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## ORNAMENT *from* MAGIC SQUARES

*By Claude Bragdon*

THIS COMMENTARY and the accompanying illustrations represent one shovelful of "pay dirt" turned up in a prospecting tour through the mountain range of mathematics. Let me first tell what led to the undertaking of this quest:

An architect is from time to time under the necessity of providing suitable ornament for his constructions. Whenever such necessity arose I suffered a discomfort which never attended the working out of other aspects of an architectural problem. This feeling was due to a sense of inadequacy to the imposed task. After trying vainly to be original I turned to Meyer's Handbook of Ornament or some other architectural pony, and cribbed that which I could not create. This, though a common practice, was humiliating, but only when confronted with the inescapable alternative of either being original or—to my sense—ridiculous, was I aroused to consider a problem not mine merely, but that of every practitioner of the arts of design; the problem, namely, of how—lacking an ornamental mode which is our own—

we shall develop one that may in some sort express our age and our psychology.

What happened was this: called upon to design a railway station for my native city of Rochester, it seemed axiomatic that no ornament should be employed which antedated steam transportation—which was older, that is, than the railway itself—for to translate our age of steel and steam into the space-language of Greece or Rome would be no less an anachronism than in the play of Julius Cæsar to give Cæsar a watch. Now because all of the ornamental motifs of any worth or importance do antedate the railroad, it appeared necessary either to eliminate ornament altogether, or else create it. The first was too stark and austere an alternative, and the second proved too difficult to a talent enervated by that order of parasitism I had practised in the past. What I did therefore was to modify and disguise some of the canonical classic ornamental motifs, much as a jazz band leader might syncopate the musical masterpieces of the past.

This compromise served its immediate

purpose, and proved moderately successful, but so far failed to content me that I undertook a searching inquiry into the whole subject of ornament, throughout the world and adown the ages. It became increasingly clear that all ornament, of whatever people or period, has a mathematical basis, that is, submits itself to a geometrical synopsis; that much of it, indeed, is only the repetition or symmetrical assembling of simple geometrical forms. Therefore, thus early in my quest, I concluded that mathematics must be the gold-bearing quartz: if out of it so much had come, much more could still be extracted.

Here was a prospect which held out some promise. Roughly speaking, all ornament is either frankly geometrical or else floral on a geometrical foundation—the rock could exist without the lichen, but not the lichen without the rock. We of the present age are urban, not bucolic: the stark geometry of cities is the *métier* in which we mostly live. It is an age not of romance, but of mathematics—or better, it is the age par excellence of the romance of mathematics, for by their light we penetrate into every unknown, minute or vast. Sing the mathematical age, therefore, in terms of mathematics; in other words, develop to the uttermost geometrical ornament. Such was my ultimate conclusion. Ruskin must have had some such view, also, for he declared, "I believe the only manner of rich ornament that is open to us is geometrical color mosaic, and that much might result from taking up that mode of design."

Another consideration which led me to mathematics was the following. Granting the soundness of the dictum, "Beauty is truth, truth beauty," it becomes of the first importance to discover some truth which is absolute, and mathematical truth is absolute within its own known

and defined limits. The truth, for example, that the square on the hypotenuse of a right-angled triangle is equal to the sum of the squares on the other two sides is incontrovertible because it is completely demonstrable, but no matter how ardent one's conviction may be that God is Love, no demonstration of the truth of a proposition of this sort is possible from which—like the mathematical one—there is no imaginable escape or appeal.

Arrived thus far—in the El Dorado of mathematics, that is to say—the next step was to discover some method of translation of this truth-to-the-mind into beauty-to-the-eye. In the course of time I discovered several such processes of translation. These are set forth in "Projective Ornament" and in two chapters of "Architecture and Democracy."

This essay shall deal with one process only, based upon the magic line in the magic square. Before going into that,

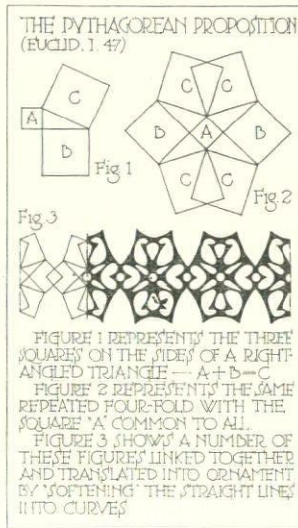


Illustration 1

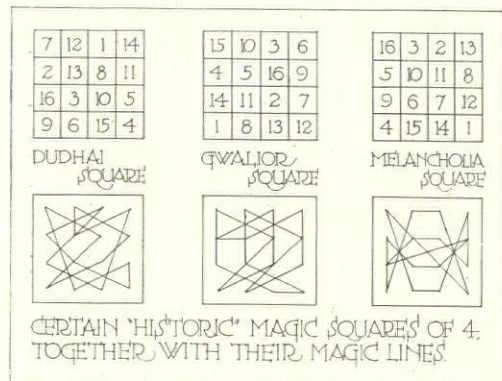


Illustration 2

however, it will be well to illustrate, by means of a single example, derived from the Pythagorean proposition above referred to—that the square on the hypotenuse of a right-angled triangle is equal to the sum of the squares on the other

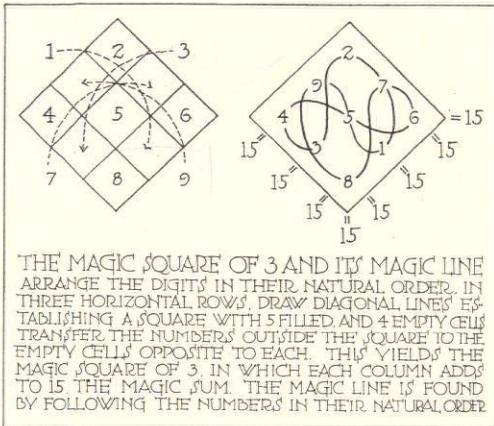


Illustration 3

two sides—the general method whereby mathematics may be metamorphosed into ornament.

Figure 1, Illustration 1, is the Pythagorean proposition in graphic form: the two smaller squares, A and B, are together equal in area to the large square, C. That is to say, the three are bound together in an exact mathematical rela-

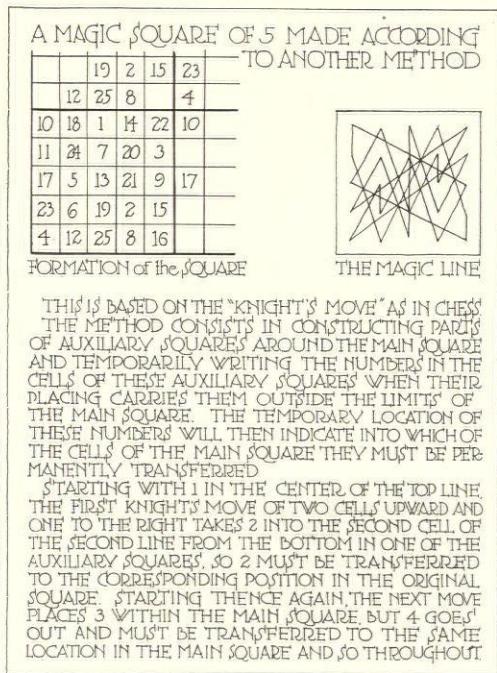


Illustration 5

tion, and this produces a certain sense of satisfaction to the mind, and—probably for that reason—a sense of harmony to the eye. Let us capitalize this if we can, by using the diagram itself as a motif for ornament. This is achieved by repeating it fourfold, as in figure 2—a symmetrical grouping around a common center which is the smallest square, and common therefore to all four figures. Here we have no mere fortuitous aggregation of lines, but a thing which, without being a representation of any natural organic form, nevertheless means some-

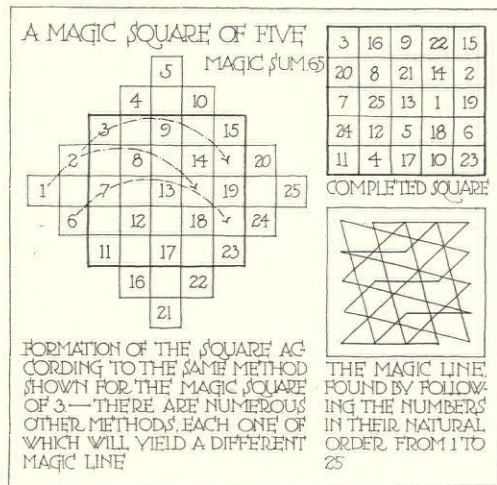


Illustration 4

thing and says something—publishes, so to speak, a truth of mathematics. By dealing with it in some such manner as is indicated in figure 3 it can be made to serve as ornament.

Coming, by way of this detour, to the particular subject of this essay (ornament from magic squares, the first thing to do, obviously, is to explain to the uninitiated what a magic square is. It is a numerical acrostic—an assemblage of numbers in the form of a square so disposed with relation to one another that each vertical column, each horizontal column, and the two long diagonals yield the same sum. These are the minimum requirements; there are magic squares which far transcend them in the number

and variety of their magic properties. Hutton's general definition of a magic square, being a trifle more detailed than the above, may give the reader a clearer idea. It is as follows:

"The name magic square is given to a square divided into several small equal squares or cells, filled with the terms of any progression of numbers, but generally an arithmetical one, in such a manner that those in each band, whether horizontal or vertical or diagonal, shall always form the same sum."

		1	15
	5		16
			20
10			21
11	25		

Illustration 6

Though the making of magic squares would be classed today as a "mathematical recreation," a certain religious or mystical significance has always in the past attached to these arrangements of numbers. Perhaps this is because they possess the charm of mystery, and ap-

200	217	232	249	8	25	40	57	72	89	104	121	136	153	168	185
58	39	26	7	230	231	218	199	186	167	154	135	122	103	90	71
198	219	230	251	6	27	38	59	70	91	102	123	134	155	166	187
60	37	28	5	252	229	220	197	188	165	156	133	124	101	92	69
201	216	233	248	9	24	41	56	73	88	105	120	137	152	169	184
55	42	23	10	247	234	215	202	183	170	151	138	119	106	87	74
203	214	235	246	11	22	43	54	75	86	107	118	139	150	171	182
53	44	21	12	245	236	213	204	181	172	149	140	117	108	85	76
205	212	237	244	13	20	45	52	77	84	109	116	141	148	173	180
51	46	19	14	243	238	211	206	179	174	147	142	115	110	83	78
207	210	239	242	15	18	47	50	79	82	111	114	143	146	175	178
49	48	17	16	241	240	209	208	177	176	145	144	113	112	81	80
196	221	228	253	4	29	36	61	68	93	100	125	132	157	164	189
62	35	30	3	254	227	222	195	190	163	158	131	126	99	94	67
194	223	226	255	2	31	34	63	66	95	98	127	130	159	162	191
64	33	32	1	256	225	224	193	192	161	160	129	128	97	96	65

THE FAMOUS 16 X 16 "FRANKLIN" SQUARE

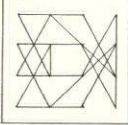
THE SUM OF THE 16 NUMBERS IN ANY ROW OR COLUMN IS 2056 — THE SUM OF THE 8 NUMBERS IN HALF OF ANY ROW OR COLUMN IS 1028, OR 1/2 OF 2056 — THE SUM OF THE NUMBERS IN TWO HALF-DIAGONALS IS 2056 — THE SUM OF THE 4 CORNER NUMBERS AND THE 4 CENTRAL NUMBERS IS 1028 — THE SUM OF THE NUMBERS IN ANY 16 CELLS WHICH ARE DISPOSED IN A SQUARE IS 2056.

NOTE THE SEQUENCES IN ALTERNATE CELLS IN HORIZONTAL ROWS ALTERNATELY FROM LEFT TO RIGHT AND FROM RIGHT TO LEFT.

NOTE THE SUMMATIONS OF CELLS IN EACH ROW EQUIDISTANT FROM THE VERTICAL AXIS.

Illustration 7

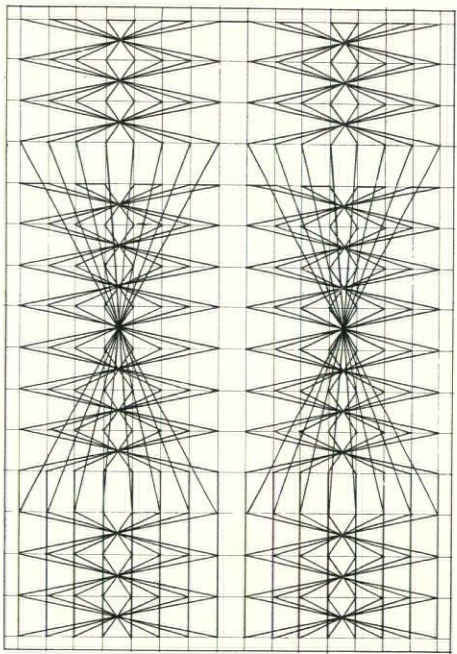
14	1	15	4
7	12	6	9
2	13	3	16
11	8	10	5



A "SUPERMAGIC" SQUARE OF 4  
 THIS SQUARE POSSESSES VERY MANY UNUSUAL PROPERTIES. THE FOLLOWING EACH TOTAL THE MAGIC SUM 34  
 (a) ALL ROWS, COLUMNS AND DIAGONALS  
 (b) ALL SUB-SQUARES OF FOUR NUMBERS  
 (c) THE FOUR CORNER NUMBERS  
 (d) PARALLEL SEMI-DIAGONALS AND (e) PARALLEL QUARTER- AND THREE-QUARTER DIAGONALS  
 (f) OPPOSITE PARALLEL HALF-SIDES  
 (g) SIMILAR TERMINATIONS OF ANY KNIGHT'S MOVE ON OPPOSITE SIDES OF ANY CENTRAL LINE OF THE SQUARE  
 (h) THE FOUR CORNER NUMBERS OF EVERY SQUARE OF NINE CELLS  
 (i) THE SUM OF THE TWO CENTRAL NUMBERS IN ANY LINE, HORIZONTAL OR VERTICAL, AND THE TWO OUTER NUMBERS OF A PARALLEL LINE NEXT BUT ONE TO IT

Illustration 9

pear to betray the operation of some hidden, supernal intelligence, or perhaps it is because they are symbols of that transformation which may be wrought within the confused, chaotic, "unregenerate" nature of man through the action of his will and intelligence: that "great



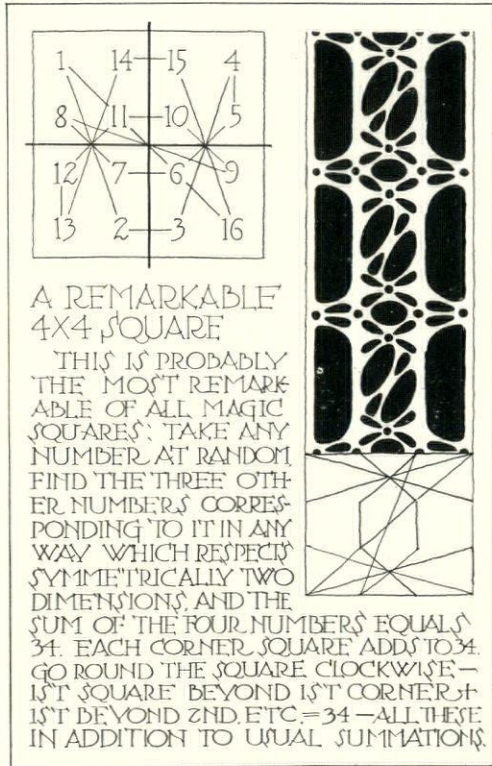
MAGIC LINE IN THE FRANKLIN 16-SQUARE BUT ELONGATED VERTICALLY ONE THIRD

Illustration 8

work" of the alchemist, the transmuting of lead into gold. Be that as it may, magic squares are conspicuous instances of the intrinsic harmony of number, and as such serve as an interpreter to man of that cosmic order which permeates all existence.

The arrangement of numbers in the form of magic diagrams was a thing known to the ancient Egyptians, and may have formed part of the knowledge which Pythagoras had from them, for such diagrams and their symbolic meanings are quite in the spirit of what we know of the Pythagorean philosophy. There is a record of a magic square in Chinese literature, dated about A.D. 1125 and it seems more than probable that its first appearance there is not the time of its invention, but rather the date of a recapitulation of vastly older accomplishments. A Hindu magic square found inscribed on a hidden portion of a lintel, was brought to light by a fall of masonry in the Chota Surange shrine at Dudhani, India, and another was discovered on the gate of the fort of Gwalior, India. A magic square appears in the celebrated engraving of Albrecht Dürer entitled "Melancholia" whose symbolism is so enigmatic and profound. (Illustration 2.) The many-sided Benjamin Franklin used to amuse himself with the construction of magic squares, one of which bears his name. (Illustrations 7, 8.)

Magic squares fall naturally into two categories, odd and even. The smallest odd number square is the 3 x 3, which consists of the nine digits so disposed in square formation that each vertical, horizontal and diagonal column adds to 15 — the magic sum. The smallest even number square is the 4 x 4, which consists of 16 numbers, with a magic sum of 34.\* The methods of construction of even squares are different from those which govern odd magic square formation. These methods are many and various, but in general it may be said that the principle involved is that of reversal or rotation — some manner of manipulation of the regular numerical sequence which shall effect those compensations whereby the numerical balance—indi-



A REMARKABLE 4x4 SQUARE

THIS IS PROBABLY THE MOST REMARKABLE OF ALL MAGIC SQUARES; TAKE ANY NUMBER AT RANDOM, FIND THE THREE OTHER NUMBERS CORRESPONDING TO IT IN ANY WAY WHICH RESPECTS SYMMETRICALLY TWO DIMENSIONS, AND THE SUM OF THE FOUR NUMBERS EQUALS 34. EACH CORNER SQUARE ADDS TO 34. GO ROUND THE SQUARE CLOCKWISE — 1ST SQUARE BEYOND 1ST CORNER + 1ST BEYOND 2ND, ETC. = 34 — ALL THESE IN ADDITION TO USUAL SUMMATIONS.

Illustration 10

...recapitulation of vastly older accomplishments. A Hindu magic square found inscribed on a hidden portion of a lintel, was brought to light by a fall of masonry in the Chota Surange shrine at Dudhani, India, and another was discovered on the gate of the fort of Gwalior, India. A magic square appears in the celebrated engraving of Albrecht Dürer entitled "Melancholia" whose symbolism is so enigmatic and profound. (Illustration 2.) The many-sided Benjamin Franklin used to amuse himself with the construction of magic squares, one of which bears his name. (Illustrations 7, 8.)

\*The formula for obtaining the magic sum for either odd or even squares is as follows: Let m represent the number of rows, n the number of cells, and x the magic summation.

$$\text{Then: } x = \frac{mn}{2} + \frac{m}{2}$$

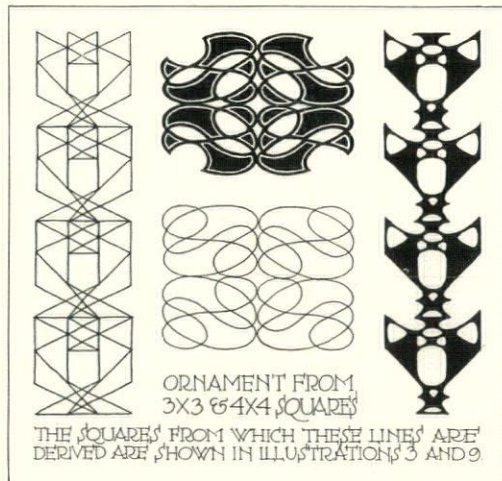
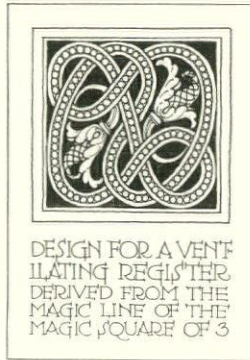


Illustration 11

cated by the magic sum—is maintained in all directions at once. The process has a certain analogy with the making of "string figures." If, for example, the numbers from 1 to 10 be thought of as ten equally spaced knots in a cord, and that cord be then looped back upon

itself until the two ends come together, 10 will be opposite to 1, 9 to 2, 8 to 3 and so on, and each of the five pairs will therefore yield the same "magic" sum, 11. Exactly similar results obtain when, with a longer string of numbers this process is carried farther — out of

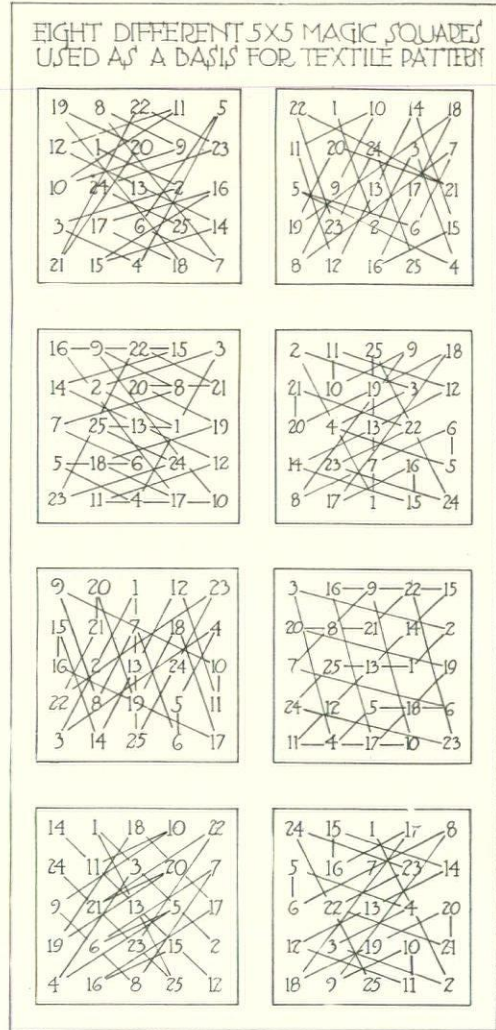


DESIGN FOR A VENTILATING REGISTER DERIVED FROM THE MAGIC LINE OF THE MAGIC SQUARE OF 3

Illustration 12

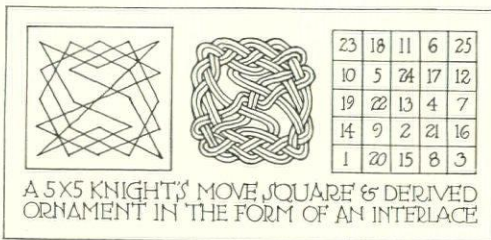
one dimension into two—with the result of forming a more intricate "cat's cradle." Always there results a sort of polarization whereby the mathematical balance is maintained. Such manipulations involve rotation in the third dimension, the transcending, therefore, of flat space. As a friend, skilled in magic square formation, wrote in a letter: "I have always felt that magic squares were evidence of motion through a higher dimension—to put it in terms of your book, that a man living in flatland would consider them evidence of the existence of a third dimension, just as I regard the magic cube as the result of revolution through the fourth dimension."

