, some provision must be made for their accommodation. The fact of public ownership, too, gives the venture a dignity not shared by a comparable commercial enterprise. This same fact of public ownership, however, subjects the work to critical scrutiny, and any waste of funds would receive widespread publicity. All of which means that the designer must achieve the appropriate monumental expression with economy. The excellent photograph on the opposite page shows one way in which this is done: improvement in the design of the generators. This interior, located at Pickwick, is particularly striking in color; the generators are in dark green and white metal, tile wainscoting is in green, while the walls are lemon yellow and light green. Initial objec-

tions to the emphasis on color have since been swept away by visitors' enthusiasm. At Norris other major problems of appearance were solved economically. The roof of the powerhouse, visible from the roadway over the dam, has been covered with light slabs of concrete which not only hide the built-up roofing, but protect it. The use of rough form-boards to give texture to the walls can be seen in the lower photograph.















combine enduring attractiveness with easy

maintenance.











WHEELER At Wheeler dam the generating units are located out of doors, protected by cylindrical coverings of metal. The control building, on the opposite page, contains visitors' rooms and the control room at the upper level, offices and shops on the floors below. The plan, and the photographs on the left, show the almost invariable relationship of lobby and control room: glass walls provide an uninterrupted view without disturbing the men at work. Another example of the characteristic thoughtfulness of TVA architects is the terrace outside the reception room, from which visitors can comfortably in-



spect the power plant below. A good sample of a typical educational exhibit ("The floods you see—the floods you do not see") is shown in the interior of the reception room. These photographic displays are found all over the Valley and constitute a potent force in spreading TVA's soil conservation story.











DESIGN DEVELOPMENT TVA's building program has produced several interesting examples of design refinement. The complicated trusses of Norris powerhouse (1) have given way to the closed ceiling at Guntersville (2); in the latest design (3) the steel is again exposed, but now as handsome rigid-frame trusses. Lighting of control rooms has developed from indirect fixtures (4) to a cove-lighted ceiling (5). Experience with this room resulted in the elimination of one cove, and the development of an asymmetrical ceiling (6). Illustrations 7 and 8 show the change from the cumbersome bridge over Wheeler lock to the vastly simplified designs for Gilbertsville. In all cases the progression is toward more highly functional expression; the extent of this development is indicated by the detail of Wilson dam at the right, built only fifteen years ago.

5





1













PICKWICK

SCALE IN FEET

COMMUNITIES—The building of residential communities is not a primary purpose of TVA, but a necessary adjunct of the large construction projects. With 1,600 to 4,500 men on a single dam, and construction periods of three to six years, some form of workers' housing is required. Each community represents a special problem. At Chickamauga, for instance, the proximity of Chattanooga made housing construction unnecessary; elsewhere complete villages have been erected. The proportion of permanent to temporary quarters is again determined by a variety of local factors. Norris, within commuting distance of Knoxville, has over 300 permanent houses and a large waiting list. Where temporary dwellings are in good repair at the end of the construction period they are sometimes moved to new projects, sometimes rented as vacation cottages if there is a demand. In all cases the program is arranged to extract a maximum of usefulness from the buildings.



NORRIS



Housing is only a part of TVA communities. Other facilities include cafeterias, recreational facilities, hospitals and schools. These structures are often later remodeled, as at Norris, to serve the needs of the permanent community.

Design procedure is closely interlocked with the larger planning activities. TVA sanitary engineers advise on water supply and sewage disposal; the medical service is consulted on health conditions; the land planners advise on possible future uses of the community and surrounding territory; electrical engineers cooperate with landscape architects to determine the most unobtrusive ways of installing the power lines; TVA surveys are brought in as an aid in establishing the degree of permanence of residential construction. In all cases greenbelts are acquired as a cheap protection against future land speculation and unwholesome developments.



NORRIS SCHOOL



FILLING STATION



SHOPPING CENTER



GROCERY STORE













HIWASSEE



An almost invariable feature of TVA construction camps is the dormitory group, built for short term labor, unmarried employes, and workers who cannot afford to bring their families to the job. Of the most inexpensive possible frame construction, they contain sleeping and washing facilities only, and must consequently be placed immediately adjoining the community center.

WHEELER 1/2 PLAN



0 10 20 30 40 50 FEET







Workmen's houses at Hiwassee are among the most interesting developed to date. Built to three standard modular plans, two of which are shown, they have post foundations, conventional framing, and half-inch insulation board inside and out. Designed for a useful life of four years, their present condition indicates a much longer period. The net cost per unit for the single house type shown was slightly under \$1,000, a little less than \$900 per dwelling in the duplexes. These figures include labor, construction complete with plumbing, lighting and flues for stoves, but do not include heating equipment, hot water heating, grading, or utility connections beyond the house walls.







CINDER BLOCK GROUP: NORRIS



















Perhaps the most interesting houses at Norris are those constructed of cinder block. Designed to meet the requirements of both temporary and permanent occupancy, they were first rented to workmen, unfinished inside save for paint on the exposed surface of the block. Floors were built of precast reenforced concrete beams on which integrally colored concrete slabs were laid. When the construction work on Norris dam ended, the houses were adapted to the demands of a higher-income group by an expenditure on finishes and equipment which averaged about \$1,200 per house.

The illustrations at the top of the page show a number of typical interiors. Plywood is used almost universally for interior walls, and insulating board is the most common ceiling finish. The one-story house above was an experiment in the use of steel frame construction which proved less economical than the conventionally built dwellings. A characteristic use of porches, which are almost a necessity in the locality, is illustrated by the house at the right; the problem of scale, always difficult where screened porches are part of the small house, has been solved very skillfully.







In its residential work the attitude of TVA towards style has been noncommittal. Such houses as the one above, which is fairly typical, are traditional in general appearance, but incorporate many modern features such as large windows and the dry finishes on the interiors. Flat roofs, another characteristic element, were omitted simply because a pitched roof seemed better for both insulation and possible requirements of future expansion. As shown by the houses on these and other pages, however, the compromise has proved successful.







The permanent houses at Wheeler have been more completely standardized than those in the other communities, brick walls and steel casements being used in the entire group. Plans are particularly well studied.







Typical of the permanent dwellings at Pickwick are these two houses, conventional in plan and exterior treatment, but reasonably efficient and compact. More common than the residence with two full stories is the type shown below, a one-and-a-half story building whose upper floor is usually left unfinished, to be arranged as desired by the tenant.



















The creation of storage reservoirs necessitated a relocation of many existing highways and railroads. New limited-access roads were also built to project sites. The bridges and culverts which form part of this new construction are built in masonry, steel and concrete. From a design point of view they represent some of the best of the new work in the Valley.









VISITORS' BUILDINGS: PICKWICK



VISITORS' BUILDING: NORRIS





In addition to the reception rooms in powerhouses, TVA also erects service buildings at the various dams in which rest rooms, soda fountains, exhibits, and occasionally shops are located. At Pickwick dam a restricted site, divided by a roadway, suggested the erection of twin buildings; more typical, however, is the unit at Norris. Temporary visitors' buildings are erected for use during the construction period.

TEMPORARY OVERLOOK: HIWASSEE






RECREATION

The 40,000-acre reservoir above Norris dam has become the boating center of the region, and its excellent harbor is perhaps TVA's favorite example of the efficiency and economy of integrated planning. The site was originally the quarry from which stone for the dam was taken. By blasting in conformity with a plan, the engineers removed the stone needed, leaving behind a boating station complete even to parking spaces. Only road surfacing and planting remained to be done. An important factor in the harbor's appearance is the control exercised over the design of private boat garages.







As an important part of the TVA program, its use as a yardstick for future planning efforts, the Authority has built a few parks as demonstrations. Big Ridge Park, near Norris, is a good example. Its lake, part of Norris reservoir, is maintained at a constant level by a small dam at its western end. Facilities include boating, a wading pool, a beach for beginners, dressing rooms, cabins, picnic grounds and a lodge where

BOAT LANDING, PICKWICK PARK



PICNIC SHELTER, BIG NANCE PARK WHEELER DAM



OUTDOOR THEATER, NORRIS PARK



refreshments are sold. Inexpensively constructed of local materials with the aid of CCC workers, the entire development presents an appropriately rustic appearance without any of the customary attempts at spurious picturesqueness. Attendance has already outstripped capacity, and an effective local demand has been created for State initiative in the building of new parks. As this demand is entirely in line with a basic TVA policy of fostering local activity, the Authority has good grounds for considering its recreational projects as one of the most successful by-products of the program. Other parks, completed or under construction, are located on Norris, Wheeler, Wilson, Pickwick and Chickamauga reservoirs.

RIDING STABLE, NORRIS PARK







Vacation cabins are to be found in a number of the completed parks, and are ordinarily laid out in groups of twelve to twenty. Construction is of the simplest, and was generally carried out with CCC assistance. As indicated by the interior view, furnishings are plain, but in good taste. An ingenious device is the jack-knife blind, shown in the upper right photograph; folded up, the blind provides good shelter from sun and rain; when closed it serves as a convenient, economical way of shutting up the house.





THE MUSEUM OF MODERN ART, NEW YORK CITY PHILIP L. GOODWIN AND EDWARD D. STONE, ARCHITECTS JOHN LOWRY, INC., GENERAL CONTRACTOR



MUSEUM OF MODERN ART, NEW YORK CITY



ENTRANCE HALL



Founded ten years ago the Museum of Modern Art, with the nucleus of a collection of modern pictures and sculpture, moved into an old brownstone house in mid-town New York. Partly because modern art has a vitality that arouses universal interest, but chiefly because the Museum's directors showed an extraordinary knack of giving life to subjects previously considered safely dead, both the Museum and its audience grew swiftly to a point where the original building became hopelessly inadequate. With the addition of departments on architecture and films, and the formation of an elaborate system of traveling exhibitions, the space problem became acute. Funds and land were finally acquired for new quarters. To produce a building that would serve as a three-dimensional demonstration of all that the Museum stood for, commensurate with a reputation grown to nationwide dimensions, was the problem. And here on these pages is the solution: an efficient and flexible plan, superlative use of materials, color and furnishings, and a thoroughly distinguished addition to the best modern architecture has produced.



ABOVE: view from the main floor gallery into the sculpture garden. RIGHT: view of sculpture garden from the terrace. BELOW: detail of outdoor exhibit.







STAIRWAY TO LECTURE HALL





Located in the basement is a 500 seat lecture hall used for Film Library programs and lectures given by other departments of the Museum. A vivid color scheme includes crimson seats and a light blue curtain against the warm background of unpainted acoustic plaster. The lounge adjoining is a handsome, luxuriously furnished room, large enough to accommodate peak crowds with comfort. As elsewhere in the building, fluorescent tube lighting has been used very successfully. The drawing above shows a section of the circular lighting and ventilating fixture on the opposite page.



LECTURE HALL

The acoustical design of the auditorium was executed by Acoustic Consultants, Inc. Its chief characteristics are: non-parallel wall surfaces, chairs with about the same sound absorption as the occupants, acoustic plaster on side walls with sound absorption increasing from 35 per cent at the center to 60 per cent at the rear. Ample air space behind side walls gives a "diaphragm action" which absorbs low frequency sounds, thereby producing greater clarity in speech and music.





LOUNGE



MAIN STAIR

THIRD FLOOR HALL











SECOND FLOOR GALLERY



The south walls of both gallery floors consist of translucent glass. Since the desired type and quantity of natural light varies with the exhibits, the glazing bars were designed to accommodate panels of cement asbestos. The flexibility of such a scheme is illustrated by the above diagram which shows various arrangements suitable for sculpture, painting, and for the insertion of display cases where bright background is required. Partitions in the galleries are temporary and can be arranged at will. THIRD FLOOR GALLERY





Sculpture galleries are to lighted, with illumination var by the use of cement asbes sheets. Flexibility of backgrout treatment is obtained with c tains of different colors. T lighting fixtures, like all oth in the galleries, are tempora



THIRD FLOOR GALLERY





HOUSING EXHIBITION: FIRST FLOOR



Working quarters of the Museum occupy the entire fourth and fifth floors, and include offices, a preview room for films, and a well-equipped library. As the photographs show, the Museum has managed to acquire admirable working quarters at nominal expense. Special desks are made of filing cabinets and linoleum-covered wood, tables follow a similar scheme. Perhaps the most interesting detail is that of the typical door and buck, the latter an ingenious development of flush trim. Doors have push plates instead of handles, and special hinges.





ARCHITECTURE ROOM







EXECUTIVE OFFICE

GENERAL OFFICE









The members' rooms occupy most of the top floor. Planned as an interesting combination of indoor and outdoor spaces, they are brilliantly exciting in color, generously illuminated, and comfortable. The furniture, as might be expected of an institution engaged in furthering all phases of modern design, is a representative collection of the best pieces available in this country and abroad. The large terrace has a red tile floor and walls in blue terra cotta tile, used here and elsewhere on the exterior as a foil for the marble and glass. The cantilevered roof is pierced at intervals by large circular openings; those over the recessed portion of the terrace are glazed.





