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COVER. The Mosque of Suleiman the Magnificent at Istanbul. Photo by Rene Zuber from Black Star

THE BOSTON CONVENTION

THIS MONTH AND NEXT

FRONTISPIECE. Transportation by Charles Phelps Cushing

TRANSPORTATION SYSTEMS IN THE CITY PLAN. Tracy B. Augur points out the mistakes that have been made to meet men's demands for a gregarious life. He also makes some pertinent prophecies for future correction of them

TORONTO, HAMILTON & BUFFALO RAILWAY STATION in Hamilton, Ontario, by Alfred Fellheimer and Steward Wagner, Architects. A railroad station with the railway company's offices above is the nucleus of a large-scale grade crossing elimination

NATIONAL TRAILWAYS BUS DEPOT in Chicago, Illinois, by Graham, Anderson, Probst & White, Architects. A specialized building that well expresses a very new medium of travel. It was designed by Alfred Shaw

BUS STATION AND THEATER. Helsinki, Finland, by Kosko, Rewell & Riihimaki, Architects. An excellent example of the influence of transportation on European architecture

THE SUPER CHIEF, a new Atchison, Topeka & Santa Fe train, Budd Manufacturing Company, Fabricators, with interiors designed by Paul P. Cret, Architect, and S. B. McDonald, Designer. People can now go from Chicago to Los Angeles in less than forty hours in very handsome fashion

ARCHITECTURAL OVERTONES. Eight photographs of Ireland

EDITORIAL. Pressure from Without

ARCHITECTS AT THE BOSTON CONVENTION

SUMMER AIR CONDITIONING SYSTEMS. By J. C. Hardigg is a clear explanation of a badly misunderstood subject

HOUSE AT FARMINGTON, CONNECTICUT. Remodeled by Henry-Russell Hitchcock, Jr. Functional modernism finds itself perfectly at home in the form of a new wing on a Greek Revival house

HOUSE OF CARRIE S. FLOETHE. Miami Beach, Florida, Carlos B. SchoeppI, Architect. Although inspired by the past, many houses in both Florida and California have a contemporaneous identity of their own

HOUSE OF EDWARD F. RATE. Iowa City, Iowa, Henry L. Fisk, Architect. New England precedent is exceedingly well adapted to the middle western scene

THE DIARY. The notes and opinions of Henry Saylor

PORTFOLIO. Tombstones and Mausoleums are the subject of No. 129 in a series of minor architectural details

AUDITORIUM SEATING AND HORIZONTAL SIGHTLINES. Series No. VII. . . . Series No. VII . . . on the correct planning of units that are recurrent in practice

TIME-SAVER STANDARDS. Auditorium seating . . . basic data . . . dimensions

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THE BOSTON CONVENTION

The Sixty-ninth Convention, American Institute of Architects, was held in Boston, headquarters at the Hotel Somerset, June 1, 2, 3, 4. A period of four days instead of three, tried for the first time, would, it was felt, not only obviate the necessity of sessions two or even three times a day, but would enable the delegates, members, and guests to see more comfortably and more fully the architectural and archaeological treasures that the convention city had to offer.

There were 580 persons registered as compared with $30 at Williamsburg last year. This number, of course, includes not only the delegates and members, but guests, Producers' Council members, family accomplishment, and the press.

Since the full and official account of the Convention proceedings will doubtless be published by the Institute, we shall attempt merely a summary of the results.

TUESDAY, JUNE 1, MORNING SESSION

Edwin Bergstrom, reporting as treasurer, pointed out a gain in income from members and from the sale of documents of approximately $22,000 and $11,400 respectively. Members to the number of 352 owing $6,259.50 automatically suspended their memberships on December 31, 1936, but are being carried on the rolls during 1937 without privileges.

The end of the year 1936 showed the elimination of all notes payable, including the last of the indebtedness connected with the Press of the American Institute of Architects. The total amount paid out to cover that publishing venture since its discontinuance is over $113,894.67.

LUNCHEON

Former students of the School of Architecture, Massachusetts Institute of Technology, gathered in the Rogers Building on Boylston Street for a buffet luncheon which gave an opportunity to inspect the work of students. Dean William Emerson reported that the old Rogers Building is to be torn down shortly, and a new building for the architectural department will be designed by the department, and built as part of the Institute group in Cambridge.

AFTERNOON SESSION

In buses and private cars the delegates and guests followed the route of Paul Revere through Cambridge to Lexington and Concord. The president's reception, which has come in recent years to be an important social event in the Convention proceedings, was held in The Gore Place, Waltham, a stately Georgian mansion which, until now, has been little known as one of our outstanding early American monuments.

WEDNESDAY, JUNE 2, MORNING SESSION

Nominations for officers showed no doubt in the minds of the delegates as to their candidates, so that, in place of the usual written ballot, the whole ticket was elected by acclamation without a dissenting vote: president, Charles D. Maginnis of Boston; vice president, Frederick H. Meyer of San Francisco; secretary, Charles T. Ingham of Pittsburgh; treasurer, Edwin Bergstrom.

Nominations were offered for regional directors: John R. Fugard of Chicago to succeed Gerrit J. deGelseke for the Illinois-Wisconsin District; Richmond H. Shreve of New York, who had been appointed to fill an unexpired term, was nominated to succeed himself for the New York District; Albert Harkness of Providence, R. I., to succeed Hubert G. Ripley for the New England District. All were elected.

Francis P. Sullivan reported as chairman for the Committee on Public Works. He spoke of the efforts that had been made through a discussion with Messrs. Louis Simon, LeRoy Barton, and Max Dunning as a committee on behalf of the Procurement Division. As a result, the Board of Directors offered a resolution to the effect that the Convention reaffirm its belief that the best results in public architecture are obtained through the employment of private architects, and that a commission should be appointed to pass upon the qualifications of architects for employment in work under the Procurement Division of the Treasury Department. After considerable discussion, the Convention adopted a resolution to this effect with the additional provision that the possibilities of the competition idea be explored and examined still further as a logical means of selecting architects for public works.

THE BOSTON CONVENTION

President-elect Charles D. Maginnis, who was being photographed from all sides with three cameras and a unipod, must have exposed many yards of film.

Dan Everett Waid of New York past president, A.I.A., has joined the ranks of the camera enthusiasts.

B. D. Andy Anderson of Chicago,
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emphasis on our dependence upon the architectural knowledge and skill of other men in other lands, particularly France. In his opinion we are in the process of emerging from such dependence, and are developing teachers of our own who are fortified with a better knowledge of American needs, techniques, and students' predilections. Dr. Groopius, displaying an astonishing knowledge of and facility with the English language, made it clear that he accepted Harvard's invitation to teach, not in the hope of imposing anything like an international style upon her students, but rather in the hope that he might build upon certain fundamentals, such as the correlation of hand and mind in construction methods, and design based upon these practical considerations.

THURSDAY, JUNE 3, MORNING SESSION

In the absence of Eliel Saarinen who was to have reported for the Committee on Civic Design, Arthur Holden of New York, with vice president Louis La-Beaume in the chair, discussed some phases of the broad question of how we are to pay for city planning. Professor Frederick J. Adams, son of Thomas Adams, who is now teaching at Massachusetts Tech, spoke for the landscape architects concerning the necessity for collaboration between the various forces that must direct the designs of our future communities.

The greater part of the morning was given over to Walter R. McCornack's report on the Committee on Housing. He pointed out that the 1936 Convention had, through a formal resolution, directed that the A. I. A. urge upon the nation the immediate creation by the Government of a central agency to undertake systematic and co-ordinated research in all matters pertaining to housing; that it further urge the immediate creation of state and municipal authorities in housing; and that the Government continue to assist such authorities to carry on a long range nationwide large-scale housing program. Mr. McCornack pointed out that the Wagner-Steagall Bill now before Congress was the most constructive measure thus far undertaken to carry out such a program; that there might be differences of opinion as to detail provisions of the measure, but that there could be little difference of opinion as to its intent and basic worth. The Convention put itself on record as approving in principle the basic provisions of the Wagner-Steagall Bill, and directed that copies of this resolution be sent to those concerned with its passage into law.

Mr. McCornack also directed the attention of the delegates to the fact that the profession's efforts to find some way of serving the small client involved necessarily a long-range program. He could hope for no material results within five years, but urged a continuation of experiment and research into methods that would finally solve this great problem.

In rapid succession the Convention passed resolutions proposed by the Board of Directors as follows: 1. Approving the continuation of co-operation between the Federal Housing Administration, the Federal Home Loan Bank, the Home Owners' Loan Corporation, and the A. I. A. Housing Committee in continuing the study of the small-house problem; 2. Urging the formation of a committee composed of members of the various interested national agencies for the purpose of investigating completed projects of low-cost housing, and to report upon these in all their phases to the constituent
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organizations; 3. Favoring the allocation of $200,000 to the Department of Commerce for the purpose of conducting a study of methods of reducing the cost of housing construction, with the reservation that the A.I.A. favors an attempt to develop a new technological approach, as well as an examination of present processes; favoring a study by the Bureau of Standards of technical data to be used in the development of building codes by local authorities for low-cost, low-rent housing based on the principle of minimum reasonable requirements for safety and health; 4. Suggesting a committee of architects to consult with the National Housing Authority as provided in the Wagner-Steagall Bill, in working out a program of basic principles for the national housing movement; 5. Urging the development of moderate cost housing for rent rather than for sale; 6. Providing for an effort through its Housing Committee and the chapters to arouse public and local authorities to the necessity of adopting in each city a minimum standard for dwelling units below which condemnation and destruction become mandatory; 7. Expressing its appreciation to the Institute and for their steadfast adherence to the principle that the large portion of the American public dependent upon Government aid to secure adequate shelter are entitled to architectural service to be rendered by the architects of their own communities.

After a short tilt on the subject of cooperation with real estate men, and particularly the National Real Estate Boards, in the attempt to find some answer to public problems with which both groups are concerned, a resolution introduced by Arthur Holden of New York, was passed urging such co-operation.

LUNCHEON AND PRODUCERS’ COUNCIL

With William Stanley Parker presiding as toastmaster, a joint meeting and luncheon was held with the Producers’ Council. During the Institute’s deliberations the Producers’ Council had been developing the basic details of what promises to be a campaign of great significance. It envisages the establishment of better standards in design and construction for the homes of America. Russell G. Creviston, newly-elected president of the Producers’ Council, brought a proposal of the Manufacturers’ Housing Promotion Council, of which he is chairman, to the effect that Producers’ Council assume the leadership in co-ordinating the activities of various organizations in the building industry having similar objectives. As a result there was created a Division of Sales Promotion and Education, to be the spearhead in a war against sloddy building in the residential field.

This brings together a combination of forces hitherto lacking centralization and unification—the fifty-seven manufacturers of building materials and equipment comprising the Manufacturers’ Housing Promotion Council, now joined with the forty-four manufacturers in the Producers’ Council membership. No such power has ever before been put behind the cause of better building.

It is planned to continue the encouragement and regulation of home owners shows, to provide a clearing house for the many schemes now being submitted to individual manufacturers, to study various problems calling for joint action, and to conduct a publicity campaign to educate the public in demanding quality materials, sound construction, good design and proper location of their buildings. Many suggestions for such a campaign were made by Marshall Adams, sales promotion manager of The American Radiator Co.

It was the feeling of those who attended this fourteenth annual meeting of the Council that a goal and a task worthy of its ideals and energies has been set before them jointly.


AFTERNOON SESSION

There was an embarrassment of opportunities offered to the delegates and members: a seminar session in the Convention Hall on housing; a visit to Harvard University to see the old and new buildings; tea at Lowell House; tea with Dean and Mrs. Emerson in the Judge Lee House, Cambridge; cocktails at the Boston Architectural Club as guests of the Boston Society of Architects.

The seminar on housing, which was the present reporter’s conscientious choice of activities, proved to be a long session, with many thoughts contributed by men in the Government service, housing authorities, and representatives from the architectural service groups; reports of attempts at certification of buildings in the effort to enlist a public demand for architectural services, news of the possibility that the building of small houses
would be taken over by one great operating corporation or a series of them. The seminar was too diversified in the subject matter it discussed for any definite conclusions to be reached.

EVENING SESSION

In the evening those attending the Convention were invited to a reception at the Boston Museum of Fine Arts, of which the former Harvard architectural dean, George H. Edgell is now director.

FRIDAY, JUNE 4, MORNING SESSION

The Convention plunged directly into the highly controversial question of what, if anything, should be done in remodeling the east front of the U. S. Capitol. Francis P. Sullivan, chairman of the Committee on National Capitol, reviewed in great detail the historical considerations and other testimony that had been brought out in a Congressional hearing.

Leicester B. Holland, chairman of the Committee for the Preservation of Historic Monuments, made the point that since the Institute appointed such a committee from year to year, it might be assumed that the Institute was interested in the preservation of historic monuments and desired the Committee's findings and opinions on such matters. He pointed out that the U. S. Capitol was unquestionably an historic monument, and that his Committee felt it should be preserved.

The Board of Directors, feeling that there might be a difference of opinion among architects in this matter, recommended that no action be taken by the Convention.

Several speakers made rather clear the fact that a large part of the Institute membership believed that the Institute should unquestionably go on record in matters of this kind. The public looks to the profession for guidance in a matter as technically involved as this. If such guidance is not given, the public is justified in thinking that questions relating to architecture are of no particular importance to anyone.

Even though president-elect Maginnis suggested that a decision in the matter might possibly be deferred until the membership could have more time to form its opinions, the Convention voted overwhelmingly in condemnation of the proposed alterations to the east front, and directed that copies of these resolutions be sent to the President and others who might have the direction of this proposed legislation.

Invitations were tendered by New Orleans for the Convention of 1938, and by both San Francisco and New York City for the Convention of 1939, the year of two World's Fairs.

Frederick J. Woodbridge of New York read, merely for the information of the Convention, the report of the New York Chapter's Membership Committee, painting a rather dark picture of how the Institute is regarded by many of the younger men outside of its ranks.

AFTERNOON SESSION

A reception had been arranged by the Boston Chapter at Fenway Court, which is better known as the home of the late Mrs. Jack Gardner. Architecture, sculpture, and painting, gathered in long and discriminating search throughout Europe, now form a permanent collection arranged as Mrs. Gardner left it.

EVENING SESSION

The culminating function of the Convention, as usual, was the annual banquet, held at the Somerset. President Voorhees, as one of his last official acts, summoned all Fellows of the Institute to the platform back of the speakers' table, to welcome newly elected Fellows. An unusually large number of those was announced, and their names and citations follow.

HARRIS C. ALLEN—Northern California Chapter: For public service, devotion to the high ideals of The Institute and unceasing effort in its cause, given freely, often at great personal sacrifice.

JOHN B. EDMUNDS, JR.—Northern California Chapter: For distinction in design, notably in public buildings, the excellence of his executed work, his record in civic and national affairs.

RALPH B. BENCER—of Philadelphia: Honored with the presidency of his Chapter, an able executive, sincere in public services and his high standards of an extended practice.

FREDERICK BIGGER—of Pennsylvania: For his many years of self-sacrificing and highly intelligent leadership in city planning in his own community and State as well as his devoted aid in every progressive movement for better land utilization, his broad minded approach to the problem of community housing and his disinterested service to his profession.

JOHN H. M. CAY—of Rhode Island: In acknowledgment of his unspiring and important effort in bringing to many problems of city and community planning in Rhode Island the influence of his enthusiasm for the preservation of its traditional culture.

RALPH HAYWOOD CAMERON—of West Texas: His professional training and practice, his unusually wide range of civic and military activities, his influence in the improvement of the practice of architecture in the State of Texas, his standing as a practicing architect and his sterling qualities as a citizen entitle him to advancement to Fellowship.

H. DALAND CHANDLER—of Boston: By reason of his notably effective service in support of the honorable standing and authority of his profession through his membership and presidency of the Boston Chapter.

ROLAND E. COAT—Southern California Chapter: For his distinguished contribution to the field of domestic architecture, the beauty and excellence of his work and his high professional standard.

JAMES R. EDMUNDS, JR.—of Baltimore: A record of sustained effort in the interest of the profession, the distinction of his contributions to design, and the care shown in his executed work entitle James R. Edmunds, Jr., to Fellowship.

G. CORNER FENHAGEN—of Baltimore: A sincere student, an artist of recognized talent, with an honorable record of public service.

HENRY A. FOELLER—of Wisconsin: For his many years of service and adherence
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AMERICAN ARCHITECT AND ARCHITECTURE, JULY 1937
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American Architect and Architecture, July 1937
WHAT A PLEASURE NOW TO "TAKE THE TRAIN"!

Beside the carpeted platform the new stainless-steel train stretches its gleaming length. Passengers are arriving, laughing, chatting and saying good-byes. The colorful, luxurious observation lounge is filling. In the flower-gay diner the white-clad waiters stand at their posts. Again in this modern day there is the thrill of travel—the happy anticipation of a delightful railroad journey.

This is the reality which thousands of pleased travelers experience today—every day. Five years ago only a vision in the mind of a great engineer—four years ago only plans on the draughting table—today there are ten of these light-weight stainless-steel trains in operation, covering more than two million scheduled miles per year.

They are fast trains, because the Budd type of construction reduces the weight to be pulled by nearly one-half. And they are supremely safe trains because the corrosion-proof stainless steel of which they are built has four times the elastic strength of ordinary steel.

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And best of all, these trains are filled. They have stimulated rail travel. Whether drawn by steam, diesel-powered or electric locomotives, they decrease cost of operation by eliminating excess dead-weight. They are profitable to the railroads as well as an immense service to the traveling public.

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PHILADELPHIA AND DETROIT
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AMERICAN ARCHITECT AND ARCHITECTURE, JULY 1937
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And no wonder! Walls, frame and floors are a monolith of concrete and embedded steel bars. Such a structure has the strength, rigidity and toughness to withstand terrific twisting, bursting and other forces that might spell disaster in a split second for less sturdy construction. It is the safe way to build.

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to and constant advocacy of the high ideals of architectural practice among members of his profession and the public, for his achievement as an architect, and for his unselfish efforts to improve the welfare of his community.

LAURENCE HALL FOWLER—of Baltimore: For notable contributions in service to his profession, the distinction of his executed work and the high esteem in which he is held by his community.

HUGH M. G. GARDEN—of Chicago: For excellence in design, for his achievement as an architect and artist, and for his sympathetic collaboration in the field of sculpture as related to architecture.

H. F. HENTZ—of Atlanta: For the high standard of his professional work, distinguished in many fields; for his leadership in civic causes and his support of governmental and professional betterment.

EDWARD SHEPARD HEXITT—of New York: Because of his keen interest and his many years of participation in architectural education, and for the quality of his work as artist and as a practicing architect.

ROY CHILDS JONES—of Minnesota: For his service in the field of education, not only in his own State but in the country at large, as well as for his support of a wider view of the obligations to the public of the profession of which he is a member.

ERIC KEENON—of New York: For his admirable work in the field of domestic architecture and public buildings, as well as the studied yet gracious quality he has given to this work.

GEORGE SIMPSON KOYI—of Philadelphia: For distinguished contributions in the field of architectural education, his indefatigable work in the interest of the student and the profession.

SAMUEL LAPHAM—of South Carolina: For his studied and charming adaptation of the distinctive architecture of his State to the needs of present day building, as well as the preservation of the precious structures of the region of Charleston.

JOHN REID, JR.—Northern California Chapter: For his valuable contribution to the field of school house architecture; for distinction in design, excellence of construction, his sincerity in civic affairs and devotion to the profession.

JOHN WELLBORN ROOT—of Chicago: For distinguished design, the excellence of his executed work and particularly the application of intelligent and studied composition in form, plan and construction to the solution of modern problems.

