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DECEMBER
1930

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The Profession Should Mobilize....

THE ZERO HOUR IS HERE

By

Ernest Ray Denmark, Editor.

THE Zero Hour has come and it is time for action. The architectural profession should mobilize its forces immediately all along the battle front and prepare to expend its best efforts towards fighting the unemployment situation. Leaders there are in the profession who are not afraid to take the initiative. Some are already well known for their position in the American Institute of Architects, while there are others who are equally as capable and perhaps more zealous in their efforts to see something done at once to justify the profession's place at the head of the construction industry.

Concise and decisive action must be taken immediately directed at the primary objective, and the only objective to which we can look for relief. With private funds for building being held in abeyance, though temporarily we believe not yet available at this time, the United States Treasury with its billions of dollars intact and ready to be expended for new and remodeled Federal buildings is the only financial source to which we can look for necessary funds and which is commensurate with the bigness of the problem at hand.

This is no time for petty political maneuvers, red tape and half-hearted enthusiasm, nor is it a time for a dress parade under the disguise of ethics. Action should be the answer to the cry of literally thousands of laborers in the building industry who are willing and anxious to break dirt, to reel and rock in monster steam shovels prying into nature earth, to scale dizzy heights on skeleton steel and wield nerve-racking pneumatic hammers for long and dreary hours, for the sake of an opportunity to earn their right to a living wage. These men are not alone in their fight for existence. Hundreds of draftsmen, engineers, superintendents and designers have been turned loose from the architectural offices throughout the country to make their way as best they can in the channels of commerce to which they are totally unfamiliar and ignorant. These men by right of their education, practical training and long experience deserve an opportunity to earn their livelihood.

Funds have been appropriated, sites have been bought, titles have been cleared and everything is now ready for actual construction of hundreds of buildings in every state and yet there are no plans, no specifications from which these needed buildings can be constructed. The Supervising Architect's Office surely cannot hope to meet the situation in time to bring the relief so much needed at this very moment. And, we should like to ask, what has become of the architects in this country who have made our buildings the envy of every nation? Why are they not being given an opportunity to solve this problem?

Here in the South there are architectural offices in every city that could be organized overnight with drafting forces capable of turning out plans for every Federal building now scheduled for this section and do the job as efficiently as the Supervising Architect's Office. But so far we know of but two firms who have thus far been commissioned to go forward with Federal work. There is no question as to the capabilities of these men in the profession here in the South. Their work speaks for itself. With our mild winter season there is no reason why this work should not be gotten under way immediately.

The zero hour has come. May our leaders in the profession here in the South honor it in the usual and accustomed way.

ENTRANCE TO ESTATE OF EDMUND E. ALLYNE, PALM BEACH, FLA.
HOWARD MAJOR, ARCHITECT

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NUMBER 12

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and BUILDING NEWS

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1930

DOMESTIC WORK OF HOWARD MAJOR

Exemplifying the compelling power of good proportions, and that spatial relations give architecture its enduring quality.

By WALTER D. BLAIR
A. I. A.

PEOPLE go to Florida to enjoy its winter climate of sunshine and warmth, and to enjoy its outdoors amid the luxuriant and, to the northerner, exotic vegetation of palm, flowering shrubs and vines that glow with the brilliancy of the rainbow. And so patios and terraces form an important part of the domestic architecture of Florida's seacoast. About them the rooms are grouped and, unlike the Spanish prototypes, there is usually one side open, screened by grilles or open arcades. In the houses designed by Howard Major and illustrated in this number, the patio has become the central feature of the design. On it has been lavished his erudition and taste. In all of them there is restraint, and yet one has in seeing them a feeling of opulence, of joyous abandon, of orderly playfulness, and one would like to stop a while in them and take one's ease. They are, in short, eminently livable, and with contrasts of sunlight and shadow, of arched and straight forms, mouldings and plain surfaces, have variety of such intensity that the beholder's attention is at once arrested.

The patio of Mr. Edmund E. Allyne, seen from the inside, (illustration No. 1) is a delightful composition of arches and columns. The arches are without mouldings save on the inside where a single cyma relates the mouldings of the Doric cap to the arch. The relation of bare wall space above the arches of the outside screen to the width of the arches, which are of darker hue than the stucco, the relation of arched opening to its masonry overload, the triple row of horizontal ripples under the slightly projecting band which supports the overhanging tile roof and emphasize by contrast its size make an architectural composition of simple and enduring beauty, for the beauty is the resultant of spatial relations of forms and areas, of their mutual proportions and, therefore, is as permanent as geometry, and independent of any fluctuation of fashion or taste.

Seen from the outside (illustration No. 2) this patio is equally pleasing. Its tiled terrace, screened balcony, simple iron grilles of the arches from an inviting picture of tranquil ease.

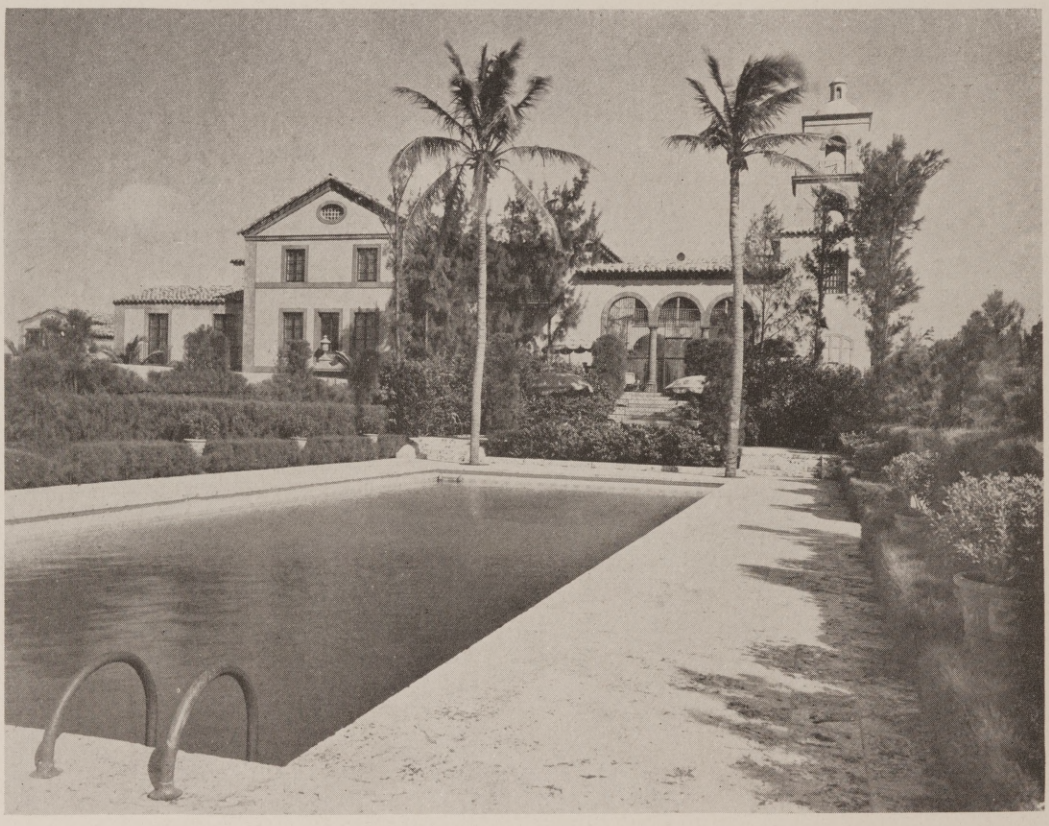
The exterior of the house (illustration No. 3) seen over the swimming pool, shows a two-story house, with one-story wings, the patio, and a belfry that balances the two-story house, a gracious and dignified structure, beautiful, simple in design and without ornament or complexity of any sort, set in a frame of luxuriant planting, tall evergreens, palms, clipped hedges, broken by large vases of oleander.

The residence of Thomas R. Cowell shows a patio with a beamed gallery on three sides. Here there are square piers with moulded caps and chamfered arches, bold and rugged architecture, with contrasts of wide shadowed aisles and sunlit patio, floors of brick and tile, and climbing vines that soften and break the lines of the architecture (illustration No. 4).

The exterior has the simplicity of a Bermudan house, wide plaster surfaces, solid shutters, a tile cornice with three bands of small ripples below, and in the center a two-story porch, the second story enclosed by slats. This house is redolent of the semi-tropics and is an expression of life amid its blaze of sunshine. The view of the entrance (illustration No. 6) reveals the house in relation to its surrounding trees and one has a glimpse of an attractive one-story wing with long screened bay windows, roofed with tile.

The living room (illustration No. 7) is panelled in pecky cypress over which has been brushed paint so thinly that the grain of it is not covered. A beamed ceiling and a small fireplace (oh, horrors, does the building department allow them, thus acknowledging that it is ever cold enough for a fire in Florida, or is this feature a survival, a vestigial appendix of design, of Mr. Major's residence in New York?

ENTRANCE DETAIL



Number 3

HOUSE OF EDMUND E. ALLYNE, ESQ., PALM BEACH, FLA.

HOWARD MAJOR, ARCHITECT

Number 2

TERRACE ABOVE THE POOL

Number 1

THE PATIO, HOUSE OF EDMUND E. ALLYNE, ESQ., PALM, BEACH, FLA.

HOWARD MAJOR, ARCHITECT

Number 6

ENTRANCE GATES

Number 4

THE LOGGIAS

HOUSE OF THOMAS R. COWELL, ESQ., PALM BEACH, FLA.

HOWARD MAJOR, ARCHITECT

DINING ROOM

Number 7

LIVING ROOM

HOUSE OF THOMAS R. COWELL, ESQ., PALM BEACH, FLA.

HOWARD MAJOR, ARCHITECT

Number 11

ENTRANCE DOORWAY

Number 8

ENTRANCE FACADE, HOUSE OF H. TELLER ARCHIBALD, ESQ., PALM BEACH

HOWARD MAJOR, ARCHITECT

Number 10

VIEW THRU PATIO TOWARDS ENTRANCE

Number 9

OCEAN FACADE. HOUSE OF H. TELLER ARCHIBALD, ESQ., PALM BEACH, FLA.

HOWARD MAJOR, ARCHITECT

THE PATIO, HOUSE OF H. TELLER ARCHIBALD, ESQ., PALM BEACH, FLA.
HOWARD MAJOR, ARCHITECT

crystal chandeliers, a Savoneric rug, an antique black and white marble floor, make a room of great beauty.

