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AMERICAN ARCHITECT

Adapting Instrument to Emergency

Economic and social influences comparatively new to American life may conceivably effect a change in the present-day pattern of architectural practice. From some quarters comes a prophecy that the professional independence of the architect will be eliminated through the necessity of closer cooperation with the financial and engineering factors of the building world. On the other hand, there are equally strong assurances that the architectural profession will emerge stronger than ever before as a prime directing force of an industry-for-building, closely integrated as to departmental crafts and highly organized for the efficient completion of any job that comes to hand. No one can accurately forecast changes that may take place. But of one thing all members of the building world can be very sure: Buildings are a commodity vitally necessary to human existence. They must be properly planned and built; and for this process trained men of vision—architects—will always be necessary. American Architect, during its fifty-eight years of existence, has seen many changes in the profession. It may witness many more. But in future years, as in past ones, its policy will be based upon service to architects—a service that is broad and flexible, that adapts the instrument to the emergency and maintains always the necessary balance between economics, aesthetics and technical science

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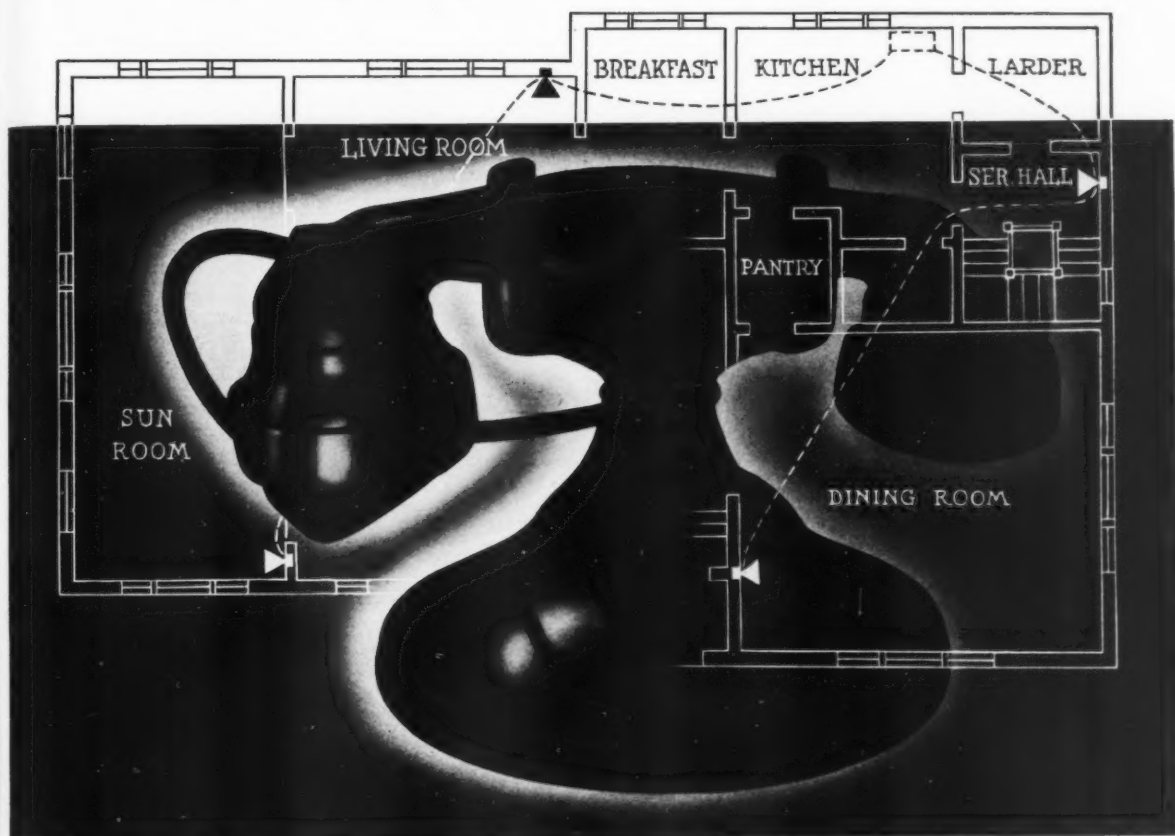
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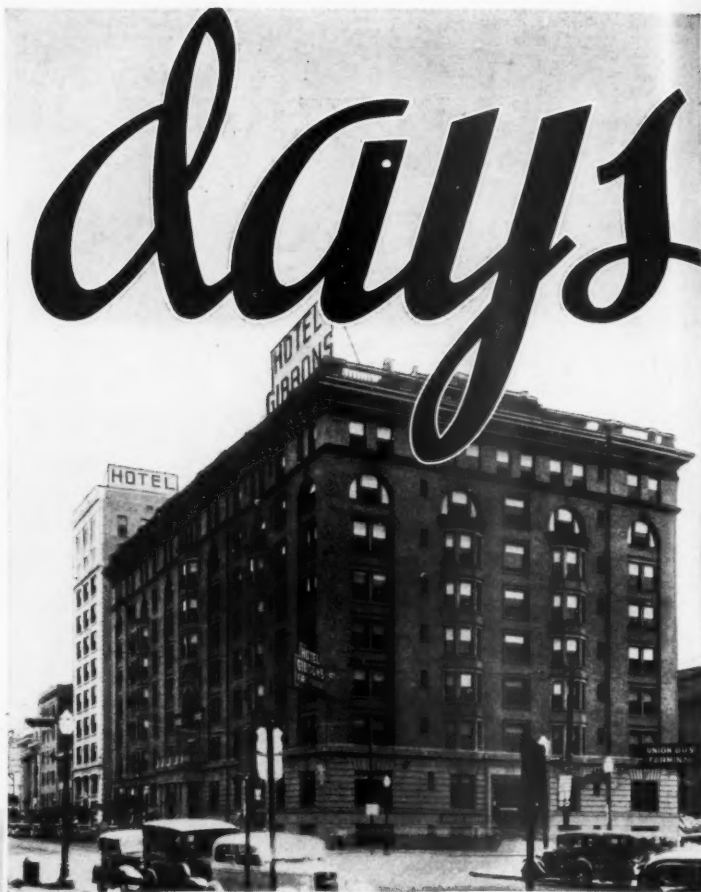
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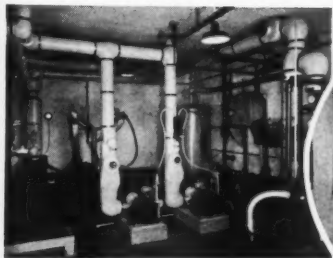
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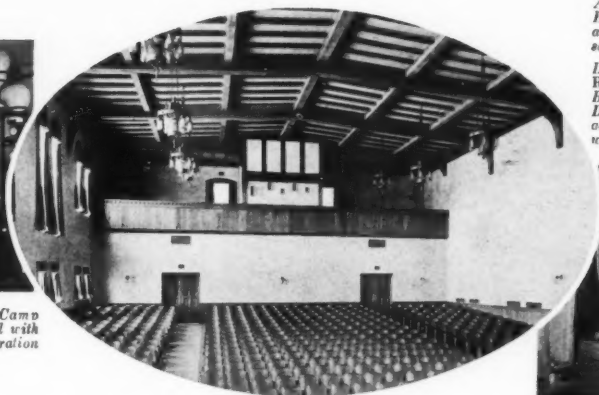
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Above—BOILER ROOM in the Tyler Hotel, Louisville, Kentucky. Fuel costs are cut by insulating boiler and drum settings with Nonpareil Insulating Brick.

Left — ATTRACTIVE AUDITORIUM in the Brockport High School, Brockport, N.Y. Architects W. O. & H. B. Dryer, of Rochester, insured excellent acoustics plus high insulating efficiency with a ceiling of Armstrong's Temlok.



Above—FANS FOR AIR-CONDITIONING in the Codman Square Theatre, Dorchester, Mass. Armstrong's Vibracork is employed to absorb vibration—caused by the fan and quiet unwanted noise.

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Let Private Industry Benefit From Building

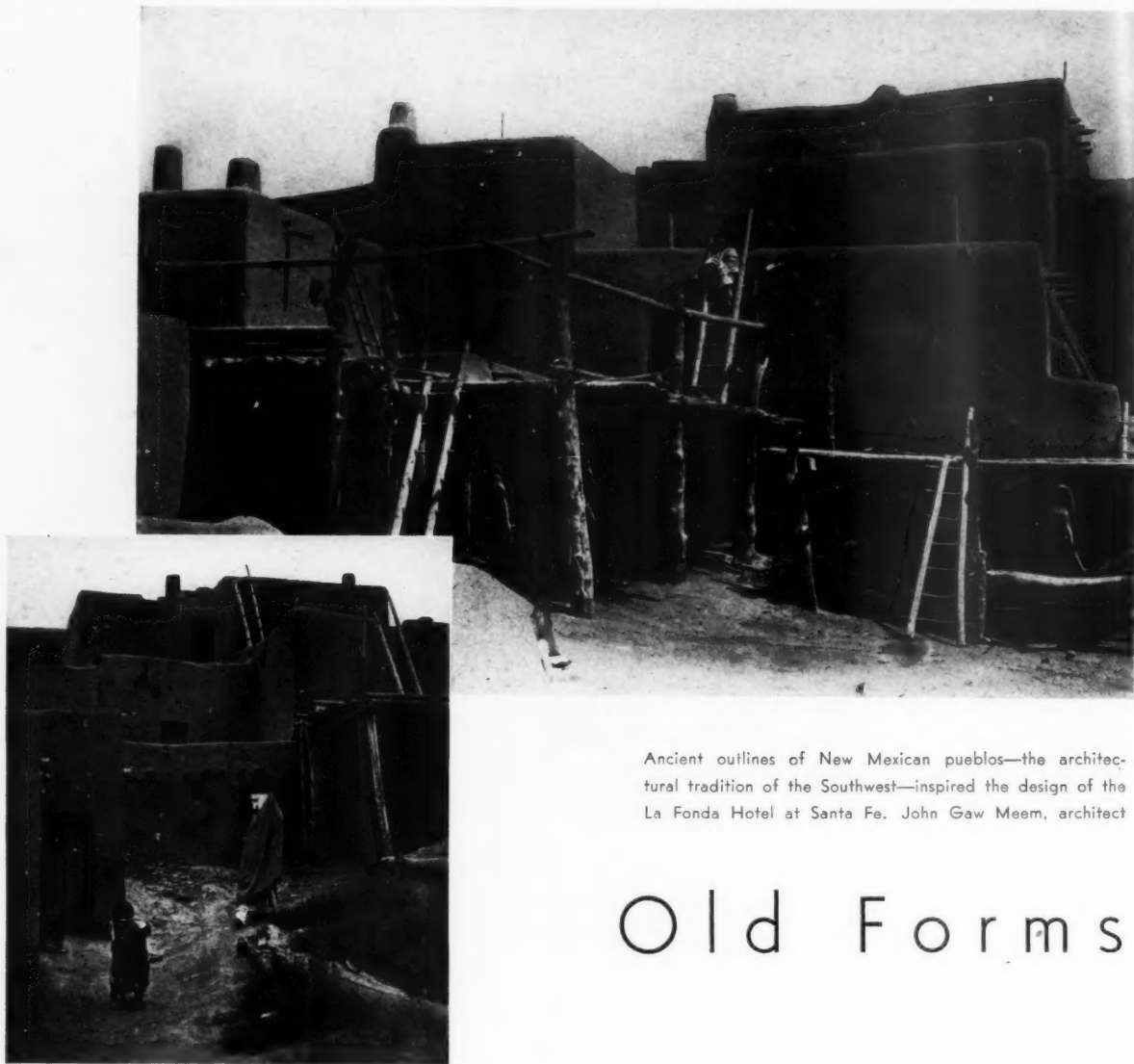
THE NEW BUILDING PROGRAM recently proposed by President Roosevelt embraces extensive slum clearance and construction of low-cost housing. By rounding out the Administration's present activities in the building field the plan may become a big step toward recovery. Its effectiveness will depend upon the speed and skill with which it is put into operation.

Experts hold that some sort of Government subsidy is essential to solve the double problem of slum clearance and low-cost housing; and experiences of other nations have pointed to the necessity of this expedient. Apparently this view is also held now in Washington. Action along this line already has started. In New York the PWA will assume financial responsibility for construction of housing to cover a sixteen-block area and eventually to be paid for and maintained by the municipality.

Governmental machinery to expand this practice is already at hand in the form of the Federal Emergency Housing Corporation, now headed by Col. Horatio B. Hackett. The Real Property Survey has exposed, in many cities, the need and locations for low-cost housing and slum clearance. Proper and immediate utilization of existing agencies would promote work for industry, reduce unemployment and solve a social problem by providing adequate housing for those now unable to afford it.

No such benefits will accrue, however, if too tight a bureaucratic control is exercised over planning or construction programs. Invested with necessary financial authority the FEHC might provide the subsidy deemed necessary to produce low-cost housing. But if the most is to be accomplished, projects of whatever sort should be constructed under guidance of technical experts, alive to needs of their communities and skilled in the best means locally obtainable for fulfilling them.

This means employment of private architectural, engineering and contracting firms. It means also utilization to the fullest extent possible of local industries and labor. Use of local skill and experience instead of the red tape of a top-heavy bureaucracy will assure the advantages that a workable plan for slum clearance and low-cost housing might bring. Otherwise it would doom to failure the fundamental objectives of the entire program.



Ancient outlines of New Mexican pueblos—the architectural tradition of the Southwest—inspired the design of the La Fonda Hotel at Santa Fe. John Gaw Meem, architect

Old Forms

THROUGHOUT a vast area in the Southwest, comprising roughly the drainage area of the Rio Grande in New Mexico, and extending far into Arizona, one sees evidences of an extraordinarily vital and well adapted type of architecture. It started centuries before the Europeans invaded America, and in modified forms persists to this day. Its origin is rooted deep in American soil and aboriginal traditions. Its form and substance are as inevitably related to the earth and the landscape as are the surrounding deserts and mesas.

Given this rich heritage of traditional forms, what should be the architect's approach to modern design problems in this particular region? It is a problem that faces not only the architect in the American Southwest, but in any region or country possessing

still vital and highly individual forms of its own,—Japan for instance. Is the effort to retain these characteristic qualities incompatible with the modern spirit; or is it merely a sentimental attempt to preserve picturesqueness or "scenery"?

The answer partly depends on what one's concept of the "modern" movement in architecture is.

My own thoughts on the subject were clarified by an address delivered by Eliel Saarinen at the Institute's Convention in 1931. He felt that great epochs in architecture were developed by an intuitive feeling for what he called, "the fundamental form of the time." This fundamental form is a composite of everything in a people's culture, in their way of thinking and living. It is the real leader of the movement rather than a product of it.



For New Buildings

BY JOHN GAW MEEM, A.I.A.

Photographs by Ansel Easton Adams

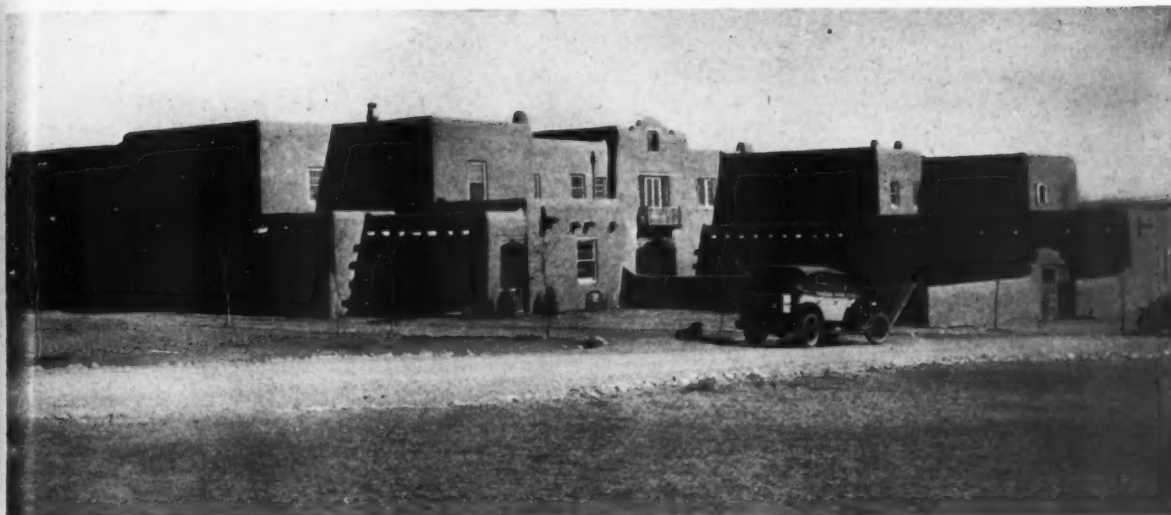
According to this view, it is apparent that the contemporary movement in architecture marks the beginning of an epoch, or style, in architecture, because it undoubtedly reflects contemporary western civilization, especially our devotion to the ideal of scientific truth. I like to think that the reason a good modern building is so logical, so clean and so honest is because it could not be otherwise in view of the high standards of uncompromising truth which science has set for itself—standards which constitute one of the great spiritual concepts of our day.

It would seem, then, that old traditional forms are to be retained and used only if they still fit in with the fundamental form of the time. This form may vary among different peoples, climates and customs, while still preserving common ideals and prin-

ciples. The world is filled with traditional forms. But measured by modern ideals most of them are outworn; and their retention in contemporary practice is, in reality, the practice of archaeology.

Here and there, however, one finds the opposite. Some old forms are so honest, so completely logical and native to the environment that one finds—to one's delight and surprise—that modern problems can be solved, and are best solved by use of forms based on tradition. The value of this use may be questioned by some; but to me it seems to add a richness and actually to enhance a series of values. In a world tending more and more toward inevitable standardization—welcomed from the practical point of view, but spiritually repugnant to us—it is truly refreshing to feel that in our contemporary architec-





Boise-Penrose Memorial Hall, The Fountain Valley School of Colorado, Colorado Springs. John Gaw Meem, architect. On facing page: the common room

tural movement is still an opportunity for the expression of ancient values.

Proof of these contentions exist in abundance. The architecture of the Southwest—the so-called Spanish Pueblo architecture of New Mexico, for example—contains elements of traditional forms that have been, in the writer's opinion, successfully used to solve a variety of modern problems. Admittedly the forms are distinctly of a regional character. But a brief description of their origin, their relation to contemporary problems can well apply, in principle, to traditional forms of any region.

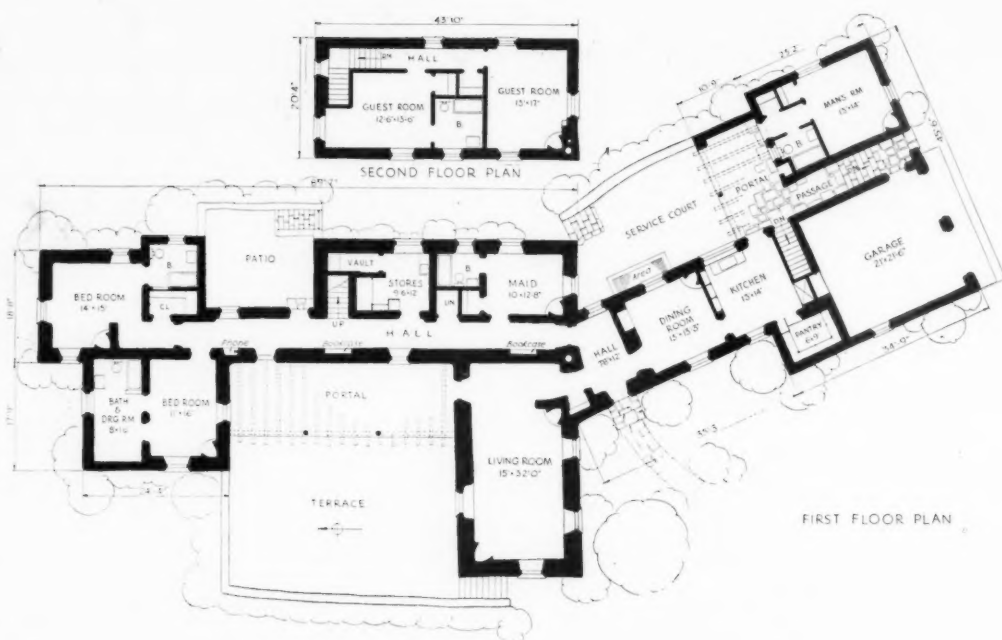
Many types of shelter were developed by the North American Indian before the time of Columbus. But in nearly all cases they were of a perishable nature, due to the nomadic character of the Indian way of life. In the Southwest, however, the Pueblo Indians and their remote ancestors developed a sedentary civilization. It was based on agriculture and through necessity produced permanent dwellings. These structures—of adobe, stone and wood—still exist and may be studied in their original forms in various parts of New Mexico, Arizona and Colorado. They are unique in that they are truly aboriginal American buildings, uninfluenced by any other culture, except, possibly the allied ones of Central America. For that reason, if for no other, they deserve the attention of American architects. Unquestionably they are the earliest expression of an American Fundamental Form.

For those who are interested in detailed descriptions of these buildings there are available several reference works. In general the design of the structure is characterized by the utmost directness and simplicity in the choice and use of locally available

materials. Plans range from individual one-room dwellings to complicated community houses, reflecting in every case the social needs of the people and providing shelter from weather, defense from enemies and gathering places for religious purposes. Walls were of stone or of adobe; floors and roofs of tamped earth. The latter were supported on wooden beams which carried a ceiling made of smaller poles or split saplings over which was packed cedar bark, twigs or dried grass to keep the earth from sifting through. In some instances walls were carried up to form several stories often set back to form terraces, the roof of the room below becoming the floor of the one above. Doors rarely existed on the first floor, access being through trap doors. Windows were merely small vents to admit air and give access to smoke.

The essential characteristics derived from these elements were flat topped rectangular masses devoid of ornament, the aesthetic effect depending almost entirely on the relative proportions of the masses. When adobe was used instead of stone, an added charm resulted from the softening effect of erosion. Bilateral symmetry was rarely resorted to, but balance was usually achieved. The result was an almost automatic harmony with surroundings.

With the advent of the Spaniard, changes necessarily occurred. Great churches had to be erected in the pueblos, requiring greater clear spans than had before been necessary. Adobe was laid up in brick forms, instead of being puddled in place by hand. Spanish ornament appeared in wood bolsters over supporting posts and in elaborate altar decorations. Doors, windows and grilles came into use. Domestic architecture reflected Spanish plans. Nev-



ertheless old forms remained, essentially unchanged. They were still a part of the earth as dignified in their simplicity as the land itself.

It might possibly be observed that the slight change wrought upon the old forms by the centuries of Spanish occupation was inevitable. The Spaniards were also agriculturists; and their method of life in a new country was akin to that of the natives. The fundamental forms of their time, therefore,

were almost the same as those of the aboriginal inhabitants with whom they came to live.

This is perfectly true. But the significant point is this: The Spaniards were fresh from the Renaissance in Europe where the thought and form of the time were vastly different from those of the New World. It would have been at least understandable had they tried to maintain that form intact. Instead, from sheer necessity and possibly through intuition,



Detail of entrance porch, house of Miss Amelia B. Hollenback, Santa Fe, New Mexico. John Gaw Meem, architect. On facing page: plan and general view of the same house. Most of the exterior walls are adobe, some of them over two and one-half feet thick

the buildings of the Spanish invaders adhered to a new fundamental form far more in sympathy with the land wherein they now lived.

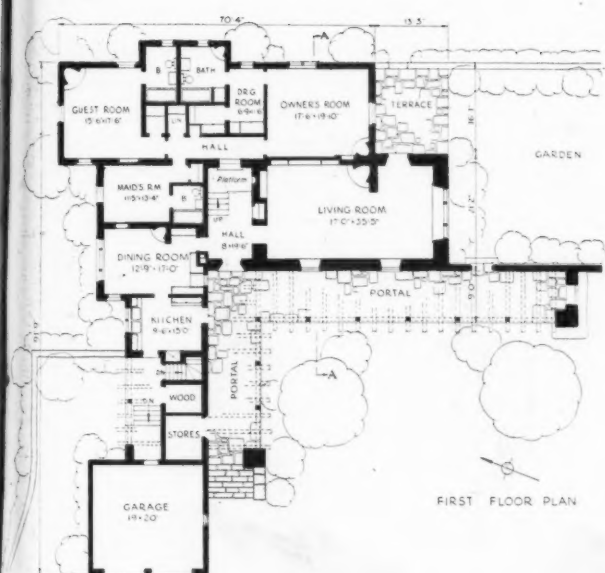
The transition marked by the American occupation in the middle of the last century was at first gradual. The old rectangular forms and basic materials were unconsciously adopted, but mill work and paint and protecting brick copings were introduced. Essentially, however, the buildings were still regional. They were still of the Southwest; and one felt they could not have been erected anywhere else. But even prior to the advent of the railroad the old forms had begun to disappear. The frontier of the middle west had pushed out. New buildings were of clapboard, and of red brick. They had tin roofs. They looked utterly out of place, even though they were honest insofar as they reflected an invading population not yet sensitive to its environment.

In the contemporary scene the old forms began

to emerge with a new vigor. About 1910 the Governor's Palace in Santa Fe was restored to its probable original form. This was followed by the New Mexico State Building at the San Diego Exposition which later was built in Santa Fe as the State Art Museum. These buildings demonstrated better than any verbal argument that the region possessed architectural forms native to it which constituted not only a rich cultural heritage, but also seemed still to possess the greatest vitality and adaptability. They started a boom in what was termed "the Santa Fe style" which, like all booms, probably did as much harm as good. Masonry forms were interpreted in lath and plaster. Incidental erosion features were stylized into deformations of parapet lines.

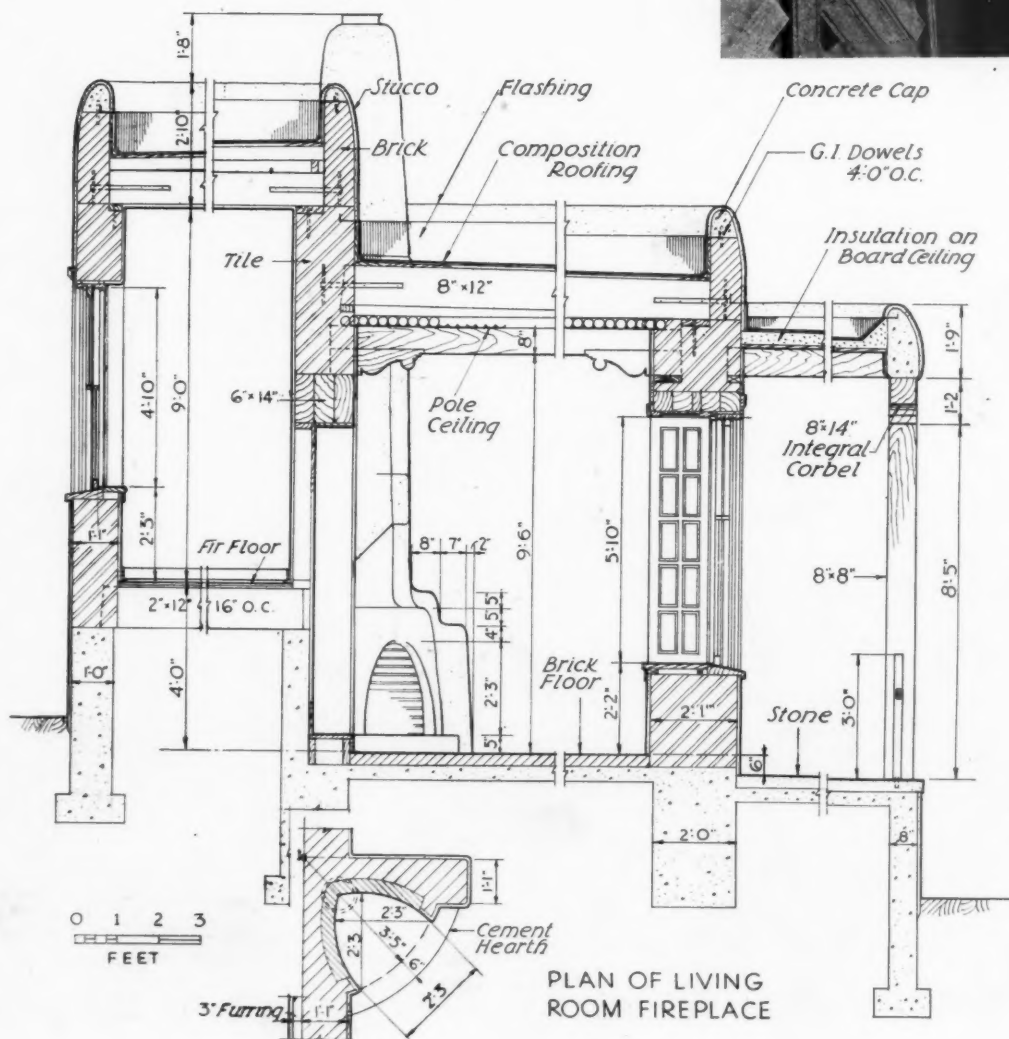
The design madness spread from the "Anglos" (as we are called in the Southwest) to the Spanish-Americans and even to the Pueblo Indians themselves. It looked as if the movement toward rebirth





House of Miss Mary V. Conkey, Santa Fe, New Mexico, John Gaw Meem, architect. Relatively small windows, a rambling arrangement of spaces and simplicity of mass and detail are essential characteristics of architectural tradition in the Southwest

Adobe, rough poles and plaster are still practical as building elements for modern structures. Combined with more modern materials, such as wall tile, concrete and finished lumber, they are widely used to express the characteristic old forms of the Indian architecture peculiar to the Southwest. Illustrated are details from the house of Miss Mary V. Conkey, Santa Fe, New Mexico. John Gaw Meem, architect. On this page: right, detail of the garage door. Below, typical construction details through living room and owner's bed room (section A-A through the plan on preceding page). On facing page: entrance hall from the living room. Small poles at the head of the opening are called "sevinas"







GALLOWAY



In striking contrast with the simple masses of the old Taos church, above, is the be-spired carpentry at the left. This is an old church at the Pueblo of Isleta, New Mexico, and characterizes the influences upon native building design of the Spanish and American occupation of the Southwest. On the facing page: a modern adaptation of fundamental forms. Detail of lounge in the Laboratory of Anthropology, Santa Fe, New Mexico, John Gaw Meem, architect

of the fundamental forms was doomed. But some good buildings were erected. They brought an increasing realization of the fundamental soundness of the original tradition. Once more the old forms re-emerge as if to prove that they are so right, so inevitable to the land that nothing could ever really change them—not even the ordeal of adaptation by three such dissimilar cultures as aboriginal American, mediaeval Spanish and contemporary American.