LOUIS A. SIMON—of Washington, D. C.: Since 1896 he has participated in the growth of the office he now heads as Supervising Architect of the Treasury Department, Procurement Division. During this time his great interest has been in the development of an expressive Federal architecture, the observance of high standards of architectural design and construction, the establishment of a better relationship between the Office of the Supervising Architect and the architectural profession, and a closer co-operation with other agencies of the Government having to do with Federal construction, so that his influence has always been one to stimulate a respect for the dignity of the profession of architecture. Because of his successful administration of an important public office, and his sympathetic understanding of problems of his fellow practitioners, his associates and the profession hold him in affectionate esteem and proudly advance him to Fellowship in The Institute.

SEYMOUR WILLIAMS—of New Jersey: For untiring endeavor in forwarding the policies of The Institute; for notable public service and the esteem in which he is held by fellow practitioners.

Only two Honorary Members were elected by the Institute this year. Excerpts from their citations follow:

GILMORE DAVID CLARKE, Landscape Architect, Planner and Teacher, has had a varied and extensive practice over many years on large scale work in collaboration with architects, sculptors and engineers. He has had an important part in shaping the development of some of the country's most notable public properties and his work has been distinguished by a broad grasp of the esthetic and the practical problems involved and by the sympathetic understanding of varying points of view which constitutes true collaboration.

Since his graduation from Cornell University, he has added to his own experience, and has increased the esthetic riches of the nation through his participation in the development of its parkways, parks and driveways, and through his creative work with numerous planning councils.

GEORGE WHITE MARSTON, Mr. Marston was born in 1850 and is now eighty-six years old. He has lived for many years in San Diego and has devoted himself to community service. He is considered by the architects of his city to be its outstanding citizen, father of San Diego's city planning, employing John Nolen some twenty-five or thirty years ago to lay out a city plan.

President Voorhees made a ceremony of having the newly elected directors and officers come forward to take the places at the table occupied by their predecessors—Messrs. Ingham and Bergstrom remaining undisturbed in their respective offices and chairs.

With a particularly felicitous address, such as we have come to expect from him, Mr. Maginnis took the chair and assumed the direction of the Institute for the coming year.

SATURDAY, JUNE 5

The delegates and members attending the Convention this year were offered two attractive alternates for prolonging the Convention period by an extra day. The architects of Maine had urged a visit to see some of their own architectural treasures in which they claimed Maine had achieved a distinction no less significant perhaps than her political one.

On the other hand, the Providence Chapter had urged those attending the Convention to come to Providence to see particularly some of the fine old mansions built before or just after the founding of the Republic. Your reporter followed the greater number in accepting this latter invitation. Members of the Providence Chapter met the morning train from Boston, drove the visitors to Brown University, and on a carefully routed trip through the older parts of the city and up the coast. A shore luncheon was served to seventy-five, including guests and hosts, at the Squantum Club—a gustatorial event which will go down in Institute history. Then on to see the Moses Taylor house and gardens near Newport, designed by the Office of John Russell Pope, with a final tea at the home of Mrs. Nicholas Brown, Harbor Court, designed some years ago by Mr. Crain's firm. After another run back along the shore to Providence the Sixty-ninth Convention had become a treasured page in the book of memory.

Some shirt-bosom highlights at the annual banquet: Robert D. Kahn of New York; George S. Koyl of Philadelphia; Lawrence H. Fowler of Baltimore, and Frank R. Watson of Philadelphia

24
Largest thoroughly air conditioned structure of its type—St. Louis Auditorium seats over 17,000 people.

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OTIS ELEVATOR COMPANY

It would be a strange sight indeed if, all of a sudden, wide cars, narrow cars, cars of every shape and size appeared on the railroad tracks of the country.

But railroad cars must all be able to operate on the same gauge track—that one restraining factor has helped set a precedent of car standardization.

Every elevator, however, has its own individual hatchway and tracks. Because of this, elevator standardization has not been an absolute necessity. But in the interest of economy and quicker delivery and installation of new equipment, there has been, this long while, a need for Elevator Standards.

Take, for instance, the small freight machine with a capacity of 2500 pounds at 50-feet-per-minute speed. Careful checking has disclosed that the dimensions specified for the car platform for this machine have varied only a few inches over a period of years. Obviously, this variation can be eliminated in favor of a standard for this machine. Obviously, a standard-size hatchway would mean a saving, all the way along the line, from the architect’s office—through the engineering and order departments—the factory—and the installation.

And most installations can readily conform to standards determined as best suited to conditions under which the machines will operate. Good examples are the standards established for apartment houses.

After a great deal of study and research, as in the cases mentioned, Elevator Standards have been determined for many types of Otis machines, both passenger and freight. More and more of these machines will be available, as the work of research on standard data progresses. And where a standard will fit a given installation, it will most assuredly mean a considerable saving to the man who buys it.

And may we mention the fact that Elevator Standards are not confined to equipment for a new installation? A standard of excellence has also been determined in the matter of maintenance of elevators. Otis Maintenance offers a life-extension service that cuts elevator depreciation to the bone.

The details of this service are definitely established—its quality is the same every day in every part of the country. Which means that the service contemplated in the specifications of an Otis Elevator can be delivered no matter where the job is located.
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American Architect and Architecture, July 1937
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Farewell goes out Sighing.”
- SHAKESPEARE

Vitrolux, the New Color Fused
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its strength but prevents it from being cut or ground like or-
dinary glass. Care must be taken to avoid striking exposed
edges or puncturing its surface with pointed objects.
Cutting the surface or chipping the edges causes this
glass to disintegrate and fly into relatively small crystals.
A PHOTOGRAPH BECOMES A COVER — not just an ordinary photograph but the first in a series of outstanding photographic records of sometimes well known and sometimes little known but always excellent examples of the world's architecture. As a matter of fact, we think that these pictures are so good that they can stand on their own merit without relationship to the contents of individual issues other than their importance as good architecture.

MILLIONS OF AUTOMOBILES (to make modern mankind motorized satyrs), buses, railways, and other forms of transportation all combine to inhibit the Topsy-like growth of cities even without scientific town planners crusading for better city planning. Tracy B. Augur gives us a glimpse of the future in Transportation Systems in the City Plan.

GOOD DESIGN is a weapon in helping to merchandise various types of transportation facilities. This is proven in the Toronto, Hamilton and Buffalo Railway Station in Hamilton, Ontario, by Alfred Fellheimer and Steward Wagner, Architects; the National Trailways Bus Depot in Chicago by Graham, Anderson, Probst & White, Architects; the bus station and theater in Helsinki, Finland, by Kokko, Rewell & Riihimäki, Architects; and by Paul P. Cret’s interiors for the Santa Fe’s new Super Chief.

IRELAND has a sentimental appeal but it also has an architecture that should be of inspiration to us in domestic work.

THREE HOUSES in three sections of the country offer excellent comparative material for study of some current trends in architectural taste.

SUMMER AIR CONDITIONING was a badly misunderstood article until J. C. Hardigg wrote an article that clearly explains the entire subject.

AUDITORIUM SEATING and Horizontal Sightlines, if worked out according to the Unit Planning Series No. VII, should result in nothing but satisfied audiences. The Time-Savers are on the same subject.

LOUIS B. SIMON tells us about the sensible effort on the part of the Procurement Division to design the new post offices for their setting instead of just letting loose screaming eagles on Main Street.

DETROIT'S ARCHITECTS EDIT a sixteen-page section including work and architectural thought in their section of the country as the second in an interesting bi-monthly series.

THE REST OF THE MENU will be varied and helpful.
TRANSPORTATION SYSTEMS IN THE CITY PLAN

By TRACY B. AUGUR

Cities, contrary to appearances, are not mere accidents. They result from a deep-seated desire on the part of human beings to live together. And this desire, in turn, is not just a matter of gregarious whimsy, but is born of economic necessity. We have cities, in short, because we cannot get along without them.

This simple fact rests on another. The human race, in its long effort at civilization, has lost much of its early independence. Man is sorely dependent on his fellow men. The complex business of living requires a great number and variety of contacts between different members of society; requires that those contacts be made easily and quickly. The reason that we cannot get along without cities is that we have not yet found any other device through which these contacts can as well be made.

Despite all the wonders of telephone and television and the mechanisms of remote control, we still rely on contacts that are personal. The board meetings and conferences of modern business can not be carried on by telephone alone. Workers can not operate the machinery of modern industry by sitting comfortably at home and pushing buttons. An evening of bridge by television, while having all the attributes of novelty, does not completely satisfy the social urge. Technology, with all of its advances, has not reduced the need for people to meet face to face.

By bringing together many people of diverse pursuits, cities make possible the variety of contacts that modern times demand. But they do so only at the price of an elaborate and costly system of transportation to enable their citizens to move about and meet their fellows. As they grow to metropolitan size and life within them becomes more complex, free and easy circulation is more and more difficult to maintain, and the dilemma of transportation rears its ugly horns.

It is a real dilemma. If a city keeps up with the demand for transport facilities, it faces bankruptcy. If it does not, it faces strangulation. Most cities have chosen to tackle the first horn, and are emptying their treasuries on new and wider streets, bridges, subways and all the other devices that serve the flow of traffic. They have chosen to risk their fortunes in a race with death, and as it is generally being run, it is a losing race.

It is a losing race because the emphasis is being put all on one side of a dual problem. There are two ways of keeping abreast of the demand for transport. One is to increase the facilities. The other is to reduce the demand. In embarking upon the first, cities generally have overlooked the second. The demand increases faster than facilities can be built to meet it, costs become prohibitive, and the problem is still unsolved. It looks like a very hopeless business. And it is.

The fact is that large cities have not lived up to expectations. They were supposed to offer the ultimate in transportation efficiency, to provide for the widest possible variety of contacts among the greatest possible number of people. By bringing more and more people together in less and less space, it was assumed that contacts between them would be automatically facilitated. Instead they have been rendered more difficult. The needs of one set of people have come in the way of the needs of another. The commuter, the factory worker, the housewife, all have found that to reach their daily destinations they must go around or through busy areas in which they have no interest. The multiplying of traffic streams on single arteries, the criss-crossing of alien streams, has built up congestion and delay. Cities reared to meet modern demands have failed to meet modern needs.

Instead of the legitimate transportation demands of a well-organized urban society we are faced with the excessive demands of a badly organized society. It is this excess that is producing the modern transportation dilemma. And it is the effort to provide for the excess, rather than to remove the reason for it, that is leading modern cities, counties and states on their expensive and futile race.

Because the dilemma has appeared in its most terrifying form where the complex of city life is thickest, it has naturally been looked upon as a city problem. Municipal engineering and city planning are expected to concoct some
and beyond its limits, for the internal contacts that serve his daily life and the external contacts that make it a part of the national or international urban family. These requirements are conditioned by the special functions of each community, by the topography of its site, by its position in the regional and national pattern. For each community there is a special form of organization that will best serve its particular needs, a form of organization in which rail lines, freight and passenger stations, streets and bus lines, airports, docks, bridges, warehouses,—all the components of the transportation system have their appropriate place. But to plan that organization is a custom job. There are no sets of standard blueprints, requiring only a little altering around the neck and adjustment of the trouser legs to fit any town or city that comes in the shop.

City planning can be of genuine assistance in our modern traffic muddle only by asserting its fundamental role, the role of designer. For until we have cities that are designed to function as modern times demand, we shall have no solving of the transportation problem. The purpose of city planning should be,—although too often it has not been,—to deal with the causes of traffic, rather than the effects alone, to evolve a functional scheme of organization that will eliminate unnecessary travel and thus make possible an adequate provision for necessary travel.

Shorn of all details and qualifications the problem that faces us is this: to so group the activities of modern society that the usual daily contacts of each citizen will fall as far as possible within his immediate neighborhood where they may be served by simple local means of transportation, that whatever regular travel is advisable beyond the neighborhood, such as commutation between home and employment, may be kept as short and direct as possible, and that other necessary contacts beyond that scope will be served by adequate arteries flowing between and around urban centers. The problem is to give to the metropolis the character of a cluster of semi-independent villages, each carrying on to the greatest possible extent its own life internally, and gaining the advantages of metropolitan location by free travel between the units for the contacts that require it.

It is interesting to note that the germs of such organization are beginning to appear in many places as a natural result of the transportation problem. Skyscraper business centers offer to certain business men opportunity for all their usual contacts within a single group of buildings. The sheer difficulty of reaching down-town stores has created satellite shopping centers carrying fall and attractive lines of goods needed in their locality. The hopelessness of subway travel has built up the walk-to-work movement in New York. The difficulty of operating in the midst of urban congestion has forced industries to move to suburban centers.

Most of this decentralization has to date been haphazard and unplanned. It has in it no guarantee of permanence. The new centers are accidental in location, and often so patterned on the older sections that they quickly inherit the congestion they are attempting to escape. The problem is not only to create, but to keep a more logically planned city structure.

To fulfill this role the planners and administrators of cities, states and regions need much more effective controls over the use of land than they have heretofore enjoyed. Streets have long been looked upon as public business, but the land on which their traffic originates and finds its destination is private property. It has been an axiom of the American way that the owner of private land is free to do with it as he pleases, while the community solves any and all traffic problems that he creates. If he erects buildings that cause more traffic than the streets will carry, it is up to the city to provide more streets, and to pay him damages if some of his property is used in the process. If he chooses to disrupt a down-town residential neighborhood with commercial and industrial buildings, forcing the people to move to the suburbs, and the city to build streets to take them there, he is free to do so, and not infrequently is called a public benefactor for aiding the progress and development of his community. As a nation, we are only beginning to understand the inner workings of our cities. The task of city planning is to produce order, and not merely to grease machinery that lacks it.
TORONTO, HAMILTON & BUFFALO RAILWAY STATION
HAMILTON, ONTARIO
ALFRED FELLHEIMER, STEWARD WAGNER, ARCHITECTS

PHOTO: WILLIAM J. MILLER
Part of a large grade crossing elimination project, also designed by the architects, this station with offices above for the railway company is an extremely practical solution to a specialized and complex problem. Built of Queenstone, a native Canadian stone that has characteristics of both limestone and granite, and accented by aluminum trim, the building is in complete harmony with the concrete used for the remainder of the development.
Semi-circular in form, the plan of the concourse consists of a series of logical sequences for travelers either entering or leaving the station. Warm and friendly in color, the walls are covered in enameled steel in shades of red and yellow, while the terrazzo flooring repeats this color scheme. Seats are upholstered in red leather and the many legible signs in aluminum lettering form an integral part of the decorative scheme.

T. H. & B. RAILWAY STATION
HAMILTON, ONTARIO
FELLHEIMER & WAGNER, ARCHITECTS
Serious consideration of the design problems of bus terminals is a comparatively recent development in this country. Fortunately, however, the value of architecture as an advertising medium was sufficiently well recognized by the designer, Alfred Shaw, so that when serious work was done the building was not created in the image of a minor railway station. Each bus company has taken pains to have its buses decorated externally in a readily identifiable manner. The same theory of decoration has also been applied to the bus stations. Bedford stone colored terra cotta (above) is used on the street front in a manner to concentrate attention on the entrance and vermillion-backed window displays.
NATIONAL TRAILWAYS BUS DEPOT
CHICAGO, ILLINOIS

GRAHAM, ANDERSON, PROBST & WHITE,
ARCHITECTS

AMERICAN ARCHITECT AND ARCHITECTURE, JULY 1937
Absolutely direct in design, the interiors are enlivened by a color scheme of soft blue, white and brilliant red. Walls are of plaster above red Formica wainscoting. Counters, counter tops and trim at the doors are also of this material. Plaster surfaces are painted blue, except for the side wall facing the bus platforms and the ceiling, which are white. Lighting is indirect. Chromium tube furniture is upholstered in red leather. Flooring recalls the red, white and blue scheme in terrazzo.
The only source of light in the waiting room is concealed above the wainscot behind the ticket counters. Light is thrown along the white wall which covers into the ceiling. In the background under the rest room space (below) is the lunch counter.
The quarter where the building is located is owned by the City of Helsinki, and until 1934 was nearly vacant. Owing to the direction of growth, however, this area was rapidly becoming one of the most central in the city. In order to be able to use this area productively, and yet reserve the possibility of later erecting a public building (city hall, concert hall or the like), the city accepted in 1935 the plans presented by the architects. These called for the erection of a bus station, service station, shops, restaurant, seating 800 people, and a theater, seating 800 people; entire cost to be amortized within a period of ten years when the area could then be used for a more permanent building.

**BUS STATION AND THEATER**

**HELSDINKI, FINLAND**

**KOKKO, REWELL & RIIHIMÄKI ARCHITECTS**

*American Architect and Architecture, July 1937*
The structure consists of reinforced concrete frame with light weight brick, cork, heraclith and insulite used as fill and insulation. Exterior surfaces are finished with a very thin coat of plaster and painted white. The large restaurant (below) is located on the second floor and runs almost the entire length of the building.

Ample stairways (right) give access to the restaurant from the ground floor. The kitchen is complete from generous storage facilities to recently developed radial ranges. The cafe, on the ground floor, is separated from adjoining florist shop by a large plate glass wall, lending a permanently decorative, open quality to the room.
Access to the "stadium" type theater is through a ticket lobby located on the street facade. A wide, double stairway leads from the lobby (left) to the foyer on the second floor. From this level the theater is reached by vomitories at either side, and the boxes by a circular stairway leading to a small balcony. (Right) Detail of one of the entrance doors.
BUS STATION AND THEATER
HELSEINKI, FINLAND
KOKKO, REWELL & RIIHIMÄKI
ARCHITECTS

The upper part of the foyer as viewed from the box gallery (below) lends a gay spirit to the design. Finishing material in the auditorium proper is hercath sheets, fixed semi-rigidly on a lath foundation. Boxes may be seen at the rear of the auditorium, and the entrance vomitories at the side. Exit is through doors located at the front of the theater under the screen.
Competition between various forms of transportation has created a greater need for competent designers. Railroads have discarded the old theory that passenger traffic does not pay. Today they are putting into service de luxe, high speed, streamlined trains. Latest of these is the Super-Chief. Metal furniture is upholstered in pigskin and the other materials carry out an Indian theme in red, black, gray and sand. A large Navajo rug based on a sandpainting design, decorates the zebra wood paneled wall of the lounge, and sets the atmosphere of the entire train.

ATCHISON, TOPEKA AND SANTA FE TRAIN
BUDD MANUFACTURING COMPANY, FABRICATORS
INTERIORS BY PAUL P. CRET, ARCHITECT,
AND S. B. McDONALD, DESIGNER

AMERICAN ARCHITECT AND ARCHITECTURE, JULY 1937
A sky blue ceiling combined with large glass areas gives a feeling of space and openness in the observation car (opposite page and top). Chairs are upholstered in a fabric that reproduces in color and pattern an old Bayeta Navajo blanket. Between the windows are reproductions of ceremonial sand paintings used in the "Mountain Chant." Carpeting is sand color. Compartments and drawing rooms are decorated with considerable individuality. All are equipped with rheostats for individual control of heat and air, reading lights and many other conveniences. These rooms may be thrown together into suites of any desired combination. In a Number 2 type stateroom (below) seal brown velvet upholstered seats are placed against Macassar ebony walls. Floor covering is also brown.