The residence of Mr. H. Teller Archibald (illustrations Nos. 8 and 9) shows on the ocean side a two-storied porch, reminiscent of New Orleans, gabled wings, intersecting at right angles, with shed roofs of tile, and a three-storied square tower. Again there are bare plaster walls and no ornament. The effect produced is one of proportion only, the elementary relation between solids and voids, the area of the walls related to the area of the windows. The entrance is emphasized by a rusticated archway, filled with a wrought iron gate, which leads into the patio (illustration No. 10). Its design consists of three elliptical arches on square piers decorated with Doric pilasters. Above smaller square piers carry the roof of a second-story loggia. The relation of square openings on the second floor to arched openings on the first floor is pleasing, and the amount and shape of the masonry over the arches is equally satisfying. One is here conscious of an admirably studied design. The pavement of stone, the planting and furnishing, the ascending staircase complete a patio that has rare quality and charm. A view of the entrance doorway (illustration No. 11) shows that beauty of form and contrast may be produced by simple means, if one knows how to combine materials and proportion them into harmonious forms and masses.

In the designs of these three houses, Mr. Major has created an admirable type suitable to the climate of Florida, and he has done so without the introduction of "Spanish details," or any ornament whatever. He has used the materials of stucco, and rarely stone, in accordance with its nature in broad unbroken masses, he has contrasted arches with square-headed openings, which he has filled with slender wrought iron in accord with its nature. His design has been as inevitable as night following day, and beauty and appropriateness have been achieved because he has known the compelling power of good proportions, and that spatial relations give architecture its enduring quality of arousing emotion.

HOUSE OF NELSON ODMAN, ESQ., PALM BEACH, FLA.
HOWARD MAJOR, ARCHITECT

ENTRANCE FACADE, HOUSE OF CATOR WOOLFORD, ESQ., ATLANTA, GA.
OWEN JAMES SOUTHWELL, ARCHITECT

GARDEN ENTRANCE

HOUSE OF CATOR WOOLFORD, ATLANTA, GA.
OWEN JAMES SOUTHWELL, ARCHITECT

DETAIL OF STAIR

DINING ROOM, HOUSE OF CATOR WOOLFORD, ESQ., ATLANTA, GA.
OWEN JAMES SOUTHWELL, ARCHITECT

AN EIGHTEENTH CENTURY VIRGINIA HOUSE AT RICHMOND

AN 18th CENTURY VIRGINIA HOME

By Ernest Ray Denmark

WE hold no antipathy for that group of modernists in the profession who can see no good in anything which has the slightest resemblance of having come from a traditional origin, and who believe that our architecture has become stagnant from a lack of originality. It may be true that old forms and old motifs have been followed too closely and that our architecture has suffered therefrom yet, to disassociate our thought entirely from the work which has gone before, would to our mind reflect upon our sensibilities and materially effect our efforts towards the creation of an architecture based upon sound planning and tasteful design.

In domestic architecture we should have a proper regard for the background, geographical, historical, stylistic and social elements, for the background goes far towards ameliorating defects in the architecture itself. If architecture is indigenous it is likely to be good. Conversely, if it is exotic or anachronous it is likely not to be in the first rank. We should study the old work with sincerity, analyzing it not over critically as to its details for inevitably there will appear much that is not good, profiting as we may from the good there is in it.

The human scale, the inimitable naturalness and lack of finickyness puts us immediately in a receptive mood to absorb the finer characteristics of the majority of the old houses which have been handed down to us through the years. And then the sturdiness of the materials appeals to our love of permanence and security. The honorable scars and wrinkles of age but accent the sterling traits of character; and we are reassured that sound workmanship has an enduring value even in a world overwrought with turmoil.

It is well that we should ever-so-often examine some of the best of these old houses, especially those which are still standing here in the South, and see if after all there are not some qualities which will in a measure help us to improve our contemporary work. The one illustrated here from Virginia offers such an opportunity. The interiors are especially interesting as they typify that sincerity of purpose and love of the simple which was a part of the character of our earlier builders. Good furniture tastefully chosen and the other decorative elements has made this house livable in a measure equally as pleasing as many of our modernly constructed homes.

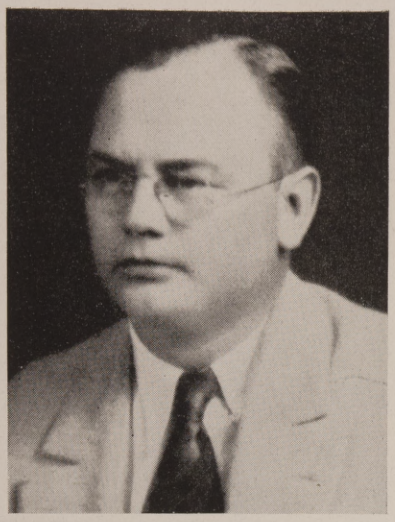
AN EIGHTEENTH CENTURY VIRGINIA HOUSE AT RICHMOND

AN EIGHTEENTH CENTURY VIRGINIA HOUSE AT RICHMOND

JEFFERSON COUNTY COURT HOUSE, BEAUMONT, TEXAS

FRED C. STONE AND A. BABIN, ARCHITECTS

This building was the subject of a contract letting in which the owners profited as follows: . . 1. A bid list of responsible and qualified contractors was furnished. . . 2. Time and expense were curtailed by giving the architect a free reign. . . 3. Assurance of a well built structure, modernly designed which ran approximately $150,000 under anticipated cost.



A "99.44" Pure Contract Letting . . . .

JEFFERSON COUNTY COURT HOUSE

By R. W. ARCHER
Sect. Beaumont Chapter, A. G. C.

WHAT has been appropriately called a "99.44" pure letting was conducted in Beaumont on September 3, 1930, when bids were received by Commissioners' Court on proposed erection of a new Court House for Jefferson County, Texas. Efforts of the Builders Exchange of Beaumont, Inc., assistance of the Bureau of Contract Information, Inc. of Washington, D. C., and the work of Texas Branch, Associated General Contractors of America, Inc., with headquarters at Dallas, Texas, has resulted in the letting being acclaimed as an outstanding event in the annals of construction industry history in the Lone Star State, from the standpoint of organization and trade association field work, and full satisfaction of the owners.

Many salient points stand out to make the letting one of historical construction interest. From the viewpoint of the owners, three features are worthy of mention. First, Jefferson County was given a bid list of responsible firms, all thoroughly qualified to perform the work. Second, time and expense to the county was curtailed through giving the architects a free reign. Third, the county is assured of a well-built structure, modernly designed, total contracts for which ran approximately $150,000.00 below expectations, insuring installation of sundry equipment for which a warrant issue had been considered.

Viewing the job from the architects' aspect, there are six important factors to be considerel, all contributing to the success of the letting. They are:

1. Architects were not handicapped by interference of the owners, or others, in the selection of bidders, nor in the conduct of the letting.

2. The Bureau of Contract Information, Inc., was placed at the disposal of the architects, and all available performance records of prospective bidders procured.

3. The bid list was confined to a nominal number of firms through pre-qualification forms.

4. Bidders complied with every request of the architects.

5. Trade associations were placed at the disposition of the architects—and USED.

6. No delay was encountered in the tabulation of bids, or the award of contracts.

Nine points surrounding the letting are conspicuously in favor of the contractors. They are, summed up:

First. Plans and specifications were definite and complete. Second. Separate bids were requested on general and mechanical work. Third. Optional alternates were requested, but the awards made on basic estimates, all alternates to be worked out with successful bidders. Fourth. Standard Associated General Contractor forms of proposal were specified. Subcontractors used a form adopted by the Builders Exchange of Beaumont, Inc. Fifth. An estimating fee was established 100%. Sixth. Bids were opened publicly. Seventh. The job came within the money. Eighth. All low bidders were awarded contracts within an hour following the opening. Ninth. Checks were returned to unsuccessful bidders immediately.

Three points made the letting "perfect" from the standpoint of the Trade Association. Association representatives were given every possible co-operation by the owners; they were given full co-operation of the Architects, and they were invited to "sit in" in the "executive session" of the Commissioners' Court immediately following the opening.

Much ground work preceding the letting was performed by the Beaumont Builders Exchange. A representative of the Exchange, at the invitation of the architects, "sold" the owners on the use of prequalifying the prospective bidders, and later secured contract performance records from the Bureau of Contract Information for them. Plans were placed in the Exchange Plan Room, at the convenient disposition of the sub-contractors, and much valuable information surrounding the job secured by the organization for the bidders. Proposal forms were prepared by the Texas Branch, A. G. C., and an estimating fee established.

HABIG MOTORS COMPANY BUILDING, MIAMI, FLA. ROBT. LAW WEED, ARCHITECT

AUTOMOTIVE

Sales and Service Buildings

An Aesthetic Expression of a Practical Problem in Merchandising Phsychology

THE development of the automobile has been the *raison d'etre* for the development of many and varied types of structures, and among those most necessary and practically indispensable are the Sales and Service buildings. Reviewing the rapid transition of the motor car, æsthetically and practically, we wonder at the scarsity of really well designed structures now housing this important industry. The great majority of these structures are but glowing examples of the fact that we are slaves to haste and imitation. Mostly haste in this particular case, because the industry has developed so rapidly that permanent dealer connections have been almost an impossibility, and consequently few dealers or the motor car manufacturers have felt it good business to build anything but temporary quarters, in the majority of cases using space planned for another purpose. However, this situation is showing a marked change for the better and we can confidently expect to find in the future a growing demand for architectural service in this particular branch of work.

The architect who undertakes to prove the worth of his service for this type of building alone on the basis of his ability to design an attractive facade will not be giving his client the full benefit of intelligent architectural knowledge. There is a very definite and practical merchandising problem involved in this type of structure. The old theory in merchandising psychology was to establish your business as far away from your competitors as possible but, today our merchandising experts tell us this theory is entirely wrong. In fact, it has been proved quite convincingly that it is good business to get as near your strongest competitor as possible. One of the best examples of the practicality of this idea is embodied in the chain grocery store business. Department stores, jewelry shops, shoe and hosiery shops, to say nothing of the theaters, are finding it most profitable to observe the psychology of group buying which has permeated the minds of the buying public.

It is quite obvious that the architect who discusses this type of building with his client must not only establish in his mind the commercial value of good design, but must consider the location as well as the physical elements of the building, and try to establish a satisfactory basis of acceptance on the part of the builder to justify his acquiescence in establishing a building fund which will adequately take care of a lot in the same neighborhood with his competitors though the cost of the property might be in excess of what a lot of the same dimensions could be had for in some other section or on another street.