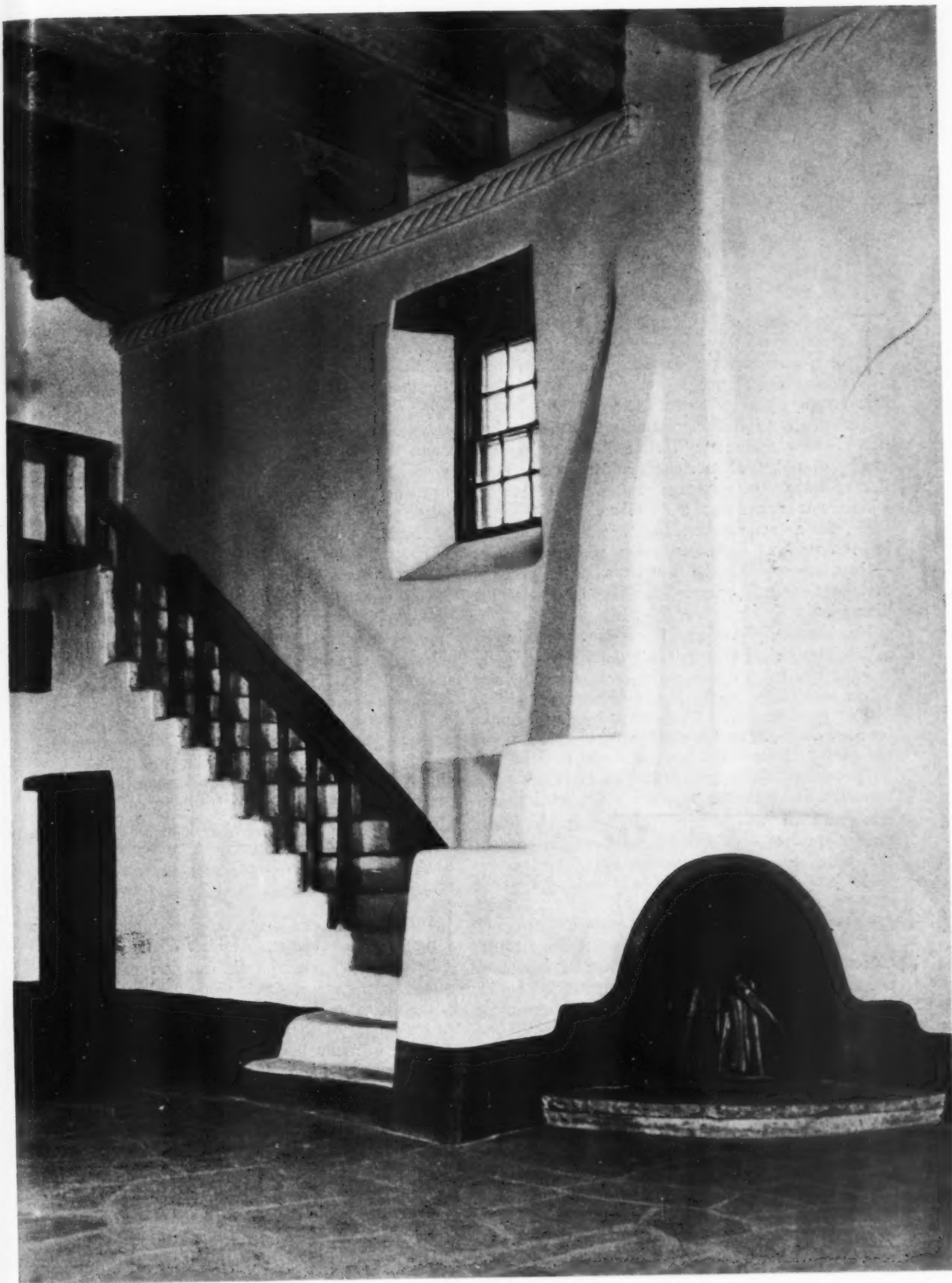
Again we are led to the original question of this paper. Is the effort of local architects to perpetuate ancient traditional forms associated with their own region a sound one? The answer is, emphatically, yes! Particularly in the Southwest, architects who use old forms need do no violence to the ideals of contemporary architectural thoughts. On the contrary, the fundamental form of the time can best be expressed in a language native to the region. These ancient shapes are modern! Evolved honestly within the limitations of available materials, they are equally as well adapted to the new materials of our own day—steel and glass and reinforced concrete.

But though a rich new palette of materials is at hand, the intelligent designer will keep the economic, social and climatic limitations of the region in mind. His motif will be horizontal rather than vertical, for there is no need for steel skyscrapers when ample

land is available. The designer deals with an agricultural life rather than an industrial or urban one. His walls may be areas of glass if he chooses. But he will not choose thus, for his problem is to minimize, rather than emphasize, the glare of brilliant sunlight. He may, if he wishes, use expensive methods of insulation; but experience will teach him that the earth itself is better and cheaper. He will find that the experience of ages reflected in the traditional forms can still be applied and is still a potent influence upon the solution of contemporary problems.

Here at hand are forms which lend themselves to the most exacting canons of modern pure design. Whether the designer prefers the rigid lines of machine made building elements or chooses to recreate the past in soft plastic earth shapes to which wind and rain give the final modeling, traditional forms can serve him well.

When using them he knows that he is building not only in accordance with the fundamental form of the time, but also in harmony with an ancient fundamental form evolved from the earth itself by its earliest inhabitants. He is linking the science and aspirations of the present with the rich tradition of the past. In so doing he is perpetuating both for a future which will be grateful.



How Architects Can Help

BY ERNEST M. FISHER

THE problem of land utilization is fundamental. Its manifestations during the past decade have been numerous and varied; and many of these manifestations are only symptoms which have been frequently mistaken for diseases.

The plight of municipal treasuries, the dissipation of many real estate "fortunes," the widespread canker of defaulted mortgages and mortgage bond issues, consequent mortgage moratoria, the staring windows of vacant office and apartment house structures, the distressing huddling together of families in overcrowded, windowless and insanitary quarters—these are some of the symptoms of the problem that have recently occupied the limelight of public discussion.

Fundamentally, they are all problems of land utilization. Municipal revenues are derived principally from a tax on real estate values; and real estate values depend upon the use to which real estate "is or may be put." Real estate paper fortunes based upon exaggerated hopes regarding future demands for certain land uses in some sections and under-provision of proper facilities in others have caused maladjustments between the need for certain types of facilities and their supply. In brief, disappointments that have been suffered in connection with real estate investments and real estate values may be traced directly to mistakes in policy concerning land utilization.

These policies are determined primarily by private individuals, subject only to certain public control exercised through such devices as zoning laws and police regulations. Within the framework of this control private owners are free to choose any course regarding the utilization of their property which appears wise and profitable.

The decision as to the future utilization of any given piece of land is made when an improvement is erected upon it. And once the decision is acted upon, it becomes irrevocable for a long period of time. The investment of an amount of capital necessary to construct a major improvement commits the land to a use that cannot be abandoned until the capital is recovered or the situation becomes so hopeless as to dictate abandonment of the capital. The decision is, therefore, a very important one.

Heretofore, these decisions have been quite haphazard, almost accidental. Personal judgment, practically unaided, has been the guiding force in the determination of the pattern of land utilization. In view of the mistakes, the tragedies, that have befallen, some aid must be brought to personal judgment that will prevent these tragedies. Some approach to the whole problem of land utilization must be made that will insure a more systematic and adequate use of the land resource of the community.

Architects should take a prominent part in developing this approach. For it is they who determine to a very large extent the efficiency with which the land is utilized. This efficiency is determined by two factors: the relationship between the site and the type of structure placed upon it and the degree to which the structure is adapted to the uses for which it is designed. The architect cannot avoid responsibility for either of these relationships.

Of course, city plans, zoning ordinances, and the existing pattern of land uses play an important part in determining the prospective use of a given site. But these are only data or evidence pointing to a given use; they do not constitute *proof* that it is appropriate. Overwhelming evidence may be produced to prove the contrary. A present or threatened surplus of given use-types is one form of such preponderant evidence.

IN the past, no one has troubled to procure any of the adverse evidence. Architects have considered it beyond the scope of their function and have assumed that it was the task of the real estate broker or their client to gather and interpret all the evidence on both sides of the question.

Thus, in many instances, they have been placed in the position of producing plans for a structure which never ought to have been built in the proposed location, and they have been expected to produce plans that would make the structure "pay." As a matter of self-protection in the future, they can hardly avoid responsibility for examining the fundamental question of appropriateness at the particular location and time of the use for which a proposed structure is intended.

The problem is one of both geographic and tem-

To Stabilize Land Values

Appropriate use of land is the best proof of its stable value. Collapse of real estate values and investments can be traced directly to mistakes in policy concerning land utilization. Repetition of these tragedies can be prevented only by developing more efficient means of real property improvement. Building design is so important in this connection that often it determines the potential value of the building site. Thus the architect who controls building design can become the most potent factor in maintaining property values, according to this authority, a Professor of Real Estate in the School of Business Administration and Economic Advisor to the Federal Housing Administration

poral relationships. Geographic relationships are expressed in the pattern of land uses; time relationships in the sequence of feasts and famines that have haunted the construction industry like a Pharaoh's dream.

The accidental pattern of urban land uses which exists today must be accepted under protest as the background against which a rational pattern can be projected and gradually realized. This realization will probably come slowly because of the handicap of the existing pattern, but it must be striven for if any order ever is to come out of our chaos of urban land uses. That order must be created by an arrangement of land uses which is based upon the relationship of any given use to the whole community and to every other use.

This is the most pressing and significant problem now facing urban land economists, city planners, and architects—the development of a *rational* pattern of urban land uses. Until it is solved, the construction of major improvements upon land is haphazard and is, in any particular instance, likely to prove abortive.

Time relationships are expressed in alternate booms and depressions in the building industry. The basis for these fluctuations is ignorance or neglect of the fundamental relationship between the supply of certain facilities created on land and the demand for the services which these facilities can render. Such a statement obviously does not apply to periods of major depression with its consequent shrinkage of incomes and business activity; during such periods demand shrinks. But long before demand began to shrink in the present depression, the supply of certain types of real estate facilities had overshot any

mark that demand could have reached within any reasonable time.

The preventive of such maladjustments is more information regarding the two factors in the situation and the intelligent use of that information. There is nothing mysterious about the operation of the forces which determine the success or failure of real estate developments; but there is a great deal of ignorance of those forces and neglect of information which would throw light upon their probable effect and intensity. The current facts regarding real estate can be ascertained and their significance appraised; but in the past architects have entered the conspiracy of real estate brokers, owners, operators and financiers to maintain a complete and profound disregard or neglect of facts.

THE determining factor in decisions regarding real estate development has, in most cases, been the judgment of the broker and the owner or operator, guided only by a superficial appraisal of a few isolated observations made in a very restricted area. The architect must assume his portion of responsibility for more extensive and careful collection of facts and for more penetrating analysis of their bearing upon the problem of securing a spatial and a temporal adjustment of land uses, to the end that improvements may be properly adjusted to their sites and to the need at the time for the services for the rendering of which the site is appropriate.

Once this fundamental question of appropriateness of use is determined, the architect becomes the creator or destroyer of potential land value in the site. For the value of a site is residual under the highest and best use. That is to say, the value of

a site is not intrinsic, but is a potential, released through the structure erected upon it. The site becomes the servant of the improvement, bound in servitude for the lifetime of the improvement. This lifetime is so great in modern structures that the value of the site when the improvement is completed is, for all practical purposes, determined by the excellence or inferiority of the design of the improvement.

By "design," however, is not meant solely the exterior or the *attractiveness* of the interior. Instead, the term is used to signify all those elements, including beauty of exterior and interior, which determine the suitability of the structure to perform the functions for which it is intended.

Specifically, effectiveness of design is measured directly in the net rentals which the structure will produce. These net rentals, in turn, determine the value of both the land and the building. Two properties similarly situated and costing the same sum to produce might have entirely different values. One might be an awkward and ineffective design that released but little of the potential value of the land upon which it was constructed. The other might be so effective as to produce a return higher than that indicated by the costs involved in production.

In this effectiveness of design such prosaic items as length of spans, position of elevators, ratio of total area to net revenue producing area, relationship of floor-space to the windows—in brief, all those factors which influence either quantity or quality of revenue-producing space—are of prime importance. They determine the value of both the combination of land and building, and *a fortiori*, the value of the land.

It is thus a waste of both private capital and of the land resource of the community to build a structure whose productive capacity is not at a maximum, considering the amount of capital invested. In other words, the architect's opportunity is not only to design an attractive and even a profitable structure, but also actually to create land value by the effectiveness of his design. On the other hand, by the clumsiness of his design, or by the misplacement of a structure, he may destroy a large portion of the potential value in the site upon which he builds.

Illustrations of both cases are not difficult to find in any community where population is large enough to exert any considerable pressure upon land uses. Vacant office structures built where one-story "tax-payers" or, at most, two-story combinations of store and office space should have gone; elaborate and ornate apartment houses whose tenants have never appeared; vacant store fronts by the mile in every large city, particularly in its outlying sections; moving picture theatres where lofts should be and hotels in receivership occupying the natural sites for factories, stores or small apartment buildings—these are illustrations of the mistakes. The occasional structure with a unique feature of layout, especial-

ly well-constructed and managed, whose tenants like to stay where they are and whose owner gets a fair return upon his investment, represents a case in which the architect created land value by the adaptation of the structure to the site and to the economic functions which it was intended to perform.

It appears to be perfectly obvious that consideration of the financial or economic aspects of real estate development is going to be much more important in the future than in the past. Even without the severe and painful experiences of recent years to point the significance of such consideration, two factors have entered the situation quite recently that will influence future practice.

THE first of these factors is the large amount of data of an economic character that have been collected regarding real estate. The Real Property Inventory conducted by the Bureau of Foreign and Domestic Commerce in 63 cities and by other agencies in some 20 more and similar surveys furnish a broader background of information upon the real property situation than has ever before been available, except in the one city of Cleveland. These surveys have made investors, builders, bankers and the public generally aware of the importance of adequate data. The facts uncovered can be appraised and their usefulness appreciated. The extent of the influence of such surveys cannot yet be accurately estimated, but it will undoubtedly be very great.

Secondly, a very important agency has been created in the Federal Housing Administration which will undoubtedly exert a tremendous influence upon the whole building industry through the enforcement of regulations governing mortgage insurance. As an incentive to the recovery of the industry, the National Housing Act has encouraging possibilities. But its long-term effect upon the whole process of real estate development overshadows its short-term significance. The very basis for success in mortgage insurance is found in the compilation and interpretation of the necessary facts regarding the property which stands as mortgage security and the forces which will affect its value. The successful administration of the Act, therefore, will necessitate the requirement that every project submitted be supported by data that will prove its appropriateness.

And these data will again be focused upon two principal questions: Is the structure appropriate to the site; that is, does it represent the highest and best use of the site? And, second, is it designed so as to render most effectively the functions for which it is intended?

Thus the architect must face the problem of land utilization and has a large opportunity to contribute to the technique and process of its solution. To do so he must be something of a city planner, an economist, a sociologist and a statistician, requirements which are necessitated by the complexity of the milieu in which he operates.

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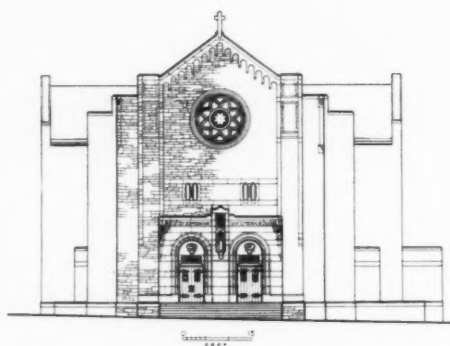
HENRY D. DAGIT AND SONS, ARCHITECTS

CHURCH OF ST. KATHERINE OF SIENNA, BALTIMORE, MD.

Photographs by Hoedt Studios



Detail of Main Entrance and Section Through Vestibule and Nave

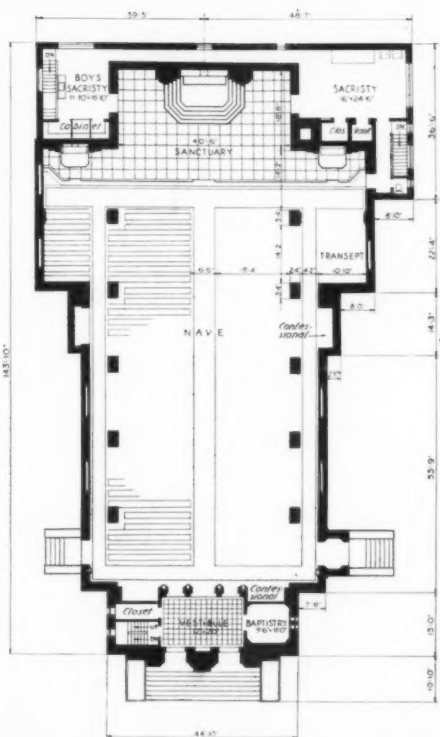


Front Elevation



Side Elevation

CHURCH OF ST. KATHERINE OF SIENNA, BALTIMORE, MD., HENRY D. DAGIT & SONS, ARCHITECTS



Construction. Exterior walls: solid masonry of blue, grey and tan local stone. Raked joints. Trim: Indiana limestone. Roof: red shingle tile. Exterior doors and woodwork: natural finish white oak

CHURCH OF ST. KATHERINE OF SIENNA
BALTIMORE, MARYLAND

HENRY D. DAGIT & SONS, ARCHITECTS



Interior walls and piers faced with limestone. Roof trusses, purlins and rafters: fir, stained brown and decorated in polychrome. Pews: white oak, natural finish. Red and blue predominate in stained glass designs. Stations of the Cross in glass mosaic

CHURCH OF ST. KATHERINE OF SIENNA
BALTIMORE, MARYLAND

HENRY D. DAGIT & SONS, ARCHITECTS





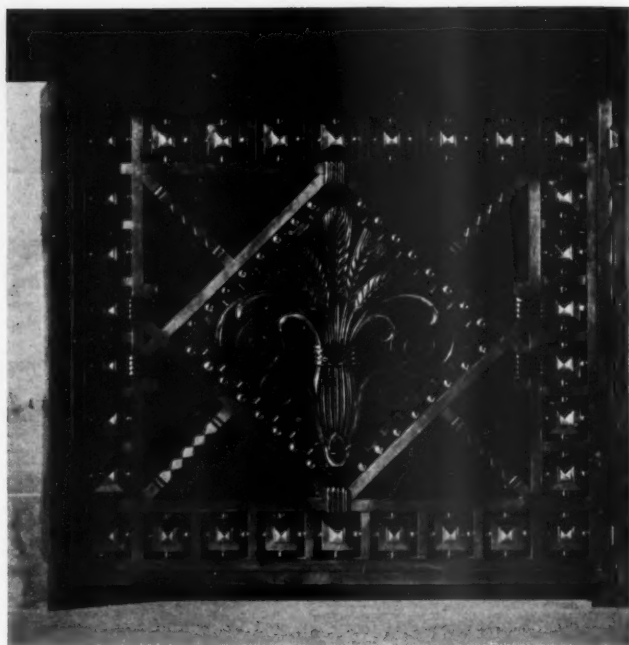
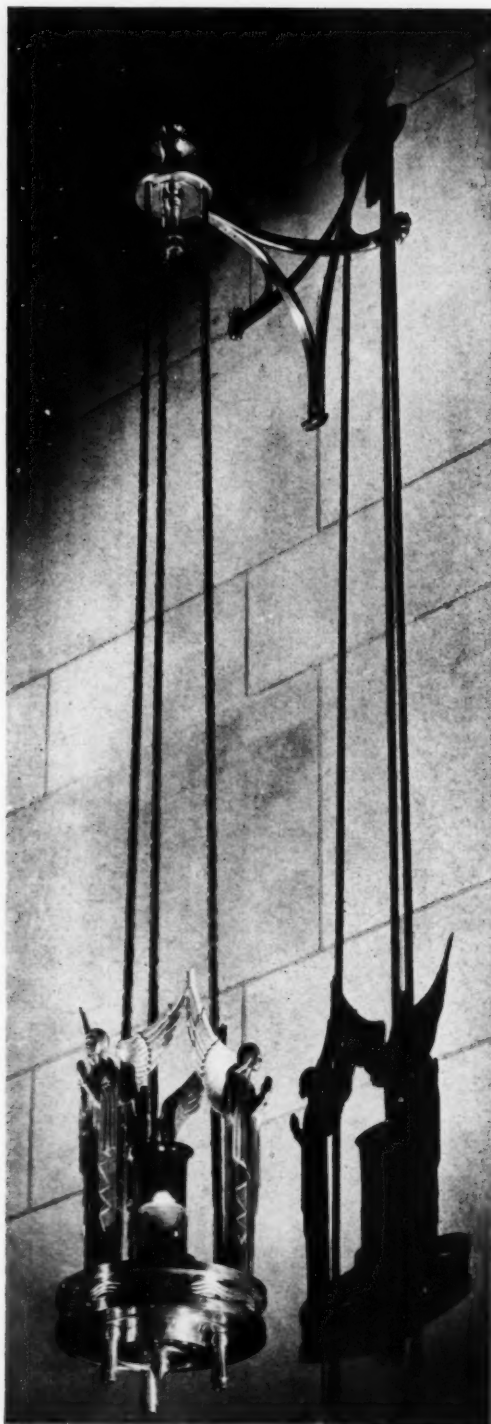
High altar reredos of limestone and glass mosaic. Panel background, blue; Cross, red; figures, red and light blue

CHURCH OF ST. KATHERINE OF SIENNA, BALTIMORE, MD., HENRY D. DAGIT & SONS, ARCHITECTS



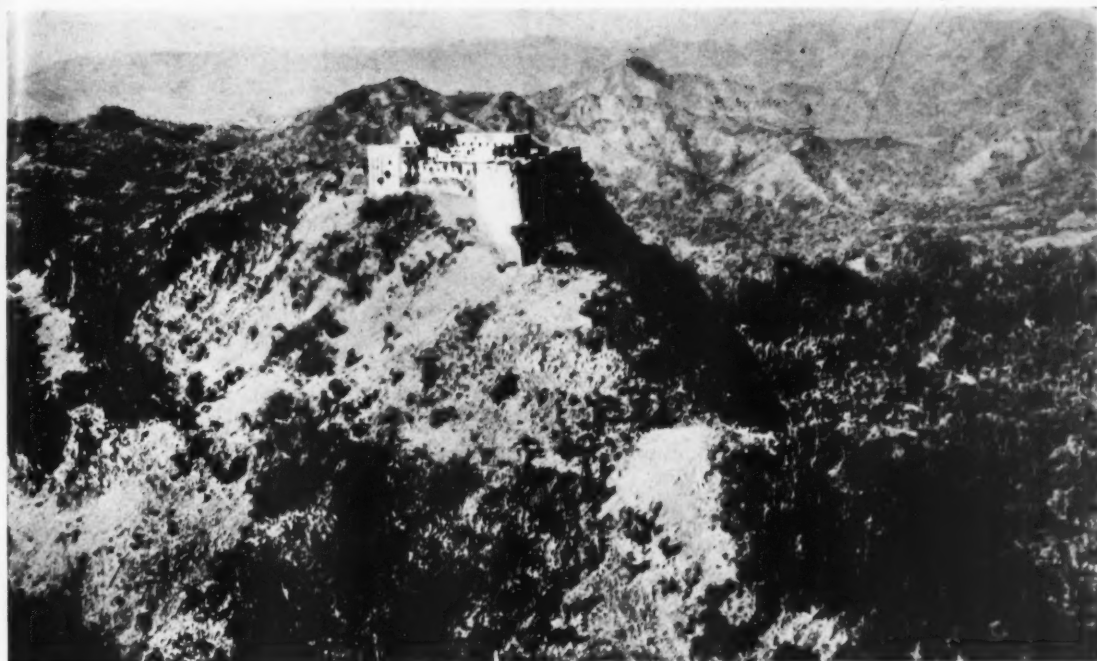
Glass mosaic panel behind one of the side altars. Color and modeling are similar in character to those of panel in high altar reredos

CHURCH OF ST. KATHERINE OF SIENNA, BALTIMORE, MD., HENRY D. DAGIT & SONS, ARCHITECTS



Left: sanctuary lamp of wrought aluminum. Right, above: altar gates of wrought brass and monel metal. Right, below: baptismal font of Verde Antique marble with cover of brass and monel metal

CHURCH OF ST. KATHERINE OF SIENNA, BALTIMORE, MD., HENRY D. DAGIT & SONS, ARCHITECTS



La Ferriere, Stronghold of a Negro Empire

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

Editor's Note—Late in 1933 a trip was made to Haiti for an architectural survey and study of the ruins of Sans Souci, the Palace of Henri Christophe, Emperor of Haiti from 1806 to 1820, and also the Citadel on the peak of Le Bonnet a L'Eveque, a mountain close to the Palace. The historical background of both structures and a description of the Black Emperor's Palace appeared in the September, 1934, issue of *American Architect* on pages 10 to 14.