XTH FLOOR LOBBY



NSTRUCTION OUTLINE

UNDATIONS: Reenforced concrete. Waproofing-Infiltro, R. B. Holtz & Co., Inc. RUCTURE: Exterior walls-4 in. marble, orgia Marble Co., 8 in. common brick, air ice, 4 in. cinder block and plaster. Second 3 3rd story facade—Thermolux, Libbeyens-Ford Glass Co. Side walls-2 in. terra ta and 12 in. brick. Interior partitionsder block and plaster. Plaster: American anamid & Chemical Corp., California Stucco ducts Co., Walter A. Troy, Calvin Tomkins , and Kelley Island Lime & Transport Co. rra cotta: Architectural Terra Cotta Co. and deral Seaboard Terra Cotta Co. Columnscrete with Concrete Steel Co. reenforcent or core. Lally columns—Lally Column Steel columns-American Bridge Co. Reorcing steel—Concrete Steel Co. Corner ds-Conver Steel & Wire Co. Floor conuction-reenforced concrete. Ceilingsne painted concrete; remainder furred; tal lath and plaster: Consolidated Exded Metal Companies.

OF: Reenforced concrete covered with slag fing—The Barrett Co. Deck—tile, Ludoil-Celadon Co.

EET METAL WORK: Flashing—copper, d coated where exposed, Anaconda Copper Ducts—galvanized iron.

SULATION: Cork insulation—David E. nnedy Co.

NDOWS: Sash—projected type, Campbell tal Window Co. Window glass and exterior ss block—Owens-Illinois Glass Co. Interior ss block—Pittsburgh-Corning Class Co. AIRS AND ELEVATORS: Stairs—reenforced concrete. Elevators—Westinghouse Electric Elevator Co. Elevator fronts—Dahlstrom Metallic Door Co.

FLOOR COVERINGS: Galleries, offices, corridors and workrooms—Sloane-Blabon Corp. Lecture room, lounge and member's room carpet, Klearflax Carpet Co. Reading room, print room and library—cork tile, Cork Insulation Co. Tile floors—U. S. Quarry Tile Co. FURNISHINGS: Book stacks, reading room tables, film racks, and study booths—Art Metal Construction Co. Office layout and equipment designed by Armstrong Associates, Inc., with Museum Department of Architecture. Coat checking equipment—Vogel-Peterson. Toilet accessories—Charles Parker. Lecture room seats—American Seating Co.

WOODWORK AND TRIM: All trim-metal, Superior Steel Door & Trim Co. Interior doors --flush, Hardwood Products Co. Exterior and special doors-C. E. Halback & Co.

HARDWARE: All equipment by Russell & Erwin Mfg. Co.

PAINTING: Paints by Sherwin-Williams Co. ELECTRICAL INSTALLATION: Pipe conduit—Garland Mfg. Co. Switches and receptacles—Bryant Electric Co. Wire—General Cable Corp. Panels and switchboards—Cole Electric Products Co. Outlet boxes—Knight Electric Products Co. Floor boxes—Russell & Stowell. Dimmers—Ward-Leonard Co. Clocks —Telechrome Co. Watchman's system—Detex Watch Clock Co. Fire alarm—Stanley & Patterson. Under floor duct—Walker Bros. Sound equipment—R.C.A. Projection equipment—



National Theater Supply Co., Lighting fixtures—Century Lighting, Inc., Mitchell-Vance, and Kurt Versen.

PLUMBING: Soil, waste and vent pipes— Crane Co. Plumbing fixtures—Crane Co. Cold and hot water pipes—Chase Brass & Copper Co. Brass fittings—N. Y. Brass Co. House tank and fire tank—Quaker City Iron Works. Fire hose equipment—U. S. Rubber Co. Sump pump—Chicago Pump Co. Sewage ejector—Nash Engineering Co. House pump— Lecourtney Co. Electric pump controls— Clark Controller Co. Pipe insulation—Magnesia Asbestos Insulation Co.

HEATING AND AIR CONDITIONING: Steam system. Air washers and fans-B. F. Sturtevant. Air heaters-Trane Co. Air filters -American Air Filter Co. Cooling tower-Research Corp. Refrigerator-York Ice Machinery Co. Anemostats-Anemostat Corp. of America. Radiators-American Radiator Co. Motors-Crocker-Wheeler. Grilles-Superior Steel Door & Trim Co. Pipe covering-Asbestos Construction Co. Thermostats-Powers Regulator Co. Vacuum specialties and pumps -C. A. Dunham. Valves and pipe fittings-Crane Co. Piping-National Tube Co. Reducing valve-Curtis Co. Material for ducts-Republic Steel Corp. Registers-Register & Grille Co. Pump and fan controls-Clark Controller Co. Gauge board and alarm panel-American Schaeffer & Budenberg Co. Fan and pump installation-Vibration Elimination Co. Thermometers and gauges—C. J. Tagliabue Manufacturing Co.

ICE CREAM STORE ON WHEELS, CHICAGO



BERTRAM GOLDBERG ARCHITECT

> GILMER V. BLACK ASSOCIATE

ICE CREAM STORE ON WHEELS BERTRAM GOLDBERG, ARCHITECT GILMER V. BLACK, ASSOCIATE









5.

 Completed central core ready for transportation to site.
 Core in transit.
 Erection of central mast.
 Prefabricated roof and supports.
 Erection of glass enclosing walls.

Interesting in construction as well as design, the mobile ice cream store shown on this and the preceding page consists of a central mechanized core containing plumbing, refrigerator machinery, shelving, etc. Built as a factory fabricated unit it contains its own rubber-tired wheels, and a glass shell which surrounds the core forming a space for customers. The roof is suspended by cables from a central steel-joist mast, useful for display as well. The entire unit is set up on a concrete mat and tied down with guy-wires. It may be readily moved from place to place in a short time. The open construction of the exterior shell does much to attract the custom of passing motorists.

Ш D

Within comparatively recent years, and especially since the advent of the sound movie, architectural acoustics has ceased to be a matter of holding one's breath and hoping for the best and has become a reasonably exact science, in the important sense that acoustical results can now be forecast with sufficient accuracy for most practical purposes. And as this science has progressed, it has become more and more evident that the architect, with his design-control over fundamental form, must play a definitive part in the proper solution of acoustical problems. The trend is away from excessive amounts of "treatment" and in the direction of properly formed enclosures and corrective surface shapes.

To give an adequate theoretical background for consideration of acoustical problems, THE FORUM is presenting below an up-to-date primer of acoustical design, covering all aspects of the question in a brief, understandable way. This material was prepared as a thesis for the degree of Bachelor of Architecture by Stephen L. Macdonald, of the School of Architecture, Massachusetts Institute of Technology, with the assistance of Professor P. M. Morse. Next month, The Forum will continue the discussion of acoustics with a second article based on analyses of actual projects recently executed by C. C. Potwin of Electrical Research Products, Inc., thus emphasizing the practical side of the question. Mr. Potwin also assisted in arranging Mr. Macdonald's material for publication.



PRACTI

ARCHITECTURAL ACOUSTICS:

SOUND . . . ITS FUNDAMENTAL PROPERTIES AND BEHAVIOR

CHARACTERISTICS Reflects at the angle of

face.

sounds.

ond.

incidence from a flat sur-

Screens produce sound

shadows, especially with high-pitched notes.

Low-frequency sounds bend around corners more easily than high frequency

Speed: 1,120 ft. per sec-

RELATION TO THE EAR High frequencies are vital

for understanding speech

and for brilliance in music

-most annoving as ech-

Exhibit, Hall of Man, Medicine and Public Health Building, New York World's Fair 1939



creening



High frequency

Low frequency



Combined waves



oes and interference.

Low frequencies add the necessary volume and richness to music and speech-are not particularly offending as echoes or interference.

Sound waves of similar phase combine to produce amplification.

Sound waves of opposite phase conflict to produce nullification

When two sound waves cross the result is either amplication or nullification. Both types of interference are undesirable.



SENSITIVITY OF THE EAR

Maximum range of audible frequencies from 20 to 16,000 cycles per second.

Normal range of sound frequencies from 50 to 8,000 cycles per second. Average sound frequency 512 cycles per second.

Intensity or loudness range 120 decibels at 512 cycles per sec.-or a ratio of 100,000,000 to 1. Variation in loudness must be 2 : 1 to be distinguishable to the ear.

Minimum noticeable time-lag between sounds-1/15 of a second.





ECHOES

Noticeable when a timelag of 1/15 sec. or more separates the hearing of a direct sound and the hearing of a reflection of the sound. To be noticeable, the reflected sound must travel at least 50 ft. further than the direct sound. BAD

PRODUCTS AND PRACTICE









DESIGN ... CAN ELIMINATE MANY ACOUSTICAL PROBLEMS AT THE BEGINNING



formly.

All shapes, including inferior shapes, can be made acoustically acceptable by either acoustical treatment or by minor reshaping of interior surfaces, or preferably by a combination of both.

Avoid forms which allow

distances of travel to vary by **50** or more feet.

Disperse or absorb sounds at offending surfaces.

-that produce echoes are generally less than

They will not reflect completely at their angle of

incidence unless the re-

flecting surface is at least

as wide as the wave

From a human speaker in

the open air high-frequency sounds are di-

rected more forward than

as to distribute both high and low frequencies uni-

low-frequency sounds. An **enclosure** naturally confines all frequencies and should be shaped so

GOOD

2 ft. in length.

WAVES

length.

DISTRIBUTION

It is better, however, to begin with a form adapted to the acoustical requirements.

UNTREATED SHAPES

Flat surface combinations

Converging surfaces tend to force sounds toward the wider opening.

Splaying surfaces tend to force sounds away from the small opening.

A series of flat surfaces may produce "**following.**"

















Section

Directing sound with flat surfaces may be very helpful. Breaks prevent following.

Convexed curves

—are safe at all times and are useful in breaking up undesirable reflections.

Concaved curves

How to use concaved curves

Large radius—at least twice the distance to the furthest listener along the radius.

With small radii use short surfaces—2 to 10 ft. maximum curvature.

Sound-escaping forms

BAD

Screening forms

-tend to prevent the sound from reaching the audience due to sound shadows.



Remedy

Keep **proscenium opening large** in relation to space to be filled.

Use reflecting surfaces to direct the sound.

TO GOOD

Half Plan

Plans

AND NOT

Carl Contract

No. of Concession, State of Co

ARCHITECTURAL ACOUSTICS



Attenuated forms

-tend to set up resonance like an organ pipe, especially if end surfaces are parallel.

-produce "flutter," or a multiplicity of sound reflections between parallel surfaces.

Remedy

Non-parallel shapes or use of absorbing material on one or more walls.

FUNDAMENTAL AIM OF ACOUSTICAL DESIGN is to direct sound over the shortest path to the listener, and to produce a uniform audible intensity of the sound without interference or echo, first by controlling reverberation time as far as practicable by reducing volume, and second by the proper use of acoustical materials.

HOW TO ACCOMPLISH THIS AIM:

1. Avoid excessive space-volume per person (100-200 cu. ft. per seat)

2. Make space proportional to the available intensity of sound.

3. Direct sound in parallel lines (avoid interference).

SOUND CONSERVATION

ANENE

and a state of the state of the

FORCING SOUND TOWARD THE AUDIENCE



4. Avoid screening effects. 5. Concentrate sound

slightly where intensity is apt to be low.

6. Use absorbing materials when necessary to control excessive reverberation.

The use of reflecting sur-

faces when carefully



Amplification (cont.)

Delayed amplification gives the illusion that the sound is emitted from the visible source rather than the loudspeakers. This is a natural phenomenon.

Too high a volume from the speakers will destroy the illusion.

RESONANCE

Materials vibrating at the same frequency as the sound, amplify it.

All materials resonate to one or more frequencies.

Hard, rigid materials vibrate to low-frequency sounds.

Wood vibrates to the widest range of frequencies.

As an absorption factor, some resonance is desirable to reduce the prominence of low-frequency reverberation. Materials for this purpose should resonate over a wide range of frequencies. Peak resonance in certain frequencies can be avoided by the use of unevenly spaced structural members (furring strips, etc.).

SOUND DISPERSION



More than 2 ft., vary size



More than 2 ft., less than 10 ft.



SOUND ABATEMENT

LOGICAL ORDER

Since high-frequency sounds produce the most annoying reflections they should be absorbed at the first surface beyond the auditor. Low-frequency absorption



to the desirable value. Desirable reverberation time varies according to the purpose and size of the enclosure:



PURPOSE

To break up sounds that create disturbances such as echoes, flutter, and other obvious interference.

METHODS

Break up the offending surface into a series of elements large enough to change the course of the reflected sound but small enough so as not to create new offenders.

Cover the surface with a checkerboard pattern of materials, some of which absorb high frequencies and some of which absorb low frequencies, interdispersed with reflective materials.

can then be more gen-

erally distributed to re-

duce reverberation time

Plan



Section

Section

AMPLIFICATION

ELECTRICAL

Intensities may be maintained in all parts of the enclosure by directional loudspeakers under separate control.

Loudspeakers removed some distance from the visible source should be equipped with a delayed amplification system.

placed directs most of the available sound toward the audience.

MAINTAINING INTENSITY

Gradually decrease the vertical cross-section of the enclosure toward the back-especially above below balconies and where listeners are furthest from the source.

Avoid curvatures that concentrate sounds too directly





FORMULA COMPUTING REVERBERATION TIME

$$t = \frac{V (cu. ft.)}{20 (S_1 a_1 + S_2 a_2 + S_3 a_3 ...)} = sc$$

Absorption coefficients for materials, people, chairs, etc., may be found in any recent book on acoustics or obtained from the manufacturers.

> EXAMPLE

	Materials	Area	Coef.	0.W.U.
	Class "A" Abs'nt	300	× .45	= 135.
	Wood door	21	.03	.63
	Abs. plaster	129	.55	70.95
	Linoleum floor	300	.03	9.
and the second second	Ord. plaster	390	.04	15.60
	Window	100	.03	З.
	Slate blackboard	60	.03	1.8
V = 3,000	3 persons		4.2	12.5
$t = \frac{3,000}{20 \times 249} = .6sec.$	Total 0.W.U.'s	n Wir	idow U	248.48 Inits'')

NOTES. Consider stage, etc., as part of the enclosure.