There is another practical problem involved in this type of structure. Outside of the larger metropolitan centers practically all automobile showrooms must be planned to include service features, that is,

INTERIOR SALES ROOM, HABIG MOTORS COMPANY BUILDING, MIAMI, FLA.

repair departments and in conjunction stock rooms, and ample storage space, besides there must be a certain amount of the space given over to private offices and their ante-rooms The building should be so planned that the sales department and the repair shop are as far removed so far as the public are able to see as possible, at the same time the one must be easily accessible to the other This necessarily calls for a plan which will make possible the entrance and exit of cars to and from the service part of the building without notice from the showroom.

While the service feature of this type of building is most important and must be carefully studied to adequately serve the purpose, it is in the salesroom where the architect must show his imagination and creative ability for pleasing effects. It is very often the case that the architect is handicapped by the owner when considering the design because the owner is often so devoid of imagination that he cannot appreciate until he has it the commercial worth of architectural beauty and the definite sales value of the design which exerts a subconscious buying appeal.

Competition in the automobile business is exceptionally keen and appearance exerts a tremendous influence on sales. For this reason the architect should consider the design of a salesroom as a definite problem in display, an adventure into the realm of advertising.

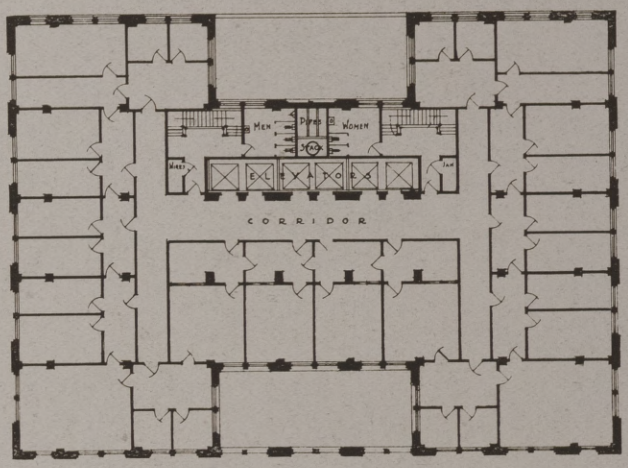
The product in this instance should be dramatized so-to-speak, in order to catch and hold the attention of the prospective purchaser. How this can best be accomplished depends entirely upon the imagination of the architect. This is a comparatively new problem with no particular precedent to follow, so the architect is free to go as far as he likes in the decorative treatment of the interior of the room, so long as he keeps within the bounds of reason and good taste.

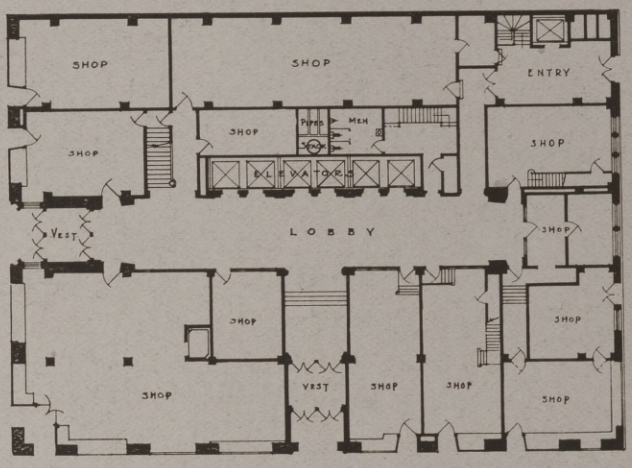
The exterior should be made as distinctive as possible, using any style that seems to lend itself best to the problem, so long as you obey the one primary requisite of window display. In this case spatial relations of windows is most important and the entire facade should be made so far as possible one gigantic window.

THE PHILTOWER BUILDING, TULSA, OKLA.

KEENE & SIMPSON, EDWARD BUEHLER DELK, ASSOCIATE ARCHITECTS

KANSAS CITY, MISSOURI





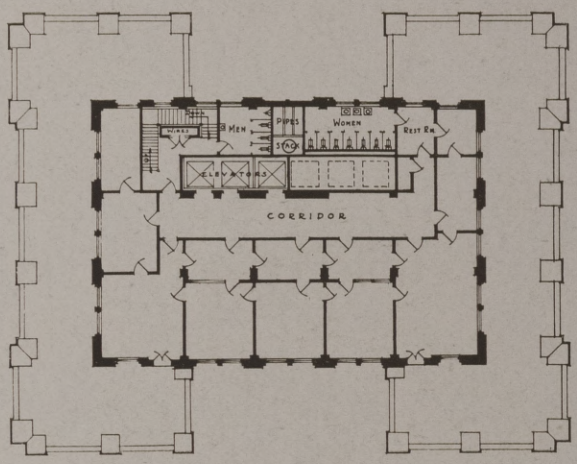
PLAN OF FIRST AND THIRD FLOORS, PHILTOWER BUILDING, TULSA, OKLA.

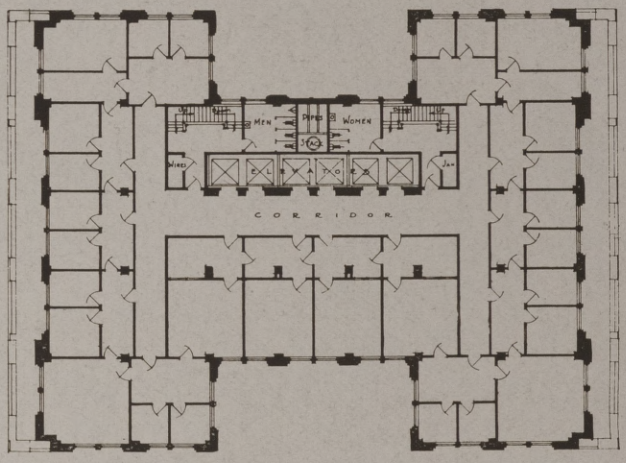
KEENE & SIMPSON, EDWARD BUEHLER DELK, ASSOCIATE ARCHITECTS

TOWER DETAIL

THE PHILTOWER BUILDING, TULSA, OKLA.

KEENE & SIMPSON, EDWARD BUEHLER DELK, ASSOCIATE ARCHITECTS





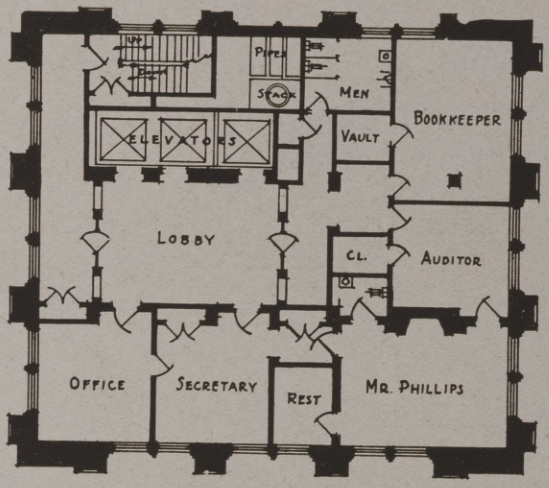
PLAN OF FOURTH AND TWELFTH FLOORS, PHILTOWER BLDG., TULSA, OKLA.

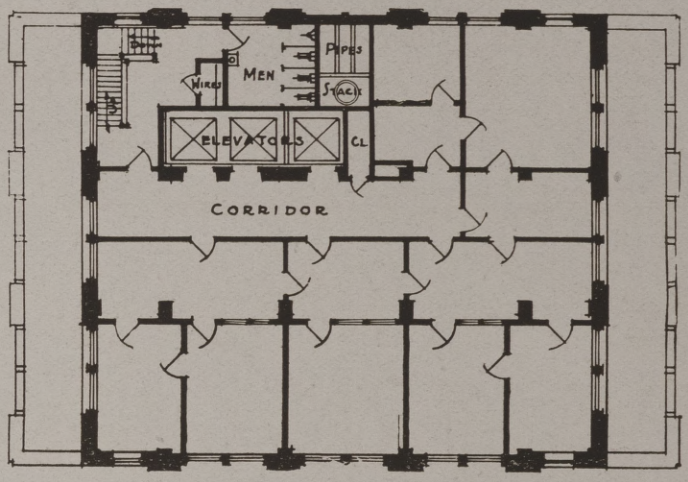
KEENE & SIMPSON, EDWARD BUEHLER DELK, ASSOCIATE ARCHITECTS

ENTRANCE DETAIL

THE PHILTOWER BUILDING, TULSA, OKLA.

KEENE & SIMPSON, EDWARD BUEHLER DELK, ASSOCIATE ARCHITECTS





PLAN OF SIXTEENTH AND TWENTY-FIRST FLOORS, PHILTOWER BUILDING, TULSA, OKLA.
KEENE & SIMPSON, EDWARD BUEHLER DELK, ASSOCIATE ARCHITECTS

DETAIL IN FOYER

THE PHILTOWER BUILDING, TULSA, OKLA.

KEENE & SIMPSON, EDWARD BUEHLER DELK, ASSOCIATE ARCHITECTS

ENTRANCE DETAIL

L. FEIBLEMAN RESIDENCE, NEW ORLEANS, LA.

MOISE GOLDSTEIN, ARCHITECT

MODERNISTIC vs. TRADITIONAL ARCHITECTURE

By
WILLIAM ORR LUDLOW
F. A. I. A.

IS modernistic architecture soon to displace the prevailing styles?

Do Colonial, Elizabethan, Italian Renaissance now belong to the past in this country, and a few years hence will they simply indicate buildings that are old fashioned? Shall we soon refer to them with the complacent superiority with which we mention Victorian Gothic, French Mansard, Cupola and Band Saw architecture?

Now, this is a very interesting question to most of us, and an exceedingly important question to those who are about to build, or who are anxious about the sale value of their homes or other buildings.

In attempting an answer, let us admit the fact that the present generation cares little for tradition. We are beginning to do things now more because they are reasonable than because "we always have done them that way." To be sure, it leaves us in a position of uncertainty about what we shall be doing tomorrow, but, after all, adventure is the only way of progress.

We must admit too that in this "machine age," efficiency is making us more materialistic, and less responsive to such intangible things as sentiment, tradition, beauty. These new standards have even now affected nearly everything—business methods, habits, customs, ethics, religious views, music, art, all in greater or less degree, and that they will affect our architecture is quite sure.

Indeed one has but to look at our recent skyscrapers to see that the architecture of our big buildings has not only been affected; it has been revolutionized. We have proven that it is not necessary to borrow the old clothes of previous generations to cover an entirely new creation—the steel frame building. We have designed office buildings that are truthful, logical and beautiful; that have no trace of Colonial, Elizabethan or Italian.