To go at all deeply into the subject of magic square formation is outside the



EIGHT DIFFERENT 5X5 MAGIC SQUARES USED AS A BASIS FOR TEXTILE PATTERN

Illustration 14



A 5X5 KNIGHT'S MOVE SQUARE & DERIVED ORNAMENT IN THE FORM OF AN INTERLACE

Illustration 13

province of this essay. The reader who is desirous to become proficient in this field has only to consult the encyclopædia, or provide himself with W. S. Andrews' monograph entitled, "Magic Squares and Magic Cubes." Not to leave him utterly in the dark, however, examples of odd number magic square formation are given in illustrations 3, 4 and 5. Illustration 3 represents the 3 x 3 square, and illustration 4, a 5 x 5 square constructed according to the same method, which is as follows: The numbers are first written in their natural order in diagonal columns, equally spaced and of equal

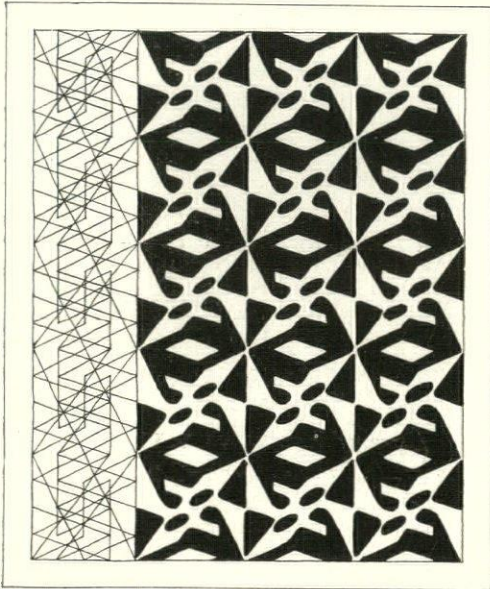


Illustration 15

length so that the whole forms a square. Vertical and horizontal lines are then drawn between these numbers with the effect of outlining a square of the required number of cells, each alternate cell being a blank. These empty cells are

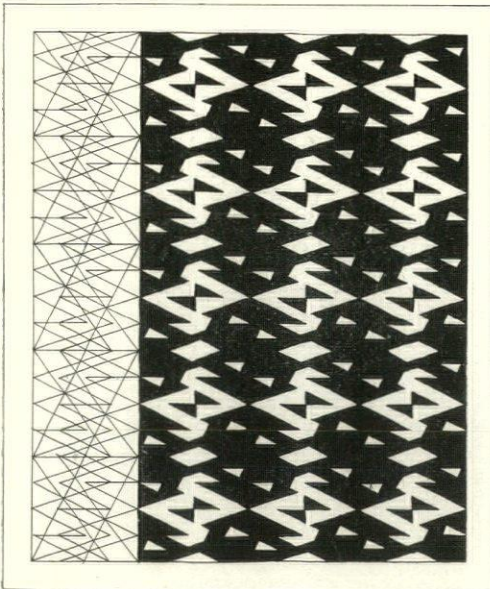


Illustration 17

then filled by transferring the numbers remaining on the outside of the square to the corresponding cells on the inside. They should be thought of as *lifted* into the third dimension from their original position, and set down with a half-turn in their ultimate position, opposite the first one, but inside the square—for, as before stated, it is an aid to the mind to realize that all magical numerical arrangements involve rotations in a higher dimension.

Illustration 5 shows a  $5 \times 5$  square constructed according to a different method, based upon what is known as the knight's move. To chess players this

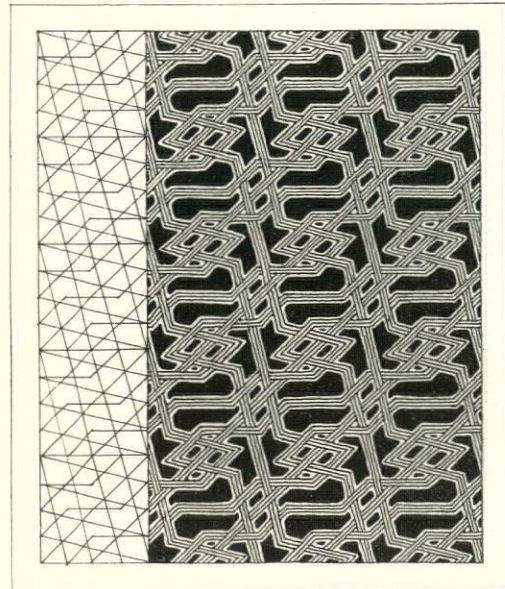


Illustration 16

move will require no explanation, but for the benefit of those who are unacquainted with the characteristic moves of the various pieces, it may be described as a move of two squares straight forward in any direction and one square either to right or to left. In the square shown in the illustration the movement is upward and to the right. Knowing this much the process becomes clear by a little study of the diagram. By varying the direction of the knight's move other magic squares may be constructed according to this method. The move may

be upwards to the left hand instead of to the right, or it may be downwards and either to the right or left hand, and also in other directions. There are in fact eight different ways in which the knight's move may be started from the center cell in the upper line. Six of these moves are indicated by figure 2's in different cells in illustration 6, and each of these moves, if continued in its own direction, varied by regular breaks, will produce a different but a perfect square. This "break," or departure from the normal progression occurs whenever, fol-

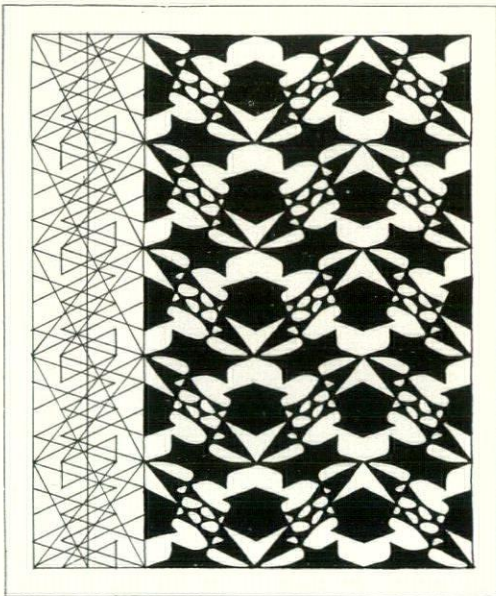


Illustration 19

lowing that progression, a cell is encountered which already contains a number: then the new number will be written in the cell immediately below—the break will be one cell downwards, in other words, but only for magic squares whose first number, like this one, is in the center of the top row. Squares based upon the knight's move may be commenced in any cell except the center one, and perfect squares may be built up from such commencements by a great variety of regular moves, such as a right hand diagonal sequence, upward or downward, or a number of knight's moves in different directions.

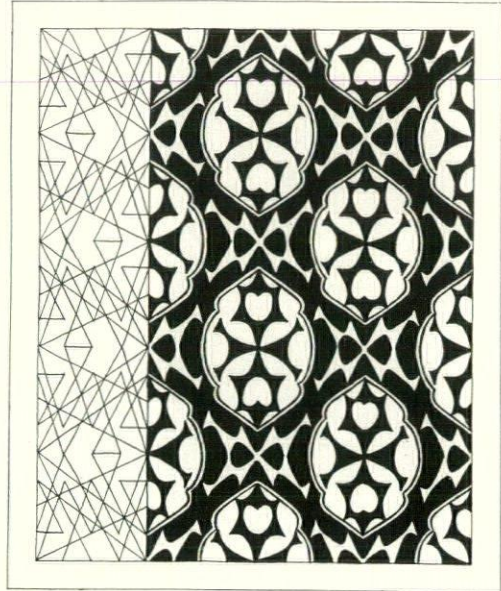


Illustration 18

To a mind unused to the marvel and mystery of mathematics it may seem sufficiently remarkable that there should be even one possible arrangement of the numbers from 1 to 16 (let us say) in square form, in which the horizontal, vertical and diagonal columns would

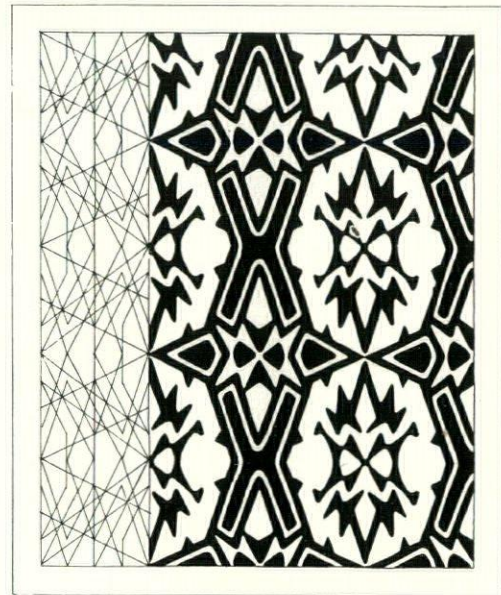


Illustration 20



yield the same sum—34, but it has been estimated that there are no less than 384 arrangements of these numbers in this form which yield this same result, and no person living knows in how many ways it is possible to form a magic square of any order exceeding  $4 \times 4$ . Moreover, many squares possess, in addition to the usual and required summations, "super-magic" properties of the most amazing sort. The "Franklin" Square shown in illustration 8 is an example, and in illustrations 9 and 10 two of the most remarkable  $4 \times 4$  supersquares are shown, and their properties enumerated.

All very interesting, the reader is doubtless by this time saying to himself, but clearly the mathematician has run away with the artist, let him perform his miracle—if he has one to perform—without any more ado.

Very well! Now every magic square contains a magic line. This is developed by tracing the numbers in their natural sequence from cell to cell and returning to the point of departure. This forms a linear pattern often possessing great intrinsic beauty—not ornament exactly, but the raw material of ornament. At all events the chasm between number and form has been somehow bridged—an interesting mathematical fact has been made apprehensible to the eye as well as to the mind. All that remains is to deal with these magic lines in such a way that they may be made to subserve æsthetic ends.

Illustration 3 shows the magic line of the  $3 \times 3$  square made not with straight lines, but with a free-hand curve. So rendered it forms an admirable motif for ornament. Illustration 11 shows one of a number of ways in which it may be thus used, and illustration 12 another in which it actually has been—as a ventilating grille in the ceiling of the Rochester Chamber of Commerce. This inter-lace idea is the most direct and obvious

method of translating magic lines into ornament. Such interlaces much resemble the designs found on Irish crosses and elsewhere. Indeed the pattern derived in this way from Euler's knight's move square of  $5 \times 5$ , and shown in

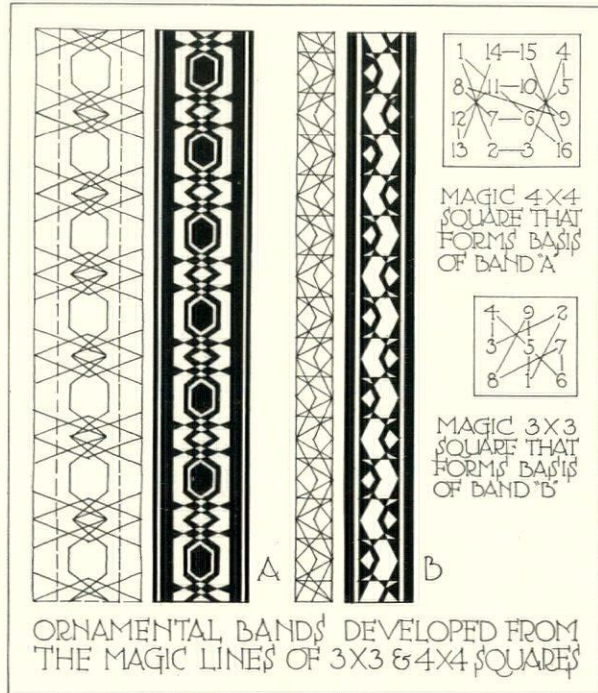


Illustration 21

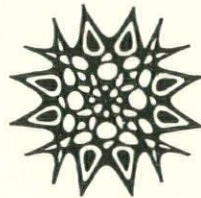
illustration 13 would probably be put down as Celtic ornament if encountered anywhere but on this page.

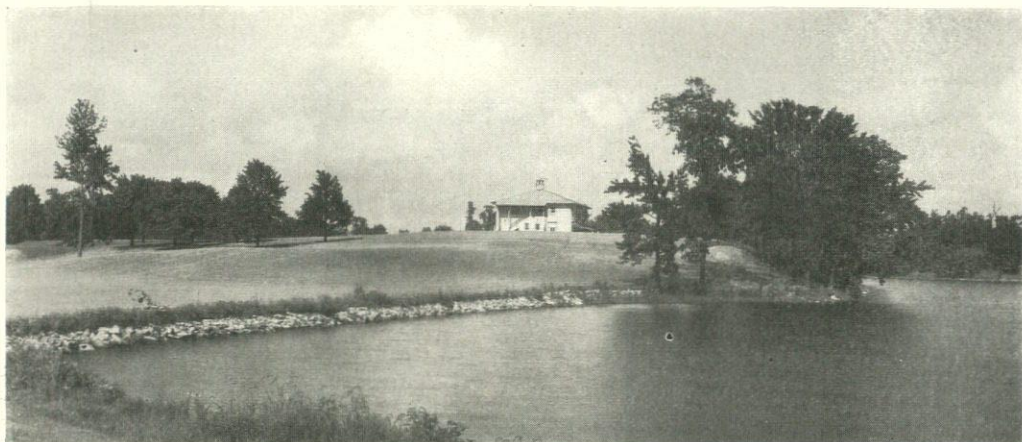
But notwithstanding the inexhaustible richness of the field, nothing can save these interlaces, however intricate and felicitous, from an ultimate monotony, due to their "one dimensionality"—the fact is that there are not a sufficient number of elements involved for contrast and variety. Filling in the interstices with floral forms, as in illustration 12, is a mere makeshift. The true path to a successful use of the magic line lies in another direction, one in which the creative faculty has freer play. Illustrations 15 to 21 variously show forth this method, which consists in using magic lines, repeated and reversed in

chess-board fashion, as a warp upon which may be woven any kind of a pattern, the geometrical web acting both as a guide to fancy and a check imparting to the design a certain orderliness. The creative faculty is not put in a straight-jacket, neither is it left utterly and helplessly free and without guidance, but it is put in harness as it were, and made subject to a control and direction which, because it is mathematical, makes for beauty because of an inherent *orderliness*.

The number of magic lines at the disposal of the designer for use in this way is practically infinite, and each individual "web" is capable of producing many different patterns. Here therefore is a foundation broad enough, and by reason of its mathematical integrity also strong enough to serve as the footing of one pier, at least, of that Palace of Art, which, when we are through with all our shifting and shuffling, our cubisms and our copyisms, we must begin to build if we would leave a recognizable record on the historic scroll.

But it is only a foundation—a point of departure. I claim for it no more than that. When I first came upon this "source" twelve years ago, I thought I had made a great discovery, and under the stimulus of this I published "Projective Ornament." That the theory is sound I still believe, but the illustrations I had then to offer were not beautiful enough to be convincing. What I hoped for was that others would develop the system to a point higher than I had reached or could reach. That hope was disappointed. The designs shown in Projective Ornament have been widely—and badly—copied, but no one apparently has been sufficiently interested and impressed to develop the patience and the courage required to build up from the bed-rock of mathematics a new ornamental mode. From time to time I have tried to supplement the deficiencies of my book by essays such as this, and to extract a more convincing beauty, still animated by the hope that others, more richly endowed than I, would profit by my discovery. That hope still lives.





*The* DEEPDALE GOLF *and* COUNTRY  
CLUB, GREAT NECK, LONG ISLAND

WARREN & WETMORE, ARCHITECTS

*By*

*Ronald H Pearce*

THE DEEPDALE GOLF AND COUNTRY CLUB was created to provide a championship course within thirty minutes' ride of New York, membership of which was limited to a total of one hundred in order to avoid that delay in commencing play which is so often a feature of the average crowded course.

This limitation in number of the members proved to be the controlling factor in the design of the clubhouse.

In laying out the course, the clubhouse had to be adjacent to the first tee and the eighteenth green and also have the ninth green and tenth tee nearby. In combining these necessary details, however, another desire was borne in mind, namely, to have the clubhouse face the lovely lake which forms a special feature of the grounds, thereby giving a pleasant outlook and ensuring to the important rooms the cool southwest breeze of summer as well as the sun's warm rays in the colder months.

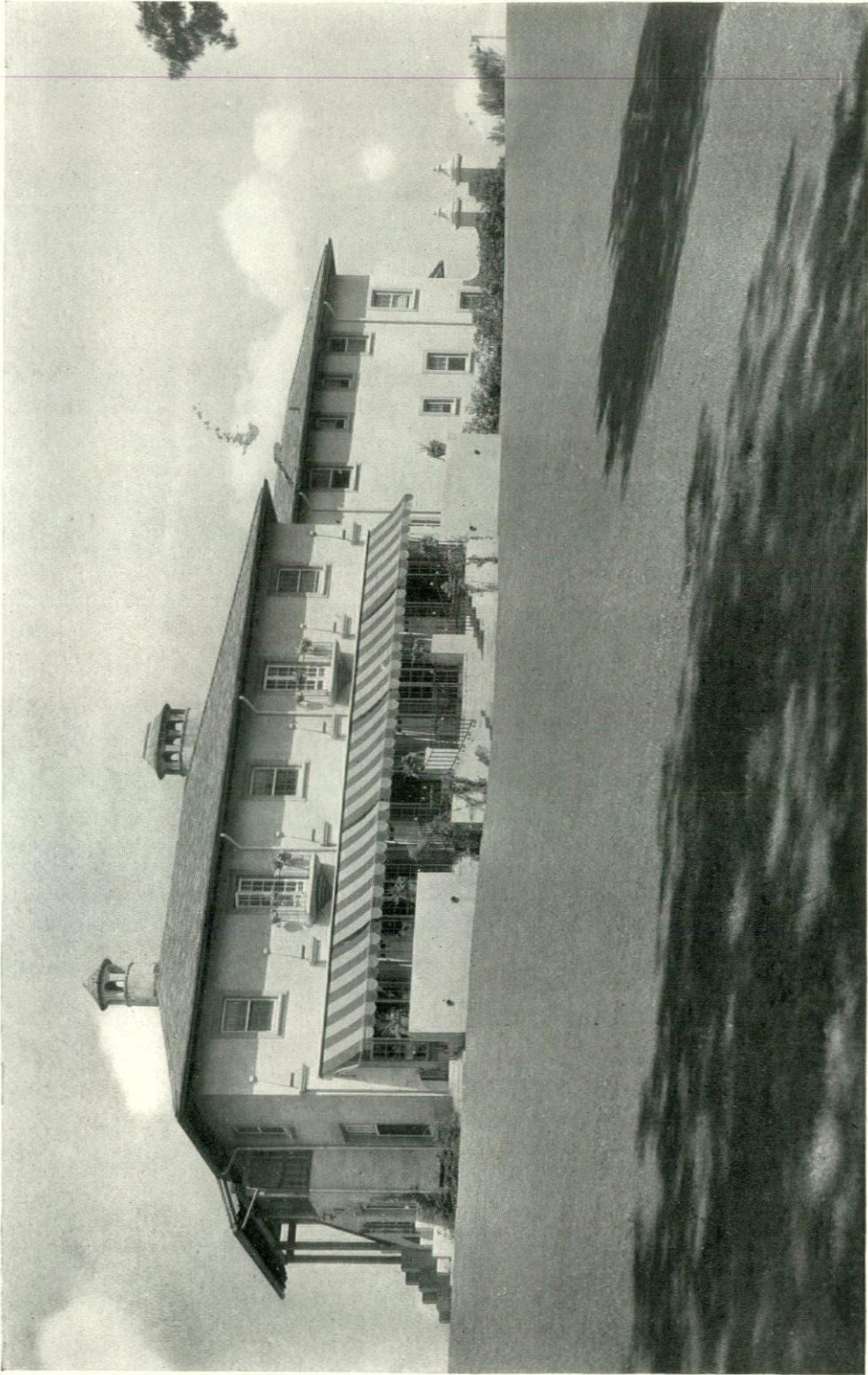
There are many beautiful trees about

the course, but none existed on the immediate site where the clubhouse was built as it had previously been a hay field. During the Fall, however, many trees and large shrubs were planted around the entrance and service wing, materially improving the immediate surroundings of the house. This improvement, unfortunately, is not shown in the accompanying illustrations, photographs for which were taken soon after the opening of the course in June.