Openings above and at the side of the stage, as well as ventilators, should be considered as open window unit.

If the floor of the auditorium is a hard, reflective material disregard it, and consider only the people, or the seats. If it is carpeted, a logical percentage of its area should be included.

ABSORPTION MATERIALS



9. 7.

134

CHARACTERISTICS

Porous and draped materials absorb principally the higher frequencies.

t reverberation time in

V volume of the enclosure

 S_1 , S_2 , S_3 , etc. surface

areas of the different

a1, a2, a3, coefficients of

absorption of the respec-

Abs.

seconds

in cubic feet.

materials used.

tive materials.

Resilient materials like thick carpet and uphol-stery absorb the middle frequencies.

Stretched membranes and resonating panels of large dimension absorb the lower frequencies.

DESIRABLE QUALITIES

1. High coefficient of sound absorption. Permits use of smaller quantities.

2. Absorption uniform over full range of audiofrequencies. Correct tone balance.

3. Board absorbents should resonate over a wide range of audiofrequencies.

- 4. Fire resistant.
- 5. Heat insulating.
- 6. Structural strength.
- 7. Durability not subject to decay and insectproof.
- 8. Non-hygroscopic.

9. Small coefficient of expansion for heat and moisture.







Section



Section



DESIGN EXAMPLES TYPICALLY GOOD DESIGNS FOR SPECIFIC USE





10. High light-reflection coefficient.

11. Easily handled, cu worked, bent, and fixed Odorless, decorative, an hygienic.

12. Economical per un of absorption and per so ft. of installation.

WHERE TO USE ABSORPTION

At the back of the er closure and also on th rear side walls if neces sary to reduce the reven beration time.

On the seating to mak the reverberation time : uniform as possible whe the room is only partial filled with people.

On the back and ceilin of small rooms used for lectures.

On the floor and sidewal only if the speaker is be heard from any pa of the room.

Wherever concaved su faces are used that mig cause excessive concer tration on some part the audience.



Section

The large lecture ha Reverberation time 1. sec. Low reverberatio time is for clarity. In sufficient intensity ma make it necessary to in crease this time. Max mum angle of divergend (sidewalls) 60°.



Section

The small auditoriu Reverberation time 1.2se (Continued on page 5

BUILDING MONEY

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LOW RENTS BY PRIVATE ENTERPRIZE	135
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Rental Housing's Gustave Ring

THE WAY TO RECORD BREAKING RENTS

is pioneered by Washington's Gustave Ring. Yesterday at Colonial Village, \$12.50 per room; today at Arlington Village, \$11; tomorrow, still lower.

A LL big businesses have their big men, and one of these usually stands head and shoulders above the rest. In the FHAinsured rental housing business* this man, first, last and always, is Gustave Ring. First, because he built the initial project under FHA's program. Last, because he is now completing FHA's most newsworthy project. Always, because most of his six FHA-insured projects have set new lows in rents charged by private industry for new apartment quarters.

First. A native of Washington, D. C., Mr. Ring grew up with FHA's housing program. Early in 1935 when Government was first prepared to insure housing mortgages, Ring was ready and waiting with the first application. By April he had an insurance commitment; by September the project was complete. Situated in Arlington County, Va., across the Potomac River from the Nation's Capital, it was named Colonial Village. One feature set it apart from other apartment houses of the time, made it the most talked-about project in the country: its rooms rented for \$12.50 per month. Far below the Washington average (and the national average), this figure alone attracted some 15,000 applications for the 276 dwelling units—most of them from the horde of workers which the New Deal brought to Washington in 1934.

In building Colonial Village, Ring drew from a wealth of experience. Behind him he had 35 years of life—nineteen of them in real estate and building, a George Washington University education in engineering and a night school training in architecture. Most important, he already had to his credit the construction of some 1,000 single family dwellings and what is still Washington's swankest apartment house —the eight-story, 555-family Westchester Apartments (average rent: \$27.50 per room per month).

Fired with the success of his pioneering FHA project, Ring has been building similar ones ever since. In the summer of 1936 he added 462 dwelling units to Colonial Village; a year later he added another 236, brought the total investment up to \$3,896,400. Having developed his entire

50-acre tract in Arlington, he moved his operations to the northeastern part of the Capital. There in 1938 he built a \$2,890,000 FHA project, called it Brentwood, rented its 440 dwelling units at \$14 per room. Also during that year came his \$1,872,000 Norwood Apartments in Baltimore-388 dwelling units at \$15.50 per room. While these two garden apartment developments were under way, Ring temporarily deviated from his main line, built the six-story Marlyn Apartments in Washington-the first 100 per cent air conditioned apartment house in the country. In this project no effort was made to minimize costs, and rents jumped to \$30 per room.

Last. This year, however, Gustave Ring is again back on the low rent trail. Last month in Arlington was opened the first installment of his sixth FHA project. Dubbed Arlington Village, it will eventually (October 1, 1939) house 655 families at the record-breaking rent of \$11 per room per month (only \$2.50 above the average for the subsidized Williamsburg Houses in Brooklyn, N. Y.). Like its predecessors, this latest Ring project will be a complete community in itself. In addition to its du-

^{*} Extent of this business was measured last month as FHA announced that it had \$100 milion of rental housing insurance on its books, hat it had put \$37 million of it there this year.



FORE COURT



REAR COURT



Standardization and simplicity keynote both the plans and exterior design of Gustave Ring's Arlington Village. Noteworthy in the floor plans for the duplex apartment units is the absence of waste space, the presence of abundant closet space; in the rear court, the absence of ornamental detail, the presence of six-family underground garbage receptacles along the central walk.

plex dwelling units, the project includes a shopping center whose space has been rented at \$9,600 per year to seven tenants of diversified businesses. Buildings cover only 12 per cent of the site, leave the balance of the 53 acres for service and recreational purposes.

The entire project will cost \$2,993,000 including land, installation of all utilities and construction. (Unit costs: \$4,570 per apartment, \$1,117 per room, 26 cents per cu. ft.). Of this, 20 per cent, or about \$600,000, came from the pocket of Ring's company; the remainder represents a FHA-insured 33-year, 41/4 per cent mortgage. Net return on the total investment will be \$45,500 per year after all charges shown in the accompanying operating statement (right). Chances are it will be still larger, for at the rate the first part of the project has been tenanted the vacancy reserve of \$36,360 (10 per cent of rental income) will not be touched for some time. All completed dwelling units are rented-a good many of them to army officers of the Cavalry's nearby Fort Myer.

Always. Equally significant as the project itself are the precepts of the man behind it-reasons for its record rents. Gustave Ring cringes when called a "miracle man." He believes that no amount of genius in design and construction technique can lop more than 10 per cent off a project's cost But he implies that he has the genius nec essary to this 10 per cent lopping, and the cost-reducing methods employed at Arling ton Village bear him out:

▶ He selected reasonably priced land on the outskirts of Washington but within the bus lines' first fare zone. Arlington County has no cities and towns, and taxes are low ▶ Since the property is within a dime ride of town and since Ring has learned by ex perience that rental project tenants leave their automobiles in the street as fre quently as in the garage compound, Ar lington Village has no garages. Instead all-night parking is permitted on the streets, widened in places for that purpose

 Ring and Architect Harvey Warwick a partner of long standing, each kept on eye on economy when designing their lates project. Mindful of the savings that ge with standardization, they repeated the design of four standard buildings with al ternate roof designs (pitched, gambrel and flat) from 31 to 190 times for a total o 403 buildings. Several of these building designs are duplicates of those used in Ring's predecessor projects.

▶ Within these standardized buildings are standardized room arrangements-there are only seven different dwelling unit floor plans (five of which are reproduced to the left) in the total of 655. And they are economical plans. While Colonial Village was built around the fundamental concep of a four-family flat, Arlington Village is in effect a project of glorified row housing whose major departure from this Washing ton and Philadelphia tradition is the over-(Continued on page 34)

OPERATING STATEMENT

TOTAL\$ Less vacancy	363,360
reserve	36,360
GROSS INCOME.\$	327,000
OPERATING EXPENS Office salaries \$ Office expense Legal and audit Telephone Misc. admin. Advertising Bad debts Engineers' salary Fuel oil Janitors' salary Janitors' salary Lighting Electricity	SES 11 400 1,200 1,500 500 5,760 20 000 1,680 900 240 1,500

COST BREAKDOWN

LAND	MISCELLANEOUS	
	Interest	25.340
LAND IMPROVE- MENTS	Taxes (real estate)	1,000
New utilities\$ 153,986	FHA mtg. ins.	7,250
Landscaping 33,340	FHA examination	11,925
TOTAL\$ 187,326	fee	7.155
CONSTRUCTION	Financing expense.	23,850
CONSTRUCTION	Title, recording exp.	7.110
Dwellings \$2,057.503 Store building \$8,877	Legal expense Organization	2,500
Contingency allow- ance	expense	2,011
Surety bond 17.503 Architect's fee 150,000	TOTAL\$	88,141
TOTAL	GRAND TOTAL \$2,	993,000

Gas Grounds payroll Grounds expense Exterminating exp. Repairs

Unemployment Ins..

Old age ben. tax..... Unbudgeted items...

BALANCE

SUB-TOTAL \$ 85,000 Real estate tax.....\$ 24,000
 Insurance
 6,712

 Int. on mortgage....
 101,363

 Ins. on mortgage....
 11,925

 Depreciation
 46,000

TOTAL EXPENSES ...\$ 275,000

NET INCOME for dividends & Sur-plus\$ 45,500

Less Fed. & State

150

5,320 2,000 1,200 20,000 1,750 600

2,000

.\$ 52 000

6.500

CONSTRUCTION OUTLINE

FOUNDATION: Walls-hard burned common brick. Cellar floor-4 in. sub-soil drain, 6 in. cinder fill, 4 in. concrete. Waterproofing-1 in. cement parging on outside below grade, 2 coats asphalt waterproofing sprayed inside and out.

STRUCTURE: Exterior walls-Hudson brick for face, United Clay Products Co. 4 in. cinder block back up and Hytest cement, v-joint. Furred walls-cypress grounds, perforated rock lath, plaster. Interior partitions-2 x 4 in. studs, perforated rock lath and plaster. Floor construction-(1st) hollow tile and reenforced concrete, oak blocks; (2nd) 2 x 10 in. yellow pine over 1 x 6 in. sub-floor. Ceiling-perforated plaster board, 1 in. plaster, painted.

ROOF: Covered with Bangor slate or 4-ply slag.

INSULATION: Outside walls, attic floor and roof-Mansard fronts. rock wool, Ludowici-Celadon Co.

WINDOWS: Glass-single strength, Lustra glass, American Window Glass Co. Screens—half copper, Flaherty Bros. FLOOR COVERINGS: Living room—Bruce block flooring, E. L. Bruce

Co. Bedrooms-13/16 in. oak strip, Kentucky Flooring Co. Halls-13/16 in. oak strip, McMinnville Mfg. Co. Kitchens-linoleum, Bathrooms-tile.

PAINTING: Walls, ceiling, sash, kitchen and baths-paint, Lucas Bros. Floors-shellac and wax.

ELECTRICAL INSTALLATION: Wiring system-conduit, Youngstown Sheet & Tube Co. Apts .- 3-wire, 220 V. single phase service, 2-15 amp. 2-wire circuits, armored cable, Hazard Insulated Wire Works. Boiler rooms-4-wire, 3-phase, 220 v., 3-wire, 3-phase, 220 V. motors, 2-2 wire, 15 amp. circuits for lighting; switches-Bryant Electric Co. Fixtures-(interior) Virden Co., Miller Co., Leviton Mfg. Co. Entrance lights-copper bracket lantern, Grahlind Bros.

KITCHEN EQUIPMENT: Range-H. C. Weiskittel Co. Refrigerator -General Electric Co. Sink-Standard Mfg. Co. Cabinets-Oxford Cabinet Co.

LAUNDRY EQUIPMENT: Sink-Standard Mfg. Co. Washing machine-Westinghouse Electric & Mfg. Co. Drier-Francisco, Chicago Dryer Co.

BATHROOM EQUIPMENT: All fixtures by Standard Sanitary Mfg. Co. Seat-C. F. Church Mfg. Co. Cabinets-Miami Cabinet Div., Philip Carev Co.

PLUMBING: Pipes; Soil-Krupp-Hajoca Corp. Waste and vent-National Tube Co. Hot and cold water pipes-American Radiator Co. Pumps-Chicago Pump Co. Tanks-John Wood Mfg. Co.

HEATING: Two pipe vapor system. Boiler-Pacific Boiler Co. Radiators-U. S. Radiator Corp. Valves-J. P. Marsh Co. Thermostat or regulators-Minneapolis-Honeywell Regulator Co. Hot water heater-Taco Heaters, Inc. Oil Burners-Petroleum Heat & Power Co. SPECIAL EQUIPMENT: Incinerators-Morse Boulger Destructor Co. Tontine shades-E. I. du Pont de Nemours & Co. Radio outlets -Bryant Electric Co.







STORES



LIVING ROOM

KITCHEN





TOTAL \$8,286.59



A gift, this model house together with 36 other lower cost units attracted 60,000 visitors to Detroit's Streamlined House Show, \$1.8 million of business to the sponsoring Home Builders Association. The Architect's Small Homes Asso-ciation of Michigan supervised all designs, elected Member Earl Pellerin (now in Europe on an Edward Langley Fellowship) as the outstanding man in the group to design this Association-built house. Particularly noteworthy is the compact arrange-ment of space permitting large rooms and many closets. See cost breakdown, left.