Moreover, in our big buildings we are beginning to replace the small units like brick by materials in large units such as sheets of non-corrodible chrome steel, large wall boards for plaster, light hollow plaster blocks for brick or tile, reinforced concrete in great slabs for terra cotta blocks. Already, therefore, the skyscraper of today bears no resemblance even in style to high buildings of only a few years ago, and the skyscrapers of a few years hence will bear no resemblance to the skyscrapers of today.

It is quite sure then that we are in the midst, perhaps only at the beginning, of an era of change, and what is happening to our large buildings is likely to happen to our smaller buildings. In fact we are quite sure to use in our smaller buildings many of the new materials borrowed from our large buildings.

Of course, in designing our houses, we have not the same problems to solve that the steel frame and great height impose, nor have the requirements of the house changed as greatly as those of the office building. But every day new materials and new forms of construction are being put on the market and new things are demanded such as the incorporation of the garage with the house, the omission of the separate dining room and larger windows for more sunshine.

It seems quite sure also that a few years from now the slow process of sending a lot of lumber to the site to be cut and fitted laboriously by a gang of carpenters to make the frame of a house, will be replaced by the less expensive shop production of light steel members, cut and fitted in the shops, sent to the site, a steel frame complete, and erected in a few days time by a few especially skilled erectors.

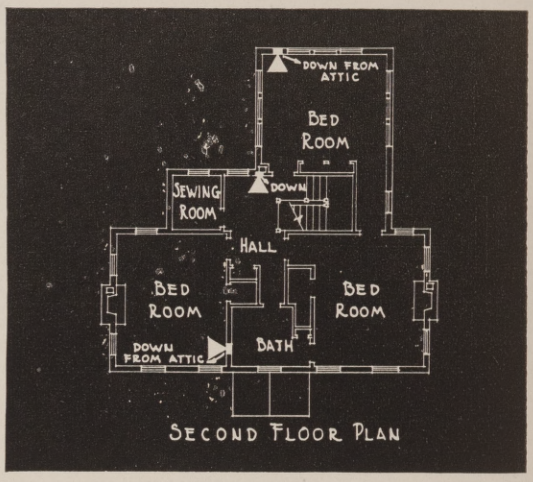
It seems quite sure that we shall use in our houses more large units like wall boards, to do away with the traditional three coats of plaster, that our floors will be in a single plastic slab instead of small

This Article is Concluded on Page Fifty-six

Architects are invited to Consult freely with Bell Company representatives

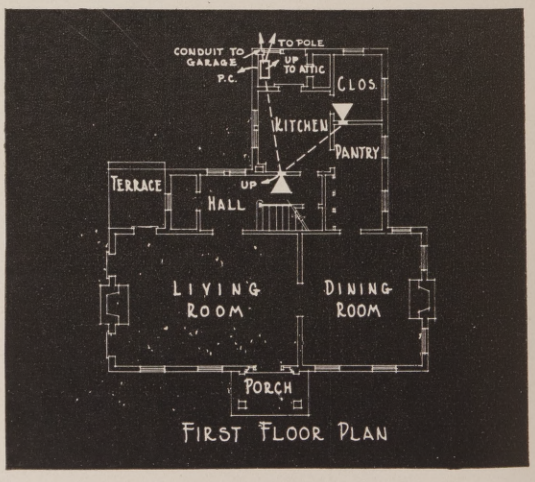
THE telephone company is constantly studying ways to improve its service. It has much data of interest to architects, particularly in view of the increasing importance of complete *telephone convenience* in the modern home. A call to the Business Office will bring a representative to discuss with you and your clients any questions that may arise in planning for the telephone arrangements in new and remodeled residences.

An important feature of this telephone convenience is the building in of conduit and outlets within the walls and floors during construction or remodeling. This gives improved appearance, by concealing the telephone wiring, and affords protection against certain types of service interruptions. Telephone outlets should be provided in all the important parts of the house. The home owner can then utilize just those which best meet his immediate needs, and he can readily rearrange or expand the service in the future.



Modern telephone convenience is provided for in the residence of Mr. Tom C. Gooch, 3724 Armstrong Avenue, Dallas, Texas, by six telephone outlets, including one in the garage. LANG & WITCHELL, Architects, *Dallas.*

LEGEND
TELEPHONE OUTLET
CONDUIT
PROTECTOR CABINET



AMERICAN TELEPHONE & TELEGRAPH CO. AND ASSOCIATED COMPANIES — BELL SYSTEM

INSULATION----A RESUME OF ITS PLACE IN MODERN CONSTRUCTION

By

W. S. WALLACE

Engineer

FROM a very small beginning a very few years ago, the insulation industry has grown to a position of major economic importance. There was then little or no adequate technic governing application—cut and try was the order of the day—and without the forbearance and sympathetic support of the architect present-day application methods could hardly have been perfected.

At the start insulation had comparatively few uses, but now there are distinct classes of use, many of them becoming more and more technical. But, fortunately, there are now well established fundamentals, proven sound by countless successful installations, the observance of which ensures satisfaction.

The architect is a busy man who cannot possibly take the time to fully acquaint himself with developments as they take place within an industry, but he is vastly concerned to have placed at his disposal proven fundamentals of the various materials to be fabricated into the buildings which he designs. It is the purpose of this discussion to give some of the high spots on proven fundamentals governing the use of insulation.

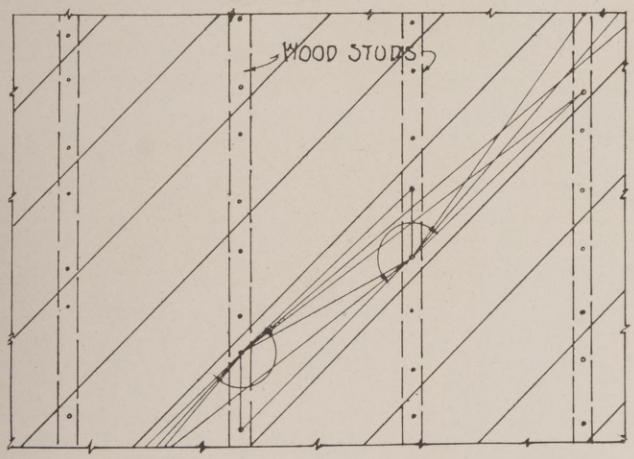


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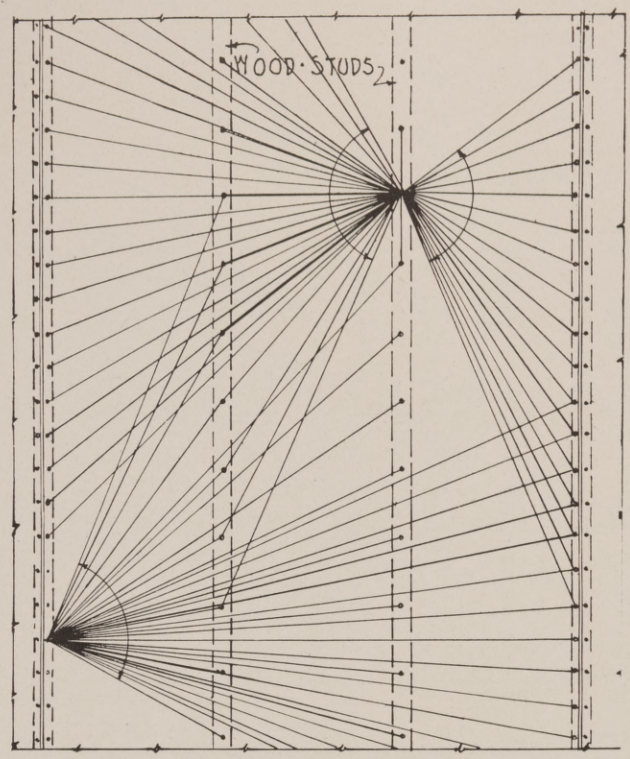
Fig. 1. Showing some of lines of resistance against distoration for wood sheathing



2

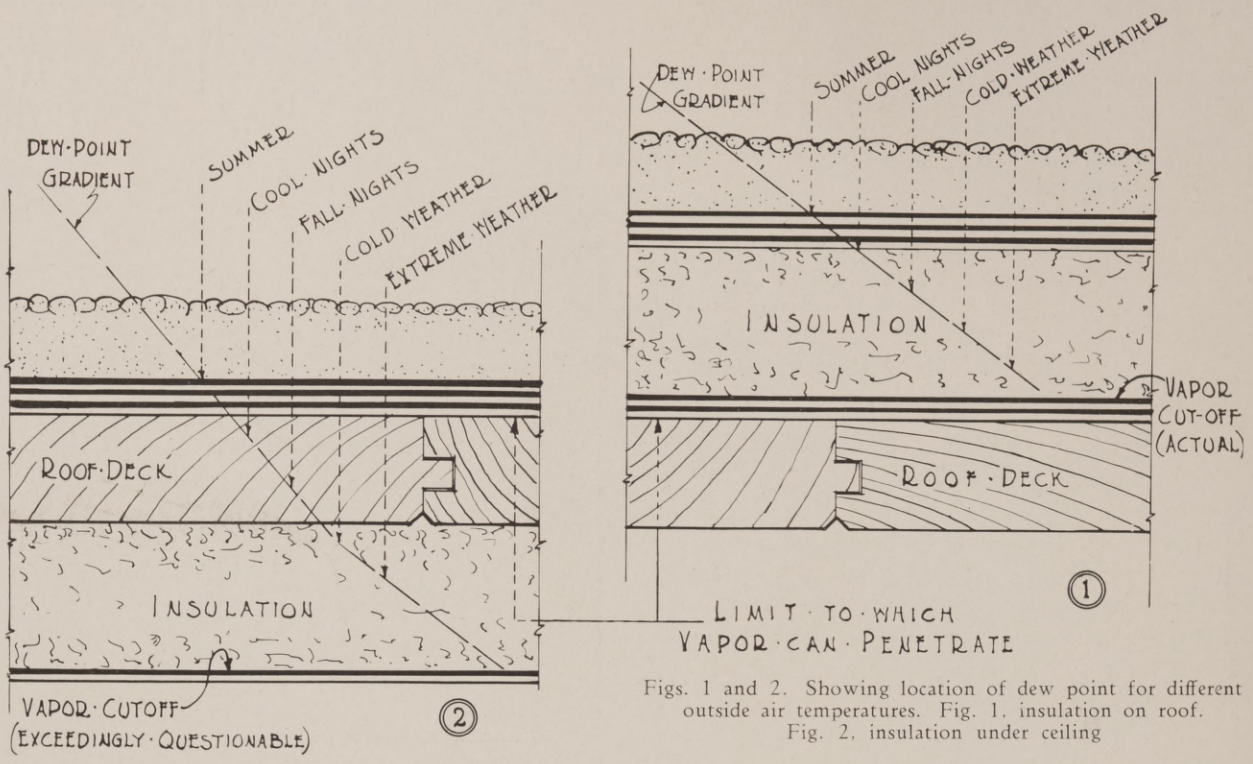
Fig. 2. Showing some of lines of resistance against distortion for insulation board sheathing

Insulation is as old as the human race. The heavy thatch of the tropics and of Europe, the thick walled houses of early America, and the like, were all effective, primitive insulations. But modern standards will not permit the first and costs make the latter prohibitive.