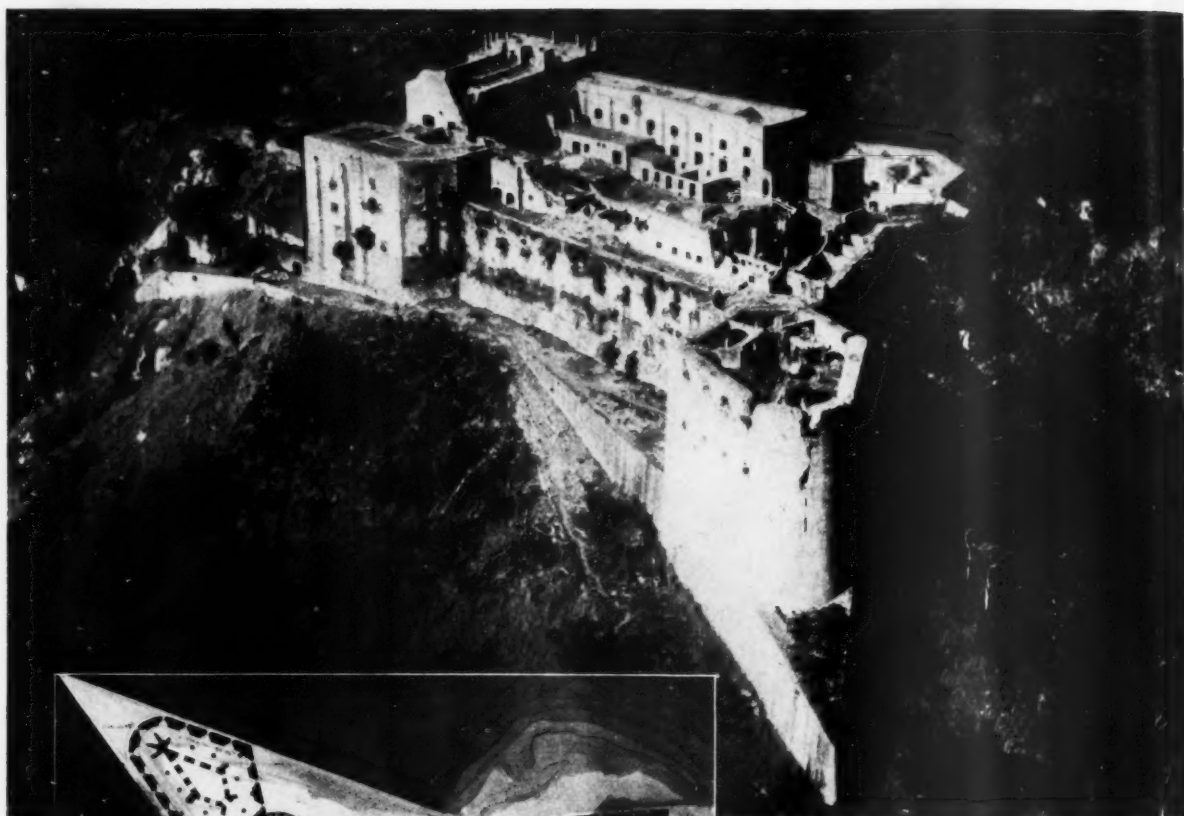
NEAR the north coast of Haiti, not far from Cap Hatien and close to Milot, seat of the Black Emperor's Palace, towers one of the most remarkable structures in the Western hemisphere. It is La Ferriere, the Citadel of Haiti's northern empire which was organized and ruled by Henri Christophe from 1806 to 1820. Standing on the peak of a mountain 3000 feet above the sea, the Citadel is at once the symbol of a slave race liberated by the driving spirit of a great organizing personality; and a marvel of building and military engineering.

La Ferriere stands helpless today against the in-

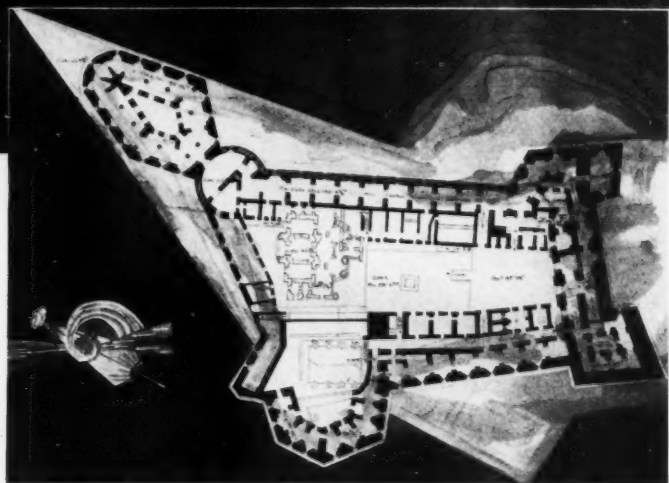
struments of modern warfare. In Christophe's day—the day of pomp and splendor of the Sans Souci Court—it was a virtually impregnable example of military defense engineering. In its ruins are written the story of Christophe's flaming ambition and the despotic leadership that, despite the greatest of difficulties, brought into being a building achievement of the first rank.

The approach to the Citadel is from the East. One has actually to climb the forty-five degree slope of the mountain to realize La Ferriere's impregnable position and to gain some appreciation of the tremendous amount of labor that was necessary to build it. The dates of its history are few. It was begun in 1804 when Dessaline, then Governor-General of Haiti, surveyed the country for the most favorable positions for military defense. The Citadel was actually begun by Christophe, who in control of the North as Dessaline's lieutenant, contemplated two such defenses, La Ferriere and a similar one on Le Ramier, a not far distant peak.

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PUB. PHOTO SERVICE



Layout of the Citadel follows closely the military defense tradition of Vauban and is similar in general conception to the general schemes of Chateau Gaillard and Visigothic Carcassone (C and B on facing page). Barbicans are lacking. They would have been unnecessary as outpost defenses due to the precipitous nature of the site. Air view above is from the north and emphasizes the streamline shape of the huge, prowlike bastion. Plan drawn by J. O. Grimshaw

After Christophe's death, work on the fortress ceased. For over one hundred years it stood unused and untouched, racked by tempest, shaken by earthquake and overgrown by the wild vegetation and life of the tropics. During that time it sustained little damage; and in 1933 the present Haitian government cleared the building and site and made such repairs as were necessary in the huge, prowlike bastion at the northern corner.

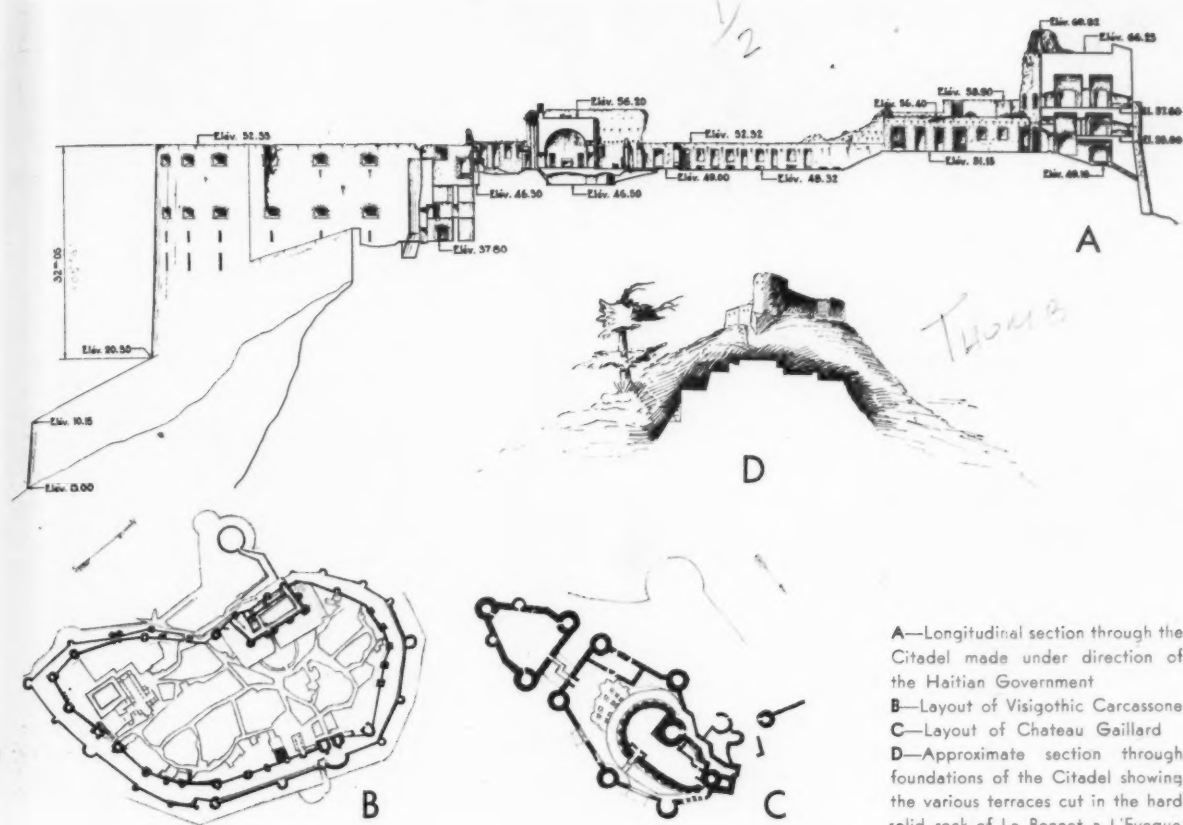
The plan as executed embodies the principles of the French military engineer Vauban, who was the greatest fortification engineer of the 17th century. Directors of the plan development and coordination of construction problems are believed to have been Henri Besse and F. Ferrier, both mulattoes, the latter a military engineer trained in France.

Because of its strategic location and disposition

of galleries and bastions, the Citadel was practically an impregnable fortress for the following reasons:

1. Besiegers lacked security.
2. Complete investment of the fort was impossible.
3. Dislodgement of defenders by heavy artillery fire was nearly impossible. Approach from the north was a 45° grade some 5000 feet in length. The range with solid shot was limited to from 1500 to 4000 yards varying with the caliber of the guns.
4. A mass attack with artillery and infantry, possible from the North only, would have been cut to pieces by the direct, flanking and parallel gun fire from the fortress.
5. Advance by sapping was impracticable on account of the projecting base footings of the fort.

Guns in masonry bastions of the fortress com-



A—Longitudinal section through the Citadel made under direction of the Haitian Government
 B—Layout of Visigothic Carcassonne
 C—Layout of Chateau Gaillard
 D—Approximate section through foundations of the Citadel showing the various terraces cut in the hard solid rock of Le Bonnet a L'Eveque

manded adjacent bastions; and protected positions behind pierced roof parapets were planned for musketry fire against direct advance and at flanks. The steepness of the approach and its rock formation made unnecessary the construction of ditches or counter scarp walls.

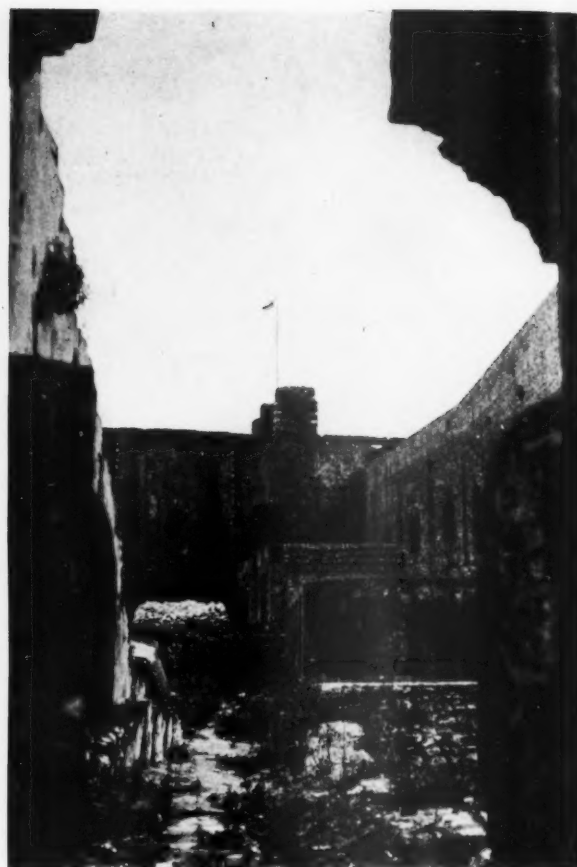
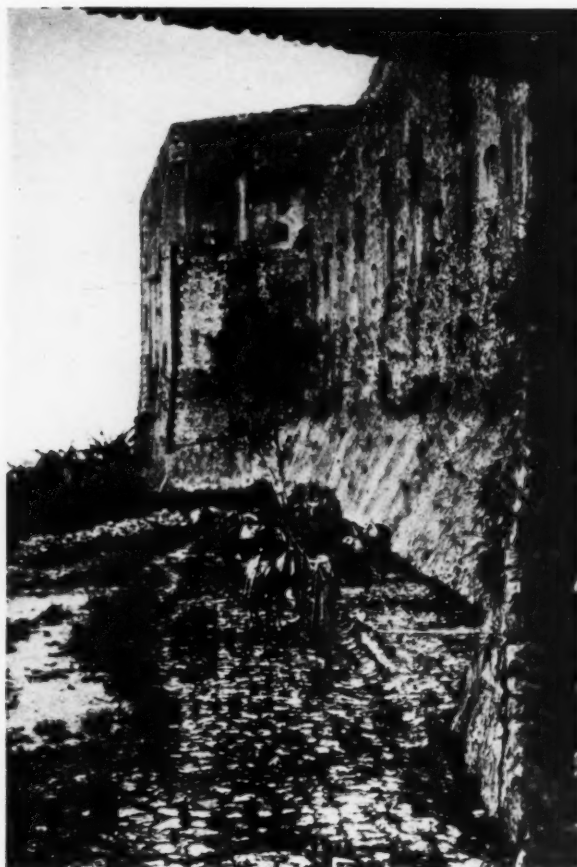
To accommodate the structure on La Bonnet a L'Eveque the top of the mountain was leveled in a series of rock cut terrace planes at the elevations required for the several major components of the project—foundations, the terrace approach from the east, storage and cistern spaces outside the walls to the west, dungeons, the lower gun galleries, the powder magazine and a central court with two levels. Due to variations in the rock-cut grades none of the principal gun galleries are on the same plane. From a bench mark, 2600 feet above Milot the Citadel is 140 ft. in height and is divided into four unequal stories. The highest single mass is the north bastion or prow which, pointing to magnetic north, commands the main avenues of approach and soars vertically 130 feet.

There are but two entrances, the principal portal leading from the south exterior terrace to the prow. The secondary one, opening from the west terrace, provided a means for reaching the outside storage and delivery area.

The Citadel is built in the form of a trapezium. A series of vaulted galleries and barrack quarters

surround a central court constructed with two levels. Gun galleries, reached by ramps and stairs overlook all means of access; and on the East are located the main batteries that command the approach from the plain. The lower one, 30 feet wide, is vaulted, divided into compartments and contains ammunition chambers adjacent to each gun mount. The upper gallery is unfinished, the exterior wall being only as high as the base of the casement. West and south sides of the fortress are similarly equipped with gun emplacements. At the northwest corner of the great interior court, a masonry stairway leads to a powder magazine excavated in the rock of the mountain. Today a great mass of decomposed powder covers the rock floor of the magazine like a coating of thick black mud.

One interesting feature of the main courtyard is the ruin of what was a small palace for use of The Black Emperor. It is located at the northeast corner of the court and reflects in plan the throne room portion of Sans Souci, Henri's palace at Milot. (See AMERICAN ARCHITECT for September, 1934, pp. 10-14) A monumental, domed chamber was provided for the ruler so that all the trappings of sovereignty could still dominate the military setting. The chamber had a fireplace and was connected with two dependencies—one a room for military advisors and records; another a portico through which could be viewed most of the fortress court.



It is evident that this little palace was not a part of the Citadel's original plan, but was probably added about 1817. At that time the walls of the unfinished eastern gun battery had been erected and the stairway leading to the gallery below was in use. Probably the value of existing masonry prevented the building of an addition to the little palace which would have created a mass symmetrical with the finished construction.

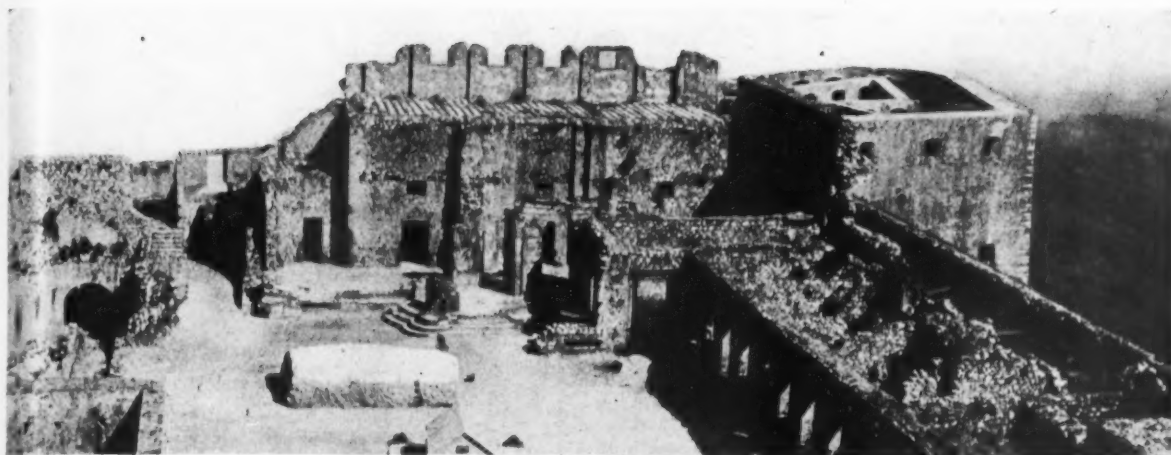
At each corner of the fort is a battery bastion, the walls of which project from the surface of the main block. Thus were provided emplacements for additional gun batteries that could rake besiegers with an enfilading fire parallel with the walls between.

The north bastion, rising from the lowest foundation of the Citadel, looks much like the prow of a ship and has a plan form that was undoubtedly a result of an intensive study of local meteorological conditions. Haiti has always been the center of gale winds which, striking the high ranges to the south-east of the Citadel, surge upward with tremendous force, thus creating from the North or Northwest an in-rushing tornado of wrecking intensity. The prow of the Citadel was shaped in a sort of streamlined wedge undoubtedly to cleave the thrust of the hurricanes and to throw off the gale along entased,

angular walls as water slips along a ship's bow. Practically, the Citadel's north bastion is streamlined, for to its design was successfully applied the principles of protective aerodynamics that have since brought the expression into common use.

It is a matter of astonishment to all who have actually visited the Citadel to observe the admirable and carefully arranged masonry. The vaults and arches indicate careful arch centering, brick-laying and jointing that could not have been done by other than skilled artisans. But in Henri's time, Haiti contained but few masonry buildings; and there certainly must have been a dearth of natives skilled either in brick or stone work.

Both the Citadel and Sans Souci exhibited work in these materials that is of the highest type. The brick of the Citadel was burned locally and formed of reddish clay of the Plaine. Its shape was adapted to the arch and heavy wall types on account of its length, 15", its breadth, 6" and height, 2". The interior walls and vaulted surfaces were plastered. Ramps and stairways were paved with imported stone, most of which has been removed, for after the severe earthquake of 1842 the building served as a quarry for the rebuilding of Cap Haitien. The stone, varied with brick employed in the building of the exterior walls and bastions, was of local origin.



On This Page: Above, general view of the Citadel's north corner. In the center are the ruins of the little palace. At the extreme left are ruins of the corridor leading to gun emplacements at the east and south. At the right is the unfinished construction of the upper west wall battery, a detail of which is at the left. Note excellence of masonry work, well preserved in spite of damage by hurricane and intentional demolition.

On Facing Page: Left, view of terrace and wall at main entrance looking toward southeast bastion from the portal of the streamlined prow. Right, inside of one of the various galleries that surround the open court, shown above on this page. Much stone has been removed, for the Citadel once served as a quarry for rebuilding Cap Hatien after severe damage by earthquake.

It is evident that the structural character of the Citadel, permanent and accurate as it still is, could not have resulted from the labor of locally trained men. Such artisanship does not come from labor enforced upon a naturally indolent and non-building race. The implied question will probably never be answered.

Rough toil, under skilled superintendence was imposed upon native workers, male and female. The walls 20' to 30' in thickness, rising to heights of 80' to 130' necessitated the delivery to the site and to scaffold platforms of immense amounts of brick, stone and mortar. Water was plentiful at the site; and there is an obstinate tradition that the cisterns are supplied by an ever flowing spring, although there are no evidences of this source. The great walls are windowless and are pierced with gun casements, splayed within, and crowned with accurately cambered brick arches. The exterior walls are composed of random-range ashlar, relieved by red brick, laid with a wide joint and in horizontal courses. The corners are strengthened with alternating courses of brick and native stone.

With Sans Souci the Citadel stands today as an example of Negro solidarity and independence. Henri, the creator of these great monuments, was a slave-born, full-blooded negro. His methods of at-

taining power and a position of unquestioned command were undoubtedly ruthless. But ruthlessness was forced upon him. Beset on all sides by a host of "foreign" enemies, faced with the tremendous problem of solidifying an enslaved populace into a closely-knit nation, Henri Christophe was forced to mould the lives and spirits of his people through the imposition of his own forceful ambition and tyrannous will.

For Haitian disorganization and individual license, Christophe substituted rigid regimentation so far as labor codes were concerned and a communal independence in which each native had the sense of being—and was in fact—an integer of a world recognized state. It is in itself a miracle that Christophe should have been able to impose upon a leisure-loving people a program of national construction that involved almost continuous individual toil from dawn to dark. But impose it he did. In Christophe's national policies lay the germ of the present independence of the Haitian Republic. The Citadel of La Ferriere and the Palace of Sans Souci are still symbols of the Republic's birth. Each has been declared a national monument; and the ruins are vivid testimony of a strong national spirit focused through the burning egoism, fanatic ambition and relentless discipline of the Black Emperor.

A Civic Improvement Program

BY B. C. GREENGARD, A.I.A.

IN almost every city in the country there exist neighborhoods sadly in need of drastic and immediate improvement. In most cases every one admits the need; yet too often little action is taken due to a lack of active direction and the want of a concrete program by which the rehabilitation of the area may progressively be accomplished.

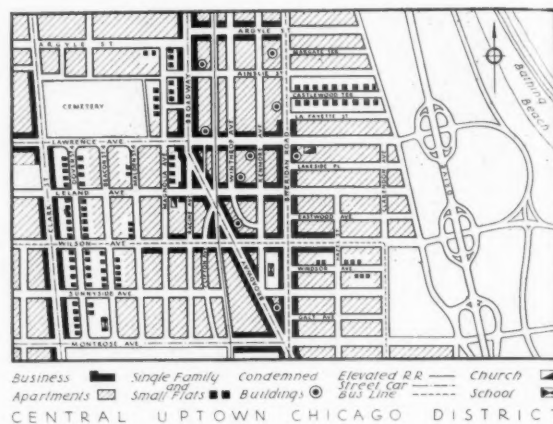
A few months ago lack of financing opportunity was a serious handicap to action along these lines. Today, however, adequate credit for improvement purposes is available under terms of the National Housing Act. This means that business men can obtain low cost loans for property modernization; and to the wide-awake architect this fact offers opportunity for a greater volume of work and a wider range of business contacts of great potential value.

That statement is not a theory. It is a present-day fact based upon the experience of organizing a neighborhood improvement drive and helping to direct the details of a comprehensive program that included a detailed survey of the area involved, plans for the demolition of condemned buildings and dilapidated eye-sores, improvement of property landscape treatments, control of land utilization and the actual repair, modernization or remodeling of buildings.

The neighborhood involved—approximately a square mile in extent—is typical of many American cities. A product of rapid growth, it contained whole blocks of single family houses on well-planted, attractive streets, a number of broken-down mansions of the gay nineties, many two-and three-family houses of the 1910 vintage and a vast series of apartment houses and hotels which constituted the defaulted inheritance of the booming twenties. To all this must be added many business structures lining a few important streets and serving a population that had grown from 16,000 in 1910 to 42,000 in 1930.

The approach to the local business and improvement association was essentially an architectural one. It embraced a proposal that the association sponsor an active campaign for improving the district. To support the statement that need for such action was imperative a detailed survey was presented. This indicated the extent to which buildings had been variously neglected to the detriment of property values. It also emphasized the desirability of co-operative action toward raising the standards of real estate development throughout the area. The survey was accompanied by a moving picture which gave a striking visualization of existing conditions.

Ideas of what might conceivably be accomplished



by rehabilitation of the neighborhood took the form of sketches, one of which is shown on the facing page. These were made from small photographs and furnished such convincing proof of the possibilities involved that the association at once appointed a committee to draw up a definite program of action.

IN such endeavors one of the greatest drawbacks is often an ignorance of conditions the improvement of which would profit every one concerned. Thus the first work of the committee consisted in calling attention to the necessity for civic improvement. Through free distribution of a neighborhood weekly newspaper and personal solicitation of property owners the objectives of the campaign were publicized. Public opinion was concentrated on the need for removing vacant buildings, limiting the spread of rooming houses, prohibiting improper uses of buildings, caring for street and plot landscaping, keeping streets and alleys clean and finally modernizing or remodeling buildings, particularly those which constituted elements of community service.

Cooperation of property owners, metropolitan newspapers and relief organizations has been generous. Demolition of unusable buildings has been donated to owners in many cases. Publicity has been given in several accounts of this neighborhood effort; and when obstructions develop, legal action is being taken to force demolition necessary to the success of the entire undertaking.

Progress is methodical and thorough. The area is being canvassed by streets, the objectives of the campaign being set forth clearly through personal interviews and letters. Questionnaires seek to obtain

m Creates Opportunities for Architects

This rehabilitation plan for a Chicago business neighborhood included a survey of the area and architectural suggestions for modernization projects which could utilize Federal Housing Administration credit



Modernization possibilities can be forcefully presented in a sketch developed from a photograph of the actual site. B. C. Greengard, Architect

reactions of property owners to the program; and when favorable replies are received, an owner is asked to cooperate directly by obtaining in turn the help of friends and neighbors.

In this particular enterprise there has been little effort so far to tie up directly with the program of the Federal Housing Administration. The activity is one that is now in the forefront of the Administration's efforts to put the building industry back to work, however; and sponsorship of any similar campaign would undoubtedly receive the endorsement of Housing Administrator Moffett.

So far as the architect himself is concerned, affiliation with such activity may give a double benefit. The main objective—civic improvement—involves the repair, modernization or remodeling of buildings. This can mean some immediate work for the architect. Secondly, the personal associations developed by such activity often form valuable future business contacts. Thus the program can give an architect an opportunity that today may be a godsend—first to exercise his technical ability toward a worth while end; and second to develop his professional prospects against a future day.

A s l t L o o k s t

NEW ACTION ON AN OLD FRONT

THE Treasury Department's invasion of the architectural field is a matter of grave concern to every architect. By developing large architectural staffs of their own, various governmental agencies have become instruments for the eventual elimination of the architectural profession. Such, in substance, is the charge of Ralph Walker, president of the New York Chapter of the A. I. A. Writing for the Chapter Mr. Walker recently outlined this situation in a letter to each Congressional candidate in New York State. He asked each candidate to state specifically whether or not he believes in increasing such governmental activity at the expense of private industry and if not, what action he will take to eliminate it if elected. Other chapters of the A. I. A. have followed Mr. Walker's example and have sent similar letters to candidates of their own states. They are hopeful that all sixty-seven chapters will do likewise.

For years AMERICAN ARCHITECT has protested against the practices by which governmental bureaus of all types seek to dispense with the services of private architectural firms. This magazine has consistently advocated that the Government get out of the architectural business. Through continuance of vigorous and concerted action along these lines the desired result may eventually come to pass.

LAND UTILIZATION: A PROBLEM FOR ARCHITECTS

LAND utilization is a problem with greater personal significance than most architects realize. Real estate mistakes of omission and commission uncovered by the depression involve not only the brokers and financial men but also architects who must bear most of the responsibility for building layout and design. Elsewhere in this issue Ernest M. Fisher, Professor of Business Administration at the University of Michigan and Economic Adviser to the Federal Housing Administration, states forcefully that a poorly designed building is not only a more or less complete financial failure; it is fundamentally an improperly contrived solution of a problem of land utilization—a subject with which architects have been too little concerned in the past. Professor Fisher sounds this warning to the entire profession: If repetition of past catastrophes is to be avoided, future buildings of whatever type *must*

develop the highest value of the land by most effective utilization of the site and location. Otherwise architects, whose job it is to do this, can hope for little important recognition in building activity of the future. His article also implies encouragement to architects, by envisioning a wider and more fundamentally inclusive range for proper professional activity.

CORRECTION FROM CHINA

MORE than a thousand architects have indicated by letters their interest and approval of AMERICAN ARCHITECT Reference Data article on "Thermal Insulation of Buildings." From a keen-eyed reader in Tientsin, China, however, comes notice of a typographical error. With due thanks to R. H. Martin of the Tientsin Land Investment Co., we report the following corrections necessary in the May issue: Page 96, bottom of right hand column, Rule 2—reference to Table VI should be changed to Table III. Page 99, Table 5 under heading "Surface Coefficients and Normal Air Spaces: Surfaces, polished aluminum, still air" change conductance from .85 to 1.18 and resistance from 1.18 to .85.

BIG FIGURES AND A BIG MARKET

SPEAKING before the Sales Executive Club of New York recently, Ward M. Canaday, James A. Moffett's righthand man in the Federal Housing Administration, mentioned vast figures in connection with the current program to repair, remodel and modernize. Mr. Canaday stated that of the 29,000,000 buildings in this country, 16,000,000 are in need of repair and of these 3,000,000 are so badly depreciated as to be unfit for human habitation. Only through the agency of immediate repairs can the others be saved from a rapid acceleration of their damaged state. The market for goods and services that is represented by these figures is enormous. Expenditure of the amount necessary to make even minor repairs will, in the opinion of Mr. Canaday, do much to end relief rolls, to take the Government out of business and to put profits back into business. If these things can be accomplished, even in part, architects will benefit; for better business means more money and more money inevitably will mean more building.

s to the Editor

CULTURE, OR JUST VERSATILITY?