TWO BLOCKS OF MODEL HOUSES

Thirty-six Detroit builders concoct an antidote for a "national dose of opium," sell 336 packages to the public.

WORLD Fairs notwithstanding, the Nation's biggest home show is in Detroit. There during recent months a group of 36 houses built by 36 individual builders has been used as a life size catalogue by some 60,000 house-seeking Detroiters.

The latest promotional scheme to be pulled from the prolific bag of tricks of the Greater Detroit Home Builders' Association*, this so-called "Streamlined House Show" serves two prime purposes: First, it is a challenge to the U.S. Housing Authority (which the Association has openly labeled "a national dose of opium" lulling the drowsy public into a false sense of security) to produce cost figures which compare with those of its \$5,000 to \$6,000 houses. Secondly, as a show case of fullsize models priced for duplication anywhere in Greater Detroit, it is a local house building stimulant par excellence.

Purpose No. 1 reflects the average small builder's contempt for the USHA program; and, since net construction cost of USHA's completed projects is \$2,903 per dwelling unit, this purpose is far from fulfilled. But Purpose No. 2 is an accomplished and profitable fact. Thus, at show's end the 36 participating builders tallied their records, found that they had taken orders for 310 houses, had put some \$1.8 million of new business on their books.

Actors. The Greater Detroit Home Builders' Association is no mean group of

builders. Organized in 1926, its 230 members now account for 85 per cent of all the residential building in the Detroit area-the third largest building center in the U. S. Eight of them have in recent years built more than 1,000 houses each on speculation. A few association deans boast records twice that big.

Year ago one of the Board of Directors. W. J. Guinan, took a tip from the local automobile industry, conceived a home show with an automobile show technique. Original idea was to line both sides of a city block with 25 houses to be open to the public for 60 days, but, in the enthusiastic hands of an Association committee and Executive Vice President Edmund Kuhlman, these plans were expanded to include 37 houses to be open for 90 days.

Property. Forthwith the ball began to roll. Through the local real estate board 37 vacant and adjoining lots were acquired on either side of Duchess Avenue in northeastern Detroit. Since the purchase was made from a defunct financial institution, the cost was low-\$600 per 40 x 120 ft. lot, including all improvements.

Next step was the selection of builders. From the total membership of 230, the Association picked 36 representatives of all sections of the city who specialized in the \$5,000 to \$6,000 price field. (Plans provided that on the 37th lot the Association itself should build another model house to be given away at the close of the show.) After their selection, the builders submitted rough sketches of the houses they proposed to build. They were turned over to members of the Architect's Small Homes

Association of Michigan (sponsored by the Federal Home Loan Bank Board), which made suggestions and revisions and, with the approval of builders, prepared working drawings. Finally, all designs were submitted to a committee of architects which assigned the 37 houses to the various lots in an effort to obtain as harmonious an arrangement as possible within the unfortunate limitations of a straight street and narrow lots.* Builders had no choice in the location of their houses, nor did the architectural committee know whose houses they were placing.

In early November dirt began to fly on both sides of Duchess Avenue as Detroit's Mayor Richard Reading turned the first shovelful. Construction of each house was financed by the builder who was also required to deposit an additional \$200 with the Association to cover architectural services and newspaper advertising. With an eve to eventual mortgage insurance, all houses were FHA-inspected during construction.

Show. With the last of the 37 houses completed, Detroit's Streamlined House Show opened on February 19.** Thanks to the fanfare of newspaper publicity (paid and otherwise), an average of 5,000 people per week visited the houses during the subsequent 90 days. Unlike most model houses, these 37 were unfurnished; and public attention was therefore focused upon design and construction. Unfortunately, however, neither aspect of the project presented anything new. Despite their

^{*} Other promotional activities: publication of Bildor, an Association magazine, publication of 166-page 50-cent year book of building information for public consumption.

⁽Continued on page 34)

^{*} As presently platted, 80 per cent of Detroit's lots are 30 to 40 ft. wide.

^{**} Two days after the Detroit Builder's Show had opened for its customary 10-day indoor stand. It has no direct connection with the Association's project, was dwarfed by the latter's size.











3. Readily adaptable to Detroit's narrow lots is this one-story 27 ft. wide model. Its combination living-dining room is one of the few modern tendencies displayed at the show. Like most the other houses, it has a full basement. Architect: Philip Brezner. Builder: William Benton. Duplication price: \$5,528.







5. One of the largest on Duchess Avenue, Builder Edward J. Russell's house was priced for duplication at only \$5,800. Architect: Ditchy, Farley and Perry.







Sargent Bel

A TROLLEY TERMINAL SWAPS

excess tracks for bus and store space, gets 400 per cent

income boost in Philadelphia remodeling deal.

BECAUSE they are places where people congregate and wait, railroad and other transport terminals are logical places to exhibit and sell merchandise. Yet many U.S. stations give scant space to such lucrative secondary uses as stores and concessions; they prefer to awe the public with cavernous waiting rooms. A notable exception is the Philadelphia Suburban Transportation Co., which operates highspeed trolley cars and buses between the edge of the city and various points in the surrounding country-side. It remodeled its old terminal and produced a home base with every spare cubic inch devoted to profitable display. As a result, it need not depend on fares and freight alone for income; gross annual return from the terminal jumped from \$20,000 before remodeling to \$100,000 after.

Decision to make such intensive use of space was based on the location of the property and the type of service offered. The terminal holds a key position in Philadelphia's thriving 69th Street shopping center. In fact, development of the center is attributable to the transportation facilities offered by the company, by another car line and by radial highways. Second factor that justified a conversion of waiting space into shopping space was the frequency of service. Trolleys leave normally at $4\frac{1}{2}$ minute intervals, buses at $2\frac{1}{2}$ minute intervals.

Problem. The old terminal, built back in 1907 and added to in 1923, failed to fill modern needs on more counts than its lack of subletable space. Eight spur lines carried the lightweight maneuverable trains into as many station bays—a conventional method of handling heavy trains, but cumbersome for single-car trolleys on heavy schedules. Buses were not provided for at all, for the bus service was not started until 1923, the same year that the terminal addition was completed. Consequently, the bus line—a subsidiary of the

P.S.T.C.—had to handle passengers on the flanking heavily-trafficked street.

Realizing that their sombre brick and stone building was long outmoded, company officials called in Philadelphia Architects Simon & Simon, whose experience included the design of the cross-shaped Baldwin Locomotive Co. office building the Philadelphia Meade Memorial in Washington, D. C. Problem was to design a terminal on a roughly triangular property that would handle the easily maneuvered trolleys and buses simultaneously and would provide ready communication with the adjoining Philadelphia Rapid Transit Co. terminal whose trolleys run to the city's center. To crack this tough problem Simon & Simon submitted a tota of five remodeling schemes for the company to mull over.

Solution. Final choice went to a unique plan that satisfied all conditions. It provided a tear-drop shaped ramp with a six per cent grade that accommodated the trolleys on the outside and the buses inside (see plan). Buses are loaded and unloaded from an island in the center and the trolleys from two platforms, one on either side of the ramp. Entering vehicles discharge passengers on the upgrade of the ramp, then move around to the other side, the down-grade, to pick up out-going passengers. This neatly eliminates traffic friction between those entering and those leaving the cars.

A logical criticism of the ramp plan relates to its entrance; the three throat tracks—one entering and two leaving cross the busy West Chester Pike, constitute a considerable hazard. But there were reasons for not eliminating the grade crossing: 1) The remodeling design was based more on bus needs than trolley needs, for buses have been rapidly gaining dominance of the short-haul passenger traffic field, and the company may some day eliminate the trolley service altogether. 2) As the bus ramp had to end at



Model of Philadelphia Suburban Transportation Co.'s remodeled terminal shows teardrop shaped ramp backed up against the station proper. Both trolleys and buses enter in the left foreground, discharge passengers on the near side of the ramp, then move around to the other side, pick up a new load of passengers on the down-grade. The streamlined roof in the ramp's middle covers a restaurant, bar, bus platforms and waiting room. Atop the roof is dispatcher's glassenclosed box. Trolley platforms are on both sides of the ramp: that on the near side is hidden by a row of display cases that look like store fronts. Unpretentious entrance to the terminal is at the right hand end of those cases. Gabled structure sticking up from back of terminal is unremodeled second floor offices of P.S.T.C.

street level, the only way to eliminate the trolley crossing was to dig a half-mile, half-million dollar subway—an expense greater than the entire remodeling cost.

Behind the ramp, on the widest part of the property, is the station proper, which houses the ticket office, stores, and concessions on the first floor, the company offices on the second. As the ramp rises over a part of the station roof, the problem of insulating the theater and stores from the rumble of cars demanded careful study. Expedient was to make a construction joint between the street-to-ticket-office concourse and the theater (see plan) —the foundation had previously been seismographed, found non-sound bearing.

Display. Although Architects Simon & Simon satisfied the basic condition of the plan that a maximum of space be devoted to stores and advertising, by so doing they destroyed the possibility of creating a terminal that would best advertise the services of the transportation company. Display cases back of the trolley unloading platform give the street façade the appearance of a row of store fronts rather than of a terminal. Not Simon & Simon's fault, however, are the billboards that top the main building and bus island.

Inside the terminal, displays are more in harmony with the building's function. Flanking the concourse, they create the appearance of an arcade, do not detract from P.S.T.C.'s own display—a large wall map showing the territory served.

Finances. Total cost of remodeling was almost as much as the cost of the land and original building together: \$485,569 compared to \$540,000. Thus, the total investment amounts to slightly over \$1 million. To finance the remodeling, the P.S.T.C. borrowed a round \$450,000 at 6 per cent, is amortizing the principal at a minimum of \$4,000 a month.

Before the terminal was remodeled it earned a gross income of \$19,800, and,



STREET ELEVATION

with an operating cost of \$19,634, was just about holding its own. For 1938, after the remodeling, the gross income amounted to over \$100,000, even though the restaurant space was unoccupied. Income sources:

Rentals	\$ 92,025
Sale of power, retail	5,252
Travel Bureau, Greyhound, etc	3,193

Total \$100,470

Of this gross income maintenance, depreciation, taxes and other 1938 operating costs consumed \$67,822, leaving \$32,648 net. As \$80,000 of the \$450,000 loan has been repaid, the company equity in the million dollar investment amounts to \$655,569. The net return is 4.98 per cent of that amount. For the present, however, the company will have to pay it all out in amortizing the balance of the loan. It will be some time in the 1940's before the full reward of the remodeling venture is reaped.

Although built for the present, P.S.T.C.'s terminal is well prepared for the future. The ramp space will take care of the next twenty years of traffic expansion, and there is lots of room under the ramp for more stores should demand increase.



RAMP



MAIN CONCOURSE

Tunnels under the enveloping ramp tie the different sections of the station together. Even the concourse leading from the street back to the ticket office is under the ramp, and in effect a tunnel (see section below). Main concourse leads to another trolley terminal next door that takes travelers to the city's center. Wall map in the picture above shows routes of P.S.T.C. trolleys and buses. Center picture reveals dominant position of signal tower, top picture; the street facade with main entrance to the left.





USONIA COMES TO ARDMORE

when Frank Lloyd Wright invents a four-family house with kitchens as control rooms, floors as radiators.

E_{VERY} time Architect Frank Lloyd Wright pushes his pencil into a new field of design, he makes news. In 1908 it was his Chicago Unity Temple: in 1920 his Imperial Hotel in Tokyo; between 1898 and 1938 each of his one-family residences from Cheney House to "Fallingwater" was news; three months ago his S. C. Johnson and Co. office building was publicized coast to coast.

Today, Architect Frank Lloyd Wright is again making news—this time in the multiple housing field. Thus, last week in Ardmore, Pa., was opened a unique four-family house embodying more new design and construction ideas than have come to light in a decade of apartment building. And, to the interest of his usual band of scoffers, Wright's latest project starts out as a financial success all apartments are rented at \$55 per month, and more families are awaiting the completion of duplicate buildings by the sponsoring Tod Company.

Space. Called Suntop Homes, this project features little that is traditional. In the first place, plan of the building cuts a four-leaf clover pattern subdivided by cross-shaped party walls. Each 90° wedge

harbors a novel arrangement of six rooms, storage space and a carport.

On the ground floor is a one-car garage without doors (a carport in the Wright parlance), and behind it, a long narrow storeroom without windows. Only other room on this level is a good-sized living room, two walls of which are made up largely of glass doors, movable glass windows and fixed glass plates. Equivalent in area to that of 20 average windows, this glass is shielded from sky-glare by an overhanging balcony. Height of the living room is 13 ft. except in the interior, fireplace corner where projection of a mezzanine floor reduces it to $6\frac{1}{2}$ ft.

Situated midway between the ground floor and the roof deek, this mezzanine provides space for three rooms and a bath, most important of which is a large combination kitchen and dining room. In the conventional house or apartment, the kitchen usually occupies the least desirable space, but in Suntop Homes it is the control room, the focal point of the design, and is therefore given a more favorable location. About half of it juts out as a balcony into the living room. While in the kitchen the housewife may watch children at play in the living room, may speak through a tube with those who ring the door bell (either refusing admission or releasing the door latch from the kitchen), and she may enjoy the garden view through the spacious living room windows.