Later the air space came into more or less common use and it is still used, of course, where it is incidental in design. Writing for HEATING & VENTILATING, April, 1930, "Do Air Spaces Insulate?", Paul D. Close says, in part, "The insulating value of air spaces is usually overestimated and in most cases the degree of insulation obtained is more costly than it would be if a commercial insulation were used. . . . It requires four air spaces to provide the same degree of heat resistance as 1″ of insulation having a conductivity of 0.31."

Commercial insulation has come to the fore because it does provide thermal efficiency with greater structural strength and nominal cost, but without cumbersome construction and loss of cubage. One inch of structural insulation is as efficient, roughly, as 3″ of wood, 12″ of brick, or 24″ of concrete.

When used for sheathing, insulation not only insulates, but it practically eliminates wind-drift through a building and very materially (wind) braces the frame. Insulation boards have about six times the strength of horizontal sheathing (Robert W. Hunt data) and about equal diagonal sheathing. The reason is that each insulation board carries so



Figs. 1 and 2. Showing location of dew point for different outside air temperatures. Fig. 1, insulation on roof. Fig. 2, insulation under ceiling

many more nails than can each wood sheathing board that there are set up very many more lines of resistance and, further, these multiple lines of resistance radiate through the full 360°. See figure No. 1.

Insulation is *not* inherently nearly as strong as wood, but insulation used as sheathing and the like *does* afford a bracing strength greater than wood similarly used. There has been much misconception on this point because it has not been understood or admitted that the statement has been made about materials *in construction*. When insulation is used as sheathing or similarly it is best to provide that all horizontal joints be broken so that none will run as belt courses across a wall nor around a building.

Insulation has taken a very definite place as a plaster base of proven merit. It not only insulates and strengthens, but it prevents the disfiguring lath marks so long thought unavoidable. The bond between "patent" (gypsum) plaster and insulation is had through the roughness and the absorption (suction) of the board. The bond averages about 900 lbs. per square foot. Lime plaster will not permanently adhere because the lime breaks down the surface fibres, destroying the bond. Cement stuccos never have any real bond and they should not be used except in conjunction with a wire mesh or self-furring metal lath over the insulation.

While the bond of gypsum plaster to insulation was always adequate, the large boards were not fool proof, requiring as they did special wetting, a cumbersome nail, stripping of the joints, special headers, and the like. But the newer insulation lath requires no wetting, uses a small nail, and eliminates all special headers and joint stripping except for interior and exterior angles. This angle stripping is still made necessary because there is no other way in which two wall planes can be tied against corner cracks.

In this connection it might be said that there are over one hundred causes of plaster cracks. Insulation lath will not, of course, eliminate those caused by foundation settlement, excessive frame shrinkage due to green lumber, and the like, but it is a fact that insulation lath prevents many sorts of plaster cracks and does entirely eliminate lath marks. This use of insulation has most certainly proved out wherever standard thicknesses of good plaster have been properly applied.

Another use of lath which has come largely into vogue is as interior finish in ashlar construction. Country schools, small-town theatres, and many buildings where cost is a prime consideration find in this application pleasing effects, very reasonable cost, and no cumbersome stripping. Acoustics are also generally measurably improved. Such construction should carry a 36″ or 40″ wainscot as otherwise the lath would suffer from abrasion. The lath is nailed with 1½″ small head finishing nails driven at a 30° angle, alternately right and left, spaced 3″ on centers and the heads just flush with the surface. The use of a nail set makes unsightly marks.

When used as roof insulation under shingles, tile, slate, or other small unit roofing, insulation can be laid under or over solid sheathing, or it can be

stripped over. It is, however, absolutely necessary that nailing of the roofing be done into wood or other material of equivalent nail-holding power. No insulation will hold nails against a pull parallel with the nail shank and all nails must therefore get a bite into wood or the like directly or *through* the insulation.

No insulation other than the inorganic sorts especially made for high temperatures will withstand continuously applied heats of over about 200° F.; it will eventually char and should therefore not be exposed to live steam pipes nor to other sources of relatively high and continued heats.

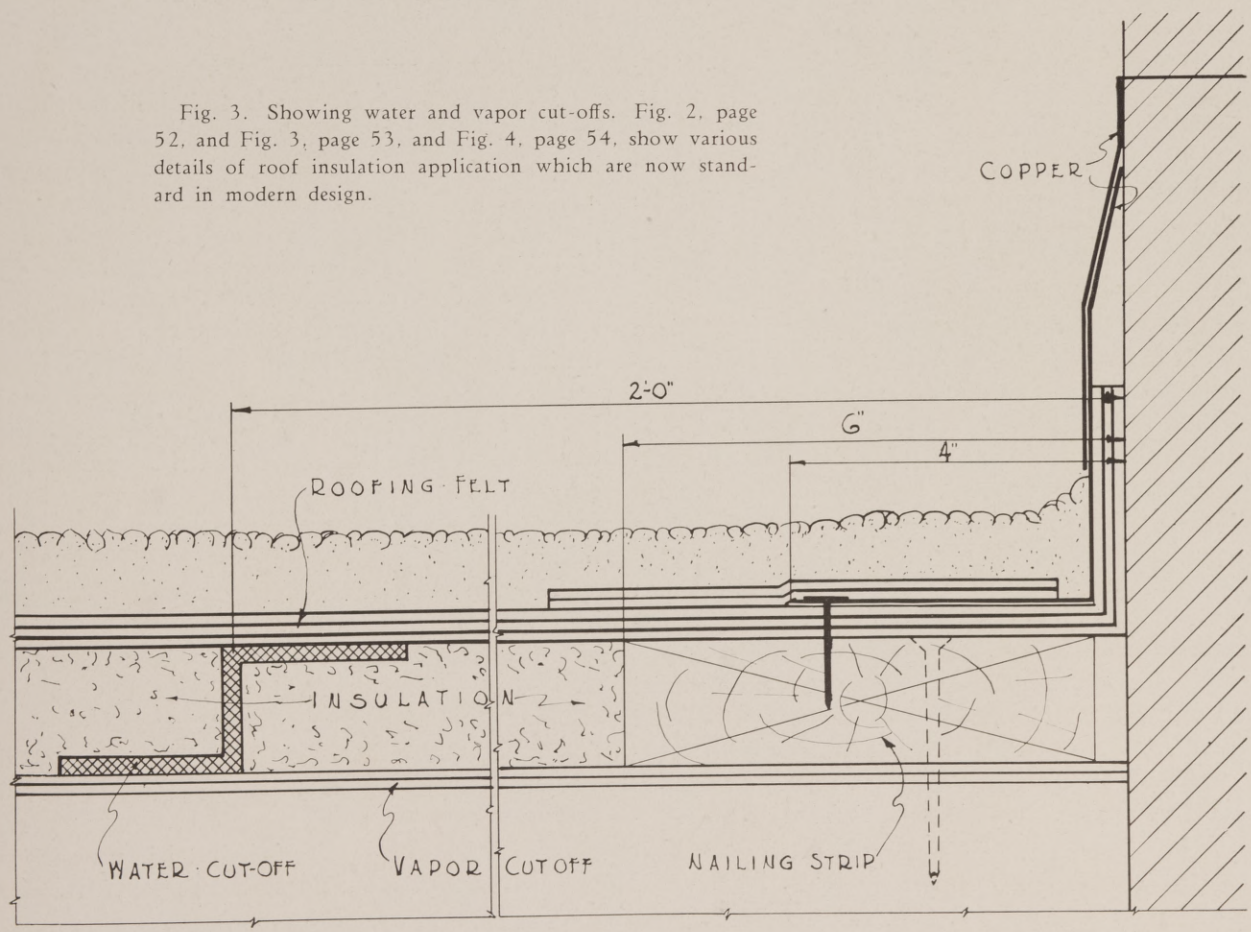
The relation of insulation to fire is largely misunderstood. While it is not, *per se*, "fire proof," it will not ordinarily support combustion and most generally functions to blanket oxygen from the flames. This blanketing of oxygen from flame is one of the prime requisites in the control of fires and if insulation is properly used in a building its large (unit) areas and great strength actually have this effect. In numerous instances the studs back of the insulation have been found almost completely burned through without material effect on the insulation itself. In other cases, of course, the insulation has gone with the building. It is, however, a safe axiom of construction that insulation, properly used, is very seldom detrimental from the fire angle.

While it may be slightly more efficient when used here rather than there in a given building, probably the best way to decide insulation location is to use it where it fits best into design. Thus mathematically it serves equally well used either as sheathing or plaster base. Structurally the building is stronger with the former, but the latter will prevent lath marks. As roof insulation, attic lining, or for top floor ceilings it serves about equally well, though it is a fact that its use both on the roof or as attic lining plus top floor ceilings is better practice because this eliminates a heat-storaging attic.

Insulation is doing a big job in making buildings more comfortable summer and winter, but there is another very closely allied science with which insulation is as a man's right and left hand. This is ventilation. Insulation is *not* a complete heat barrier; merely a heat retardent. If the sun were overhead twenty-four hours a day and if the building were completely closed, the inside would eventually reach the outside temperature.

On a hot day a parasol is cool while a tent is hot, though both are made of about the same materials. The difference is merely free escape of the heated air—ventilation—with the one and its retention with the other. There is a somewhat parallel application with housing and the fullest benefit of insulation can be attained, ordinarily, only with adequate ventila-

Fig. 3. Showing water and vapor cut-offs. Fig. 2, page 52, and Fig. 3, page 53, and Fig. 4, page 54, show various details of roof insulation application which are now standard in modern design.



tion. Suffice it here merely to point out the fact as ventilation is a science too intricate and important to come within the scope of this discussion.