THE SUPER CHIEF
PAUL P. CRET, ARCHITECT
S. B. MC DONALD, DESIGNER

AMERICAN ARCHITECT AND ARCHITECTURE, JULY 1937
African rosewood is used to panel the dining car. Chairs are upholstered in dusky red leather and the carpeting of red and black is based on an ancient Indian motif. The side lighting is especially effective.
No matter whether it is a peasant's simple cottage, an ancient ruin or a Palladian "great house," the architecture of Ireland is usually in a fine setting. (Above) A typical farm house near Athlone. Coins for the Irish Free State decorate these pages. Designed by Percy Metcalfe, they have on the obverse a harp with the legend "Saorstát Éireann" and on the reverse the animals of Ireland, the nobler beasts on the higher denominations.
ROCK OF CASHEL was once the stronghold of the kings of Munster. According to a legend, dating from the Fifth Century, two swineherds after having seen an angel bless the rock led Core Mac Linghdbeach, King of Munster, to the spot. Today its ruins consist of St. Patrick’s Cathedral, a round tower, unusual in that it is built of free stone, an ancient cross and Cormac’s Chapel, a relic of the Twelfth Century.

BLARNEY CASTLE includes the famous stone the kissing of which supposedly bestows the gift of a flattering and persuasive tongue. Built in 1446 by Cormac McCarthy, some of its walls are 18 feet thick. . . . It was an important stronghold in both the Civil War and the War of the Great Rebellion.
FARMYARD near Donegal in the province of Ulster. The house is of whitewashed limestone and has a thatched roof. This is a section of Ireland that has small farms and rather meager crops.
FERMOY in County Cork is typical of the Irish market town. A center for trout and salmon fishing in the river Blackwater, which runs through the town, it did not become important until the Nineteenth Century.
AN OLD FARMHOUSE near Dublin. These simple whitewashed stone buildings with thatched roofs could well serve as inspiration for the American architect engaged in the design of smaller country houses. Their free fenestration and simple design is particularly attractive.
ROSS CASTLE, old fortress of the O'Donoghues, stands amid a beautiful setting on Ross Island in Lough Leane, lower lake of the Killarney Basin. The Lakes of Killarney are surrounded by mountain groups covered from peaks to water's edge with shrubs and trees.
A view of Trinity College, Dublin
PRESSURE FROM WITHOUT

We all know that in numbers the architectural profession is about the smallest in the country, even though the amount of control it exercises over building is tremendous, and the amount of money expended under its specifications and supervision is great. There are various groups which seek to limit the power and the potential amount of work given to this comparatively small group, the architects in private practice. These attempts at limitation take three forms—direct competition, limiting legislation, and organized coercion. The price of survival for independent architectural practice is eternal vigilance and consciousness of these impinging movements, plus active measures, both local and national, to meet each situation as it arises.

To meet the competition of designers and engineers and builders of various sorts, who are working in the architectural field, either directly or with the aid of employees who are registered architects, the only means seems to be a program of education of the public to the value of real architectural service. Such a program includes publicity and advertising, plus a record of competent performance on the part of individual architects, and of the profession as a whole.

Each year, in many states, legislation is introduced which is as detrimental to the practicing architect and as prejudicial to the interests of the public as it is advantageous to the special groups which inaugurate the bills. In New York State, three acts were introduced and passed, and probably all would have become law had not the architectural and engineering organizations presented their cases to the Governor. A bill which would have automatically eliminated the architect in private practice from designing buildings erected by the state or its civil divisions or cities and would have given this architectural work to bureaus, was fortunately vetoed.

Governor Lehman stated “This Bill would place the state, its cities, and all other civil divisions of the state in a strait-jacket insofar as the employment of architects and engineers is concerned. . . . While the bill contains an exception, the exception is far too restricted and narrow. In effect, if approved, this bill would unduly hamper administrative officials of the state and local units of government from exercising judgment as to the use of private architects or engineers. In my opinion it is important to keep the door open so that if a unit of government desires to use private architects or engineers to do an entire job in special cases, government may do so. It is important that the State of New York and its municipalities maintain the highest standards of architectural and engineering achievement.”

However, a bill was passed and signed which changed a mandatory clause of the City Charter to a permissive clause, so that the Department of Public Works of the City of New York is no longer required to employ private architects for projects exceeding $100,000, but may do so.

A third bill was signed and becomes a law requiring that all designing, drafting, and inspecting in connection with the construction of schoolhouses in the city of New York, shall be performed by a bureau under the Board of Education. . . . The bill provides that such school work “may be otherwise performed,” when, if and as the Board of Estimate may approve in special cases.

These latter bills in practice circumscribe and limit the employment of architects in private practice in a way that amounts to virtual elimination.

In the far west, a movement to limit the independence of private architects is sponsored by labor unions who are striving for a closed shop in all architects’ offices. To make their edicts effective union groups may develop lists of “approved” or “disapproved” architectural offices. Through the refusal of union masons, plasterers, electricians, plumbers, et cetera, to work on buildings emanating from a disapproved architectural office, the unions would be in a position of absolute dictatorial control.

We believe that the work of independent architects in private practice is essential to the greatest progress of the art and science of building; and that the sooner the profession becomes aware of the forces at work to eliminate this independence, the quicker and more effective will be its measures to maintain its place as an independent profession.

T. H. Sturdee
Editor

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William Roger Greeley, who helped to represent not only his firm of Kilham, Hopkins & Greeley, Boston, but the Class of Massachusetts Tech 1902.

Moise H. Goldstein of New Orleans and Albert J. Evans of San Francisco discuss geographical differences of practice over a glass of punch at the Gore Place.

Walter T. Karcher, whose Philadelphia firm is Walter T. Karcher & Livingston Smith, inspects the route of Paul Revere.

Dana Somes, who has devoted a great deal of energy in the past two years to the Boston Small House Architectural Associates.

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Edwin Hawley Hewitt, Minneapolis, whose firm, Hewitt & Brown, has recently been changed to Hewitt, Setter & Hamlin, Inc.

Dean Everett V. Meeks and Frederick A. Godley carry on their discussion as to how the architectural student at Yale should be taught, while at ease on the grounds of the Eastern Yacht Club.

Frederick W. Garber, of Cincinnati, tells an interested guest about his son who is also an architect, now in Pope's office.

Gerrit J. deGelleke, of Milwaukee, Wis., the retiring regional director of the Illinois-Wisconsin District.

Frank Chouteau Brown and Edward H. Prichard, two of the Boston hosts, at the president's reception—the Convention's first social function.

J. Edgar Willing of New York, who, while out of active practice, finds time to attend the Convention.

Alber Kelsey, of Philadelphia, caught in a gesture which may have had something to do with the competition for the Christopher Columbus Lighthouse.

Detroit sticks together—Alvin E. Harley, president of the Detroit Chapter, and Clair W. Ditchy—in the shelter of the Gore Place marquee.

ARCHITECTS AT THE BOSTON CONVENTION

AMERICAN ARCHITECT AND ARCHITECTURE, JULY 1937
SUMMER AIR CONDITIONING SYSTEMS

Eight ways to produce summer comfort in buildings are reviewed by a Consulting Engineer of wide experience, who surveys present trends in modern equipment design and its use . . . . . . by J. C. HARDIGG.

AIR CONDITIONING today has reached the stage of development where there is satisfactory and efficient equipment for every type of building. It remains only for the architect to decide the type best suited to the geographical location, kind of building, degree of comfort required and amount of money to be spent. A review and evaluation of equipment now available may prove helpful in making such selections.

Several years of experience have taught the fallacy of creating too great a difference between the outside temperature and that of the inside treated space in summer air conditioning. There still remain many examples of over-cooling in large department stores and theaters where the incoming patron is struck by an unpleasant chill and a consequent feeling of depression. Return to the heat outside is often accompanied by a sensation of dizziness unless the body adjusts itself to the sudden change. Generally speaking, an inside temperature not more than 10°F. below that of the outside air and a relative humidity of 40% to 60% produces the greatest comfort on a hot day. A better way of expressing requirements that will minimize shock to the human body is to say that the difference between outdoor and indoor effective temperatures (which reflect the relationship between air motion, temperature and humidity) should not exceed ten degrees.

Development of methods and perfection of equipment makes it possible now to produce these desired comfort conditions in a number of ways. The selection of method and equipment will vary with local conditions and prices, as well as with particular requirements of the building or space to be treated.

MOISTURE REMOVAL METHODS

There is a trend among some air conditioning authorities to look upon dehumidification and air circulation rather than cooling as the major factors in producing summer comfort. Some of these authorities believe that maximum comfort and minimum shock to the human body can be achieved by reducing outside temperatures not more than 5°F. in stores and other buildings briefly occupied and from 5°F. to 10°F. in conditioned space occupied three hours or longer at a time, provided that the relative humidity of the conditioned space is maintained in the neighborhood of 50% with comparatively frequent air changes. If this trend of thought is further confirmed in practice, it may considerably affect future summer air conditioning design, especially in those sections of the country where high summer temperatures are frequently accompanied by high relative humidities. It means, in effect, that more emphasis will be placed on reducing excessive moisture than on reducing excessive heat.

Two methods of removing moisture are now available. Unfortunately, the technical terms defining these systems—adsorption and absorption—are confusingly similar in spelling and pronunciation. Adsorption connotes the process of removing moisture from the air by material that has a physical affinity for water but does not dissolve in the water it acquires. The adsorbing material is chemically unchanged by its acquisition of moisture. Absorption connotes the process of removing airborne moisture by materials that have a chemical or physical affinity for water—the two combining together usually in the form of a solution. Both methods operate independently of cooling and, if used alone, would raise the temperature of the treated air. They are therefore normally combined with cooling equipment capable of reducing temperatures only to the comfort range.

1. Adsorption Method. In equipment of the adsorption type air-borne moisture is absorbed by a granular material which is revivified by heat and then cooled. There are two cells or compartments, each of which is alternately adsorbing moisture and then being revivified. See Fig. 1. These machines are adapted to locations where cold water is available for cooling service and where climatic conditions require removal of humidity without a large amount of cooling.

Commercially available equipment of this character is available for all classes of buildings from residences and small stores to large buildings. The size suitable for the average residence is about the size of a heating boiler. Connections required include a flue for waste heat and gases from the regenerating chamber; piping connections for gas, steam or other heat sources; and usually a water connection to coils that remove the heat released by adsorption. The unit, of course, is connected into the usual duct system.

2. Absorption Method. The newest development in summer air conditioning is the introduction of equipment that dehumidifies the air by passing it through chemical sprays which have the property of absorbing moisture. The absorption machine is offered in suitable sizes ranging from small homes or apartments to large public buildings. The machine simultaneously cools and absorbs moisture to a predetermined temperature and relative humidity. The moisture of the air is removed by a liquid absorbent and the latent heat of the removed moisture is given up as sensible heat to the air. The cooling water removes this heat as well as additional heat taken away to lower the incoming air temperature.

The cycle of the absorption system is: hot, humid outside air is blown by a fan through a water-cooled coil. The liquid absorbent flows over the coil and on coming in contact with the air removes the excess moisture. The air then passes through a filter and into distribution ducts to the space that is air conditioned. Excessive moisture collected from the air is removed from the liquid absorbent by pumping it over a low pressure steam heated coil, which concentrates it by evaporation. The liquid is then passed over a cooling coil and returned to the system. See Fig. 2.
The relative humidity of air leaving the machine is controlled by the chemical composition and concentration of the liquid absorbent; the temperature of the air by the quantity and temperature of the cooling water. The temperature zone of the cycle just described does not go below the air temperature required for cooling the air conditioned space.

Normally the steam used to revivify the liquid absorbent is supplied by a low pressure heating boiler, which may be kept in operation for domestic hot water supply purposes or for use during border line weather conditions where both heating and cooling may be needed in the same day. The machine is equipped with a control that automatically heats or cools, humidifies or dehumidifies, as the outside weather requires.

In localities where water is expensive, the cooling water is pumped to an indoor cooling tower in which air with a low dew point, exhausted from the conditioned space to make room for fresh air for ventilation, absorbs the heat from the cooling water. This use of a cooling tower is applicable to other systems as well but is not essential where cold water is cheaply available from other sources. In places where large amounts of hot process water are used or where the cost of water is low, the cooling water is pumped to the process heater or just allowed to waste.

Space requirements are no greater than for an ordinary air washer or heat transfer chamber in the usual duct system, with a small pump for re-circulating the absorbent liquid and a small regenerator connected to the boiler. If a unit cooling tower is employed to minimize water consumption it takes the form of an enclosed chamber with a separate vent to the outdoor air (through a chimney or some other provision) and requires electrical connections to operate its own pump and fan.

METHODS OF COOLING AIR

Conventional methods of summer air conditioning cool the air by passing it through cold water sprays or over cold surfaces—usually heat transfer coils—containing cold water or a refrigerant. When dehumidification is sought (as it should be in practically all parts of the country except where outside air is exceedingly dry) the temperature of the cooling medium is brought well below the prevailing "dew-point" temperature of the incoming air. At this temperature, moisture carried in the air is condensed on the cold surfaces and drained away. Air chilled to this temperature usually must be re-heated by passing over supplementary heated coils or by mixing it with warm, untreated air before it enters the conditioned space. Typical equipment of these two basic types is shown in Fig. 3. Such equipment is normally used with well water, ice, mechanical refrigeration and steam jet refrigeration cooling systems.

3. Cooling with Well Water. Cooling and dehumidification with 50° F. to 55° F. well water is being used more and more extensively. The equipment required is simple: a pump to pull the water from a well and force it through the cooling coil; the coil; and a fan to blow the air over the coil, to draw in the air of ventilation and to distribute or circulate it. Often unit heaters are used for summer cooling and dehumidification and for winter heating. In most instances the heating capacity of the coils is greater than required when the size is right for the cooling load. For this reason operation of the
unit heater is thermostatically controlled in winter. The addition of evaporators or humidifiers makes this equipment an all-year air conditioning system.

4. Cooling with Ice. In localities where water is expensive or the supply limited, as well as where colder temperature is required, ice often can be used to advantage to chill and re-use the water. The operating cost—the cost of ice—is high but the first cost, maintenance and fixed charges are low. For those sections of the country where summer cooling and dehumidification season is approximately 120 days, ice is a strong competitor of the other methods of air conditioning on a cost basis. The water is chilled by spraying part of it over ice in a well insulated box. The temperature of the chilled water is maintained constant by varying automatically the amount sprayed over the ice. The rest of the water is by-passed around the ice sprays into the chilled water reservoir. The only water sent to waste is the surplus created by the melted ice.

For efficient operation, an ice system requires a thoroughly insulated ice bunker, or chamber, built more or less like a modern ice box. It should be able to carry over a supply of ice from day to day so as not to waste the supply during cool night periods. Underground tanks, or other chambers lacking thorough insulation, have been used in the past but do not show satisfactory economy.

5. Mechanical Refrigeration. Mechanical compression refrigeration, though well known to everyone, also should be outlined to make this survey complete. It is based upon the fact that a relatively large amount of latent heat is absorbed by a refrigerant when it changes from liquid to vapor or gas. The system consists of: compressor, condenser, expansion valve, and evaporator. The compressor draws the low pressure refrigerant vapor or gas from the evaporator, compresses it, and discharges it at high pressure to the condenser. Raising the pressure of the gas increases its boiling or condensing temperature. The cooling air or water passing through the condenser removes from the gas the heat absorbed by it. Upon this cooling the gas under pressure condenses and passes either into a reservoir or into the line to the expansion valve. The refrigerant liquid passes from the high pressure of the condenser, containing only the sensible heat of the liquid form, through the expansion valve to the evaporator where, because of the lower pressure, it evaporates and absorbs the latent heat of vaporization, producing the required low temperature.

The air to be cooled and dehumidified is passed over the evaporator coils in some systems. In others water or brine is chilled by passing it over the evaporator and pumped through coils or sprays where it cools and dehumidifies the air.

6. Cooling by Steam. Steam jet refrigeration is based upon the fact that water in a vacuum boils at a low temperature. That is to say, 60°F. water when pumped into a tank where a vacuum of 0.3 inches of mercury absolute pressure is maintained, will give off vapor (latent heat) until it lowers its own temperature to 45°F. If the absolute pressure in the tank is lowered further the water temperature will drop; conversely, an increase in the absolute pressure will produce a higher water temperature.

The steam jet refrigeration system consists of three circuits: the refrigerant or cold water; the steam; and the condensing water circuit. The refrigerant water is pumped through spray nozzles in the top part of the vacuum tank and from the bottom.
TWO BASIC AIR CONDITIONING UNITS

ALL SUMMER AIR CONDITIONING systems that cool and dehumidify the air with cold liquids or refrigerants employ equipment of one of these two types. Top diagram shows the components of an air-washer or spray chamber installation in which cold liquids sprayed into the air stream absorb its heat and condense air-borne water vapor. Below is a coil-type air conditioner in which the air does not come in direct contact with the refrigerant or cold fluid circulating through the cooling coils. Note typical precautions against transmitting vibrations and machine noises. Different types of systems are largely distinguished by their methods of producing low temperature fluids for the sprays or coils. See opposite page.

of the tank through the cooling coils or sprays. The high pressure steam is expanded through a nozzle to become high velocity steam that creates a vacuum on passing through a diffuser into a condenser where it is condensed to water. This condensate is pumped back to the boiler or it may be re-employed elsewhere in the building when the steam is bought from the street mains of a public utility company. The water used to condense the steam is pumped from the condenser to a cooling tower where it gives up the heat it has absorbed from the steam and then returns to the system.

Obviously steam jet refrigeration systems are applicable only where high pressure steam is available throughout the cooling season. This often occurs in large buildings where steam is used for power generation, and in some hotels, commercial buildings and industrial plants where steam is needed for cooking or process work. The equipment itself is relatively compact and practically noiseless in operation. Its installation, however, requires a thorough knowledge of the engineering factors involved and thus should be made only under the direction of competent engineering counsel.

In any method of air conditioning where the water is removed from the conditioned air by bringing the temperature of the air below the dew point and thus precipitating the excess moisture, some method of reheating this air to bring it within the comfort zone must be provided. On maximum summer days this is usually provided by the sensible heat load of the job. In spring and fall or on summer days of moderate dry bulb temperature and high relative humidity this source of reheat is not available and reheating of the air must be done by means of steam heating coils. For instance, on a day that has a temperature of 72°F and a relative humidity of 80%, the dehumidified air would have to be reheated before going to the conditioned space.

7. Cooling by Humidification (Dry Climate). Evaporative cooling is used in a climate of high temperature and low humidity. The relative humidity is raised by spraying water into the air; the heat to evaporate the water is absorbed from the air and cools the air. The spray water is used again and again, losing only the amount evaporated by the air. This system is capable of producing comfort conditions of proper humidity only in arid regions. When the outside temperature is 110°F and the outside air has a relative humidity of 20% evaporative cooling can produce an indoor temperature of 90°F with 50% relative humidity.
THREE SOURCES OF COLD WATER USED WITH CONVENTIONAL AIR CONDITIONERS

1. WELL WATER may be used as a cooling medium if cheaply available in adequate quantity and at a sufficiently low temperature. In adsorption and absorption systems, shown on the two preceding pages, the well water temperature need only be five or ten degrees below the desired room temperature. In all systems that dehumidify by cooling below the dew-point temperature, well water below 55°F is generally required.

2. COOLING WITH ICE is practical where natural or artificial ice is relatively inexpensive and the initial cost of the installation must be kept to a minimum. Principal requirements are an accessible and thoroughly insulated ice bunker, spray heads and pump. The chilled water is then used in either of the air conditioning chambers shown on the opposite page.