But there are still other control features of the kitchen. Part of the room extends above the roof deck, and through a transom the housewife may watch the children at play on this deck. Their bathing and eating may likewise be supervised from this room. Also on the mezzanine floor is a small master bedroom one wall of which is of glass and opens upon a large sleeping deck. Adjacent to it is a small boudoir which, due to its interior location is lighted and ventilated by a clerestory (series of transoms) similar to that of the kitchen.

On the roof of each clover leaf unit is a small penthouse containing two additional rooms, a stair well and a 5 ft. square shaft ventilating the bathroom below. Balance of the roof is finished with a wearing surface permitting its use for recreation, clothes drying and gardening. It is shielded from the street by a 5 ft. parapet and, part of it, from the view of neighbors by an 11 ft. extension of the party walls.

Planes. Surface treatment in Suntop Homes, like its unique room arrangement, follows closely the principles of "Organic Architecture" originated by Mr. Wright and typified by his terse precepts: "Five lines where three are enough is stupidity; nine pounds where three are sufficient is





A four-leaf clover, Architect Wright's floor plan places emphas's on the mezzanine kitchen. Living room is large, bedrooms are small—the smallest intended for use with built-in double deck beds. Section and preliminary plot plan (right) shed light on the complicated design. obesity." Aside from the large area of living room glass, only two materials are seen from the street—vertical panels of red brick and horizontal parapets of common cypress. The facade's only ornamentation comes from the materials themselves, the cantilevered terraces and the shadows they cast.

Inside the same simplicity of design is apparent. Brick of the 16 in. party wall is left in its natural state. Partitions are covered with waxed plywood, and no attempt is made to disguise the wood ceiling-floors. In the latter is Suntop Homes' major departure from traditional construction; it is built of 3 in. pine planks splined together and nailed solidly (40 penny nails) to $3 \ge 8$ in. wall plates. Unaided by cross beams, this planking spans all rooms, is even cantilevered to support the unit's roof and sleeping decks.

Air. In keeping with the modern design of Suntop Homes, is its modern radiant heating system. Generated in a small basement furnace room, steam is circulated through 175 ft. of coils laid in the concrete floor of the living room, carport, and store room (see photograph below). While the heating of the open carport is of questionable benefit, the system as a whole claims many advantages. Warmest part of the living room is around the occupant's ankles where it is most needed. All the hot air required for heating the rest of the house rises from the living room-its circulation controlled by kitchen exhaust fans and by opening and closing the bathroom ventilator shaft and bed-



HIT PENTHOUSE TERRACE

room transoms. Thus, despite the obvious neglect for the usual cross ventilation requisite, all the air in each dwelling unit may be kept in motion. (In a house of customary fenestration the air near the ceiling is usually stagnant.)

While the project sponsors are convinced of most of the advantages of this new heating system, they are not as firmly convinced as its designer. To wit: they have made provision for the possible installation of a radiator or two on the mezzanine floor.

Client. In the face of so many untried design innovations, there naturally arises the question of who would dare finance and build such a project. The answer is 58year-old Otto Tod Mallery, president of the Tod Company. A self-styled economist-capitalist-citizen, Mr. Mallery is an advanced student of business cycles and proponent of public works planning and, as such, has served for short periods under all the Presidents since Wilson. While Roosevelt II's original public works policy (1932-35) was exactly what Mr. Mallery had been preaching for years, in 1935 he decided that no matter what Government might do, full business recovery was not probable without large scale private investment in durable goods. After considering various industries as possible avenues to such investment, he selected Building. Reason: he considered it "the most backward industry . . . a jumble of anarchy and convention" and therefore believed that Building offered the most room for technological improvements.

CONSTRUCTION OUTLINE

FOUNDATION: Walls—crushed stone topped with 18 in. of poured concrete.

STRUCTURE: Walls—12 in. brick. Party walls—16 in. hollow brick. Interior partitions — $\frac{5}{6}$ in. plywood screen partitions. Floor construction—(ground) concrete, integral color; remainder—L. L. yellow pine planking which forms both structural and finished floor and ceiling.

ROOF: Penthouse—Celotex and 5-ply Celotex built-up roofing; deck, same with 1/2-in. Celotex Traffic Top, Celotex Corp.

SHEET METAL WORK: Flashing—lead coated copper. Downspouts—3 in. copper bearing steel built into walls.

WINDOWS: Sash-cypress. Glass-1/4 in. polished plate, Pittsburgh Plate Glass Co.

FLOOR COVERINGS: Living room—colored concrete, wax. Kitchen and bathrooms— linoleum.

WOODWORK: Cabinets-fir plywood. Exterior doors-cypress.

HARDWARE: Interior—black iron. Exterior —galvanized hinges.

ELECTRICAL INSTALLATION: Wiring system—conduit, lead covered wiring in concrete slabs. Lighting—indirect.

KITCHEN EQUIPMENT: Range—gas. Sink and laundry tray—Standard Sanitary Mfg. Co. Cabinet—fir plywood, built-in.

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

PLUMBING: Pipes—Standard Sanitary Mfg. Co.

HEATING: Coal-fired steam radiant heating system. Boiler—Kewanee Boiler Corp. Automatic stoker—Schwitzer-Cummins Co.

Mr. Mallery then set out in search of an investment vehicle in the building industry-one that he could trust with his own as well as other people's money-one that would be a hedge against inflation. For four years he explored every new building material and method that came to his attention-vetoed them all. Finally, he bumped into Frank Llovd Wright, studied the latest publication of his work, actually visited his most recent projects. All this convinced him that Mr. Wright was an inventor as well as an architect, and in early 1938 he commissioned him to invent something to fit the Ardmore property owned in the name of his Tod Company.

Six weeks later Architect Wright produced his invention—Suntop Homes—and Client Mallery submitted it to Ardmore neighbors for their consideration and approval. But instead of approval he got comments such as these: "We don't want to know anything about it. . . . It is an apartment house. . . . We don't want any experiment on our street." And, although chairman of the neighbor's committee has since given his full approval, construction of Suntop Homes was delayed for a year.

Meanwhile, Mallery asked his friends to put small sums into the Tod Company with the understanding that, if it proved successful, they would be given rights to subscribe more substantial sums. As a result, the Tod Company today has eleven stockholders, representatives of Boston, New York and Philadelphia. At the suggestion of one of these men, Architect Wright built a model of his invention (see photographs, page 142) sent it to the Ardmore Superintendent of Buildings and the Township Board of Commissioners. An open-minded group of officials, they thoroughly studied the design, finally approved its construction.

Dollars. On May 1, a steam shovel scooped out the small basements for the first unit of Suntop Homes, and construction was under way. Last week it was completed and, to the surprise of its neighbors whose opposition turned to approval (Continued on page 26)

(Continued on page 36)



HEATING COILS

BUILDING'S CHARTS AND TABLES point to increasing activity.



		LATEST MONTA*	PRECED. MONTH	CORRES. MO. 1938	CUMU 1939	LATIVE 1938		LATEST MONTH*	PRECED. MONTH	CORRES. MONTH-1938
PERMIIS-residential (000,00	00)1	.\$116.3ma	\$84.3	\$62.8	\$453.4	\$311.4	INSURANCE COreal estate held (000,000)10.	\$1,738.0 mr	\$1,740.0	\$1,773.0
non-residential "			40.4	29.3	230.8	212.7				
alterations "		. 31.0	31.2	26.5	140.4	132.5	COSTS-wholesale materials (% of 1926)11		89.5	89.7
total "		. 192.9	155.9	118.7	824.6	656.6	housing-labor (% of 1936)12		111.9	111.3
							materials ''		102.9	104.8
	(000,000)2	£177 0	\$144.4	\$83.2	\$532.6	\$313.4	total "	105.6	105.9	106.9
	(000,000)		94.6	77.8	423.7	351.9				
non-residential			121.0	122.2	454.7	378.0	RENTS-new leases (% of 1923)13	86.0 ju	86.2	86.7
engineering			330.0		1.411.0	1.043.3				
total		. 300.4	220.0	203.2	1,411.0	1,01010	FORECLOSURES-non-farm (% of 1934)14	54.9 ma	48.3	57.0
							metropolitan (% of 1926)15		151.0	181.0
DWELLING UNITS-total	(000) ³	. 31.1ma	23.7	16.8	126.0	87.5				
							INTEREST RATES-N.Y.C. mortgages (%)16	4.48 ju	4.59	4.68
FHA-mortgage selections	(000,000)4	.\$101.5ju	\$109.4	\$97.2	\$602.0	\$455.2		Sector Andrews Sector Sec		
mortgage acceptances	(000,000) 5	. 82.3	73.7	76.3	367.8	277.5	BOND PRICES-real estate 17	\$325.0 ju	\$326.0	\$307.0
rental housing m't'g's	" 6	. 3.0	7.2	6.2	37.2	21.0				
modernization loans	" 7	. 23.3	21.6	17.3	105.4	51.3	STOCK PRICES—bldg. materials (% of 1926)18	88.8 ju	84.7	73.4
MORTGAGES-							WAGE RATES-common bldg, labor (per hr.)14	\$0.683 ap	\$0.68	0 \$0.677
	(000,000)8	.\$109.7mg	\$94.9		\$431.8		skilled bldg, labor (per hr.).	1.44	1.44	1.40
insurance cos.		. 29.9	26.8		127.1					
banks & trust cos.		. 85.4	73.3		359.2		EMPLOYMENT-bldg, unions (% of total)20	71.0 ap	68.0	61.0
mutual savings bks.		. 12.2	10.1		46.7		EMPEOTIMENT-Bidg. Glions (78 of foldi)	Mite up		
individuals		. 59.5	55.7		263.7		COST OF LIVING-(% of 1923)21	84.7 ju	84.8	86.7
other mortgagees		. 52.8	43.6		208.8				0110	
total			304.4	***	1,437.3	1.7.*	PAYROLLS—factory (% of 1923-25)22	85.0 ap	86.9	74.6
MARRIAGES-38 cities	(000) ⁹	. 28.7ma	22.1	26.4	100.3	109.6	PRODUCTION-industrial (% of 1923-25)23	94.0 ma	95.0	77.0
	(*Designation of latest month: mr—M	arch, ap—April	ma-May	y, ju—June.
FOOTNOTES: 1Valuation of building perm nities; source, U. S. Depart 2Valuation of contracts awar F. W. Dodge Corp. via U. S. 3Number of dwelling units co- note No. 1. 4Home mortgages selected Title II, Section 203; source, FHA. 6Large scale rental housing m paying under Title II, Secti 7Property Improvement loan	ment of Labor. ded in 37 States; . Dept. of Commerce vered by permits. So for FHA appraisal ., FHA. r insurance under T nortgages becoming p	source, ee foot- under litle II, oremium	10- 11- 12- 13-	 Number cities; Total re Assn. ol Composi source, Nationa ft. unfin Rates a Nationa 	of mar source, A sal estate f Life In te index U. S. D l average dished; so t which l Industi	riages red ARCHITEC boldings as. Preside of wholes epartment s based on surce, FHI new renta rial Confe	source, FHLBB. orded in 38 largest U. S. TURAL FORUM. by member companies of the ns. ale building material prices; six-room house of 24,000 cu. BB. contracts are made; source. ence Board. 50 non-fam communities;	t rate on all re 0,000 or more; s of 200 hotel, offic Amott-Baker & C twelve building Standard Statiss ering News-Recon embers employed; food, fuel and 1	corded New ource, N. 2 'o. material ma tics Co. 'd. source, An	y Yo-k Cit Y. Mortgag and theate anufacturers perican Fed



The Kitchen Rents the Apartment!...

GAS REFRIGERATION RENTS THE KITCHEN



Jas Refrigerati

Notice how often prospective tenants ask if you offer SERVEL ELECTROLUX

TENANT "I derive the greatest pleasure and satisfaction from Servel Electrolux, in the fact that all products I use retain all their natural flavors and freshness of the garden, which I have not found in other makes of refrigeration. Its noiseless operation, easiness of keeping in sanitary condition, and low cost of upkeep, make it most outstanding in my estimation." Miss Linda Brown, 325 S. Witmer St., Los Angeles, Calif.

MANAGER "One of the first things asked by women looking at an apartment is, 'What kind of refrigeration has it?' I have won many a new tenant because I was able to answer, 'Servel Electrolux.' Folks like its carefree, economical operation—the way it keeps food fresh for days. Servel Electrolux' silent gas refrigeration is one of my biggest assets in the business of renting apartments." Mrs. Helen Shumate, 325 S. Witmer St., Los Angeles, Calif.





- NO MOVING PARTS in its freezing system
- PERMANENT SILENCE
- CONTINUED LOW OPERATING COST
- MORE YEARS OF DEPENDABLE SERVICE
- SAVINGS THAT PAY FOR IT

SPECIFY THE REFRIGERATOR THEY HEAR ABOUT · BUT NEVER HEAR

LOW RENT PROJECT

(Continued from page 136)

lapping of dwelling units (the second floor of one unit frequently is over the first floor of the adjacent unit). Purpose of this planning is to permit a larger range of apartment sizes without altering the inexpensive rectangular plans of the buildings. Also, the duplex design eliminates all unprofitable and costly public corridor space, all second floor kitchens and the expense of their attendant plumbing connections.

▶ Exterior design is simple. Ornamental entrances and cornices are conspicuous by their absence. On rear elevations this simplicity has been carried to an economical extreme (see photograph, page 136).

▶ All wiring has been carried from apartment to apartment by exterior brackets on the rear of all buildings. Reason: low installation and maintenance costs. Ring drove a bargain with the local telephone company by placing telephones in all apartments at the project's outset. And, the increased telephone business has converted his switchboard from a liability into an asset.