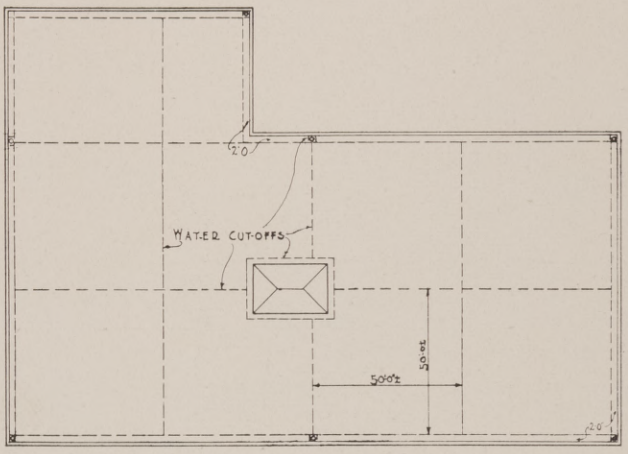


Fig. 4. Suggested Layout for Water Cut-offs

The old bugaboo about rats, mice, and vermin "eating" insulation is, unfortunately, still with us. The canard originated in two ways. First, nothing seems to be proof against rats except, possibly, boiler plate. Second, poor losers in sales competition find a ready weapon or swan song in the rat story.

The naked truth is that none of the insulating boards contain anything of food value and they are all so thoroughly sterilized by steam or dry heat in the making that all extraneous saps, juices, or sugars which might support life are entirely removed. If this were not so they would sour or otherwise decay in place. They are all cellulose in a form which *can* be eaten, but which *cannot* support animal life (U. S. Government data).

A shipwrecked, starving sailor at sea in an open boat will gnaw his shoes and a rat will go through insulation or most anything else if it is between him, hungry, and something to eat. But if it is at all possible he will go around and not through. There are those, unfortunately, who would have us believe that our shade trees and our forests are doomed because a tree blew down in the last big wind.

There has also crept into insulation merchandising some of the buncombe seemingly inevitable in American material sales. Correctly used, but wrongly applied, mathematics too often are misleading. Insulation thickness (of the board-form type) in the very beginning was set as simply the difference between stud clearance and standard plaster thickness as determined by standard trim dimensions.

It so happened that 7/16″ did not require special trim nor did it diminish plaster thickness, but still permitted insulation effective thermally and structurally; 7/16″ has therefore become standard much as the length of wood lath is standard as predetermined by standard stud spacing. It *is* true that thicker and thicker insulation becomes increasingly efficient *by hot plate (test) figures,* but hot plate tests are not the *full* index of how insulation will function *in place* any more than height or weight alone is the full measure of a man. The formula for insulation *in place* includes several other factors which render small increases in thickness of small moment.

The standard formula for wall sections as used by the Bureau of Standards, by the American Society of Heating & Ventilating Engineers, and by all others concerned with problems is:—

$$U=\frac{1}{\frac{1}{K_1}+\frac{1}{K_0}+\frac{2N}{K_1}+\frac{X}{C}+\frac{X}{C}+\frac{X}{C}}$$

In which:—

U —Overall wall conductivity.

K_1—Still air surface resistance.

K_0—Moving air surface resistance.

N —Number of air spaces.

X —Material thickness, inches.

C —Material plate conductivity.

Thus for a wall built of studs, sheathed and weatherboarded outside, insulated with 7/16″ board and plastered on the inside, vs. the same construction except that the insulation is full ½″, "U" would be:—

For 7/16″:

$$U=\frac{1}{\frac{1}{1.34}+\frac{1}{4.0}+\frac{2}{1.34}+\frac{0.78}{1}+\frac{0.63}{1}+\frac{0.438}{.33}+\frac{0.5}{2.32}}=0.184 \text{ Btu.}$$

For ½″:

$$U=\frac{1}{\frac{1}{1.34}+\frac{1}{4.0}+\frac{2}{1.34}+\frac{0.78}{1}+\frac{0.63}{1}+\frac{0.50}{.33}+\frac{0.5}{2.32}}=0.178 \text{ Btu.}$$

$$\frac{.184-.178}{.184}=3\text{-}1/3\%.$$

Similarly, for brick veneer with insulation used as sheathing and as plaster base the difference would be slightly under 4½%. It would hardly seem that a gain of under 5% in overall efficiency would compensate for the cost of special trim or the detriment of thinned-down plaster. Furthermore, such small differences (under 5%) are not perceptible to the human senses nor are they taken into account by the heating authorities in figuring radiation because they actually lie inside the working error of about 10% allowed in heat conductivity calculations. The Guide Publication Committee of the American Society of Heating and Ventilating Engineers have never shown any differentiation between the two thicknesses as they cannot concede any real benefit.

Nor is structural strength perceptibly increased by very small increments in thickness. This is had by properties inherent in the insulation itself and by its method of use or attachment. Other than for certain industrial uses and for extremes of climate demanding 100% increases in thickness, no good purpose could be served by changing present proven standards.

Insulation of roofs* of industrial, warehouse, school, and office buildings divides itself roughly

*A special article on the use of roof insulation for industrial buildings was published in Textile World, January, 1930. A reprint can be had on application to the Southern Architect.

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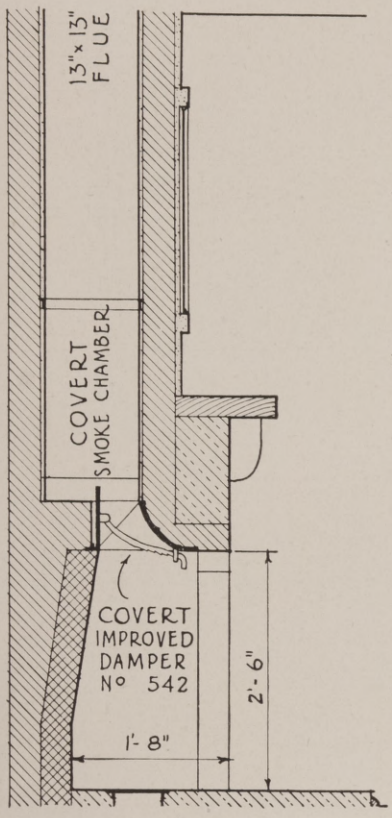
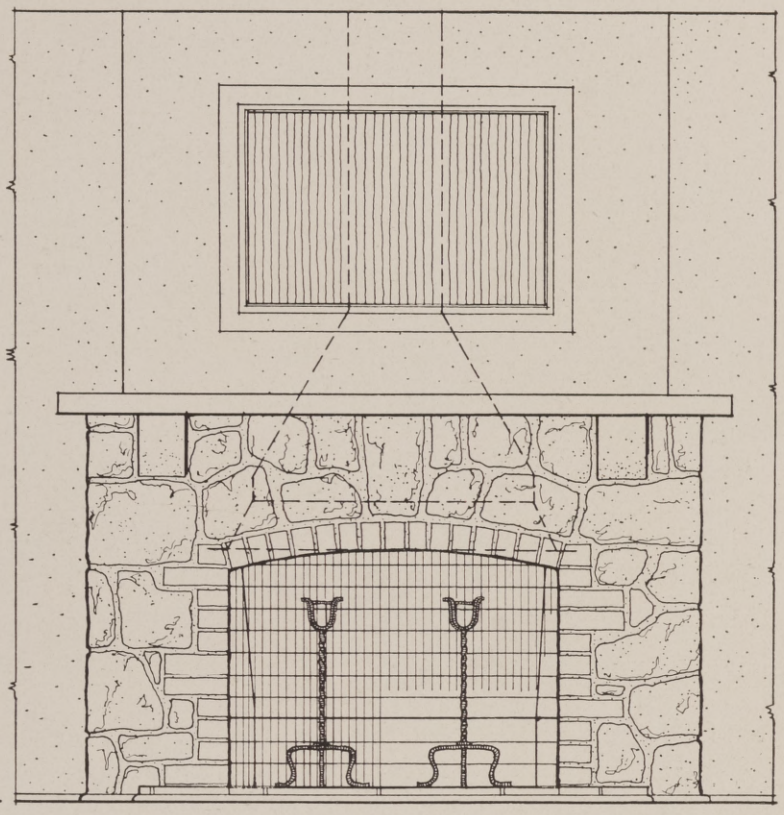


SECTION



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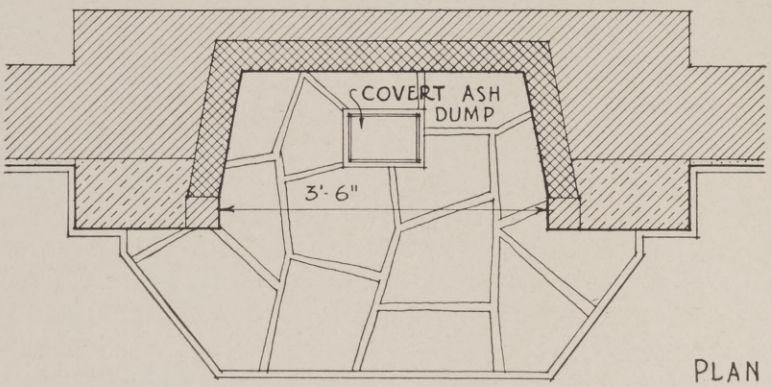

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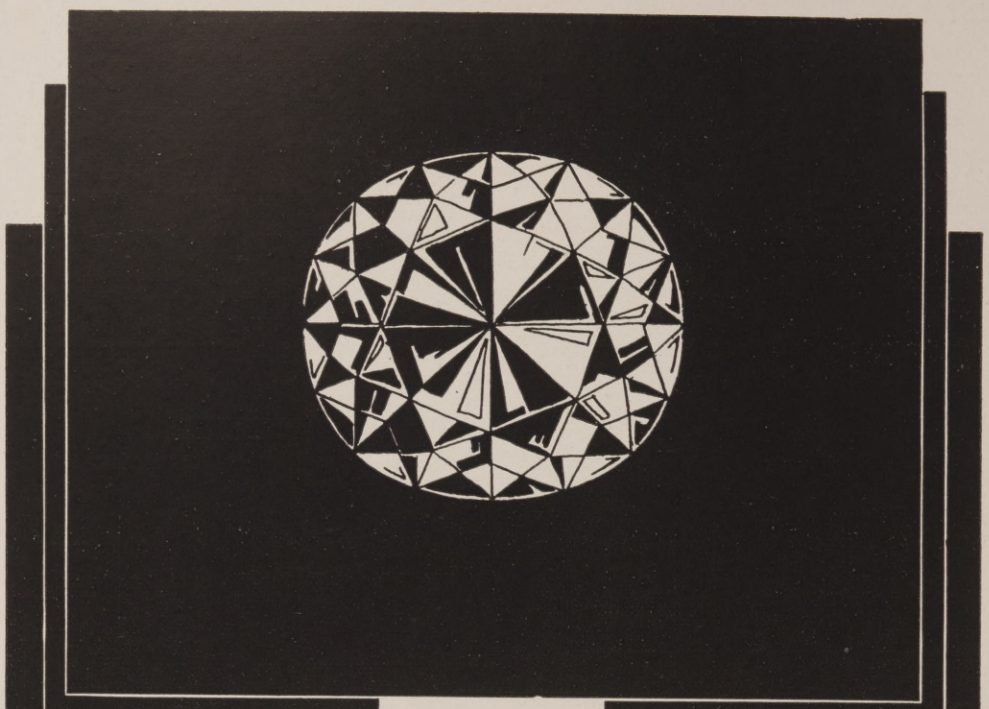