The ground to the south was graded to a gentle slope from the terrace to the lakeside where sufficient trees already existed. In fact it was found necessary to cut away some of the growth to obtain a view out over the water.

The architects were fortunate in being allowed not only to design the clubhouse with its immediate surroundings including the entrance drives, walls and planting, but to design also the entire interior furnishings.

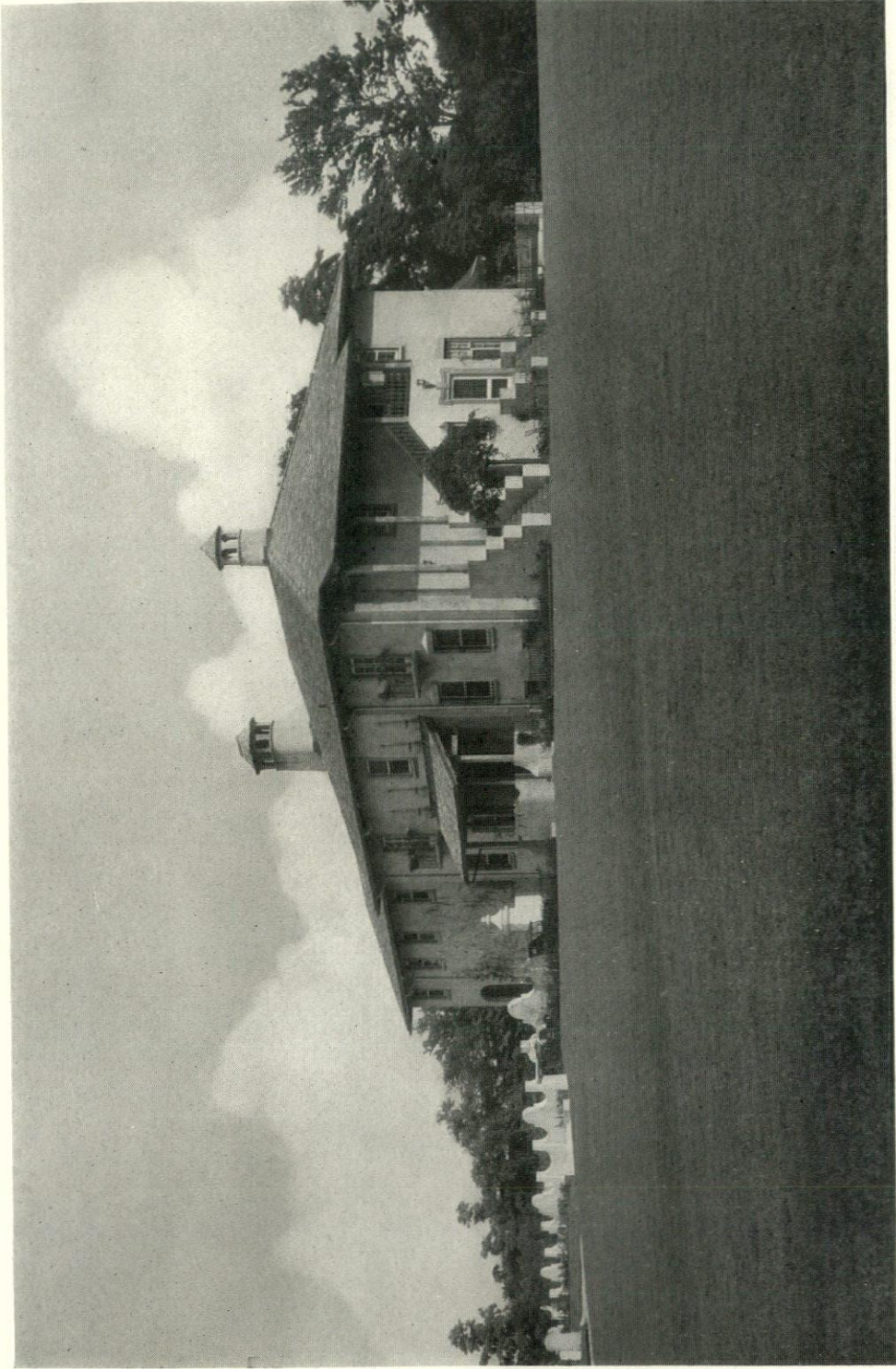
One can hardly claim that any gen-



*The Architectural Record*

South Elevation from the Edge of the Lake  
THE DEEPPALE GOLF AND COUNTRY CLUB, GREAT NECK, LONG ISLAND  
Warren & Wetmore, Architects

*December, 1926*

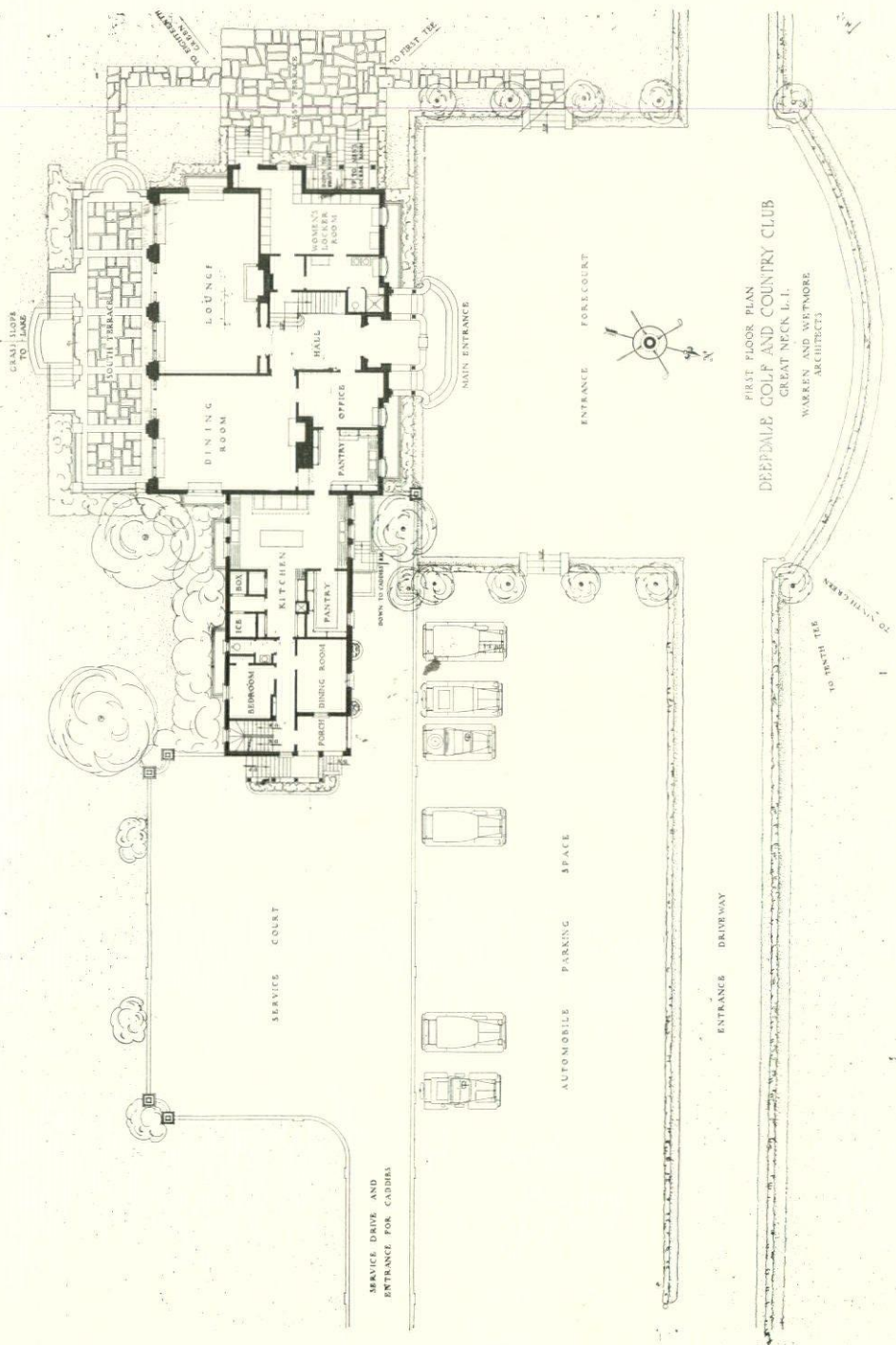


[519]

*The Architectural Record*

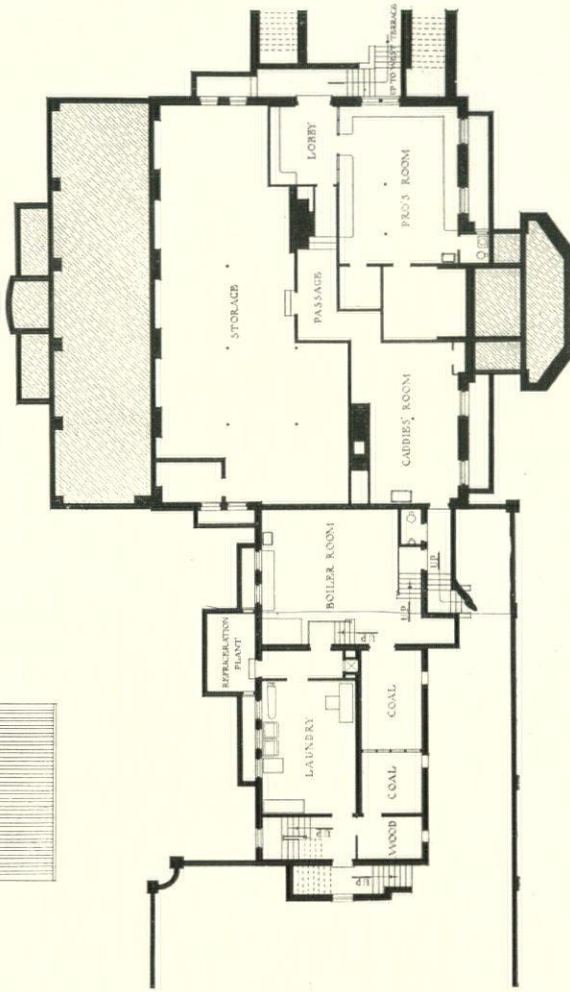
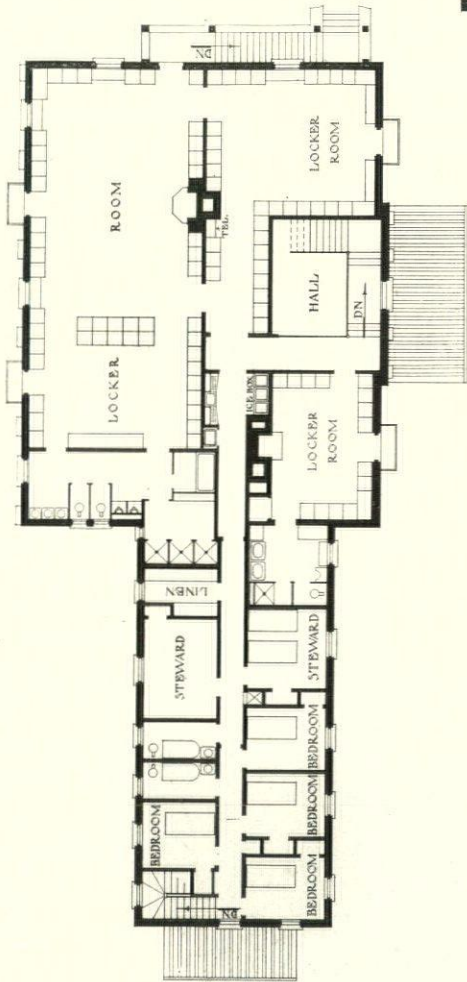
Club House from the First Tee  
THE DEEPDALE GOLF AND COUNTRY CLUB, GREAT NECK, LONG ISLAND  
Warren & Wetmore, Architects

*December, 1926*



FIRST FLOOR PLAN  
 DEEPDALE GOLF AND COUNTRY CLUB  
 GREAT NECK L. I.  
 WARREN AND BUTTHORE  
 ARCHITECTS

Plans of  
Second Floor and  
Basement



DEEPDALE GOLF AND  
COUNTRY CLUB  
GREAT NECK, L. I.  
Warren & Wetmore  
Architects

December, 1926

*The Architectural Record*



*The Architectural Record*

December, 1926

West Elevation, Showing Outside Staircase to the Men's Locker Room and  
Entrances to Pro's Room and Women's Locker Room  
THE DEEPPDALE GOLF AND COUNTRY CLUB, GREAT NECK, LONG ISLAND  
Warren & Wetmore, Architects





*The Architectural Record*

*December, 1926*

Detail of South Terrace  
THE DEEPDALE GOLF AND COUNTRY CLUB, GREAT NECK, LONG ISLAND  
Warren & Wetmore, Architects

[523]



Main Entrance  
THE DEEPPDALE GOLF AND COUNTRY CLUB, GREAT NECK, LONG ISLAND  
Warren & Wetmore, Architects

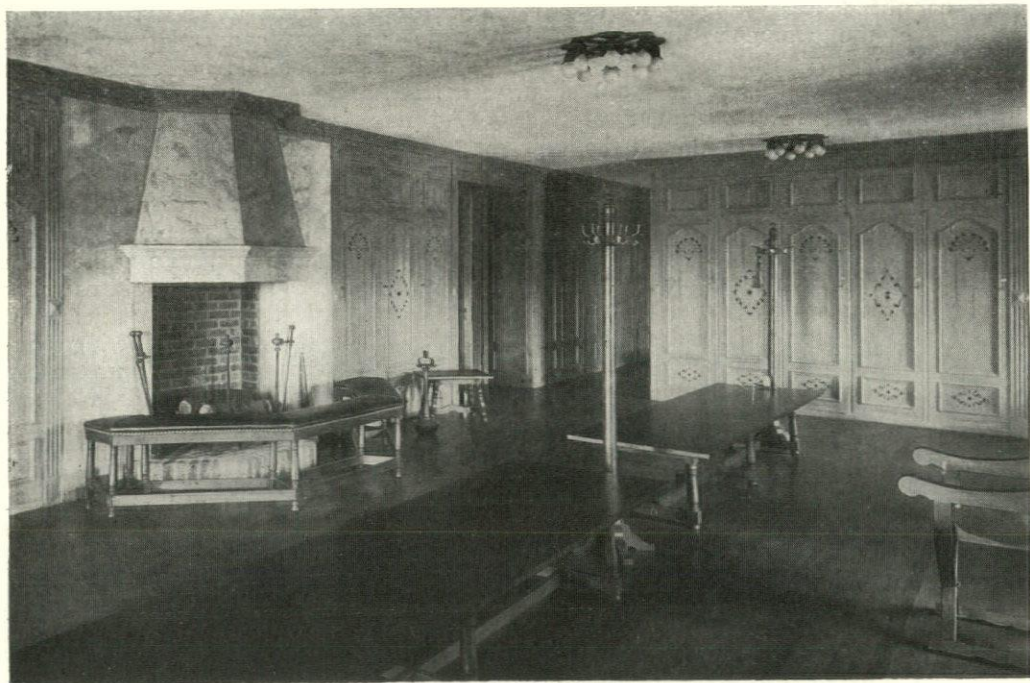
eral so-called "style" has been followed or carefully copied. Possibly it is truthful to say that a trip in the Pyrenees gave the general idea and the rest of the design followed in carrying out the requirements—the principal one being a

request not to plan a typical American Country Club but rather a building more like a private country house in which the members would feel at ease to do as they wished.

From the accompanying plans it will



Dining Room



*The Architectural Record*

A Locker Room

December, 1926

THE DEEPDALE GOLF AND COUNTRY CLUB, GREAT NECK, LONG ISLAND  
Warren & Wetmore, Architects

be seen how the main entrance drive arrives at the forecourt on the north side. Running parallel is the automobile parking space, behind which is the service drive enclosed by concrete walls built to screen the rear entrance as well as to form a barrier to the parking space. There is also a service yard in which the caddies can play, thereby eliminating the caddie house and its objectionable features. The caddies can pass from this service yard into a caddie room in the basement and, when wanted, can continue through the basement and on out to the west terrace to meet the players as they come from their locker rooms. The professionals' room is also in the basement with a high ceiling assuring ample light.

One enters—on the first floor—a medium size hall, finished in fairly rough plaster, somewhat of the color of Travertine stone. The woodwork here as in most of the interiors, is finished in the color of natural weathered oak, containing a great deal of silvery gray with a slight hue of red. To the left is the steward's office and the dining room; straight ahead the lounge, and to the right are the women's dressing and locker rooms. As this locker room has a northern exposure, it is painted a bright yellow. The treatment of the walls in the lounge is similar to the hall. The curtains on the many windows harmonize in color with the plaster and the bright colors were reserved for the furniture coverings and rugs.

Dining rooms in country clubs are often spots in which one eats and escapes from as soon as possible owing to the lack of any personality connected with them. Attempting to overcome this situation, the entire walls were frescoed with gay mural decorations using subjects that are seen hanging in almost any simple courtyard in Spain, such as ripe corn, melons, peppers, etc., with a painted tile wainscot, and on one entire wall the golf course is accurately laid out on a large scale, showing the number of yards to each hole, traps, water hazards, the correct line a player should make to escape all these, etc., so that after a morning spent on the links, a group of members at lunch can "fight"

out their round all over again and check up each other's shots and total scores.

It was originally intended to import the dining room furniture from Cuba, made of Majagua wood. This was found to be impractical and the furniture was made in New York by copying the Cuban models; it was finished in green with natural color sole leather backs and seats. The table linen is of French Normandie linen in green and white checks and the table service is also carried out in green and white.

The open terrace to the south adjoining the dining room and lounge connected by large windows is constantly used, both to dine and sit upon.

Particular attention was paid to the service portion where high ceilings and cross ventilation assure comfort for the employees at all times. The kitchen equipment includes both electric and coal ranges and a complete automatic ice making and refrigerating plant with brine coils to each compartment of each refrigerator; the kitchen refrigerator is divided into large separate compartments for meat, vegetables, milk, fish, etc. Ample pantries connecting with the kitchen make possible perfect service at all times.

As this is primarily a man's club, women are excluded from the second floor, and instead of having one large locker room, there are three, allowing groups of members, if they so desire, to occupy different rooms. To make these locker rooms attractive, fireplaces were introduced and the walls paneled in wood. Each section of paneling conceals two lockers, one large and the top one small, each with a floor area of approximately two feet in both directions, giving ample storage accommodations. Most of the furniture is oak with the benches in black with red graining beneath the final glaze, and the curtains are of a striped linen in yellow, red and gray.

Ample dressing rooms with all the necessary toilet arrangements are provided off the locker room.

Since there are not any bedrooms for members or guests, the second floor of the service wing contains the necessary servants' rooms.

