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Pier and Beam

A Comparison of Occidental and Oriental Architecture

OUR ARCHITECTURAL forms and traditions are those of a civilization that had its origin, as we all know, in that region bordering on the Mediterranean which we call the Near East. There is yet another entirely distinct civilization, with its own totally different building traditions which originated, as far as we all know, in that more remote part of the world which we call the Far East.

The building material of the Near East was stone, or if not stone, then masonry of a kind closely allied to stone in its essential characteristics. The great architectural styles of our Levantine civilization—Greek, Byzantine, and Gothic—as we know, were all evolved in masonry. Although our forbears did occasionally build in wood, they built only unimportant structures. And they were prone to copy in these wooden buildings the architectural forms properly belonging to stone, as witness the arcades and colonnades of our own American Renaissance.

The building material of the Far East was wood. Although the civilization of the Orient had its own various architectural styles, they were all of them evolved and executed in wood. Although they, for their part, did occasionally build in stone, they built only edifices of no great importance. And they, just the opposite of our forbears, copied, in these occasional stone structures, the forms and details properly belonging to wood—as witness this granite *torii* of Nikko.

Thus may we succinctly recount the history of the world's architecture down to the nineteenth century of the Christian era.

Meantime the civilization of the Near East spread westward—carrying its architectural traditions with it—until it covered all of Europe right up to the shores of the Atlantic. And the civilization of the Far East spread eastward, from China through Korea to Japan, until it embraced in its march everything straight out to the open Pacific. And then, just as the eighteenth century was drawing to a close, there

took its place in the world a new people, a new race, on a new continent located still farther east than the Pacific, still farther west than the Atlantic, midway between the age-old civilizations of the Orient and the Levant.

This new race, although still in its adolescence, has already made the most significant contribution to architectural history since the world's beginning. For in the construction of its buildings it has introduced a whole new structural system—one in steel—the first new building system since the days of Imperial Rome. Whether this steel has been fabricated in a frame of its own, or whether it has been imbedded in masonry in the form of reinforced concrete, it has given rise to an entirely new kind of engineering design, a kind totally unlike anything that the Levantine civilization has ever before employed.

Whenever, in the past, a new structural principle has been introduced in building, as we all know, there has resulted a great new architectural style—just as, for example, the innovation of intersecting vaults eventually resulted in the Gothic. The modern builders in steel have introduced not only a new system, but even a new building material, thus impregnating their architecture with possibilities far transcending anything that has gone before. It is a temptation to set up as a prophet and attempt to forecast the appearance and character of the new style that must necessarily be the outcome. But we will not. It is history which we have undertaken to write, and not prophecy.

But we have chosen to introduce our subject in this way because we believe that there is, in the history of wood construction in the Far East, much material for the making of such a prophecy; and it is this material that we wish to lay before the reader. For the characteristics of wood are not unlike those of steel. In truth, the structural forms of steel are necessarily much more like those of wood than they are like those of masonry. And the architectural motifs of the world's



Underwood & Underwood
THE GREAT STONE TORII OF NIKKO

future style must inevitably have more in common with those of the wood system than with those of stone.

II

While we might have chosen our illustrations just as well from Chinese or Korean architecture—their traditions are the same—we have preferred to take them from the Japanese, for the same reason that would lead us to choose our examples of the stone system from the buildings of Greece, in preference to those of Egypt or Assyria. And since our comparison deals only with the broadest of generalities, we may select for illustration anything, or everything, from the native architecture of that country, knowing that it will serve our purpose.

We begin with a typical shop—an umbrella and lantern shop—one of the commonest sights in any Japanese city. The reader will note the absence of doors—the absence of wall itself, for that matter. In brief, except for a roof overhead, and a method of support for that roof, we find nothing at all in common with our own conception of architecture.

In residence work as well, as illustrated in the house at Nagaoka, we find nothing more in common with our familiar building traditions. But we can detect a resemblance to the shop front already shown. For one thing, the openings that take the place of doors and windows are, unlike our doors and windows, wider than they are high. Even the openings in the design of the railings are long and low instead of tall and narrow, as they are in our own classic balustrades. The comparative slenderness of the various framing

members, and the mere fact that they are all executed in wood, makes the whole construction appear to our eyes as temporary and inconsequential.

We are apt to look upon wood as a perishable material at best. And at its worst, when suffering from neglect, it is far from prepossessing. While stone seems to gain in charm under abuse and disuse, wood suffers immeasurably. And thinking in terms of centuries, we are inclined to consider the most monumental work in wood as ephemeral and short-lived. But this is not necessarily true. The temple called Horyuji, for example, was standing before ever Anthemius reared the pendentives of Santa Sofia. It had been standing for centuries when the vaults were first cast over the nave of Amiens. It had been standing more than a thousand years before the first structure of any kind was erected in any of our thirteen colonies. Through all this millenium and more, it has withstood the ravages of fire, and pillage, and decay. Nor is it the only one of its kind. In the park at Nara, and in the environs of Kyoto, there are not a few others erected scarcely a hundred years later.

Comparing these temple edifices with the more familiar Greek buildings of our own classic tradition we observe that, while there are columns as in the Parthenon, yet they are not at all like those of the Parthenon. For these columns have no caps, no bases. In all cases but one, they have no entasis. With the single exception of this same Horyuji, the classic temple post is of uniform thickness from top to bottom. And these posts are invariably set much too far apart to be reconcilable with any of our notions of classic architecture. Mouldings, too, are conspicuous by their absence. Great eaves take the place of our classic cornices—curving eaves that suggest to us anything but a



AN UMBRELLA AND LANTERN SHOP



THE TEMPLE CALLED HORYUJI—NEAR NARA

dignified monument of classic antiquity. And yet these temples are, indeed, excellent typical examples of the classic style of the Orient.

While we find in them much that is romantic, much that is picturesque, much that we can wonder at and admire, we are forced to conclude that there is in them little or nothing that we can understand—much less love—as we do love the familiar forms of our own classic tradition.

It is, nevertheless, possible to show that these same strange architectural forms are, after all, not in any way accidental, or capricious, or unreasonable; that they are, on the contrary, just as much the logical outcome of the use of wood as a building material, as were the orders of Greece the logical outcome of the use of stone.

III

May we introduce the structural system of the Far East through the medium of the *torii* (pronounced *to-rye*)—Figure One—the symbol of the native Shinto faith—and consequently as common a sight in the Island Empire as is the cross with us? The writer can remember his first acquaintance with the *torii*, in a book published while he was still a student of architecture. He can remember looking with condescend-

ing amusement upon the strange double lintel. He could not see why a gateway needed two lintels any more than a cat needs two tails. His idea of such a simple portal would have been two piers with a single beam over them—Figure Two. This was all there was to Stonehenge—and there those monoliths had stood since before the beginning of recorded time. The single lintel served them perfectly well; and the addition of a second one would have seemed senseless and absurd.

But the writer's ideas at that time were solely those of stone—quite naturally, considering his training and traditions—while the structural ideas expressed in the *torii* were those of wood. And the characteristics of wood as a building material are just the opposite of those of stone.

Stone is heavy, ponderous. You can take blocks of it and pile them up in a pier; and this latter is self-sufficient. Man leaning his weight upon it, God directing his tempests against it—both factors combined are negligible in comparison with the dead weight of the material itself. Just the opposite is true of wood. A post of this material set up on end will as promptly fall over again unless stayed. The various members of a wood structural system, far from being self-

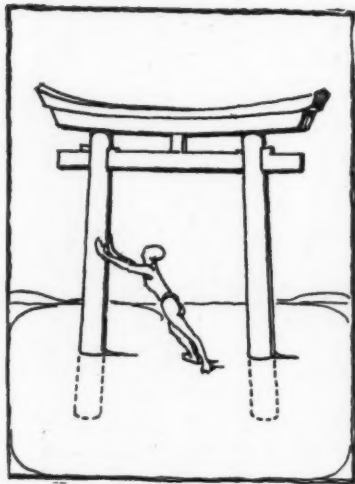


FIGURE 1

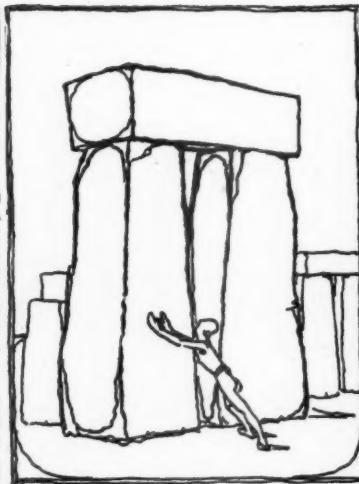


FIGURE 2

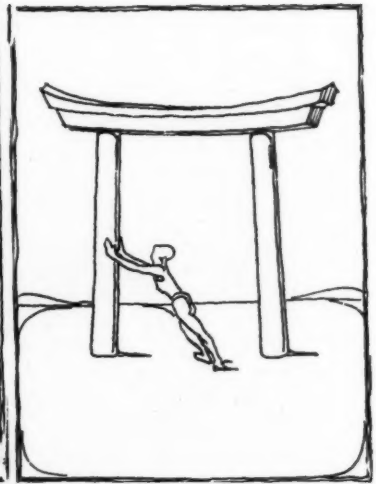


FIGURE 3

sufficient, are in reality interdependent. They must be knit together into a framed construction before they are of any use.

In the *torii* we have the elements of such a framed system. The two posts (in lesser examples) are footed in the ground and mortised into the under side of the topmost beam—Figure Three. But such a three-membered system is not enough in itself alone—as it would be in stone—for without other bracing it would weave back and forth under the slightest stresses. It proves necessary, therefore, to put in the second beam included in Figure One, a thin tension member thrust through slots in the two columns, and held rigid by the wedges that play such a conspicuous part in the ornamentation of this simple *motif* of wood design.

And this second member, this tie, instead of being a superfluous thing, proves to be an indispensable one. In fact it is the one significant feature without which a pure wood system of design would have been impracticable. The truth of this is borne out in all Oriental design; for a study of the illustrations will show this tie always present, whether in the most elaborate temple fabric, or in the humblest house construction.

IV

It is not impossible to find a corresponding single significant form in our familiar stone system—particularly if we return once more to a comparison of stone and wood as building materials. For, much as stone has to recommend it, nevertheless it has at least

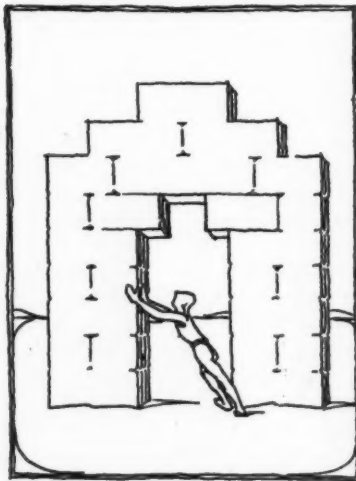


FIGURE 4

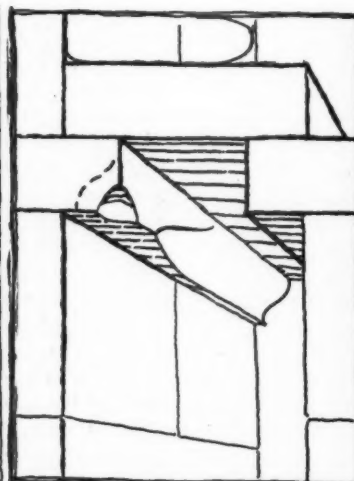


FIGURE 5

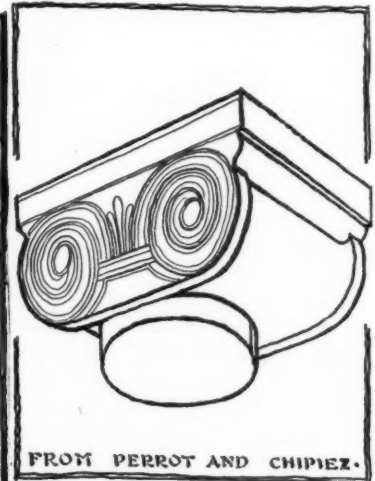


FIGURE 6

FROM PERROT AND CHIPIEZ.



THE GINKAKUJI GARDEN AT KYOTO

one great limitation. As a beam it is almost useless.

In this capacity it is so weak that a lintel of any considerable length must either be so massive that it is out of the question for practical building purposes, as in Stonehenge, or else it will almost fall in two of its own weight, say nothing of carrying any load. And yet beams—or some other device—of reasonable span are indispensable to satisfactory construction, because no builder would choose to have his supporting piers any closer together than necessary.

Later builders—Roman, Byzantine, or Gothic—overcame this limitation in stone—as we know—by means of the arch principle—that inspiring device which turns the virtues in stone—its weight and its great compressive strength—to direct account against its chief deficiency. But we do not write about that here, since we have undertaken only a comparison of the trabeated systems of antiquity. For the Egyptians and Mesopotamians and Greeks used stone as beams only—just as the Chinese and Koreans and Japanese used wood.

The Levantine builders used stone as beams only. And the device that they employed, in order to retain a reasonable spacing between the supports of these beams, was the corbel. A glance at Figure Four will show how ingeniously this feature does cut down the actual span, thus making it possible to use beams light enough to be available for building purposes. And because of this indispensable service which it renders, the corbel proves to be to the trabeated system in stone what the tie was to construction in wood—the one significant member without which that system would have been impracticable, if not impossible. The truth of

this is borne out constantly in all Levantine design—whether Egyptian, Mesopotamian, or Greek—for this member is conspicuously present, whether in the most elaborate monumental work, or in the humblest forms of masonry construction.

When the builder of the Levant set out to roof with stone the area enclosed between two walls, he corbelled out—Figure Five—in order to cut down the span, and therefore the weight, of this roof slab. But such a corbel was heavy and clumsy at best. And as soon as he came to appreciate that the lower outside corner of it was not necessary to its usefulness, while at the same time it did add to its weight and clumsiness, it was quite natural that he should begin to cut away this corner—cutting it away in profiles that called attention to the member itself and enhanced its bearing function. Thus did the continuous corbel become the moulding of classic antiquity.

If we have failed to recognize this corbel as the significant feature of our classic architecture in stone, surely we do now recognize it in the more familiar guise of the moulding—a feature so completely identified with architecture in our minds that we find it hard to conceive of it without mouldings. (And yet the wood system of the Orient is just such an architecture without mouldings, since mouldings—or corbels—are not essential to it any more than ties are necessary to a system in stone.)

It is also natural that the builder in stone—in his desire to lighten both the weight and the appearance of his corbel members—in cutting away the unnecessary portions—should cut them away not only in moulding profiles, but also in ornament like the egg-and-

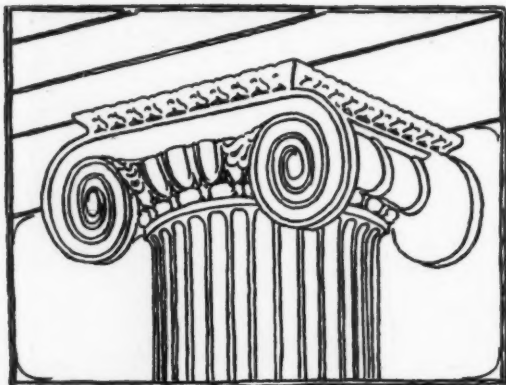


FIGURE 7

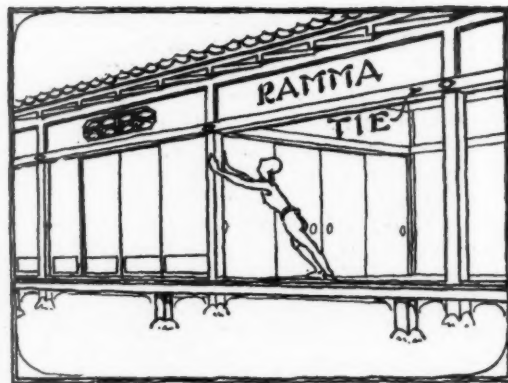


FIGURE 11

dart and the water-leaf. Thus did he call marked attention to their significance in his construction. Thus did he enhance their charm. And as the corbel surmounting the wall became the moulding, so that surmounting the column became the capital. This is particularly evident in the Ionic style. An archaic example found on the Acropolis—Figure Six—shows the primitive corbel form—with the volutes only introduced as surface ornamentation—later to flower out in the exquisite products of the Age of Pericles—Figure Seven.