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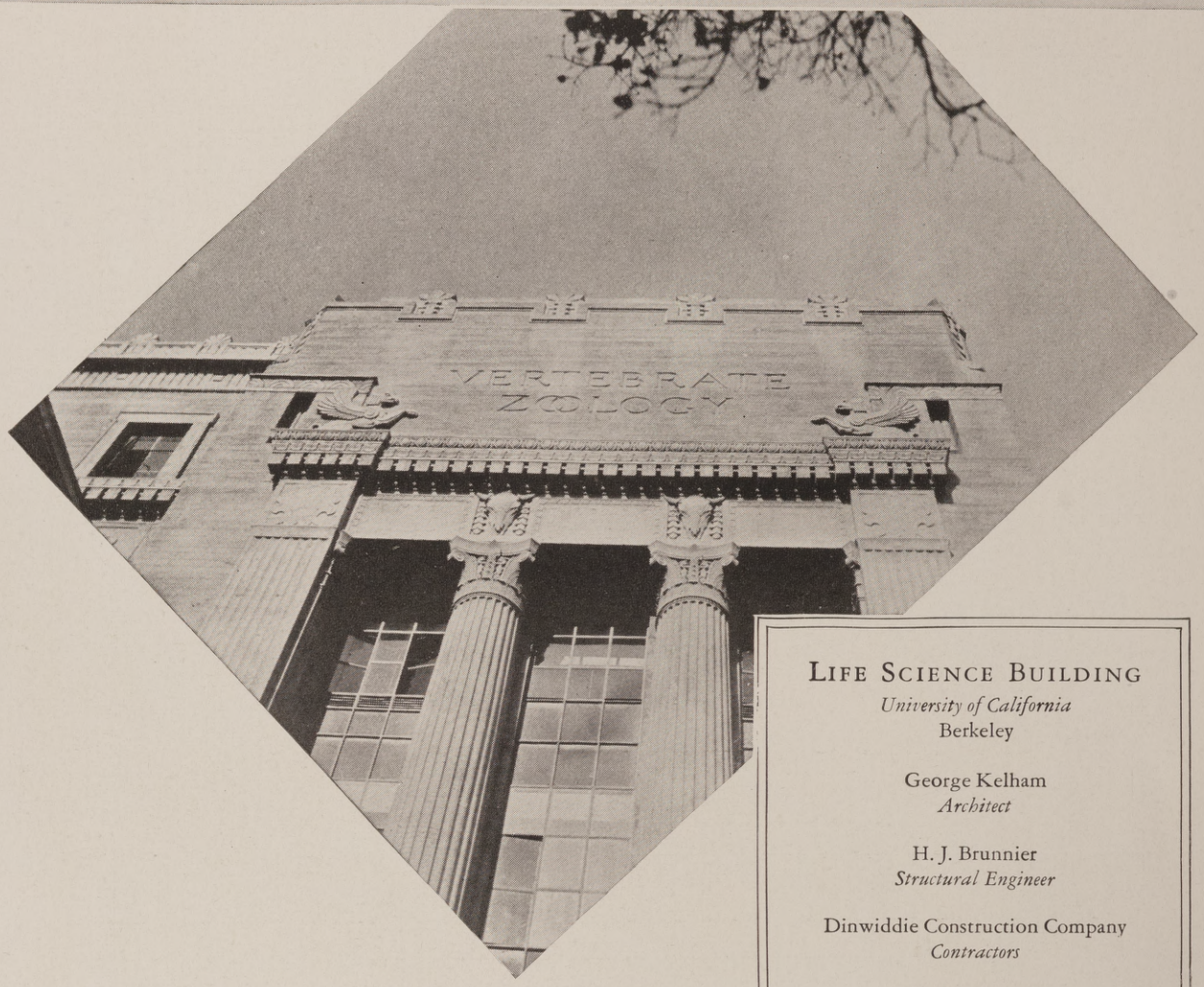

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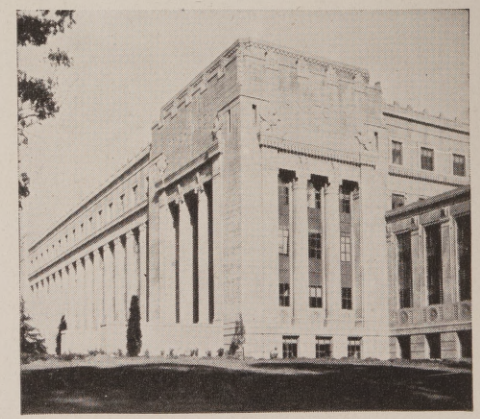

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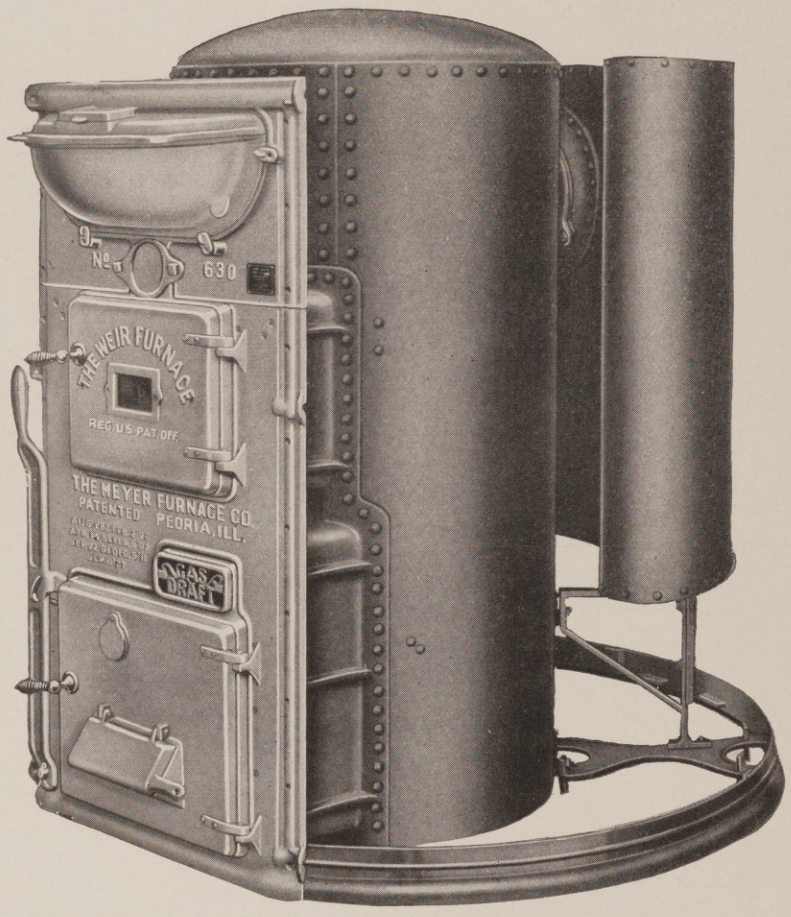

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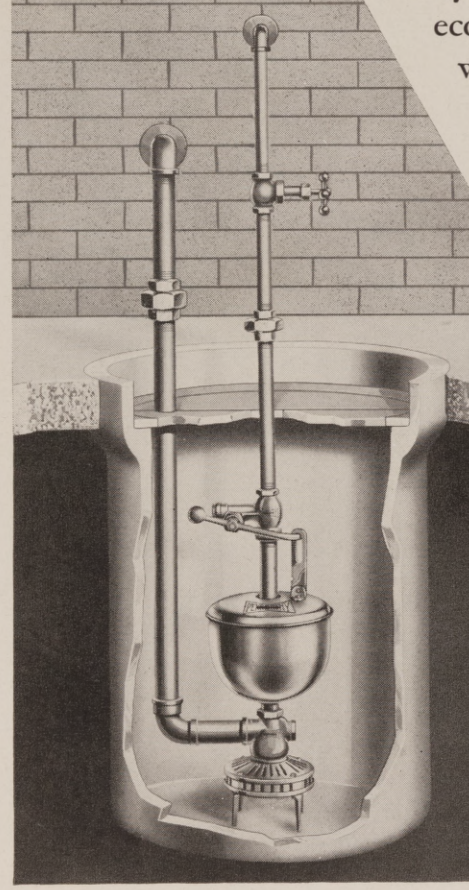

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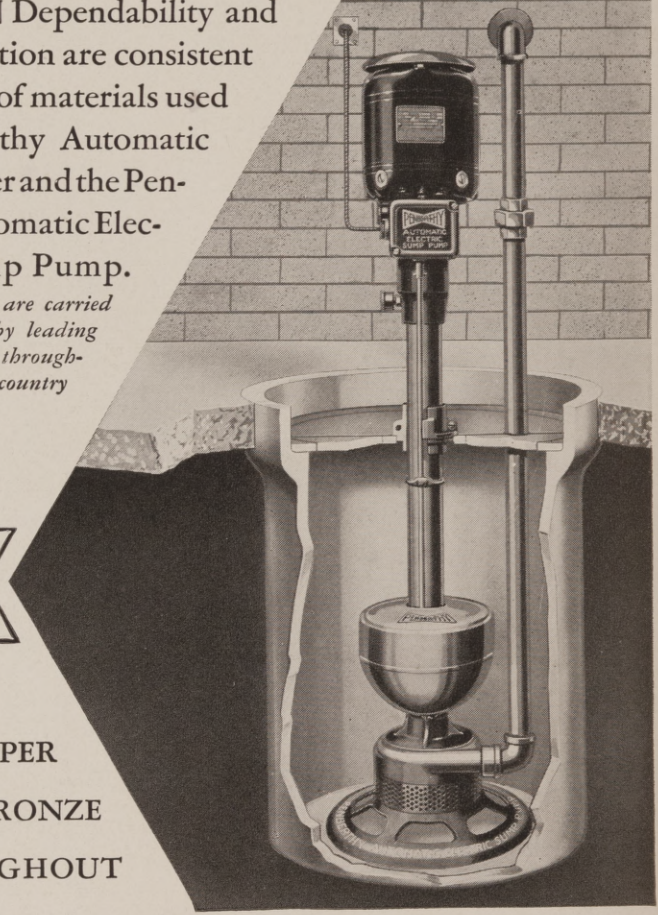
Automatic Electric Sump Pump



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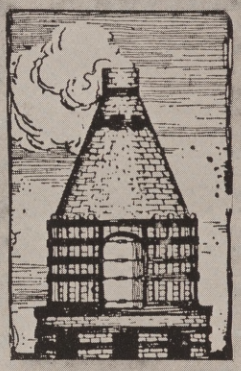

ARCHITECTS and draftsmen are invited to write for photographs of recent Atlantic Terra Cotta applications as, (a) a facing material for entire structure, (b) wall units for interior wall surfaces, and (c) as an unequalled form of exterior and interior ornamentation. Kindly specify which use is of special interest.