▶ Building schedules are so staggered that small construction gangs are busy at all times. There are no temporary layoffs, with the result that workmen gain experience as the project progresses, become more efficient. (Stair installation took 24 hours during construction for the first four buildings, now takes from ten to twelve hours.) Ring further capitalizes on labor efficiency by employing many of the same men from one project to another. He selects intelligent building foremen and superintendents, gives them considerable responsibility, rewards them with bonuses when they display initiative and efficiency.

▶ Ring makes volume purchases directly from manufacturers, gets his materials and equipment at prices 10 to 20 per cent below list.

► Cash is paid for everything, and he benefits by the usual discounts.

▶ Ring builds large projects—but not too large. Volume operations are economical up to a certain point, then they become expensive. As an example, he points to the vast Bronx (New York City) housing project of the Metropolitan Life Insurance Co. which is so big that several material orders could be placed only with the largest producer in the particular field. Since that one company is mindful of the situation, competitive prices are difficult, if not impossible, to obtain. (Rents at the Metropolitan's \$50 million project will be \$12 to \$15 per room per month.)

Greater in importance than the net effect of all these tangible cost-reducing factors are several other precepts followed by the Ring organization. Foremost, this organization is composed of specialists in every phase of rental housing procedure.

It handles with efficiency every step from plot planning and grading to renting and maintenance. Before any work at the site begins, every financial detail of the project is figured closely. Example: Low rents depend as much upon low maintenance cost as upon anything else, and to help keep them low the postman is requested to keep off the grass, is tipped if he does. Thus, a small tip replaces a large grass seed item in Arlington Village's expense account.

Firmly convinced that the low rent projects must be sponsored, planned, constructed and operated by persons well acquainted with local conditions, Ring has concentrated all his developments in the vicinity of Washington. One time he went outside this area. The site was selected, plans were prepared and approved, and the mortgage money was ready—but that was as far as he went. Charging the costs to experience, he returned to Washington believing that the proposed project could be better handled by local interests.

Finally, Builder Ring preaches and practices the theory that all rental housing sponsors should heed well the rules and regulations of FHA's Large Scale Housing Division-whether or not the project's mortgage is FHA-insured. Ring could undoubtedly get higher rentals than he charges under his agreement with FHAbut he would not. Says Ring: ". . . it is better to keep 100 per cent occupied at ... lower rentals than 90 per cent occupied at 100 per cent rentals." Low rentals attract tenants-Ring has a waiting list two feet long-and permit a wider selection of families. Thus, Arlington Village may hold to its policy of not allowing more than two people to a one-bedroom apartment and of choosing only those tenants whose presence will better the community.

Builder Ring's respect for FHA regulations is so great that he will adhere closely to them in his next rental housing development-despite the fact that it will probably go up without benefit of FHA mortgage insurance. Reason for his desertion of the FHA fold is an amendment tacked on to the National Housing Act in June which provides that prevailing wages be paid labor on all large scale FHA projects. If the clause means what it says, it will not bother Ring, but if "prevailing wages" is officially interpreted to mean an artificially high union rate (that does not exist in residential construction in outlying areas), Ring and many another rental houser will dispense with FHA assistance. Private low rent housing cannot be built with labor paid at top union rates.

With or without FHA mortgage insurance, however, Gustave Ring's next rental project will be as significant as are all his others. Preliminary plans include two features which will make it so. First, it will be a project of free-standing, single-family houses. And more important, their rents will be still lower than Arlington Village's average of \$11 per room per month.

37 MODEL HOUSES

(Continued from page 138)

small size, only a handful of the houses varied from traditional design to the extent that a dining alcove was substituted for a costly full-size dining room. And with the exception of one or two quasi-Tudor facades, all exteriors adhere closely to Colonial.

Equally conventional, construction of all 37 houses features brick veneer exterior walls, red cedar shingle roofs. About half the houses are one-and one-half stories high; the balance is evenly divided between two-story units and bungalows. Costs run from \$5,600 to \$6,600 including land and real estate commission, and their breakdown is similar to that of Association President Harry J. Durbin's House (No. 4, page 139):

Land and improvements	\$ 600
Architectural service	75
General construction	4,265
Plumbing	
Electrical work	
Overhead and profit	650
Real estate commission	

Sales price-house & lot..... \$6,500

Finale. Enthusiasm with which the public looked upon these houses and price tags is indicated by the fact that during the 90-day period the 36 participating builders took orders for 80 exact duplicates of the models, closed 230 additional construction contracts directly attributable to the influence of the show. Furthermore, by late July, 26 builders had sold their demonstration houses, although occupancy was not permitted prior to the show's conclusion. It is safe to say that no other home show in history has produced such tangible results-\$1,848,000 of new business on the basis of an average house cost of \$5,500.

Show's climax came on the closing day when the Association-built house (No. 1, page 138) was given away. Each visitor to the project was urged to answer in writing a detailed questionnaire concerning the type, size, location, and cost of the house he hoped to build or buy. And, by signing his name and address, each respondent was entitled to a chance on the gift house. On May 14 the drawing was held, and Winner George W. Hewstone, a retired auto parts dealer, and his family were automatically out of the housing market.

In return for this \$8.237 gift, the Association members received signed questionnaires from most of the other visitors —valuable leads to further new business. They will be followed while Association Showman Edmund Kuhlman plots a 50house extravaganza for next year. Current plans point to a three-ring show three separate streets of houses, each in a different price class from \$3,500 to \$7,000.
ROOMS LIKE THIS WITH BESTWALL



SPECIFY FIRE-PROOF BESTWALL FOR SMOOTH, CRACK-FREE WALLS ON NEW OR REMODELING WORK

When you specify Bestwall there will be no vexing delays in wall finish to bring complaints from impatient clients. Bestwall is ready for any decorative finish 24 hours after it is erected.

You get permanently strong, crack-free, fire-safe walls when you specify Bestwall—the Original Gypsum Wallboard. Fire-proof Bestwall, with its core of strong, gypsum rock covered with specially made 7-ply paper, is economical both in material and application costs.

There are types of Bestwall for every job. Recessed Edge Bestwall with improved Bestwall Reinforcing Joint Systems to conceal joints. Square-Edged Bestwall, "nail-marked" to locate studs and save time and trouble on the job. Bestwall Grain Board, in exact reproductions of American Walnut and Knotty Pine. Insulating Bestwall with metal foil insulation.

Illustrated 16-page book "Bestwall for Better Walls" gives complete descriptive information and specifications on all types of Bestwall. Your request for a copy will have immediate attention.



NO OTHER WALLBOARD LINE OFFERS <u>ALL</u> THESE QUALITY FEATURES

DAYS

Fire-Safe • Easy to Apply • Easy to Decorate • Stronger • "Twin Mounted" - reaches the job clean and unmarked . Colors: Buff or Ivory, Gray back . New Grain Finishes - Knotty Pine and American Walnut • Types for New or Remodeling Work: Recessed Edge Bestwall with improved Bestwall Reinforcing Joint Systems to conceal joints - ready to decorate in 24 hours • Square Edge Bestwall - nailmarked to locate studs - saves trouble on the job . Insulating Bestwall (Metal Foil Insulation)



Omicron Mortarproofing, added to any mortar mix, is positive insurance that mortar shrinkage cracks will be checked. That is why so many architects specify "O. M." . . . it is the time-tested, *sure* way to check mortar shrinkage — real cause of leaky brickwork.

"O. M." permits the reduction of as much as 20% of the mixing water, yet actually makes workability better! Specifying "O. M." on your projects is the safest measure to assure "tight" weatherproof walls. See Sweet's for full details — Reference 5/15 — and avoid one of building's biggest "headaches" leaky brickwork.



Physical Education Building. Oregon Normal School, Monmouth, Oregon.

Mr. Ellis A. Stebbins, Business Manager, Oregon Normal School, reports, "The brick walls of the Physical Education Building on this campus have shown no signs of leakage . . . The results of the use of Omicron Mortarproofing have been very satisfactory."

Send for full information to THE MASTER BUILDERS COMPANY Cleveland, Ohio

In Canada: THE MASTER BUILDERS Co., Ltd. Toronto, Ontario



ARDMORE'S USONIA

(Continued from page 143)

as construction progressed, it was fully tenanted. From a long list of applicants attracted solely by word-of-mouth rumor (the project has been neither advertised nor listed with realtors), the Tod Company selected the first four—the families of two associate museum directors, two university professors, all from nearby Philadelphia. They pay \$55 per month for their shelter and for about 40 per cent of the necessary furniture which is built into the house. On top of this they must pay for water, electricity and coal.

Thus Investor Mallery's gross income is calculable, but his net is not. It will depend upon the total construction cost of the completed four-family unit and the number of units still to be built—as yet neither has been determined. However, while no specific construction cost shortcuts were made, several cost-reducing features are inherent in the design of Suntop Homes:

▶ There are twelve major walls for the four houses, or only three to a house.

▶ Paint, lath and plaster and wallpaper have been eliminated.

▶ The clustering of dwelling units permits economical utility connections.

▶ Garage doors and double-hung windows are omitted.

▶ Indirect lighting supplants ceiling and wall brackets.

▶ One wrought iron heating coil, prefabricated in one piece, takes the place of many radiators and risers.

▶ Plumbing is concentrated.

▶ The laying of floors as the brick work went up made scaffolding unnecessary.

▶ Floor construction is inexpensive.

These savings will not, however, be reflected in the construction cost of Mallery's first building, and simply because it is his first. On its cost sheet are weighty items covering experimentation, land improvement, long delays, instruction of workmen on new building techniques, architect's and patent fees*. Some are non-recurring costs, others will be shared by subsequent additions to the project.

However, on the basis of ultimate construction costs and obviously low maintenance expenses, a 5 to $5\frac{1}{2}$ per cent net investment return is anticipated. Thus, Suntop Homes, Frank Lloyd Wright's first venture into the rental housing field promises financial success. In fact, Capitalist Otto Tod Mallery, one-time investment banker, considers it "in the prevailing monetary situation a better and safer investment than the highest grade corporation bond on the market today."

* Patents on Suntop Homes' design have already been granted Architect Wright, other patents covering many individual features of the houses have been applied for.



Gets Tenants– Holds Tenants

In thousands of installations, coast to coast, we have yet to hear of a dissatisfied Pureaire Kitchen owner. ... Invariably, building owners report that Pureaire attracts tenants and reduces turnover. Names? Gladly! Just ask us. . . . Remember-Pureaire is a complete steel Kitchen with full-size stove, oven, sink, refrigerator and unit, as well as ample storage-all in less than 8 Sq. Ft. of floor. . . . Additional matching storage cabinets make kitchen 60 or 74 inches wide. Remember, too, that Pureaire installs in one piece—keeps all cooking odors from escaping into the room-actually costs no more than conventional units, bought separately. . . . Write!

THE PARSONS COMPANY Detroit





BUILDERS Starrett Brothers & Eken

7,000,000 FEET RUCE BLOCKS

TO BE USED IN PARKCHESTER'' (BRONX, N. Y.)

blanning and execution of the work is under the general direction of Board of Design. Shown in the picture (left to right) are Chairman nond H. Shreve, architect; Robert W. Dowling, builder; Andrew J. , builder; Irwin Clavan, architect; George Gove (facing Mr. Shreve), ager Housing Projects, Metropolitan Life Insurance Company; pre D. Clarke, city planning and landscape engineer; and Russell unter, builder. Henry C. Meyer, Jr., engineer, member of the Board, is not in the picture.



12,000-Family Housing Project of Metropolitan Life Insurance Co. Selects Bruce Block Flooring for Durability, Economy and Beauty

FLOOR CONTRACTORS

John T. Swanson Flooring Co.

EVER PLACEDY

Bruce Blocks have received the highest tribute ever paid any flooring material! Over 7,000,000 sq. ft. (enough flooring for almost 10,000 average size homes) are being used in "Parkchester," the vast garden apartment community being financed and operated by the Metropolitan Life Insurance Co. in East Bronx, New York.

This specification of Bruce Blocks dramatically proves the superior features and extra value of this modern hardwood flooring. It confirms the judgment of thousands of architects, builders and owners who are choosing Bruce Blocks for modern buildings of all types and sizes. More than that, it recognizes the dependability of the Bruce trademark, the uniformity of Bruce manufacture, which mean lasting satisfaction with beauty and utility for owners and tenants.

In Bruce Blocks, the building industry is offered all the advantages of hardwood—the finest of flooring materials—in a form adapted to the requirements of present-day construction. Ask Bruce for full information.

E. L. BRUCE CO., MEMPHIS, TENN.



MONTH IN BUILDING

(Continued from page 4)

details. Thus, at mid-July a Murphy blast went so far as to name the cities in which the Department will launch anti-trust suits next month—New York, Chicago, Cleveland, Detroit, St. Louis and a halfdozen others. And, the initial step has been taken: Economist Corwin Edwards, trained in anti-trust problems as Assistant Chief Economist of the Federal Trade Commission, has been appointed to Justice's Anti-Trust Division and placed in charge of the housing enforcement program.

All tell-tales point to Building Labor as the Department's first case. Thurman Arnold has made it known that he considers the building trades as the real bottle-neck in Building, and Government investigators have found little that they can hold against the building material manufacturers. In fact, Arnold believes that many large manufacturers are the chief victims of the trade restraints, that they would have tried to break them up long ago had not the cards been stacked. Finally, there are the emphatic words of Trust-buster Arnold himself: when asked at a recent press conference whether or not he was really going ahead with his drive against the unions, he snapped, "You are damned right I am.'