And a comparison of the orders of the earlier temples of Selinus—Figure Eight—with that of the Parthenon—Figure Nine—suggests the corbel origin of the Doric capital as well. The columns of Selinus are more widely spaced, and therefore the capitals flare out the more, with the intention of cutting down the actual span of the ponderous beams overhead. As the more finished designers of the Parthenon made an architectural virtue of a structural necessity, and purposely

spaced their columns closer together, they were able to cut down this clumsiness of the corbel feature of the capital.

V

The builder in wood, like the builder in stone, also sought to concentrate his architectural ornament about the significant feature of his structural system, in order to call attention to it. But, just as naturally, he did it in an entirely different way, because of the very differences in the material in which he worked. There was no occasion, for example, to cut anything away from the tie, because, as a straightforward, economical craftsman, he would have made it as small as it should be at the outset. And if ties were introduced into the system at minimum size, he certainly would not weaken them by carving them. However, their free ends—Figure Ten—which projected beyond the terminal columns—did no work, serving at most to call attention to the framed nature of the tie. There

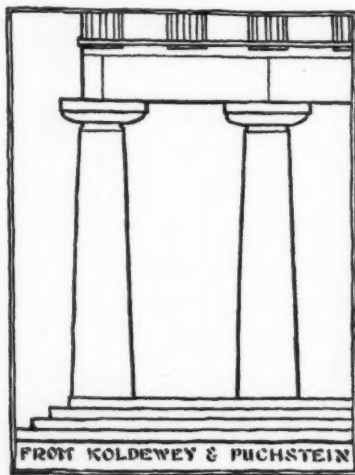


FIGURE 8

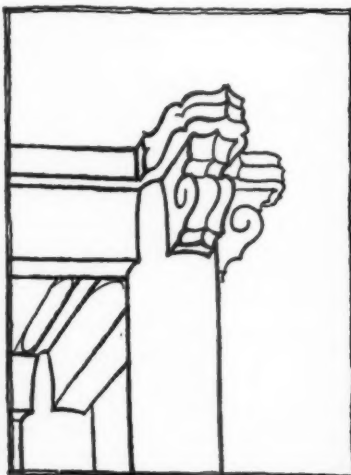


FIGURE 10

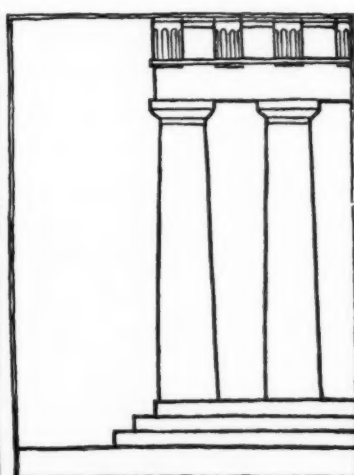


FIGURE 9



THE TEMPLE GROUND OF NAGAOKA TENJIN

was no danger of weakening them by carving. And how quick the craftsman was to appreciate all this, and to concentrate his ornament upon them! These carved ends became one of the chief ornaments of the Oriental wood system.

But the most important center for ornament—corresponding to our column capital—was that significant rectangle—Figure Eleven—enclosed by the four essential framing members of the Oriental structural unit. As in the case of the tie, the efficient craftsman in wood had chosen, at the outset, the slenderest timbers that would serve for his framing members, which is no more than our efficient designers in steel are doing today. Consequently, for fear of weakening them, no ornamentation with carving would be feasible. But the builder in wood chose instead the empty space enclosed by these members, and filled that with carving—to which wood lends itself so readily—as readily as did the marble of Pentilikos. These empty spaces received a significant name, *ramma*, from the classic Chinese, a name meaning “the area between the beams.”¹ And the carved ornaments for these *ramma* are among the choicest treasures of Oriental antiquity. Good speci-

mens of them may be seen in the Japanese collection of the Boston Art Museum.

Whether it is ornamental, or whether it is only plain, the *ramma*, like the tie that accounts for it, is never absent from Oriental design—as a study of the accompanying plates will show. On the other hand, neither of them are present in stone design, since the tie is there useless. By the same token, the moulding and the column capital are not found in wood design, inasmuch as the corbel is there out of place. Nor are battered walls, nor column entasis, for they too have no part structurally in wood design, as we shall try to demonstrate below.

VI

We have already spoken of the massiveness of the stone pier, and its self-sufficiency as compared with the wood post. It is self-sufficient because its own weight is greater than any load that it is called upon to carry. And what is true of the pier is equally true of the entire masonry building. The vaults and arches, piers and buttresses, of such a building weigh far more than do the live loads that they are designed to carry. Stone construction is essentially a dead load system.

Just the opposite is true of wood, or of the steel in use today. Quite the opposite of stone, wood is

¹ Cf. “metope” = *μετέωπη* = “openings between.”

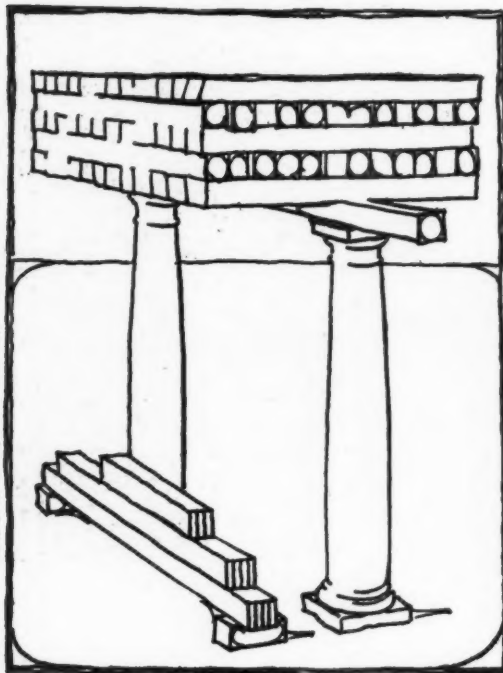


FIGURE 12

admirably adapted for use as a beam. If we take, for illustration—Figure Twelve—a reasonable size and shape for structural purposes—say one foot square and twelve feet long—such a beam, in the white marble of the Greeks, would safely carry only one and a half times its own weight, whereas a similar beam in white pine would safely carry sixty beams like itself. While wood's very lightness keeps it from being self-sufficient like stone, its great comparative strength, when knit together in a framed construction, enables it—like steel—to carry loads many times its own weight. Therefore, in the case of framed buildings, whether of

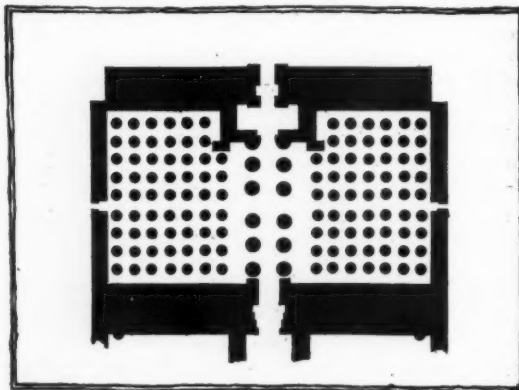


FIGURE 13

wood or steel, the live loads far exceed the dead loads. In brief, wood construction is essentially a live-load construction.

The entasis of stone columns and the batter of masonry walls both bear silent testimony to the truth that here the dead load is the greater one. The wooden column, being so much lighter than the load it carries, can well be, and always is, the same diameter from top to bottom; but the mounting courses of a stone wall add so materially to its weight that it is reasonable to increase them in thickness, and therefore in carrying capacity, the higher the wall they have to support.

Wood is rich in beam quality, and poor in pier quality; while stone is rich in pier quality and poor in beam quality. In truth, the word "beam" is cousin german to the Teutonic *baum*—"tree," or "wood"; just as the word "pier" is the direct descendant of the old French word for stone.

Because stone was so poor in beam quality, the builders in stone, when they built entirely in that material, were compelled either to set their columns close together like the trees of a forest, or else to build continuous bearing walls, in order to afford adequate support for their roof slabs. The plan of the Hypostyle Hall at Karnak—Figure Thirteen—and of the Palace

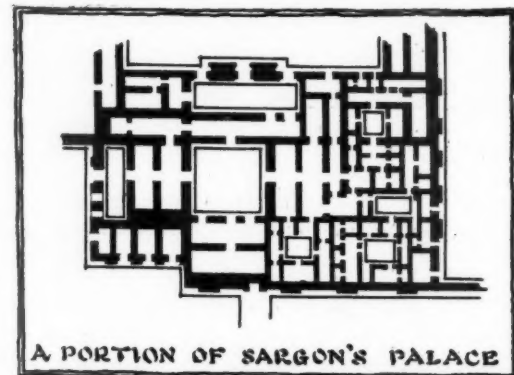


FIGURE 14

of Sargon at Khorsabad—Figure Fourteen—are both eloquent of this fact. The builder in wood, on the other hand, could carry the loads of his construction on widely spaced posts. In his buildings, as in our modern steel ones, walls were an incident rather than an essential.

While stone or other masonry construction implies bearing walls, wood or steel construction implies curtain walls. Let us compare, in this respect, the plan of an Ionian House from Viollet-le-Duc—Figure Fifteen—with that of the house of a *daimyo* from Morse's *Japanese Homes and Their Surroundings*. In the latter the curtain walls are nothing more than light screens that can be set up or taken down at will. A further study of the larger plates will show



DETAIL OF THE SHRINE OF ITSUKUSHIMA ON THE INLAND SEA

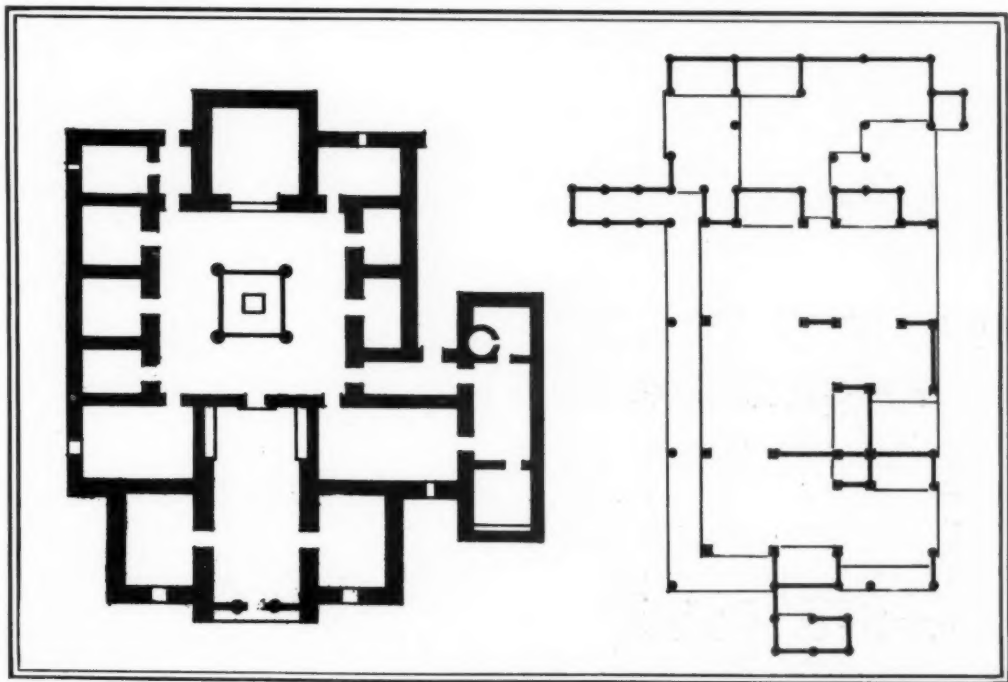
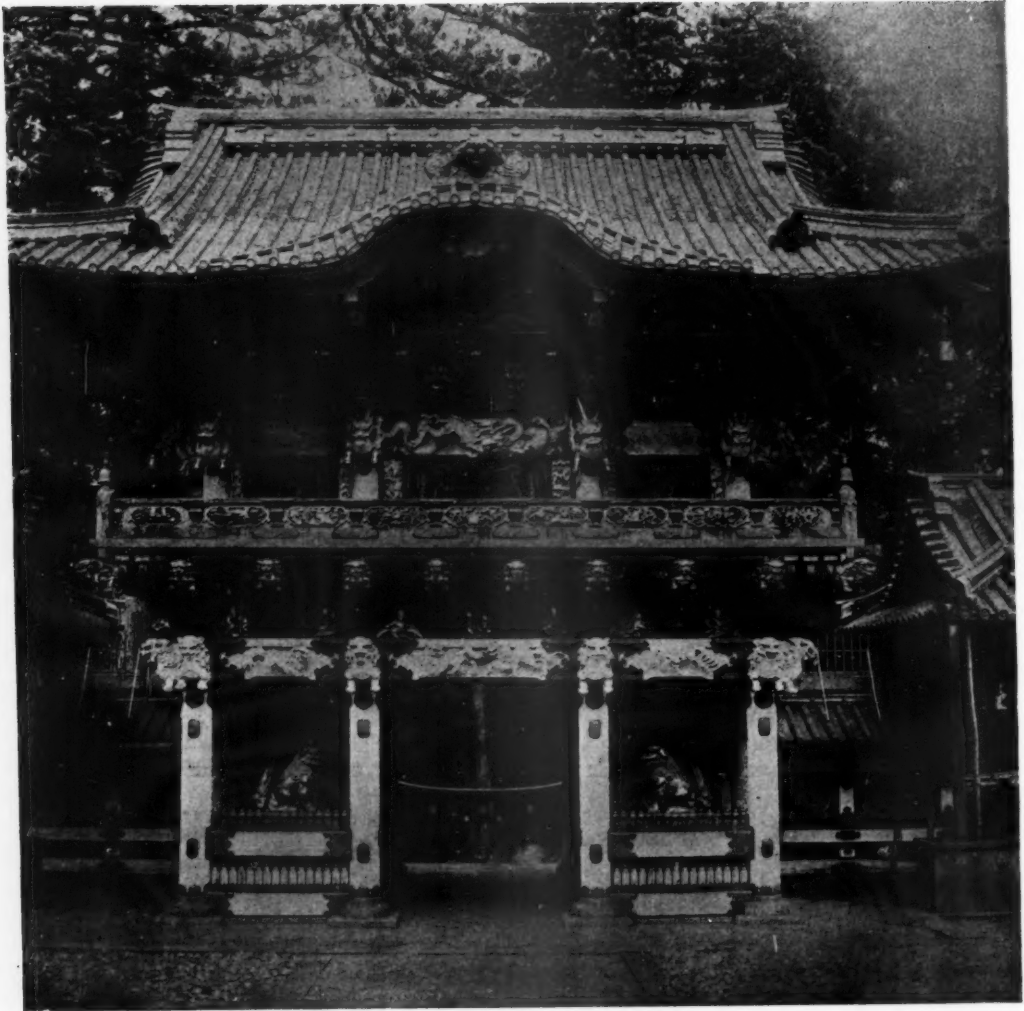
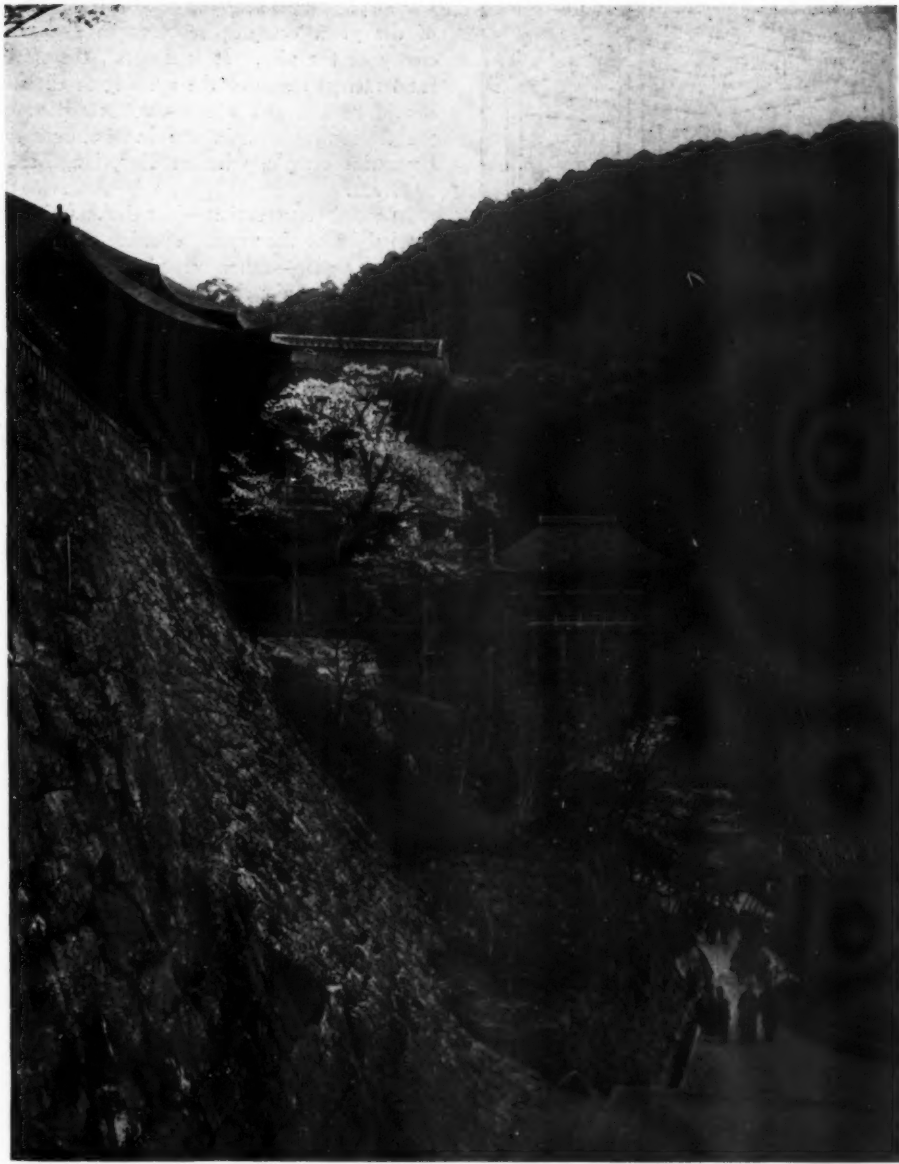