3. MECHANICAL REFRIGERATION is the standard source of low temperatures for air conditioning purposes, greatly exceeding in present use all other types of systems. As this diagram shows, several variations in equipment are possible: the condenser may be air cooled or water cooled to dissipate the heat absorbed in the evaporator; the latter may be placed directly in the path of the air stream (as in the cooling coils opposite), or may be immersed in water or brine which is then pumped through similar coils or sprays.
STEAM JET Refrigeration is another form of mechanical cooling which is applicable where high pressure steam is available in summer. There are three circuits in this system: (1) Steam is used to produce a vacuum by high velocity and subsequent condensation; (2) Cold water from a cooling tower or other source is used to condense the steam; (3) Water to be chilled is sprayed in the vacuum chamber where its partial evaporation (low temperature boiling) cools the remaining water to about 45°F. This cold water is then circulated through air conditioning chambers of conventional type.

8. Indirect Cooling by Evaporation. Another method which can be used in a dry, hot climate is to cool the air by blowing it over coils which are cooled by water from which heat has been removed in a cooling tower. Further cooling to bring the temperature and humidity conditions into the A. S. H. & V. E. comfort zone can be done by repeating this cycle. That is, excess air treated in the first stage is used in another cooling tower to reduce part of the cooling water to a still lower temperature.

The ultimate limit beyond which cooling can not be effected by this method is the dew point of the outside air. Practically, air can be cooled by this method to within 15° of the dew point. For instance, with air at 110°F and 18% relative humidity, it can be cooled in this manner to 75°F and 60% relative humidity.

OTHER NEW TRENDS

Experience with existing summer air conditioning installations has brought about at least two new trends in the design of equipment.

The first relates to exfiltration, which connotes forcing air to leak outwardly from the building by creating a greater air pressure inside than exists outside. It is just the opposite of infiltration, which proves so troublesome in winter practice that the weather stripping of windows and doors has become almost a prerequisite in efficient heating.

It has been found that by designing an air conditioning system to take in a larger amount of outside air than the amount of air released from the conditioned space, more positive control can be gained and there is less tendency for unconditioned air to diffuse into the conditioned space.

The second important trend relates to noise elimination in all air conditioning equipment. The best method of eliminating noise is not to make it. This requires the selection of a fan which can handle the required volume of air silently—a matter of both fan design and speed of operation. Special electric motors and motor drives have been developed for the extremely quiet operation desired in any air conditioning system.

When these precautions do not suffice to eliminate the telephoning of noise through the duct system or apparatus, two alternatives are available. The use of a sound absorbing lining, known as acoustical felt, for a distance approximately five times the diameter or larger duct dimension, will remove practically all noises generated in advance of the lining and prevent their transmission to the conditioned space. The use of sound absorbing or vibration dampening bases for motors, blowers and other moving elements, is also an effective recourse that is becoming standard practice in air conditioning work.

EVAPORATIVE COOLING is a practical and simple method of air conditioning primarily suited to very dry climates. Two types of equipment may be used. The first is a spray chamber (identical with the conventional spray-type conditioner shown in Fig. 3, except that reheating coils are not needed) in which water sprays add humidity to the air and cool it by evaporation. The second, above, uses two or more cooling towers to chill water by evaporation of sprays in separate air streams. The cooled water is then employed to lower temperature of the air to be conditioned. Climatic conditions govern the choice between these and other systems.
Neo-Grec in style and built about 1835, the original house is of heavy wooden frame construction covered with a flat sheathing of matched boarding. The purpose of the remodeling was to rehabilitate the house, which had fallen into a serious state of disrepair; to adjust it technically for modern living, and to provide ample, well-lighted wall space for the owner's important collection of modern French paintings. Additions consist of a new living room wing at the rear and an extension of the dining room. Construction is consistent with that of the original house. A mobile sculpture by Alexander Calder was placed at the head of an old well.
Downstairs the new wing provides the chief living room of the house, particularly prepared for the larger and more important paintings. Ceiling and side walls are of plaster painted white; the chimney breast and opposite end wall are covered with gray fabric. Curtains, of the same fabric, which at night cover about a third of the walls from floor to ceiling, are of dull grass-green. The library is fitted with specially designed movable wooden shelving, and preserves the original Grecian black and gold marble mantel.
During the past few years there has evolved, notably in California and in Florida, a domestic architecture, which while obviously of eclectic inspiration, is characteristic of contemporary America. This house is a case in point. Compactly planned, it is built of concrete and cement block, stuccoed. Roofing is of Ludowici white interlocking shingle tile and all windows have Fenestra steel sash.
Interiors of the living room indicate the same borrowing from precedent that characterizes the exterior. Random width vertical boarding is used on the fireplace wall of the living room while the remaining walls are painted plaster. Tiles are used for flooring.
HOUSE OF EDWARD F. RATE
IOWA CITY, IOWA
HENRY L. FISK, ARCHITECT

New England precedent is well adapted to a mid-west setting. Built on a sloping site, a garage under the house provides direct access to the entrance vestibule and to a recreation room on the basement level. Constructed of brick veneer and redwood siding over frame, the foundation walls are concrete block and retaining walls are of native stone. Cedar shingles are used for roofing.
White painted wood siding and trim, red brick and native stone offer a pleasant and discriminating choice of textures. Leaded glass steel casement windows have been used in the library (below), although double hung windows have been used throughout the rest of the house.
Boston, Tuesday, June 1.—The Sixty-Ninth Convention of the American Institute of Architects: Bishop William Lawrence addressing with a surprisingly wide knowledge of American architecture and architects . . . Stephen Frank Voorhees getting out from under his burden of responsibility . . . Edwin Bergstrom bringing the glad tidings that we're in the best position financially for some years . . . tables, investments, consolidations, operating budget and other figures.

The Somerset Hotel on the edge of Boston's Fenway, a happy choice of our Boston hosts . . . surrounded by trees and plenty of parking space, filled inside with hand-shaking reunions on the part of men with orange, blue, green and red badges.

Forming students of architecture at Massachusetts Tech gather in the old Rogers Building for a buffet luncheon and to hear Dean William Emerson tell us that Tech's already high tuition goes up next year to six hundred dollars . . . Surprising how many architects have long known who now turn to Tech men.

Piling into buses and private cars to follow the route of Paul Revere . . . Informed impressively by megaphone that Paul Revere was not the only rider—there were two others, and only one of these two got through to give the warning. Too hot for stable enthusiasm about early Massachusetts houses and history . . . The Gore Place, a revelation . . . Why has it been so long hidden from the architectural world?

Particularly festive today with hosts and hostesses dispensing a collation under a marquee on the lawn . . . Hubert Ripley, Gordon Allen, J. Lovell Little, and others.

A well-handled punch worthy of much cooler weather.

Symphony Hall filled with tables and clinking glasses for the Pop concert . . . An attempt on the part of the architects to sing Les Pompriers with rather disturbing results—Ken Murchison says that the music of Les Pompriers is fundamentally wrong and that he has made the only effective orchestration of it . . . Far into the night renewing friendships with men from the Middle West, the Pacific Coast, and the South.

Boston, Wednesday, June 2—Convention wheels well oiled and running smoothly . . . New officers elected by acclamation instead of usual secret ballot . . . Readymade resolutions by Board of Directors adopted in rapid succession . . . Robert Kohn and Arthur Holden in their annual bout declaring warm friendship and differing diametrically on policy . . . The delegates, feeling their oats, overruling the Board in the latter's apparent wish to keep the idea of competition for public works tucked away in a dark closet . . . Unification urged—we stand united, we divide we fall.

Off for Marblehead . . . Lovely old houses . . . The satisfying beauty of simplicity . . . Cocktails for some of us at Frank Chouteau Brown's, followed by much seafood at the Eastern Yacht Club . . . Many discovered I. Howard Jones' house fairly near the Lee Mansion, and its wisteria-covered upper porch lured us away from the hurried trip on to Salem.

Sunday's room only in the Convention Hall tonight—a surprisingly large number of Bostonians apparently interested in architectural education . . . Dean Emerson urging better and fewer architectural schools . . . Everett Meeks tracing the history of our educational methods and pointing out our dependence herefore on France . . . Gropius dispelling the widely spread impression that he would build on the tenets of the Internationals—a well considered paper which, however, seemed to me less satisfying than his informal talk some weeks ago at the League in New York.

Boston, Thursday, June 3—Housing, housing, inspired by Walter McCornack's report . . . Not enough about one of the biggest problems facing the profession—how to provide service for the small-house client.

Luncheon with the Producers' Council . . . Delegates off to Harvard, with tea as Boston takes it at Dean Emerson's home in the Judge Lee House . . . The more conscientious house owners attending an afternoon session . . . Talk of civic planning, talk of Governmental activities in housing, talk and more talk . . . and the small-house problem not yet solved.

Boston, Friday, June 4.—Francis P. Sullivan dealing with historical, technical, and archeological items to justify altering the east front of the National Capitol . . . Leicester B. Holland asking why have a Committee on the Preservation of Historic Monuments if its findings are merely filed . . . Resolution indicating the Board's desire to solicit the question . . . Charles D. Magazines, beloved incoming president, suggesting postponement of action . . . Delegates listening quietly and respectfully, then exploding in a practically unanimous vote for hands off the Capitol.

The late Mrs. Jack Gardner's palace over-run with delegates inspecting European pavement and drinking thousands of pounds of sandwiches per square inch on the massive tea table . . . Ambitious camera fiends photographing art treasures . . . One delegate with three cameras and unipod.

The architect dressed up . . . A banquet menu simplified and glorified as only Hubert Ripley could do . . . With the cup dispensing to the number of new Fellows . . . Irving K. Pond demonstrating the architect as eighty years young . . . The new officers taking their places, the old ones fading out . . . Charles D. Maginns speaking of the present as a Pentecost period in which architecture apparently likes to sit in dust and ashes while clothed merely in its skin . . . Congratulations . . . Farewells . . . Moving on to cafes and bars . . . The Sixty-Ninth Convention really enjoying itself.

Boston, Saturday, June 5.—Up early and on to Providence . . . Providence architects showing us Brown University . . . Grand old houses hard to beat . . . Tea and privateering . . . Shore dinner at the Squadron Club . . . Seeing the Moses Taylor house designed by the Office of John Russell Pope, with a magnificent forecourt hedge of square-clipped lindens . . . Tea on the terrace of the Nicholas Brown house—designed some years ago by Cram—with the cup dispensing to the number of Providence architects—"See you next year at New Orleans.

Cambridge, Monday, June 7.—Massachusetts Tech seems to be on the verge of turning her thoughts upon this matter of housing.

An auditorium was filled this morning to capacity with house owners who wanted to hear what Sir Raymond Unwin, John Ely Burchard, Robert D. Kohn, and Ernest J. Bohm had to say about housing.

It is positively amazing, considering the number of times we call upon Sir Raymond for his thoughts, that he never fails to throw the powerful searchlight of his mind into some unexplored corner of the subject or else upon some outstanding principle which has hitherto been less brightly illuminated. For instance, today he pointed to the fact that with the onward march of civilization it becomes increasingly important that all of the individuals concerned with our complex community life must play their proper parts therein. It is, then, a community obligation to see that all of its individual members are enabled to live decently and be equipped to play those parts properly.

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build them about twelve to the acre which allows about three hundred yards of garden space for each family, and while Sir Ray- mond does not directly criticize our mass housing, I think there is no doubt of his con- viction that the individual unit with its in- dividual plot of ground is infinitely better. Sir Raymond has a habit of bringing his hearers up with a jolt by some such provo- cative remark as this: "The area of the United States exceeds three million square miles; the present population may be es- timated at thirty-two million families; if they were all gathered in cities laid out on the low average of ten dwellings only to the acre; and if a like space—a very generous allowance—were allocated for industrial, commerical, and other uses; only ten thou- sand of those square miles would be needed. In other words, an insignificant patch on a map of the United States measuring one hundred miles each way, would suffice to hold the whole population in urban areas on a generous scale in which every family could have its own dwelling with land attached."

Not only did Sir Raymond bring significant facts and stimuli to his audience, but Messrs. Burchard on "Flow Better Homes Will Be Built?"; Robert D. Kohn on "The Future of Housing," and Ernest J. Bolin on "Housing and the Government" contributed to what was perhaps the best rounded expo- sition of the subject that even houseors have heard for some time.

Vanevar Bush, Dean of the School of Engineering at Tech, summed up the sym- posium and even reduced it all to a formula which he chalked on the blackboard. It comes pretty nearly to this: "There should be established a standard of hous- ing, this standard being so set as to impose the minimum current costs on society," which when you look at it in the round, is a rather comprehensive statement.

Wednesday, June 9.—The legislative ax has fallen upon the architects of New York State, though its weight was measurably lightened by the Governor's veto of the McNaboe Bill. The latter would have pre- vented the employment of architects and engineers in private practice for any archi- tectural, engineering, or technical services to be performed in the construction or main- tenance of any public work instituted by the State or its civil divisions or cities. Gov- ernor Lehman couldn't quite stomach it.

Nevertheless, he did sign the Buckly Bill which practically prohibits the employment of architects in private practice in connection with the designing of buildings for the City of New York. He also signed the Feld Bill which prevents the employment of archi- tects in private practice by the Department of Education of the City of New York, ex- cepting in special cases.

Friday, June 11.—Over to the grassed and planted roof of the French Building to see what the Pittsburgh Glass Institute competi- tion had brought forth. The entries were of unusual interest and effectiveness, par- ticularly emphasized by the uniformity of the photographic presentation. The competition suggests a whole series of them, to show about to be done in marble, terra-cotta, stone, brick, wood. It remained, how- ever, a hollow echo for one of the youngest members of the family—the glass industry—to set the.

Monday, June 14.—His Majesty's Office of Works had its own troubles in seating the coronation thrones. If anyone imagines that the task could have been solved merely by providing a number of seats be little more than the British capacity for detail. There was, for instance, the Broadest Peeress for whom the standard 1 ft. 8 in. seat would not do at all. H.M.O.W. contrived to run an aisle past her seat on one side, and to pry it loose from its neighbor on the other side, thereby preserving the comfort of the Broad- est Peeress and the dignity of the Empire.

Tuesday, June 15.—Would you like to help save the mosaics of St. Sophia in Istanbul? The Byzantine Institute, Sears Building, Boston, Mass., has undertaken to preserve these mosaics, and needs $50,000 for the next two years, in addition to funds now in hand.

Thursday, June 17.—One becomes accus- tomed to startling ideas in these days of rapid change. Nevertheless, it was some- thing of a shock to hear a definite proposal today, at a meeting of representatives of the architects and allied arts, that we form our own union. The idea behind the sug- gestion was that apparently it is only large combinations of persons whose views can be heard in the public councils.

Nevertheless, a union certainly pres- sposes identity in interests and singleness of purpose, which is something that architects, painters, sculptors, decorators, draftsmen, and industrial designers are "fresh out of.

Saturday, June 19.—Frank Lloyd Wright has designed a good many things, not to overlook some effective printed matter in his books and announcements. This month, however, he blossoms forth as a designer of magazine covers with what I judge to be an abstract conception of the fug as it might be waved on the Fourth of July. See Town & Country's July cover.

Tuesday, June 22.—Until a few years ago this country had never thought architects of sufficient importance to confer upon one of them an honorary degree. These have been coming thick and fast in recent years, however, to Magenigle, Maginnis, Butler, Corbett, and others. Today Princeton con- ferred upon Stephen Francis Voorhees the degree of Doctor of Engineering. A day or so ago the French Government honored Albert Kahn by membership in the Legion of Honor. Moreover, there is a well sub- lying expectation that within the next few days, will honor Sir Raymond Unwin with a degree, Doctor of Arts, and Charles Moore, veteran chairman of the National Fine Arts Commission, also with the degree, Doctor of Arts.
Tombstones and Mausoleums

Here rests in honored glory an American soldier known but to God.

© H. H. Saylors
Lorimer Rich

Thomas Hudson Jones


The Editors welcome photographs of these subjects . . . Forms close eight weeks in advance of publication. A list of the subjects that have appeared will be sent upon request. Certain of these past Portfolios are available to subscribers at 25 cents each; or five subjects for one dollar.

Number 129 in a series of collections of photographs illustrating various minor architectural details.

American Architect and Architecture, July 1937
Redlands, Calif.
I. N. Phelps Stokes

Leeds Mausoleum, Woodlawn Cemetery, Woodlawn, N. Y.
Office of John Russell Pope

Saginaw, Mich.
Thomas E. Tallmadge; Emory Seidel

Denver, Colo.
William E. and Arthur A. Fisher
Sewanee, Tenn.
Cram & Ferguson

Schwitzer Mausoleum, Crown Hill Cemetery,
Indianapolis, Ind.
J. E. Kopf

Woodlawn Cemetery, Woodlawn, N. Y.
Howells & Stokes

Detail of mausoleum, Riga, Latvia
Herr Zale
Woodlawn Cemetery, Woodlawn, N. Y.
Ralph S. Myers

Plymouth, Mass.

Memorial Cemetery,
Cold Spring Harbor, N. Y.

Rock Creek Park, Washington, D. C.
Augustus St. Gaudens; Stanford White
Boldt Mausoleum, Santa Barbara, Calif.
Reginald D. Johnson

Kinderhook, N. Y.
L. A. Whitehouse

OLIVER BATY CUNNINGHAM
SEPTEMBER 17, 1894
CAPTAIN FIFTEENTH FIELD ARTILLERY
KILLED IN ACTION, THIRICTIONS, FRANCE, ON HIS BIRTHDAY 1918.

Rosehill Cemetery, Chicago, Ill. [Detail shown above]
Earl H. Reed
Cornish, N. H.
The ashes of Augustus St. Gaudens
McKim, Mead & White

Lausanne, Switzerland. (Another view shown above)
Cram & Ferguson

Oakwoods Cemetery, Chicago, III.
A. Harrison Barr
Wilwyck Cemetery, Kingston, N. Y.  
Charles S. Keefe

Graceland Cemetery, Chicago, Ill.  
Thomas E. Tallmadge

Mt. Auburn Cemetery, Cambridge, Mass.  
Cram & Ferguson

Rear of the Munger sarcophagus  
shown on the page opposite
1856 LOUIS HENRI SULLIVAN Born 1896
BY HIS BUILDINGS GREAT IN INFLUENCE AND POWER. HIS DRAWINGS UNBEPASSED IN ORIGINALITY AND BEAUTY. HIS WRITINGS RICH IN POETRY AND PROPHECY. HIS TEACHINGS PERSUASIVE AND ELOQUENT. HIS PHILOSOPHY WHERE IN "FORM FOLLOWS FUNCTION" HE SUMMED UP ALL TRUTH IN ART. SULLIVAN HAS EARNED HIS PLACE AS ONE OF THE GREATEST ARCHITECTURAL FORCES IN AMERICA. IN TESTIMONY OF THIS HIS PROFESSIONAL AND OTHER FRIENDS HAVE BUILT THIS MONUMENT.

Rear of the Louis H. Sullivan tombstone shown on the page opposite

Munger sarcophagus, Elmwood Cemetery, Birmingham, Ala. McKim, Mead & White

Trinity Church Cemetery (uptown), New York, N. Y. Bertram G. Goodhue
Forest Lawn Cemetery, Buffalo, N. Y.
A. Harrison Barr

Memorial Cemetery, Cold Spring Harbor, N. Y.

James Earle Fraser

Porter Mausoleum, Woodlawn Cemetery, Woodlawn, N. Y.
Trowbridge & Livingston
Memorial Cemetery, Cold Spring Harbor, N. Y.

James Earle Fraser

Bertram G. Goodhue's tomb, Chapel of the Intercession, New York, N. Y.
Lee Lawrie

Trinity Church Cemetery [uptown], New York, N. Y.
Thomas Nash
Pluckemin, N. J.
Lorimer Reich

Trinity Church Cemetery (uptown),
New York, N. Y.