While a Presidential blessing has not

yet been bestowed upon the anti-Labor phase of the program, it is known that the AFL (controlling most of the building trades unions) is not in the good graces of the Administration. Denunciation by the White House of the AFLsponsored WPA "strike" is indication enough of this fact.

One thing is delaying the Murphy-Arnold drive on trade restraints. The Department cannot haul Building's bad boys into court until the Anti-Trust Division is adequately staffed and financed. Last month the Department of Justice appropriation bill was still jammed up in a Congressional conference committee. If passed as is, it will provide \$1,115,000 for the Anti-Trust Division (\$400,000 more than last year). And, obvious purpose of the premature newspaper barrages of Messrs. Murphy and Arnold was to bolster their case before Congress, hasten the passage of this bill.

While the requested appropriation would be too small to finance a fight on a national front against the uncountable men and organizations involved, it will be sufficient to tackle a limited number of local building situations. How hard a tackle, remains to be seen. How long the tackled organizations will stay down is still a weightier question.

HOUSING LOTTERY. During its current session the Illinois State Legislature scratched a group of much-touted housing bills before it got to the starting post, then passed a dark horse as a joke on the judges. Bills killed related to Public Service Housing Corporations and were supported by the Chicago Real Estate Board. The proposed corporations were designed to permit private capital to enter the slum clearance field under a public franchise. They would not have to rebuild for the slum dwellers, however, but could aim at whatever income group the market would carry.* The bills will be redrafted for the fall session.

The dark-horse bill passed by the legislature seeks to raise money for slum clearance and low cost housing by means of legalized lotteries. According to the bill, 10 per cent of the take would go to winners, 6 per cent to administration and 84 per cent to housing.

Sponsor of the bill is Representative Carmen Vacco. It was his first bill since becoming a member of the State house, and it was for that reason that it was passed. The legislators wanted to do their tyro confrere a favor and, believing the bill unconstitutional anyway, passed it as a joke—probably on the Governor who fortnight ago had neither signed nor vetoed it.

* For a more detailed explanation of the illstarred Public Service Housing Corporations see speech by Chicago Real Estate Board Vice President Paul D. Angell, ARCH. FORUM, Jan. 1939, p. 16.





YOU'LL get a surprisingly generous return from your modest investment in Ivory Soap Dispensers. Not alone through low soap costs. But also through the

added good-will they're certain to win for your building. For people like Ivory Dispenser service. These gracefully designed dispensers invite use . . . and their efficient performance matches their good looks. The quality soap they deliver — pure, gentle Ivory Soap — assures an unusually satisfying wash-up. For both face and hands.

Whether it's a new washroom installation or a modernizing job, you'll find the right answer in Ivory Dispensers. An illustrated folder tells the complete story of these modern dispensers. It's yours for the asking.

PROCTER & GAMBLE

Industrial Sales Dept. Gwynne Bldg. Cincinnati, Ohio



The Largest Selling Boiler for Heating Big Buildings

When one make of boiler consistently outsells others, it must be good... and that's the record of Kewanee Type C. Another "Success Chapter" added to the 70 years' history of Kewanee Heating Boilers.

At the New York World's Fair. See a Type C Kewanee cut in two to show its outstanding features . . .



Also the famous Kewanee Bubbling Boiler, residence type, equipped with Pyrex brand portholes above and below the water line so one can actually **see it make steam**. Both are displayed in the American Radiator and Standard Sanitary Building on the Avenue of Patriots ... both are "hits" of the show.

PLUS THESE FEATURES . . .

which provide high efficiency and an unhampered output in compact accommodations.

- **Furnace big and high** enough to promote complete combustion.
- Flues with sufficient area to handle the expanded volume of hot gases as they travel back and forth while their heat is transferred to the water.
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THIS IS ONE OF A SERIES . . .

of L·O·F advertisements appearing in Time and Newsweek. Each advertisement stresses the value of the services rendered by the architectural profession.



FORUM

National Guard Armory at Harrisburg, Pennsylvania. Edmund G.Good, Jr., architect. Architectural concrete used throughout. All decorative details cast in the forms.

Maximum economy was essential! So this building was designed in **CONCRETE**

THIS armory was designed in 1935 to cost \$75,000. And the price tag had to stick even though building was delayed until 1937 and the estimated cost had risen to \$108,000. It was the architect's job to meet the owner's original requirements at the original cost without sacrificing structural safety, durability or low upkeep.

The solution lay in finding a type of construction which would permit each dollar to do more work. So the architect redesigned the structure for concrete. Form boards were frankly used to produce wall texture. The result is an outstanding building—within the budget.

In structures of all types, concrete saves money

by combining structural and architectural functions in *one* thrifty material. Its great adaptability, and variety of surface textures and colors give wide latitude to the imaginative designer.

TU

Your architect or engineer can show how your building may be designed in concrete for beauty and economy. On request we will mail illustrated booklet, "The NEW Beauty in Walls of Architectural Concrete" (free in United States and Canada), or send one of our engineers.

PORTLAND CEMENT ASSOCIATION Dept. 8-7, 33 W. Grand Ave., Chicago, Ill.

A national organization to improve and extend the uses of concretethrough scientific research and engineering field work,

ARCHITECTURAL CONCRETE ... Architectural and Structural Functions Combined in ONE Firesafe, Enduring Material

THINGS HAVE BEEN HAPPENING FAST IN ICE REFRIGERATION



Gone is the old fashioned wooden "ice box"—gone to the limbo of forgotten things. But *ice refrigeration* is today in a stronger position than ever before.

For in place of the old "ice box" there is the modern air-conditioned ice refrigerator —a beauty to look at, a satisfaction to use.

As a preserver of perishable foods this new-type ice refrigerator accomplishes truly remarkable results. It does more than just keep foods cold. It guards them against rapid drying out and against the exchanging of flavors.

No other type of refrigerator gives foods the triple protection of constant cold, controlled moisture and clean-washed air.

The new air-conditioned ice refrigerator costs only a third to a half as much as other types. A single servicing of ice lasts three to five days or longer. And the drip pan is eliminated by the use of a simple permanent drain.

There is a style and size to suit every home and meet every commercial requirement. Your local ice company will give you complete details—or write:

NATIONAL ASSOCIATION OF ICE INDUSTRIES

228 North La Salle Street Chicago, Ill.

Cold ALONE is not enough !

FORUM OF EVENTS

(Continued from page 18)

AWARDS

To MISS BEULAH P. FEATHERSTONE of Franklin, Ill., the Kate Neal Kinley Fellowship, providing \$1,000 for advanced study in art in America or abroad.

To CRAM & FERGUSON, architects, the J. Harleston Parker Medal, for excellence in design and execution of the Conventual Chapel of St. Mary and St. John in Cambridge.

TO PIERRE BAILLEAU of Paris, the Delano & Aldrich Scholarship for travel in the U. S., awarded by the A.I.A.'s Committee on Education.

COMPETITIONS

U. S. GOVERNMENT REGION NO. 1 COMPETITION. John M. Carmody, Administrator of the Federal Works Agency, carries forward the program of Regional Competitions initiated last March by Secretary Morgenthau. On July 20 Mr. Carmody announced the third of these competitions—for the design for the new Post Office and Court House Building in Montpelier, Vt., with an estimated cost of \$400,000.

This competition is open to all registered architects who are citizens of the U.S.A. and whose home offices are located within the confines of Region No. 1: Maine, Vermont, New Hampshire, Massachusetts, Rhode Island and Connecticut.

Architects whose home offices are within the region above mentioned and in States having no registration law, and who are not registered in other States, are eligible to enter this competition upon the submission of qualifications satisfactory to the Federal Works Agency. Details of these requirements for qualifications have been published in connection with the previous Regional Competition (ARCH. FORUM July 1939, page 44), or may be obtained by addressing "Commissioner of Public Buildings, Public Buildings Administration, Federal Works Agency, Washington, D. C."

The author of the winning design will receive \$4,000 for this distinction and will be paid an additional \$4,000 in his capacity as consultant during the preparation of working drawings and specifications which will be prepared in the Public Buildings Administration of the Federal Works Agency.

Drawings called for are to be in pencil, free from rendering, thus keeping to a reasonable minimum the labor involved in the competition drawings.

Copies of the program will be available shortly after Aug. 15. In order to enter this competition, architects must apply by letter or telegram so that their names may be placed on record in the Public Buildings Administration.

INSULUX GLASS BLOCK COMPETITION No. 2—Three Stores, \$2,500 in prizes, closing August 21. (See page 7).

INSULUX GLASS BLOCK COMPETITION NO. 3—A Dairy, \$2,500 in prizes, closing November 20. (For full program see page 7).

EDUCATION

UNIVERSITY OF ILLINOIS. Dale Nichols, artist and illustrator whose "End of the Hunt" was purchased by the Metropolitan Museum of Art, New York, has been named Carnegie Visiting Professor of Art.

(Continued on page 46)

THEY TALKED BEHIND THE ARCHITECT'S BACK



FOR EVERY CLIENT

Now every home you design — modest or pretentious — may have the luxury of Formed Iron Plumbing Ware.

There is a wide range of popular colors, one to meet most every desire and decorative scheme. And every piece — bathtub, lavatory, kitchen sink and laundry tub—is finished in acid-resisting porcelain enamel at *no extra* cost.

You and your clients will delight in the smooth, graceful styling of Formed Iron Plumbing Ware ... its exceptionally high-luster porcelain enamel ... its new convenience features ... and its evidence of sound creative designing and craftsmanship. Remember, too, that each fixture is drawn whole from ARMCO Enameling Iron and bears the familiar ARMCO trademark of basic quality.

For additional information, write to The American Rolling Mill Company, 1491 Curtis Street, Middletown, Ohio. Modern bathroom of Mr. E. H. Hannah, Ann Arbor, Mich. Architect, Frank S. Carson, Ann Arbor. Installation by Huron Plumbing Co., Ann Arbor.



A NAME KNOWN TO MILLIONS

HOW A BUILDER MADE THE MOST of <u>2</u> <u>GREAT IDEAS</u>



... You've got something there!

LIFE'S great idea was to make America home-conscious by publishing 8 inspiring designs by world-famous architects. And the Reliable Home Construction Co. (along with other alert builders) followed up with another when they actually built a "Life" Home and let modern automatic gas equipment handle the 4 major housekeeping jobs of cooking, refrigeration, water heating, and house heating.

No other single fuel is so well suited to

GAS

the advanced standards of living represented by the "Life" Home designs and no other fuel makes building money go so far. And gas appliances, in addition to their superior performance and longer life, assure important savings in first cost, installation cost, and operating cost.

See for yourself how "gas for the 4 big jobs" simplifies planning, building and *selling!* Visit the nearest All-Gas "Life" Home, or consult your local Gas Company.

ASSOCIATION



LIFE Home at Tenafly, N. J. Architect: Royal Barry Wills. Associate Architect: E. J. Maniscealo. Builder: Reliable Home Construction Co.

AMERICAN

Specify JOHNS-MANVILLE **ASPHALT TILE**

wherever you need a decorative, durable, resilient flooring



Send for this FREE full-color brochure

This interesting brochure suggests dozens of attractive designs for schools, hospitals, restaurants... any type of public building where quiet, resilient, longwearing floors are essential. It contains a plate showing

the thirty-four beautiful J-M colors in plain and marbleized patterns that are adaptable to any decorative treatment. You will need this helpful book for frequent reference and for picturing flooring effects to your clients. For your copy and complete specification data on J-M Asphalt Tile Flooring, mail the coupon, today.



One of many unusual floor designs possible with J-M Asphalt Tile.

------ CLIP COUPON FOR FREE BOOK ------JOHNS-MANVILLE, Dept. AF-8, 22 E. 40th Street, New York City Send me specification data and your full-color brochure describing J-M Asphalt Tile Flooring.



FORUM OF EVENTS

(Continued from page 42)

COOPER UNION, NEW YORK. Professor Edward Slater Sheiry has been appointed head of the Civil Engineering Department, succeeding Professor Fred E. Foss, retired at the age of 76. Professor Sheiry formerly headed the same department in Robert College, Istanbul.

UNIVERSITY OF MICHIGAN. The Department of Landscape Design, established 30 years ago in the College of Literature, Science and the Arts, has been transferred to the College of Architecture with the title of Department of Landscape Architecture. Its five year curriculum will lead to the degree of Bachelor of Landscape Architecture. Title of the College of Architecture is now changed to College of Architecture and Design of which Wells Bennett is Dean.

COLUMBIA UNIVERSITY. A new course is offered this coming year in which the School of Architecture collaborates with the Department of Social Science. It deals with housing —its social purpose, the effect of slum clearance and improved environment, administration, design, housing authority, finance and the like. Experts in the related fields will be called upon to present detailed information under the direction of Carl Feiss.

NEW YORK UNIVERSITY. The School of Architecture and Allied Arts will expand its Department of Industrial Design next fall under the direction of Gilbert Rohde.

CALENDAR

September 4-8. Institution of Mechanical Engineers of Great Britain to meet with American Society of Mechanical Engineers, the two societies to be joined by the Institution of Civil Engineers and the Engineering Institute of Canada, who are meeting with the American Society of Civil Engineers, Hotel Pennsylvania, New York, N. Y. (Mechanical Engineers at Hotel Pennsylvania, Civil Engineers at Columbia University.)

September 25-28. Fifteenth International Congress of Architects, Washington, D. C.

September 28. International Congress of Architects as guests of the A.I.A. leave by steamer for Old Point Comfort.

September 29. International Congress of Architects as guests of the A.I.A. in Williamsburg, Va.

October 2. Architects' Day at the New York World's Fair.