FIGURE 15



"THE 'BAROQUE' OF THE ORIENT"
A GATEWAY AT NIKKO



THE TEMPLE CALLED KYOMIDZU DERA AT KYOTO

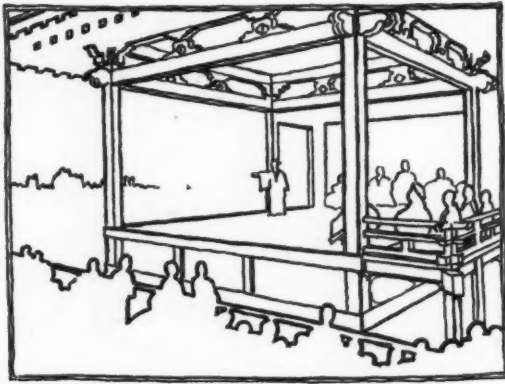


FIGURE 16

still better how thoroughly the builders of the Orient took advantage of this capacity in their wood system, throwing whole sides of their houses and temples open to out-of-doors, until the interior became one with their peaceful gardens.

Building in stone, the craftsmen of the Levant were able to achieve, with their solid bearing walls and closely spaced columns, an expression of permanency, stability, security and dignity such as could never be attained in wood. Building in this same wood, however, the craftsmen of the Orient acquired for their structures an expression of shelter, hospitality, openness, and adaptability equally impossible to buildings in stone.

VII

As no enclosing wall of a structure, whether in wood or stone, is of use without openings, the openings must necessarily constitute an important feature of any construction. Let us therefore consider their comparative characteristics in the two systems. In stone construction the width of such voids is necessarily limited because of the deficiencies of stone as

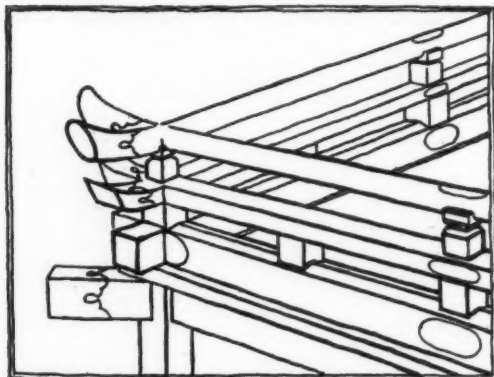


FIGURE 17

a beam; but their height is practically unlimited because of the great compressive strength and the self-sufficiency of the pier. It is natural, therefore, that the fundamental shape of the opening in the stone system should be tall and narrow, as indeed we find it in the doorways, and in the intercolumniation of the Levantine temple, whether Egyptian, Mesopotamian, or Greek.

In wood construction—just the opposite again—it is the height of the typical opening that is limited; because any post—either wood or steel—carrying a load many times heavier than itself, has to be braced laterally at short intervals in this height. But the width of such openings in the wood—or steel—frame can be

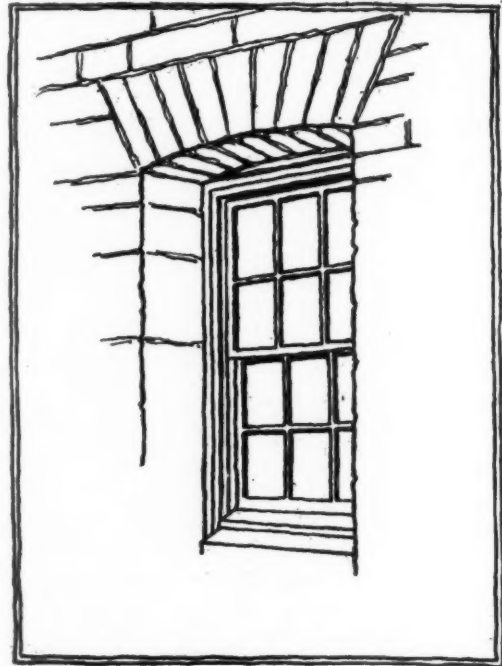


FIGURE 18

made proportionately great. And seeing that it can be, it naturally would be; because it is inconceivable that any builder would not welcome the minimum number of supports to his roof—Figure Sixteen. It means greater economy of construction, and greater freedom in the arrangement of the valuable space within. Therefore, since the height of this opening is limited, and its breadth much less limited, the typical basis of the wood system is the low, wide rectangle. The reader may identify this rectangle in the intercolumniations of the Japanese temples illustrated, in the openings that take the place of our doorways and windows, in the classic *ramma* referred to above. Even the balustrades, just the opposite of ours, are designed with

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low, flat openings rather than tall narrow ones—Figure Seventeen.

The typical window of the stone system is a tall rectangle—Figure Eighteen—and the sashes that fill it are cut up into lights that are also tall rectangles. The typical opening of the wood system is the flat rectangle—Figure Nineteen—and the sashes that fill it are cut up, as well, into flat rectangles. Even in architectural ornament this basic form asserts itself—Figure Twenty—just as the tall form serves as the basis of much of the ornament, even the free ornament, of our stone tradition—Figure Twenty-One.

And has the reader noticed that the Greek designers, when they began to appreciate that the high and narrow basis was imposed upon them by the limitations of their material, actually set themselves to make a virtue of this limitation? We find, as they progressed in

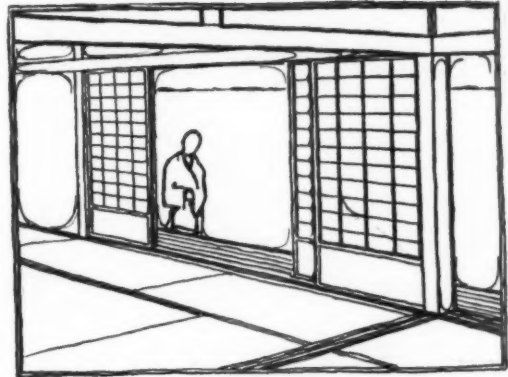


FIGURE 19

VIII

We have thus far avoided any reference to the curved roofs of Oriental architecture. We admit that they constitute the most striking and conspicuous point of difference from our own traditions, and that perhaps we should have tried to account for them first. But we wished to build up this analysis of the wood system as logically as we might; and in such an analysis, the different aspect of the roof proves to be a less significant characteristic after all. In his *Foundations of Classic Architecture*, the late Dean Warren of Harvard establishes the interesting fact that even the simplest work of architecture cuts up naturally into three horizontal divisions—foundation, support, and shelter. And the greatest of these is shelter—for it is the primary object of all buildings. Nor is it hard to demonstrate that the designers of our classic antiquity appreciated this truth, when we analyze the ornamentation of their edifices. For, as if to call especial attention to the significance of this upper third, they seem to have concentrated all the beauty of their design upon it, in sculptured frieze and pediment, in metopes, cornices, antefixes and akroters. Even their doorways

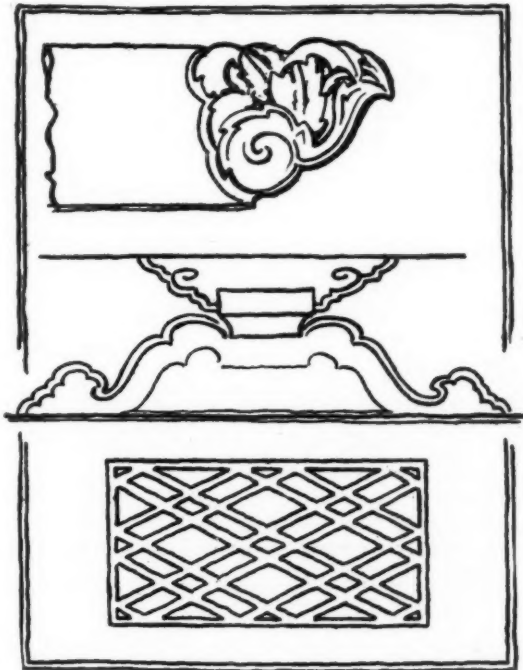


FIGURE 20

design, that they gradually set their columns closer and closer together, as if they sought thus to add to the expression of which stone was eminently capable. We have compared above the order of a temple at Selinus—Figure Eight—with that of the Parthenon—Figure Nine. In the latter they seem to have given up, as a bad job, the struggle to get a reasonable spacing between columns, and they have gone to the other extreme instead, just as if that was what they had been wanting to do all the while.

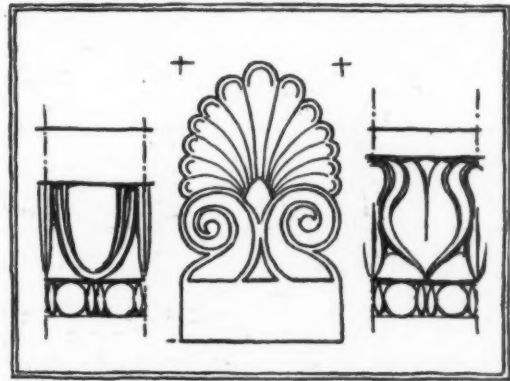
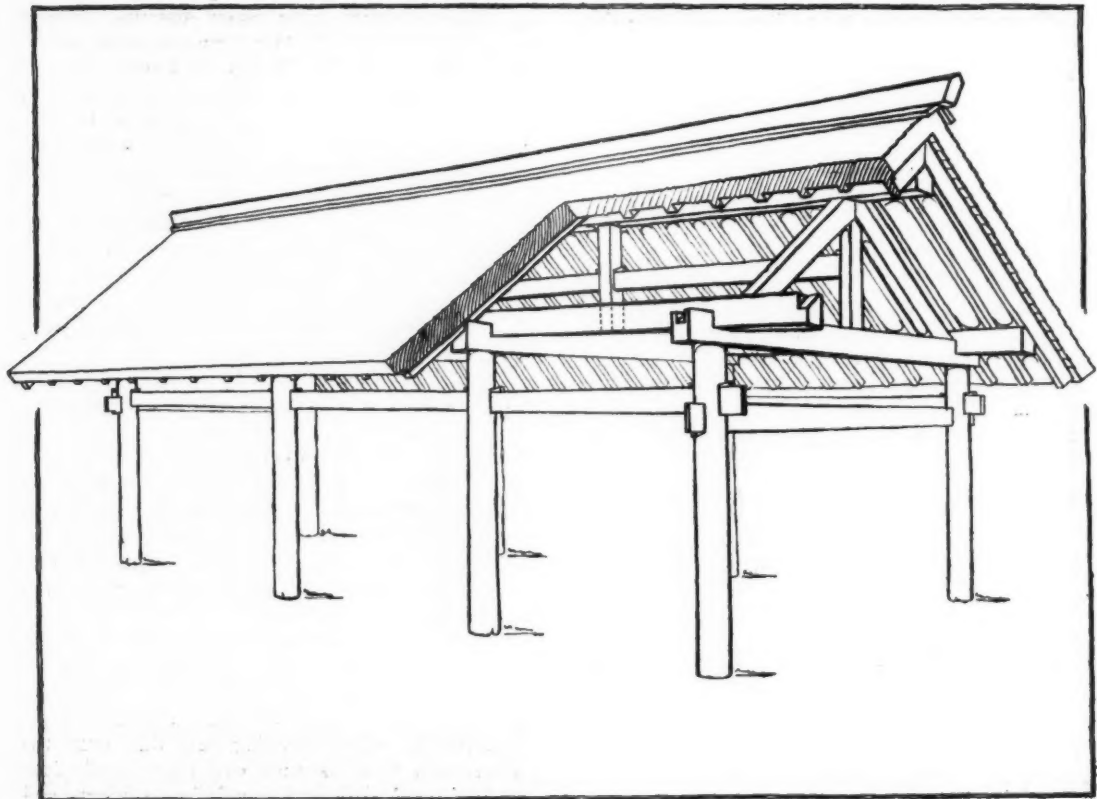


FIGURE 21



A PAVILION FROM THE SHRINES OF ISE

The simplest form of the Wood System: a structure to which nothing need reasonably be added, from which nothing can reasonably be taken.

were more richly ornamented on the top, or sheltering, member. It is no wonder, therefore, if we find the builders in wood also making an especially ornate feature of the upper third of their buildings.

The builders in stone, by means of ornamentation,

did all they could to enhance the significance of the sheltering part of their edifices; but when it came to the most desirable enhancement that would have been possible—an actual expression of shelter itself—they were limited once again by the deficiencies in their tra-

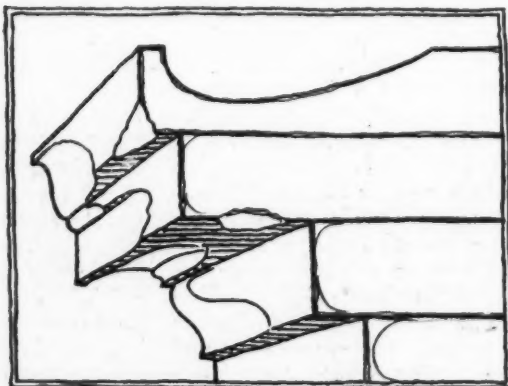


FIGURE 22

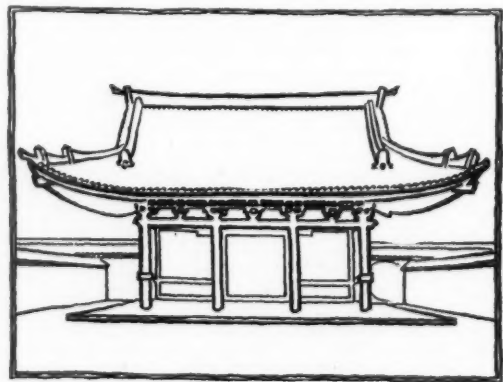


FIGURE 23

PIER AND BEAM

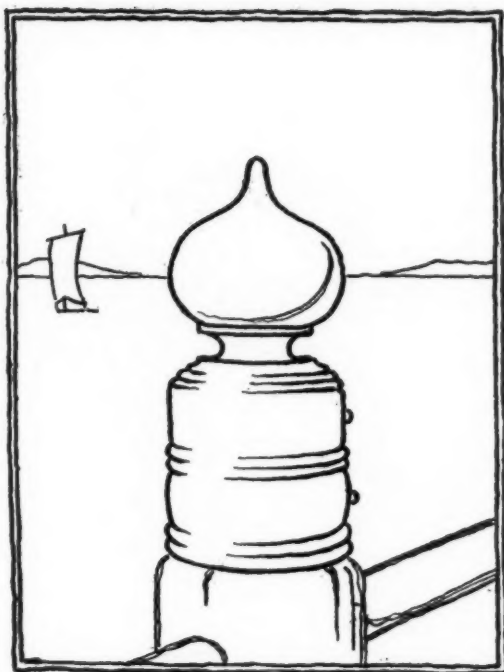


FIGURE 24

ditional material. The lack of beam quality in this material kept them from overhanging their roofs as they surely would have liked to do. What comparatively slight projection of this sort they were able to get was accomplished by means of the corbel, in the form of bed-mould. And by cutting away the under corner of the capstone itself, they somewhat lightened the untoward clumsiness of this member, and created at the same time another moulding form, the *cyma* of the classic cornice—Figure Twenty-Two.