Oak Hill Cemetery, Washington, D. C.
Adapted from a 13th Century cross

Warren, Knight & Davis

Wainwright Mausoleum, St. Louis, Mo.
Louis H. Sullivan

St. Marks in the Bowery, New York, N. Y.

Pluckemin, N. J.
Lorimer Reich

Trinity Church Cemetery (uptown),
New York, N. Y.

Warren, Knight & Davis

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UNIT PLANNING—VII

AUDITORIUM SEATING AND HORIZONTAL SIGHTLINES

BY FREDERIC ARDEN PAWLEY

DIMENSIONAL planning factors affecting auditorium seating are all related to a basic unit, the seat. Definite limitations imposed by standard seat sizes, code requirements and layout schemes are obviously developed in multiples of individual units. Approached from this angle, solutions to problems of auditorium seating become a matter of planning for installation of proper seating units. Part I of this article and the accompanying Time-Saver Standards deal with such definite dimensional data.

The more theoretical limitations based upon horizontal sightlines are discussed in Part II. These, being susceptible of study in plan, should be constantly in the designer's mind when making seating layouts. Methods of staggering seats and of determining distances from front row seats to stage or screen are developed from requirements for unobstructed vision.

In Time-Saver Standards are presented concise dimensional and tabular data adapted to the practical solution of common seating problems. No attempt is made to show theoretically ideal conditions or to standardize theater plan types. These vary with each job. They are often governed by economic, structural or esthetic considerations beyond the scope of this article.

PART I—SEATING

Theater chairs are manufactured in a range of stock sizes sufficiently wide to permit utmost freedom in making seating layouts. Seats are sized by width, center-line of arm to center-line of arm. They vary also in pitch of seat back and in material.

Seat supports are called "standards," those at ends of rows being end standards and those between seats, middle standards. Stock sizes of seats vary from 18" to 24" wide by inches. Size and back-to-back seat or row spacing are measured on the "chair-size" or datum line, which is approximately 2" in front of the rear of middle
AUDITORIUM
SEATING . . .
UNIT PLANNING
NUMBER . . . . VII

standards. Depth of seats varies only slightly.

Pitch of seat backs is measured either in degrees
from the vertical or inches of horizontal projec-
tion. Provision of a variety of tilts is necessary
to permit a comfortable view of the center of
interest from seats in all locations within the aud-
itorium. Selection of pitch, in general, should be
made as follows: Portions of level or reverse-
curved floors closest to center of interest require
greater pitches. Steep banks such as balconies
require more nearly vertical backs. Greater
pitches also require increased back-to-back row
spacing for easy passage.

Seats vary as to material from fully upholstered
to veneered, including such types as spring-edge,
spring-back, box-spring, padded back, and veneer-
back. Combinations of spring edges and backs
form the most luxurious and most expensive type.

Box-spring chairs are almost as comfortable and
less expensive. Veneered seating is suitable only
for conditions of hard usage such as schools.

Upholstered chairs improve auditorium acoustics
tremendously, particularly in halls not having
capacity audiences at all times. Fully upholstered
seats can be obtained designed for acoustic
absorption when empty equal to that when oc-
cupied. Use of non-absorbent seating such as
plain veneer chairs necessitates installation of in-
creased amounts of acoustic plaster or similar
materials.

Exact dimensional data relating to stock sizes,
pitches and clearances are given in T.S.S. Serial
No. 84 and No. 85.

CLEARANCES

Clearances are necessary for three principal rea-
sions: to accommodate pitch of seat backs; to pro-
vide room for mechanics on jobs properly to
secure seat standards to the floor, and to provide
sufficient room for end seat standards.

Pitch. Horizontal projection due to pitch of seat-
back must be checked carefully when laying out
seats on risers. The back of the seat starts to
slope at 12 inches above the floor, so that an in-
crease in the height of a riser over 12 inches
causes a direct increase in ‘X,’ the distance seat
standards must be placed in front of the riser.

With cramped back-to-back spacing, the worst
condition exists when the top of a seat-back comes
to the knee of a person in the next row back.

This occurs when risers are approximately 12
inches high. Clearance necessary is normally
small, since risers exist ordinarily in balconies
where seats with small pitches may be used.

Typical minima are shown on T.S.S. Serial 84.

Clearance at side walls illustrated in Time-
Saver Standards and required by pitch of backs,
is unnecessary in a fan-shaped auditorium with
side walls approaching radial lines, if seating is
laid out in curved rows having the same center.

This is not a usual solution but need for this
clearance is minimized in any fan-shaped hall even
though auditorium wall centers and row centers
do not coincide. In all cases, there should be pre-
ferably 1” clearance between seat-backs and walls.

Standards of seats must be set on level surfaces
with sufficient room for workmen to use power
drills. Cove of risers and bases should be limited
to 11/2” approximate maximum radius.

When using pew seating side wall bases should
not be coved if pews are built up to walls. Covex
at this point would require scribing or shrinking
end standards.

End standards require 11/2” additional space at each
end of a row. In balconies having risers, this
allowance is normally increased to 21/2” inches.

End seats of rows may be chosen from the
smaller sizes, since their location provides elbow-
room for occupants without interference on one
side. The smallest desirable end seat is 19” wide. Intermediate seats should be at least 20” wide, preferably 21” or 22”, to avoid crowding.

**ROW LAYOUTS**

Rows may be straight or curved in plan. When rows are straight, spectators at sides of auditorium must twist in their seats to view the center of interest. The results are personal discomfort for spectators and undue wear and strain on seat upholstery and frames. An approximation of curved rows may be obtained by laying out side seating rows at an angle to center rows.

**Canted side banks.** When side banks are laid out at an angle to straight rows in center banks, difficulties caused by the failure of rows to line up across aisles are aggravated in areas with risers. Either steps in aisles must be canted at a still different angle, or central banks of seats must be spaced more widely than side banks.

**Curved rows.** A practical minimum radius for seating is 20 feet. An absolute minimum of 8 feet is possible with special tapered seating. Compensating hinges with pivoting elements are also necessary to avoid binding. When designing a sloping floor for curved rows of seats, the floor should be laid to avoid tilting seats at sides of auditorium.

A compromise with the ideal of a fixed center for radii of seating rows is often found. It is argued that by flattening the arc of the first row a few seats are gained. These are poor seats, but because the practice is common, a related problem should be mentioned. Lengthening of the radius of first row of seats often places the center point behind the rear wall of the stage. How can such an arc be laid out on a job in which the rear wall already exists?

The simple geometrical method shown in the margin solves the problem. The first row radius is set off on the center-line of the house in a reverse direction with center at 0, and an arc, AB, drawn. Then CD is drawn, a straight line perpendicular to the center-line and tangent to arc AB. Next, a number of short lines are laid off parallel to the center line, and the distances intercepted by arc and tangent are set off on the stage side of the tangent. These establish points on the desired arc XY.

A screed for the concrete slab is set on this curve for the first row. The next screed can be placed by measuring with a rough T-square of fixed length, depending upon the method of curving the floor.

A radius with center points stepped back or forward is sometimes necessary in alteration work to fit such job conditions as established curves of aprons, orchestra pits, standee rails or rear walls. If stepped back, it is necessary to check carefully for legal back-to-back clearances at ends of rows because spacing with this type of radius becomes less at the sides.

**Ventilators** are of two general types: mushroom, with adjustable hood which may be set at various heights to regulate area of opening; and the type

*Left, also from Kansas City Auditorium; clearance is required between seat-backs and standee-rail. Note that curved rows continue to rear of auditorium. Right, Pix Theater, Scarsdale, New York; an intimate cinema in which, although no row contains more than 14 seats, the seating layout falls within the definition of "Continental Seating"*
which is built into middle standards of the seating and is shown on T-S.S. Serial No. 84.

Floor ventilators must be studied in relation to the seating. They must not catch or mar the shoes of persons sitting in the row behind; and they must not be high enough to obstruct seats when tipped up. The latter point must be watched in areas under balconies where exhaust openings must be opened as wide as possible in order to properly condition such a limited space, the foul air strata being low.

AISLES

Seats should be aligned at aisles. Banks of staggered seats such as those often used abroad cause jagged aisles with "pockets" which hamper exit of an audience. An additional problem is introduced when finish aisle flooring differs from general seating area flooring or when the aisle is heavily carpeted.

For instance, if aisles are of terrazzo, the rest of the floor of cement, seats will project irregularly into aisles, producing an unsightly jagged line, and terrazzo will be found unsatisfactory to drill for anchors for seat standards.

Balcony aisles. It is important to pour or build in intermediate steps in balcony aisles after the seating has been laid out on the job, or even after the standards have been placed. In this way dangerous and unsanitary pockets can be avoided, since the steps can be shaped to the radial lines followed by the standards and thus fill these undesirable spaces. Such pockets are particularly bad when the aisle is not radial. Steps placed before the seating is laid out in such plans may have to be cut back on one side to get the last seat in.

Continental or aisle-less seating involves use of an unlimited number of seats in each row, increased back-to-back spacing and side aisles or foyers wider than usual. The building code of the National Board of Fire Underwriters and the new Chicago building code both permit Continental seating under certain restrictions. Not only are comfort and ease of passing through to an interior seat increased, but steel span over the auditorium is also decreased and more seats are placed in the best parts of the house. As will be demonstrated in the second part of this article, the greater back-to-back spacing also improves vision.

Ramped aisles for exits which encroach upon seating areas may also cause seats to be out of plumb. In special cases where such slopes cannot be avoided this condition may be corrected at considerable expense by changing the relative heights of hinges on each seat in order to keep seats level.

THE STAGE PICTURE

Visual problems in the theater are best studied by comparative analyses of the perspective picture presented by the stage from various locations in the seating area. These correspond to the experiences of spectators, and other theoretical tests are meaningless if the stage picture is unduly distorted or obstructed.

Obviously, any stage composition relies for effect on the spatial, color and textural relations between actors, set and properties, and must be seen from a restricted area to retain any likeness to the scene as designed (see "Distortion" below).

Horizontal and vertical sightline angles form a logical division of theater visual problems. This study will be limited to horizontal angles only. Horizontal sightlines are more closely related to seating layout since both are studied in plan.

PHYSIOLOGICAL FACTORS IN VISION

Horizontal visual range and viewing distances. Normal horizontal visual range may be assumed with reasonable accuracy to be 40°. It follows that to obtain a comfortable, full-width view a spectator must be a certain minimum distance from a screen or proscenium opening.

The minimum seating distance (AB in marginal diagram 1) is easily found to be 1.4 times S, which means that, because of the horizontal limits to normal vision, the first row of seats must be located at least 1.4 times the width of the screen from the screen, a theorem partially recognized at present by rules which allow a first row distance of one foot per foot of screen width, or 15 inches per foot of width. The former is based on 53° horizontal visual range, the latter corresponds to 43° 30' (or 1.25 times screen width).

Diagram 2 shows that if 40° is the actual limit of the horizontal visual range, a location only one screen-width remote will make the outer intercepts (X and Y) difficult and tiring to see. These total over one-quarter (0.28) of the width of the picture in this case.
Provision of some distance between screen and front row of seats also helps to lessen for nearby spectators the jumpy effect of the motion of objects across the screen. The usual legitimate theater, however, has seats jammed right up to the apron, and the “bald-headed” row even carries a premium for one type of performance!

Plays are often restricted in space and utilization of stage possibilities for purposes of composition does not approach that of the motion picture screen; a result due in part to bad theater planning—for there is good scene-design talent. On the other hand there may be for special scenes a distinct psychological value in requiring the spectator’s glance to travel from one side of the stage to the other. Such movement would emphasize the length of a procession, for instance, or contribute to the dramatic punch of sudden entrances. Such effects, often unplanned, are also limited to a necessarily small part of the conventional audience.

Ben Schlanger, an architect specializing in motion picture theaters, has studied optical relations between motion picture cameras which photograph the original scene, projectors in the theater showing it, and locations of persons viewing projected scenes. From these relations, the areas corresponding optically to the location of the camera will naturally become the best areas from which to view the projected picture. The fact that such areas must normally be at a limited distance from the screen (because the majority of scenes taken at close range) results in a tendency toward smaller cinemas for better vision.

Schlanger recommends four times the screen width as the ideal viewing distance. He sets the maximum viewing distance at preferably less than six times screen width.

The maximum distance from the stage for seats is partly an acoustical problem. This is truer in the legitimate theater since the unaided human voice reaches only 75 to 100 feet with any range of dramatic effect. In the cinema, sound must be balanced between the volume tolerable for nearest seats and that necessary for those most remote.

Binocular vision. In addition to the limitation of horizontal visual range and its effect on viewing distances, the phenomenon of binocular vision must be considered in seating design. It is to the fact that we have two eyes that we owe the normal development of perception of static and dynamic spatial relationships so necessary to the appreciation of stage compositions. The camera has one eye. This illustrates the fundamental physical distinctions between vision in the stage theater and in the cinema.

Binocular vision also affects our ability to see around obstructions such as the heads of spectators between us and the stage or screen. The width of obstruction varies directly with the distance from the screen and indirectly with the distance from the eyes to the obstructing object. This latter point can be proved in an elementary fashion by holding out your hand at arm’s length, noting the size of the obstruction it causes in whatever scene you see, then noting the increase in this obstruction as your hand is moved nearer your eyes. Note also the difference in the hand's obstruction size and location when viewed with each eye singly and then with both eyes.

Similar obstructions formed by heads of spectators in the next row in front are illustrated in the diagrams for differing back-to-back spacings of seating rows. The two eyes are replaced by an equivalent single point. The relation between the constants selected (papillary distance 2½ inches, head-width 7½ inches) is such that this equivalent point is always located one-half the back-to-back spacing away.
Typical three-bank auditorium seating laid out in straight rows. Notice that because aisles are at right angles to seats rows and seats do not project. Seats at fronts of side-banks and balconies will not provide good vision but as this is obviously an auditorium rather than a theater, such a defect may be tolerated.

Horizontal obstruction relationships can be expressed in foot units (all factors in feet) as:

$$ X' = \frac{0.21 (2aS + b)}{b} $$

In inches (all factors in inches) as:

$$ X'' = \frac{2.5 (2aS + b)}{b} $$

When $X = $ Obstruction at screen or stage;
$S = $ Screen or proscenium width;
a = $ A constant for the viewing distance under study (i.e. 3 or 4 times $S$, etc.)
$S = $ viewing distance;
$b = $ Back-to-back spacing of rows.

The fractional form of this formula clearly shows that obstruction width varies (1) directly with viewing distance; and (2) indirectly with back-to-back spacing.

The latter point should convince anyone skeptical of the value of greater row spacings than usually required by building codes. Increased comfort as an argument is thus reinforced by the increase in the amount of the screen or stage that can be seen. These combine powerfully to improve theater design in a way the public will appreciate and recognize by increased patronage.

In legitimate theaters an additional element, depth of the stage, makes horizontal obstructions also vary from the curtain line to a maximum at the back-drop.

Staggering of seats. To avoid horizontal head obstructions, which are particularly noticeable in flat portions of auditorium floors near the stage or screen, it is customary to stagger the first ten rows of seats (approximately). Curved or compound aisles, or fan-shaped plans, also aid vision, the shortened rows giving an opportunity for staggering without jagged aisles (see "Aisles" T.S.S. Serial No. 84.)

Seats staggered in two-row multiples are the usual practice, the three-row plan becoming too involved for the benefit gained. Seats in side banks should not be staggered since heads of spectators will then be lined up.

Staggering of seats is related to the subjects just discussed under "Binocular Vision," the result of staggering being an increase in the distance between the spectator's eyes and the obstructing head. This corresponds to doubled or tripled back-to-back spacing.

When seat rows are steeply pitched, as in balconies, staggering becomes unnecessary.
The single aisle down the center of this cinema eliminates what would ordinarily be the best seats in the house. Seats are laid out in straight rows from front to back; there is no staggering. To partially overcome difficulties of horizontal sight-lines, pitch of floor has been increased using risers at the rear.

DISTORTION

Schlanger has also published material on distortion in motion pictures viewed from extreme side seat locations, a problem with which the legitimate stage is not concerned because actors and properties are always seen in the round. The diagrams illustrating stage picture analyses, however, show that the stage picture is designed primarily for the center of the house and the conventional stage is partly hidden from side seats by the proscenium. Theater designing is now based on tolerances of such defects.

Tolerable angles for the legitimate theater should never be made more than 10° if good vision is a requirement. Even when the side flats of stage sets are splayed (see dotted lines in diagram) there are unsatisfactory seats in most existing theaters.

The effect of sitting to one side of a stage grouping, as already explained, is to change the relative sizes and locations of the figures. The diagram illustrates this distortion by the changes in the width of the picture plane (PP) and in the location of the center-lines of scenes (OS), perpendicular to successive picture planes.

Side-angle tolerances for motion pictures are becoming increasingly strict. The more recent range is from 40° to 60°, measured as shown in the diagram at lower right of page.

TIME-SAVER STANDARDS

The following Time-Saver Standards contain information on seats and seating in concise tabular and diagrammatic form. In Serial No. 84, "Auditorium Seating—I—Basic Design," will be found stock seat sizes, clearances necessary and types of seating layouts. In Serial No. 85, "Auditorium Seating—II—Dimensions," tabulated dimensions of over-all depths at standard row spacings, aisle sizes, combinations of stock seat sizes available for various row lengths, and seating capacities of auditoria laid out in standard length rows are presented. Since these tables are mathematically related, their use is explained by a series of typical problems commonly met in planning seating arrangements to accommodate given numbers of persons and vice-versa.

Information so presented is intended, not to demonstrate ideal layouts, but to provide an accurate, practical means of determining requirements for any layout. Much of the data has not been published before.

The author wishes to acknowledge assistance rendered by the American Seating Company in preparing portions of this article.
AUDITORIUM SEATING—I—Basic Data

Seating standards for use in theaters, auditoria and similar buildings are developed on this sheet and T-S.S. Serial No. 85, "Auditorium Seating—II—Dimensions," which gives tabular data and methods for laying out seating plans. Material is the result of research by Frederic Arden Pawley. Sources include architectural offices specializing in theaters, and seating manufacturers.

TYPES OF SEATS

Construction and finish. Upholstery variations include spring-edge seats (most luxurious, more expensive); box-spring (nearly as comfortable); spring-back and padded-back. Veneer-back seating is suitable only for conditions subject to hard usage, as schools. Acoustical control is more satisfactory with upholstered types.

Sizes. Seats are designated by width, the depth front-to-back varying only slightly. Common sizes and recommended uses are shown below. In pew seating without individual arms, as in churches or arenas, a "sitting" is usually 18" wide. Pitch of back will vary according to the vertical angle of vision to the center of interest. In general, greater pitches are used for front portions of orchestra floors and more nearly vertical backs for elevated banks such as balconies.

Clearances. In addition to those noted diagrammatically below, the following points should be considered: Coves at intersection of floor and walls (or risers) should be kept small (1½" radius) to permit close fitting and leveling of seat standards. Balcony risers cause cramped knee-room when 12" high, unless back-to-back seat spacing is increased. End clearances in balconies should be increased to 2½". Pitch of back greater than average (see drawing below) also requires increased back-to-back spacing.

TYPES OF LAYOUTS

Rows may be straight across entire theater, side banks may be canted, or entire rows may be curved. Advantages of each type are shown in the accompanying diagrams. Min. radius for curved rows, due to seat construction, is 20'-0". Center for radii of rows and center of screen or stage need not coincide, although this is the ideal case. When rows are curved, a sloping auditorium floor should be a compound curve or amphitheater type to prevent tilted side seats.