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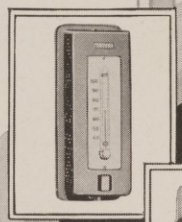

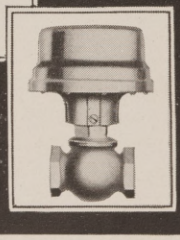

JOHNSON HEAT AND HUMIDITY CONTROL

into four classifications according as the installation is made for (1) comfort; for (2) control of manufactured humidities; for (3) control of incidental humidities; for (4) heat retention or exclusion.

The method of application for all of these uses depends on the kind of deck used and other details of design. They are fully outlined in the specifications of the insulation manufacturers and are now being made a part of the roofing manufacturers' specifications.

The thicknesses used for comfort are determined very largely by the results had on like buildings in like climates. It may be said that 1″ of roof insulation is most generally sufficient, though greater thicknesses are now often used. In dealing with comfort cognizance should be taken of the fact that greatly added thicknesses will not progressively reduce room temperatures.

Thus, if 1″ of insulaiton will "stop" 70% of the heat which would pass through the uninsulated roof, a second 1″ would stop only 70% of the balance or 21%. A third 1″ would stop only 70% of the heat still passing or 6.3%. It would take the most delicate thermal instruments imaginable to detect this 6.3%; the human senses unaided could not.

For buildings carrying manufactured humidities there are standard charts which show with mathematical exactness the thickness required to maintain condensation—free atmospheres for any relative humidity, any room temperature, any outside air temperature, with any roof deck. For such purposes standard practice calls for thicknesses up to 2″ and 3″ and, at times, even more.

For buildings such as laundries, some mill process rooms, and the like, in which excessive humidities are incidental and unavoidable, prevention of condensation (generally known as "ceiling sweating") is rather more of a problem. Insulation alone cannot care for humidities much in excess of 90% unless disproportionate thicknesses are used. In such cases it is very essential that all sources of free steam be hooded and vented to the outside or that mechanical ventilation be employed.

Retention or exclusion of heat are problems handled by heating and ventilating or by cold storage engineers. They set certain roof and wall conductivities required to satisfy the heat or cold machine rating.

The accompanying figures 2, 3, and 4 show various details of roof insulation application which are now standard in modern design. The details have been perfected to protect the insulation both during and after application and to make repair of the insulation, if such later be necessary, easier and less costly. In this connection damage to insulation is spoken of in about the same terms as fire protection. Relatively little insulation is ever harmed just as relatively few buildings burn, but this insurance for insulation is worth while just as insurance against fire is worth while.

Industrial uses of insulation are so many and varied that they can hardly be cataloged. While ordinarily they come more within the province of the engineer, the architect can get from the insulation manufacturer exhaustive data on any problem. Research has been, and still is, playing a very large part in solving the many intricate problems met in industrial practice and such information as is given the architect should, of course, be based on actual research findings, not on mere supposition.

The public demands this or that and the manufacturer meets that demand. Or the manufacturer creates a thing and says to the public, "Look here, see what I've got for you." But in either event there must enter another factor, the architect, to touch these things with beauty of line, of surface, and of mass. To live in a manufacturer's United States without the architect? Heaven forbid!

MODERNISTIC vs. TRADITIONAL ARCHITECTURE

[*Continued from Page Forty-nine*]

boards, that our roof coverings will no longer be of little shingles put on by hand at considerable expense, but of sheet metal of durability and pleasant design or of large, thin composition or terra cotta slabs.

We may say then that there are these major factors that we must reckon with in any attempt to answer our question as to the passing of present architectural styles—the disregard of tradition, the efficiency of a machine age, the introduction of new materials and new methods of building and new housing requirements. That these will change both our architecture and our construction are without the shadow of a doubt.

Having admitted all this, let us pause just a moment, however, to remember that there is, fortunately, an element that enters into the design of a home that the methods of the big building and a machine age will never destroy. The home is not primarily built to pay dividends, and the sentiment about "home" is not dead yet by any means. Witness the thousands of individual homes being erected all over the country even in these hard times.

The "family" still means something and as long as it does, the design of our homes is not going to be levelled to the utilitarian box that some would have us believe. In making the home, efficiency and iconoclasm will never wipe out that kind of sentiment that opposed to materialism makes life worth while.

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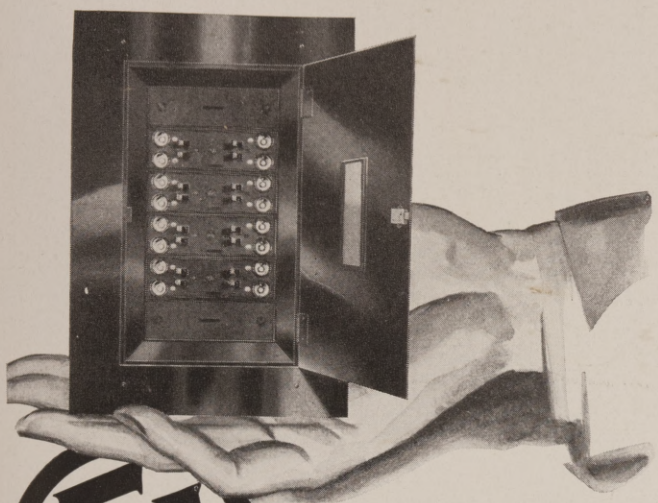

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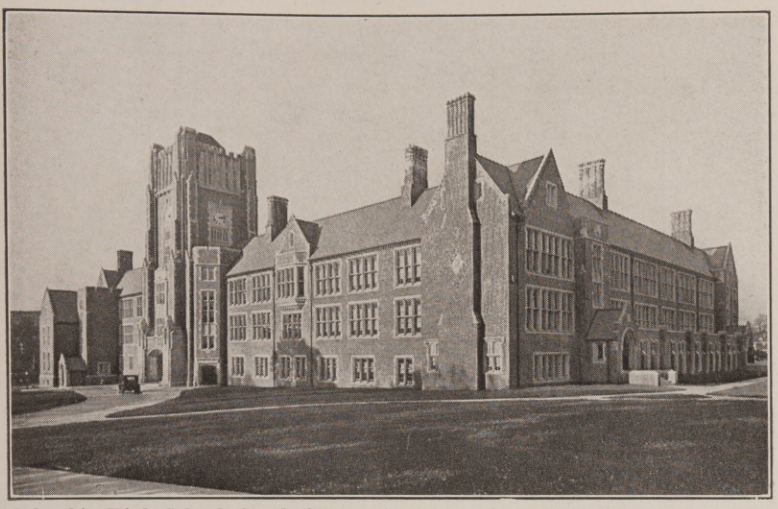

Columbia High School, South Orange, N. J., in which AMBLUCO Treads were furnished for all seven stairways. Guilbert & Betelle, Architects

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912

Of Southern Architect and Building News, published monthly at Atlanta, Georgia. Entered as second-class matter at Post Office at Atlanta, Ga.

Before me, a notary in and for the state and county aforesaid, personally appeared H. E. Harman, Jr., who, having been duly sworn, according to law, deposes and says that he is the publisher of the Southern Architect and Building News and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc.

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(Signature of business manager)

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A HOUSE IN OLD NEW ORLEANS

MATERIAL & EQUIPMENT

CHECKING LIST

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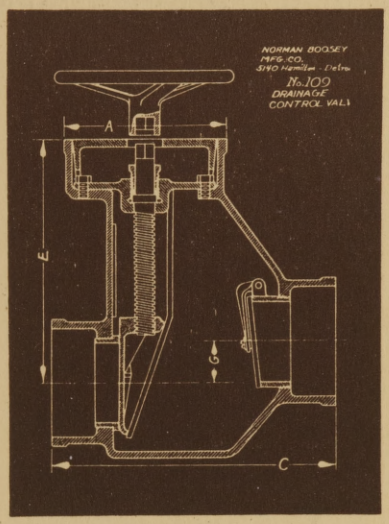

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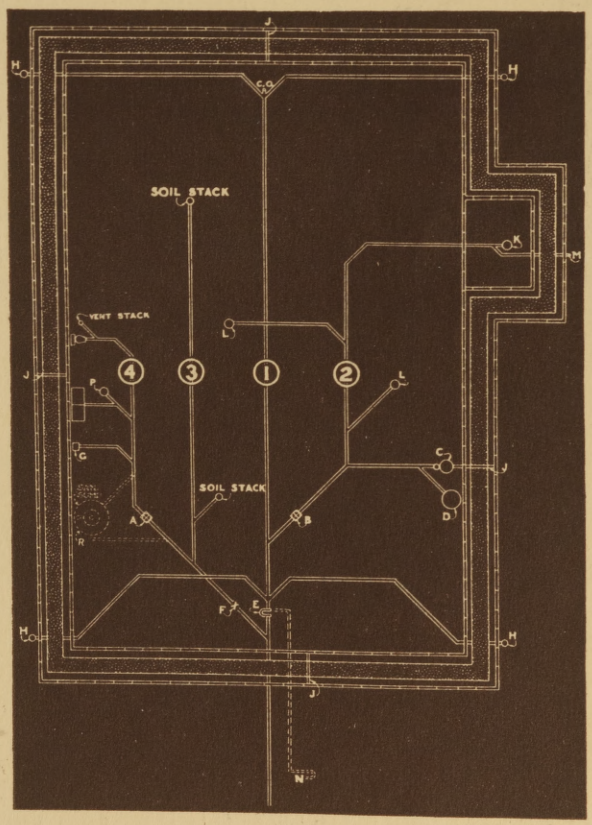

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