In comparison with the builder in wood, however, the builder in stone was never able to achieve a real expression of shelter in his upper third. And this limitation the Greek designer particularly appreciated and acknowledged. With him the snubbed cornice was the logical expression of the system of stone, as we may assure ourselves by comparing the profile of the Parthenon order with those of the temples of Imperial Rome.

The builder in wood, on the contrary, found no such difficulty in achieving a direct expression of shelter in his roof. Because of its very beam quality, wood was admirably suited for the framing of overhanging eaves. And just as the Greek mason purposely set his columns closer together than need be, in order to enhance the qualities that stone possessed, so the carpenter of Japan overhung his cantilevered eaves beyond any reasonable necessity in order to enhance

the virtues peculiar to his chosen material. It is not an uncommon thing to find them projecting ten and twelve feet, as in the Chion-in at Kyoto. It is not unusual to find them, particularly on lesser gateways, overshadowing an area four times as great as that of the building that supports them—Figure Twenty-Three.

And considering that eaves of such great overhang would be apt to sag of their own weight, it was only natural that these Oriental craftsmen should give them a slight upward curve to counteract, not only the possibility, but even the appearance, of such sag. And as for the still longer hips, or angles at the corner, it was reasonable that they should have been given a still greater kick upward in proportion to their greater length.

Furthermore, this is one of the pleasing characteristics of wood—the fact that it can be curved. Just the opposite of stone—because of its fibrous nature—it lends itself to bending. And no craftsman in love with his material would have been slow to take advantage of this virtue which he found in it—taking advantage of it particularly in the leisurely members of the upper third of his building, which had nothing but themselves to carry.

If we of the Occident have been slow, in our wood architecture, to recognize and to take advantage of



THE TEMPLE CALLED HORYUJI—NEAR NARA



DETAIL OF THE SHRINE OF ITSUKUSHIMA ON THE INLAND SEA

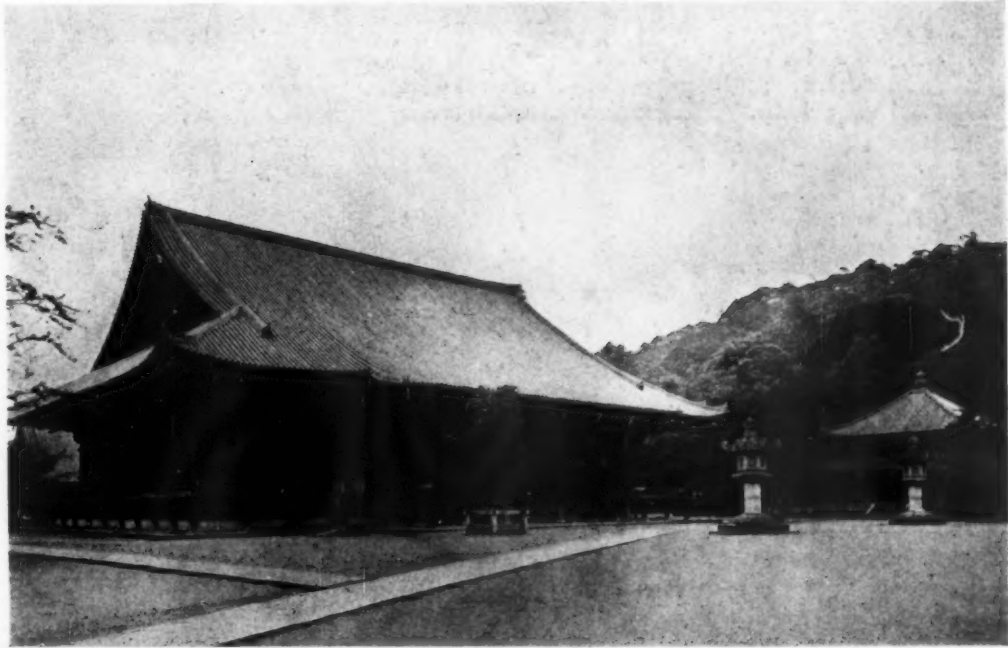
this pliability in that material, it may be because we have been inhibited by our deeply ingrained stone traditions. Our own furniture makers, for example, Chipendale, Sheraton, and Hepplewhite, who were not inhibited by architectural traditions, certainly made the most of this capacity in wood. And so did the Japanese. And it is interesting to notice in passing, that, the latter, in their best work, curved only the leisure members of their structures, like the top members of *torii* and balustrades—Figure Seventeen—or the free projecting ends of the ties. These craftsmen seem to have had too great respect for the working members of their system to curve, or carve, or otherwise hamper them, in the work they had to do.

To return to the characteristic roof—in the more refined work of Japan or China or Korea, the curve of this roof was only a slight, corrective one, as in the Ginkaku of Kyoto, the pleasure-house of an Ashikaga Shogun. In the “baroque” of the Orient, chiefly visible in China, this curve does take on a greatly exaggerated appearance, a grotesque sweep that has no more foundation in structural necessity than have

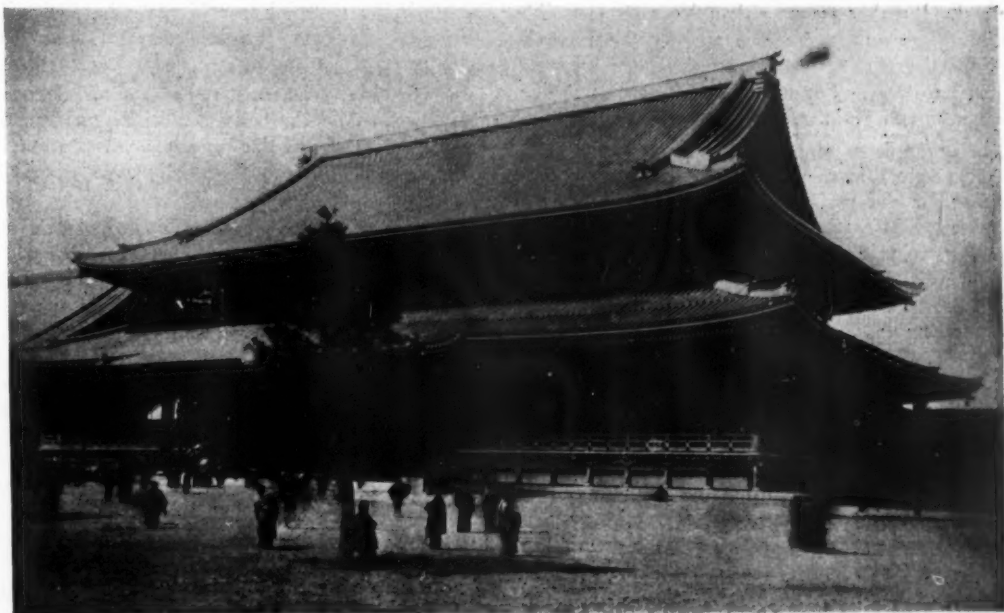
the architectural forms of our own purely decorative styles. And it would be just as hard for us to come to an understanding of their structural system of studying this later florid work as for them to gain a knowledge of our classic traditions of architecture in the Jesuit churches of the seventeenth century.

IX

We could continue at length with this analysis. We believe that in the purer structural system of the Shinto buildings of Japan, as exemplified in Miyajima, it would be possible to show that every new and unusual structural shape or detail could be accounted for reasonably and logically. This is almost as true of the Buddhist edifices. Let us consider, for example, the great temple of Hongwanji in Kyoto. The reader will notice all the little white squares that peep out as interesting accents from the soft brown shadow under the overhanging eaves. The Occidental eye might look upon these spots as merely a happy caprice of decorative art—and withal a very effective one—for they do make the somber shadow so much the more somber by



CHIONIN TEMPLE IN MEMORY OF FAVORS RECEIVED, IN KYOTO



EAST HONGANJI TEMPLE IN KYOTO



DETAIL OF THE SHRINE OF ITSUKUSHIMA ON THE INLAND SEA

contrast. But they are more than decorative art. They are in reality so many little covers of white paint closing the end grain of the myriad false rafters, to protect them from decay. For wood is most subject to decay through its end grain.

The ornate bronze post caps—Figure Twenty-Four—so characteristic of the Orient—are only another covering for end grain; and yet they are among the most beautiful bits of detail in all the world. For thus did these enthusiasts in wood turn the very limitations in their beloved material into sources of beauty and joy.

We should like to go on and show further how quick the Japanese were to appreciate still other virtues in the material—the slender dimensions, the thin sheets to which it could safely be worked, its beautiful grain, its suitability for carving. We could write much on each of these topics, but we will not do so here. We have undertaken only to outline a comparison between the logical structural forms of wood and stone; and that comparison properly ended with the previous section. If we had an ulterior motive in this comparison it was to establish if possible the striking relationships between wood as a structural material, and steel

—steel, the material to which we builders of today are enthusiastically devoting ourselves as engineers.

For the steel structural system too is a live-load system. Steel construction is also a curtain wall construction. And the basis of steel design, like that of wood design, is the flat rectangle. And what is true of the steel skeleton is equally true of reinforced concrete.

For years we have been fashioning the skeleton of our buildings in this steel or concrete. But up to this immediate present—naturally loyal to our own stone traditions—we have been clothing it in the architectural dress of that stone tradition, whether it was Greek, or Roman, or Renaissance, or Gothic. While our structural selves have been forging ahead into the future, culture and training have still bound our artistic selves to the past. But a new day is dawning. Evidence of it are apparent on upper Park Avenue and in the Back Bay. We are no longer masons of bearing walls and arches and vaults, but “framers” in steel and concrete. The designers of tomorrow are acknowledging this; and are asking themselves once more:

“Shall the thing framed say of him that framed it, he had no understanding?” EDWIN BONTA.



Six Old Virginia Homes
After the photographs by ROGER MILLEN

"WAVERTREE"—ALBEMARLE COUNTY, VIRGINIA



FREDERICKSBURG—THE BRAXTON HOUSE
Roger Millen



FREDERICKSBURG—THE RISING SUN TAVERN
Roger Millen



FREDERICKSBURG—THE BANK BUILDING
Roger Millen



FREDERICKSBURG—THE MARY WASHINGTON HOUSE
Roger Millen



FREDERICKSBURG—THE SENTRY BOX
Roger Millen

Vitruvius on City Planning

IT WILL always be regretted that the only important work of architecture which has come down to us from Greek and Roman antiquity, Vitruvius' *De Architectura*, is so limited in value as a source of knowledge on ancient city planning. Its insufficiency, in this respect, is all the more striking as Vitruvius himself does not leave us in any doubt as to the importance which both the Greek and the Roman world attached to city planning as an architectural discipline. How valuable it would have been to have received from him some more explicit evidence regarding the Hellenistic city planning beyond the few and more or less superficial references to Alexandria, to Mytilene in Lesbos, to Halicarnassus, and to one or two other Greek cities! He has a rather valuable chapter on the Greek house, another on the Greek theatre, but as for the *agorae* he confines himself to saying that "the Greeks lay out their forums in the form of a square surrounded by very spacious double colonnades, adorn them with columns set rather closely together, and with entablatures of stone or marble, and construct walks above in the upper story."

On this point one might have expected something more definite and less niggardly from an author who devotes a great part of the first of the ten books to various aspects of city planning and, moreover, made extensive use of the forever lost Greek writings on architecture, especially of those produced by the theorists of the Alexandrian school. It is the Hellenistic phase of Roman architecture with which Vitruvius makes us acquainted. As his work was written as late as the reign of Augustus, the great city development of the Hellenistic East had culminated long ago, and the material for observation and description was rich both in volume and variety.

This failure of Vitruvius to satisfy our curiosity about Greek city planning probably depended in part on his aptitudes, which were not those of a historian. But the main reason seems to have been the diversity of the subjects dealt with in the treatise, in which a variety of technical specialties were included according to the then prevalent conception of architecture. Such a multiplicity of objects, theoretically explained, primarily, for practical purposes, necessarily dampened any desire the aged author may have had to treat more fully that particular phase of architecture with which we are now concerned. However, although he deals with city planning in a rather perfunctory manner, his handling of the subject nevertheless convinces us that it seemed important to him. For after having defined the departments of architecture he immediately proceeds to making his observations on the choice of the best site for a city, the city walls, the planning of streets and sites for public buildings. This procedure is not without justification as, according to him, the art of building, one of the three departments of architecture, may be divided into two main branches, viz., first, the construction of fortified towns and of works for general use in public places, secondly, the erection of structures for individuals.

Although Vitruvius does not directly say so, it is

evident that he looked upon the planning of a city as the greatest synthetic problem of the architect. The Italian Renaissance could well quote him as the main source of the fundamental idea that the city as a whole is to be considered as an object or architectural endeavor, that it even ranks first among public buildings, and that it should accordingly be so laid out and so built as to have the qualities of durability, of utility and of beauty (*firmitas, utilitas, venustas*), in order fully to answer architectural requirements.

Through inspiring the Renaissance with this idea, Vitruvius' work more than any other influence became the incentive in reviving city planning as an architectural discipline. Nevertheless, it is true that the Renaissance derived most of its knowledge of the *aesthetic* aspect of ancient city planning, not from Vitruvius, but from other ancient writers, Greek and Roman—Vitruvius pays so scant attention to city planning *aesthetics* that he makes only two or three statements of *aesthetic* purport, and they are very brief. Of the high *aesthetic* level to which city planning sometimes attained in the Hellenistic East he gives merely the vaguest indication (in a short paragraph on Halicarnassus). Nothing that he says contains an intimation that even city planning along the lines of strictest regularity may be productive of great variety through skillful combination, and his recommendations with regard to sites for public buildings are, in the main, of the most dryly prosaic and practical kind or inspired by religious observance. In brief, he deals with the subject in a rather elementary manner; most of his suggestions merely conform with the ordinary routine of Roman planning, as it appeared in the small colonial towns, laid out at the start in chessboard or gridiron fashion.

A little less reticence on the subject of beauty would have been appreciated and have been more welcome than the prolix digressions (on more or less extraneous topics), in which the author sometimes indulges when dealing with other things; for instance: the choice of a site for a city. Vitruvius' example evidently induced several of the Renaissance writers to similar discursive treatment of this matter, the great importance of which, however, cannot be denied. Leon Battista Alberti, for instance, returns to it in several chapters of his work *De Re Aedificatoria*, variously recording disagreement with Vitruvius, as he does rather frequently on other matters.