THE reconstruction of Williamsburg, Va., has been accomplished with such minute and careful accuracy as to make it seem almost a "resurrection." Some 352 buildings of modern construction have been torn down, 57 colonial buildings restored, 61 colonial buildings constructed. The result is said to be so successful that the visitor feels himself surrounded not merely by the outward forms but by the spirit and culture of an age long since dead. Some architects may speculate as to whether this would be the case if a modern town of similar importance were to fall to dust and be restored some two centuries hence. Would there be, as in the case of Williamsburg, this quality of harmony with the best contemporary tradition? Or might our puzzled descendants be constrained to feel—rightly or wrongly—that while our architects were amazingly versatile our people were without an integrating culture worthy the name?

ARCHITECTURAL POSTAGE STAMPS

STAMPS have been issued in commemoration of almost everything in American history. Why not commemorate American architecture in the same way? This suggestion comes from Harry Lucht of Cliffside Park, N. J. It is an interesting and practical idea. Many foreign countries issue beautifully engraved stamps depicting masterpieces of national architecture. On pages 48 and 49 of *AMERICAN ARCHITECT* for July, 1933 appeared an article by Eric Fleming on "Architectural Philately" that illustrated several of these stamps. Architectural stamps for our own country might help stimulate interest in the present building drive of the Federal Housing Administration.

GOOD NEWS FROM THE SOUTHWEST

BENJAMIN F. BETTS, Editor of *AMERICAN ARCHITECT*, is now traveling in the southern and southwestern states. He has been studying conditions in these areas and reports encouraging evidences of greater building activity. Architectural offices in south Texas, for example, have much more work than formerly. Mr. Betts has found also much interest in the progress of the Federal Housing Ad-

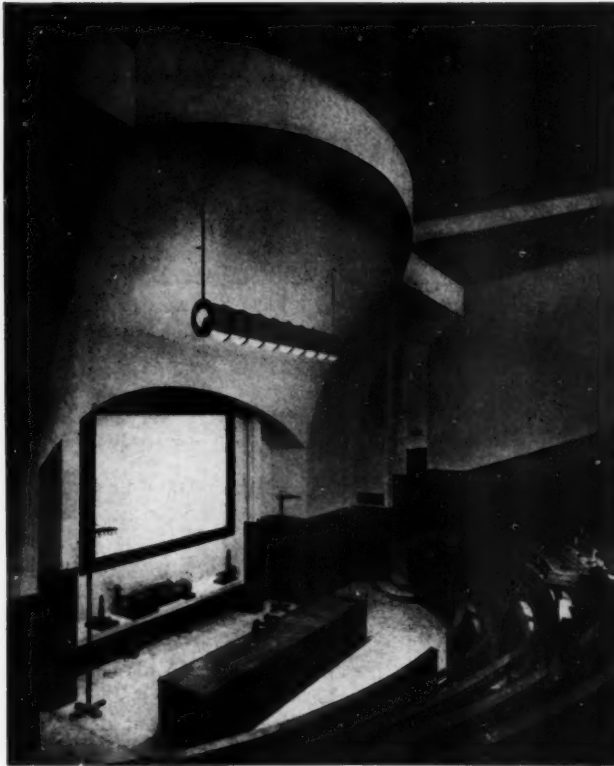
ministration's Better Housing Campaign. Every effort is being made by local agencies to make the public conscious of the fact that houses need occasional reconditioning and that now is the time to do it.

"ARCHITECTS ARE TOO CONSERVATIVE"

IN *The New York Sun* there recently appeared an editorial commenting upon opportunities for architects under the financing terms of the National Housing Act. *The Sun* noted that Ernest J. Russell, president of the A. I. A., had urged architects to promote their business by convincing property owners that architectural service will save money. The editorial says, "Mr. Russell's spur to his colleagues to promote their business now carries an implication that they are ordinarily backward about doing so. . . . Probably architects, by and large, are too conservative. If these times can transform them into better business men, they may say, as others have already said, that the depression has brought blessings in disguise, costly though they be." The point seems well taken that architects are usually too reluctant to "talk business" or to apprise the world that they can be just as hard-headed and practical as the occasion demands. The newspaper comment serves to emphasize the attitude of the public toward the architectural profession—an attitude that unfortunately is not too strongly refuted by Mr. Russell's call to arms.

CREDIT TO C. W. A.

ANOTHER grand old architectural monument of an earlier America has recently been assured the reverent preservation it deserves. The Dey House at Preakness, has been characterized as architecturally the finest of its kind in northern New Jersey. It has survived from the mid-eighteenth century and its historical associations are notable. In the parlor of the Dey House George Washington, under inducement of Benedict Arnold, gave to the Marquise de la Fayette command of West Point; and in 1780 the old mansion served as the headquarters of the Continental Army and Navy. To the Park Commission of Passaic County and workers of C. W. A. goes credit for rescuing the Dey House from the oblivion of nineteenth-century "improvements" and restoring it to a careful semblance of its original state.

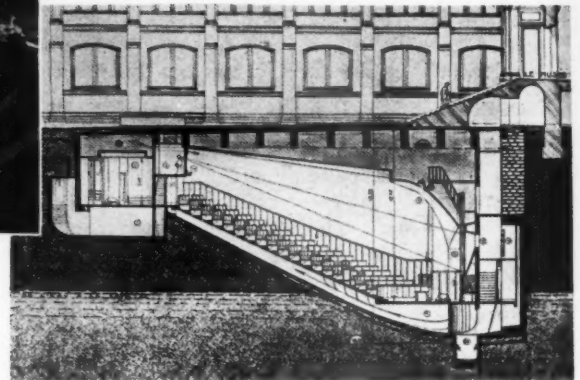


A decorative sound-mirror and unusual lighting are features of the underground auditorium of the National School of Arts and Crafts in Paris, for which L.-M. Boileau was the architect. Two supplementary lecture rooms flank it on either side. An air-conditioning system supplies ventilation



THIRIET

New Social Center for American students in Paris, designed to harmonize with nearby Romanesque chapel. Welles Bosworth, architect



Trends and Topics

• Architects affiliated with the State Association of California Architects and the Northern California Chapter of the A. I. A. are offering a special consultation service for minor alterations and additions within the scope of the FHA's present modernization program. Albert J. Evers, President of the Northern California Chapter of the A. I. A. has announced a schedule of minimum charges and compares the fees to those of the medical profession. He says, "This type of service includes: First, a consultation and a diagnosis involving a study of the problem, a visit to the building and recommendation; next, office visits for consultation as may be required and also visits to the building itself." Charges for drafting are roughly parallel to X-ray or medical laboratory charges; and if the building case seems to require a major operation, a fee for the whole work can be arranged. Schedules of

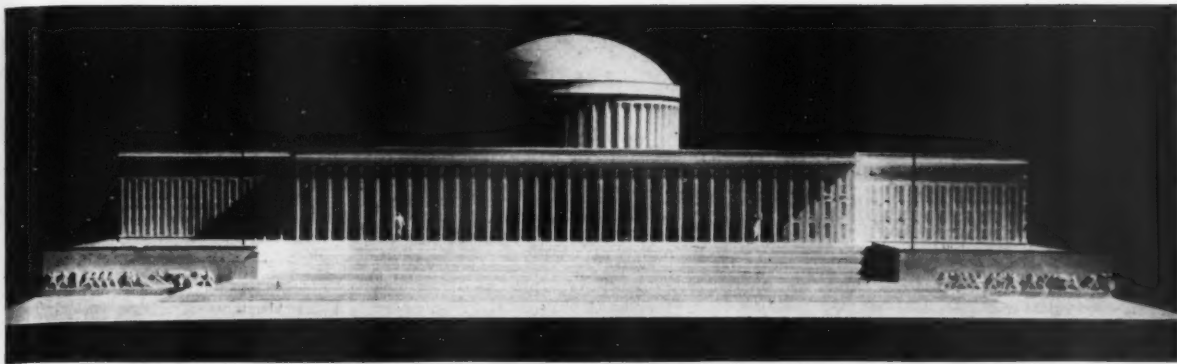
charges for work under and for the duration of the National Housing Act are:

Initial Consultation and Architectural

Diagnosis	\$10.00
Subsequent Office Consultations up to one hour	3.00
Visits to Building Site.....	5.00
Architectural Drafting, per hour.....	2.50

It is made clear that these charges apply only to incidental and partial architectural service. Full percentages of the A. I. A. schedule apply when full services are needed or requested.

• Need for 1,750,000 new houses and the repair of 16 million others is indicated by government surveys, says Ward M. Canaday, Director of Public Relations of FHA. Commenting on the fact that



ACME



COURTESY, ARCHITECTS' JOURNAL

Top of page: Model of a club building that is to be constructed for the working population of Cologne. Prof. Clemens Klopf, architect. Left: Mural for new R.I.B.A. building, London, executed by Bainbridge Copnall, covers an area of 480 square feet. Right, above: New R.I.B.A. building. G. Grey Wornum, architect

s of the Times

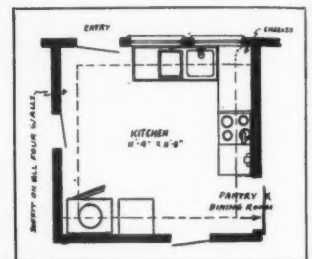
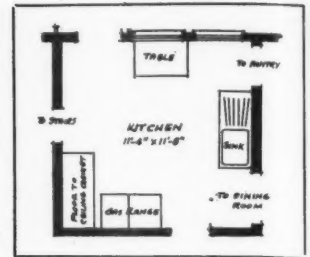
the second phase of the N. H. A. program, which will go into effect this month, will make available loans for new construction costing up to \$16,000 Mr. Canaday says that sums spent on home modernization and new construction should be sufficient to put thousands back to work and keep builders operating full time for five years. Defending the present prices of materials and labor, he states that they are still approximately ten per cent below the 1926 level which is taken as a fair normal.

- Unhappy deviations from the original plan of Washington, D. C., as a result of unregulated growth, suggest to Francis P. Sullivan, Chairman of the Committee on the National Capital of the A. I. A., that new plans now under consideration must be more specific and subject to more rigid control. The Capitol is all but surrounded by a jumble

of insignificant buildings, says Mr. Sullivan, and there is constant danger that new construction in this area will, because of its inconsistency, seriously hamper proper treatment in the future. He proposes that a complete and balanced plan for the approaches to the Capitol be drawn up, and future construction placed under the control of the Commission of the Fine Arts.

- Italy's housing problem shows signs of wilting under the scrutiny of Mussolini, who has prescribed a program calling for 500,000 new rural houses and the repair of nearly a million others. All expense is to be borne by the government. The program will probably require thirty years for completion.

- Plans to stimulate and assist sound mortgage financing by private capital and private enterprise



This complete kitchen modernization was carried out in five days by the General Electric Company. The proposed layout having been settled upon, a temporary kitchen was set up in the basement, materials were ordered and local contractors employed. The aim was to make as few structural changes as possible, to eliminate unnecessary steps, to provide adequate working areas, and best arrangement of equipment. The ceiling was lowered to permit thorough ventilation

were recently announced by R. F. C. through its Chairman, Jesse H. Jones. The Government is prepared to buy preferred stock and capital notes in trust companies specializing in mortgage loans, says Mr. Jones, and wants to encourage organization of other such companies. Supplementing the work of FHA., the purpose of the plan is to provide money for new construction, aid distressed mortgage owners, facilitate refinancing, and assist in the preservation and reorganization of distressed properties.

• Justification for rehousing was dramatically presented by the Housing Exhibition of the City of New York, recently held at The Museum of Modern Art. It was sponsored by the City Housing Authority, with five other representative groups, and directed by G. Lyman Paine, Jr., and Dr. Carol Aronovici. The exhibits included two full sized apartments. One was a three-room flat, lifted almost intact including furniture of the last occupants, from a recently demolished tenement house. In contrast was a typical low-cost modern apartment, made to rent at approximately the same price as the old one and furnished with inexpensive modern furniture.

• Arthur C. Holden does not believe that the amount of money released through the efforts of FHA. is sufficient to do much towards restoring the building industry. In a recently published article Mr. Holden points to the average annual value of building contracts between 1925 and 1929, which was eleven billion dollars. In 1932 it was three billions; and in 1933, even less. Only a billion and a half dollars of credit, he says, will be released by FHA.'s insurance fund of two hundred ten million; whereas, to restore the building industries and dependent trades, at least five hundred million dollars a month must be spent for housing alone.

• Construction of the roof before excavating the site was the unusual procedure prescribed by L.-M. Boileau, architect of the new 700-seat lecture hall for the National School of Arts and Crafts, in Paris. (see cut, page 42.) The hall is situated under the courtyard of the school, and ordinary building methods would have prevented free access to the buildings during construction. After the roof was finished the soil was excavated in five foot horizontal slices. Curtain-walls around the exterior were built in five foot sections from (Continued on page 82)

How Shall We Train Future Architects?

Problems of Education involve the entire architectural profession. ELLIS LAWRENCE, F.A.I.A., former president of the Association of Collegiate Schools of Architecture considers some of them and suggests methods for their solution

WHEN things are in the depths of depression, education is often unjustly blamed and punished accordingly. When times are rosy with prosperity it is usually lauded. Architectural education has not escaped criticism. The Profession and registration boards have taken plenty of shots at it—many of them no doubt deserved, but more of them not.

As to the Profession, the educators are perplexed as to where it is heading. Until it clarifies its objectives, how can the schools determine their course and duty? Why train for ethics and the professional ideal, only to have our students return disillusioned to us, after a few years out in the field, with stories of the travelling salesman architect, the free sketch man and solicitor; the realty agent, paid for bringing in the work and other flagrant violations of the code. They find, frequently, valiant fighters for the Institute's ideals left by the wayside in poverty, with only the less important building operations left to them. They complain that no profession plays a smaller part in shaping public policies than does architecture. This is no exaggeration. I say these things from my own experience.

Is the architect of the future to be a salaried man, controlled by the government or the corporation? Is he to abrogate the professional ideal and go in for big business? Is he to retain the plan factory, or turn back to the old ideals of personal service? The educators alone cannot answer these questions. The Profession must, before preparation for practice can be solved. For what are we preparing?

The Profession, the Registration Boards, and the educators are all vitally interested in the solution of this problem. In fact, I will go further and assert that the profession, as such, cannot long survive without meeting this, its greatest obligation. If it does not, the profession we have loved will slip into something different before we know it.

Is there one of us who has not asked, "Where do we go from here?", "What is the trouble anyway?": "How can we profit by the lessons these tragic times are teaching us, or should be teaching us?"

What we want is to find antidotes to the poisons which have brought about our present predicament. I submit, with all humbleness, three of these poisons and suggest possible antidotes:

First: The mechanism essential to enlightened group thought and action is faulty.

Group thought and action are the keys to any successful democratic undertaking. Until we build

from the bottom up and not from the top down, we cannot know if democracy can work or not. In education the mechanism by which the group functions is just as vital as in industry or government, for it deals with the relationships between individuals and groups. Students, teachers, administration, Board of Governors, and public—we know too well what a price education pays when the interrelationship of any of these goes wrong.

We, the teachers, can't really educate the students. We can't superimpose on them a group thought or ideal. It must evolve from the group itself. To do this, students and teachers should be self-governing, free, not under orders. Freedom without license should be a product of education. In our blindness we have allowed our system to build up impediments and barriers. Why not now fix the mechanism under which we labor and let democracy, education and human nature have a chance to survive?

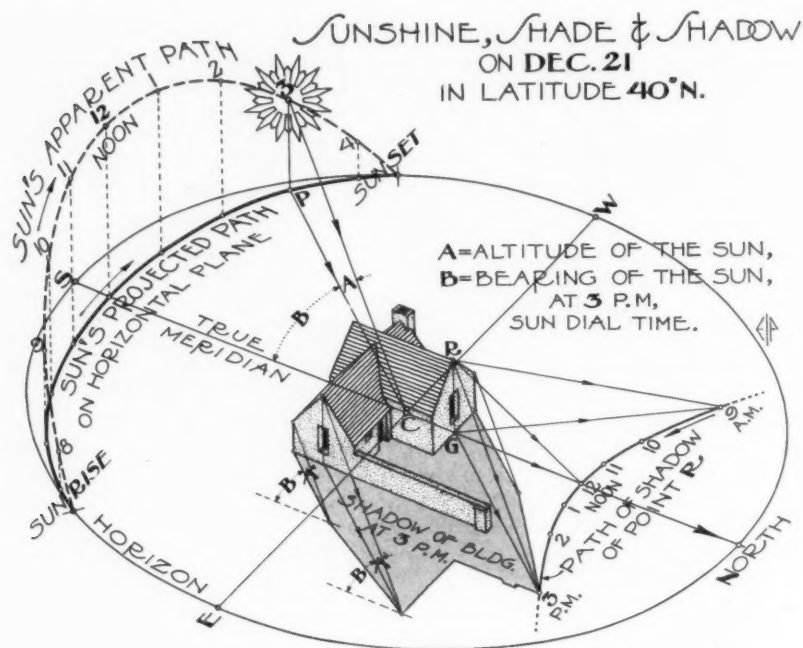
Second: We have attempted to build a social consciousness without correlating the component parts, which make up its totality.

It is hardly necessary to amplify this statement. The architects form a cult and are laughed at by the business man. The average engineer refuses to let his emotions have a say. We are wearing blinders most of the time—not thinking "in the big." But in architectural education we can free intuition and emotion to the advantage of the intellect. We can make a program for a design project the vehicle of teaching sociology, politics, education, economics, yes and ethics—s well as one for teaching structure, hydraulics, illumination and design.

Third: We lack the fixed idea or deep conviction.

There comes a time when convictions must be deep enough to fight for. What would these be as far as architectural education is concerned? Every student is an individual problem. All we can do is to guide, to place him in an environment where he can be free to spread such wings as he has. Fixed methods of teaching are of little value compared with the teacher's personality. Free both students and teachers and do away with competitions, grades and honors; with programs superimposed by others over whom the teacher has no control.

Architecture is the product of group effort. This means team play, harmony in diversity, without loss of freedom, and the closest understanding of the arts involved. Architecture is a projection of the society it serves. It cannot be well taught separated from the ideals and standards of that society.



Pathways of the Sun

BY ERNEST IRVING FREESE

THE successful orientation of buildings is largely conditioned by the positions of the sun during every hour of every day in the year.

Whether the object is to secure the maximum amount of sunshine or of shade, the pathway of the sun is the controlling factor. The importance of precise orientation is obvious in the planning of hospitals, sanatoria, suburban and country residences, greenhouses—almost any free-standing building, in fact. But its importance is as great, though less obvious, in the development of buildings on limited sites where the full coverage of the property and its high value demand maximum efficiency in the design. By orientating a structure or by modifying the shape of its roof, courts or wings, the architect may to best advantage utilize or mitigate the effects of the sun. To accomplish this with dependable accuracy he needs only to know the direction of the sun's rays in relation to his building at controlling periods of the day and year.

The accompanying charts present a complete, practical and simple method for obtaining this essential information. By their use the architect may forecast exact relative positions of the sun for any given latitude at any time of day or year.

Chart one, at the top of this page, plays no part

in the actual method, being simply a general pictorial explanation of the data geometrically recorded on the other charts.

The latitude of the place of building is the first factor to determine in the application of this method to any specific case. The particular chart appropriate to that latitude may then be considered to represent the plane of the horizon, at the building site, in plan. On this chart is plotted the pathway of the sun corresponding to that latitude, and from this pathway are derived the only other factors necessary to determine the direction of the sunshine at any given point of time. These are: the angular altitude of the sun, indicated as "A" on the chart; and the angular bearing, indicated as "B".

Thus "C", the center of the site, is the vertical axis upon which the structure might be assumed to revolve in orientation. Therefore, using the proper chart, upon "C" as the approximate center, place a plan of the building (or portion thereof) at any scale, being careful to give it the approximate desired orientation. Now, knowing the angle "A"—which is the altitude of the sun relative to the plane of the horizon—and the angle "B"—which is the bearing of the sun relative to the north-and-south meridian—the actual shadows for any hour of the

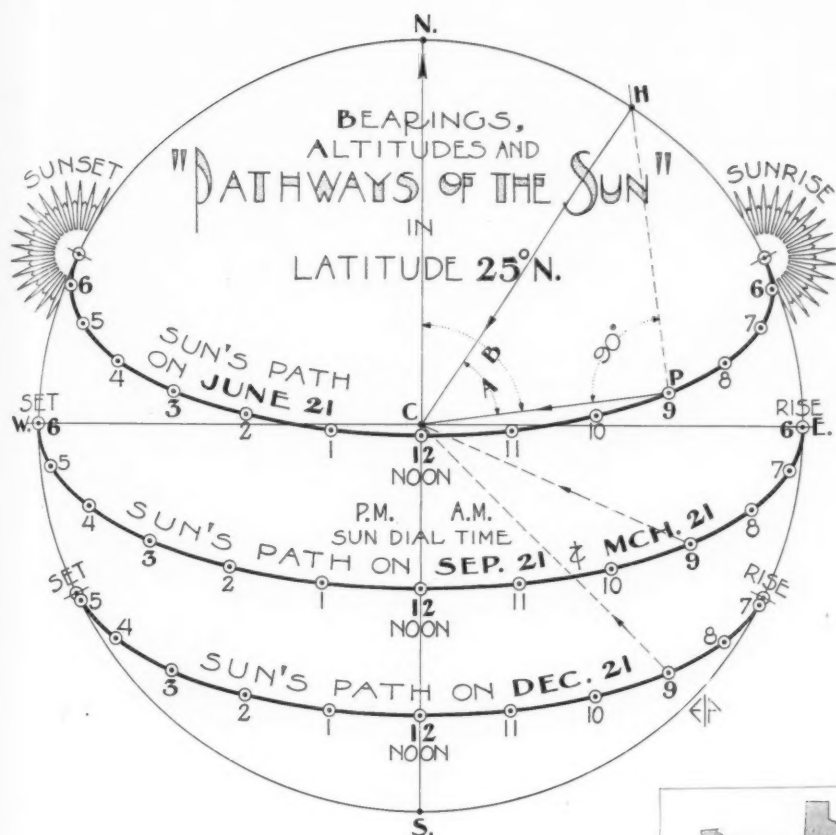


CHART NUMBER TWO

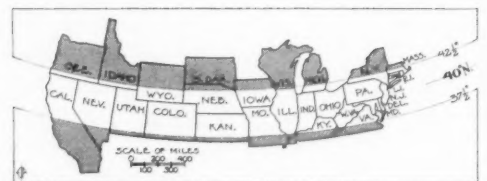
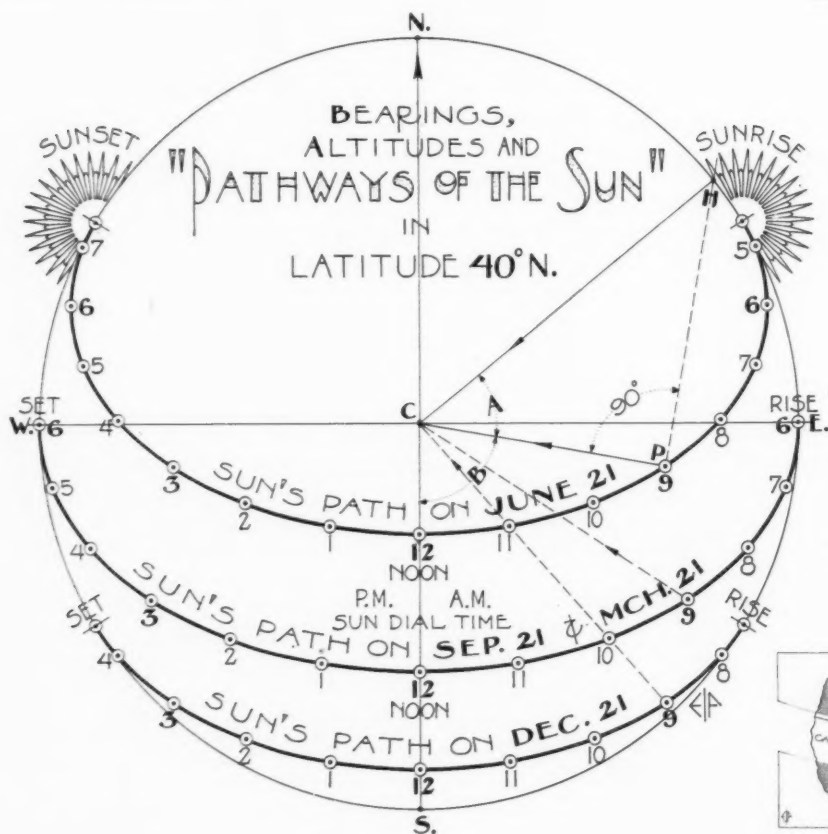
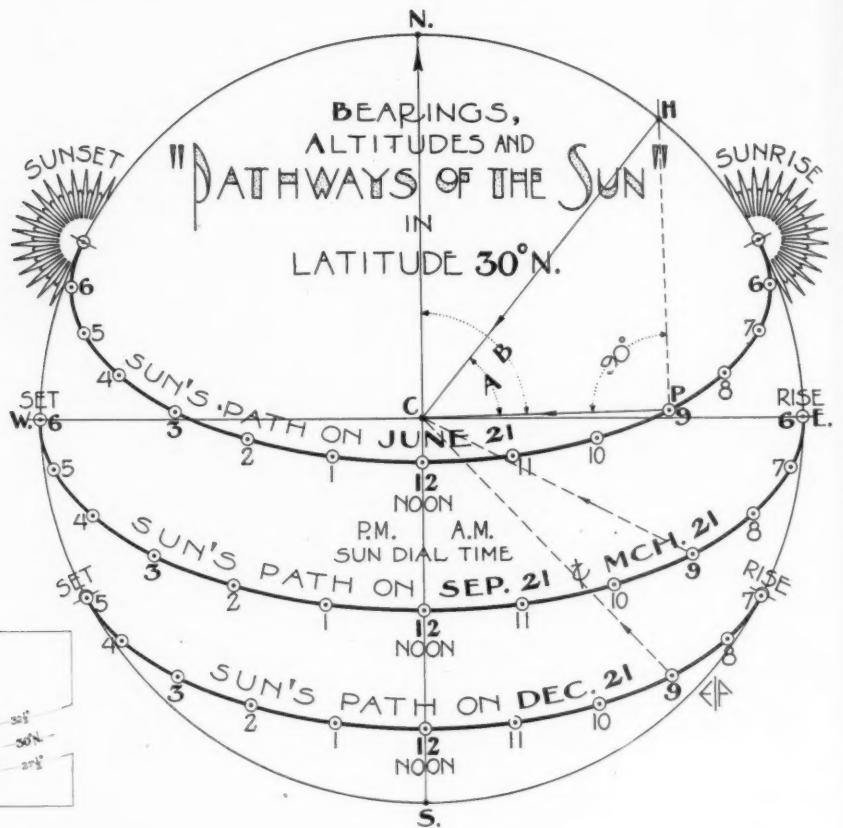
The numbers on the sun's paths are hour-marks, and **P** may be any point on any path. Then **PC** is the direction of the sun's rays, in plan, at the time indicated by point **P**. A line from **P**, square with **PC**, will cut the outer circle at **H**. Then the angle **PCH**, designated as **A**, is the true inclination of the sun's rays in elevation. In other words: **B** is the bearing of the sun relative to the north-and-south meridian; and **A** is the altitude of the sun relative to the plane of the horizon at the time indicated by point **P** on the sun's path. The chart applies directly to any place on earth having the designated latitude north. It would apply equally well to any place having the designated latitude south, if compass-points, solstice-dates, the numbering of hours and the rise and set of the sun were reversed in position. In south latitude, winter and summer seasons are reversed while the equinoctial dates remain the same as for north latitude. The accompanying strip map indicates the limiting latitudinal zone cutting across North America, within which zone the above chart may, without appreciable error, be assumed to apply.

day can be cast on the plans and elevations of the building. The sun's rays, at any one instant, are always considered as parallel.

All problems involving a consideration of local sunshine, shade and shadow can thus be reduced to a simple matter of orthographic projection.