October 11. Architects' Day at the Golden Gate International Exposition, San Francisco.

January 22-26, 1940. Sixth International Heating and Ventilating Exposition, Lakeside Hall, Cleveland, Ohio.

MISCELLANEOUS

SUPERVISING ARCHITECT'S OFFICE. Marking the 103rd anniversary of the founding of the Supervising Architect's Office and the transfer of this office from the jurisdiction of the Treasury Department into the newly created Federal Works Agency, the personnel of the office held a dinner on July 6, at the Willard Hotel in Washington. Over 400 persons attended, and they were addressed by Secretary Morgenthau,

(Continued on page 50)

low you can use WALL HUNG FIXTURES without nstallation Grief or Damaging Strain on the Wall -ZURN CARRIERS Support the Load Instead



ast methods of supporting Wall Hung Fixtures are now relegated the oblivion of obsolescence. And with them goes all the inallation grief and damaging strain on the wall that has "jinxed" e use of Wall Hung Fixtures.

urn Engineered Carriers remove the limitations imposed upon our desire and ability to create finer and more completely saniary and attractive toilet rooms by making Wall Hung Fixtures ractical from every standpoint. Zurn Carriers are adaptable r hanging any type and make of Wall Hung Fixtures.

esearch, analysis of hundreds of phases of installation problems

and thorough engineering responsible for this advanced development is a big story . . . too big for this message . . . too important to you and your clients to be confined in this advertisement. It's all presented in the Zurn Carrier Catalog, the first authoritative book offered on the subject of Carriers for Wall Hung Fixtures.

A copy of the Zurn Carrier Catalog will complete and bring up to date your working information on Wall Hung Fixtures-your plumbing and heating file would be incomplete without it. Use the coupon to send for your copy now.

J. A. ZURN MANUFACTURING COMPANY Sales Office and Factory; Erie Pennsylvania

21 **BUILDING DRAINAGE PRODUCTS** NAME ROOF TO BASEMENT ADDRESS CITY AND STATE

J. A. ZURN MANUFACTURING CO., Erie, Pennsylvania Please send me without obligation a copy of the Zurn Carrier Catalog.



FOUND: A Floor That "can take it". AZROCK



It has been said that Americans work hard because they play harder. Certainly, the rough-and-tumble usage given equipment in nite spots, club rooms, refreshment centers calls primarily for durability. AZROCK, the modern mastic tile, provides a floor covering of sturdy durability without sacrificing either good looks or economy. All marks of burning cigarettes, spilled foods and liquids are readily erased. An almost imperceptible resiliency resists indentations. An AZROCK floor stays new under the toughest treatment at a minimum of maintenance cost . . AZROCK "can take it"!





DAYTONA VILLAGE" APARTMENT PROJECT

GAIN PROVES THE PRACTICABILITY OF INDIVIDUAL GAS-FIRED UNITS FOR HEATING

Wieterine investment, inc. owner Date siter meral works, installe Dates Si

ECTED FOR ANOTHER TON DEVELOPMENT! 200 JANITROL ALLATIONS ARE SPECIFIED FOR THIS MODERN H. A. HOUSING PROJECT

ol individual gas-fired heating met the rigid specifications set municipal and federal engineers architects for Dayton's first nment housing project. Compardata assembled proved Janitrol eating to be the most practical conomical heating method. Up-to-the-minute in its conveniences, Daytona Village, Dayton, Ohio, will follow the modern trend by offering individually heated apartments—continuous heating service with a minimum of attention—with Janitrol Winter Air Conditioners.

Architects found features in Janitrol that added prestige and value to their recommendations. Owners saw Janitrol advantages that meant increased return and reduced expenses as well as unusual service features to client tenants.

increase the value of your service to clients. SURFACE COMBUSTION CORPORATION, TOLEDO, OHIO Janitrol was specified because of its superior design and construction features a product of 30 years of concentrated gas heating research. It offered advantages especially suited to this job.







Houston warehouse of James Bute Company, weatherproofed and preserved with a treatment of No. 109 (stone gray) Bondex.

Everyone in the Southwest knows the James Bute Company — grants them "inside knowledge" of paint through many years of experience.

With dozens of products to choose from, this popular distributor selected Bondex for weatherproofing the Houston warehouse.

Take a tip from an expert and specify Bondex on stucco, masonry, brick and metal surfaces.



FORUM OF EVENTS

(Continued from page 46)

Postmaster General Farley, J. M. Carmody, newly appointed Federal Works Administrator, Charles D. Maginnis and by several other administrative officers in the Government's building activities.

Five major building organizations are now grouped together in the Federal Works Agency, each under a Commissioner; Public Buildings Administration, Public Works Administration, Works Projects Administration (formerly Works Progress Administration), Public Roads Administration (formerly Bureau of Public Roads), and U. S. Housing Authority. Of these the Public Buildings Administration, with some additions, is the former Public Buildings Branch, Procurement Division of the Treasury Department.

The Supervising Architect's Office had its genesis in the appointment by President Andrew Jackson of Robert Mills as Federal Architect on July 6, 1836. To the man who designed the Washington Monument was entrusted the direction of new Federal buildings then contemplated, including the Treasury Building. The design of this famous monument, as is well known in the profession, set the type for Washington's public buildings from the day in 1836 down to the present.

In the early days of the Republic, the construction of new Federal buildings was a matter entrusted to the President. There is no lack of evidence that Presidents Washington, Jefferson, and Jackson took great personal interest in this work and in the selection of the architects. To the Treasury, however, soon fell most of the responsibility for the building of our public works.

The newly titled Public Buildings Administration is under Commissioner W. E. Reynolds, who as Assistant Director of Procurement, was head of the former Public Buildings Branch for six years. The principal subdivisions of the Administration and their principal officers are:

Office of Supervising Architect

Louis A. Simon, Supervising Architect (whose announced retirement as of June 1 last has been postponed for one year by an Executive Order of the President).

Office of the Supervising Engineer

Neal A. Melick, Supervising Engineer

Office of Fiscal Manager

E. R. Witman, Fiscal Manager

Office of Buildings Manager

Charles A. Peters, Buildings Manager Office of Office Manager

John H. Schaefer, Office Manager

Office of Planning and Space Control

C. J. Guthridge, Chief of Planning

Serving in an administrative and advisory capacity to the Commissioner is LeRoy Barton, with the title of Architectural Adviser. He exercises a general supervision over the office of the Supervising Architect and the Consulting Architects, and the administrative direction of the Advisory Boards of Architectural Design and Structural Engineering.

On the Technical Staff of the Public Buildings Administration are, in addition to Mr. Barton: N. Max Dunning, Architect Assistant; Walton C. Clark, Engineer Assistant; Chester L. Post and Allen W. Stephens, Consulting Engineers.

Consulting Architects: Howard L. Cheney, William Dewey Foster, Gilbert S. Underwood and Rudolph Stanley-Brown.

On the Administrative Staff are B. C. Gardner, Personnel Officer; Harry G. Hunter, Engineer Counselor; and Beverly Thompson, Acting Chief Counsel.



The Ford Foundation—established in 1936 as a non-profit corporation—has begun construction of what is believed to be one of the largest private housing projects ever undertaken in the United States. This home building project is scheduled to provide housing during the next ten years for a model community of 16,000 persons.

The site is a plot of approximately two square miles adjoining Greenfield Village and the Edison Institute Museum in Dearborn. The initial development includes 15 apartment buildings of the walk-up and terrace type, with a total of 203 apartments, accommodating an average of four persons each, and 53 single houses and business center buildings. The first occupancy is scheduled for November 1939.

Unhampered by any existent street layouts or buildings, the Ford Foundation home project reflects thinking directed toward the modern ideal in community development. Its planning is based on two years of research and examination of housing projects throughout the country. Dwellings are located on *cul-de-sac* streets—away from the noise and traffic dangers of through highways. The architectural treatment of the apartments is colonial, in keeping with that of nearby Greenfield Village and Museum.

TRAN-STEEL framing will be used exclusively in the construction of the apartment buildings and the business center. Stran-Steel was chosen only after consideration and examination in the field of all possible types of construction now in use the best for safety, adaptability, permanence, low cost, and speed in erection.

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20 LOW COST USES

PRODUCTS and PRACTICE

(Continued from page 134)

DESIGN EXAMPLES





The large auditorium without public-address system. Reverberation time 2 sec. Reflecting panel desirable.



Plan

The movie theater Stationary speakers allow more directional treatment.



Plan and Section

The legitimate theater Reverberation time $1 \frac{1}{2}$ sec. Do not allow the volume to become too large.



Section

The concert hall Reverberation time 2 sec. Wood reflecting surfaces and floor.

The examples given above are generally applicable but the designer must analyze each specific problem on its merits.

Where exact results are necessary, an acoustical engineer should be engaged.

Plan and Section

FROM THE **SHERWIN-WILLIAMS** PALETTE-COLORS FOR THE MUSEUM OF MODERN ART

Outstanding example of the expert use of color in relation to light and form is the decoration of New York's Museum of Modern Art. Here color becomes functional. It furnishes appropriate backgrounds for exhibits. It gives expanse to smaller areas. Holds larger areas together. Is used to attract attention to exhibits in alcoves. Avoids reflecting color. Emphasizes surface planes. Reflects light. Twelve colors from the Sherwin-Williams palette of standard decorator colors complete the range used by architects Philip Goodwin and Edward D. Stone for the entire Museum.

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ART LIBRARY—A yellow back wall gives a note of brightness and cheerfulness. Blue panels on book stacks and in alcove afford appropriate contrast. The gray on the panels surrounding the book stack gives relief and blends perfectly with the strong colors. The ceiling is white, to reflect all available light.



MEMBERS' ROOM (Roof Garden) — Ceilings are gray plaster. Front wall is white. Side walls are Sherwin-Williams blue. Roof Garden alcoves have been given strong colors to relieve expanses of neutral gray. Surface planes and arrangement of lighting as well as type of exhibits decided coloring used here.



RECEPTION— The ceiling is done with acoustical material painted off-white. The paint used does not affect the soundproofing qualities. Wood panelling is natural, in "rubbed" varnish effect. Front curtains are white. The whole design is simple and clean cut, depending upon materials, form, light and color for decorative effect.



AUDITORIUM — Walls are neutral gray to avoid any tendency to attract attention to themselves and to avoid reflecting color over the audience. Lighting is indirect, focussed on sidewalls. The alcove at rear of the auditorium is dark gray, tending to fade out any empty seats. Seats are crimson. The rug is dark blue.



FACADE—Strikingly modern in design, the facade of the Museum of Modern Art is easily one of the most impressive sights in New York City. The white marble of the facade blends agreeably with the glass panels of the gallery floors. Unique is the penthouse with its perforated canopy done in Sherwin-Williams yellow. The side wall is terra cotta blue.



LOUNGE—Walls are in neutral gray, a shade which does not compete with exhibits on the wall, nor distort color values. The neutral gray also furnishes an appropriate background for new exhibits placed regularly. The ceiling is light blue. The area surrounding the indirect luminary is white—for light reflection and true color values.

Consult the Sherwin-Williams Department of Architectural Service on all things paint and color. See our section in Sweet's Catalog. Write The Sherwin-Williams Company, Cleveland, Ohio and all principal cities.



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• These photographs illustrate how the newest development in insulation-Presstitched Kimsul-is speeding up application at every point. For they show how the multiple rows of strong twine, stitched down the entire length of the Kimsul blanket, make the installation of Kimsul more than ever a "one man job."

Not only does Presstitching reduce time and labor costs in the installation of Kimsul, but also increases its efficiency and permanence.

Presstitching prevents Kimsul from being expanded beyond its most efficient density, enabling even an inexperienced workman to make a correct and snugly uniform installation. The stitching being approximately 20 times stronger than necessary to support the entire weight of the blanket, Kimsul will not sag or pull away from headers.

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- 2. Kelvin Home No. 16 in the "Town of Tomorrow" 3. The All-Wood Home in the "Town of Tomorrow" 4. Swift & Company Exhibit Building
- 5. United States Steel Building (Kimsul used for acoustical treatment of air conditioning equipment room) 6. Toffenetti Restaurants

largely a matter of FORMS

LARGELY a matter of forms, this business of erecting a concrete building. That is to say, forms are built, set and filled with concrete; then job progress is held up, waiting for concrete to become self-supporting, so forms can be stripped and re-assembled.

That is why, on many structures, 'Incor' 24-Hour Cement shows substantial net savings; because 'Incor', an improved Portland cement, cures or hardens in one-fifth the usual time. Concrete, poured one day, is stripped the next; forms are released faster, one form-set does the work of two or three. Form costs are reduced, and faster erection time cuts job-overhead expense, permits earlier occupancy.

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LONE STAR CEMENT CORPORATION MAKERS OF LONE STAR CEMENT 'INCOR' 24-HOUR CEMENT







A CAMERA FINISH seems the right way to describe the material in the September FORUM. Bridge design reaches a new high in the Bronx-Whitestone, latest effort of Bob Moses and his collaborators. Two school buildings, one featuring plywood . . . the other glass block. Three residential remodeling jobs showing that both city and country houses yield unsuspected values in the hands of a talented designer.

Acoustics are tamed for the first time, reduced to an exact science and presented in an understandable, usable feature. And the California houses which missed last month are here with all the glamour of the originals. Finally, a whopping surprise for Housers of which no hint until the September FORUM hits your desk.

THE ARCHITECTURAL FORUM · SEPTEMBER

SPECIFICATION AND BUYING INDEX

The advertising pages of THE ARCHITECTURAL FORUM have become the recognized market place 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.

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