Of all that Vitruvius says with regard to the site of a city, the most interesting item, perhaps, is the reference to Old Salpia in Apulia, "founded," Vitruvius says, "by Diomedes on his way back from Troy or by Elpias of Rhodes." Owing to the unhealthy climate sickness prevailed in that city, "wherefore Marcus Hostilius," Vitruvius continues, "asked the Senate and the Roman people, after petition from the inhabitants, for permission to remove the town. He constructed the walls and laid out the house lots, granting one to each citizen for a mere trifle. This done, he cut an opening from a lake into the sea, and thus made of the lake a harbor for the town." Through this operation, a healthy site was

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obtained only four miles distant from the original one. Obviously the process of "removing towns" was not initiated in America!

Salpia was not a large place, yet the instance of its transplantation well illustrates the great city planning achievements of the ancients. This episode arrests our attention as though a searchlight suddenly projected its rays over an extensive field into the most distant recesses of a remote and obscure background. Dimly there appear the prehistoric city planning endeavors of the Greeks, expanding, on the very threshold between semi-mythical and historic times, into the unnumbered city foundations in Southern Italy, in Northern Africa, in Sicily, and on the Euxine Sea. Nearer, scattered over the vast arena of centuries, are the results of later Greek and Roman activity, the famous examples of city planning in the age of Pericles, the numerous city creations of Alexander the Great and of the Seleucids, the many Roman colonies founded by the Republic and by the Empire. Not chance, but careful selection determined the sites of many of these cities. What an abundant material to observe and to comment upon for an expounder of the principles of city location! But in Vitruvius there is indeed little to remind of its existence.

Healthfulness, facility of food supply and convenient connections by land or by sea are the principal demands which the site of a city should meet. Of course, at the time of Vitruvius, the best site, in addition to meeting these requirements, was naturally strong. Warfare and its influence upon city planning enter into consideration. And in the days of Vitruvius, as well as in recent times, planning for defence was the most "scientific" part of the whole matter, becoming ever more difficult and exacting. Vitruvius' chapter on this important subject is the most concrete one of those on city planning. And he is particularly interesting, because he contradicts a time-honored Roman custom when he recommends laying out towns in circular (or polygonal) rather than in rectangular shape. In favor of the former he cites the greater facility of defense which it affords. But the four-square or oblong form, besides being consecrated by religious rite of the highest antiquity, simplified the problem of street planning, and seems to have been adhered to except when local conditions necessitated a deviation.

In Roman practice the planning might be as irregular as that of Pompeii, or it sometimes might equal or even surpass in regularity that of Augusta Praetoria Salasorum (Aosta), for instance. However, whatever shape the outline of the wall assumed, the greatest possible regularity was in general aimed at in the street lay-out. And Vitruvius, even though he gives preference to making the wall enclosure circular (or polygonal), by no means rejects the chessboard or gridiron street plan. Nothing but one or the other of these types could result from "letting the direction of the streets and alleys be laid down on the lines of division between the quarters of two (prevailing) winds"—as should be done according to his advice. But he does not enter into technical details. Most of the chapter on the "directions of streets" he devotes to little dissertations on winds and their causes, on diseases caused by chills and draughty air, on the several kinds of winds and their names, on the

methods for finding the direction and quarters of winds, and on the means of making a diagram for this purpose.

This chapter in particular makes us regret the loss of the original drawings by Vitruvius which accompanied his work and for which we merely have the substitutes, by some of his commentators. However, a "model" city plan, as conceived by Vitruvius—if one existed—was no doubt somewhat similar to many of the "model plans" of the Italian Renaissance, polygonal as these mostly are with a rectangular street net, a big central square and smaller ones grouped around the centre. If Vitruvius drew a similar scheme—in which the well-enclosed forum, according to usual Roman practice, was probably in the centre near the crossing of two main streets—he certainly did so to demonstrate how a city might be laid out in reality, just as did Francesco di Giorgio Martini, Pietro Cataneo, Vasari il Giovane, Scamozzi and others at the time of the Renaissance. And the Renaissance "model plans," at least, were more or less closely imitated in various practical instances.

The Renaissance model plans always provide squares very generously, for æsthetic as well as practical reasons, for if many squares are skillfully laid out variety will surely result. Therefore the best plan would combine streets and squares of varying size most effectively without impairing the unity of the architectural conception. How essential this idea seemed to the Renaissance one may judge from a plan like that of Charleville in France, laid out by Charles of Gonzaga in the first decade of the 17th century. Although Charleville is a very modest place (about 10,000 inhabitants nowadays), the plan provided not less than five spacious secondary squares, grouped around the very extensive central one, the Place Ducale.

That kind of extravagance was foreign to antiquity. But even in the single forum of a small provincial town there might be concentrated a magnificence and splendor such as no modern Pompeii or Priene has ever dreamed of. This idea of the "civic centre"—for art and display, for worship and assembly, for commerce and administration of justice, for social intercourse and gladiatorial shows—is of course emphasized by Vitruvius, but his utterances hardly do justice to a matter replete with interest. In a seaboard town the forum should be close to the harbor; in an inland town, in the middle of the city. Public buildings to be erected adjoining the forum are the temple of Mercury, the Basilica, the Treasury, the Senate House, and the Prison. Vitruvius remarks that the dimensions of the three latter buildings should be proportionate to those of the forum, the size of which should in turn be commensurate with the number of inhabitants, "so that it may not be too small a space to be useful, nor look like a desert waste for lack of population."

The forum should have the form of a rectangle, one and a half times as long as wide and should be surrounded with a spacious double colonnade, like the *agora*, but the Roman custom of giving gladiatorial shows in the forum favored placing the columns of the portico and the upper gallery farther apart than the Greeks used to do. Finally bankers' offices should find a place in the colon-

VITRUVIUS ON CITY PLANNING

nade, and the upper floor ought to have balconies, "properly arranged so as to be convenient and to bring in some public revenue."

This is practically all that Vitruvius says regarding the most festive, monumental and representative feature of ancient city planning. Of course, had he lived a hundred or two hundred years later, he would hardly have stopped with these meagre indications. That would have been altogether too shockingly inadequate in view of the sumptuous developments of the Empire at its zenith of wealth and power! It should be remembered that Vitruvius wrote at the time when the properly Roman development in architecture began, and it may perhaps be maintained that only then did Roman city planning sometimes rise to achievements of any æsthetic scope and importance. Vitruvius' main failure in this subject in general and its æsthetic aspect in particular lies, as has already been said, in the almost complete neglect of the creations of the Hellenistic East. This is all the more true because the influence on Roman city planning from that quarter was probably greater than has generally been assumed.

Vitruvius presents little which is concrete and specific in speaking of the forum; he is scarcely better as he deals with sites for public buildings. In this chapter he refers to the location of various temples. The temple of Jupiter, Juno and Minerva should be on the very highest point, commanding a view of the greater part of the city, that of Isis and Serapis in the emporium, that of Apollo and Father Bacchus near the theatre. In communities which have no gymnasium or amphitheatre the temple of Hercules should be built near the circus. Finally, the fanes of Venus, Vulcan, Mars and Ceres should be outside the city, and "proper sites should be set apart for the precincts of the other gods, according to the nature of the sacrifices offered to them."

These general precepts did not constitute ironclad rules in Roman practice, but they embodied ideas of recognized validity according to tradition, followed whenever possible. However, they do not reveal the whole importance of this phase of ancient urban organization, barely suggestive as they are that the idea and practice of districting were not foreign to the ancients. Accordingly the brevity of the author is disappointing to say the least.

In making a few brief observations on the orientation of temples, Vitruvius says that if the nature of their sites forbids their facing west, the principle of determining the quarter should be changed, so that the widest possible view of the city may be had from the sanctuaries of the gods. This indicates that for temples, in general, the highest possible location should be chosen, an idea which the Italian Renaissance theory revives in prescribing that churches, if feasible, should occupy vantage points within the city.

For two other classes of public buildings, baths and theatres, the site is to be determined according to their exposure to the rays of the sun; public baths are best situated in a warm place, facing away from the north and northeast, while a southern exposure should be avoided for the theatre.

The Hellenistic custom of erecting extensive colonnades

adjoining the theatre was imitated in the city of Rome when its first stone theatre, that of Pompey, was built about 50 B.C. The lavish magnificence of the Hecatomastylum did not fail to make a great impression, and this, combined with its practical advantages, made it a feature which Vitruvius holds should adorn every theatre. And here he makes an observation which serves to remind us that public gardens were not unknown to the cities of the ancients. "The space in the middle, between the colonnades and open to the sky," he says, "ought to be embellished with green things; for walking in the open air is very healthy, particularly for the eyes, since the refined and rarified air that comes from green things, finding its way in because of the physical exercise, gives a clean-cut image, and, by clearing away the gross humours from the eyes, leaves the sight keen and the image distinct." How great an importance Vitruvius attributed to this phase of city planning is especially evidenced by his expressing the opinion that "cities should be provided with the roomiest and most ornamental walks laid out under the free and open sky." This observation, no doubt, was inspired by the notable examples of municipal gardens in the Hellenistic East, which he wished to see reproduced in Italy.

Meagre as is our knowledge of the glories of ancient garden art, Vitruvius might well have enriched it with at least a little information to add to what other writers tell. He displays, however, a similar sphinx-like reserve in dealing with another matter, æsthetically hardly less interesting—the planning and construction of harbors. Without doubt, to plan and build a harbor was a very matter-of-fact affair among the ancients, but Vitruvius' brief and arid comment contains nothing apt to reveal the high level to which they sometimes attained in ennobling this most utilitarian part of the city, so that it presented an aspect of decorous dignity, even grandeur, to the approaching traveller. Outstanding examples are so well known that none need be named here.

On the interesting subject of bridge building, which plays so important a rôle in the theory of the Italian Renaissance, Vitruvius says never a word. A peculiar omission it seems, considering the comprehensiveness of his work and the fact that bridge building was certainly not considered a matter extraneous to architecture. Even to the mediæval students of Vitruvius this omission must have seemed singular—far more so to us moderns, who, for all our failures in practice, recognize that for the architect there are few opportunities which æsthetically equal those of spanning a river in urban surroundings.

The burial of the dead and the disposal of sewage are other matters to be provided for in the planning of a city; again Vitruvius is silent. On the other hand, he pays some attention to the construction of water conduits, that branch of civil engineering in which the Romans excelled and which, fortunately, was expertly treated by Frontinus in his capital work, *De aquis urbis Romae*. Did there ever in the urban history of the world exist anything in the line of municipal engineering quite comparable in magnitude and monumental solidity with the fully developed aqueduct system of the city of Rome, or, to quote another of many examples, with those mighty aqueducts erected in the reign of Trajan, which carried

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water from the Hauran Mountains into the Syrian plain? To such grandiose achievements we can add those of the Roman road systems, which at least in part seem never to have been equalled in technical perfection. We are here in the presence of planning endeavors on the grandest scale, inseparably linked with the great urban development which began during the later Republic and continued during the earlier period of the Empire. Of this development Vitruvius witnessed merely the beginning, and he says little or nothing which adds to our limited knowledge of the whole vast fabric of urban, intra-urban and regional planning in the time of the

Romans. More to be regretted is his reticence in touching upon similar endeavors in the Hellenistic world before the Roman domination. For there enlightenment is most needed. That his silence depended on ignorance is not unlikely, for our author does not appear to have been a very travelled man. For all its insufficiency in this and other respect, however, Vitruvius' *De Architectura* is our main literary source of knowledge on ancient architecture, and the influence that the work has exerted in modern times will always save it from oblivion and make it an object of interested study, whatever its intrinsic value may be.

NILS HAMMARSTRAND.

London Letter

THE PAST year, as far at any rate as London is concerned, has been an important one for architects, if not for the quality of their works. It has been marked by a steady increase of popular interest in the profession and its achievements, by the completion of a large number of important buildings, by the creation of a great Empire Exhibition, and by the fusion into one body of the two leading professional Societies of the Kingdom. In the field of housing, while there has been comparatively little actual progress, the whole question has been thoroughly inquired into before undertaking any wholesale government action, and this must be considered both a wise proceeding and an advance on the immediate post-war housing program.

Architecture has continued to receive increasing attention on the part of authors and publishers, and not for many years has there been such activity in the preparation of books, many of which aim at circulation among the general public. A sign of the times has been the entrance into this field of one of the biggest publishing houses, Messrs. Ernest Benn, Ltd., who have opened up a special department which has produced amongst other works the already familiar series of the *Masters of Architecture*, and an important collection of the most important examples of modern Swedish architecture.

The Architecture Club, which has been very largely responsible for the increase in architectural propaganda, has its full quota of architects, and has almost reached its membership limit on the side of literature. This Club, which has been responsible since its inauguration in 1922 for two of the most interesting architectural exhibitions ever held in this country, is an admirable organization, not only through its dual connections and influences, but also by reason of its non-political composition. The President, Mr. J. C. Squire, elected again to the Chair for the coming year, is responsible for the editing of *The London Mercury*, and he is able, through the assistance of the press, to raise the general appreciation of good architecture in a degree impossible even to the Institute, which might always be open to the implication of 'axes to grind.' The Club has no premises and a merely nominal subscription, and exists for one purpose only, the promotion of architecture. One wonders whether a similar organization might not have its utility in the United States? Co-ordination of aims and much useful interchange of ideas

and experiences would result from contact between similar bodies in the two great English speaking countries.

The architectural press at the commencement of the New Year is accustomed to review the most important buildings of the old year, but it will be difficult to find anything revealing very great interest of idea, with the exception, perhaps, of Adelaide House, one of the few commercial buildings which breaks away from the usual traditional treatment. Sir Edwin Lutyens, in his elaborate offices in Finsbury Circus for the Anglo Persian Oil Company (illustrated in the *JOURNAL* of July, 1923), has said the probably last and the weightiest words in the Italian Renaissance manner, and these two buildings will probably be first favorites in competition for the award of the R. I. B. A. medal for the best London street façade of the year.

Still in the same classic note is to be the very large new building in Leadenhall Street for Lloyds, who for the past 150 years have been housed in the Royal Exchange. The architect is Sir Edwin Cooper, who was responsible for the massive Port of London Authority Building on Tower Hill.

* * *

As was foreshadowed in these Letters, it has been definitely decided to reopen for another year the British Empire Exhibition at Wembley. The argument in favor resides in the substantial and expensive character of the buildings, the cost of which could scarcely be paid off in the six months for which the Exhibition was open.

The final balance sheet for 1924 is not yet available, but the decision to reopen has created considerable stir amongst those who were guarantors, and who may consider that they are not in any way bound to continue their guarantee for another year. Had the Exhibition been definitely terminated in October, there would probably have been very considerable available assets as an offset to the losses in the venture, with a consequent considerable reduction in estimated liability of the guarantors; and there is a certain feeling that if another year of opening is inaugurated the government should step in and relieve all private persons of financial responsibility.

* * *

American architects who love their old London will be sorry to hear that still further familiar landmarks are

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disappearing. The County Fire Office, by Abraham (illustrated in the *London Architectural Review* for December), which has stood for 100 years on the east side of Piccadilly Circus, has been entirely demolished, and now the little figure of Eros which graced the fountain in Piccadilly Circus is shortly to be banished, possibly for good.

From the point of view of those who consider that Love is the center of all that really matters, the site for Eros was a very happy one. But the Underground Railway is going to make excavations on the very spot, and on Armistice and Boat Race nights the local wags will have to find some other fountain in which to get arrested.

The destruction of the Regent Street Quadrant is by now very nearly complete, but there still remain elsewhere a few souvenirs of John Nash and his period of the Regency, such as the east wing of Carlton House Terrace, the United Service Club, the Haymarket Theatre, and the Marble Arch. Decimus Burton is represented by the arch on Constitution Hill, the screen opposite to it at Hyde Park Corner, known as Apsley Gate, and a good deal of work in Regent's Park. But the County Fire Office seems to be about the only work of Robert Abraham. His name is barely known to this age and tomorrow it will be forgotten.

* * *

The poet, John Masefield, has set an example to authors by building a theatre within the grounds of his residence at Boars Hill, near Oxford. It is a simply designed building, rather on the lines of a "tithe barn," and seats about 120 people. Although the stage is a broad one, it is, however, proposed to dispense with stage scenery altogether and use specially designed curtains as a setting.