Charts Two to Seven, inclusive, record the true "pathways of the sun" at the beginning of summer (about June 21), and the first day of winter (About Dec. 21), and at the equinoxes (about Sept. 21 and Mar. 21); and for each five-degree parallel of latitude from 25° north to 50° north, inclusive, thus covering the entire United States and portions of Mexico, Cuba and Canada. Practically, for the purpose of planning and orienting buildings, the four days occurring at the designated three-months periods are the controlling ones; also, for the same purpose, any place occurring within 2½° either north or south of the designated parallel of latitude, may be considered as occurring in that latitude. Hence, the strip maps, accompanying each chart, indicate the limiting zone of application for that chart.

Chart Eight gives an accurate, graphical method of determining the position of the sun at any hour of any day in any latitude.



Above: CHART NUMBER THREE

Below: CHART NUMBER FIVE

CHART NUMBER SEVEN

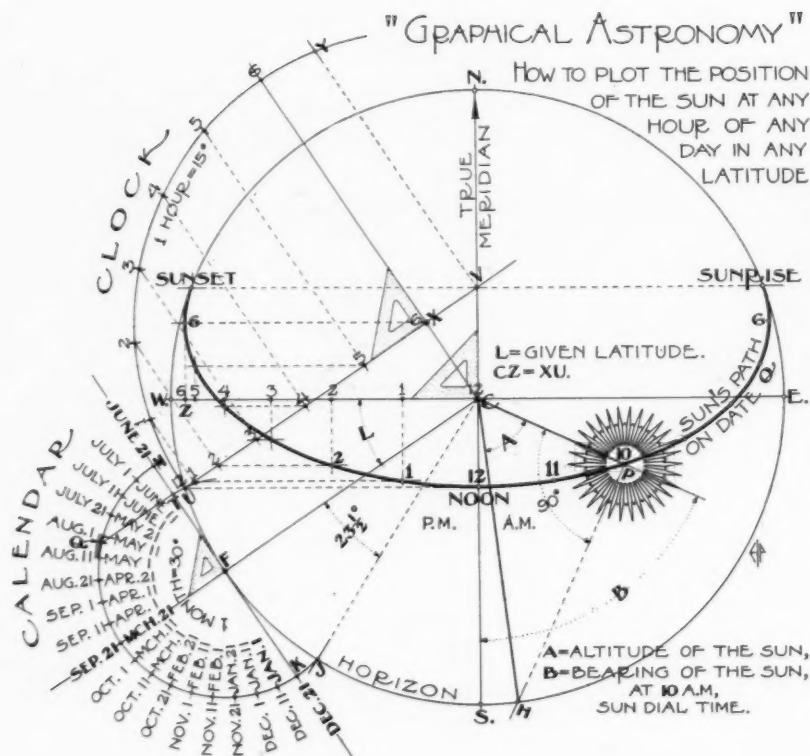
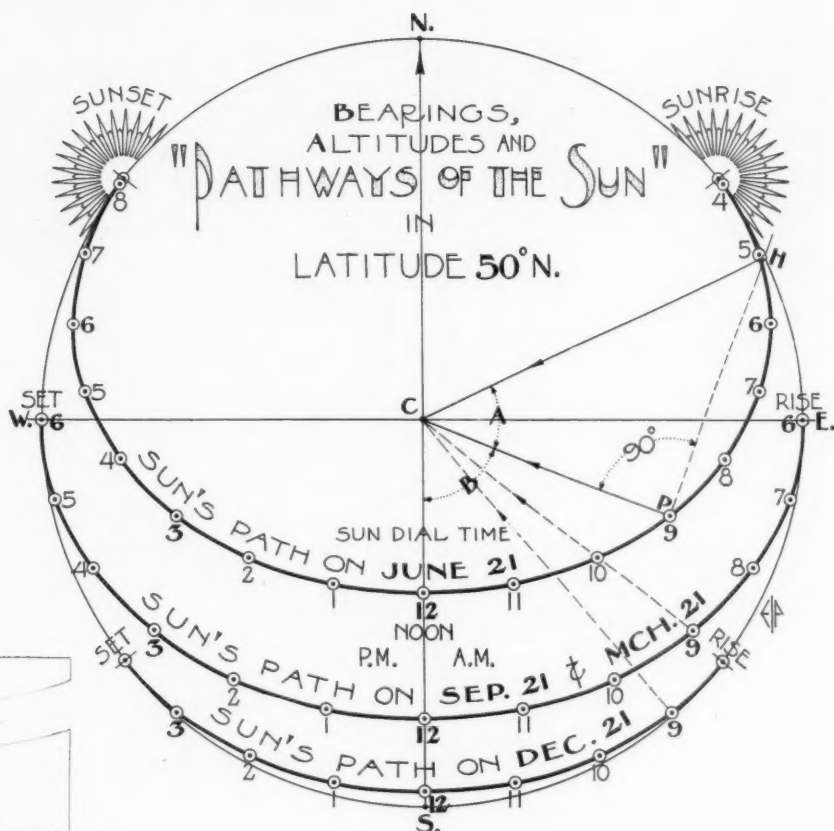
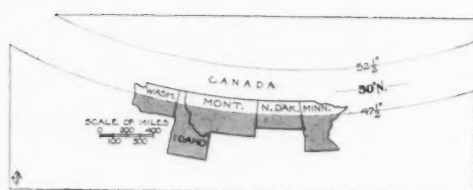
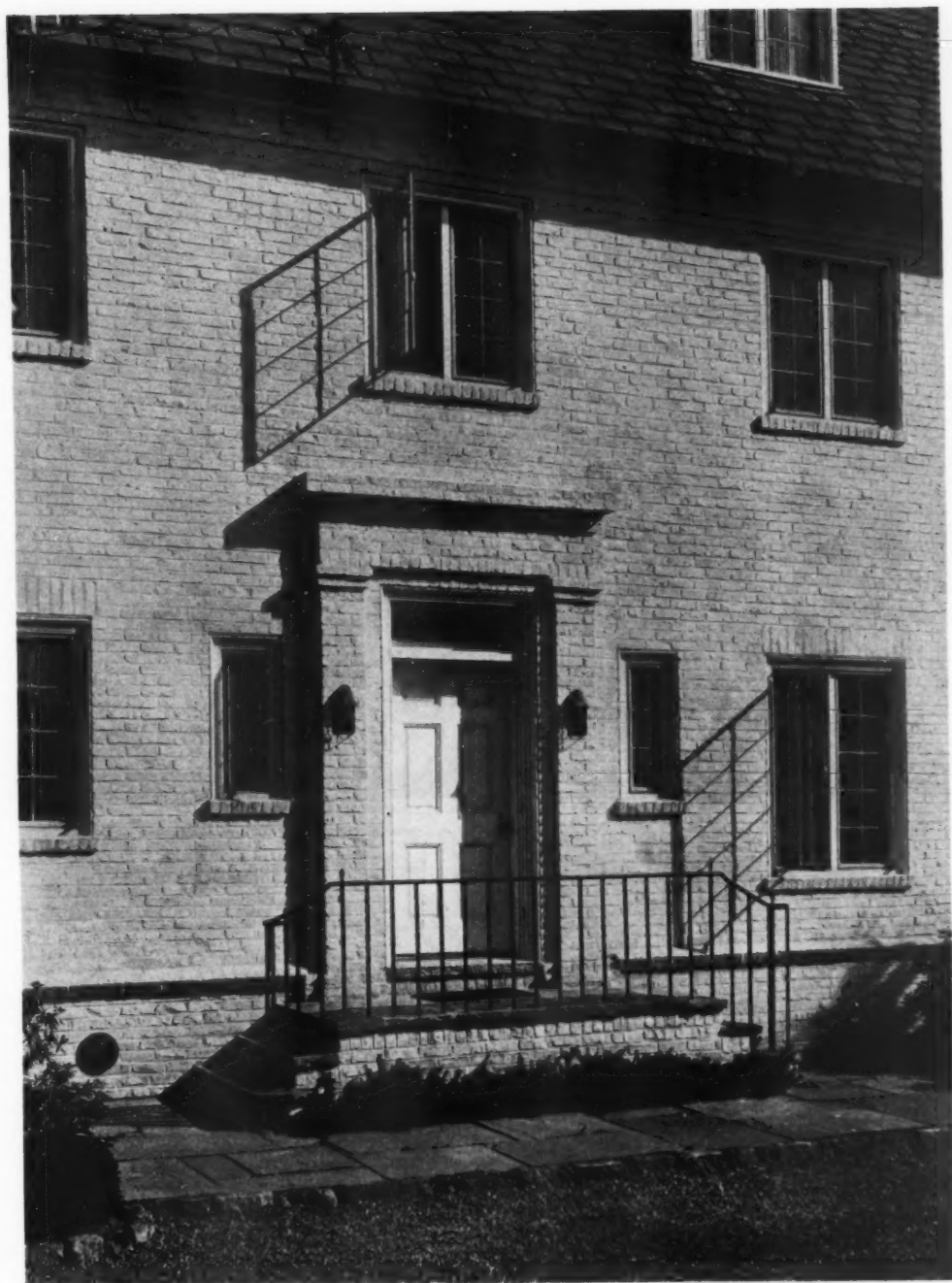


CHART NUMBER EIGHT

Draw any large circle representing the plane of the horizon. Cross it with perpendicular diameters, the vertical one representing the true north-and-south meridian, as shown. Make angle L equal to the given latitude (i.e., if the latitude is 40° , make L a 40° angle) thus locating point F on the horizon. Fix point J on the horizon $23\frac{1}{2}^\circ$ from F ; and through F draw an extended tangent to the horizon. Upon this as a base draw semicircle KM with radius FJ . This semicircle becomes the calendar upon which can be located the given day of the year, Q . From Q project a line parallel to FC , thus fixing point T on the tangent. Revolve T to the horizon-point U with radius FT ; and draw UV parallel to FC and crossing the meridian at V . From C draw a line square with CF , locating X on UV ; and from X as center and with radius XU , draw an arc representing the clock. Step off hour marks on the clock as shown not beyond point Y , since this represents the time of sunset and sunrise. Now project hour-marks of the clock to line XU as shown. From C transfer this marked-off distance to CZ , making CZ equal to XU . Reverse the numbering of points. Finally, from points bearing similar numbers on XU and CZ , project points marking hour-intervals on the sun's afternoon pathway. Reverse this for the morning path. From the plotted pathway both the sun's bearing, B , and altitude, A , can be found at any hour, P . If the given latitude is south of the equator, then angle L , representing this latitude, should first be laid off above line CW , after which the directions should be followed precisely.



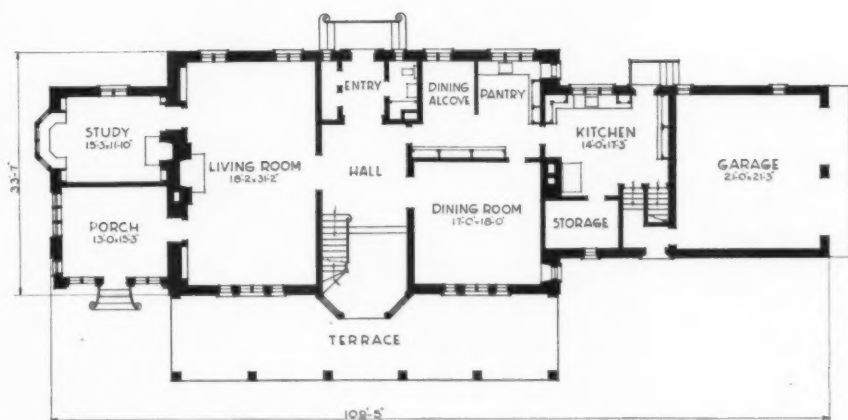
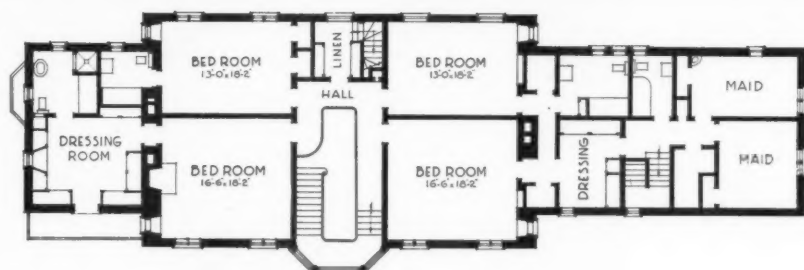
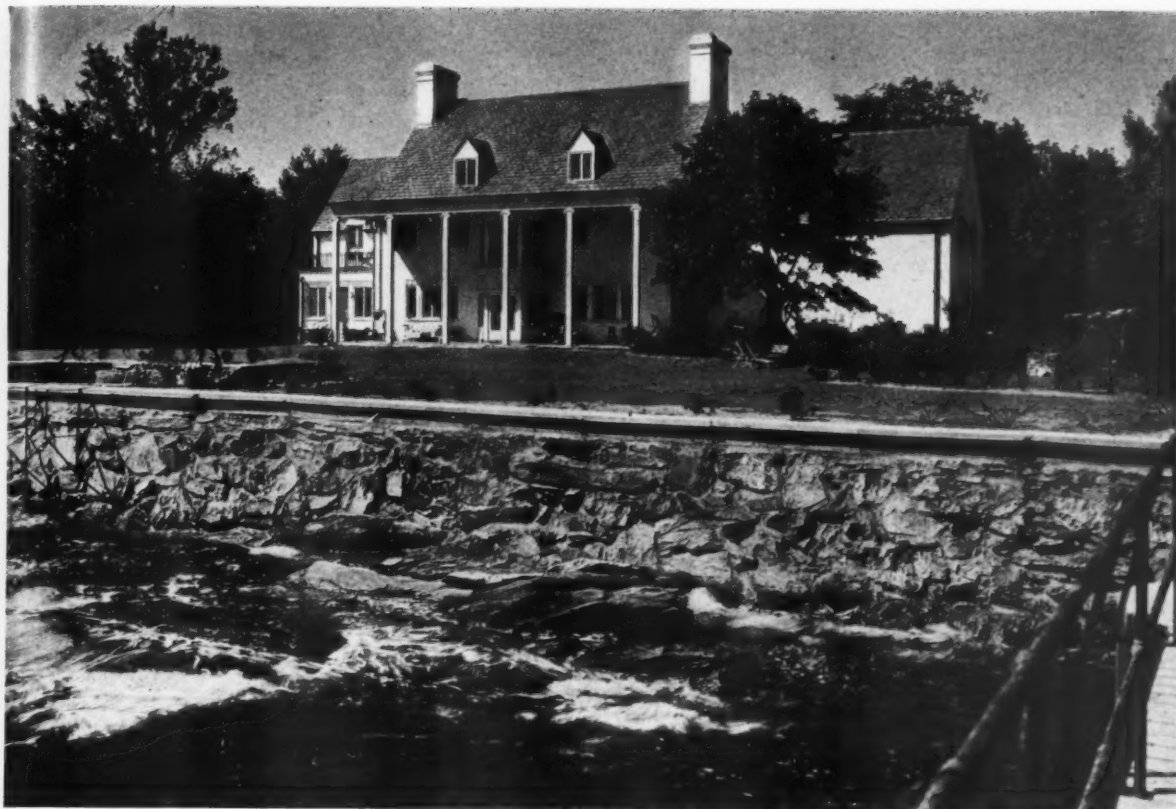
JULIUS GREGORY, ARCHITECT

HOUSE OF FRANK E. WILDER
OLD GREENWICH, CONNECTICUT

Photographs by Samuel H. Gottscho



HOUSE OF FRANK E. WILDER
OLD GREENWICH, CONNECTICUT
JULIUS GREGORY, ARCHITECT



HOUSE OF FRANK E. WILDER
OLD GREENWICH, CONNECTICUT
JULIUS GREGORY, ARCHITECT



CONSTRUCTION. Walls, cinder block and brick, furred for plaster. Floors, concrete slabs on steel beams, finished with oak. Insulation, blanket type. Roof, black slate. Exterior walls and woodwork painted white; iron-work, black. Hot water heating system with oil burner. House contains 115,000 cubic feet. Completed in 1931

HOUSE OF FRANK E. WILDER
OLD GREENWICH, CONNECTICUT
JULIUS GREGORY, ARCHITECT



The Legal Side of Architecture

BY CLINTON H. BLAKE

Blake and Voorhees, Counsellors-at-Law

Various Interpretations of State Registration Laws

IN the September issue of AMERICAN ARCHITECT I discussed a Tennessee case in which it was held that the defendant was improperly representing himself as an architect. I suggested there that a different decision might have resulted had the defendant merely undertaken to provide architectural services through others who were duly registered architects and had such services been performed by these registered architects rather than by the defendant.

The Supreme Court of Wisconsin has made a decision which is directly in point in this connection. The plaintiffs—who were not architects—entered into an agreement with the defendant, pursuant to which the latter authorized and employed the plaintiffs to prepare plans and specifications and to superintend the erection of an apartment building and of garages. The plaintiff agreed “to furnish services consisting of the necessary conferences, preparation and preliminary studies, working drawings, specifications, large scale and full-sized drawings, the drafting of proposals and contracts, the keeping of accounts, and the general administration and supervision of the work.”

In an action by the plaintiffs to recover their agreed compensation for this work the defendant contended that no recovery could be had because the contract violated the provisions of the Wisconsin statute with respect to the registration of architects. The section of the statute in question was as follows: “No person doing business in this state shall use the term ‘architect’ as a part of his business name or title or in any way represent himself to be an architect, without a certificate of registration, as provided in this section.”

The Trial Court sustained the defendant’s contention in this position and the plaintiffs appealed. The Supreme Court said: “This statute clearly prohibits any person doing business in this state from using the term ‘architect’ as a part of his business name or title or in any way representing himself

to be an architect without a certificate of registration as provided in that section. It does not prohibit the performance of architectural services by one not registered as an architect. . .

“The defendant, however, contends that, since the contract related to the performance of purely architectural services, the plaintiffs impliedly represented themselves to be architects, and thereby violated the following language in section 101.31. (1), to wit: ‘Or in any way represent himself to be an architect.’ This contention we do not consider sound. . .

“If the statute prohibited the performance of architectural services by one not licensed as an architect, the complaint would no doubt be subject to demurrer. Since the statute does not prohibit the performance of architectural services by one not a licensed architect, it therefore does not prevent recovery for such services. In the complaint herein nothing is found that suggests that the plaintiffs used the term ‘architect’ as a part of their business name or title or in any way represented themselves to be architects, unless the mere agreement to perform the architectural services may amount to such a representation. . . We must hold that the mere agreement to perform architectural services cannot in and of itself amount to a representation that one is an architect.

“In this case it further appears that the plaintiffs agreed to furnish services consisting of necessary conferences, preparation, and preliminary studies, working drawings, specifications, large scale and full-sized drawings, the drafting of forms of proposals and contracts, the keeping of accounts, and the general administration and supervision of the work. It thus appears that the plaintiffs did not agree to perform these services themselves. They agreed to ‘furnish’ such services. The word ‘furnish’ has been construed to mean ‘to supply’ or ‘provide’ . . . The word ‘furnish’ has been held not to be synonymous with ‘perform’.”

The latter part of the opinion quoted indicates quite clearly that under such as the Wisconsin statute, the Court will differentiate between the *performance* of architectural services by one who is not an architect and an undertaking by such a person to *provide* or *furnish* or *supply* architectural

services through others who are duly registered architects. The distinction is, I believe, a sound one. On the other hand, if one not an architect is undertaking to furnish architectural services in a state where a statute of this kind exists, he would be in a far safer and stronger position if he were specifically to state in his contract that the services are to be performed by a registered architect whose name is disclosed. Thus it would be clear beyond question that the contract contemplates merely the providing of architectural services through others and does not contemplate in any way the performance of architectural services or the practice of architecture by the maker of the contract.

The registration laws of the states differ, of course, in greater or less extent in their phraseology. No general rule can be laid down, therefore, which will be applicable in all or in any substantial proportion of the states. Each case will be decided upon its own merits and in accordance with the provisions of the particular state statute which may be applicable. In New York, for example, the registration law, subject to certain exceptions which are not generally applicable, provides that: "In order to safeguard life, health and property, no person shall practice architecture in this state, or use the title 'architect,' or any title, sign, card or device to indicate that such person is practicing architecture or is an architect, unless such persons shall have secured from the Regents a license as architect."

It will be noted that the New York provision differs from the Wisconsin provision in that the New York statute prohibits a person from "practicing" architecture without being registered, whereas the Wisconsin law prohibits him from representing himself to be an architect. Under the New York statute, therefore, if a person is actually performing services which are architectural in their character and is therefore practicing architecture, he will be subject to the requirements of the statute, irrespective of whether or not he is thereby directly or impliedly representing himself to be an architect.

Even under the New York statute, however, it would seem possible for one not an architect to enter into a contract to furnish, through another who is a registered architect, architectural services without it being held that the mere agreement so to furnish these services is tantamount to the practice of architecture.

Obviously, the conservative and safe course wherever possible is to secure the proper architectural registration and thus place the person securing it in a position where he can perform or agree to furnish or provide architectural services as he may wish, without any danger of transgressing the statutory requirements of the state in which he practices or in which the services are performed.

It is interesting to note, also, that the New York law places the statute on the grounds of safeguarding life, health and property. In this connection it

is very similar to the Tennessee law which we discussed in September and in the construction of which the consideration of the public safety and the public health were of fundamental importance.

THE cases which we have discussed with respect to the registration of architects have arisen under state statutes. It has been suggested that there is no reason why somewhat similar license requirements might not be promulgated by municipalities. As a matter of fact, a case arose in Grand Rapids, Michigan, some years ago generally similar to the Wisconsin case to which I refer, except that the matter came up under a Municipal ordinance. In that case the plaintiff brought suit to recover the contract price for his services in preparing plans and specifications. A city ordinance then provided that: "Any person doing business as an architect in the city of Grand Rapids shall take out an annual license, and pay therefor an annual fee of five dollars, and shall furnish to the city of Grand Rapids a bond in the penal sum of one thousand dollars," and that "... any person who shall be engaged in the planning or supervision of the erection, enlargement or alteration of buildings for others and to be constructed by other persons than himself, shall be regarded as an architect within the provisions of this ordinance, and shall be held to comply to the same."

The plaintiff in this case was a builder and contractor. The architect who actually prepared the plans and specifications was in the plaintiff's employ; and neither architect nor plaintiff had secured a license. It developed that the plaintiff told the defendant he—the plaintiff—was not an architect, but would employ an architect to prepare the plans and specifications. Supervision of the work, however, was to be done by the plaintiff himself. The Court held that under the wording of the ordinance the plaintiff should be regarded as an architect; that he would accordingly be subject to the provisions of the ordinance with regard to the securing of a license; and that, inasmuch as he had not secured a license, he could not recover.

THE purpose and intent of architectural registration laws are clearly in the interests both of the architectural profession and of the public. Moreover, penalties provided in many of these laws are comparatively severe. Where any possible question of the applicability of a registration statute is involved, any person seeking to perform and provide services of an architectural character will do well to seek proper advice, to comply with the requirements of the statute and thus to avoid the danger of being deprived of compensation for services performed and of incurring legal penalties in addition. While in some cases the statutes have been construed rather strictly, I believe that on the whole the tendency of the courts will be to uphold them as salutary and reasonable and to enforce them in the public interest.



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CONTEMPORA, INC.
F. S. LINCOLN, PHOTO

Modern Interior Lighting

PART ONE

AMERICAN ARCHITECT REFERENCE DATA

Number 14, November 1934

Tradition of the Flame



GALLOWAY

BEFORE the advent of the incandescent lamp all artificial light sources employed flames. They had to be supported away from walls, ceilings and hangings. They had to burn in an upright position. They required a supply of fresh air for combustion. They had to remain within reach to be lighted and extinguished. Many were so dim they could tolerate no shades. All were relatively expensive for the amount of light they gave.

Modern light sources have none of these limitations. They can be placed anywhere, in any position. They can be totally enclosed, hidden out of sight and reach, and remotely controlled. Their brightness is usually so great they demand shading or diffusion. They are so cheap and efficient it is economically feasible to produce any desired effect and almost any amount of illumination. They can be controlled to a degree never possible with flames.

But the tradition of the flame has long retarded lighting progress. Until very recently designers have adhered to the candlestick and the oil lamp in the creation of electric light fixtures. They have placed them on tables, stuck them out from walls and hung them from ceilings without thought of the essential differences between flames and incandescent lamps.

Yet these same designers long ago accepted central heating and air conditioning in place of the log-fire of the Tudors. They freely use elevators despite the beauty and grace of the circular staircase so perfectly developed at Blois. They have used steel rather than adhere to the limitations of wood and masonry. Why should they not use the advances made by modern lighting as logically and as freely?

Only within the last few years have the fetters of the past been sundered from their hold on lighting. Architects and designers have discovered new ways to use modern light sources. They are beginning to light the things to be seen instead of letting the light source command first attention. They are literally "designing in light"; making light compose and organize their interior compositions rather than unbalance them as often has occurred in the past.

The tradition of the flame will doubtless always remain, just as the fireplace, the stairway and good old-fashioned masonry will never be lost. But traditional lighting fixtures will be used decoratively to complement controlled and efficient lighting, as the fireplace, whether used or not, survives with central heating.

Modern Interior Lighting

PART ONE

AMERICAN ARCHITECT REFERENCE DATA

No. 14, November, 1934

A DECADE ago practically all interior lighting by electricity used *fixtures* of either direct, semi-indirect or totally indirect type. Today these three kinds of light sources have been supplemented by panel and cove lighting, column, pilaster and beam lights, luminous light boxes, niches and coffers, spotlights and "down" lights. The ordinary incandescent lamp has found new forms and greater adaptability, and three types of gas-filled tubular light sources have entered the field bringing color as an added tool for those who would "design in light."

These advances have accompanied a wholly new trend in lighting with new and better concepts and standards of interior artificial illumination. They enable the architect to provide light according to mood as well as need. They free him utterly from the past domination of the light fixture as a major element in his interior designs: now he can subordinate the light source to the things to be seen.

It is the architect's opportunity—and in truth, his

obligation—to design building interiors for nighttime effect as well as day. The amateur selection of light sources, brought about by leaving their choice largely to the client as a last minute decision, has ruined too many good projects to permit its continuance. Light and shade have always been an essential part of an architectural composition; why should the daytime aspect be spoiled at night by inept, if not actually bad, artificial lighting?

Moreover, the architect's relation to lighting is further established when it is fully appreciated that both initial cost and operating cost of proper lighting are directly related to the color, texture and surface finish employed on walls, ceilings, floors and even the furnishings of any room. If *efficiency* is the primary objective in lighting design the choice of surface treatments is relatively limited. If *appearance*, including styling or decorative treatment, is the first consideration, the choice of light sources and their disposition is largely governed by the selected colors, textures and contrasts to be illuminated.

MODERN LIGHTING STANDARDS

GOOD lighting, in conformity with the modern concept, should comply with these six standards:

(1)—General lighting should effectively illuminate all objects and areas to be seen with due regard to their relative importance in the interior composition. This implies a general level of illumination adequate for eye comfort throughout the room; elimination of dark shadows and sharp contrasts while preserving soft shadows for roundness and relief, and lighting emphasis on those parts which should command first attention.

(2)—Light sources should be subordinated in visual importance to the things they are intended to illuminate, except in rare instances where the light source itself is wanted as the dominant decorative element. Unless so effectively concealed or counter-lighted that they are not apparent, light sources have extremely high attention value and readily dominate

the scheme when in use. If visible they should usually be so disposed as to attract the eye to the major features of the room rather than divert attention to themselves.

(3)—Glare must be completely eliminated. Glare is the result of intense brightness in concentrated areas within the direct line of vision. It may be produced by excessive brightness of visible lights, by reflections of bright lights from polished or only slightly diffusing surfaces, and occasionally by extreme contrasts of light and shade. To assure its complete elimination it is usually necessary to employ means of diffusing light at its source or to use finishing materials throughout the room that diffuse or absorb rather than reflect light sharply.

(4)—The level of illumination should be adequate for the type of eye-work required in the room. Local lighting may supplement general lighting to provide



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Left: "Eye operation" at the Ophthalmology Institute, Columbia Presbyterian Medical Center; James Gamble Rogers, Architect. (Photo copyrighted by F. S. Lincoln). Lighting from recessed light boxes with sloping prismatic control lenses. Above: Ceiling illuminated by vertical panels in reception room in offices of Johns-Manville. Shreve, Lamb & Harmon, Architects

adequate illumination of work at machines, desks, reading tables and other fixed points, but this high level local lighting should always be accompanied by enough general illumination to minimize contrasts and eye strain.

It may be noted here that there can be no such condition as over-illumination from artificial sources provided there is no glare. Outdoor daylight levels run up to 10,000 units; indoor natural lighting to several hundred. Rarely does artificial lighting today exceed 20 units, though the tendency is upward and for some purposes may reach 100 or more units.