Aisles may be straight or curved, parallel or radial. Aisles should run at right angles to rows to eliminate "pockets." Combinations of row and aisle types commonly used are shown in the diagrams. For layouts see T-S.S. Serial No. 85.
AUDITORIUM SEATING—I—Basic Data

Serial No. 84
JULY 1937

Code requirements govern (1) maximum number of seats in a bank, (2) aisle width, (3) cross-overs (not uniform). Usual requirements are: (1) no seat more than 7 seats from an aisle; (2) min. aisle width of 3'-0", increasing by varying factors in relation to length of aisles. (5) Requirements for cross-overs, not uniformly subject to codes, vary. See examples and tables in T-S-S. Serial No. 85. Consult local authorities.

CONTINENTAL SEATING, most commonly used abroad, involves use of rows with unlimited number of seats. Local codes in this country often either prohibit its use or impose many restrictions. However, existing examples have proved safe and comfortable due to increased back-to-back seat spacing (up to 42") which is essential to scheme. Larger than usual side aisles or foyers and many side exits are required.

LEVEL FLOOR

INCLINED FLOOR

STEPPED FLOOR

MINIMUM SPACINGS FOR VARYING FLOOR CONDITIONS

Based on stock sizes with 5½" pitch back

STRAIGHT ROWS

Uncomfortable for spectators at side, unequal stress on seats and backs

STRAIGHT, CANTED SIDE-BANKS

Same defects as straight rows though to less degree. Note that rows do not line up. Steps if required in aisles will be unsafe

TYPES OF ROWS

STRAIGHT (poorest type)

COMPOUND

CURVED

FAN (ideally best)

see also "Continental Seating" in text

DIRECTION OF AISLES

COPYRIGHT 1937, HERIT MAGAZINES INC. (AMERICAN ARCHITECT AND ARCHITECTURE)
This sheet contains data, compiled by Frederic Arden Pawley, for determining auditorium dimensions. For data on seats and layouts see T.S.A. Serial No. 84. Preliminary estimates may be based upon the "Rule of Thumb" which is sufficiently accurate for rough sketches.

### Tables

For such purposes as financing, working drawings, etc., follow method outlined in Examples A, B, C and D. Variations between the two methods are to be expected.

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#### Table I - Depth Dimensions (Ft.-In.) for Various Spacings

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- **EXAMPLE A:** Given auditorium area = 87'-0" x 56'-5" or 4990 sq. ft., how many 20' seats, 36" back-to-back?
  - Rows: In Table I, 36'-0" depth, No. rows = 29
  - Total increase = 1'-6" per row, Total is 28'-6"
  - Rows available for seats = 22

- **EXAMPLE B:** Given capacity of 627 seats, what are auditorium dimensions? This problem is the converse of "A".

- **EXAMPLE C:** What is radius of any row? To radius of back of first-row seats add desired value from Table I.

- **EXAMPLE D:** How many and what sizes of seats can be used in rows shortened by curved or radial aisles? See Table IV.
## AUDITORIUM SEATING—II—Dimensions

**Table IV—Numbers of Seats (Stock Sizes) for Any Row Length**

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### End Allowances: Normal 3" allowance to accommodate 2 end standards per row is included above. For balconies with steps in aisles allow 2" additional.

### Seat Sizes: Common sizes shown. Seats are also available in .16", 23" & 24" wide. 16" size not recommended. Limit use of 10" seats to ends of rows for comfort.

### Choice of Seats: Note that for longer rows two choices of seat sizes are available. Examples: Row length = 14"—20"; six 10" seats and three 20" may be used; or, two 21" and six 22". Dotted lines separate choices. Dimensions not fitted by stock sizes are omitted.
BOOKS


There have been indications in the professional journals from time to time that Mr. Flagg has delved deeply into the philosophy, ideology, and practical techniques practiced in Greek architecture. It was surely seventeen years ago that he discovered "what seemed to me conclusive evidence that the Greeks were in the habit of using the simplest practicable proportions." As a typical example, Mr. Flagg has brought together in this book the evidence and arguments concerning a single room in a single temple. This is but a fragment of a larger work on which he has been engaged, covering like evidence in connection with five whole temples. The task of presenting it, however, has proved so staggering that the author has found it best to bring this much of the evidence before the profession and others who are interested, partly in the fear that he will not live to finish his original self-imposed task. It is worth noting, incidentally, that in all of his demonstrations, Mr. Flagg has used measurements made by independent authorities who had no idea of their significance, rather than measurements that might have been even unconsciously affected by his own theories. The text is in both French and English in parallel.


A comprehensive analysis of the flat as designed and built chiefly in England but also in other countries. The author is concerned not only with architectural design, but with the economics, financial set-up, mechanical equipment, and construction. It is likely that the architects of America will find this material of academic, rather than practical interest, since our own problems in this classification of structures vary rather widely from those of our English brethren.


The decline of the essay as a form of literary art must be clearly in evidence to those who read current publication lists. All too often, precious, therefore, is a volume of these flowers of relaxation brought into being, as they almost invariably are, in the writer's intervals between more serious and more spectacular creations. For one who would enjoy the thoughts, impressions, musings of a distinguished figure in the profession of architectural decoration, here is a delectable morsel.


For years F. R. Webber has been editor and chief contributor to a periodical called Lutheran Church Art. His knowledge of ecclesiastical work, particularly in connection with the small parish church, has been so clearly in evidence as to have made his modest little paper a guide and stimulant not only to the clergy, but to architects whose interests were more clearly concerned with ecclesiastical work. The present volume should bring a wide audience to this man who, for years, has stood up and preached the gospel of honest construction, avoidance of sham, and the elements of good taste in liturgical art.


If you are fluent in reading Polish, you may find the results of considerable research and study in this technical volume. Even if your linguistic attainments are not up to this, there is a summary in English at the end of each chapter, and the captions are in both Polish and English. Its records of work done cover most, if not all, of the countries in which broad scale planning is practiced.


This is the thirty-third annual issue of this year book, and, as usual, it affords a representative showing of contemporary work not only in furnishing, but in pottery and glass, fabrics, and other accessories. Although the English architects and decorators are among the foremost in their uses of materials and in their handling of color, their rooms frequently startle American architects by reason of their failure to conceal radiators and in other ways to integrate the mechanical services.


Here is a book which demonstrates very clearly the principle that a layman properly informed can tell a fellow layman more about a technical subject than can the highly specialized technician himself. The authors have had unusual experience in studying homes as they are built and used, interpreting these findings for the public. It would be difficult to find any branch of the subject of home building which is not clearly and understandingly discussed in these pages. It is an excellent book for the architect to give the client who wants to know why and how every nail is driven.

INDEX TO A.S.T.M. STANDARDS AND TENTATIVE STANDARDS. As of January 1, 1937. 120 pages, 6 by 9 inches. Paper cover, issued by the American Society for Testing Materials, 260 South Broad Street, Philadelphia, Pa.


Progress in heating, ventilating and air conditioning is always reflected in the ASHVE Guide. This year architects will find new data on air conditioning, particularly on problems of humidification, dehumidification, water cooling, automatic control, sound control, and air distribution. As usual, some of the data on insulating materials have been brought up to date to reflect new advances and recent tests. This edition completely supersedes prior issues and should take its place as an invaluable handbook in the library of every architectural office.
On the FLOOR at Waikiki

carpets specially created by Bigelow

SET in a tropical garden, the new Waikiki Theatre is of modernistic design skillfully fitted to its Hawaiian environment by architect C. W. Dickey.

Its interior treatment is "atmospheric": garden walls with remarkably realistic trees and tropical foliage form the sides. Down front, a huge rainbow arches over the screen. Overhead, drifting clouds and twinkling stars in a deep blue sky. And underfoot, luxurious Bigelow carpet in a design created especially for this theatre.

Whatever the effect you seek, you can rely on Bigelow's Carpet Counsel experts to help you achieve it! Contract Dept., Bigelow-Sanford Carpet Co., Inc., 140 Madison Ave., New York.
ACOUSTICS


Deals with the conflicting uses of school auditoriums; must serve as class room, concert hall for voice or instruments, often as a cinema or theatre, and as a chapel. Brief notes on the details of making a workable minimum stage. The great value of adjustable seating capacity is illustrated by plans with supplementary areas which can be cut off with movable partitions.

CONSTRUCTION


Essay on functional design and the vegetable world, demonstrating by close-up photo views the amazing similarities between reinforced concrete construction and the leaf structure of the *Victoria Regia*, a huge tropical water-lily.

**ELEVATORS**


National Bureau of Standards tests have shown hoistway interlocks, annual safety tests, and certified buffers to be important safety provisions. Notes on strength determination of worn cables, constant tension devices and cable equalizers, lubricants and other details.

Safe speeds under the Elevator Safety Code have risen from 800 fpm (1921) to 1500 fpm (1934 to date). Reasons to believe that there will be no general increase beyond this speed include:

1. Change of air pressure disturbing to passengers. Air line pilots have general rule limiting ascent and descent to 1000 fpm.

2. Increased travel necessary to attain speed and to stop. About 200 feet is required to start, build up to 1600 fpm and to stop. 2000 fpm would take 300 feet of travel.

3. Prohibitive power requirements.

"In some actual installations the power required to accelerate the car, hoisting ropes, counterweight, and rope compensation is several times the power necessary to handle the fully loaded car at contract speed."

HEATING & AIR CONDITIONING


A thorough analysis of the physical effects of temperature, humidity and air movement. Discussion of the comfort zone and the air we breathe. Illustrations of various types of equipment and controls, including a schematic diagram of the functions of winter air conditioning.

Air duct construction by lathers & plasterers. The Plastering Craft. 15 Ap'37:12-14 dtv

A series on this new field for the trade has recently started in this magazine. This installment gives data on ducts with smooth cement scratch coats only, and on hanger details.

It is claimed that these ducts, closed with plaster-board softi panels, can easily be opened at any point, cost no more than sheet metal ducts and do not rattle or make other noises.


Description of functions of complete air conditioning and methods of effecting
WET BLANKETS WON'T INSULATE

- The merest tyro in science knows that wet insulation doesn't insulate. There's a moral to this fact. People buy insulation because architects specify it— for protection against extremes of temperature.

To give completely satisfactory service —to be impervious to the moisture of condensation within walls— insulation must be completely guarded from moisture. It must be shielded not just on one side, but on all sides. Then, and only then, can it promise satisfactory performance under all conditions.

Balsam-Wool is DOUBLE-SEALED against moisture. It is completely surrounded by a tough, waterproof coating, which also assures a positive method of application that leaves no loopholes for the wind to get through.

DOUBLE-SEALED Balsam-Wool is available in three thicknesses: 1/2", 1" and wall-thick meet every need for insulation. It offers maximum protection for every type of building in every climate and is particularly adapted to the needs of air conditioning. Write us for full details.

WOOD CONVERSION COMPANY
Room 159, First National Bank Building, St. Paul, Minn.

EVERY ARCHITECT SHOULD HAVE THIS INSULATION HANDBOOK
— It contains valuable data— useful tables— specific information about various types of insulation. Mail the coupon for your free copy.

WOOD CONVERSION COMPANY
Room 159, First National Bank Building, St. Paul, Minn.

Gentlemen: Please send me, without obligation, your new Insulation Handbook.

Name: ____________________________
Address: ____________________________
City: ____________________________ State: __________

BALSAM‐WOOL
DOUBLE‐SEALED INSULATION

AMERICAN ARCHITECT AND ARCHITECTURE, JULY 1937
101
themselves: Heating, cooling and partial cooling, humidification and dehumidification, air movement and air cleaning. Units and central systems, split systems. Controls, and the influence of house construction on air conditioning.


Use of burner-heater units is increasing because of the efficiencies of correlated design. Gun, rotary and gravity burning: because of the efficiencies of correspondent design. (Oil burners). There are recommendations for proper wiring and oil tank installation. Controls are discussed.

LIGHTING


A measurement chart showing the amounts of light reflected, into rooms on the dark side of an area, from the bright surface of a building. Tabular values correlate various angles of obstruction and coefficients of reflection to obtain the luminosity of a wall and the illumination in foot-candles when the average sky illumination is 500 foot-candles.

MATERIALS & FINISHES


Sources of timber and history of English timber building. Description of details of Swiss Chalet, a remarkably durable type. Structural adaptability of wood.

Statistics of U. S. underwriters are quoted as reporting more fires in brick than in timber houses—the former being characterized by this writer as "huge brick flies full of sticks."

Timber shrinks 75 times as much crossways as it does lengthwise. Therefore, long, small pieces are preferable to short, heavy ones, and American balloon framing is better from shrinkage viewpoint.

Color, costs and roofing are also considered.


Brief report telling of research on the effect of humidity on the size of wooden members. The average conditions of relative humidity in a number of typical environments have been studied and these data make it possible to specify the seasoning process. Thus if wood is to be used for paneling in a location in which the moisture content is known to stay close to 12%, the wood may be seasoned to that degree of moisture content before installation. This will minimize movement.

The effects on timber strength of knots and other defects are considered at length.


An excellent digest in English of activities connected with timber use in all countries. The general section deals with progress of the Timber Utilization movement. There are also sections on building construction, aeronautical construction, timber preservation, seasoning, wood gas, new uses, counter-propaganda (a Continental publicity brochure on steel), and a classified, annotated bibliography of recent publications on timber.


Costs, durability, immunity to attack, shrinkage and strength are discussed at great length.

It is claimed that with proper seasoning (drying to less than 20% water content) and good ventilation in construction there is little risk in using softwood sap wood.


Bricks in foundations, methods of keeping out ground moisture and dampness coming through walls. Graph illustrating effect on the strength of brickwork of adding lime to mortar.

Continuation. 7 My'37:992-994 +

Renderings and stuccoes, entry of moisture by roof, infiltration, thermal properties of brick, reinforced brickwork.


Description of a scientific method of finding the relative value of sands for construction purposes. The calculation of relative areas of surfaces of sands—important in its effect on quantities of cements and water—is simply explained.

There is a table of typical gradings for different purposes (British standard sieves). Several practical examples are worked out in the text.

Continuation. 7 My'37:997-8 +

Critical correspondence and author's reply.


Description of the earth pigments: French Ochre, Raw and Burnt Sienna, Raw and Burnt Umber. Also the chemical colors: chrome yellows, basic lead chromate (scarlet), and green pigments.

Sources, manufacture and character of results: color and stability. This article is to be continued in the next issue.

When painting—Follow the sun. (L. R. Bradley). National Painters Magazine. My'37:22, 47 dptv

It is held that too few master painters consider the movement of the sun in relation to the surfaces they are about to paint. Painting in direct hot sun causes rapid formation of a surface film with unsightly paint beneath. The resultant stratification causes unequal contraction or expansion, rupturing the paint and causing "chalking" and similar defects.

It is suggested that painters schedule exterior work according to shade, starting in morning on western sides. Then north, east and south, if one day is sufficient for the job.

TYPES & PLANNING


Discussion of plans, space efficiency, general design involving area of floor space, arrangement of supports, ratio between length and depth of plan, roof construction. Larger hangars have better space efficiency but greater fire risk. Maximum suitable clear span about 280 feet. Notes on lattice girder construction, rigid frames, evolution of steel plate roofs, stressed-skin roofs, and hangar doors.


Brief review of international examples and development as illustrated at the Exhibition of Airports & Airways at the headquarters of the R.I.B.A.

Airport reference issue. Rassegna di Architettura. (Milan). Fe'37:47-84 +

An important reference article, p. 50-84, by R. Campanini, gives classification of fields, data for selection of locations, types of runway layout and materials with photos of fields in several countries including America, signal systems, illumination, planning of buildings, and hydro ports. There is a brief bibliography included.


Brief notes with diagrams: radiators, unit heaters, ventilation, pneumatic cash systems and central vacuum cleaning installations.

Shops—Protection. 8 Ap'37:615-618 +

Burglar alarms, window grilles, armor plate glass, bars, locks, fire protection.

Shops—Conclusion. 22 Ap'37:697-700 +

This long series on shops is closed with several pages of photo views of shop fronts in England and on the Continent.
Look to economies in construction and maintenance, to greater beauty. No matter what the type — double-hung, casement or industrial — whether frames or sash are large or small, an Aluminum window is available for your use.

Precise dimensions and advanced designs in extruded shapes of Alcoa Aluminum produce windows light in weight, sash easy to operate. No rusting, shrinking, warping or swelling to interfere with their smooth performance. Small, strong sections increase the effective glass area.

Not expensive. And annual costs are low, for Aluminum windows require surprisingly little attention. No need for painting. No streaking or staining of adjoining surfaces to be guarded against.

Leading manufacturers offer complete lines of windows fabricated from Alcoa Aluminum. Aluminum Company of America, 2195 Gulf Building, Pittsburgh, Pennsylvania.
Armstrong's Resilient
MEET THE NEEDS

ACCOTILE

Accotile forms an attractive and serviceable floor in the outgoing reception room in Denver Children's Hospital. Colors are regal blue and azure blue. Accotile is an asphaltic tile, the only type of resilient floor suitable for use over concrete in contact with the ground, on or below grade. Armstrong's new method of installation with asphalt sheeting makes Accotile floors warmer, quieter, more comfortable, and more damp-proof. Accotile is available in 34 handsome plain and marble colors. It is low in cost, moisture-resistant, fire-resistant, and odorless.

CORK TILE

In the hydrotherapy and physiotherapy rooms of Denver Children's Hospital, quiet floors of Armstrong's Cork Tile lessen shock and fatigue. A more even temperature is also provided because cork tile floors are warm and draft-proof. Note the guide lines along which crippled patients are trained to walk. Cork tile is made in light, medium, and dark shades, in 3/8" and 3/4" gauges, beveled or unbeveled. Acoustical ceiling is Armstrong's Corkoustic.

AMERICAN ARCHITECT AND ARCHITECTURE, JULY 1937
HERE are five reasons why it will pay you to standardize on Armstrong’s Resilient Tiles for jobs like Denver Children’s Hospital, where special areas require floors of widely varied properties:

1. Armstrong manufactures the only complete line of resilient tiles—Rubber Tile, Cork Tile, Accotile (asphaltic), and Linotile. There is a material for every purpose. Simply by turning to the Armstrong Catalog in Sweet’s File (17/54), you can save hours of "hunting."

2. Having this complete line, our Architectural Service Bureau can offer you unbiased suggestions as to the best type for your problem. By dealing with a single line of products of known dependability, you can be more sure of delivering a satisfactory job to your client.

3. The fact that these tiles are made by the makers of Armstrong’s Linoleum will result in ready acceptance by your client and thus simplify your "selling job."

4. Your general contractor will find it easier and more economical to deal with a single flooring contractor who handles a complete line of products. Where a job involves special difficulties, the Armstrong dealer’s broader knowledge of resilient flooring can be a real help.

The accompanying pictures show how Architect Burnham Hoyt was able to provide a suitable flooring for all sorts of rooms by choosing the proper type of resilient tile.

For data, see Sweet’s or write now for file-sized "Tile Portfolio."


LINOTILE

Constant traffic does not mar the beauty of this Linotile floor in the kitchen of Denver Children’s Hospital. Linotile is a linoleum-type composition tile. It is even more resistant to indentation than battleship linoleum. It is available in 30 plain and marble effects. The rich colors cannot be worn off because they run through the full thickness of each tile. Linotile is quiet, comfortable, and sanitary. Spilled liquids and greasy wipe up without staining. Daily dusting and occasional washing and waxing keep Linotile floors clean and bright for years. Here, colors are foam green and ocean green set off by a narrow strip of black Linotile.
FHA SMALL HOMES NOW PLANNED IN BRICK

An unusually interesting series of small brick house plans has just been issued by Structural Clay Products Institute on behalf of the burned clay products industry of this country. These small houses, designed to be built at a cost of from $3000 to $4500, have been planned from the principles outlined in the famous Technical Bulletin No. 4 recently published by the Federal Housing Administration. These are the same demonstration houses which are being built throughout the country in frame construction under the auspices of the National Lumber Manufacturers Association. Now the brick and hollow tile industry comes forward with suggestions for the construction of the same houses with burned clay masonry exterior walls.