# THE COLONIAL COURTHOUSE CHESTER, PENNSYLVANIA

*Restored by Clarence Wilson Brazier, Architect*

The Colonial Court House, of what was then Chester County, was erected in 1724, on the west side of Market Street between Fourth and Fifth Streets in Chester (Delaware County), Pa.

The building was erected under the Act of the Assembly of 1723-4, Chapter 242, under which Trustees were appointed and instructed that "£400 be put into the hands of the Treasurer of the County of Chester and that £300 thereof be applied towards building the Court House at Chester."

By vote of the Assembly 11 mo. 4, 1722-3 "Lion or Dog Dollars weighing 16 pwt shall pass for 5s." This would apparently place the original cost of our Court House at one thousand two hundred "Lion or Dog Dollars."

So far as known it is the oldest public building still standing in the State of Pennsylvania and was occupied continuously for public purposes until 1919, when, at the personal expense and direction of the Honorable William C. Sproul, it was restored to its original condition, and is now open to the public as a historic relic.

After several years of research by the architect for documentary data in the old county, state and private records, a studious dissection of the then existing

building was begun. Traces of the original stone floor were found and the original wainscoting, etc. After removing three coats of plaster unmistakable marks were found on the original plaster as to the original staircase, chair-rail, partitions, fireplaces, etc., all of which were restored so as to exactly fit the old recesses.

Several minor details of convenience of later periods were retained as found, such as the 19th Century door giving access to the Judges' Rostrum. The Judges' bay is of a later date (perhaps circa. 1760), than the original building and probably replaced a slighter segmental projection in the same location for which traces of foundations were found.

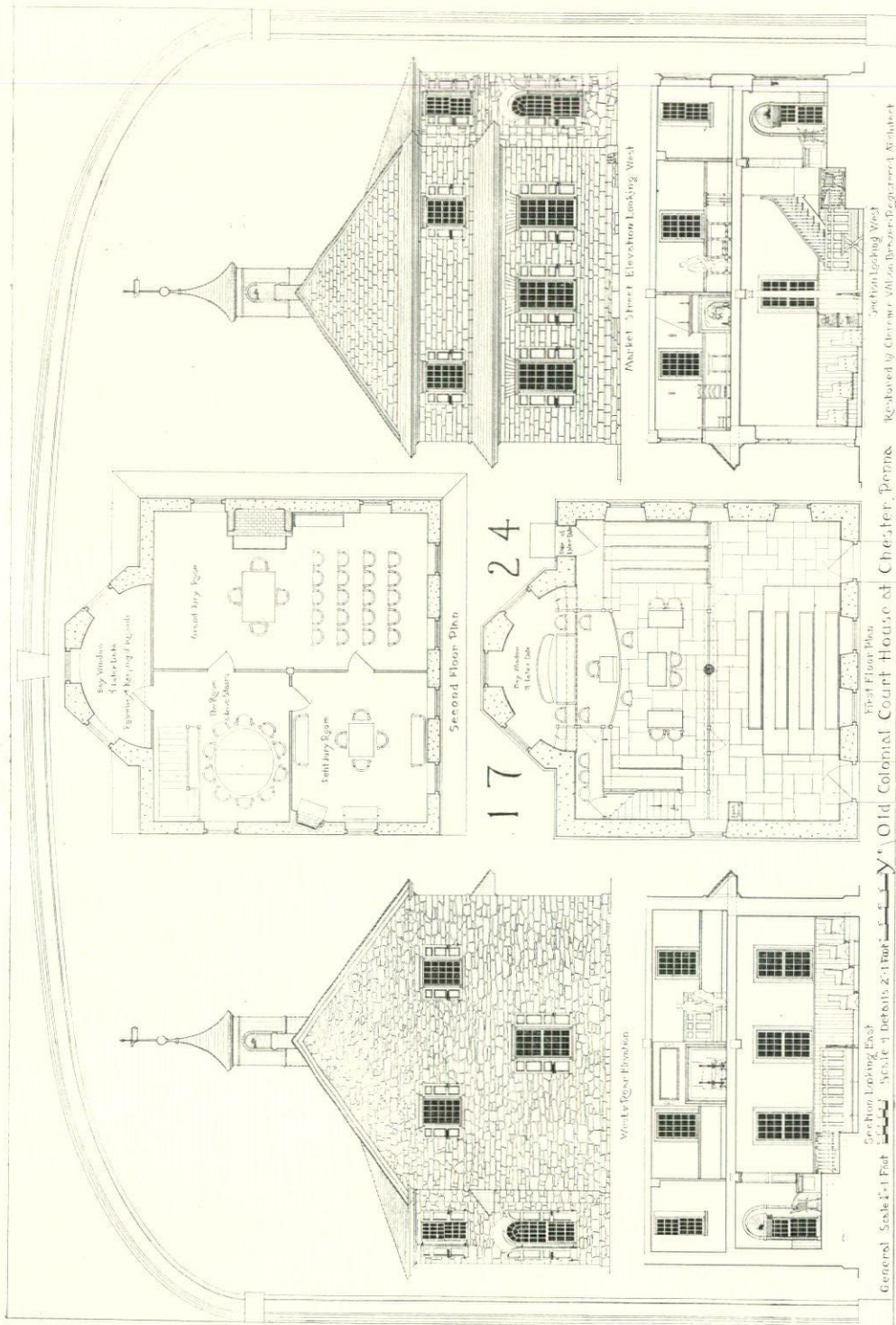
The Judges' bench, railings and Jury benches were restored from the collaborative memory of old residents who remembered the condition of the building before it was modernized and much altered in 1857. Slight changes shown in the

measured drawings, where different from the photographs, show what is more likely to have been the original treatment when viewed in the light of later information.

A bronze tablet placed by the Delaware County Chapter of the Daughters of the American Revolution concisely states the History of this Building as follows:

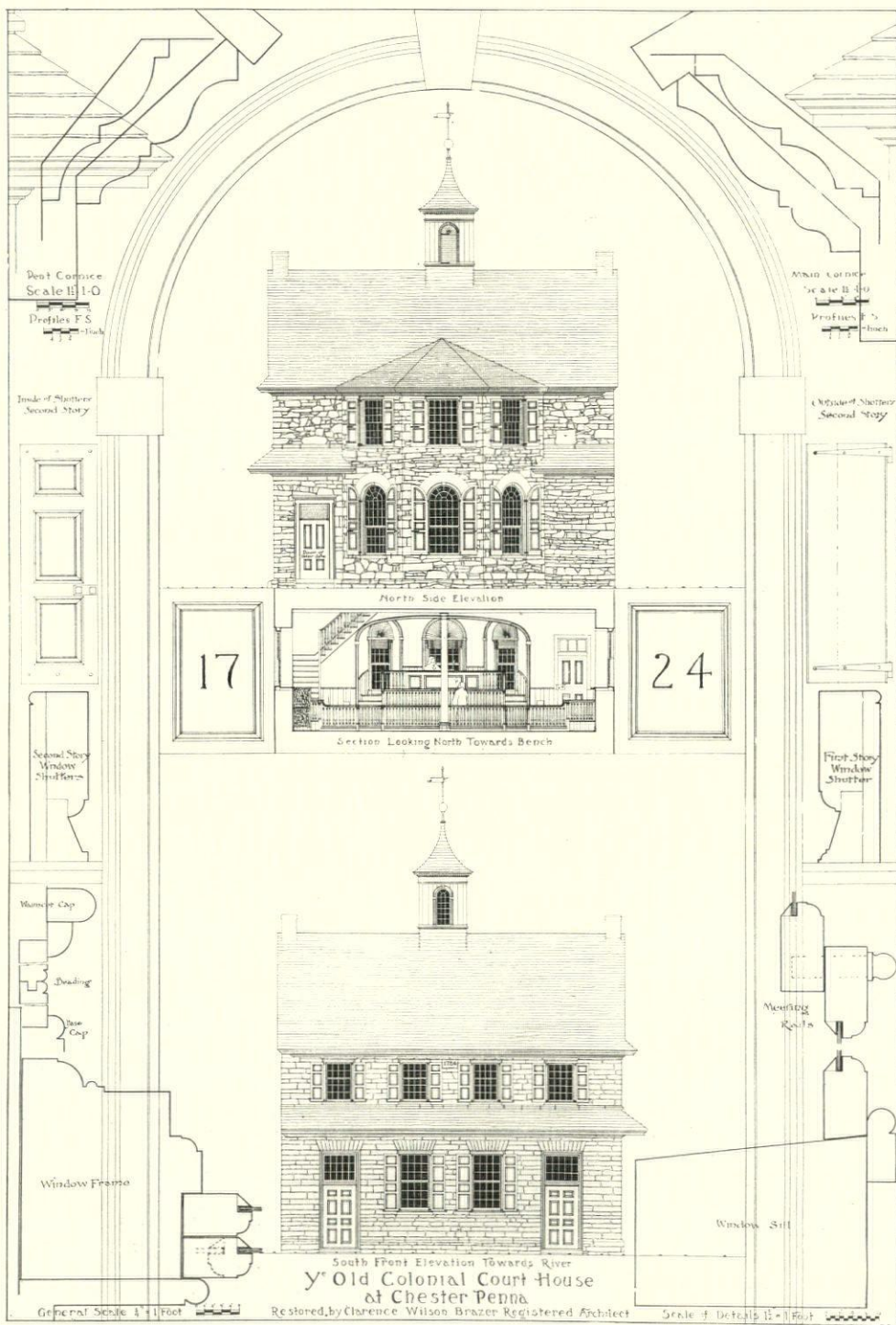


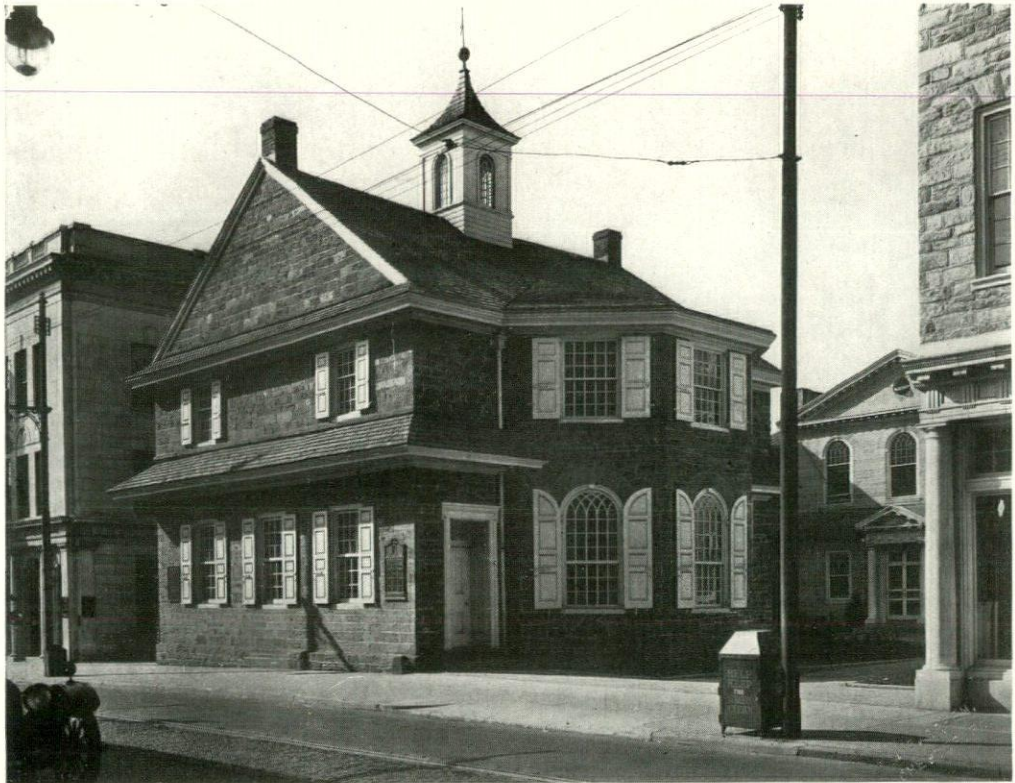
The Chester Court House Before  
Restoration in 1918



December, 1926

The Architectural Record





THE COLONIAL COURT HOUSE, CHESTER, PENNSYLVANIA

Restored by Clarence Wilson Brazer, Architect

THIS BUILDING WAS ERECTED 1724 DURING THE REIGN OF GEORGE I OF ENGLAND. IT WAS THE COURT HOUSE OF CHESTER COUNTY, 1724-1786; COURT HOUSE OF DELAWARE COUNTY, 1789-1851; HALL OF CHESTER BOROUGH, 1851-1866; HALL OF CHESTER CITY SINCE 1866. IN 1739 ENGLAND DECLARED WAR AGAINST SPAIN, AND SOLDIERS WERE HERE ENLISTED FOR AN EXPEDITION TO CUBA. HERE ANTHONY WAYNE RALLIED AND DRILLED HIS TROOPS, JANUARY, 1776. IN 1824 LAFAYETTE, AS GUEST OF THE NATION, WAS ENTERTAINED IN THIS BUILDING.

Among the documents discovered by the architect in his research are the following interesting petitions which describe the deplorable condition into which the building and its contents had fallen within a dozen years after its erection. Apparently the public's property had no efficient caretaker, and the petitioner was thereafter given that duty as Clerk of the Court and Sheriff of the County.

*The Petition of Joseph Parker of Chester Humbly Sheweth*

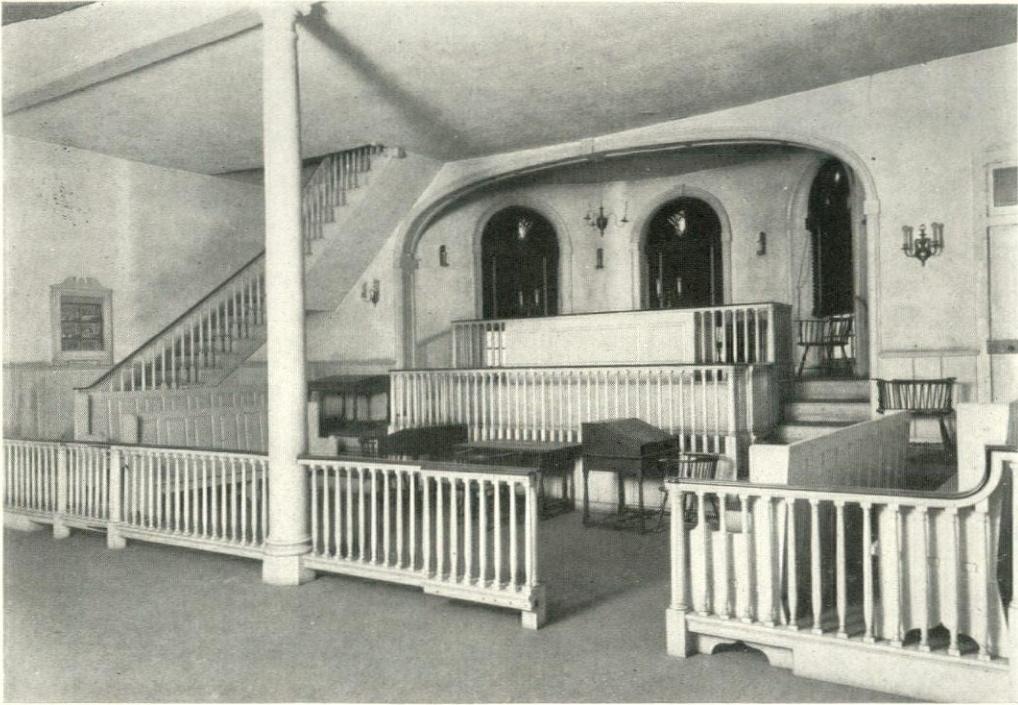
*That Whereas your Predecessors as the*

*Guardians of the Publick found an absolute Necessity for Erecting a Court house with other Buildings for the better accommodating the administration of Justice which said Court house was at the Publick Expense furnished with Tables, chairs, fireshovels, Tongs, Doggs, Fenders, so many as was Reasonably Adjudged Necessary. But whoever the Person that charge the same was Committed to It is Apparent to Every Person that will make use of his Eyes, that the Doors are most Commonly left Open for Horses and Cattle to go in and out at Pleasure, the Furniture broke and Exceedingly Diminished and the place made a Common Stage whereby Rude people break the Windows, Treads down Ceiling and Commits many Disorders which if not timely prevented must end in the Ruin thereof.*

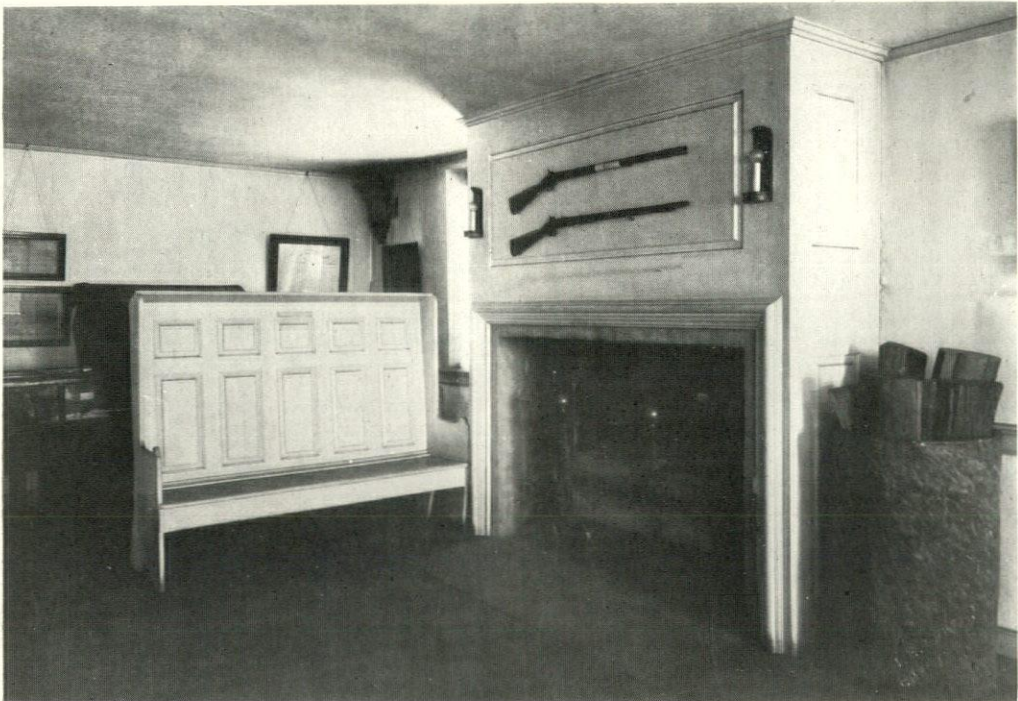
*I am your Friend to Command.*

*January 24th, 1737. JO PARKER.*





Main Court Room



Grand Jury Room

THE COLONIAL COURT HOUSE, CHESTER, PENNSYLVANIA  
Restored by Clarence Wilson Brazer, Architect

Joseph Parker's Petition produced the following results.

*"Memorandum that the Commissioners & Assessors of Chester County have ye 1st day of March 1737-8 agreed with John Owen to repair the Court House after the Manner herein Mentioned (Viz.) The lower floor and the Bar and to provide Convenient Seats for the Petty Jury to Sitt on, when in Court, and to repair the windows and Shutters below Stairs and above and the Chimney case in the Grand Jury room and to repair the Three Tables belonging to the Several rooms above stairs and the Benches, and to fix a Turn'd Column or Pillar to Support the Ceiling where the Bell rope comes thro, and to cause the Ceiling to be repaired, and to Provide as many Boards as may lay a floor over that sd ceiling and to make and put up Shutters for the Belfry (or place where bell hangs) and likewise to make a window in the Gable End in the Garret or upper Room and glaze the same, and to endeavor to procure (with the help of Joseph Parker) the Chairs that is wanting belonging to the Court House as also the Tongs and Fire Shovels, and the Said John Owen accomplish or cause to be accomplishd the above sd respective articles by the first day of Next May. Court to be held at this County of Chester, March ye 1, 1737-8. In consideration of the performance of the said work, the said John Owen hath been allowed an order on the Treasurer*

*for five Pounds toward the same & Providing Materials.*

JOHN OWEN.

*Copy of Bond of John Owen (High Sheriff) to Richards Jones, Samuel Lightfoot and John Parry, Journ. Gent<sup>m</sup>. Commissioners of County of Chester."*

The furniture indicated on the architect's drawings (pages 528 and 529), shows the use to which the building was put. They are the original furnishings as shown by an old document.

Copy of the furnishings ordered by the Chester County Commissioners for the new Court House in 1725.