(5)—General illumination should be related to or controlled to suit the occupant's mood. There are important psychological reactions to light. Worship, introspection, contemplation and physical relaxation are aided by relatively low lighting levels.

Gaiety, keen thinking and great mental and physical activity are favored by high levels. In theatres, houses, and some types of restaurants it is particularly important to control lighting according to mood; in stores and shops and in some institutional buildings it is necessary to employ the amount of light that will produce the most favorable psychological reaction; in offices, factories, schools and shops where work is done, it is essential to select illumination levels that will eliminate eye-strain.

(6)—Appearance of light sources should be carefully related to the style, decorative treatment and general composition of the room. In style, shape and finish visible fixtures or luminaires, or the means employed to conceal hidden sources, should harmonize, both lighted and unlighted, with the architectural character of the room.



DEFINITIONS OF TERMS RELATING TO ILLUMINATION

Absorption—The loss which results when light strikes any object or traverses any medium. The amount of light absorbed expressed as a percentage of the total amount striking the object or medium, is known as the absorption factor.

Brightness—A quantitative term used to define the luminous intensity of a surface in relation to its projected area as viewed from a given point. It refers to a light source rather than to a lighted object. It is independent of distance. It is measured in lamberts, foot lamberts, candlepower per square inch, lux and other terms of importance to the technician.

Brightness Ratio—The ratio of one bright surface to another. In general, it can be said that the brightness ratio of any two surfaces within the same field should not exceed 100 to 1 for comfortable vision.

Candle—The word refers to the International Candle, which is the unit of luminous intensity. Candlepower is luminous intensity expressed in candles.

Coefficient of Reflection—The ratio of the total light reflected by a surface to the total light falling upon it, expressed as a percentage. (See Absorption)

Coefficient of Transmission—The ratio of the light transmitted by translucent and transparent objects to the total light falling upon them, expressed as a percentage.

Coefficient of Utilization—The ratio of the useful light (upon the working plane) in a room to the total light emitted by the lamps in that room, expressed as a percentage.

Louver or Spill Shield—A shield placed in the path of light to eliminate a part which is not desired.

Lumen—The unit of luminous flux: the amount of light (1) emitted over a given solid angle around a source or (2) received on a given area. It differs from the candle or foot-candle in that it takes account of the extent of space or area over which the light is distributed. For a given illumination the flux or amount of light (lumens) varies directly with the area over which this illumination is distributed. With reference to light received on a given surface, one lumen equals one foot-candle distributed over one square foot. $\text{Lumens} = \text{Average foot-candles} \times \text{sq. feet of area}$. Conversely, $\text{Foot-candle} = \text{lumens per square foot}$.

Luminaire—A lighting fixture or complete unit; officially adopted by the Illuminating Engineering Society to denote the combination of light source with its direct appurtenances, such as globe, reflector, refractor, housing and support.

Reflection—The light flux striking an object which is turned

back (i. e., is neither transmitted nor absorbed). The percentage of incident light reflected by an object is called its reflection factor and is used as a criterion of the reflectivity of that particular object. The degree to which an object receiving light upon its surface can reflect it is called its reflectivity.

Reflector—Any object which to a marked degree possesses the property of reflecting light; specifically a device for redirecting light by reflection.

Refractor—A device (generally of glass) designed to control the direction of light emergent rays.

Room Index—A constant used in lighting calculations which takes into account the proportions of the room in conjunction with the height of lamps.

Transmission—The passage of light through an object or medium. The ratio of transmitted light to incident light is known as Transmission Factor of an object, or of a material of specified thickness.

Working Plane—In the design of lighting installations for use in factories, mills, and other work places, a plane in which the work is presumed to be done. It is ordinarily assumed to be about 30 inches above the floor.

Diffusion—The scattering of light rays so that they travel in different cross directions rather than in parallel or radiating lines. Too much diffusion makes rounded surfaces and relief appear flat. Such an effect is referred to as "Flat Lighting."

Distribution of Light—The manner in which a light source or lighting unit emits its flux in various directions. The characteristics of light distribution are commonly recorded in the Candlepower Distribution Curve.

Effective Lumens—The light, measured in lumens, which is useful in providing the desired illumination. It is commonly taken as being the product of the area illuminated and the level of illumination. Thus, an area of 1,000 square feet illuminated to 5 foot-candles would require 5,000 effective lumens.

Flux—A term commonly used to describe the quantity of light given out by an illuminant measured in terms of visual sensation. Its unit of measure is the Lumen (q.v.)

Foot-candle—The unit of illumination defined as the illumination at a point one foot from a source emitting one candlepower in the direction of the surface. It is the illumination received when one lumen of light falls on one square foot of area.

Lens Plate, also known as Controlens—A prismatic refracting plate placed in front of a lamp to gather and bend the light rays in desired directions

Apartment of Katherine Brush, designed by Joseph Urban Associates. Recessed bookcase niches lighted by soffit panels. Ceiling fixtures consist of a series of metal light troughs diffusing light across ceiling and throughout room by diffuse and specular reflection. Photo: F. S. Lincoln

LIGHT SOURCES AND LIGHTING MATERIALS

THE tools which the designer uses to produce lighting effects include incandescent lamps and gaseous tube sources, reflectors, diffusing and transmitting glasses, lenses, prisms, and the surfaces of the room itself. Basic data concerning these sources and materials follow:

Incandescent Lamps are made in the standard wattages, types and dimensions shown in Table 1 and in other special styles not shown. Bulbs may be

"clear," "inside frosted," "clear colored" and "diffuse colored." Inside frosted finish is standard in the range of 15 to 100 watts, and readily obtainable in larger sizes, combining the advantages of some diffusion with minimum absorption of light. Clear bulbs never should be used exposed; in fact, even frosted lamps are too bright for comfort and it may well be said that in general all lamps should always be shaded or shielded from direct vision.

Wherever possible architects should design light sources which will permit the use of standard line incandescent lamps designated as shapes A and PS in Table 1. These are universally available and are sold in such quantities that their prices are lower than any other types. The other bulb shapes listed are in standard production but are not always carried in stock by local dealers and are more costly.

Some new special types of importance in lighting of building interiors are: (1) Three-intensity lamps having two filaments of different wattages which may be lighted singly or together by means of three circuits and a special three-contact receptacle. For example, a bulb having a 200-watt and a 300-watt filament may operate at 200, 300 or 500 watts. These lamps are useful in giving a considerable range of lighting intensities with the minimum number of fixtures or outlets. (2) Lumiline lamps, which are tubular lamps requiring support at each end in special sockets. By their use practically continuous lines of light may be installed in narrow spaces. They are made in several colors including white, straw, orange, emerald green, moonlight blue, rose and surprise pink, which may be used exposed.

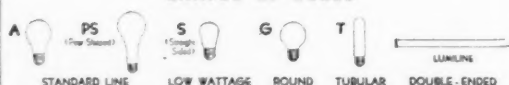
Gaseous Tube Light Sources are essentially arc lamps. They require some auxiliary device, such as a transformer or reactor, for their operation. Various types of gases used within these tubes produce light of different colors. There are three basic types: High voltage discharge lamps (commonly but often erroneously known as neon tubes), hot cathode gaseous conductor lamps and mercury vapor lamps.

High voltage discharge lamps employ glass tubes one-third to one-half inch in diameter and in any length desired up to voltage limits permitted by local rulings. The maximum length is generally 50 ft. which requires 15,000 volts for its operation. The transformers serving such tubes range in size from 8"x5"x6" to 14"x10"x6" according to the length and voltage of the tube served. These transformers should be as near as possible to the tube terminals to minimize the necessity of excessive high voltage wiring which requires specially insulated conductors. Where radio interference is a consideration—a con-

TABLE 1. DIMENSIONS OF MAZDA LAMPS FOR SERVICE ON STANDARD LIGHTING VOLTAGES—(110-115-120)

Watts	Standard Line "A" Bulbs		Base
	Diameter	Over-All Length	
15	2 1/8	3 5/8	Med.
25	2 3/8	3 15/16	"
40	2 3/8	4 1/4	"
50	2 5/8	4 15/16	"
60	2 5/8	4 15/16	"
75	2 5/8	5 5/16	"
100	2 7/8	6 1/16	"
Standard Line "PS" (Pear Shaped) Bulbs			
150	3 3/8	6 15/16	Med.
200	3 3/4	8 1/8	"
300	4 3/8	9 7/16	Mogul
500	5	9 13/16	"
750	6 1/2	13 3/8	"
1000	6 1/2	13 3/8	"
1500	6 1/2	13 3/8	"
Tubular "T" Bulbs			
25	0 13/16	5 1/2	Inter.
25	1 1/4	5 3/8	Med.
40	1	11 7/8	"
75	1 1/4	11 7/8	"
100	1 1/2	34	"
150	1 1/4	11 7/8	"
Double Ended "Lumiline" Bulbs			
40	1	12	Special
30	1	18	"
60	1	18	"
Low Wattage "S" Bulbs			
3	0 3/4	1 7/8	Cand'ra
6	0 3/4	1 7/8	"
6	1 3/8	2 5/16	Inter.
6	1 3/4	3 1/2	Med.
10	1 3/8	2 5/16	Inter.
10	1 3/4	3 1/2	Med.
Round "G" Bulbs			
25	2 5/16	3 9/16	Med.
25	3 3/8	4 7/16	"
40	3 3/8	4 7/16	"

SHAPES OF BULBS



BASES: Cand'ra; candleabra; Inter. intermediate; Med. medium; Mogul; mogul.

Incandescent lamp bulbs are designated by number and letter, the number indicates the diameter in eighths of an inch; the letter indicates the shape as above. Thus, A-19 designates a standard line lamp having a diameter of nineteen eighths of an inch, or 2 3/8 inches.

dition that occurs in the majority of installations—a suitable condenser must be shunted across the transformer terminals.

The light emitted by these high voltage discharge lamps is not of high intensity, permitting the tubes to be used exposed without serious eye strain. The color of light produced depends upon the gas used, such as neon, argon, mercury, helium, etc. Their decorative possibilities for interior lighting are extensive, though they are most familiar because of their common use in illuminated signs.

Hot cathode gaseous conductor lamps represent a new type for use on standard voltages. They produce a considerable volume of light and must therefore be concealed or shielded from direct vision. They may be disposed in much the same manner as tubular or lumiline incandescent lamps. As sources of brilliant colors of high intensity, hot cathode tubes are far more efficient than either incandescent lamps with colored bulbs or colored shields, or the high voltage discharge tubes.

These hot cathode gaseous conductor lamps have a tubing one inch in diameter and a length of 27 to 50 in. per unit. The tube requires a space 4 in. over-all to accommodate the terminals which are larger than the tube itself. One transformer with control apparatus, measuring either 6"x8"x22" or 10"x10"x10", is required for each lamp. Standard insulated wire may be used from the control to the lamp and the control can be placed in the fixture itself close to the tube or remote from the lamp providing the run of wire does not exceed 20 ft. measured on one side of the circuit.

Mercury Vapor Lamps of both high and low pressure types produce light rich at the blue-green end of the spectrum whereas incandescent lamps produce light inherently rich at the red and yellow end. By combining incandescent lamps with mercury lamps (preferably in concealed light sources) light of very satisfactory white appearance is secured at high efficiency.

Reflectors are used to control the distribution of light from lamp or tube sources by shielding the light source from certain directions and by reflecting the light thus shielded in desired directions. Reflector surfaces may be polished and reflect like mirrors, in which case the shape of the reflector accurately controls its distribution characteristics, or the reflector surface may be of diffusing type, in which event the reflector shape only partially controls distribution.

Materials commonly used for polished or specular reflectors are silver on glass, chromium, aluminum, rhodium and prismatic glass; for diffusing reflectors, oxidized or etched aluminum, white paint, vitreous porcelain enamel, aluminum paint, and dense white glasses. White plaster is an excellent diffusing reflector but is too difficult to keep free of dust for practical use as a direct reflecting surface behind lamps. The reflection factors of typical materials are shown in Table 2. The characteristics of reflectors of various basic types are shown in Fig. 1.

Lenses and Prisms are important tools in controlling the distribution of light. Lenses are employed with reflectors to form light beams of accurately regulated dimensions. They are used principally on spotlights, down-lights and other concealed sources where the light opening must be very small but the amount of illumination considerable. Prisms, such as the Fresnel glass used in lighthouses, and various other types of prismatic glasses are also used with reflectors to bend light beams. See Fig. 1.

Diffusing Materials, other than those used as reflectors, will be found in Part II. Of all the materials used to transmit light in its architectural applications, glass is by far the most important. The forms commonly used are:

TABLE 2. REFLECTION FACTORS
FOR TYPICAL MATERIALS AFFECTING LIGHTING
(Based on color characteristics of incandescent lamps)

Material	Reflection (per cent)
INTERIOR MASONRY MATERIALS	
Plaster—white	90-95
Terra Cotta	
White and cream—smooth and matte	60-80
Caen Stone	55-65
Limestone	35-58
Marble	
One side polished	30-71
Impregnated	27-54
Alabaster	
Veined	49-67
Colored	27-29
Grey Cement—natural	20-30
Granite	20-25
Red Brick—natural	10-15
INTERIOR WOOD FINISHES	
Light Oak	25-35
Dark Oak	10-15
Mahogany	6-12
Walnut	5-10
METALLIC REFLECTORS	
Vitreous Porcelain Enamel on Steel	
Matte White	60-83
Glazed White	65-77
Matte-Finished Metal	
Oxidized or etched aluminum	70-89
Aluminum Paint	60-65
Polished Metal	
Silver	90-92
Chromium	63-66
Aluminum	62
Monel metal	49-55
Chromium-nickel (stainless) steel	55
PAINTED SURFACES	
Flat White	75-85
Gloss White	75-80
Cream	65-75
Bright yellow	60-70
Buff	52-56
Light grey	35-50
Dark Grey	20-25
Very light blue	45-55
Spanish or bright blue	5-10
Apple or pale green	40-55
Willow or medium green	15-25
Olive green	12-15
Spanish or bright orange	35-40
Cardinal or dark red	20-25
Medium brown	25-35
Dark brown	8-10



Prismatic lenses in ceiling light boxes used for side-wall lighting in apartment of H. H. Porter; Rosario Candela, Architect. Note that unit placed over door for symmetrical spacing projects light to the right as well as toward wall

Solid Opal Glass—A homogeneous white glass, usually providing a high degree of diffusion.

Flashed or Cased Opal Glass—Crystal glass with a thin coating of highly diffusing opal. The clear glass may be in color. An amber tinted glass gives a warm, soft light; a blue glass, a cold white light; and a pink glass produces a tint flattering to the complexion.

Opalescent Glass—A partially devitrified glass with crystalline material more or less uniformly scattered throughout. Tinges of color are usually visible and variegated effects are often present.

Alabaster Glass—Semi-diffusing glass usually of a gray waxy appearance, with diffusing material held in colloidal suspension.

Configured or Obscure Glass—Crystal glass with its surface embossed in patterns or roughened, for decoration and scattering of light.

Depolished Glass—Either sandblasted, acid-etched, or ground; sometimes in patterns.

Rods—Solid, clear or depolished, refracting light predominantly transversely somewhat as ribbed or fluted glass.

Tubes—Clear, or depolished inside or outside, thus providing several steps from flashing high lights to silvery sheen.

Colored Glass—Having coloring matter within the glass.

Ceramic Coated Glass—Glass with a fired coating of white or colored, more or less diffusing, material.

Cathedral Glass—A very wide classification covering glasses sometimes obscured in no definite pattern, frequently tinted, variegated, or opalescent. A large group derives its texture from the presence of bubbles, "seeds," "strings," crackles, etc.

Moulded Glass—Sculptured grilles, plaques, etc. in pressed glass, often with diffusing finishes and colors. Highly valuable for luminous detail. This class also embraces several types of structural glass.

Carved Glass—Any type of glass sandblasted in patterns of variable depth. May be tinted or opaquéd.

Structural Glass—Pressed-glass building blocks, tile, etc., used in place of opaque materials. Blocks are made solid, hollow, and evacuated, embossed for decoration and scattering of light. Available in crystal or diffusing glass.

The most important of these glasses for light boxes, panels, diffusing windows and the like are flashed opal glasses; for the thin coating of opal on crystal glass produces excellent diffusion and uniform appearance with a much higher transmission of light than is possible with solid opals or frosted crystal glasses.

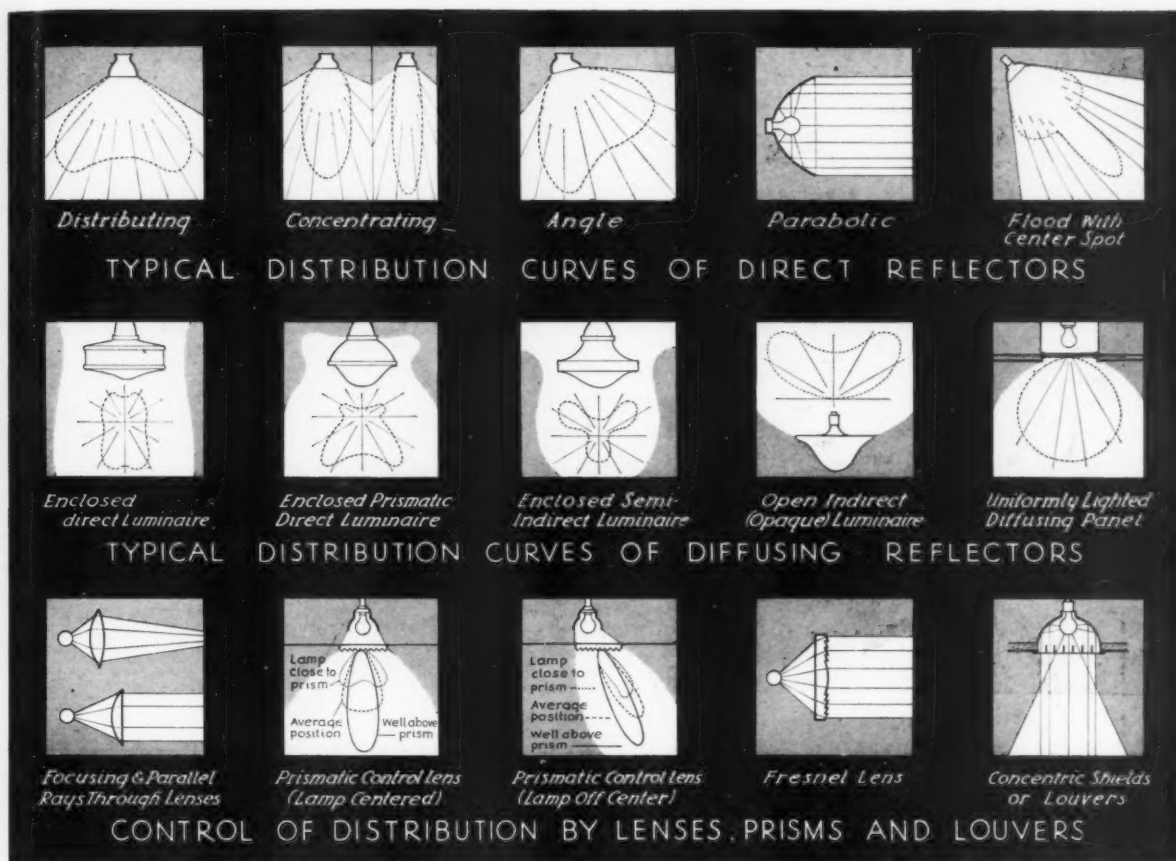


Fig. 1—Methods of controlling the distribution of light by reflection, refraction and diffusion

The transmission of many ground and roughened glasses is increased when the rough side of the glass is toward the light source. This is fortunate, because maintenance reasons generally require the rough surface to be turned in.

The amount of light reflected by glass affects its daytime appearance. The higher the reflection factor the whiter the surface will appear in daylight. For example, if a definitely white surface is desired, solid opal glass should be used. In order from white to gray, the other materials are flashed opal, opalescent, obscure and ground glasses.

Surface Materials used on walls, ceilings, furnishings and even floors, markedly affect the selection and use of light sources. If the light source itself is diffused through such materials as flashed opal glass, it is possible to tolerate polished room surfaces without creating a troublesome glare, but if the light source is unshielded or very bright, it will glare from polished or reflecting surfaces; hence unshielded sources should only be used where they will project toward diffusing surfaces. Failure to appreciate this relation between the brilliance or glare-producing qualities of the light source and the characteristics

of room surfaces is a common cause of unpleasant glare and bad lighting.

Another aspect of surface materials is that their absorption of light (which varies with the material, its texture and its color) affects the quantity of light which will be delivered by redirection. See Table 2.

From this table and from calculation data to follow in Part II it will become evident that if efficient lighting is wanted at minimum cost, the ceilings should be white, the walls and all other available reflecting and diffusing surfaces, light tints of buff, cream, yellow or green. This is common practice in industrial plants, offices, stores, etc. But the cost of electric lighting is so low, that efficiency may be subordinated to appearance in the great majority of installations.

It should also be noted that the type of light source governs the importance of surface absorption of light. The finish of walls and ceilings is least important when opaque direct lighting reflectors (industrial types) or down-lights are used; more pronounced with translucent glass luminaires and panels, and a major consideration with semi-indirect and indirect luminaires, cove lighting and other sources reflecting most of their flux from such surfaces.



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OPPOSITE PAGE. Upper left: Luminous box cornice in Bullock's Wilshire store, Los Angeles, for general illumination and to accentuate relief of side walls. **Upper right:** Beauty shop in same store showing lighting by vertical as well as horizontal surfaces. John Parkinson & Donald Parkinson, Architects. Photos, Associated Photographers, Inc. **Below:** Lounge, Ford Building, Century of Progress; Albert Kahn, Architect. Flush ceiling panels and illuminated side-wall panel simulating window. Photo, Hedrich-Blessing Studio. **THIS PAGE. Upper left:** Hollywood apartment with soffit lights over lounge and lights incorporated in ceiling cornice of unusual form to illuminate side walls. Herbert Ketelle & Joseph Babolnay, designers. Photo, Associated Photographers, Inc. **Upper right:** Reception office L. C. Chase & Company. Fixtures used for architectural emphasis especially designed by Eleanor Le Maire. Photo, F. S. Lincoln. **Below:** Detail of Sardi's Restaurant; Rudolph Schindler, Architect. Low placed cove lighting troughs project against a curved side wall designed for light reflection. Caricatures are illuminated from behind. Photo, Associated Photographers, Inc.





OPPOSITE PAGE. Upper left: Luminous box cornice in Bullock's Wilshire store, Los Angeles, for general illumination and to accentuate relief of side walls. Upper right: Beauty shop in same store showing lighting by vertical as well as horizontal surfaces. John Parkinson & Donald Parkinson, Architects. Photos, Associated Photographers, Inc. Below: Lounge, Ford Building, Century of Progress; Albert Kahn, Architect. Flush ceiling panels and illuminated side-wall panel simulating window. Photo, Hedrich-Blessing Studio. **THIS PAGE.** Upper left: Hollywood apartment with soffit lights over lounge and lights incorporated in ceiling cornice of unusual form to illuminate side walls. Herbert Ketelle & Joseph Babolnav, designers. Photo, Associated Photographers, Inc. Upper right: Reception office L. C. Chase & Company. Fixtures used for architectural emphasis especially designed by Eleanor Le Maire. Photo, F. S. Lincoln. Below: Detail of Sardi's Restaurant; Rudolph Schindler, Architect. Low placed cove lighting troughs project against a curved side wall designed for light reflection. Caricatures are illuminated from behind. Photo, Associated Photographers, Inc.

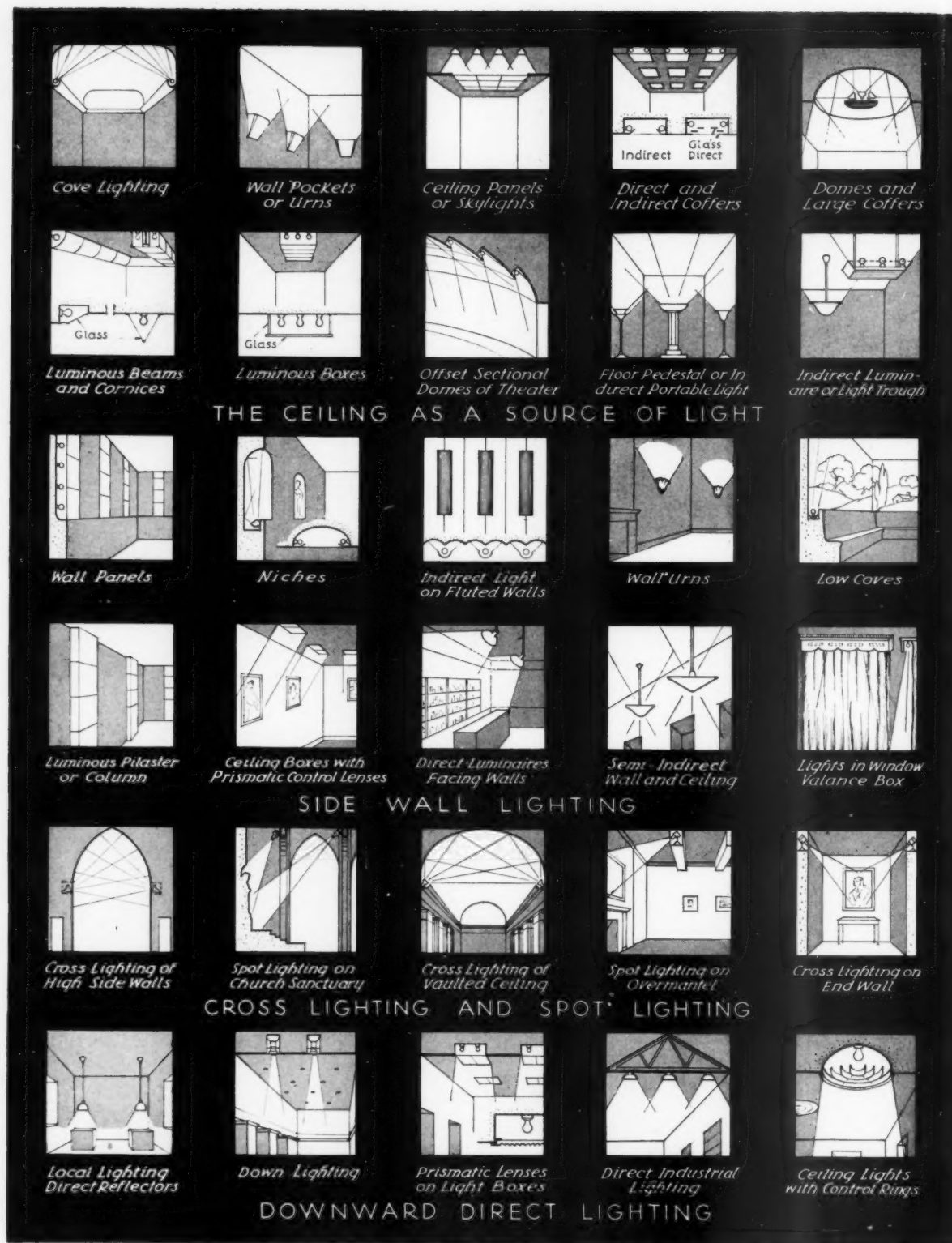


Fig. 2—Ways of using light

WAYS OF USING LIGHT

VARIOUS ways of using light for seeing (as distinguished from purely decorative applications) are diagrammatically presented in Fig. 2 as well as in many of the accompanying illustrations. The characteristics and limitations of the principal methods may be summarized as follows:

Ceiling Reflection, in which light sources are directed upon a white or light colored ceiling and thence re-directed and diffused throughout the room, produces a soft general lighting of excellent quality. It is generally most effective when side walls are also of rather light tone; otherwise the ceiling may appear excessively bright and thus distract the eye by its contrast with dark walls. It is also very useful as a source of moderate-level general lighting, in the order of 3 to 6 foot-candles, when supplemented by local lighting of special areas or work surfaces at higher intensities. Ceilings may thus be lighted by coves, indirect luminaires of trough or bowl shape suspended from the ceiling, pylons or floor stands with concealed reflectors above the eye level, and wall pockets, brackets or strips like short sections of coves mounted on side walls or columns. With indirect lighting the luminaires themselves may be opaque or slightly luminous by transmitted light. See Fig. 2, for representative methods of using the ceiling as a light source.