A study of the accompanying plans will indicate that the Structural Clay Products Institute in redesigning these houses has made practically no changes in the floor plans recommended by the Federal Housing Administration. In planning the exteriors for brick, however, several changes have been made in the arrangement of doors and windows to give a more pleasing architectural effect without in any way adding to the structural cost, except the slight additional cost of masonry work. Several minor architectural changes have been made in gables, eaves and other small details which add to the pleasing appearance of these exteriors. Brick details, such as steps and terraces, have been added and it is also possible to incorporate brick fireplaces in living rooms. Where basements are indicated floors call for the permanent non-wear finish of paving brick laid over the subfloor.

As the planning of these houses has been entirely subject to the principles recommended by the Federal Housing Administration and reviewed by their engineers, it is obvious that their construction can be carried out through FHA Insured Financing anywhere in the country.

In the booklet issued by the Structural Clay Products Institute, three methods of building exterior walls are indicated for these houses. Foundations can be constructed of hollow clay tile or brick. Exterior walls can be built of brick with hollow clay tile backing, or solid brick as selected. Also in many instances it is realized that these houses will be built of brick veneer construction. This booklet which can be obtained by addressing the Structural Clay Products Institute, Inc., 1427 Eye Street, N. W., Washington, D. C., presents illustrations of the houses in color and for each house, the complete floor plans, scale drawings of the four exteriors, and sectional drawings indicating how the walls can be constructed in either of the three ways mentioned. These plans will serve as a guide to indicate types of houses which can be built in the price range from $3000 to $4500.

In addition to the permanence and beauty of brick exteriors there is also to be considered the obvious saving in maintenance cost and often in the cost of fire insurance. It is interesting to note that under FHA Insured Financing the actual additional cost of building these small homes with brick exteriors represents only approximately $2.00 per month added to the total of monthly payments.

This replanning of FHA small homes in burned clay products is one of the early steps in an extensive promotional campaign now being undertaken by the Structural Clay Products Institute on behalf of the burned clay products industry of this country. In March of this year the Institute announced an unusually interesting small house competition calling for drawings or photographs of small houses having exterior walls of masonry construction. Copies of this competition program as well as copies of the booklet on FHA Homes in Brick can be obtained by addressing the Structural Clay Products Institute, Inc., 1427 Eye Street, N. W., Washington, D. C.
BRIXMENT is STRONG!

When tested in piers, the strength of Brixment mortar is almost equal to that of straight portland cement—is actually greater than that of the brick it binds! And this great strength is obtained at no sacrifice of plasticity or workability.

•• Strong like portland—plastic like slaked lime putty—waterproofed during manufacture—prevents efflorescence and faded mortar colors—economical! These are the characteristics that have made Brixment the leading masons’ cement.

•• One part Brixment, 3 parts sand. Five bags will lay approximately 1000 brick. Louisville Cement Company, Incorporated, Louisville, Kentucky.
METHODS • MATERIALS

AIR CONDITIONING

ROOM COOLER

Two types of room coolers made in 3/4 ton capacity are available from Scott-Newcomb, Inc., St. Louis, Missouri. These are air cooled and water cooled. The air cooled unit avoids the use of plumbing and can be plugged into any light socket and is furnished complete with an air duct connection for outside air for the condenser, as well as for ventilation in the room. The refrigerant used is Freon. The water cooled unit requires a water connection and is provided with a duct so that ventilation can be had where desired. The cabinet is approximately 40” x 3’ x 18”.

PORTABLE AIR CONDITIONER

A new portable air conditioner designed to meet the demand for an inexpensive, attractive room air conditioner has been placed on the market by York Ice Machinery Corporation, York, Pa. Aside from cooling, dehumidifying and filtering dust and dirt from the room air, several features are claimed for this new model. The operating mechanism, consisting of the compressor and motor, is cradled so that it floats in the chassis of the unit; consequently its motion is not transmitted to the cabinet. The finish, termed Mexican Cedar, is of special interest. Three coats of lacquer, sprayed in a new way on the steel casing, produce a microscopic crinkled surface having a texture that looks and feels like leather. Capacitor type motors are used. The compressor is of standard York construction, having the same features of balance, centrifugal oiler and pressure flex valves.

BLAST HEATER

A new blast heater for heating, ventilating, air conditioning and process application has been announced by Modine Manufacturing Company, Racine, Wisconsin. Elimination of expansion strain is one of the design features of the new unit. The expansion bend allows each tube to expand and contract as its temperature requires, without affecting the tube adjacent to it. Headers and tubes are cylindrical and seamless. These are brazed into a single rugged unit without use of gaskets, bolts or screw joints. All steam carrying passages of the condenser, including headers, tubes, and inlet and outlet bosses are of pure copper or copper alloy from the point where the steam enters to where it leaves in the form of condensate. Fins are metalically bonded to tubes. Greater heat transfer is said to be promoted by scientifically die-forming fins to give effective turbulence to air. Orificing of tubes has been eliminated by use of a special steam distributing plate which rations steam evenly to all tubes the full width of the condenser. The Modine Blast Heater is available in a large variety of sizes and capacities.

EQUIPMENT

LIGHTING AND VENTILATING UNIT

Just introduced is a new unit called Vent-O-Lite, a combination ceiling lighting fixture and exhaust fan that both illuminates and ventilates the rooms in which it is used. In appearance it looks like a modern lighting fixture. But hidden behind its prismatic glass panels is the patented assembly that functions as an exhaust system to draw off kitchen odors and force them outside the building through ducts buried in the ceiling between the beams. In bungalows and one-story attached dwellings no ducts are required. The Vent-O-Lite exhausting into the attic is said not only to cool the kitchen but also to force out bad attic air. Though primarily recommended for kitchen use, the unit may be used in card rooms, play rooms, finished basements or in any other locations where forced ventilation is desirable to keep the room ventilated and free from smoke. It is a product of the Vent-O-Lite Corporation, Jamaica, N. Y.

VOLTAGE REGULATORS

Ward Leonard Electric Co., Mount Vernon, N. Y. has developed two automatic electronic alternator voltage regulators. They have no moving parts. Instead of relying upon mechanical means to close contacts or change pressures an inertial stream of electrons controls the regulating action. These regulators are controlled rectifiers deriving their power from the a.c. generator and delivering the rectified d.c. current to the shunt field of the exciter in an amount which is a function of the a.c. generator potential. The corrective action of Bulletin 5601 Regulators starts within one-half cycle of the slightest change in generator voltage; bulletin 5602 Regulators start within one cycle. The former model is designed so that it can be used with any known method of excitation. The latter model is designed for use with one exciter only.

LIGHTING BEAM-DIRECTOR ATTACHMENT

A new accessory for lighting fixtures, which makes it possible to convert existing reflectors of the overhead lighting system into supplementary lighting units without appreciably affecting their efficiency as general lighting units, was recently placed on the market. These "Beam-Directors" consist of auxiliary projectors of etched Alzak aluminum which are attached inside skirt of Benjamin RLM Dome reflectors. They are recommended for building up illumination

(Continued on page 114)
Permanently Efficient and Economical
USG RED TOP INSULATING WOOL
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A Proved 4-inch Conductivity Coefficient of .066

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  FIREPROOF — Red Top Wool will not burn or support combustion. It is approved by Underwriters Laboratories.
  
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  DOES NOT DECAY — Unaffected by air, water, acids or gases, it never crumbles or rots. Will not harbor vermin.
  
  EFFICIENT — Independent laboratory and university tests show that a 4-inch thickness of Red Top Wool has a conductivity coefficient of .066 BTUs per sq. ft., per hour, per degree temperature difference.
  
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UNITED STATES GYPSUM COMPANY

AMERICAN ARCHITECT AND ARCHITECTURE, JULY 1937
TENTH ANNUAL
SMALL HOUSE COMPETITION
Conducted by
HOUSE BEAUTIFUL
$2,300
IN CASH AWARDS
THIS YEAR'S PROGRAM

GENERAL The competition will be divided into three classes. These, with the awards, are as follows:
CLASS I—For houses of 6-9 rooms inclusive, built east of the Mississippi
First Prize $500
Second Prize $300

CLASS II—For houses of 6-9 rooms inclusive, built west of the Mississippi
First Prize $500
Second Prize $300

CLASS III—Houses of 5 rooms and under built especially for week-end or summer living
Special Prize $500
Honorable Mentions—Not less than eight nor more than twelve in all classes will be awarded at the discretion of the judges in the amount of $50 each.

Houses entered in the competition must have been completed within the past three years within the continental limits of the United States, and shall not have been published in any other national magazine (professional architectural magazines excepted). Breakfast rooms, pantries, baths, dressing rooms, halls, laundries and enclosed porches shall not be counted as rooms.

COMPETITORS Any architect or architectural designer is eligible to compete, and each competitor may submit as many houses as he desires in any or all classes. No house shall be eligible in more than one class.

ENTRY BLANKS A special entry form will be available to prospective competitors immediately upon application to the Competition Editor. This form shall be in every ease accompany the entry in the manner prescribed.

DATES All entries shall be shipped for normal delivery to the offices of the Competition on or before October 15, 1937. Judgment by the Jury will follow, and announcement of awards will be made to competitors immediately after the judgment. Prize-winners will be announced and prize winning entries will be published beginning with the January, 1938, issue of HOUSE BEAUTIFUL.

JURY The Jury will consist of three members of the American Institute of Architects and the Editors of HOUSE BEAUTIFUL.

BASIS OF AWARDS Awards will be made by the jury on the basis of the following principal points:
1. Excellence of design
2. Economy in space and convenience of plan
3. Adaptation to lot and orientation
4. Skill in use of materials

REQUIREMENTS 1. Mounts. All entry mounts shall be a single piece of corrugated board, of white or light color, or board of comparable weight and stiffness. The size shall be exactly 30" by 40". On the lowest left corner of the mount shall be neatly lettered, in one or two lines, the inscription, "House Beautiful Small House Competition 1937." In the upper right corner of the mount shall be left space for a 3" by 5" card which will display the architect’s name if the entry is selected for the Traveling Exhibit. A clear margin of at least 1½ inches shall be left on all edges of the mount.
2. Photographs. On the face of each mount shall be firmly secured at least three matt finish photographs of the house, as follows: A general exterior view, at least 14" by 18" in size; an exterior detail at least 8" by 10"; an interior detail at least 8" by 10". Duplication of exterior views is not desirable.
3. Plans. First and second floor plans and a plot plan, either separately or incorporating first floor plan, shall be drawn in ink at any convenient scale and poched, with rooms plainly labeled and dimensioned. An arrow indicating points of the compass shall be included.
4. Legend. A legend shall be clearly presented to supply information as indicated by the special entry forms which are available to all competitors and one of which, properly filled out, must accompany each entry. This legend, as specified, shall supply all the factual information required by the jury in determining awards.

5. Anonymity. No contestant’s name or address shall appear on the face of the mount but shall be lettered on the back of the mount and covered by a piece of opaque paper pasted around the edges. The piece will properly filled out shall be made of cardboard of suitable weight and stiffness. On the back shall also be attached a sealed envelope containing the required entry forms properly filled out and a 3" by 5" card clearly lettered with the name and address of the competitor. This card shall be suitable for attachment to the face of the mount for later exhibition purposes.

6. Delivery. All entries should be carefully packed with stiff board for protection and shipped express prepaid and at owner’s risk to the Competition Editor, HOUSE BEAUTIFUL, 572 Madison Avenue, New York City. The competition closes on October 15, 1937, and all entries shall be shipped in time to arrive in the offices of HOUSE BEAUTIFUL on or before that date.

7. Publication and Exhibition. All photographs and plans entered in this competition and chosen either for publication or exhibition shall remain in our possession until after the exhibition. Photographs are essential, and announcement of awards will be in the manner prescribed. This form shall be in every case accompany the entry in the manner prescribed.

To insure good reproductions, glossy prints of those photographs to be published in HOUSE BEAUTIFUL will be requested from the architects. (Additional photographs in readiness are desirable.) Photographs of houses not awarded prizes but requested for publication will be paid for at $5 each.

8. Agreement. It is agreed that submission of entries carries with it acceptance of the above conditions and those contained on the required entry forms.

Copies of this program and entry forms to the desired number may be obtained from:

Competition Editor, HOUSE BEAUTIFUL, 572 Madison Ave., New York City

110 AMERICAN ARCHITECT AND ARCHITECTURE, JULY 1937
LIMITED WATER SUPPLY NO OBSTACLE

NOTE: Erected in 1913, the Leader Building in Cleveland, Ohio is typical of many office buildings throughout the United States where the water supply is limited because of small mains. How Carrier year 'round Air Conditioning was provided for the 13th and 14th floors of this building without enlarging existing water mains or extensive remodeling, is of interest to every architect, engineer, building owner or manager.

ZONE CONTROL for the 13th and 14th floors was made possible by Carrier Dehumidifiers and Refrigeration machines like these, located on the upper floors. But in place of the usual water towers, spray decks or water condensers—any of which would require enlarging of water mains throughout the building...

...CARRIER EVAPORATIVE CONDENSERS were located on the roof. Using less than 5% of the water required by water condensers or other type of water equipment, these efficient condensers solved the Leader Building's problem completely, without enlarging water mains.

CONCEALED DUCTWORK is another unusual feature of the Carrier Air Conditioning installation in this 24 year old building. In this office, for example, ductwork is concealed by a slightly lowered, false ceiling, while a pan type outlet diffuses the conditioned air. This same ductwork leads to an adjoining...

...EXECUTIVE OFFICE, where the Carrier outlet is in the wall, over the door. Compare the two offices—notice that ceiling height has not been sacrificed by this inexpensive and efficient method of remodeling the Leader Building.

What is YOUR Air Conditioning Problem?

MAKING it possible to secure the benefits of year 'round air conditioning where water rates are high or the supply is inadequate, is but one of Carrier's many achievements. For more than 35 years, Carrier has devoted its efforts exclusively to solving such problems, including the invention of true air conditioning and to making economical, dependable air conditioning for every enclosure regardless of size or location.

• To refine the art Carrier developed such features as the By-Pass, Dew Point Control and Zoned Control. And when refrigeration needs outgrew existing equipment, Carrier broke away from traditional design to develop Centrifugal Refrigeration. Carrier installations in 99 countries of the world—ranging in size from one room to such famous structures as the U. S. Capitol, Macy's, Radio City, Palmer House and Los Angeles Times, bear witness to Carrier's air conditioning technique.

• Whether your problem is the air conditioning of a skyscraper, a theatre, a department store or a neighborhood shop—you'll find Carrier and Carrier representatives, well-qualified to solve your problems. Why not get acquainted with the Carrier representative today? He can show you many tested time-and-money savers. And show you how, by acting at once, you can still secure the benefits of Carrier Air Conditioning for this summer's use.

CARRIER CORPORATION, Desk 425
850 Frelinghuysen Avenue, Newark, N. J.

Please send me your latest Catalog in Sweet's—and name of the nearest Carrier Representative.

Name
Company
Address
City
 Eternal Youth in Fine Buildings

Opened in 1848, the marble central building of Girard College (in upper photograph) has stood the assault of time. Here has been preserved all the original beauty of the architectural design. Marble is justly famed for its durability. Likewise, the newer Girard College Library will prove a worthy example of the "longevity" of marble from our own quarries.

VERMONT MARBLE CO., PROCTOR, VT.

VERMONT MARBLE

Rectangular in shape and styled to harmonize with Hot-point ranges, dishwasher and other kitchen equipment, the new Hotpoint Vogue Cabinet Water Heater recently introduced by United General Electric Appliance Company, Chicago, is of 30 gallons capacity and gives additional work surface in kitchen. Its features include: galvanized tank guaranteed for a 300-lb. test pressure, 150 lb. working pressure; red brass sweat-type hot and cold water fittings and copper tubing—both fittings rigidly fastened to the bottom cover assembly; all welded bottom cover and base construction; seven inch base to conceal electrical and plumbing connections; all wiring enclosed in electrical metallic tubing and fittings. Rock wool in an average thickness of three inches is used as insulation. Work surface is finished in a stainless porcelain enamel. Body of heater is finished in a high gloss durable baking enamel over a primer.

TWIN AUTOMATIC FURNACE CONTROL

Streamlining of automatic heating and air conditioning equipment has been influential in the development of the new Type M-80 Combination Fan and Temperature Limit Control for warm air furnaces just announced by The Mercoid Corporation, Chicago. This unit has double adjustments provided for both the fan and limit switch settings. These adjustments permit individual setting of both the "high" and "low" operating points. The range can be adjusted over the entire scale and the differential can be set for very close operation or can be widened to meet requirements. A visible dial is provided which is calibrated from 50 to 300 degrees. The new combined control utilizes features of other Mercoid units. It automatically opens the electric circuit and thus acts as a safety limit control to prevent overheating. It prevents blowing of cold air into the room if the furnace is not hot enough to deliver heat. A sealed mercury switch is used as the operating medium. It consists of a glass tube containing sealed contacts of a special material and a
Garden Decoration and Ornament for Smaller Houses

by G. A. Jellicoe

The author, who is well known as a town-planner and designer of houses and gardens, analyzes in this profusely illustrated volume the structural features and ornaments of gardens for small country houses, suburban and town houses. *The London Times Literary Supplement* praised it for its “beautifully chosen illustrations” and spoke of it as “of a quality rare in modern garden books . . . full of stimulating ideas.” *Country Life* says “it should be of great value to home and estate owners and garden lovers all over the world.” $6.00

The Supervision of Construction

by W. W. Beach

This book is perhaps the first comprehensive treatment of the supervision of construction to be published and is indispensable to architects, engineers, construction superintendents, technical libraries, students and all interested in architecture and engineering. Written by one of the best-known architect-engineers in the Middle West, it is an authentic, up-to-date handbook that fills a long-felt need. Within its 488 pages are included all the details of the superintendent’s work; there are appendices, 20 diagrams and illustrations.

**Contents**

- The Duties of Superintendents
- A Superintendent’s Records
- The First Day on the Job
- Beginning the Work
- Contract Changes
- Foundations and Masonry Materials
- Concrete Form-Work
- Concrete Work
- Concrete Reinforcement and Other Built-in Members
- Waterproofing and Dampproofing
- Finishing Concrete Surfaces
- Rounding-in by Pipe Trades
- Job Progress
- Masonry
- Terra-cotta, Cut-stone, and Pre-cast Stone
- Structural Steel
- Miscellaneous Metal-work
- Structural Carpentry
- Roofing and Sheet-metal-work
- Furring, Lathing and Plastering
- Marble-work and Tiling
- Finish Carpentry
- Finish Hardware
- Glass and Glazing
- Painting and Varnishing
- Electric Work
- Heating and Ventilating
- Plumbing
- Completion and Acceptance
- Cost-plus Construction

$6.00
TECHNIQUES

quantity of mercury to make or break the circuit when the tube is tilted. The M-80 Control Dial automatically regulates the tipping of the mercury switches thus turning on or shutting off the fan or blower at the desired temperature.