*"By a minute entered of Record in the Comrs. Books bearing Date ye 2 Day of October Anno Dom 1725 it appears that the then Comrs agreed with John Owen to make a Large Oval Table in the Court House room above Stairs of the Dimensions of Seven by Eight Foot and another Table in the Grand Jury room of the Dimension of 6 by 5 feet and a Square Table in the Petty Jury Room of 4 foot long and 2 benches of Length of 6 feet each and one Bench of 4 foot long in the Same Room, and Necessary Conveniences in the office for laying and keeping the Records in, and Thomas Giffing is ordered to make two pr. of Tongs and fire Shovels for the two rooms with Irons to Lean them again as also Dogs and fenders for the Sd Rooms and Saml Hollingsworth procure 4 Dozn of Chairs 4 of which to be Arm Chairs."*

# ARC WELDED STRUCTURAL STEEL

By

*John Brackett*

*Consulting Engineer*

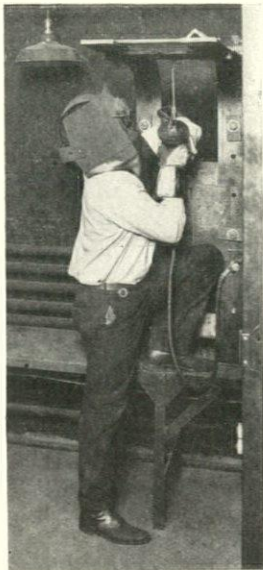
ARC WELDING, APPARENTLY, has developed to a point where it may very reasonably command the attention of the architectural profession. If welding offered merely an alternative method of forming joints in steel structures, it would be of little general importance. Riveted joints are entirely satisfactory, and connection details would seem to be of interest to shop men and engineers rather than to architects.

Such is far from being the case. Arc welding creates possibilities so far reaching that they modify our entire conception of the relationship between loads and stresses in steel structures. Under the influence of the electric arc, single span girders become continuous over many supports, carrying their loads with less steel than before, and distributing their reactions in an entirely different manner among the members which must carry them. Beams once supported between columns become integral with their supports, rather than supported ends, and with a vastly different and a far more complex system of beam and column strains.

Compound sections may be welded up out of sheared plates, using no structural shapes whatever. As compared to riveting practice, tests of girders constructed in this manner have shown truly remarkable gains in economy of material per unit of useful load.

The mechanics of arc welding are extremely simple. A source of current is connected directly to the steel structure, and on the other side, to a steel welding wire, operated by the workman. Touch-

ing the wire to the steel "pulls" an arc, melting the edges to be joined, and causing them to flow together into one piece of solid steel. In the process the welding wire fuses into the joint, building it up in cross section until its resistance considerably exceeds that of the original steel area. Low voltages are used, eliminating personal risk. The welding wire, with its convenient holder, weighs about two pounds—far less than a riveting hammer. The operation ceases when the wire is withdrawn from the steel. While in contact, the arc may be drawn slowly around any shaped joint, leaving solid welded steel in its path.



A SCHOOL FOR WELDERS

Workman executing an overhead weld in the Westinghouse School.

In common with all industrial arts, considerable skill is required. Flat seams, as on a floor or bench are the easiest to weld. Vertical seams, as in welding a beam web to a column, and overhead welds, as in welding bottom flanges of girders, are much more difficult. All of these operations, however, seem to be well within the reasonable expectations of good workmanship. Similar conditions form the basis of the thoroughly practicable lead burning art, where sheets and sections must be fused together from every conceivable point of approach—the soft, fusible lead offering a far more elusive problem, especially overhead, than is offered by steel. Riveting, too, is far from being an unskilled profession. It calls for strength, skill, and teamwork to a far higher degree than is generally appreciated.

Poor work may occur in welding as well as in field riveting, but it is per-

haps even easier to discover by inspection. This statement is perhaps worthy of further examination. One is apt to visualize welding as of a shaft, or a forging, where a mass of metal is joined, the bulk of it far beneath the surface. However trustworthy such operations usually are, their surface indications are of little value. Conditions in a steel structure are very different.

All of the sections are relatively light—often thinner than the welding wire. It is customary to make the external bead of the weld as heavy as the webs of some girders. The visible portions of the weld form an extremely high percentage of the total joint. It is scarcely possible for defects to exist without showing—in fact, the surface manifestations of even slightly defective welding are far

more glaringly apparent than are those of poor riveting, where the head may be perfect, but the hole far from being filled. It may fairly be said that poor welding and poor riveting are at least equally easy of detection and repair. In either case the prevailing factors of safety are ample provision against ordinary deviations from perfect work.

The American Bridge Company are erecting a five-story steel building at the Sharon Works of the Westinghouse Electric and Manufacturing Company. Welded construction is used throughout. Exhaustive tests of welded construction preceded the design, and the test members were of full size, built and tested under actual service conditions. Welds, for example, between girder webs and columns, were made vertically, as would be the case in practice. Overhead welds

were made at points where they would normally occur. Built up beams and the like were welded flat, as would be the case in shop practice. Twenty-two specimens were tested to destruction.

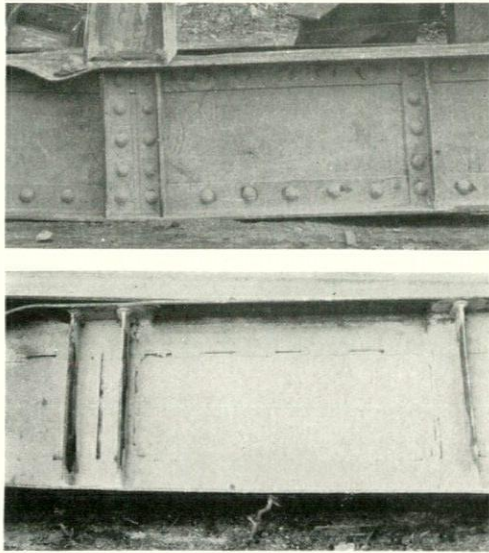
Six of these tests were of cantilever beams protruding from a column. Tests of this kind are simple tests of the joint itself. In every case but one, complete failure of beam or column was effected without injury to the welded joint. In the one case the weld, noted to be inferior, failed, but only after a complete rupture had occurred of the top flange of the girder.

Insofar as a set of tests may be regarded as proof of anything, these tests indicate that welded joints can be made to develop the full strength of structural members; that beams and girders can be connected to columns

so as to produce absolute fixation; that lines of beams or girders can be connected so as to produce complete continuity across supports, whether the supports be girders or columns.

These conclusions are extremely important to the structural steel designer. The first conclusion is not so important. It has always been more or less assumed that riveted connections can develop the full strength of members. Proof that welding will do so might be of importance in the design of structures for earthquake regions, where unusual service may very conceivably occur. Absolute fixation of beams to columns, however, and entire continuity of lines of girders, are elements which, if granted, will save money in the design of almost any structure, anywhere.

Two tests were made of beams welded



GIRDERS OF SIMILAR DESIGN  
The upper girder is riveted. The lower one is of riveted design and welded construction.

between supporting columns, and one test of a similar beam exceptionally well riveted between supporting columns. The comparative breaking points were 73,500 lbs. and 58,700 lbs. This test would apparently justify the assumption of a very high degree of fixation of beams welded between columns. When this is allowable, immediate economies result in the steel design.

Eight tests were run on welded rods, continuous welded girders, welded truss members and the like, all tending to support the above conclusions.

Four tests were run on built-up girders of similar dimensions — very striking tests, which

seem to suggest tremendous possibilities. The girders were built in three types, one riveted, one of riveted design (plates and angles) but of welded instead of riveted construction, and two of special welded design. The riveted girder failed at 68,900 lbs. The welded girder of riveted type failed at 77,200 lbs. The welded girders of especial welded design failed at 110,350 lbs.

These figures are as striking as the underlying facts are simple. The special welded design, which failed at 110,350 lbs. was simply three sheared plates, welded into an I form, with flat bars on edge for web stiffeners.

All specimens were loaded by means of rocker blocks 5-in. wide 8" long, 10" high finished on two faces to a radius of approximately 2-ft. Plates 1½-in. thick, 5-in. wide by 8-in. long were placed between the rocker blocks and the specimen so as to distribute the load through the rocker block over an area 5-in. wide across the specimen. Cantilever specimens, of course, were loaded at a point approximately 3-in. from the end, whereas simple beam specimens were supported by means of the rocker blocks on various spans, the load being applied at the center

of the specimen through a similar 5-in. wide by 1½-in. thick block.

The amount of weld metal used to make the various joints is unquestionably in excess of that actually required to produce joints of 100% strength, but this was intentionally incorporated in the design of the test specimens so that we

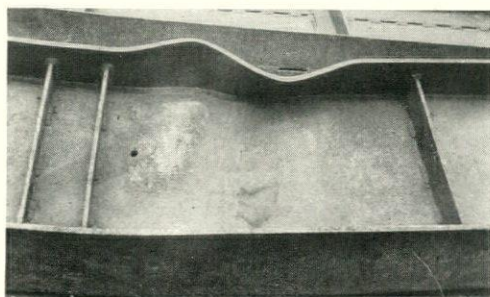
could prove beyond the shadow of a doubt that structural members can be joined by arc welding, making joints which will not fail even up to rupturing loads on the members so joined.

In carrying out further tests in the future, determinations will be made as to the minimum

amount of weld metal which can be used for such joints and still retain the requisite strength at the joints.

It is perfectly apparent, with the development of welding, that stock sections of this kind can be put on the market and their advantages and economies realized by the mere process of specifying them — from hand-book data. Such economies are already available to an extent in the various pressed steel purlin sections which the market affords. With welding perfected and recognized, similar economies are to be expected in heavy steel.

Proponents of welding realize, no doubt, better than any one else, that there is much work still to be done. Welding must be admitted under building codes. Safe possibilities must be fully established, and the facts put in hand-book form, as easy to use as a riveting table. Welded details must be thoroughly standardized, and the data made generally available. Only then can the art be regarded as a practicable thing, ready for the non-specializing engineer and architect to use. All of these things have been done in structural steel and in reinforced concrete practice. There is no apparent reason why they cannot be accomplished



COMPLETELY WELDED GIRDER  
This girder is fully welded and is of special welded design.



COMPLETELY ARC WELDED BUILDING ERECTED BY THE WESTINGHOUSE  
ELECTRIC AND MANUFACTURING COMPANY

by welding engineers. Apparatus is becoming highly perfected. The Westinghouse Company has established a school for welders. It is generally recognized that welding must be "sold" by careful, thorough presentation of the facts. All of this is extremely reassuring.

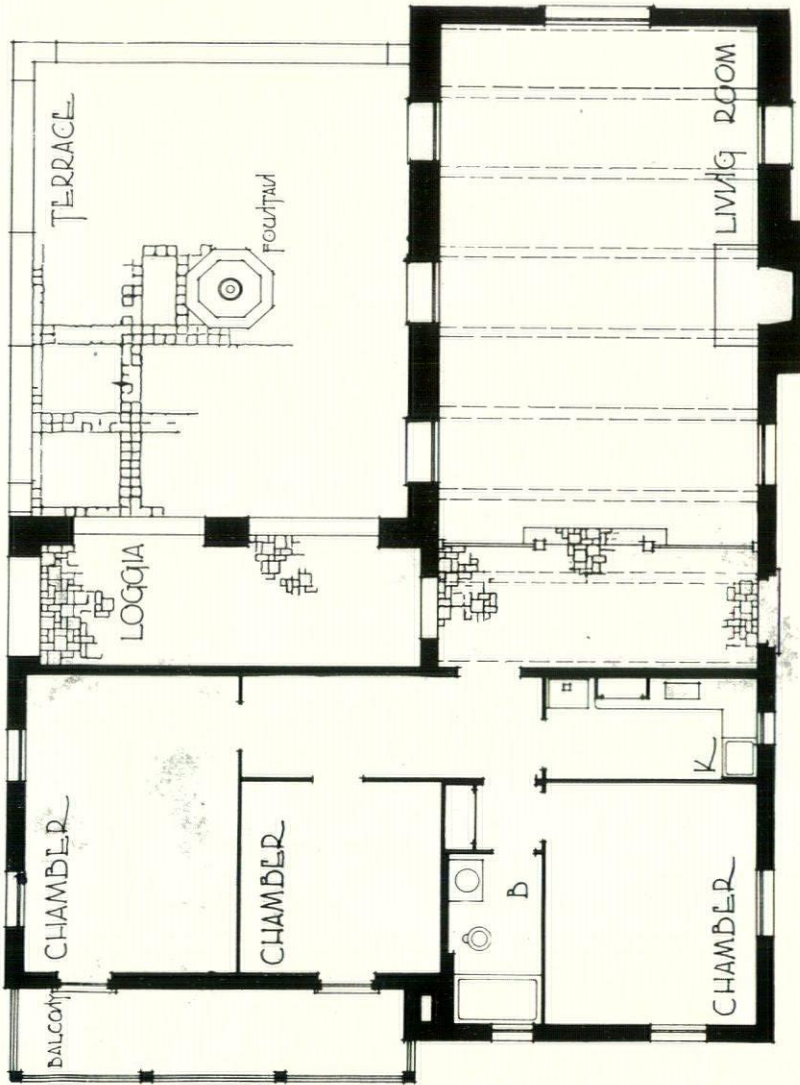
Meanwhile, it is possible that a new and important element of design is taking form. Its basic possibilities are great, and even its incidental advantages are

considerable. Many a designer on alteration work would welcome the electric arc when steel appears in unexpected places. When changes and extensions must be made from old records, the results cannot always be foreseen. If the man on the job can cut and shape steel even a very little, how much trouble and annoyance may be avoided. And, truly, the roar of the riveter is among the things that never will be missed.

P O R T F O L I O  
C V R R E N T · A R C H I T E C T V R E



REAL ESTATE OFFICE, FOX MEADOWS ESTATE, HARTSDALE, N. Y.  
Andrew J. Thomas, Architect



FLOOR PLAN

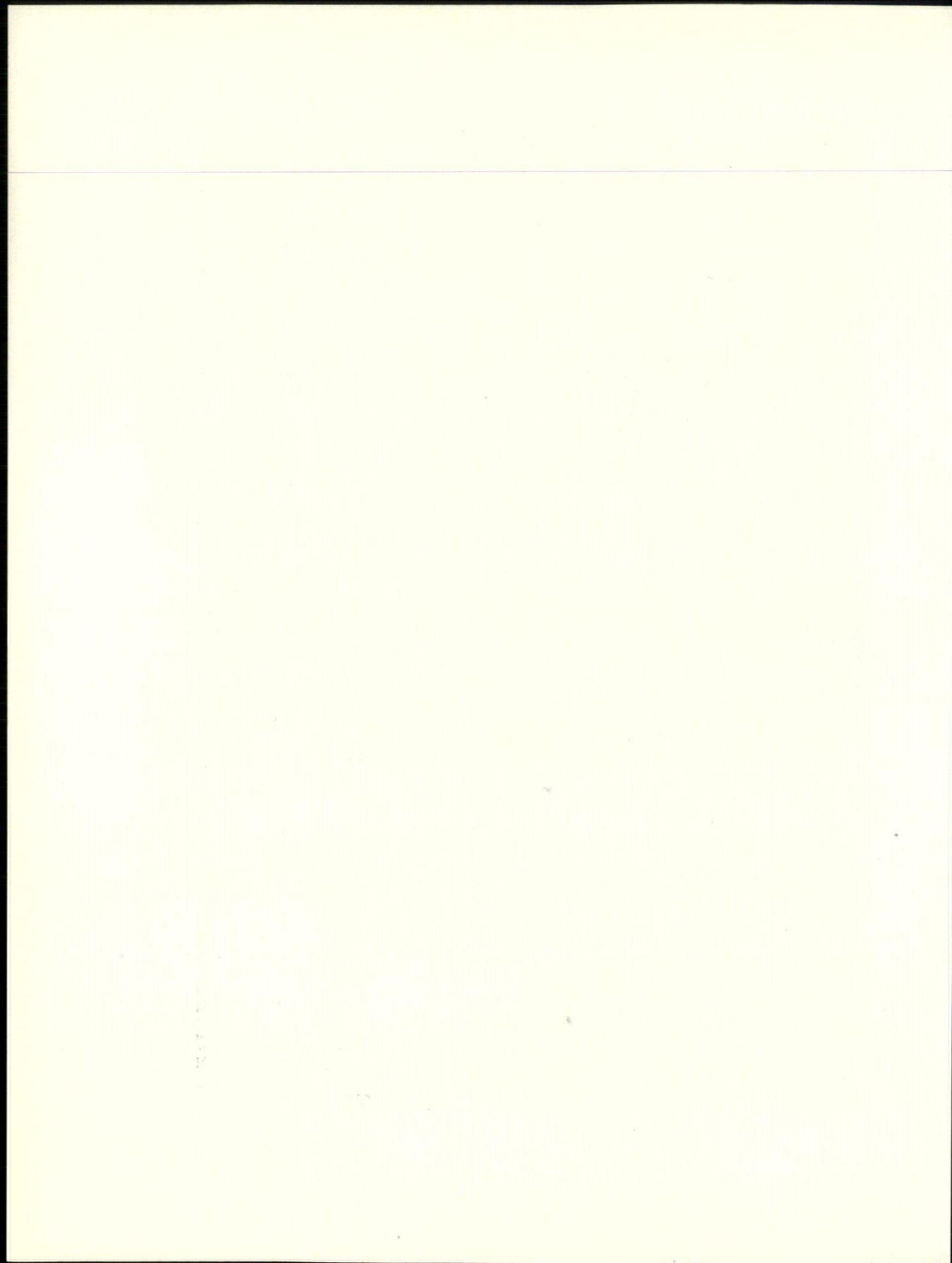


REAL ESTATE OFFICE, FOX MEADOWS ESTATE, HARTSDALE, N. Y.  
 Andrew J. Thomas, Architect





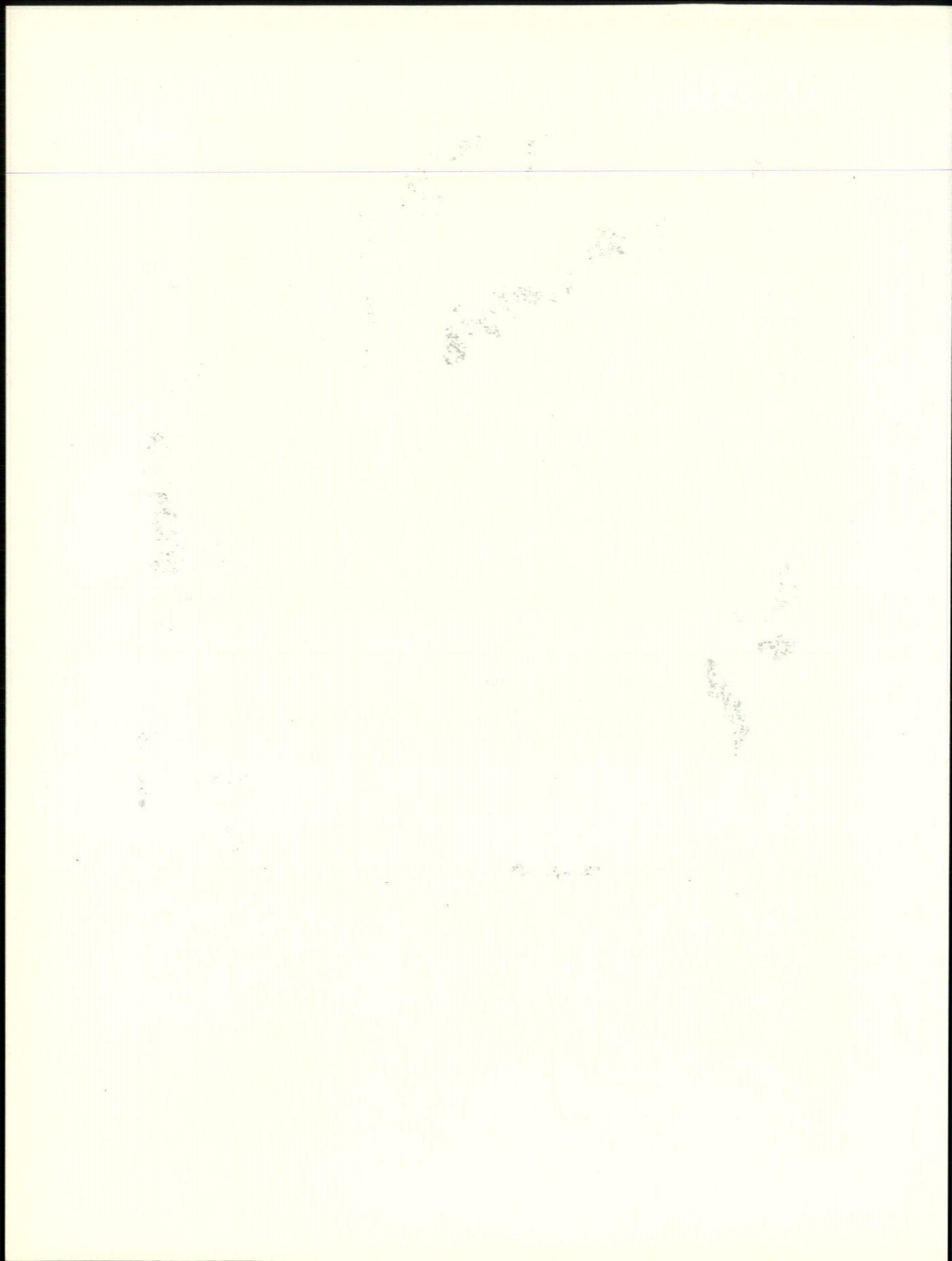
REAL ESTATE OFFICE, FOX MEADOWS ESTATE, HARTSDALE, N. Y.  
Andrew J. Thomas, Architect