* * *

The Society of Architects, having completed most of its arrangements for fusion with the Royal Institute, is closing its doors to new members, and has celebrated its approaching absorption by inviting the whole Council of the R. I. B. A. to a sort of pre-nuptial dinner. No reports of speeches were issued, but we understand that the excellence of the fare accounted for a confusion in the minds of the speakers as to whether the celebration might be considered in the light of a funeral or a wedding. The Society was referred to alternately as a blushing bride and a rather congenial corpse, but fortunately a musical entertainment drowned the noise of numerous "bricks," which were being dropped on both sides, and complete harmony was established.

* * *

The festive season which is just behind us has called the attention of all thirsty persons to the question of cupboard doors, and we have noticed the revival of the ancient custom of concealing the "store" behind the innocuous covering of false book racks. These are generally made up of sets of classics which it is certain that no inquisitive meddler will attempt to pull from the shelf, but we have noticed that some owners utilize the giving of titles as an opportunity for a little fantasia in self-expression. For the benefit, however, of architects who

may be called upon to provide book titles in addition to detailing the cupboard, we append the following suggestions which are taken from the life:

Carpenter's "Horse of Troy."
"Clapper on Bell-Ringing."
"Nine Tales of a Cat."
Gunn's "Army Echoes."
"Whoosh on Golf."
"Organ Playing," by Handel.
"Johnson's Contradictionary."
Cobbler's "Use of the Trees."
Pound's "Electric Currants."
"No Connection," by Marconi.

"X."

London,
January, 1925.

In Praise of Architecture

"Wren was one of the harmonic heroes of the world if ever there was one. Though he wrote his poetry in stone and brick rather than in iambs and trochaics, he was not only one of the stateliest but one of the most direct, stimulating, and appealing of the poets; one of the noble band who purge our minds, who clear away the storms, and for whom we may thank God when once more the blue appears. Wren is one of the physicians of the soul. In his own day perhaps he was the greatest. Much as I love Dryden, and glory in Pope, delight, though with a shudder, in Swift, and own the enchantments of Purcell, I cannot help feeling that from 1670 to 1710 Wren reigns supreme in the arts—at any rate in the arts of his native land."—*John St. Loe Strachey in THE RIVER OF LIFE (London, 1924).*

"Just one word about your tiny churches without choirs and sacristans, bare and cold anterooms of God, with an oaken roof, a grassy graveyard around, and a rectangular belfry among the trees, which is as typical for the English countryside as the onion-shaped church domes are for ours; belfries which mark the passage of time with an eternally changeless chant over the eternally changeless graves of the departed."—*Karel Capek in HOW IT FEELS TO BE IN ENGLAND (Manchester Guardian, October, 1924).*

Expositions

The Seventh Annual "Own Your Home" Exposition, to be held at the Sixty-ninth Regiment Armory, New York City, 18-25 April, will be interesting in that it will reveal various construction methods used in erecting a home of average size, and will endeavor to point out the proper uses of various building materials. To this end a house, partially completed, will be erected on the exhibition floor, in which foundation work, walls, plumbing installations, flooring, ceilings and insulation will be exposed to view. It is planned to have men in attendance to explain the various materials and processes.

STANLEY & SCHEIBEL announce the removal of their offices to 1301 Realty Building, Youngstown, Ohio.

The Fifty-Eighth Annual Convention

And the Architecture and Allied Arts Exhibition

I DON'T want the readers of the JOURNAL to get the impression from these short articles that I am attempting to tell them all about the Fifty-eighth Annual Convention. In the last issue I may have seemed to be Chairman of the whole thing. I am only Chairman of the Exhibition Committee, which I can assure you is quite enough.

Mr. D. Everett Waid, President of the Institute, is doing a few things himself; Mr. Benjamin W. Morris, President of the NEW YORK CHAPTER, is making a few gestures, too, while Mr. Donn Barber, Chairman of the Entertainment Committee, could tell you an epic tale of what he is proposing to do to the "poor" delegates and their families. I am only afraid he will be so successful in entertaining them that they will barely have time to see my Exhibition, but it is generally conceded that we lead a hectic life in New York and we expect to give the delegates so much that they will never forget it.

Most enthusiastic letters are coming in from all the Regional Directors who are energetically at work collecting the very *crème de la crème* of material throughout the United States. This means that for the first time in our history we are really going to see assembled, in one show, the most representative work of the entire country. While comparisons are sometimes odious, I am quite sure that a comparative Exhibit of the work as collected by the Regional Directors will

only prove that American architects, no matter how different their point of approach to a problem may be, are ALWAYS good.

One floor of the Grand Central Palace will be devoted exclusively to the interests of the Small House. No feature of the Exhibit will have a greater popular appeal, and here will be shown examples to fit every pocketbook, together with a practical exhibition of all the conveniences, furnishings and decorations which go to make a small house most livable.

At the entrance to the Grand Central Palace on the main floor will be a complete directory of the Exhibition so that those with limited time may find what they want especially and devote themselves exclusively to one field.

From the Small House to City Planning is quite a jump, but no more of a jump than one would be obliged to take if he expects to cover the wide range of this Exhibition. The International City Planning Exhibit, in connection with the International Town, City and Regional Planning Congress, is to be part of our Architectural and Allied Arts Exposition.

These, then, are the two extremes. In the next issue of the JOURNAL we will try to give you a few of the high spots in between.

HARVEY WILEY CORBETT, *Chairman,*
Exhibition Committee.

The Secretary's Page

62. CHAPTER REPORTS. The reports this month were more voluminous, as some of the Chapters sent in their reports for the entire year, so the Secretary has had several hours of interesting reading. Once more he suggests that the Chapter Secretaries send in their reports immediately after each meeting. As you know, because of the rules for publication of monthly magazines, articles for them have to be in nearly a month ahead, hence delays on the part of the various Chapter Secretaries make the items in *The Secretary's Page* just that much older. As New Year is upon us the Secretary writes this. When you see it the year will be all of a month old. How about delayed "New Resolutions," or if you object to that time-worn device, how about really endeavoring to pick up some of the loose places and making this the best year we have ever had?

The Secretary sees direct improvement in the interest being taken by the different Chapters in the communications from the Secretary's Office. And many of the Chapters are taking action along the lines suggested, though many merely mention them as having been read and placed on file.

Questionnaires on Chapter activities have not been filled out by all the Chapters as yet. In one of the minutes a statement was made that the Chapter had done so little that its Secretary was embarrassed in trying to answer some of the questions, but that now things were looking up a little and he would try to do so. Such embarrassment should not be felt. The very lack of accomplishment by some of the Chapters is the reason for the questionnaire. The difficulties that arise in each Chapter may be solved when they are once expressed on paper. Perhaps the Secretary's office can help you out. It believes firmly in the value of the results to be obtained from the collating and disseminating of the answers to these various questions. Every Chapter has had to start out in a small way and feel its way along the line, and the experience of all the Chapters should be of great help to most of them.

A much increased interest is being shown in the work of Public Information. In this number the various public activities of Chapters, as shown by their reports, will be grouped under a special subhead of *The Secretary's Page*, called *Public Activities of the Chapters*, and it is

THE SECRETARY'S PAGE

hoped that ideas of value will appear for the benefit of all. Some very real things are being accomplished, and in some parts of the country the profession is making itself felt as an active and important part of the growth of the community. The Chapters are being asked, by "The Powers that Be," to give of their wisdom and advice in all civic matters that touch upon the physical growth of the city or community. And this is as it should be.

The Secretary looks forward on the new year with a distinct feeling of optimism and satisfaction. He thinks it will prove to be a year of work and results for the entire profession. This is a crucial time in the history of the profession of architecture, and the Secretary believes that the profession has awakened to that fact and is going to show it this year.

KENTUCKY shows a record of interest as shown by the President's report of the past year's work. They have been having their troubles with the old bane of small attendance and lack of interest on the part of many Chapter members, and, for the nonce, find a partial solution in holding luncheon meetings. Their new committees for the year have been announced and things will be done in Kentucky.

WASHINGTON STATE is having best success with dinner meetings. It is trying an interesting experiment in finding the feeling of the Chapter in the matter of the annual election of officers, and is having a preliminary advisory ballot for the information and help of the nominating committee.

VIRGINIA reports its difficulties due to a much scattered membership. The annual meeting is the important one of the year, and this past year it has tried, with success, the idea of having social meetings at different points in the State.

CHICAGO, able because of its size to do many things which other Chapters cannot attempt, has had a remarkable year. It has set up definite programs for different meetings, issued charming little printed announcements and invitations, and secured enthusiasm and attendance. Many of its evening programs are definitely educational with such subjects as: "The Navy," "The Draughtsman," "The Landscape Architect," etc. In the "Leaflet" is appearing a delightful "History of the Chicago Chapter," by Peter B. Wight.

RHODE ISLAND offers an idea, new to the Secretary, which has great possibilities. Its president distributed at random to different members subjects of all types, and each man was to deliver a five-minute talk on the particular subject handed to him. Apparently there was some embarrassment, but in general it was a great success.

NEW YORK is very busy over the coming Convention. If the Secretary is any judge at all, NEW YORK is going right over the top when the Convention date arrives. NEW YORK makes a specialty of interesting announcements of meetings to come. Its "Harvest Home" dinner at the new Hotel Shelton was a great success, and the tour of the hotel was valuable to every architect present. Tales of their travels abroad this last summer by six members must have been delightful. A suggestion being

seriously considered by the Chapter is a series of meetings especially for draughtsmen. The necessity, or rather the desirability, of recognizing the draughtsman as a fellow architect is growing steadily.

UTAH completely overwhelmed the Secretary with a pamphlet containing the transactions of the entire year. This, on top of their happy little edition of *Irregular Curves*, was a distinct surprise. One of the sheets was a tabulation of the attendance of each member of the Chapter. There were twelve meetings during the year and three men had a 100 per cent record, and there was but one who did not attend a meeting. Further reading showed the Secretary that this one had done some very excellent work for the Chapter, so his failure to attend must have been from some other cause than lack of interest in it. UTAH is also holding meetings where it can inspect the work of fellow members, and has decided to assess each member \$5.00 to meet the expenses of its Convention delegates. Bully for UTAH.

MINNESOTA reports a meeting with the Engineers' Club, and Heating and Ventilating Engineers, and the Draughtsmen of the Board of Education also invited. A tour of the school was made and the methods by which a cubic foot cost of building of 25.39 cents was achieved were explained.

NEBRASKA sends its usual delightfully prepared minutes. It plans to have, at its annual dinner, representatives of the Omaha press, the Professional Men's Club of Omaha, and the Secretary of the Builders' Exchange.

SAN FRANCISCO reports cooperation with SOUTHERN CALIFORNIA in a Traveling Exhibit of School Houses.

PITTSBURGH reports a delightful exhibit of Water Colors and Sketches.

BALTIMORE shows interest and much discussion of many things.

CLEVELAND is much exercised with a Registration Law, and is going through all the agonies of discussing it. It has taken the matter up with the Institute through the Secretary's office, and the Secretary is sure that they will find the best solution for their problem.

WASHINGTON, D. C., is considering a move to establish a class of student members, paying dues of \$5.00 a year, with no initiation fee. This is a very worth-while idea for any Chapter near an architectural school. There was also much discussion of that question, so vital in every Chapter in the country, "How to keep local work in the hands of local architects." The Secretary offers the suggestion for another allied subject: "How to make local architects capable of meeting outside competition."

Public Activities of the Chapters

63. This is the new subject for *The Secretary's Page*, and he hopes that it will receive each month many notes of value from all over the country. Perhaps space can be found for detailed stories of experiences which have produced results. He feels that this first number ought to be of interest to most of the Chapters, and that perhaps it will start detailed correspondence between different Chapters for special items that cannot be touched on in these brief notes.

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KENTUCKY has appointed a Committee to push the matter of putting through a proper State Registration Law in 1926. It has a special committee to work with a committee of the Board of Trade to see what shall be done with the Jefferson County Court House. It is to hold an exhibition of architectural photographs this month, one of the traveling exhibits of the American Federation of Arts.

Director C. H. Hammond has announced his intention of visiting the KENTUCKY CHAPTER on his way to the meeting of the Executive Committee at Asheville.

WASHINGTON STATE announces that its Building Code Committee has finished its work on the new Code, and that the Mayor of Seattle has signed the new Ordinance creating a City Planning Commission. One of its members will come from the Chapter.

CHICAGO has instructed its secretary to inform the Plumbers' Association that all matters pertaining to Contracts are handled by the Institute Committee on Contracts. The combination of the CHICAGO CHAPTER, the Illinois Society of Architects and the Chicago Architectural Club is well on its way in the formation of The Architects' Club of Chicago, as reported in the JOURNAL for January.

RHODE ISLAND is taking an active part in the working out of a new building code for Providence. Reference is made in the minutes to the slow procedure of the Building Code Committee of the Department of Commerce, and the suggestion that they carry on without reference to it. This leads the Secretary to remark that the Building Code Committee of the Department of Commerce has no expectation of ever making a Code which can be adopted *in toto* by any one city. It is busily at work preparing such parts of codes as can be used safely by different communities. It has completed and published one report on "Small Dwellings" and the reports on "Walls" and "Floor Loads" have been finished and are in the process of publication. An "Outline" is well under way, and all Chapter and Code Committees throughout the country will do well to write to the Building Code Committee, Office of the Secretary, Department of Commerce, Washington, D. C., for information. It is timely to state that two members of the Institute have always been among the active workers on the Building Code Committee.

NEW YORK has just formed a most interesting Committee, which should develop something worth while—the Committee on "Uneconomic Practices." This should bring much of interest to this page.

The recent action of the NEW YORK CHAPTER recommending that the trustees keep Trowbridge & Livingston as architects for the new Roosevelt Memorial Museum is most noteworthy. The trustees had decided that they would like to hold a paid competition, under the rules of the Institute. All the preliminary work on the project had been done by Trowbridge & Livingston.

UTAH has taken action condemning the practice of those architects who employ material salesmen engineers in their work. Surely the profession of architecture should do all in its power to enable its sister profession, engineering, to carry on in a professional manner, and UTAH is taking one definite step.

The City Federation of Clubs has asked the Chapter to endeavor to set up and keep a permanent architectural exhibit, and UTAH has accepted the charge by instructing its Committee on Education to see that the drawings and photographs on exhibition are changed every month.

MINNESOTA reports its members at work on the City Building Code Committee with other civic bodies and the Building Inspector's Office.

CLEVELAND reports active work on the matter of a State Registration Law.

WASHINGTON, D. C., reports the passage of a Registration Bill.

SAN FRANCISCO reports a Code of Ethics for the Building Industry, as adopted by the Industrial Association of San Francisco, the SAN FRANCISCO CHAPTER, and the San Francisco Builders' Exchange. Articles XI, XII, and XIII, the obligations of the architect, the contractor and labor, are particularly interesting, a concise and accurate statement of the separate functions of these three elements, and worthy of complete publication on a national scale. The Secretary recommends them to the attention of everyone.

PITTSBURGH reports a tremendous piece of work on its Building Code, the report submitted by the Chairman, Mr. Sidney F. Heckert, of that Chapter. Authority was granted by an enabling act in 1915. Since that time 472 meetings have been held and the code completed. Some twenty of the twenty-one ordinances already passed have been printed in book form. Two or more Institute members have always been members of the Committee.

ST. LOUIS reports a fall season of great interest. The Committee on Legislation has been occupied with an Architects' Registration Bill. The Civic Improvements Committee is assisting the city authorities with the Memorial Plaza Program. It is safe to say that the work of this committee had a decided effect in the recent election, which was in the nature of a popular referendum on the work of the Municipal Plan Commission. The Committee on Public Information has succeeded in having a number of articles appear in the public press explaining the functions of the architect and the nature of his services. It was also instrumental in placing the Home Builders' Clinic of the Architects' Small House Service Bureau in one of the local papers, and has been cooperating with the South Central Division of the Bureau in the exploitation of its services.

EDWIN H. BROWN, *Secretary.*

Industrial Relations

THE FIVE DAY WEEK.—Contractors in various parts of the country are very much agitated by the five day week which has been asked for by building trades workers in many localities. A statement recently issued by the National Association of Building Trade Employers states that the five day week movement is believed to be "the most serious question that has faced the construction industry in years. If this meets with any degree of success, construction costs will go up and the prosperity which has been enjoyed in the past three years will be at an end."