INSULATED CASEMENT WINDOWS

One of the outstanding features of the new Curtis Silentite Casement is said to be its weather-tightness. The sash is weatherstripped on all four sides with a new type of weatherstripping developed and patented by the manufacturer. The complete unit—pre-fit—includes all operating hardware, screens and insulating glass, and operates from inside only. It is self-locking and has no side projecting hardware. These sash may be used singly or in multiples of nearly any desired number, with or without transoms. There are four stock sash made—2, 4, 6, and 8-lights—all two lights wide, 8" x 12" glass size. The casement is said to be free from tendency to stick, bind or warp and to proof against swinging, slamming or rattling. This new wood casement is manufactured by Curtis Companies, Inc., Clinton, Iowa.

ESCALATOR COVERS

Fireproof shutter covers for escalators are being manufactured by Cornell Iron Works, Inc., Long Island City, N. Y. The cover illustrated coils on a horizontal shaft in the rear when open. It pulls shut by cables, using a detachable hand crank on a drum also located in the rear. The operation of cranking open or shut is accomplished in from eight to twelve seconds. All mechanisms are concealed. The escalator cover can be made to close automatically in case of fire by means of a fuse link releasing a closing weight. The speed of closure can be controlled by a governor when desired. The cover can also be operated electrically.

METAL ROOF DECK

A new roof deck has been developed for the purpose of making clear spans without beam or center supports, giving a smooth ceiling that can be painted or decorated and easily cleaned. This deck is constructed of 16-gauge steel sheet formed in U shape pans on ten-inch centers, and locked
The reason why Azrock was selected as floor covering in this important architectural undertaking is that Azrock met all specifications for beauty, utility and economy. Azrock, resilient for quiet and comfort, durable for long wear under hard usage, forms a non-slip surface that is fire resistant (actually fireproof on concrete), moisture proof, sanitary.

Azrock may be obtained in a wide variety of colors, which penetrate the entire thickness of tile for permanence. The colors, plain or marbleized, and the different sizes of tile available encourage individuality of design, distinctive floor coverings. Azrock can be laid over any smooth sub-floor, old or new, at a minimum of time. No expensive waterproofing is necessary, when installed below grade. It splendidly resists the toughest treatment, even marks of burning cigars and cigarettes being readily removed. It is inexpensive in first cost, inexpensive to maintain. Altogether, Azrock Tile is a floor covering on which this country's most exacting architects can safely rest their good name.

For name of your nearest Azrock distributor write to Uvalde Rock Asphalt Co., San Antonio, Tex.
THREE BOOKLETS WHICH GAVE THE PUBLIC

THE question, "Shall I employ an architect, or not?" is easily answered if one understands the role of the architect. One does not hire an architect to design a set of plans, or a home, or to send one's family to a museum. The architect is a professional who helps one to visualize what one's home will be like, and to plan it in a manner which will best meet one's needs and desires. The architect is the only person who is trained to do this kind of work.

Thousands of copies of these booklets have been distributed through architects as a practical method of promotion to prospective clients.

Consistent advertising in Town & Country

AMERICAN ARCHITECT AND ARCHITECTURE
and *House Beautiful* has promoted this program to thousands of other able-to-build prospects.

What this has meant to the profession is indicated by hundreds of comments like these:

"You could not have made a finer contribution to the cause of good architecture, and the welfare of the architect." — New York architect.

"As advertising in behalf of the profession ... surpasses anything I have seen so far." — Pennsylvania architect.

"I have never seen anything of the kind which approaches it." — Wisconsin architect.

This is one phase of the program continually carried on by *American Architect and Architecture* on behalf of architects. That this job needs to be done ... and is succeeding ... is indicated by letters of appreciation, and requests for thousands of reprints, from architects all over America.
SPECIFY
THE SENSATIONAL NEW
WILLIAMS
OIL BURNER
... IN YOUR NEXT JOB

* IT'S PRICED LOWER THAN ANY OTHER NATIONALLY KNOWN OIL BURNER
* IT'S A WILLIAMS OIL-O-MATIC PRODUCT—BACKED BY ITS PRESTIGE
* IT'S NATIONALLY ADVERTISED
* IT'S A GREAT OIL BURNER—THE PEER OF ANY HIGH PRESSURE BURNER REGARDLESS OF PRICE

ARCHITECTS everywhere are hailing this great new Williams Oil-O-Matic Product... saying it's one oil burner that certainly fills their needs. It's low priced... it has the prestige of Oil-O-Matic behind it... and it's a great product in its own right.

In your next job, specify the Williams Oil Burner. You'll find more ready acceptance for your house because of it. For full information, write or wire.

STUDY THESE FEATURES
* Fully Automatic
* High Pressure continuous spark —no radio interference
* 1-10 H.P. motor —very low current consumption
* Two-stage pump with automatic safety shut-off—uniform pressure—constant flame
* Exclusive anti-carbon nozzle
* Burns low cost No. 3 fuel oil
* Silent as a whisper
* Williams engineered throughout
* Easy payments—12-36 months to pay

WILLIAMS OIL-O-MATIC HEATING CORPORATION
Dept. 711, Bloomington, Illinois

TECHNIQUES

CABINET LAVATORY

A new cabinet lavatory has been introduced by Crane Company, Chicago. This, the Coronet, incorporates the same in-a-door shelves which have previous cabinet-lavatory units and likewise has the piano-hinge doors, but instead of the conventional type of lavatory basin it has a special new vitreous-china top of unique design. Faucet handles are set at an angle on an inclined and beveled-corner "instrument panel." In addition, the new unit has a special raised "dry" shelf back of the faucets for keeping powder, toiletries, etc. dry and out of the way during hurried toilets. The spout is raised well above the rim of the bowl to eliminate danger of cross-connections and back siphonage of waste water into fresh water lines. The large basin, which has a splash lip, is rectangular, as is the general shape of the entire fixture. The front of the cabinet and lavatory are slightly concave to permit closer approach for washing; the sides and back slightly convex. The lavatory size is 24 x 20 and the basin, 17 x 11. Towel bars are optional, but the cabinet is supplied with holes drilled for the bars. The sub-base, in black baked enamel, has setback for toe space. The unit is available in colors as well as white.

CASEMENT WINDOW OPERATOR

A recent development of H. S. Getty & Co., Inc., Philadelphia, is their Internal Gear Operator for metal and wood casement windows. While the new operator may be used as an adjuster for non-screened windows, it is especially adaptable for screened casements. It eliminates the necessity for using hinged screens and stay-bar adjusters, and leaves a large portion of the sill space free for ornamental decoration or other purposes. The housing of the unit, which is attached to the inside of the sash, contains a worm driven by a crank handle. This worm meshes with a gear, integral with the operating arm that extends through the sash and runs freely in a channel guide attached to the inside of the casement window sash. Both worm and gear are heavily constructed, meshing perfectly. The unit is said to provide a positive lock when the window is closed and to hold the window rigid when open at any angle. It is furnished in various metals and finishes.
The names that mean MOST in Asphalt

Asphalt plays an important part in the architect’s specifications today. And of all asphalts yet discovered, either native or manufactured, Trinidad Native Lake Asphalt—The Vital Element—alone possesses inherent qualities that fit so well the requirements of modern construction.

The Barber Company, Inc., “Asphalt Headquarters,” is the sole United States distributor of Trinidad. For more than fifty years Barber has been specializing in asphalt . . . research . . . development . . . analyses . . . comparison . . . producing high-grade asphalt products.

Today all the knowledge and experience gained through this endless research are at your disposal. “Asphalt Headquarters” is ready to serve you . . . to acquaint you better with all the possibilities and limitations of asphalt in the buildings you design . . . to solve the problems you encounter in drawing up your specifications. Your inquiries will be welcomed without cost or obligation. The Barber Genasco line of asphalt products includes:

**THE VITAL ELEMENT**
Trinidad Native Lake Asphalt—The Vital Element—was made by Nature. It is “mined” from the surface of the asphalt lake on the Island of Trinidad. For millions of years this natural asphalt has been constantly “stirred” by Nature . . . exposed to the searching rays of a year-round summer sun, the fury of tropical tempests. Trinidad has come through these centuries with a natural vitality which it retains indefinitely.

Trinidad is an intimate mixture of an extremely adhesive bitumen and an inherent mineral filler so dispersed in the bitumen as to be in colloidal suspension. The bitumen has unparalleled ductility, indicating an extreme in self-healing and adhesive qualities. The colloidal mineral filler accounts for the great toughness, indicating cohesiveness. In no other asphalt has Barber found the same balance between these two necessary properties. And only by specifying Barber Genasco Products, nationally advertised to your clients, can you be sure of getting the most in asphalt.
GOVERNMENT

SENATOR ROBERT F. WAGNER'S LOW-COST HOUSING BILL appears, temporarily at least, to be sinking into the same morass that side-tracked last year's bill—Administrative opposition. While it is usually left to Presidential critics to voice concern over any question of money, this time the Executive Branch of government has reversed the field. The President is reported as definitely opposing the Wagner Bill in favor of a pay-as-you-go policy. Thus, proponents of the bill which contemplates long-term contractual obligation by the Federal Government, are faced with the prospect of making drastic concessions, or of risking another Administrative check-mate.

Actually the focal point of the present controversy is the Treasury. Senator Wagner's bill calls for annual Federal contributions to specific projects over a fixed period not exceeding sixty years. It would begin with $10,000,000, but the amount might be swelled each year. The Treasury is opposed to obligating the country for a period of sixty years in advance; and the President is backing the Treasury.

Senator Wagner believes that low-cost housing must be a long-term proposition. One of the strongest reasons is his belief that contracts over a period of years will insure that the projects be limited to the use of the very low income classes, that is, families with incomes of $1,000 or less a year. It is also felt that more housing could be accomplished by this method.

In the President's opinion, low-cost housing in Europe, as well as in this country, has shown that it is necessary to make a gift of about 40% of the cost in order to keep rentals low enough. In other words, a return of interest and amortization can be expected on only about 60% of the cost of housing. Since the government cannot, therefore, clear slums and get a 100 per cent return on its investment, a gift of some kind must be made, i.e., government agencies must donate money or labor or tax remissions. Right here is where the President expresses his theory of action. Rather than obligate the government over a long period, a 40% gift would be made, just as it would under the Wagner plan, but private capital would be borrowed for the remaining 60 per cent. The Federal Government would not obligate itself to continuous grants, and, according to the President, it would put the project into the pay-as-you-go class.

Senator Wagner is confident that an agreement can be reached. The Treasury seems to be set against the bill as it stands, however, and with the Presidential bulwark, considerable hacking may be done before everyone is satisfied with the measure.

LEGISLATION

THE LIFE OF THE PUBLIC WORKS ADMINISTRATION was extended for two years by a recent vote of the House of Representatives. The gradual liquidation of the PWA was started by restricting its activities to projects already applied for. The bill, embodying the compromise proposed by President Roosevelt to keep the one and a half billion dollar relief appropriation clear of "earmarking" amendments, was passed under suspended rules. Everything was far from peaceful, however. Representative Alfred E. Beiter, Democratic of New York, had an amendment to offer but could only warn the House that a fight was due. And warn he did, pointing out that an amendment to give the agency more funds would be offered in the Senate and that the fight might be revived in the House when the relief bill came out of conference. There is a good chance Representative Beiter's clairvoyance will prove accurate, and necessary.

For example, the House Appropriations Committee in drawing up the compromise, stated that the PWA would realize a considerable sum of money from the sale of securities still to be purchased. Sharply challenging this, Representative Beiter said, "everyone knows that the political subdivision bond market is at a very low ebb, and that the PWA will be

Want to eliminate the danger of scalding in your shower baths and stop unexpected changes in the water temperature?

1. No more slipping in a soapy tub or on a wet tile floor while trying to dodge a "shot" of icy cold or scalding water—When you use a shower bath regulated by a Powers safety shower mixer the temperature remains right where you want it. You can really enjoy the thrill of a comfortable shower in absolute safety.

2. Why they're more economical—There's no loss of time or waste of hot or cold water while waiting for a shower at the right temperature.—Powers mixers cost more—They're worth more.

Write for circular describing this remarkable shower mixer.
The Powers Regulator Company,2751 Greenland Avenue, Chicago.Offices in 45 Cities—see your phone directory.

Powers SAFETY SHOWER MIXERS

2 BASEMENT EXITS
Are Better Than One

In the first place, basements are the breeding grounds of most fatal fires.

In the second place, with the increasing tendency to use basements as informal living rooms, an opening which leads directly to the yard is not only desirable, but a necessary adjunct to the modern basement.

Property owners, too, have come to place a high value on these installations, for it definitely is easier to sell or rent a house with a hatchway, particularly if it is a BILCO hatchway, because—BILCO HATCHWAYS are Fireproof . . . Burglar-proof . . . Water-proof . . . Decay-proof . . . and Termite-proof. And they don't warp, sag or swell.

ASSEMBLED AND INSTALLED QUICKLY AND EASILY. BILCO ALL-METAL HATCHWAYS ARE PRECISION MADE OF COPPER STEEL. THEY ARE PERMANENTLY TROUBLE-FREE AND LAST FOREVER.

The BILCO Corp.

Steel Hatchways and Sidewalk Doors

166 Hallock Ave. - New Haven, Conn.
unable to sell the securities it now holds, and those it is already obligated to purchase, without sustaining a heavy loss."

Whether this condition changes or not, it is certain that little help can be expected from the Reconstruction Finance Corporation. Under existing law, the RFC cannot purchase securities from the PWA in an amount beyond $250,000,000. It now holds slightly less than $200,000,000.

CONSTRUCTION

THE STEADY RISE IN BUILDING COSTS has excited comments from many sides; few, however, as thorough-going as those of Myron L. Matthews in a recent issue of "The Dow Service." No discussion could fail to mention certain phases familiar to all but Mr. Matthews interprets with a fundamental simplicity that not only speaks well for his knowledge, but that should prove interesting even if you have thought of some of the ideas yourself. We quote from his article:

"Heretofore, when the resistance point to further cost increases had been met, it was simply a question of waiting for supply sources to bring wholesale prices into line with demand. At present, there is not enough inflation or parasitic cost in building to lend hope that a lessening of demand in the more active classifications of construction could, short of a fundamental collapse in the whole market structure, bring about necessary topdoging of prices to an easier level.

"At the root of it all are the increases granted to labor for its services. The point is not whether this is right or wrong. . . . With labor wages up and still going higher, and with material prices up because of increases to labor, what is left of the elements of building costs that can be adjusted to create a necessary balance? Direct and indirect material and labor costs make up about 85 per cent of the cost of the average building. The remaining 15 per cent does not offer much hope for modification unless some of the usual and time-proven functions always practiced are either eliminated or reduced. The idea is so loaded with dynamite as to condemn it at the outset; and, even if it were practicable, other functions not as desirable or essential would undoubtedly enter the situation to plague it far worse than now.

"New and more efficient construction methods seem to be the only avenue of approach to stabilize or reduce construction costs. . . . Even now such economies can be effected by the use of standard units, but they must be flexible enough to afford all the variation in architectural design which the market may demand."

HOUSING

HARLEM RIVER HOUSE, the $4,219,000 Public Works Administration project which will house 574 families, was formally turned over to the City of New York.

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2,500 residents of the section watched the operation of an apartment house. It was the first time that a city and the Federal Government have gone into partnership in the operation of an apartment house.

Under the agreement, 45 per cent of the cost of the project is a PWA grant and the remainder will be amortized and repaid to the government within sixty years. After one year's experimentation, during which a change in rents may be effected, a longer term lease will be given to the city.

The rents will average $5.20 weekly for a three room dwelling, and it is significant that there were 14,000 applicants. After signing the twenty-three page lease, Mayor La Guardia said, "This is the happiest moment I've had since I became Mayor. Here indeed is a dream come true." He agreed that the Harlem River House was inadequate for the city's needs, but added, "It's 574 more than has been specified for a cemetery memorial with a prize of $3,600 offered by the Barre Granite Association of Vermont.

The contest which is open to all designers, architects, artists, draftsmen, and students, closes September 1st, 1937. An interesting feature of the competition is a ruling which permits the collaboration of two or more persons in the submission of a design. Further details may be obtained from the National Alliance of Art and Industry, 119 East 19th Street, New York City.

ANNOUNCEMENTS

FOUR APPOINTMENTS AS RESEARCH ASSOCIATES will be available at Battelle Memorial Institute, Columbus, Ohio, for the year 1937-38. Appointments are for September to August inclusive, and are open to graduates of any accredited university or college.

Application forms and further information may be obtained by writing the Director of the Institute.

OBITUARIES

FRANK HOWELL HOLDEN, an architect associated with the firm of Robert D. Kohn, Charles Butler and Associates, died of pneumonia at his home in New York City on May 29, 1937. He was sixty-seven years old.

Born in Chicago, Mr. Holden graduated from the Massachusetts Institute of Technology in 1894. After studying for three years at the Ecole des Beaux Arts, Paris, he began practice in Aurora, Ill. Later he came to New York, and in 1902 with Frank H. Bosworth established the firm of Bosworth and Holden.

Mr. Holden was among the architects who helped construct the store of R. H. Macy & Co. With his associates, Marshall Oliver and J. Scott Dawson, he recently completed the Dennison Store on lower Fifth Avenue, and the store of Doubleday, Doran & Co., at Fifth Avenue and 38th Street.

ARTHUR DILLON, retired architect and former head of the New York firm of Dillon, McClellan & Beadel, died on June 5th, 1937 at his home in South Orange, N. J. Mr. Dillon was sixty-six years old, and had been ill for some time.

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AMERICAN ARCHITECT AND ARCHITECTURE, JULY 1937
Fitting the Post Office to the Location

Next month AMERICAN ARCHITECT AND ARCHITECTURE will present photographs of Federal buildings recently constructed under the authority of the Procurement Division of the Treasury Department. In many respects the photographs illustrate the decided change that has come into architectural expression generally, in both public and private buildings. They show how the Treasury Department has solved the problem of fitting the post office to the environment of many a different type of community... and how the department has endeavored to steer a course between a more liberal approach to traditional forms, and a tolerant if somewhat restrained and cautious attitude toward changing thought. You will find this presentation interesting and useful. Watch for it... next month.

Also in the August Issue, American Architect and Architecture

Detroit Architects Edit—the second in the series of 16-page sections prepared by various architectural groups throughout the country. The Detroit section, prepared under the direction of Malcolm R. Stirton, A.I.A., assisted by Clair W. Ditchy, N. Chester Sorenson, Richard T. Raseman, Talmadge C. Hughes, Andrew R. Morison and Alvin E. Harley... will be of great interest to architects everywhere. Mr. Stirton will present features of interest to draftsmen. Mr. Ditchy will contribute an article on Small House Associates. Mr. Sorenson will represent school architects. And Mr. Raseman will discuss the Cranbrook School.

Architectural Overtones—devoted to the recent work of eight important American mural painters.

The Racquet Club, Palm Springs, California—a fine example of a private swimming and tennis club designed in the so-called "desert" style. By Spencer and Landon, architects.

Royal Palm Club, Miami, Florida—a new night club designed in a pleasantly restrained type of modernism. By Robert Law Weed, architect.

Veterinary Hospital, New York—an unusual handling of an unusual problem. By Block & Hesse, architects.

Time Saver Standards—on swimming pools.

Favorite Features—on simple mantels.

Portfolio—on vertical sunnails.

Colburn Residence, Highland Park, Illinois—a distinguished and workable house in the middle west. By Gilmer Black, architect.

Walker Residence, Palm Springs, California—a typical desert house of today. By Charles O. Matcham, architect.

Watch for the August Issue of American Architect and Architecture
A handsome Bus Terminal with FORMICA

THE new bus terminal of the National Trailways System in Chicago is one of the handsomest in the country and a liberal use of Formica for a number of purposes had a great deal to do with making it so. The counters have Formica panels in attractive colors and Formica tops. Formica doors and Formica paneling in some locations were also included in the attractive design of Graham, Anderson, Probst & White.

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