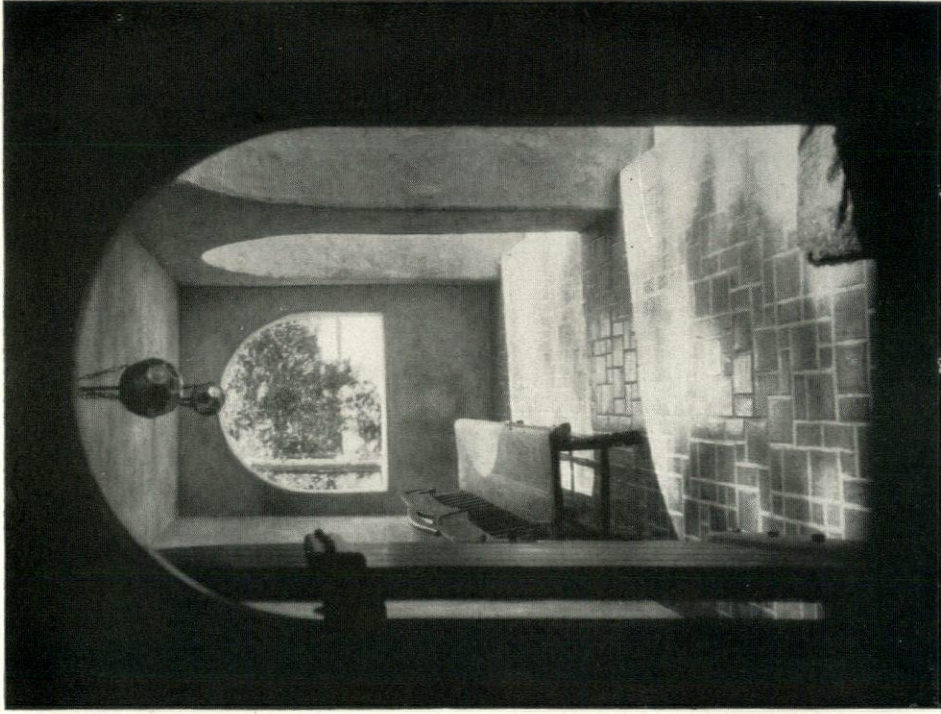
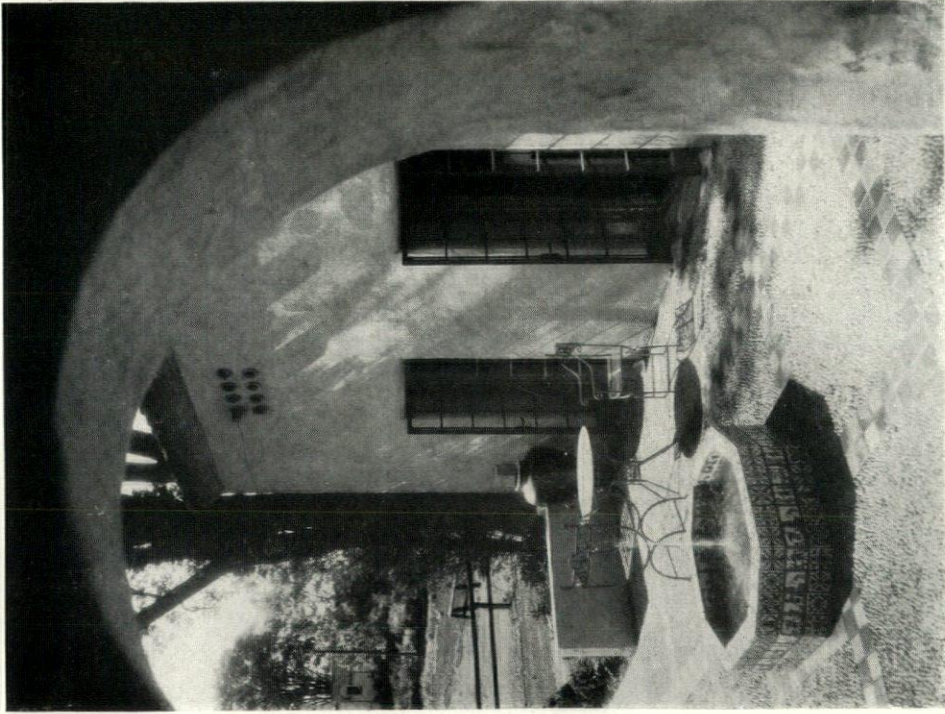




REAL ESTATE OFFICE, FOX MEADOWS ESTATE, HARTSDALE, N. Y.

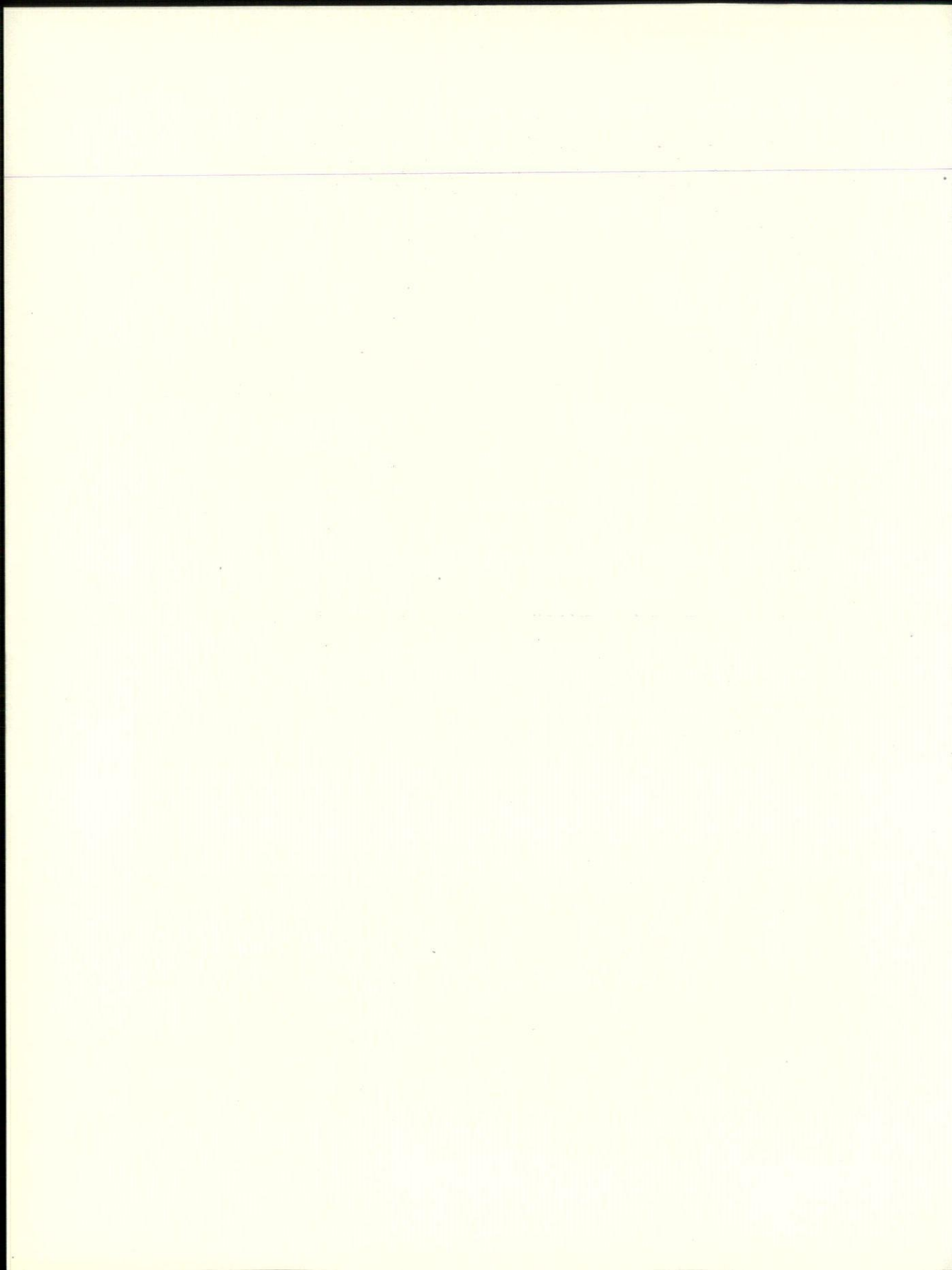
Andrew J. Thomas, Architect

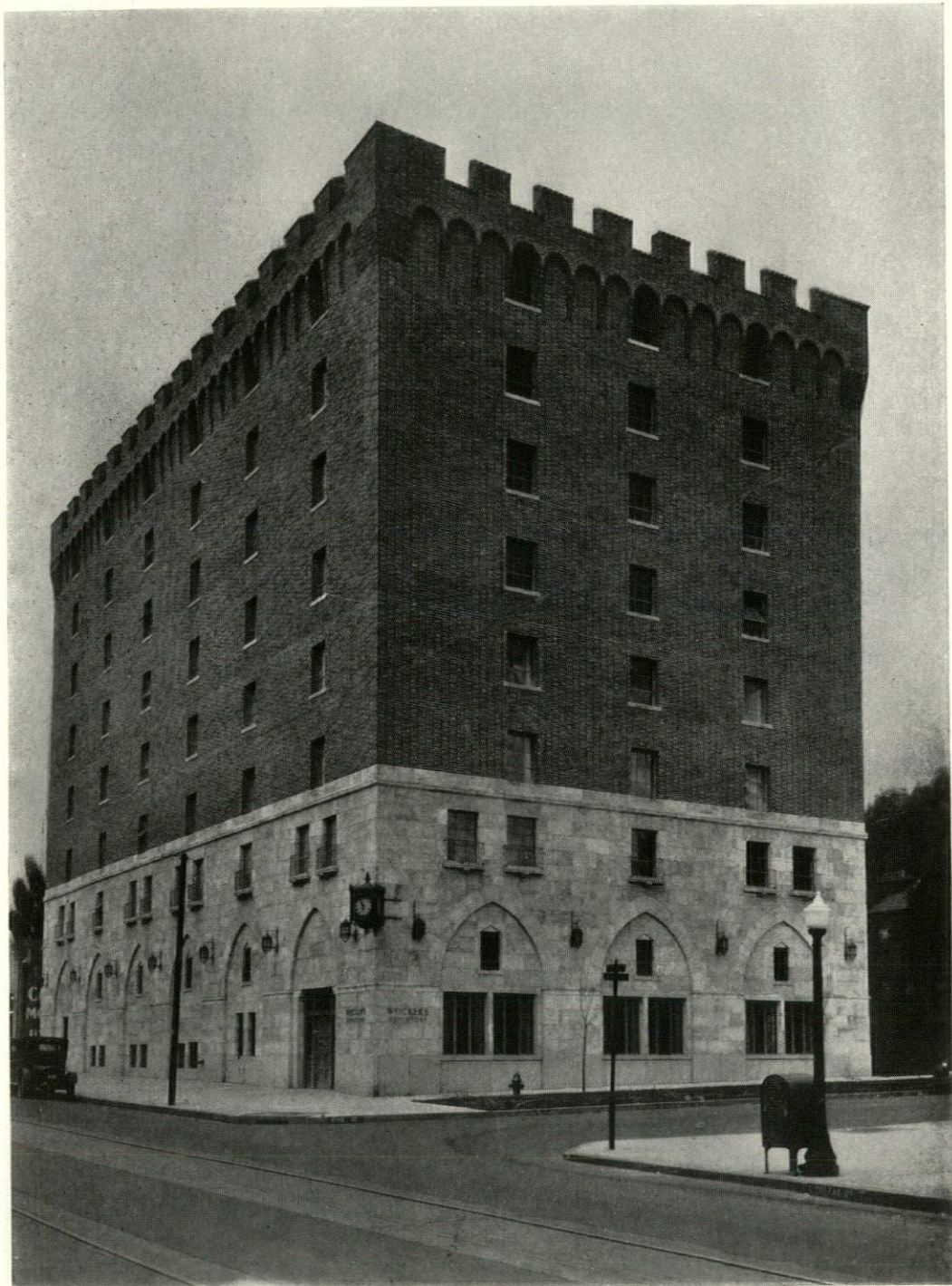




REAL ESTATE OFFICE, FOX MEADOWS ESTATE, HARTSDALE, N. Y.

Andrew J. Thomas, Architect





DEPOSITORY OF THE WEICKER TRANSFER AND STORAGE CO., DENVER, COLORADO  
William E. & Arthur A. Fisher, Architects

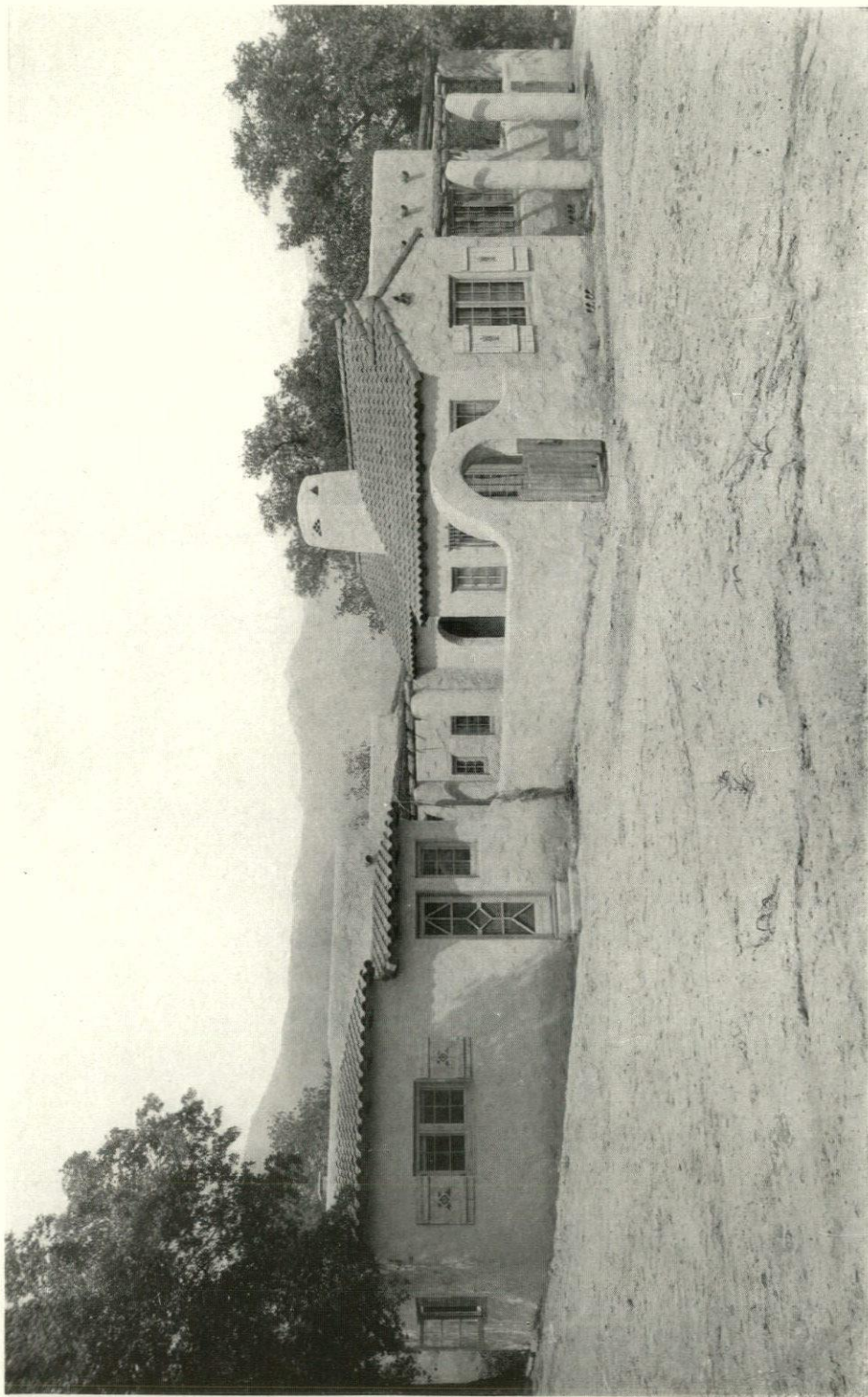






DEPOSITORY OF THE WEICKER TRANSFER AND STORAGE CO., DENVER, COLORADO  
William E. & Arthur A. Fisher, Architects



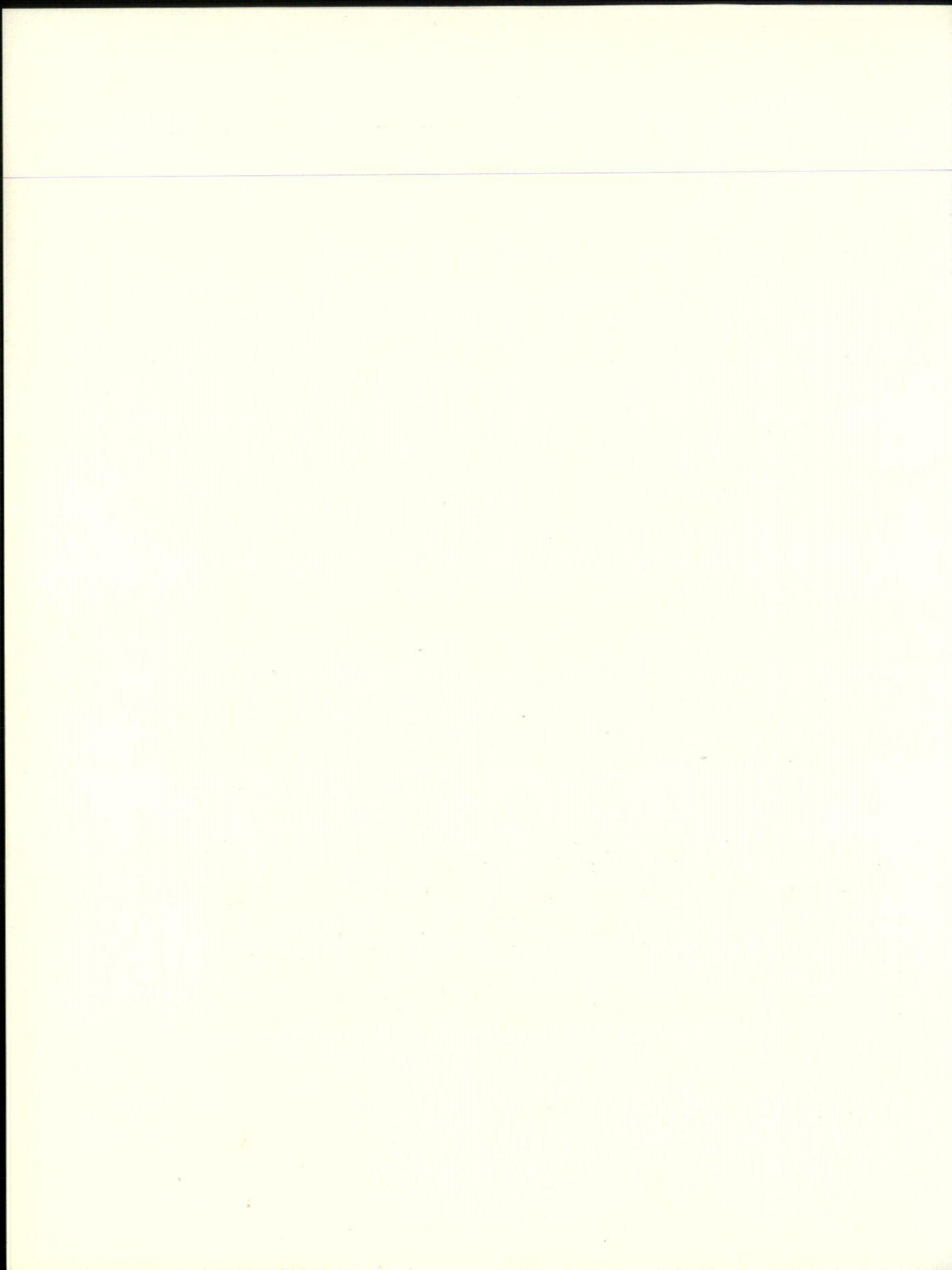


South View of the President's House  
THE KROTONA INSTITUTE OF THEOSOPHY, OJAI VALLEY, CALIFORNIA  
Robert B. Stacy-Judd, Architect