INDUSTRIAL RELATIONS

At a conference of Building Trade Employers held in Cleveland on 5 January the following resolution was adopted:

Whereas, There is an extreme shortage of mechanics in the building trades in the United States today, and

Whereas, The efforts being made by some labor organizations in the Building Industry to establish a five day week would further increase this shortage by almost ten per cent, thereby increasing the cost of building homes and other essential structures and limiting the amount of construction possible, and

Whereas, Organized labor has placed itself definitely on record as acknowledging the existing extreme shortage of labor in the building trades and has cooperated with the employers in the establishing of apprentice schools throughout the country in order to create more mechanics,

Therefore, be it Resolved, That the employers in the Construction Industry here assembled at Cleveland this 5th day of January, 1925, from throughout the United States, believe that the efforts on the part of several trade unions now to put into effect a five day week, thereby nullifying the splendid work of the apprentice schools to create more mechanics to take care of the shortage, is unwarranted and is a distinct step backwards for the Building Industry as a whole.

Therefore, be it Resolved, That any further attempt on the part of any labor organization to put into effect any such destructive program cannot be looked upon by the public and the employers as anything but bad faith and must be resisted to the utmost.

Be it Further Resolved, That it is requested and expected that organized labor will join wholeheartedly with the employers in the Building Industry throughout the country so that this further restriction in hours of labor will not be sanctioned or upheld and that they will earnestly assist the employers in removing from the working agreements of any trades any such prohibitive restrictions as a five day week.

There has also been considerable newspaper publicity on the same subject. The *Engineering News Record* reports in its annual survey that at least one-third of the 20 most important cities of the country expect record-breaking building booms this year. The survey shows that the wage tendency has been upward owing to the strength of the unions in the building industry, the urgent demand for the services of the mechanics and the scarcity of apprentices.

It seems to the Chairman of the Institute's Committee on Industrial Relations that there is no way to meet any unwise demand of the building trades union for a shorter working week than by education. It seems possible that there are circumstances (shortage of work) under which a 40 hour week might be perfectly legitimate. On the other hand, the occasions are frequent when such a shortening of hours would be unwise. This it seems will be the case in many cities this coming Spring. Under similar conditions one or two of the Building Congress groups have been fairly successful in getting the sympathy of the union leaders against the shortening of the working week in the ordinary course of the Congress procedure. That is to say, some of the building trades leaders through participating in Congress group work are beginning to understand the relation between shortage of labor, high prices and progress in building con-

struction. On the other hand, many of the contractors and architects connected with the Building Congress groups realize that some of the very intelligent building trades union leaders are quite as anxious as are other elements in the industry that the price of labor shall not go so high as to put the workers out of bounds and at the same time discourage building construction.

Although the Committee on Industrial Relations is appealed to by the Contractors' Association to defeat this plan for increased pay and the shorter week, it does not seem reasonable for an Institute Committee to take any such decision. The unions in the building trades, like Contractors' Associations and Associations of Architects, will continue to go their own way and frequently do things that are harmful to the industry as a whole until each of these groups realizes much more fully than it does now the part it plays in a composite function and each knows what are the difficulties of the whole process. That educational work has so far hardly been begun.

NEW BUILDING CONGRESS IN FORMATION

At a series of conferences held in Omaha, 14-15 January, the first definite steps were taken towards the formation of the Omaha (or Nebraska) Building Congress. At one of these meetings, the annual banquet of the Master Builders of Nebraska, held on the night of 14 January, the scheme of Congress organization as presented by the Chairman of the Institute's Committee on Industrial Relations was enthusiastically received by more than 400 guests. It may not be amiss to report an amusing incident that occurred at this banquet. The toastmaster (a leading financial man of the city) took at least an hour and a quarter for a preliminary speech, thus leaving only about twenty-five minutes for the specially invited speaker. A few days later Mr. Harvey Newbranch, Editor of the *Omaha World-Herald*, published an editorial, of which the following is a part:

SPEAKER AND TOASTMASTER

"It was a most interesting story that Robert Kohn, eminent New York architect, told the Omaha Builders' Exchange, of the benefits the building industry has gained in other cities through a builders' congress. Architects, contractors, engineers, material and supply men, workmen and all others concerned in this great industry, meeting through representatives at the council table to discuss and understand each other's problems and functions, to thresh out their differences, and to bring, by co-operation, system and order out of confusion and strife.

"That the speaker digressed to suggest that a similar plan might well be applied in the field of government, each industry or interest selecting its own representatives, was a squint in the direction of the soviet theory that added piquancy to a very thoughtful and earnest address.

"The scintillant gem of Mr. Kohn's speech, however, as attested by the zest with which his listeners grabbed for it, was his proclamation that the next time he journeyed far to be the speaker of the evening he would request that he be made the toastmaster. Which recalls what an indignant subscriber wrote, the other day, to the *Boston Transcript*:

"If I am ever seized with homicidal mania and 'kill my man,' it will be under extreme provocation—when I am sitting in a lecture hall and listening to the pre-

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liminary exercises, before some advertised speaker is presented to his audience. I shall slay one of our prominent citizens. I shall slay an introducer.'"

It is not only at Building Congress meetings that restraint must be put upon Toastmasters.

ROBERT D. KOHN, *Chairman.*

Public Works

The Public Works Committee is able to announce that, in cooperation with the Engineering Council, amendments shall be an architect in charge of all the architectural design and construction of Federal Public Works.

The American Institute of Architects is working in to the proposed Reorganization of the Federal Departments will be introduced by the Engineers and Architects, proposing a Division of Public Works in the Interior Department with four assistant secretaries, one of whom entire harmony with the Engineering Council in this movement and hopes to continue our efforts for such a reorganization accepting defeat rather than compromise, with the intention of reintroducing the same bill in the next Congress.

It is hoped that the various Chapters may be able to get in touch with their senators and representatives when these amendments are offered and urge their adoption.

A bill has been introduced appropriating \$150,000,000 for Public Buildings throughout the United States—\$25,000,000 of this sum to be available annually, and with so large a program it is important that the Government Agency in charge of this program should be fully informed by the profession of the necessity of incorporating in these buildings the best architectural expression possible.

M. B. MEDARY, JR., *Chairman.*

Current Activities

STRUCTURAL SERVICE COMMITTEE SCIENTIFIC RESEARCH DEPARTMENT

SIMPLIFIED PRACTICE RECOMMENDATIONS: During the past month Institute approval has been given to the Recommendations of the Division of Simplified Practice of the Department of Commerce for the Elimination of Waste in the Manufacture of Builders' Hardware; Steel Reinforcing Bars; and Blackboard Slate. These Recommendations have received the approval of the manufacturers, distributors, and at least 80 per cent of the consumers. They will be ready for distribution and upon release by the Department of Commerce will be abstracted in the Structural Service Department of the JOURNAL.

CUBING BUILDINGS: Mr. D. Knickerbacker Boyd has been appointed Chairman of a sub-committee of the Structural Service Committee to formulate a Standard Method for Cubing Buildings. The Committee is at present collecting data on the subject and would appreciate receiving comments and suggestions.

A. S. T. M. COMMITTEE (C-11) ON GYPSUM: Mr. Harry Parker has recently been appointed Institute Representative on the above Committee.

HEAT TRANSMISSION THROUGH EXTERIOR WALLS: At the last meeting of the Joint Committee of Architects, Engineers and Manufacturers Investigating the Subject of Heat Transmission Through Exterior Walls, it was announced that the National Research Council, Washington, D. C., had started an investigation of this subject. In order to avoid duplication, it was decided to discontinue the investigation of the Joint Committee and to organize a Committee to cooperate with the National Research Council.

Building Committee Competition

With this issue of the JOURNAL is included a supplement setting forth the details of a competition, inaugurated by the Building Committee, D. Everett Waid, *Chairman*, for a Historical Device for the Octagon House in Washington, D. C. It is the earnest hope of the Committee that as many entrants as possible may be induced to enter this competition, which will close on 1 April.

Registration

News comes of the passage of Registration Laws in the District of Columbia and the Territory of Hawaii, and that the movement towards the enactment of registration legislation in Ohio, under the guidance of Herbert B. Briggs, A. I. A., the State Architect, is gathering impetus. The arrival of registration in the District of Columbia brings to a close the contest which, made especially difficult by the peculiarly constituted political organization of the District, had been waged with increased determination since the well-remembered Knickerbocker Theatre disaster.

It is hoped that a more complete report upon these activities will appear in the JOURNAL for March.

The International Planning Congress

The International Congress on Town, City and Regional Planning will be held in New York City, 20-25 April, under the auspices of the American City Planning Institute, the National Conference on City Planning and several associated organizations.

An exhibit of city planning material from all over the world—probably the largest and most comprehensive ever assembled—will be shown at the Hotel Pennsylvania and also at the Grand Central Palace—the latter as part of the exhibit of Architectural and Allied Arts, held by the American Institute of Architecture and the Architectural League of New York. This will meet in conjunction with the city planning congress, which will bring together the most prominent city planners in the world. The International Town and Country and Garden Cities Federation, meeting for the first time in this country, will be represented by some of the most eminent city planners and housing authorities in Europe.

The subjects of discussion during the Congress are: Progress in Planning Throughout the World; Regional

FROM OUR BOOK SHELF

Planning—How to Lay Out Regions for Planning, New York Regional Planning and Transportation, and Traffic Problem Solutions; Better Regional Distribution of People and Industries—Methods, Local Government, Finance, Traffic, Building Sites and Arterial Roads; Commercial and Recreational Development of Waterfronts and Waterways; Zoning and the Street System, High Buildings and Traffic.

Some twenty-six papers are announced in the agenda, touching upon the varied phases of this program, prepared, among others, by D. Everett Waid, present, and Harvey Wiley Corbett, of the Institute; George B. Ford, Thomas Adams, Robert Whitten, Raymond Unwin and G. B. Purdam.

Producers Research Council

The Executive Committee of the Producers Research Council, affiliated with the American Institute of Architects, tendered a luncheon on 28 January to members of the architectural press, for the purpose of making them better acquainted with the work of the Council and the various projects which it had under way.

Mr. Harn, Chairman of the Council, gave an account of the formation of the Producers' Section, as it was then known, at the Indianapolis advertising conference of the Institute, and traced its growth and subsequent development and expansion of ideas.

The Chairman of the Educational and Bulletin Committees explained, for the benefit of the guests, the scope of these movements and the progress which had been made toward providing service to architects, in the matter of distribution of films and lectures on general phases of the building industry, and also the issuance of bulletins covering building materials.

The representatives of the press were very much interested in the scope of the movement and it was felt that there could be much mutual benefit gained by their cooperation with the Council in its work.

From Our Book Shelf

From the Beginnings

In *The Nature, Practice and History of Art*,¹ the author has well accomplished a commendable purpose. He has brought forth a book which the laity—that portion of the public the architect often conceives of as woefully lacking in appreciation of Art—can read without becoming confused or bored with its abstruse phases. Its almost naïve simplicity should enlist sympathy and interest and remove somewhat of the glamour of mystery surrounding Art, which doubtless has contributed to the aforesaid lack. It tells in clear, business-like fashion of what Art consists, of its various mediums of expression, of how they are used, of what kind of a job its production is, and of how the artist—that real human like other folks—tackles it, followed by the story of its growth.

It is a swift book. Page follows page in smooth, or-

¹*The Nature, Practice and History of Art.* By H. Van Buren Magongia. Scribner's.

derly review of events—political, religious, economic, intellectual, artistic—which have been potent causes of Art's ever-changing forms. It produces, in a singular sense, an impression of a pageant, a panorama, of the world's art. Each passing scene has its central interest focalized by a wealth of surrounding allusions likely to arouse curiosity of a lively sort and to send the reader to sources of information more extended and particular—allusions so brief, yet so continuous, that they comprise a veritable category of the names of every art impulse, of peoples and events responsible for their direction, growth and decline, and of artists who have given them tangible shapes.

The book frankly is for readers other than artists and architects, though for them, with the bibliography at its ends, it has distinct value as a work of handy reference, while for students, its interesting text and many well-chosen illustrations, will open vistas luring them on to many a journey of historical adventure.

It is, as frankly, a presentation of the author's own views upon the subject. He does not argue—he states. Others may disagree with his deductions—they are at liberty to do so. Nobody has glimpsed truth in its finality—he does not insist that he has done so. Though one go not with him, he still may thank the author for opening possible new angles of approach to it, as, for instance, his personally tintured reference to Mohammed—and how about his attempt to shatter an old poetical fancy by denying that architecture is any more like frozen music than it is like 'frozen mud'?

Finally, the book reads as if the author enjoyed writing it. He enjoyed his travels over the old road. Of the many less fortunate than he in acquaintance with art and the stories of the art of other men, times and places, few who begin it, will be likely to thwart his hope of a complete reading.

W. R. B. WILLCOX.

Obituary

Paul Waterhouse, P.P.R.I.B.A.

Died at Yattendon, Berkshire, England, 19 December, 1924

The sudden and untimely death of Mr. Paul Waterhouse, at the rather early age of 63 years, removes from the profession in Great Britain one of its most luminous figures. The eldest son of the architect, Alfred Waterhouse, R.A., in his time also President of the R.I.B.A., he seemed predestined to the eminence he was to attain. Graced with social and administrative as well as professional talent, he soon forged to the van, and maintained his position thenceforward. Ascending, finally, to the Presidency of the Institute, at a time when the incumbency of that office demanded the exercise of a tactful shrewdness and a high order of governing ability, he brought his unfailing wit, humor and gift of persuasive speech to bear upon more than one knotty problem of those somewhat troubled days. That his death should have come with such abruptness scartely more than a twelvemonth after he had vacated this office cannot but bring greater sorrow upon his associates and all who knew him.

The Allied Architects Association of Los Angeles—VII

THE AIMS and purposes and some of the accomplishments of the Association already have been discussed in the pages of the JOURNAL. A description has been given of its educational work, its library, its method of arriving at design by the method of comparison and criticism of sketches submitted by individual members at meetings, and the handling of the design through the jury system.

Guiding all its activities there must be some one to represent the Association, a group of men who are true to its ideals, who constantly reflect the best thought of its members and who are ever mindful of the many interests and responsibilities of a growing corporation. Not only must these men assume the leadership in the affairs of the Association, but also serve as the connecting link between the Association and its clientele, public officials and the public. Such a representation of this Association is the Board of Directors. To them, through the By-Laws, many duties and responsibilities are placed. The Board has the power to enter into contracts, acquire and assume obligations to borrow money, to make or issue notes or evidences of indebtedness, to assign to members and to require of them the performance of services, to elect the officers of the Association, and generally to conduct the business and finances of the Association. At their meetings the policies of the Association are initiated and policies approved by the membership are put into effect. In matters of design the juries of members are charged with the responsibility of carrying out the best possible development of the drawings, but the juries are always free to consult and meet with the Directors who grant the final approval of their work before it is transmitted to the owner. Similarly the Juries on Specifications and Engineering develop the structural and technical phases of the architectural production, under control of the Board. The superintendence and supervision of field work are directly under the jurisdiction of the Board. In order that these technical phases of the architectural service may be more closely connected with the work of the Board, it appoints a Director to take charge of each of these activities. Each one of the Directors so appointed reviews and inspects the work of design, engineering, specifications or construction and reports back to the Board.

The President, as Executive Officer, functions with the aid of the Executive Office. The personnel of this office consists of the necessary assistants, accountants and office staff. The office handles the de-

tail of records, correspondence, accounts, publications and secretarial work of the Association. No contracts are made, no obligations are assumed, no disbursements made nor responsibilities undertaken without the approval of the Board of Directors.