Direct Ceiling Sources, including ceiling beams, illuminated coffers and domes, luminous false beams and cornice mouldings, and luminous glass boxes, differ from indirect ceiling reflection in that they introduce areas of relatively great brightness in contrast with the remainder of the ceiling and hence have considerable attention value. They usually have somewhat the same effect of attracting the eye upwards as an indirectly lighted ceiling that contrasts sharply with dark walls. Where this degree of prominence of the light source is desired or acceptable and where the units are arranged in a pleasing and logical pattern that gives good coverage of the room, they may provide general lighting of moderate to fairly high levels. The disposition of visible light sources on the ceiling or suspended therefrom is usually superior to side-wall lighting for the reason that it is less distressing to have them well above the eye level than in direct line of vision.

One form of direct ceiling lighting places the lamps themselves in boxes or reflectors above the ceiling level and sends controlled beams down through relatively small openings which do not greatly distract the eye. One form, called a "down light," employs an elliptical reflector equipped with lenses concealed above the ceiling level with only small apertures 4 in. or less in diameter appearing on the ceiling surface. Another type employs an open reflector having louvers or shields that cut off direct view of the lamp from all normal angles of

vision, and a third uses reflectors and prismatic refracting plates or "control lenses." The light is projected downward in all cases. As a class these sources are particularly useful where the ceiling itself is unimportant to the lighting composition and where the floor level must be well lighted. Such schemes give better light control than any other commonly used method.

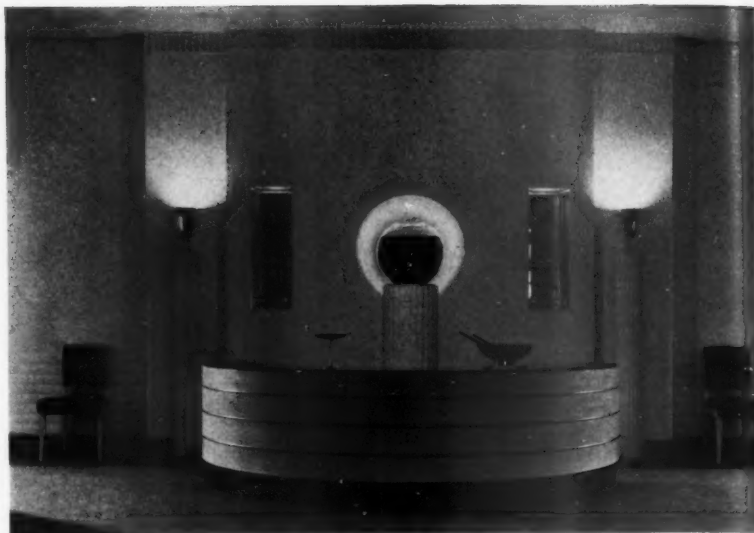
Indirect Side-wall Lighting, if developed uniformly over large areas and at moderate brightness levels, has substantially the same value as indirect ceiling illumination but with the important exception that it tends to form silhouettes of persons or objects viewed toward the wall. Indirect side-wall light sources are shown in Fig. 2. They include: low coves concealed behind built-in furniture; coves incorporated in window head valance boxes or above bookcases, show cases and similar built-in units; indirect lighting produced by projecting opaque light troughs that reflect against the adjacent side wall; and soffit lights in ceilings or beams which, by means of prismatic reflectors, direct most of their light flux on the adjacent side wall.

Direct Side-wall Lighting, using such sources as luminous wall panels, niches, wall urns and side-wall brackets of any type have high attention value because they are in direct line of vision. Recessed sources tend to produce sharp contrast between the lighted sections and the indirectly illuminated areas which surround them. Side-wall lighting is valuable for decorative and architectural purposes and for good illumination of vertical surfaces, such as manikins and dress models in shops and stores, but they do not provide uniform distribution of their light flux on the horizontal plane of the room.

Cross Lighting may be used on walls or on vaulted ceilings as illustrated in Fig. 2. As the name implies, projectors (usually concealed or recessed and shielded from the eye level) cast their light across the room from both sides or from two different angles toward the same area. This method is particularly useful when side walls well above the eye level carry murals, mosaics or other important decorations requiring good illumination from invisible sources. It also serves as a means of correcting spottiness caused by cove lights, wall brackets, etc., by cross lighting the shadowed areas.

Spotlighting is one-way lighting, usually employing projectors with lenses but sometimes with reflectors only, used to give special illumination of a limited area as in theatre practice. A mural, statue, oil painting or other axial feature may thus be made to dominate the lighting composition. The spotlights must be so located as to be out of direct line of vision and to produce no troublesome reflections or glare. Possible locations may usually be found within

Leunge, Ford Building, Century of Progress. W. D. Teague, Designer. Light is here used as a definite part of the architectural composition. Two side-wall urns on the pilasters provide general illumination by reflection from side wall and ceiling. Niches behind counter are lighted by soffit lights. Decorative bowl is centered in a semi-spherical wall niche indirectly lighted around its perimeter. Photo, Hedrich-Blessing Studio



chandeliers of special design, in ceiling beams or coffered or in columns or wall brackets. See Fig. 2.

Ceiling and Side-wall Fixtures and Luminaires are by no means made obsolete by modern lighting standards, though their selection and use is now a matter of intelligent consideration rather than mere habit or precedent. The greatest value of luminaires are their flexibility and economy in securing uniform distribution of light over large areas with the minimum of outlets and lamps.

The modern fixture, however, is not merely an adaptation of an old candle, oil or gas device with incandescent lamps at the ends of metal arms, but rather incorporates in its construction reflectors, refractors and other devices for controlling the distribution of light and limiting visible brightness. It may follow traditional lines and may even have electric candles exposed, but the ingenious designer conceals in the body or structure the light sources which really furnish the illumination.

The use of fixtures and standardized luminaires is too familiar to warrant detailed discussion here. Complete design data can be obtained from manuals and catalogs issued by leading manufacturers of such equipment and of Mazda lamps. Factors governing the selection and proper use of direct, semi-indirect or totally indirect luminaires will be found in Part II of this article. Considerations governing the design or selection of lighting fixtures of period character are clearly indicated in the general presentation of modern standards.

Portable Fixtures, including table and floor lamps, belong strictly in the local lighting classification and are invaluable for stepping up lighting intensities at work centers such as desks, tables and at reading chairs. Suspended direct lighting opaque reflectors

hung low enough so that the reflectors cut off all view of the lamp, have the same function in commercial and industrial applications over machines and work surfaces.

Reliance upon portable lamps for general illumination is rarely good practice though currently popular in residence work. Such use of relatively high intensity areas scattered throughout the room completely distorts the daytime composition, often attracting attention to areas of minor importance and neglecting others that should normally dominate. They leave dark shadows beneath furnishings and cause excessive eye-strain due to the sharp contrasts of light and deep shade.

DECORATIVE LIGHTING

THE foregoing general survey of lighting sources and methods relates only to their functional uses; their decorative or appearance aspects are considered to be a matter easily controlled by the architect. But in addition to functional lighting, modern light sources can be used also for pure decoration in light and shadow, form, line and color. Such ornamental applications are of infinite variety, ranging from simple shadow boxes from which light shines through stencils and colored apertures to cast light patterns upon walls and ceilings to intricately developed coloramas, but these are beyond the scope of this article. Complete data can readily be obtained through manufacturers of lighting equipment and from public utility service departments.

This is the first part of an article prepared by the Technical Editor in consultation with Alvin L. Powell, president of the Illuminating Engineering Society. The second and concluding part, giving design data, dimensions of typical elements and simplified rules of procedure for calculating lighting loads, will appear in the December issue.



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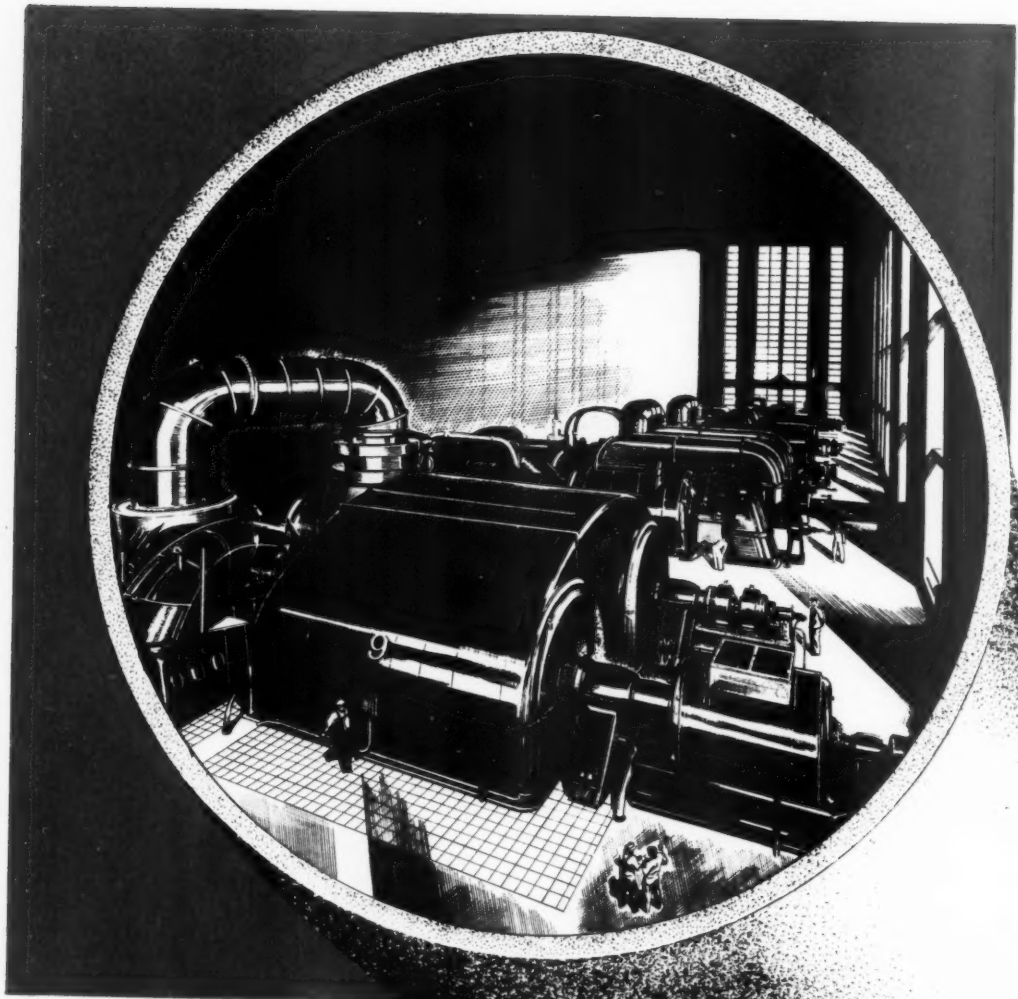
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Dielectric Strength

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Insulation Resistance

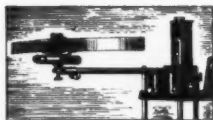
The insulation resistance constant for Laytex is: $K = 54,000$ in the formula:

$$R = K \log_{10} \frac{D}{d}$$

R = insulation resistance in megohms per 1000 feet

D = diameter over Laytex insulation

d = diameter of conductor



Specific Inductive Capacity

The Specific Inductive Capacity of Laytex is 2.5



Moisture Absorption

Moisture absorption of Laytex by change in Specific Inductive Capacity method.

Specific Inductive Capacity one day in water not to exceed 4.0

Increase in Specific Inductive Capacity at the end of first to fourteenth day not to exceed 10.0%

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Physical Properties

Tensile Strength

Laytex has a tensile strength of 5000 lbs. per square inch.

Elongation

The elongation of Laytex, at rupture, is 750 per cent.

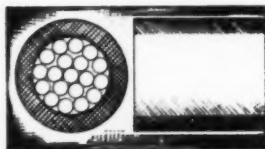
Set

Laytex has a set of 1/4 inch in two inches stretched to 10 inches; release; one minute interval prior to measurement.



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Rebuild America! The Modernization drive under the Federal Housing Act passed by the last Congress is already under-way.

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General Electric sees in this huge movement the opportunity to help restabilize building industries. At the same time inadequate wiring conditions in old buildings throughout the country can be corrected and adequate wiring installed in new buildings. To these ends General Electric is lending its complete support to this program to help architects and builders in the many ways at its disposal.

Since all loans for renovating and new construction will be made through existing banking and commercial loan organizations, it is certain these institutions will permit only the use of quality materials for all FHA work. The architect will be relied upon to know exactly what quality materials to specify. Here General Electric places at your disposal many specific aids — prepared especially for architects — for laying out and systematizing wiring specifications to care for today's electrical requirements.

For further information on how General Electric can help you in laying out specifications for FHA work write to Section CDF-1011, Merchandising Department, General Electric Company, Bridgeport, Connecticut.

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The Readers Have a Word to Say

• LET ARCHITECTS APPLAUD

Editor, AMERICAN ARCHITECT:

I WOULD like to call your attention to the policy adopted by the Portland Cement Association with regard to architects and suggest to you that it receive, through your columns, commendation on behalf of the profession.

This association is very active in promoting the interests of its industry. It carries on very active advertising campaigns among prospective home builders. In doing so, it has adopted the policy of attempting to put prospective clients in touch with architects. It has refused to enter into any form of stock plan selling. While I have no knowledge of the actual number of jobs which it has secured for architects, I do know that it has furnished many of them with valuable leads.

So far as I know, this is the only large trade association to cooperate with the profession. Certainly, the lumber dealers are foremost among those which sell stock plans, neglecting entirely the architect.

I would like to suggest that you devote a little space to this whole matter, in an attempt to secure on the part of all trade associations a policy like that of the Portland Cement Association. In view of the predominance of small houses in the architectural practice of the present and near future, this is a matter which takes on an importance it would not have had a few years ago.—*Lawrence Moore, Architect, New York City.*

See page 94 of the October issue for reference to Johns-Manville Co., also doing much to help architects through radio broadcasting. To such firms should go the support and commendation of all architects.—Ed.

• BUSINESS TANGLE

Editor, AMERICAN ARCHITECT:

COULD you help us out on the following? An association was made among three architects to collaborate on the production of a Government job. C and G is a partnership. B is an individual.

An agreement among them states that all scale and contract drawings are to be made in the office of C and G, and

the full sized details in the office of B. G is to act as "job captain" and be paid at the rate of \$100 per week for actual time spent on the project, on work done in the office of C and G. After all expenses are deducted, the net profits are to be divided equally among C, G and B.

B denies that overhead is an element of cost. C and G are willing for B to charge "overhead" for the production of the full sized details.

The question is: Can overhead be charged as "expenses incident"?

Any information on this subject would be of interest.—*J. T. Gillig, Architect, Lexington, Ky.*

He is Satisfied with his house



He had an Architect



• ADVERTISING THE ARCHITECT

Editor, AMERICAN ARCHITECT:

THE "Build Now" ads which the Stuyvesant building group are publishing interest me greatly. However, I firmly believe that if you are to interest the type of people who do not now retain architects, you must appeal to them in a different way.

For instance, in the sample ad published in AMERICAN ARCHITECT article in July, a very fine house is shown, but a person who lacks architectural appreciation may not like the house, and he therefore says to himself that

This house gets on my Nerves



I'll see an Architect today -



he would rather not have an architect than have a house like that.

I think that you must make the people feel that they are committing a great social fault by not employing an architect. If you can make a woman feel that a poorly designed house affects her standing just as much as unattractive clothes, she would wish to engage an architect.

I am enclosing some sample ads which I believe illustrate the point.—*Royal Barry Wills, Architect, 3 Joy Street, Boston, Mass.*

• APPRECIATION

Editor, AMERICAN ARCHITECT:

THIS chapter appreciates your efforts and congratulates you for the splendid article and program as stated in the July issue of AMERICAN ARCHITECT in reference to national publicity for architects and their services. Appreciation is also extended to the Hearst Publications for their cooperation.

We feel that publicity to the public will accomplish the most toward establishing architects in their place as leaders in the building industry. This chapter has and is now bending every effort possible toward carrying on this work locally through newspaper articles, sketches, informative paid architectural announcements, civic works, exhibitions. *Diego Chapter of The A. I. A., Frank L. Hope, Jr., Secretary.*

WHAT and WHY and WHERE is SEAMLOC



Seamloc on the floors of G. Fox & Co., Hartford, Conn.

WHAT? Seamloc is the new era carpet without a sewn seam to show wear, that cuts in any direction forming its own selvage, needing no binding. It is the economical carpet, because there is 80% less waste in making odd shapes. It is the individual carpet, for any design can be *inlaid* with the marvelous patented process of joining.

WHY? Skyscraper architecture, streamline motor cars and trains were developed to fill a definite modern need, and Seamloc is the logical floor covering for modern homes and buildings. It "dates" old fashioned carpets as surely as a petticoat dates a

woman. It dates the designer who doesn't know about it today, as well.

WHERE? Where service is called for, Seamloc is called on. Hotels, department stores, restaurants, residences, offices, theatres, even railroad coaches, are equipped with it. And where beauty is paramount, Seamloc is preferred. Decorators are designing whole interiors around it. Customers are learning that a durable, economical carpet can be a thing of beauty too. They are learning this from better decorators and architects throughout the country. Are they learning it from *you*?

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RAMESES TO ROCKEFELLER

By Charles Harris Whitaker. Published by Random House, New York, N. Y. Illustrated; indexed; 360 pages; size 6 1/4 x 9 1/2; price \$3.50.

THIS new history of architecture, by the former editor of the Journal of the American Institute of Architects, presents an interpretation as well as a record. Viewing the panorama of architectural history as being, in fact, the story of human existence expressed in the function and form of buildings, the author develops his theme in a manner essentially different from that of the mere "arranger" of facts. Mr. Whitaker envisions architecture as being not so much a "fine art" as a technical and humanitarian problem, and his history keeps this point of view consistently to the fore. The book covers the whole period from the days of the Pyramids to the present time. It includes an analytical discussion of the tendencies and difficulties of the modern era. The preface is a dedicatory letter to the author's friend, Louis Henri Sullivan.

THE HOUSING PROGRAM OF THE CITY OF VIENNA

By Charles O. Hardy and Robert R. Kuczynski. Published by the Brookings Institution, Washington, D. C. Illustrated; indexed; 143 pages; size 5 3/4 x 8 1/4; price \$2.00.

A HISTORY of the Viennese housing experiment under the Social Democratic Party from 1919 to 1933. In view of the wide-spread interest in slum-clearance and rehousing in the United States, this book has the virtue of timeliness. While concerning itself primarily with a description of the Municipal Building Program, a substantial part of this volume is devoted to the housing situation before and just after the war, and to political changes influencing the program.

THE BONDING OF BRICKWORK

By William Frost. Published by The Macmillan Co., 60 Fifth Ave., New York City. Illustrated; 247 pages; size 5 x 7 1/2; price \$1.75.

THIS little volume is written primarily for students, craftsmen and foremen concerned with the various problems of brick masonry. For the architect, however, it presents much practical information on brick patterns and the way they are actually built into a wall. The text is divided into short paragraphs descriptive of various types of brick bonds. The remainder of the book contains over 500 examples of bonding presented as a series of line drawings showing a variety of conditions and classes of brickwork.



The bridge at Ronda, Spain.
From "Rameses to Rockefeller"

INDUSTRIAL DESIGN AND THE FUTURE

By Geoffrey Holme. Published by the Studio Publications, Inc., 381 Fourth Avenue, New York City. Illustrated; 160 pages; size 7 1/2 x 9 15/16; price \$7.50.

DEALING in a fresh way with the problems of industrial design, this volume should prove interesting to those architects who recognize a similarity in design technique between buildings and the objects of everyday use. It is divided into three portions. The first sets forth the author's attitude toward industrial designing problems; the second is a report of questionnaires sent out in an effort to establish the attitude of industrialists, merchandisers and designers toward the subject under discussion. The third consists of many photographs which show the trend of design in a variety of objects ranging from a cold cream jar to an ocean liner.

QUANTITIES IN ARCHITECTURAL BUILDING CONSTRUCTION— Volume I

By F. E. Drury and Graham Doyle. Published by The Macmillan Co., 60 Fifth Ave., New York City. Illustrated; indexed; 247 pages; size 5 3/8 x 7 7/8; price \$2.25.

THE book deals with a detailed process of quantity surveying; and by a great number of tables relating to a variety of trades indicates the processes necessary in estimating the cost of a small six-room house. Since it is written for English building trades, some of the practices indicated may not be directly applicable to American work. The method outlined, however, should be

useful to the more efficient conduct of architectural offices in whatever part of the world.

LIGHTING CALCULATIONS

By H. H. Higbie. Published by John Wiley & Sons, Inc., New York. Indexed; 503 pages; size 9 1/4 x 6 1/4; price \$5.00.

FULFILLING a need that has been increasingly apparent with the development of modern lighting principles and new types of light sources, Professor Higbie has produced a monumental and comprehensive text book that will become at once a standard work on illuminating engineering. It is primarily for the student and engineer but it contains much of value for the architect who desires a sound foundation in the important field of interior lighting. The volume contains many reference tables and working formulas of value to a practical designer; accompanying the book are tracing paper charts and protractors which Professor Higbie has developed for simplifying the calculations of light distribution.

MODERN FURNISHING AND DECORATION

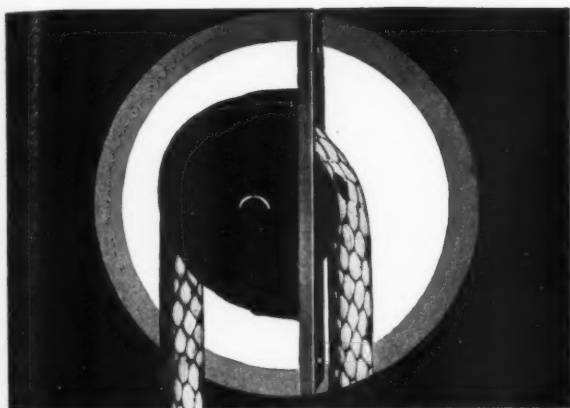
By Derek Patmore. Published by The Studio Publications, Inc., 381 Fourth Avenue, New York City. Illustrated; 98 pages; size 7 1/2 x 10; price \$4.50.

WITH their characteristic care the publishers of this volume have produced a beautifully arranged book. Most of it is devoted to explanations of sixteen full-color plates and thirty-two black and white illustrations that range from general views of modern interiors to a decorative painting by Picasso. A short text outlines the essentials of room arrangement and interior decoration.

THE AUTOBIOGRAPHY OF AN IDEA

By Louis H. Sullivan. Published by W. W. Norton & Co., Inc., New York. 330 pages; size 5 3/4 x 8 1/2; price \$2.00.

REPRINTED by permission of the American Institute of Architects, which published the book originally in 1922, this vigorous account of the emergence of a personality and a pioneer will probably be warmly welcomed by many members of his profession. The story of the life and progressive development of Louis Henri Sullivan, who, as Claude Bragdon says in the foreword to this edition, was "perhaps the first squarely to face the expressional problem of the steel-framed skyscraper, and to deal with it honestly and logically."



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COSTS in *thirty*
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Samson Spot Cord is specified by architects because such specification is definite and positive—Spot Cord is made in one grade only and is identified by the trade mark, the colored spots. Substitution is easily detected and is unnecessary because Samson Spot Cord is available to contractors and builders through Hardware and Supply dealers in every section of the United States.

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Frick Company
WAYNESBORO, PA., U.S.A.
ICE MACHINERY SUPERIOR SINCE 1882

Trends and Topics

(Continued from page 44)



• Fifty thousand pounds of aluminum were used in facing the escalators of Marshall Field & Company's new building in Chicago. The metal is surfaced by a process called Alumilting which is said to give it an extremely hard translucent finish.

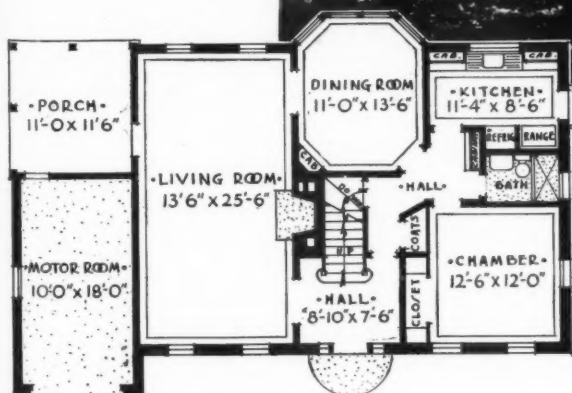
the top down. The wall behind and above the demonstration platform, designed as a decorative sound-mirror, is said to function perfectly. Air-conditioning solves the ventilating problem.

• Moscow will witness the construction of one of the world's most remarkable buildings when the projected Palace of the Soviets gets under way next year. Actually, the building, for which Boris M. Iofan is chief architect, will serve as a pedestal for a three hundred-foot rust-proof metal statue of Lenin, at the same time housing the governmental activities of the Soviet Union. The basic features of the Palace will be two auditoriums, seating 20,000 and 6,000 persons respectively. There will be foyers, promenades, offices and a large library, while above the larger auditorium will be constructed museum rooms and a panorama of the revolution. The total height of the structure will be 1,361 feet. Soviet architects are at present in this country discussing the various technical problems involved.

• New uses of materials create new possibilities for design. In the application of mosaics to the ceilings of the new Department of Justice building, in Washington, a radically different process was followed. The colored particles were placed in the bottoms of moulds furnished with ridges to separate the colors and carry out the design. They were then covered with two inches of concrete, thus becoming an integral part of precast slabs which were subsequently swung from the steel girders of the building. These slabs were used as forms and the concrete for the floor above poured into place without other ceiling forms. Finally a weak muriatic acid bath was given the mosaic surface to reveal the full brilliance of the coloring.



Stratton O. Hammon
Architect
Photograph by
Theodore Webb



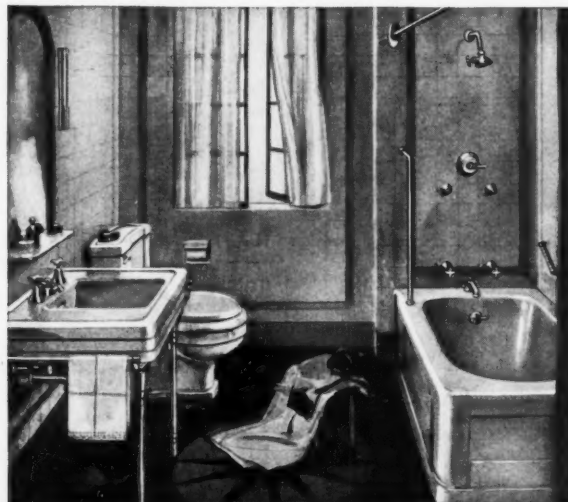
A good \$5000 house

Designed for today's purse, this well planned and constructed house is another reason why Good Housekeeping's architectural articles are so interesting to its 2,000,000 readers. This house will be described in the December issue of Good Housekeeping.

Good Housekeeping

Everywoman's Magazine

MODERNIZATION N.H.A.



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VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIALS



● Minarets of the famous old Tampa Bay Hotel will echo no more to the gaiety of fashionable parties. This architectural gem of the 1890's, long an embarrassing asset to Tampa city fathers, has been transformed into a temple of learning and will house the educational activities of the University of Tampa.

● A new method of insulating wiring is said to have been perfected by the United States Rubber Company as the result of several years of research. The process as described consists in dipping the tinned wire in prepared latex fluid which laminates itself uniformly on the wire. It is claimed that this insulation has superior dielectric and chemical properties which will permit material reduction of the diameter of the finished wire. Accordingly, rigid conduit is expected to hold twice as many conductors as at present, while lamp cords and other flexible conductors will be smaller for the same carrying capacity.

● Subsidized building construction in Great Britain is the subject of a report by the Housing Study Guild, 101 Park Avenue, New York. It reveals that a minimum of 300,000 dwellings, and a possible maximum of 400,000, with government aid were planned. From June, 1933, to June, 1934, 210,433 houses were completed by private enterprise; while 58,452 were completed by local authorities. These figures may be compared with the results of the previous year, when 144,468 and 49,402 houses were completed in the respective classifications. Perhaps there is a parallel in the stimulation given to private construction by FHA's campaign in this country. A report from one section indicates that approximately 4 out of 5 projects for which loan negotiations were instituted were eventually carried through without borrowing any money.

● Ernest S. Randall died November 1st at the age of 63. Mr. Randall was born in Brooklyn, N. Y., but had long been a resident of Freeport, L. I., where, in addition to his architectural practice he was Chairman of the Board of the First National Bank and Trust Co. He was graduated from Columbia University.

NEW CATALOGS

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

J-M BUILDING MATERIALS

482...A new catalog issued by Johns-Manville, New York, contains information on all J-M building materials, including shingles, insulations, asbestos wainscoting and wall sheets, ready roofings and roof coatings, and building accessories. The advantages, features and applications of each type of material are fully described. The sections on asbestos shingles, asphalt shingles and asbestos wainscoting contain illustrations in natural color which show the range of colors available. 32 pages; filing size.