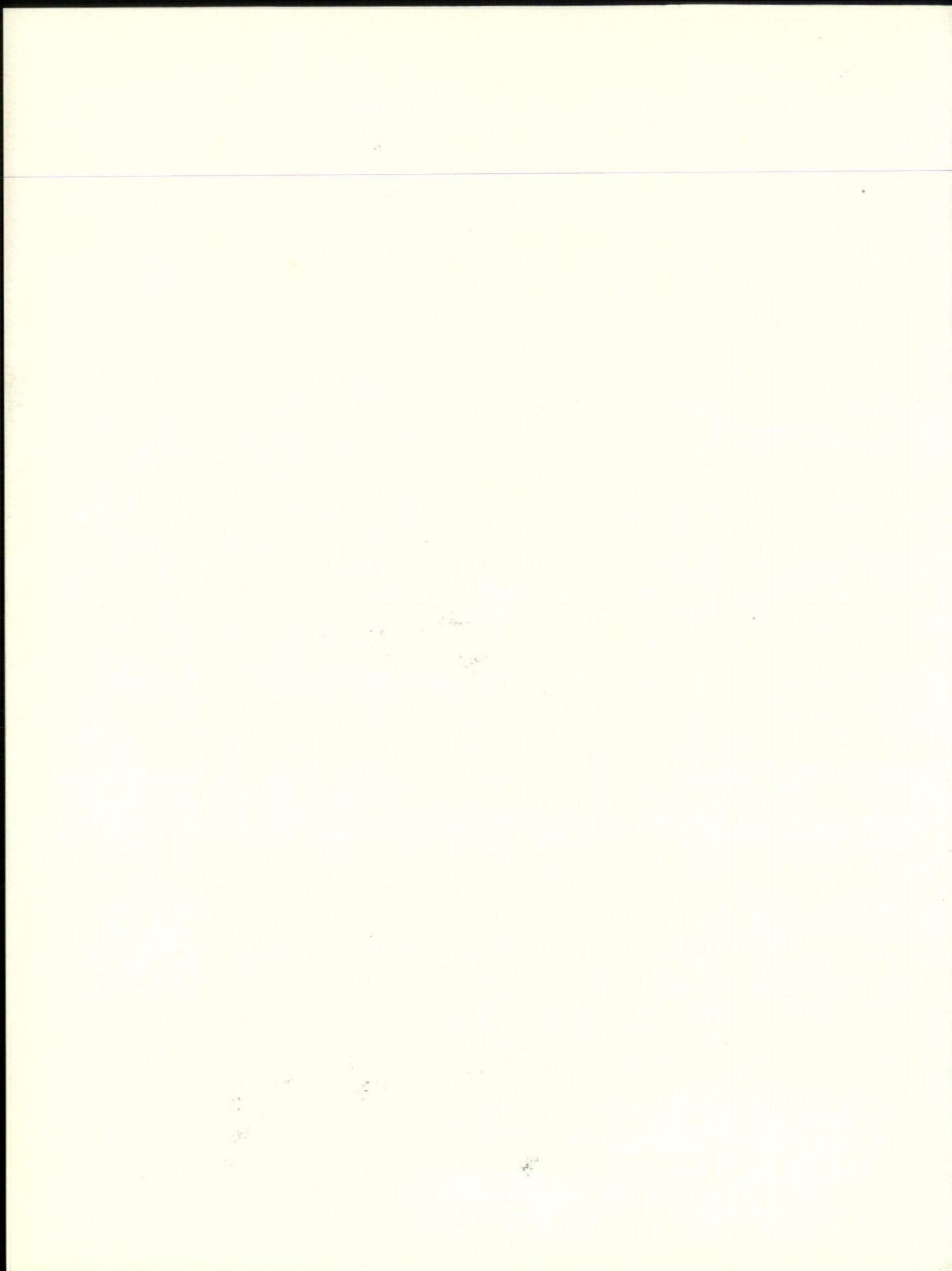


Detail, Patio of the President's House  
THE KROTONA INSTITUTE OF THEOSOPHY, OJAI VALLEY, CALIFORNIA  
Robert B. Stacy-Judd, Architect

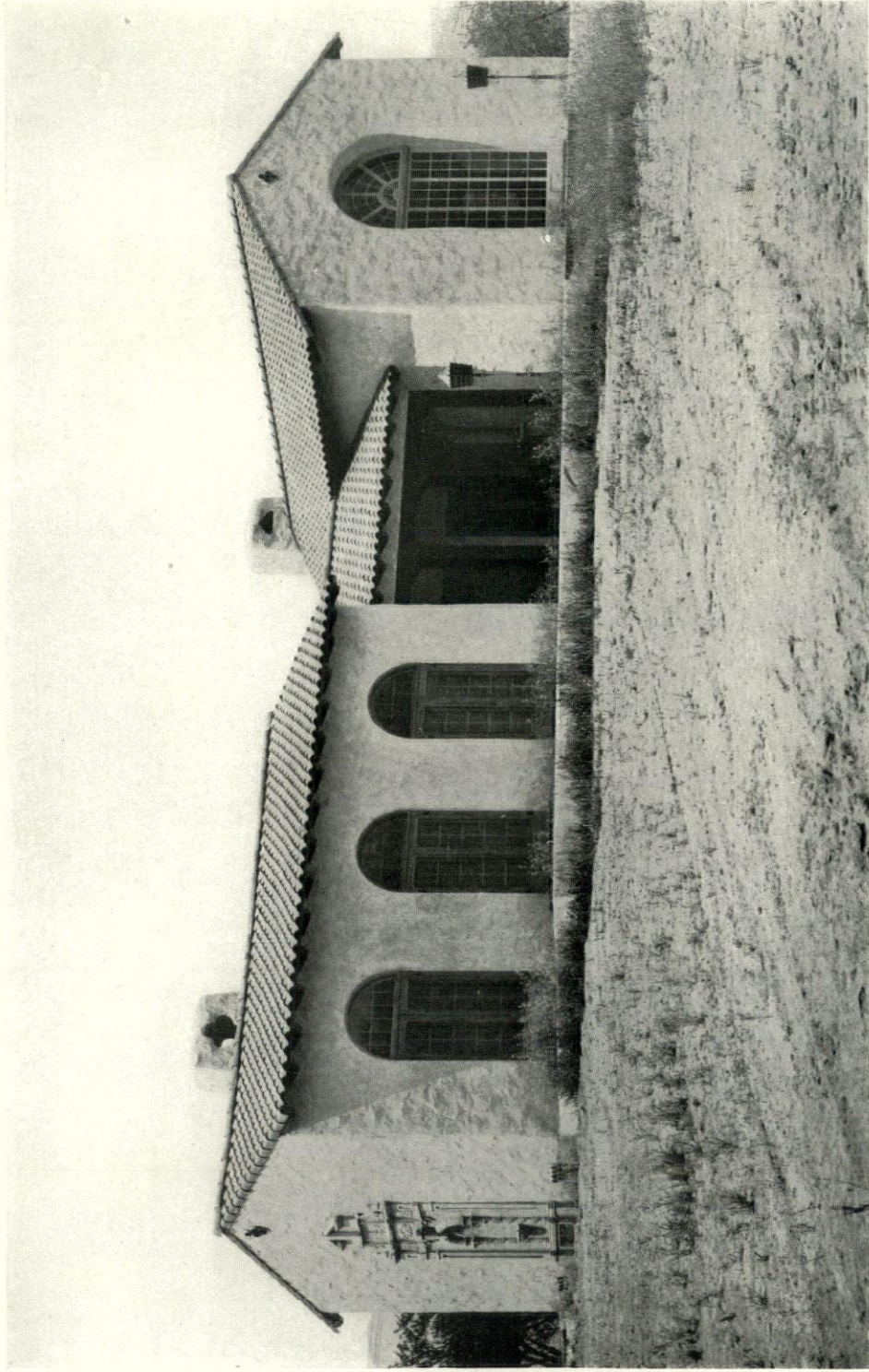




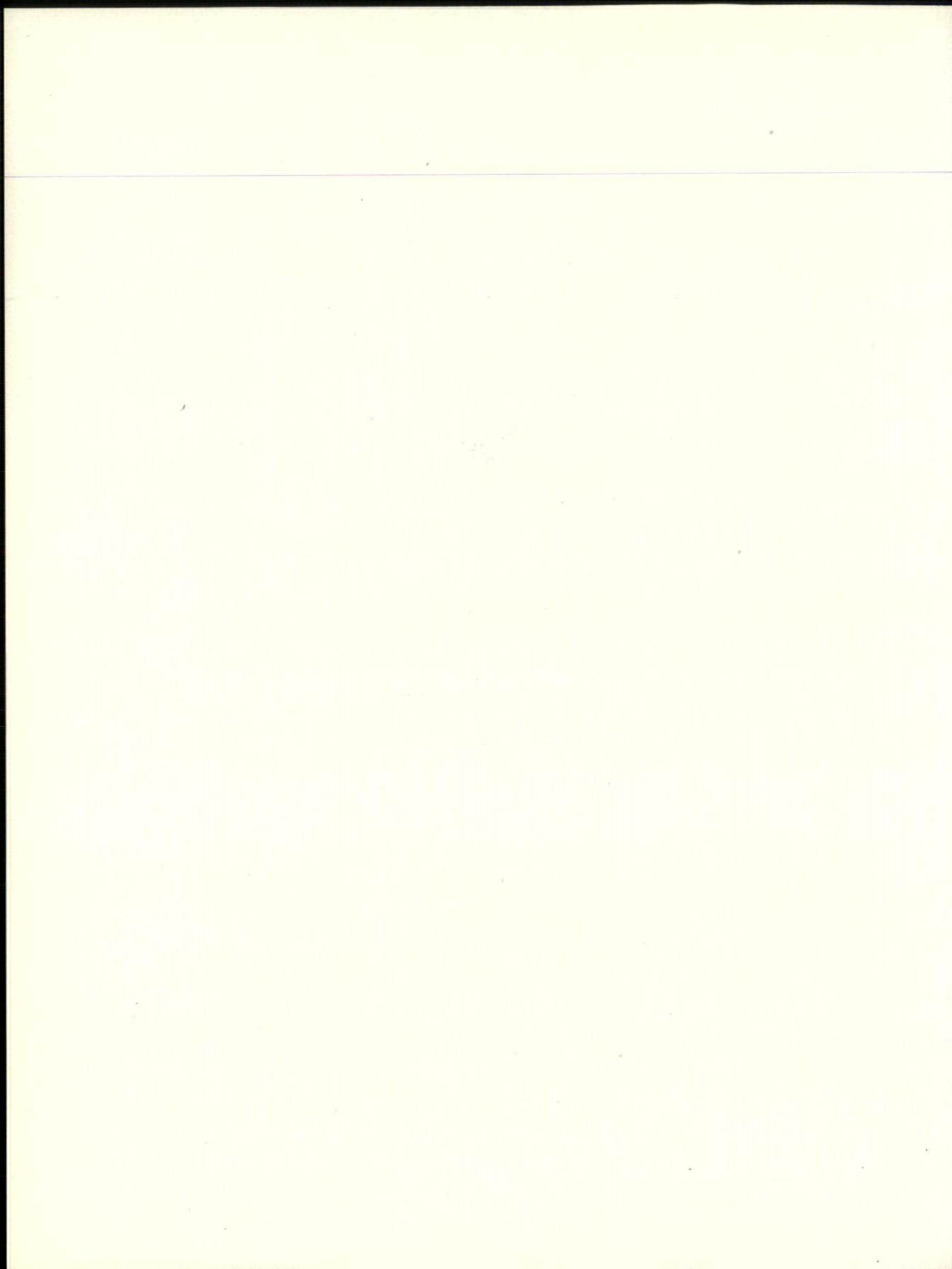
Southwest View of Library Building  
THE KROTZ INSTITUTE OF THEOSOPIY, OJAI VALLEY, CALIFORNIA  
Robert B. Stacy-Judd, Architect

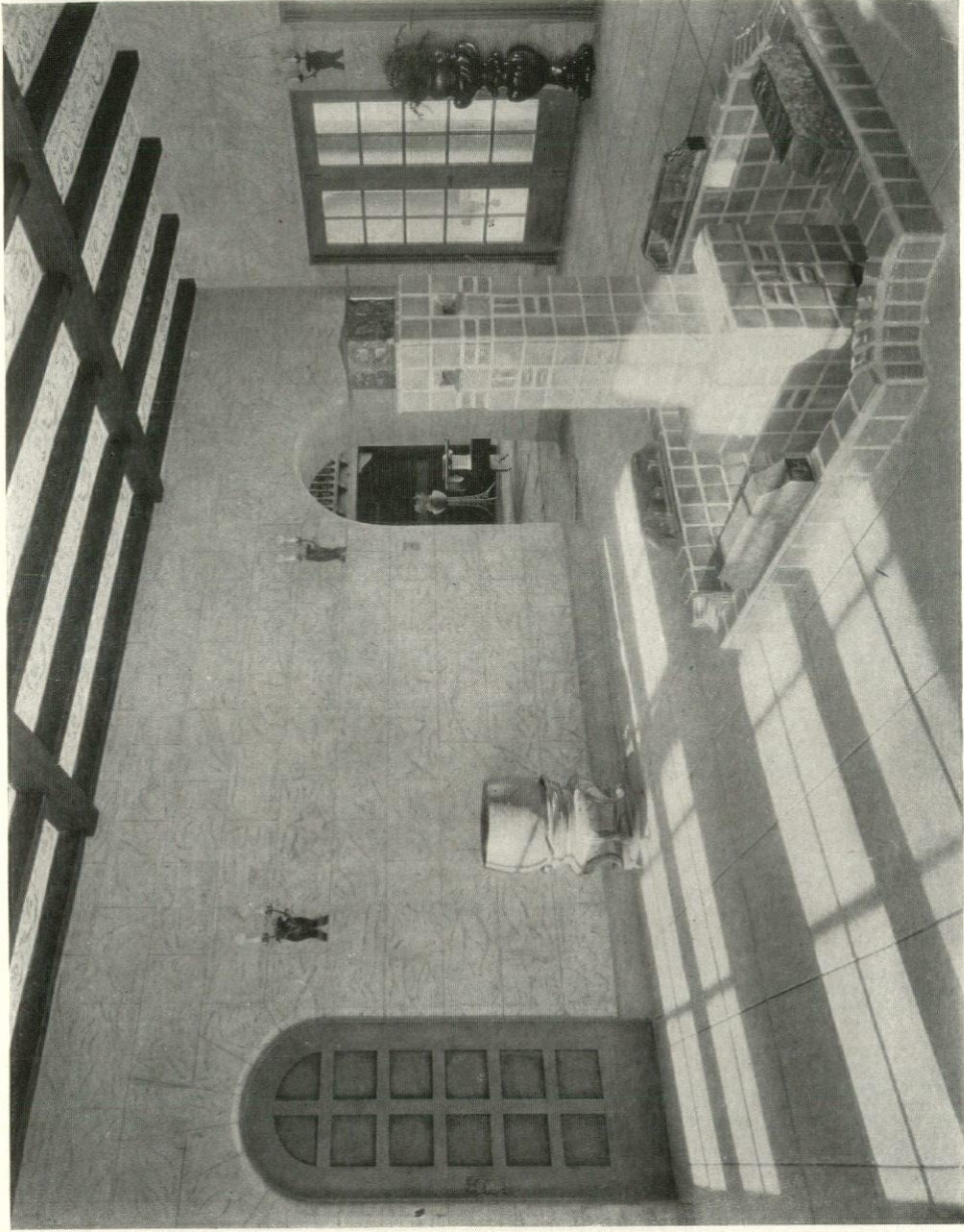




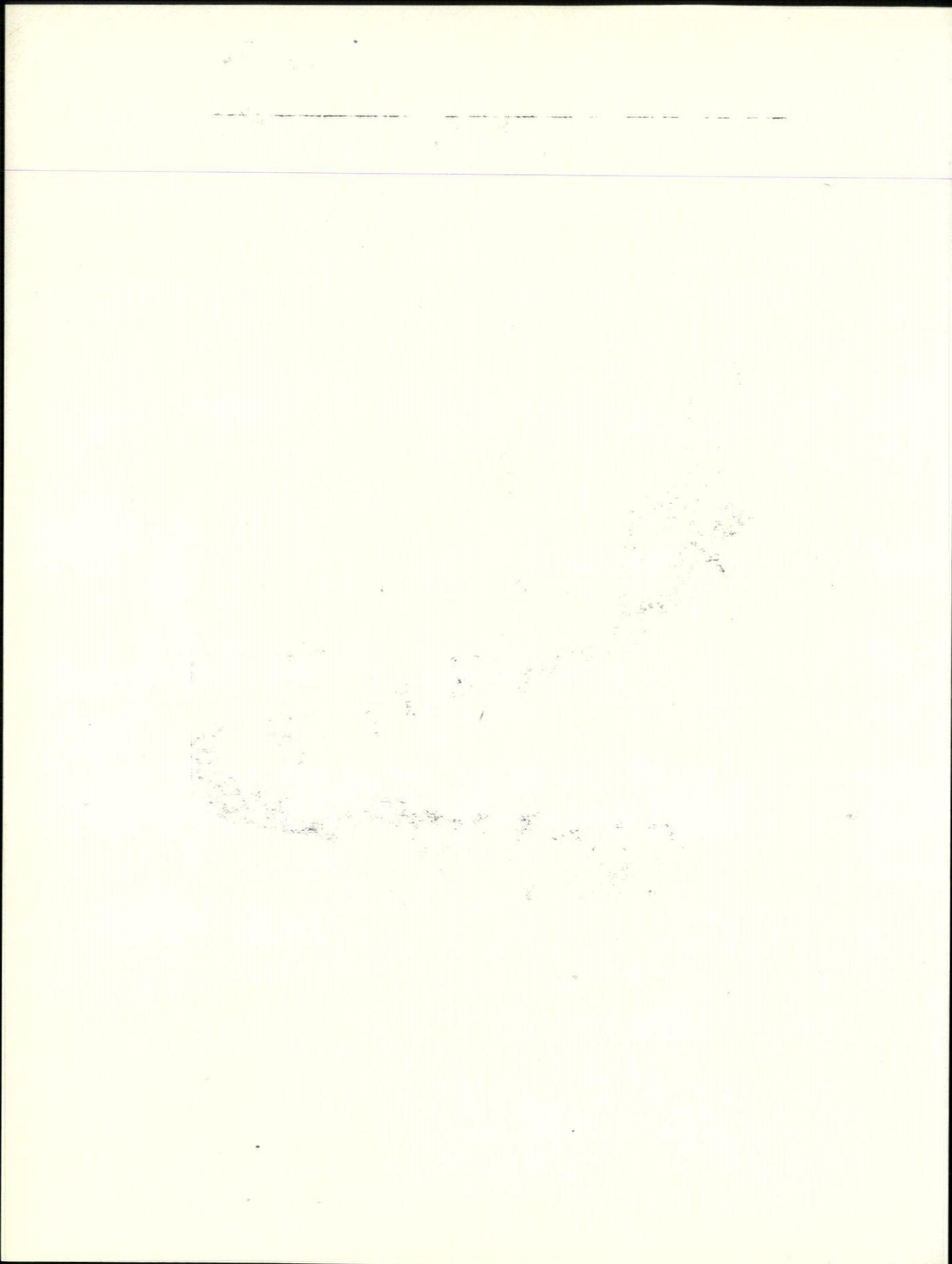


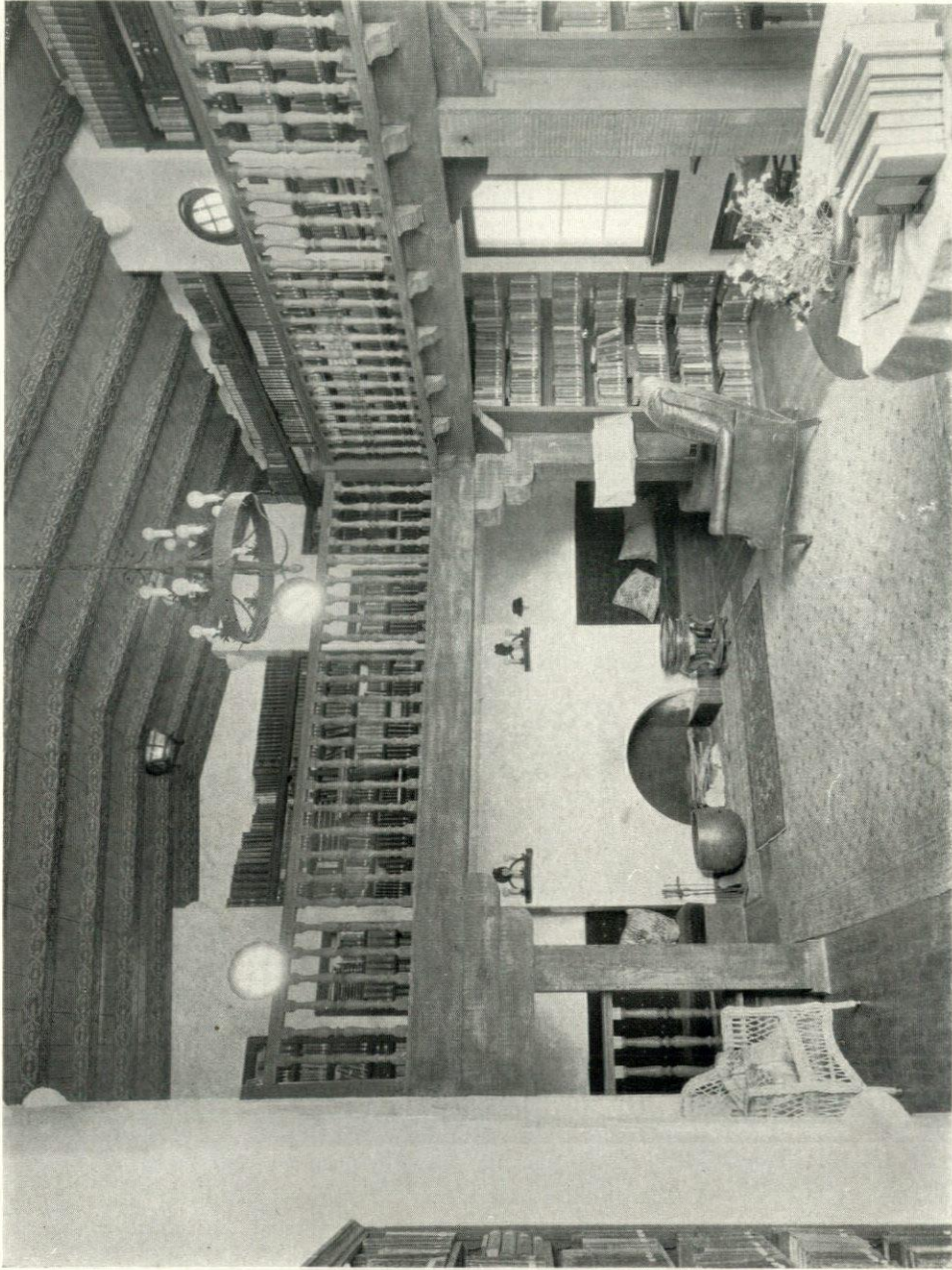
Southeast View of Library Building  
THE KROTONA INSTITUTE OF THEOSOPHY, OJAI VALLEY, CALIFORNIA  
Robert B. Stacy-Judd, Architect