During the year 1924 the Board of Directors held sixty meetings, an average of more than one meeting each week. There are few absentees, in spite of the fact that the Board receives no remuneration for this service. In almost every case the members assemble for luncheon at noon, after which the meeting is called to order and an extremely formal and definite program is followed. All business to be transacted is carefully listed and the necessary material, data and information pertaining thereto is ready for quick reference and speedy action. The minutes of the meeting are carefully recorded verbatim and read in detail. The Book of Minutes, already filling many volumes, tells an interesting, accurate and complete story of the Association. The Resolutions acted upon by the Board, which for convenience are compiled in a Book of Resolutions, have become an authoritative digest of all the activities of the Association. By precision and accuracy in the conduct of these meetings, the members of the Board are spared any waste of time and are afforded an opportunity to discuss more fully matters of general interest pertaining to the profession and to the welfare of the Association.

Through the guidance of these men the members of the Association feel their interests are being safeguarded and enhanced. To these meetings are invited committees of members and individuals to whom work has been delegated. Any one sitting down for the first time at the table with the Board is deeply impressed by the amount of business transacted, the punctiliousness of its procedure and the interest and breadth of the discussion.

One of the greatest reasons for the successful career of the Allied Architects Association of Los Angeles lies in the orderly organization of its work and accurate delegation of responsibility. During the year 1924 over forty members served on juries or on definite committees, and of the sixty-nine members there is not one who has failed to do some constructive work in the interests of the Association. By these carefully worked out methods and with the inspiration of a common cause the efforts of the members are harmonized and made effective in working for the advancement of the art of architecture.

Structural Service Department

LEROY E. KERN, *Technical Secretary*

In connection with the work of the Committee on Structural Service of the American Institute of Architects and in collaboration with other professional societies and organized bodies having the same objective—improvement in building materials and methods and better shelter for humanity in all its manifold vocations and avocations

Abstracts

Strength of Steel Tubing Under Combined Column and Transverse Loading, Including Tests of Columns and Beams (13a). (*Technologic Paper of the Bureau of Standards No. 258, by Tom W. Greene, Assistant Engineer Physicist. Pages 32. Size 7" x 10". Illustrated.*)

This investigation was made to determine whether experimental data confirmed the theory of struts subjected to combined column and transverse loading. Tests on steel-tubing struts ranged from that of a column with no transverse load to that of a beam with no column load.

The conditions contributing to the strength of a strut and a method devised for measuring eccentricity were studied. It was found that the eccentricity due to variation in wall thickness and to deviation from straightness is an important factor and should be considered. The results show that the commonly used formulas, which neglect the effect of eccentricity of loading, do not represent actual strut conditions and are liable to give dangerously high results.

A modified rational formula based upon consideration of the effect of eccentricity was found to fit experimental results very closely and is the preferable one for design. Failure of a strut will occur when the maximum compressive stress computed by this modified formula is approximately equal to the yield point. The modified rational formula also applies to columns as it reduces to the "secant" column formula when the transverse load is equated to zero. Failure of a column will occur when the extreme fiber stress computed by the "secant" formula is equal to the yield point of the material.

A reasonably accurate computation of the stress for a strut under transverse load can be made by summing the bending stress due to the transverse load and the column stress obtained by the "secant" formula if for the latter the effective eccentricity is taken as the sum of the original eccentricity, due to tube irregularities, and the deflection of the strut at the center resulting from the transverse load.

Ventilating Ducts, Efficiency of (30d4). *By C. E. H. Winslow and Leonard Greenburg. Reprint No. 773 U. S. Public Health Service. Size 6" x 9". Pages 10. Illustrated.* The experimental plant consisted of two ducts, a tapered and an untapered one. Both main ducts were 22 feet 10 inches long and were placed side by side on wooden supports. At the upper end they were joined by a Y branch, at which point a damper was so placed that the air could be shut off from either duct at will. The single leg of the Y was connected by means of a tube 6 feet long to a 45 inch steel plate planing-mill fan arranged so as to blow air into the ducts. The fan was driven by a constant speed electric motor. Proper control apparatus was provided by means of which the motor speed could be varied at will. Each duct was 1 foot 4-7/16 inches square at its beginning, the tapered duct being finally reduced to 6 inches square at the further end. Both main ducts were provided with six branch pipes, five on the side and one at the far end. In designing the tapered duct, the plan was to provide a main duct of cross sectional area, 25 per cent in excess of the sum of the branch areas from any point to the end of the duct. All of the branch pipes were 6 by 6 inches in cross

section and entered the main duct at an angle of 30 degrees. Ports were also placed at five points in the side of the duct for the study of direct discharge (or exhaust) without slanting branch ducts. All of the branch pipes, the ports, and the handhole were provided with sliding dampers. All joints in the ducts, branches, and dampers were designed and constructed with care so as to insure the apparatus being airtight.

The main results obtained indicate without a single exception (a) branch ducts give better results than lateral ports; (b) with either branch ducts or lateral ports, an untapered main duct gives better results than a tapered one; (c) other conditions being equal, plenum ventilation is more even than exhaust ventilation.

The conclusions drawn are: 1. That in order to secure the most even distribution, ventilating systems, on either the plenum or the exhaust plan, should be constructed with slanting branch ducts, the question whether the main duct should be tapered or untapered being decided by the relative cost of labor and materials involved.

2. That reasonably good distribution can be economically effected with an untapered duct discharging or exhausting through lateral ports.

3. That a tapered duct discharging or exhausting through lateral ports is likely to give rise to serious irregularity in distribution.

Synopsis: Description of experimental plant, method of making observations, results of air supply studies with slanting branch ducts, results with lateral ports, results of air-exhaust studies with slanting branch ducts, results with lateral ports, general conclusions.

Depreciation of Lighting Equipment Due to Dust and Dirt (31f2). (*A paper presented before the Annual Convention of the Illuminating Engineering Society, September, 1923. Size 6" x 9". Pages 31. Illustrated.*) A report of tests under service conditions to determine the relative depreciation or loss in efficiency of lighting equipments due to the accumulation of dust and dirt. Comparison tests were made under forced rates of dirt accumulation in an effort to determine the feasibility of obtaining quick comparisons between the depreciation rates of different equipments. Consideration of the possibilities of a simple comparison standard for predicting depreciation rates in a particular installation is included.

Pit Silos (3511). (*U. S. Department of Agriculture, Farmers' Bulletin, No. 825, by T. P. Metcalfe and G. A. Scott. Bureau of Animal Industry. 12 Pages. Size, 6" x 9". Illustrated.*) The construction of pit silos is recommended only where a combination of soil and climatic conditions exist such as is found in the Southwest. If well made, pit silos are permanent and safe, and the cost of repair is practically negligible. They should be constructed only in soils that are firm and free from rocks, sand strata, and seeps, and where the water table is always below the bottom of the floor after they are dug.

Directions are given in this bulletin for construction, indicating the proper size and best location. The practices which have proved most satisfactory are described so that a pit silo may be made without mistakes which would cause undue waste of time and material.

STRUCTURAL SERVICE DEPARTMENT

U. S. Government Specifications for Raw, Refined, and Boiled Linseed Oil (25a11). (*Circular of the Bureau of Standards No. 82. Federal Specifications Board Standard Specification No. 4. Size 7" x 10". Pages 9.*) Linseed oil, raw, refined, or boiled, shall be pure and shall conform to the following requirements:

Raw Linseed Oil:

	Maximum	Minimum
Loss on heating at 105 to 110 degrees		
C (per cent)	0.2	.....
Foots by volume (per cent)	2.0	.....
Specific gravity 15.5/15.5 degrees C ..	.936	0.932
Acid Number	6.0	.....
Saponification number	195.0	189.0
Unsaponifiable matter (per cent)	1.5	.....
Iodine number (Hanus)	170.0	.....
Color	Not darker than a freshly prepared solution of 1.0 g potassium bichromate in 100 c.c. pure strong (1.84 specific gravity) sulphuric acid.	

Refined Linseed Oil: Contract shall state whether acid refined or alkali refined is desired.

	Maximum	Minimum
Loss on heating at 105 to 110 degrees		
C (per cent)	0.2	.....
Foots by volume (per cent) .....	.2	.....
Specific gravity at 15.5/15.5 degrees C.	.936	0.932
Acid number (acid refined oil)	9.0	3.0
Acid number (alkali refined oil)	3.0	.....
Saponification number	195.0	189.0
Unsaponifiable matter (per cent)	1.5	.....
Iodine number (Hanus)	170.0	.....
Color	Not darker than a freshly prepared solution of 0.1 g potassium bichromate in 100 c.c. pure strong (1.84 specific gravity) sulphuric acid.	

Boiled Linseed Oil: Boiled oil shall be pure, well-settled linseed oil that has been boiled with oxides of manganese and lead. It shall conform to the following requirements:

	Maximum	Minimum
Loss on heating at 105 to 110 degrees		
C (per cent)	0.2	.....
Specific gravity at 15.5/15.5 degrees C.	.945	0.937
Acid Number	8.0	.....
Saponification number	195.0	189.0
Unsaponifiable matter (per cent) ...	1.50	.....
Iodine number (Hanus)	168.0	.....
Ash (per cent) .....	.7	.2
Manganese (per cent) .....	.03	.....
Lead (per cent) .....	.1	.....
Time of drying on glass (hours)	20.	.....

This circular also contains specifications for Sampling, Laboratory Examination, Reagents for Testing, and Basis of Purchase.

The Relation of Illumination to Production (31f13). (*A paper presented before the Annual Convention of the Illuminating Engineering Society, September, 1924. Size, 6" x 9". Pages 12. Illustrated.*) This paper is a report of extensive tests on the time required for the inspection of parts of roller bearings under various levels of illumination

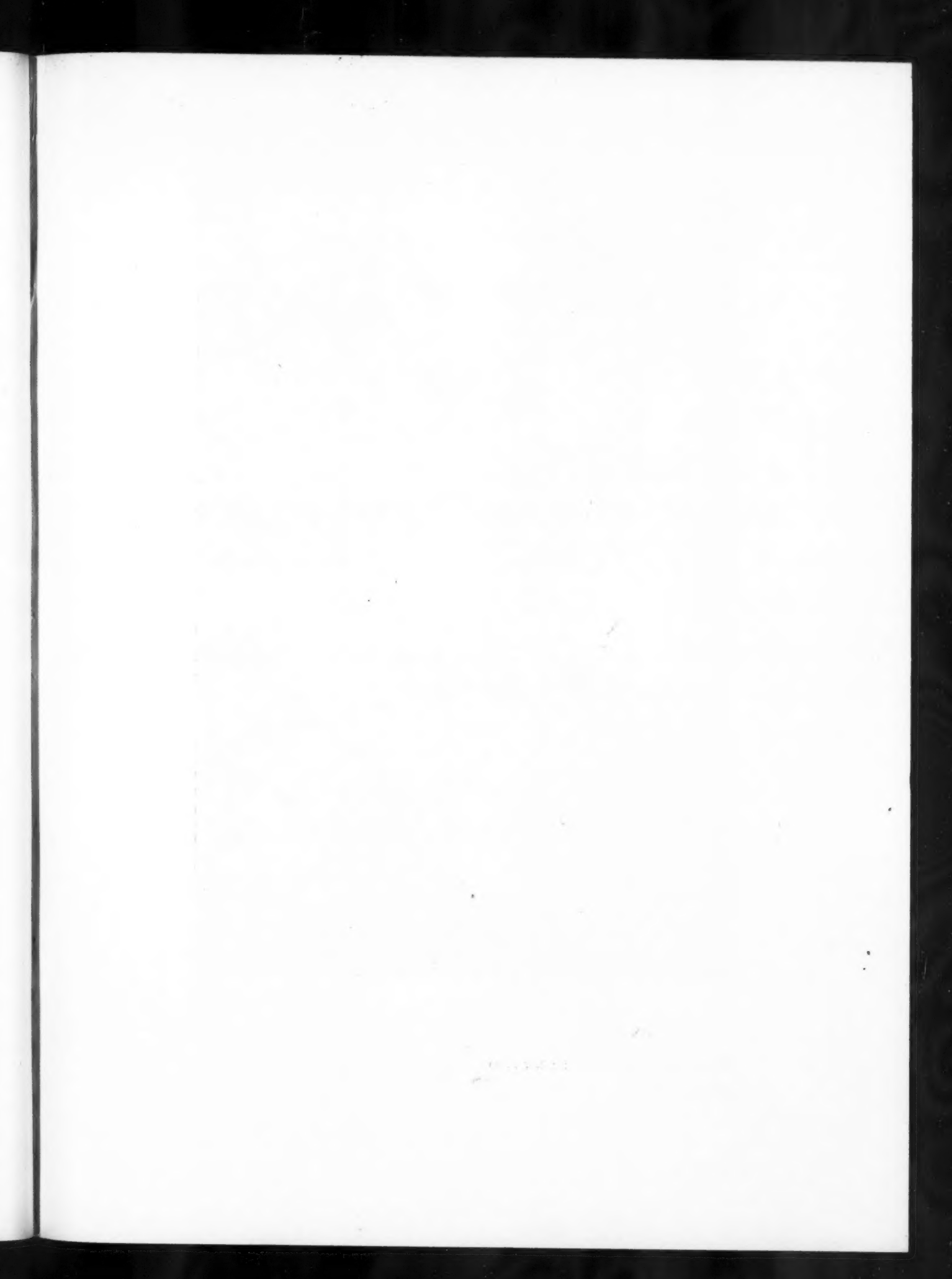
from 5 to 20 foot-candles. Over 7,000,000 separate pieces of material were inspected during the test period. The types of lighting employed, as well as the illumination levels, were found to have an important bearing on the output of the department. Cost data on the lighting and the value of increased production are included in the paper.

Nick-Bend Test for Wrought Iron (13a). (*Technologic Paper of the Bureau of Standards, No. 252, by Henry S. Rawdon and Samuel Epstein. Pages 40. Size, 7" x 10". Illustrated.*) The "nick-bend" test is included in nearly all specifications for wrought iron, the character of the fracture of a nicked bar being the criterion by which the material is judged. A coarsely crystalline fracture is generally considered as indicative of inferior material. Most American specifications are very indefinite regarding the manner by which the specimen is to be broken and permit any method between slowly applied pressure and a single-blow impact stress. This investigation was carried out upon eight different grades of wrought iron and one of open-hearth iron which were fractured under different conditions and the character of the fracture studied. The "crystallinity" of the fracture depends upon the size and distribution of the slag threads in the wrought iron, and is a maximum in open-hearth iron, which contains no such slag inclusions. The rate at which the specimen is fractured also affects the character of the break, and when broken by severe impact crystallinity usually results. The same material broken by bending, which is permitted by most specifications, usually shows a fibrous fracture. The results show that the test cannot be depended upon to show the presence of "steel" in wrought iron, nor to give results by which the phosphorus content may be judged. In short, in many specifications the "nick-bend clause" is meaningless and should either be eliminated or redefined.

Kiln Drying Douglas Fir Common Timbers (19a32). (*Forest Products Laboratory. Technical Note, No. 183.*) The kiln drying of Douglas fir common is a problem which differs in several respects from most kiln drying problems. In order that the knots shall not drop out of the wood, the maximum temperature must be limited more or less by the melting point of the resin around the knots, and the humidity kept high enough so as not to allow excessive differential shrinkage between the knots and the body wood. The difficulty of keeping the knots in place is lessened to some extent by the fact that it is usually not necessary to dry common lumber to a moisture content lower than 15 per cent. A new complication is added, however, inasmuch as it is very difficult to bring hardwood and sapwood to a uniform moisture content as high as 15 per cent by any ordinary kiln-drying method.

These unusual requirements demand that a kiln for drying Douglas fir common shall have a very rapid and uniform circulation readily reversible in direction, and an accurate control of temperature and humidity. The only type of kiln which at present can be safely recommended for this class of work is an internal-fan kiln similar to the semi-commercial unit in operation at the Forest Products Laboratory, Madison, Wisconsin, or to the kiln used by the laboratory at Tacoma, Washington.

Drying much below 15 per cent moisture is not recommended. At this moisture content the underweights are much better than those usually obtained in air seasoning. The total kiln and planing-machine degrade should average not more than 15 per cent if the recommended schedules are followed and the lumber is dried in suitable kilns to a final moisture content of 15 per cent.





RONDA—GARDEN OF THE CASA DEL REY MORO
Louis La Beume