GRAYBAR COMMERCIAL LIGHTING

483...The construction features, dimensions and specifications of the various types of direct, semi-indirect and indirect globes and fixtures for commercial applications manufactured by Graybar Electric Company, New York, are presented in a new 40-page catalog. The Domino System of Decorative Lighting, ultraviolet fixtures, ornamental fixtures and fixture accessories are also described and illustrated. A table of lighting intensities for general illumination of commercial interiors and one on the required foot-candles for lamp size and spacing are of especial interest.

CHASE LIGHTING FIXTURES

484...In a handsomely printed book of 100 pages bound with a board cover, Chase Brass & Copper Company, Inc., New York, presents its line of residential lighting fixtures. The book is divided into sections, each devoted to a particular period. Each section opens with an outline of the period, including brief history, characteristics of the homes, furnishings and lighting fixtures, and is followed by illustrations and descriptions of Chase Fixtures appropriate to interiors designed in the period. The book closes with a section devoted to Chase American Adaptations, a color chart, and general specifications.

KAWNEER STORE FRONTS

485..."Kawneer Store Fronts" is a new 32-page reference catalog just issued by The Kawneer Company, Niles, Mich. It contains illustrations, descriptions and installation details of Kawneer store front construction, including sash, awning and transom bars. Other sections are devoted to metal doors, show case doors

and ventilators, grilles, thresholds and bronze tablets. Typical Kawneer store front installations and a list of all Kawneer products are included. Filing size; A. I. A. File 26-B-1.

MULTI-USE BLACKBOARD FIXTURE

486...The Multi-Use Blackboard Fixture, which has a composition board with cork on one side and blackboard on the other, is illustrated and described in a new 8-page folder prepared by Austral Sales Corporation, New York. Illustrations show the varied uses of this product for classrooms, churches, offices, factories and wherever lectures are given, bulletins posted, or art work displayed.

HOWELL CHROMSTEEL FURNITURE

487...The Howell Company, Geneva, Ill., has just issued a 32-page catalog illustrating and describing its line of Chromsteel furniture for modern interiors, which includes tables, chairs, settees, desks, stools, cabinets, etc. Many typical commercial and residential interiors are shown, some handsomely printed in natural colors.

LUMINOUS BUILDINGS

488...The application of luminous buildings or store fronts to retail business and service is discussed in a 16-page catalog issued by General Electric Company, Nela Park, Cleveland. Illustrations show various designs for this type of construction, which uses light as an architectural element and combines it with light-reflecting structural materials.

BRYANT WIRING DEVICES

489...The Bryant Electric Company, Bridgeport, Conn., has issued Catalog No. 34, an illustrated price list and reference manual of Bryant wiring devices, including receptacles, sockets, switches, plates, caps, circuit breakers, plugs, etc. Wiring diagrams are given for Bryant interchangeable wiring devices, and for flush and surface switches. Rating and dimensional data for all units are also included. 68 pages; size 8 by 10 inches.

BRUCE NAIL BLOCK FLOORS

490...E. L. Bruce Company, Memphis, Tenn., has issued a small folder which presents the advantages and features of its Nail Block Flooring for modernization and new projects, and offers a sample of the material to architects.

ALZAK REFLECTORS

491...Major Equipment Company, Chicago, has issued Bulletin No. 20 which illustrates and describes its line of Alzak reflectors for footlights, borderlights, troughs and other forms of light projection. "Alzak" is a new metal surface which has a reflection factor of 87 and is said to have the highest reflective power of any known practical medium.

GUTH SUPER ILLUMINATORS

492...Guth Super Illuminators for indirect lighting are presented in a new six-page folder issued by The Edwin F. Guth Company, St. Louis. Descriptions,

NO POSTAGE REQUIRED ON THIS CARD

AMERICAN ARCHITECT
New York City

November 1934

Please have the following catalogs reviewed in this issue sent to me.
Numbers

• I also desire further information about the new products described in this month's "New Materials and Equipment." (See pages immediately following this insert)

Numbers

• I would like to have catalogs and information concerning the following products advertised in this issue. (See advertisers' list on following page)

Name

Firm name

Address

City

Occupation

FOR NOVEMBER 1934

These NEW Catalogs may be obtained through AMERICAN ARCHITECT

dimensional data and prices are given for all models available; five are illustrated. In addition, brief data are given for indirect light wall brackets and floor lamps, and for the Guthfan combination air circulator and lighting unit.

REFRIGERATING COMPRESSOR

493... "Refrigeration Takes Six Steps Forward" is a new four-page folder issued by Thermal Units Mfg. Company, Chicago, describing and illustrating the features and advantages of Thermal Unit V-8 Refrigerating Compressor for automatic refrigeration. Filing size; A. I. A. File 32.

STANDARDIZED METAL CAGING

494... Mitchell-Tappen Company, New York, has issued a four-page folder on its Standardized Metal Caging for use in reinforcing concrete fireproofing on steel beams, girders, columns and channels. Tables are shown giving sizes of standardized metal caging for beams, columns and channels. Directions for applying the caging and estimating requirements, and a standard soffit specification are included. Filing size; A. I. A. File 4-F.

L. C. CHASE PRODUCTS

495... Four interesting little leaflets have been issued by L. C. Chase & Company, New York, on its Seamloc Carpets and Velmo decorative fabrics. Two of these illustrate and briefly describe the advantages and features of Seamloc Carpets. The other two relate to Velmo and mohair fabrics for upholstery, draperies, casements and other decorative uses.

SLATE ROOFING FOR FLAT ROOFS

496... The advantages of slate roofing for all flat roofs are discussed in a 4-page folder issued by Griffin Roofing Company, Inc., New York. A drawing showing details of construction is included.

QUIET OPERATING MOTORS

497... A four-page leaflet has been issued by Westinghouse Electric & Mfg. Company, East Pittsburgh, illustrating and describing its line of Quiet Operating Induction Motors. This leaflet shows the method of individual testing of these motors for quietness, their distinctive features, construction, application and control. Filing size; A. I. A. File 31-G-2.

GORTON HEATING

498... The various appliances that make up the Gorton Single Pipe Vapor Heating System are described in an 8-page folder published by Gorton Heating Corporation, Cranford, New Jersey. These include vapor equalizing valves, air eliminators, radiator valves, draft regulators and vapor gauges. Filing size; A. I. A. File 30-C-24.

EVAPORATION COSTS TABLES

499... Lammert & Mann Company, Chicago, has published three tables based on simple computations from which the evaporations costs for various fuels at various prices may be readily obtained and compared.

ILG VENTILATING EQUIPMENT

500... A condensed catalog (C50) of Ilg ventilating, heating, cooling and air conditioning equipment has just been issued by Ilg Electric Ventilating Company, Chicago. This 32-page illustrated pocket-sized manual contains brief but pertinent information about each unit, and numerous tables of capacities, dimensions, weights and performance data.

HUBBEL ELECTRICAL SPECIALTIES

501... The complete line of switches, convenience outlets, wiring devices and electrical specialties for every construction and industrial application, manufactured by Harvey Hubbell, Inc., Bridgeport, Conn., are illustrated and described

in its 1934-35 catalog. Ratings and dimensional data are included. 52 pages, filing size.

'INCOR' 24-HOUR CEMENT

502... The advantages of using Incor 24-Hour Cement in the construction of bridges, highways, buildings, sewers, piling and precast products under Winter conditions are presented in a new 12-page folder offered by International Cement Corporation, New York. Essentials of successful Winter concreting methods, charts, illustrations and a table of minimum heat protection requirements based on the use of high-early-strength cement are included.

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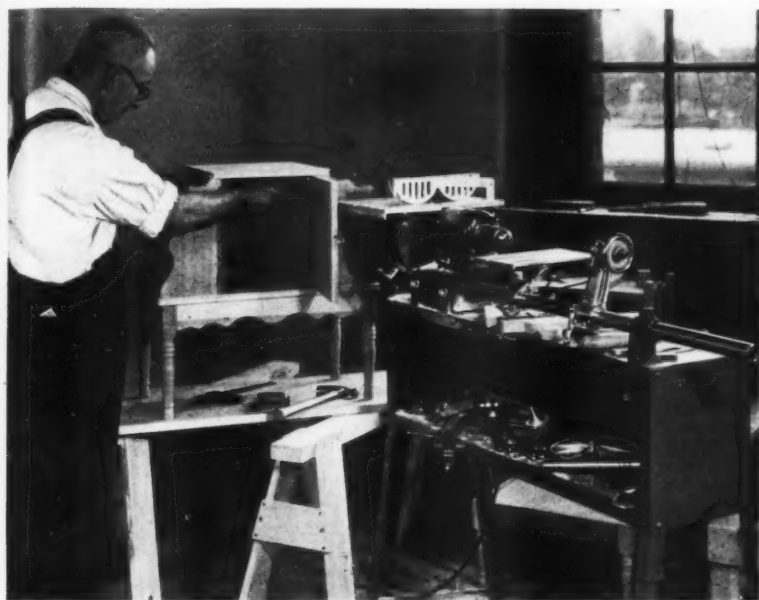
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BRIEF REVIEWS OF MANUFACTURERS' ANNOUNCEMENTS
TO KEEP THE ARCHITECT INFORMED OF NEW PRODUCTS

New Materials and Equipment



The G-E Workshop

357M A new combination machine designed for working in wood and the softer metals and intended primarily for the home workshop has been announced by General Electric Company, Nela Park, Cleveland. Changes from one attachment to another are easily accomplished by means of its unique clamping arrangement. The machine, with all attachments, including circular saw, lathe, sander, etc., occupies a floor space 18 in. by 38 in. All parts are proportioned to withstand maximum stresses and many supplementary attachments can be built by means of the Workshop itself.

Westinghouse Condensing Units

358M Two new large capacity, open-type condensing units for commercial applications are announced by Westinghouse Electric & Mfg. Company, East Pittsburgh. The models are two and three HP units and use Freon for the refrigerant. Features include: use of an oil pump, oil separator, valves in the head, directed flow of air over compressor, and a compressor with small bore and stroke for higher operating speed and

less vibration. The units are entirely hooded and all moving parts are lubricated by a specially designed system.

Gate Valves

359M The Kennedy Valve Mfg. Company, Elmira, New York, has introduced a new heavy standard bronze gate valve designed for 150 lb. working steam pressure and 250 lb. working water, oil or gas pressure. Features include a large bonnet hex placed close to the body for rigidity, deep stuffing box with graphite moulded packing rings, non-slip handwheel, and heavy pipe and hexes. A flexible connection between stem head and disc minimizes the possibility of stripping of contact connections.

All-Metal Vacuum Switch

360M A small steel vacuum switch for breaking a circuit in a high vacuum has been announced by General Electric Company, Schenectady, N. Y. This new unit, known as Type FA-6 vacuum switch, is about $\frac{3}{4}$ " in diameter and $1\frac{1}{2}$ " long and can be operated by a fraction of an ounce of pressure. It will interrupt as much as 5 HP as fast as thirty times a sec-

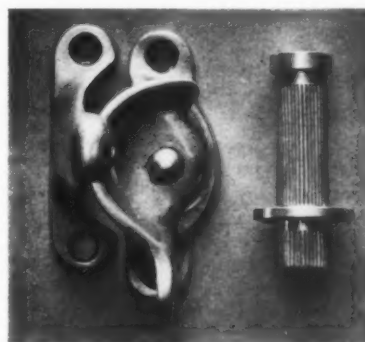
ond. The device is rated at 10 amperes, 250 volts D-C or 440 volts A-C; or 5 amperes at 500 volts D-C.

Floor Leveling Compound

361M Selby, Battersby & Company, Philadelphia, have developed a plastic floor leveling compound for trowel application to sub-floors over which resilient floorings are to be laid. It is composed of a liquid bonder, a compound in powder form and an emulsion. No special preparation of the sub-floor is required for its application. The bonder is applied first with a brush or notched trowel; then the compound and emulsion are mixed and applied. This new product can also be left exposed for heavy foot or truck traffic.

No-D-K Wood Preserver

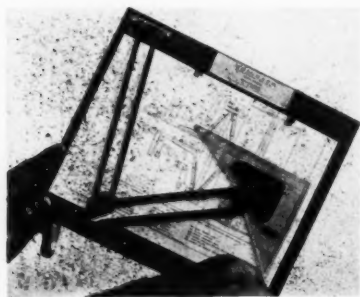
362M A highly concentrated creosote oil extracted from hardwood timber has been made available by Tennessee Eastman Corporation, Kingsport, Tenn. under the trade name No-D-K Wood Preserver, for the preservation of all wood surfaces, and for brush application to foundation timbers of new buildings.



Window Sash Lock

363M Faultless Sash Holder Company, Inc., Chicago, has developed a window sash lock which is placed in the meeting rails of the upper and lower sash. The only visible part is the bushing on the face of the lower sash into which a key is inserted, which engages a threaded locking means, drawing both sash

members tightly together. A compression spring forces this locking means back into the housing of the lower sash to permit sash members to move freely up and down when unlocked. Screw-shaped nails are used to anchor the upper sash housing.



Junior Wrigraph
Draft Block

364M A low-priced drafting machine, known as the Junior Wrigraph Draft Block, is a recent development of L. G. Wright Company, Cleveland. It consists of a 3/16 in. Masonite board and a parallel device with drawing attachment. The parallel device is made of heavy nickel-plated arms, connector and wrist plates, reamed and assembled with bronze bearings. Either of two drawing attachments is provided: one a combination of the 30, 45 and 60 degree triangles into one; the other consists of a protractor and graduated straight edge which can be set to any angle required.

Non-Scald Mixing Valve

365M A new pressure mixing valve, known as the Type K, has been developed by the Julian D'Este Company, Boston. Automatic and instantaneous shut-off of hot water is assured in case of cold water failure. Water is supplied to the shower head at an even, predetermined temperature and is not affected by changes in back pressure on the shower head or in source pressures. No supplementary checks or stop valves are needed. Maintenance is reduced to a minimum by its simple construction and easy accessibility.

Bakelite Laminated "Sandwiches"

366M A new resilient material, consisting of layers of soft rubber sandwiched between sheets of Bakelite Laminated, is being manufactured by Synthane Corporation, Oaks, Pa., under Bakelite Corporation patents. Layer thicknesses and number of alternating layers of rub-

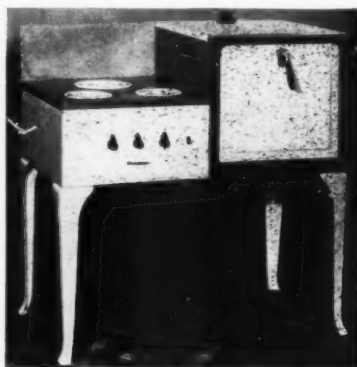
ber and laminated material can be varied to form an infinite number of combinations. Suggested uses are: for vibration-absorbing machine mountings, table tops and serving trays in restaurant and hospital service, furniture construction and wall paneling.

Modernistic Underfloor Duct Outlets

367M A complete line of modernistic surface fittings or outlets for underfloor ducts has been introduced by General Electric Company, Bridgeport, including duplex, two-pole, three-pole, twist-lock and polarity outlets. Telephone wire and cable outlets are available in sizes from 1/2 in. to 1 1/2 in. A special flange for use with carpets is installed, without injury to the fabric, by separating the knap. The outlets have either Textolite or brass-housed heads.

Electric Operator for Elevator Doors

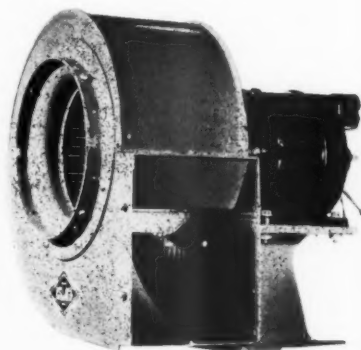
368M An electric operator, known as Type O, which provides power operation for elevator car and hoistway doors, has been introduced by Otis Elevator Company, New York. The doors are power-opened and spring-closed, and are cushioned at end of travel in either direction. The hoistway door is driven by the car door. Hoistway door locks and contacts conform to the American Standard Safety Code for Elevators.



Westinghouse "Cardinal" Range

369M A new low-cost, full-sized electric range is announced by Westinghouse Electric & Mfg. Company, Mansfield, Ohio. The main body of the range has a finish of Dulux, a new baked-on synthetic high temperature enamel. Cooking top, back and side splashers, and oven door are surfaced with Sanalloy, a metal highly resistant to heat. Temperature is

controlled automatically by a radio-type dial on the oven top. The range has one 2000-watt oven unit and three platform heating units of the open coil type.



Ilg Volume Blowers

370M The Ilg Electric Ventilating Company, Chicago, has introduced a new series of Type "B" Volume Blowers for low pressure small volume work. Each unit has a steel housing press formed and mounted in a cast iron base. Inlet flange is cast iron. The dynamically balanced multiblade wheel is die cut and mounted directly in the shaft of the motor which is placed on the cast iron base. Available in different speeds; free air capacities range from 180 c.f.m. to 2100 c.f.m. and pressure ranges to 1 1/2" static pressure.

Pigment Vehicle for Surface Protection

371M A vehicle for pigments which penetrates and seals the walls of the microscopic pits usually found in surfaces of all kinds has been introduced by Protection Products Company, Kalamazoo, Mich. The penetrating power of this fluid is said to be such that the length of life of the treated surface is greatly extended and loses its power to attract or absorb destructive elements. This pigment vehicle comes in clear or aluminum, black, light tan, khaki, and brown.

Unit Heaters

372M An improved line of unit heaters, known as Series 3, has been introduced by Fedders Manufacturing Company, Buffalo. Streamline tubes provide large steam ways. Header tanks have integral baffles. Full floating mountings maintain alignment of heating element within the cabinet. Cabinets are electrically welded with integral reinforcing members, and are finished in a dark brown morocco-like texture. Capacities range up to 1,200 sq. ft. EDR steam.

Pensauken Kennel Club installs "well-bred" floors of Sealex Veltone Linoleum

Architects Green and MacNelly, confronted with the problem of erecting this club house in record time, selected Sealex Veltone floors, which could be installed without interruption to their carefully planned schedule. In new construction or on modernizing work, Sealex successfully meets the most exacting requirements of quick installation.



Even as any four-footed thoroughbred facing a Judges' Committee, Sealex Linoleum had to meet the most exacting qualifications before it was "placed" in the Pensauken Kennel Club, Camden, N. J.

Architects Green and MacNelly required a floor colorful and distinctive in design to complete the interior of the Club. Yet this floor had to be of a type that could be installed quickly—and be fit for use shortly after installation. It had to have, furthermore, the lasting qualities to withstand the heavy foot-traffic of large crowds attending the races.

Sealex Veltone Linoleum not only qualified on each of these points, but added resiliency and economy of maintenance for good measure.

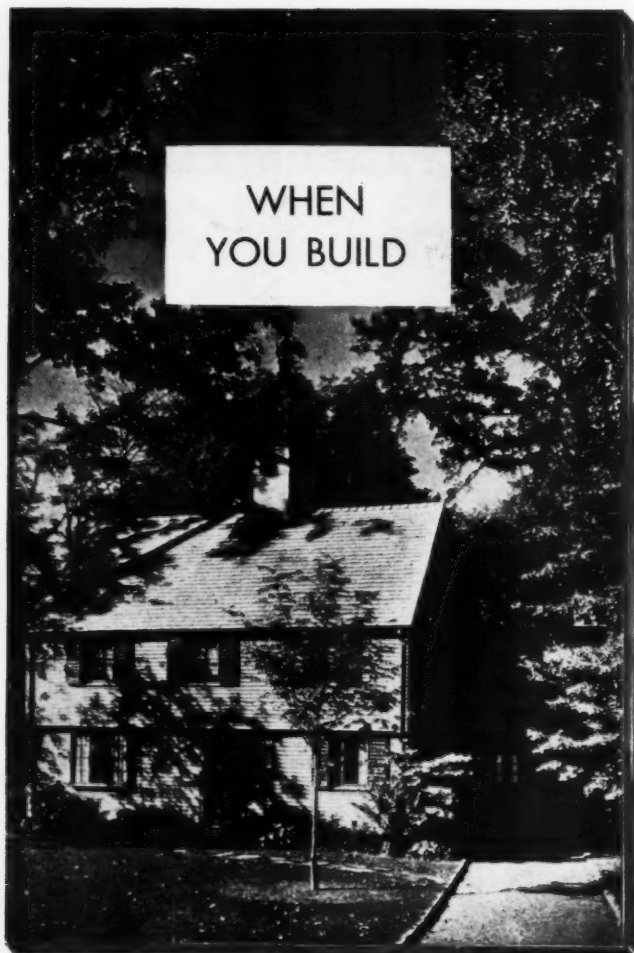
With Sealex Veltone, or with Sealex Plain, Jaspé or Inlaid Linoleums, you can create, at moderate cost, flooring effects in perfect harmony with your decorative plans . . . or with the individual tastes of your clients.

SEALEX WALL-COVERING: Let us tell you about this permanent linoleum-type decorative material—widely used in new buildings—that offers unlimited opportunities for modernizing old walls. Stain-proof—washable—easy-to-clean.

* * *

When Sealex Flooring or Wall-Covering is installed by authorized contractors, both material and workmanship are backed by a Guaranty Bond. Write us for full information.
CONGOLEUM-NAIRN INC., KEARNY, NEW JERSEY

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This Booklet Sells YOUR Services to YOUR Prospects

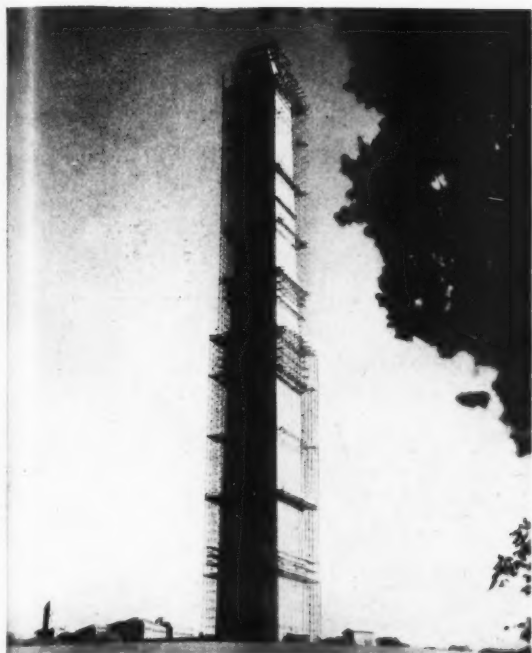
Any architect may have one copy of this booklet FREE OF CHARGE. Additional copies may be had at these prices: single copies, 10c each; 15 copies, \$1.00; 50 or more, 6 1/2c each; 500 or more, 6c each. As these booklets are offered to architects at actual cost, remittances must accompany orders.

"WHEN YOU BUILD" helps architects secure new clients. It is one of the most effective pieces of literature ever prepared to help laymen understand architects and the value of their services.

The increasing flood of publicity to promote building is becoming effective. Thousands of people who know nothing about architects are now prospects for your services.

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"WHEN YOU BUILD" enables you to do this in a professional and dignified manner. It is authoritative, unbiased, readable. Send a complimentary copy to every prospect in your territory. Order direct from American Architect, 572 Madison Ave., New York.



• Architecture of a new kind is suggested by this photograph of the Washington Monument. Between five and six hundred tons of steel tubing were used in the scaffolding which completely encloses the structure, as workmen give the monument its first overhaul in fifty years. The \$100,000 necessary to carry out the work was obtained from PWA funds. It is estimated that three months will be required to complete the repairs

ANNOUNCEMENTS

• The ninth annual collaborative competition of the Association of the Alumni of the American Academy in Rome will be held during the period from November 7 to January 18. The competition is open to any collaborative group of architects, landscape architects, painters, and sculptors, and to students. Prizes of \$300, \$150, and \$75, respectively, will be awarded to the three winning teams by courtesy of the American Pencil Company. Information may be obtained from the Association's headquarters, 101 Park Avenue, New York.

• The Massachusetts Institute of Technology announces the introduction of a four-year course in illumination, under supervision of Prof. Parry Moon. Planned to fit the student to cope with modern problems of electric lighting, it combines a scientific grounding with architectural theory.

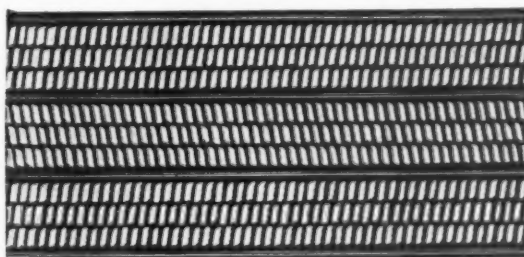
• St. Louis' Modern Home Exposition, originally scheduled to open November 10 in the Municipal Auditorium, will instead be held January 5 to January 13. The change was requested by the Federal Housing Administration on the grounds that the Better Housing Program now getting under way in St. Louis would best be served if the later dates were set.



Metal Lath?
Corner Bead?
Metal Trim?

The **MILCOR**
MANUAL in Sweet's Catalogue File

contains by far the most complete and desirable information for the architect on Fireproof Building Materials. The 1934 edition includes illustration of many new products, specification data and descriptive material, exactly as you would like to have it.



KUEHN'S SPECIALMESH METAL LATH

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House in St. Paul, Minn. Wm. M. Ingemann, Architect, St. Paul
Painted with Cabot's DOUBLE-WHITE Collopakes

No Mystery In Cabot's Collopakes

It is the *process* by which Cabot's Collopakes are made that distinguishes them from ready-mixed or painter-mixed paints of usual type. The resulting product has unique advantages both when applied and after years of wear.

The *materials* used in compounding them are standard paint materials of first quality: standard permanent pigments, standard fixatives, standard solvents. They contain no water or other adulterants and, except in the well-known Creosote Stains, no creosote whatever.

The Collopaking Process first disintegrates the pigments to particle sizes, 100 to 1000 times smaller than can be produced by ordinary grinding methods. In the resulting product the pigment is in permanent colloidal solution and will not again clump together as in mechanical mixtures.

The "Collopaking" Process is patented. So is the product.

Cabot's Collopakes, being truly colloidal and not mixtures, are:

1. More adhesive—closer bond with the surface.
2. More waterproof—finer pigment particles plug pores more permanently.
3. Greater in hiding power, especially in darker colors.
4. More body—fillers are unnecessary. Fillers are chief cause of fading. Collopakes contain no fillers to add body.
5. Self levelling—high surface tension smooths out brush marks.
6. For outside use dry less rapidly and so do not disintegrate as rapidly.

The coupon below will bring you full information.

Cabot's Collopakes

DOUBLE-WHITE, Old Virginia White, Gloss Collopakes, Stucco and Brick Stains, Interior Flat Collopakes. Made by the makers of Cabot's Creosote Shingle Stains.

Samuel Cabot
INC.
Manufacturing Chemists

141 MILK STREET
Boston, Massachusetts

Gentlemen: Please send me Color Card and information on Cabot's Collopakes.

Name

Address AA-11-34

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AMERICAN ARCHITECT

PERSONALS

• Robert Stanton Everitt has reopened his office at 1013 Grand Ave., Kansas City, Mo.

• C. Godfrey Poggi announces that his partnership with William B. Bragdon has been dissolved by mutual consent. He will continue the practice of architecture at the same address, 275 Morris Avenue, Elizabeth, New Jersey.

• Frederick C. Sauer, 625 Center Ave., Aspinwall, Pittsburgh, Pa., has for sale an architectural library of 1,500 volumes. Prospective purchasers may apply to him for a catalog.

• Charles H. Mills has changed his address to Box 120-S, Route 2, El Cajon, California.

• Judson E. Schnall has opened an office for the practice of architecture at 44 Court Street, Brooklyn, N. Y.

• Arthur Lewis Harmon introduced Edward L. Bernays, famed publicity man, to the members of the Architectural League at a recent meeting in New York. In his address Mr. Bernays strongly advised his audience to use the up-to-date business-getting methods which have proved successful in so many other fields, and outlined an institutional program for professional publicity for architects.

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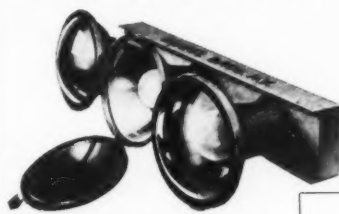
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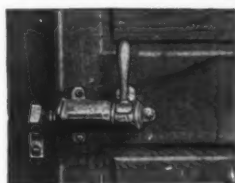
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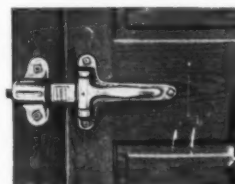


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