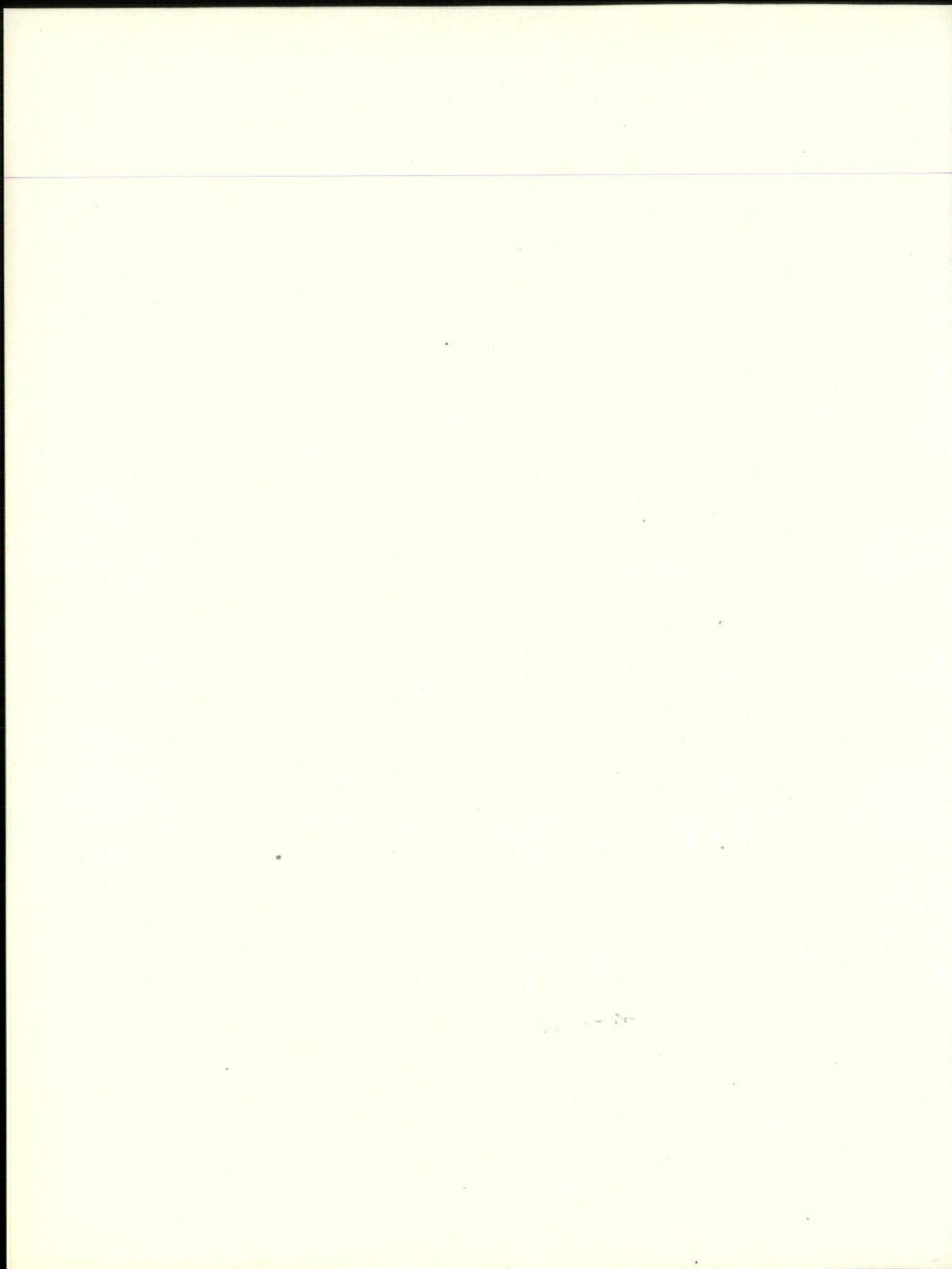


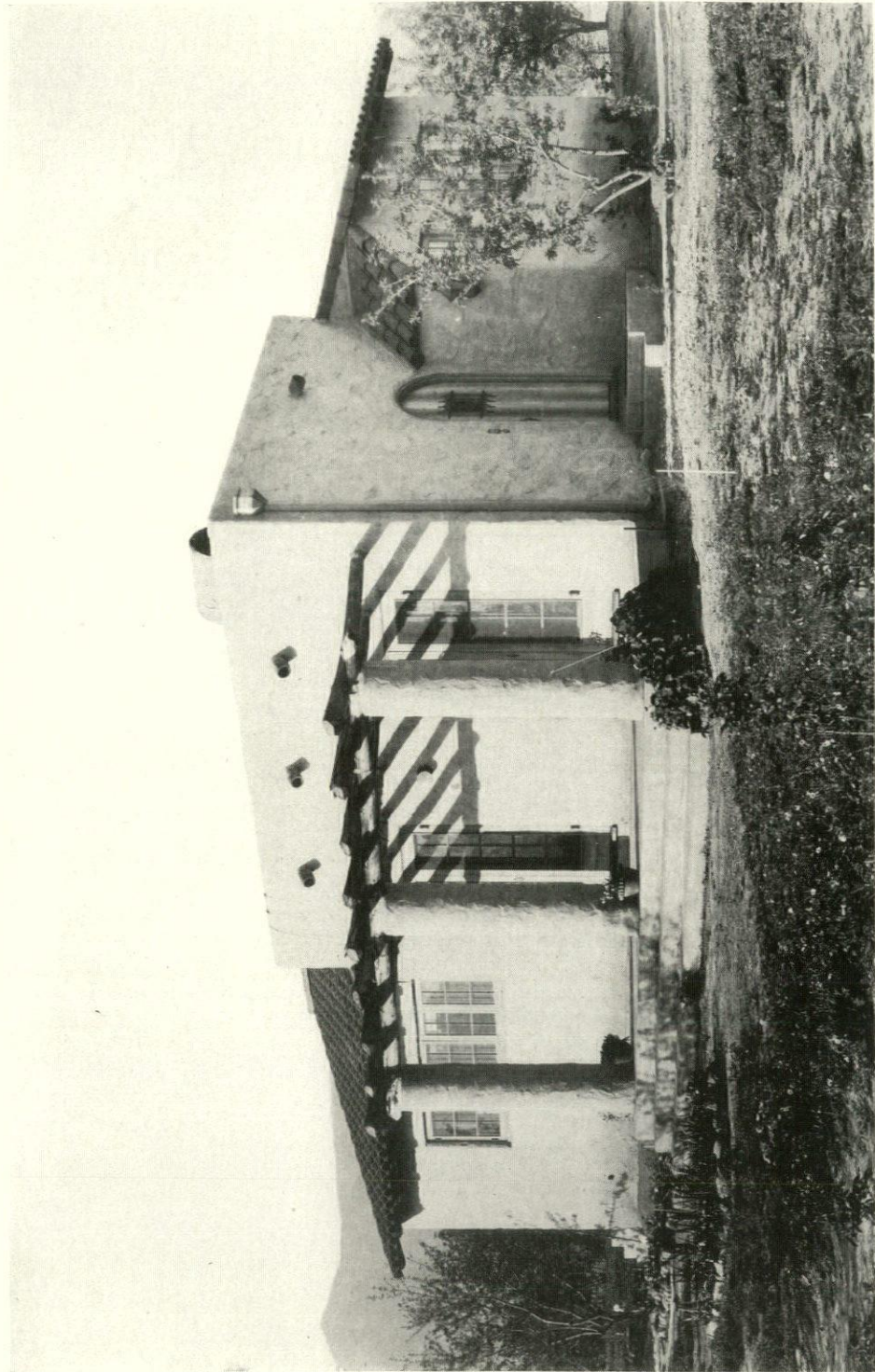
The Lobby, Library Building  
THE KROTONA INSTITUTE OF THEOSOPHY, OJAI VALLEY, CALIFORNIA  
Robert B. Stacy-Judd, Architect



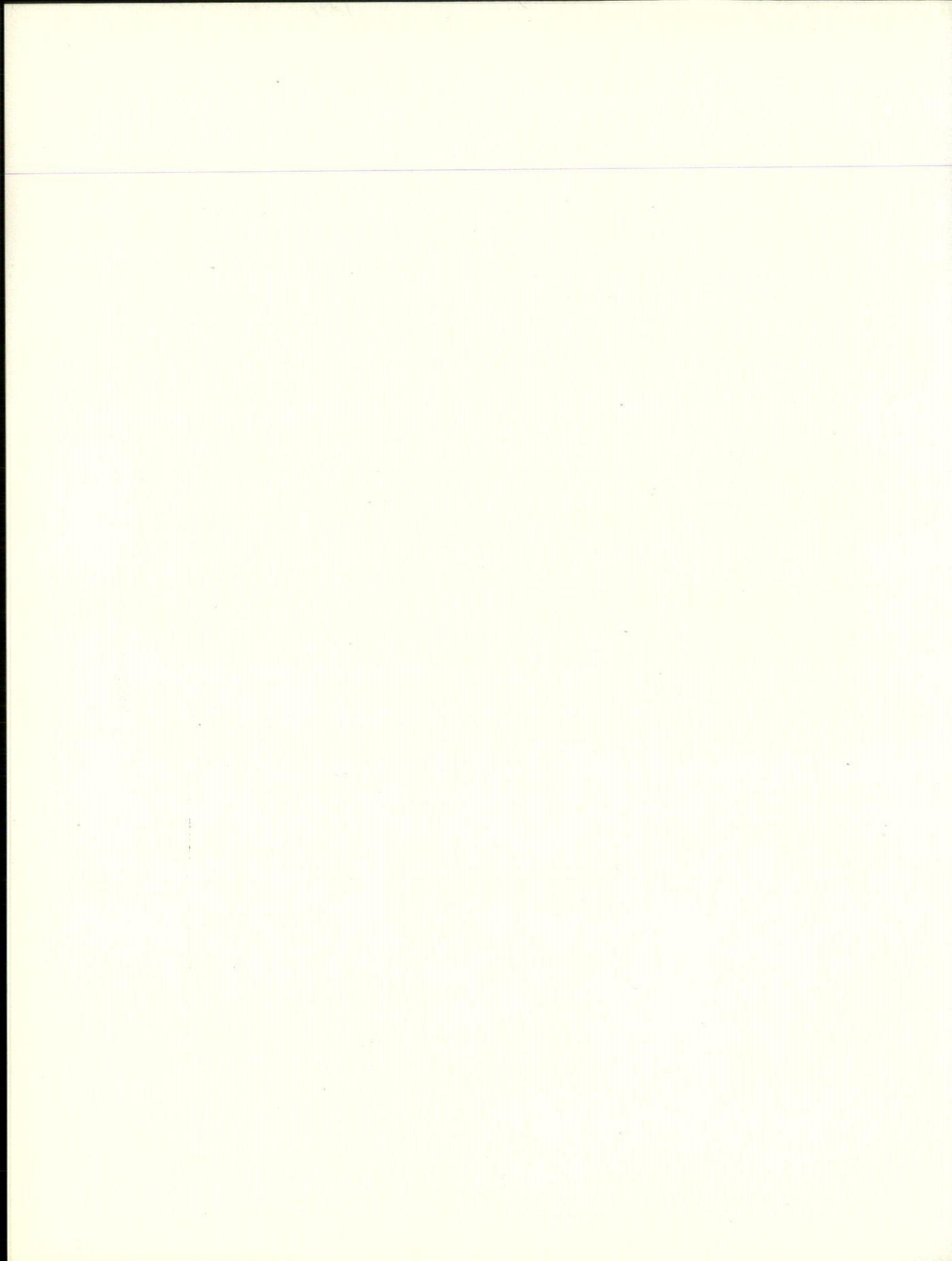


The Library, Library Building  
THE KROTONA INSTITUTE OF THEOSOPHY, OJAI VALLEY, CALIFORNIA  
Robert B. Stacy-Judd, Architect





One of the Cottages for Students  
KROTONA INSTITUTE OF THEOSOPHY, OJAI VALLEY, CALIFORNIA  
Robert B. Stacy-Judd, Architect

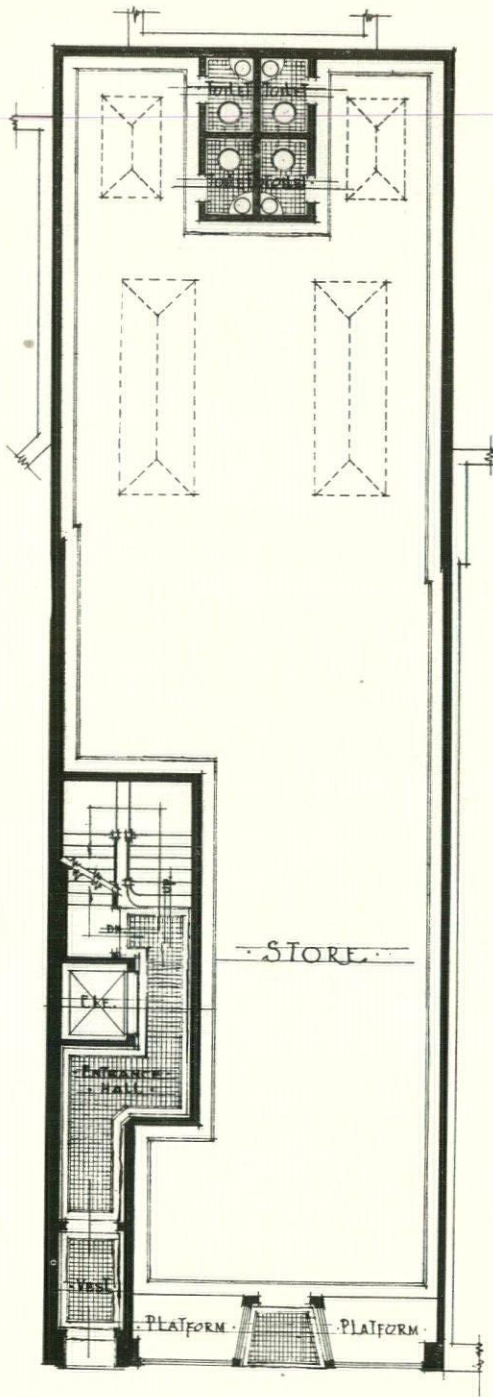




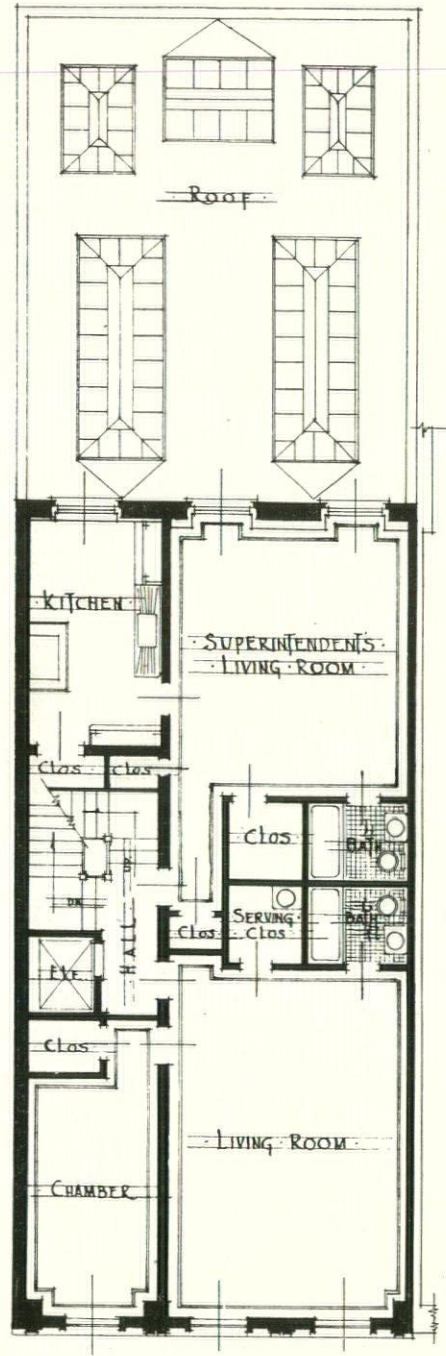


*Photo, Amemiya*

THE AEON REALTY BUILDING, NEW YORK CITY  
Joseph C. Schaeffer, Architect



FIRST FLOOR PLAN



SECOND FLOOR PLAN

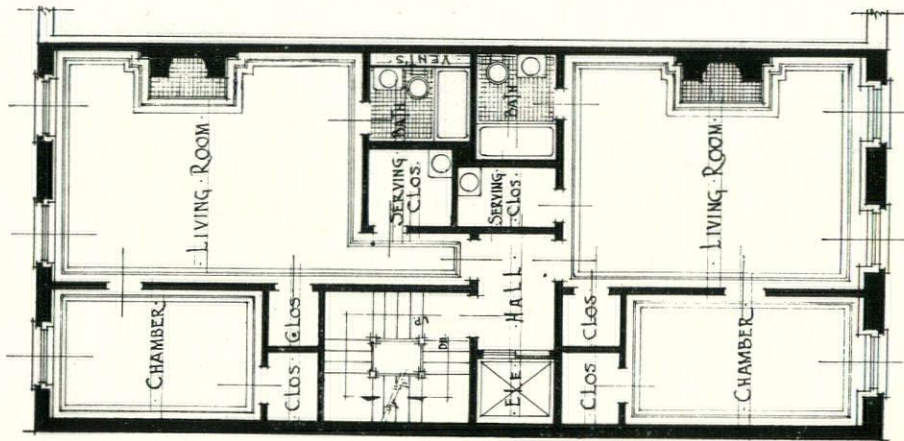
THE AEON REALTY BUILDING, NEW YORK CITY

Joseph C. Schaeffer, Architect

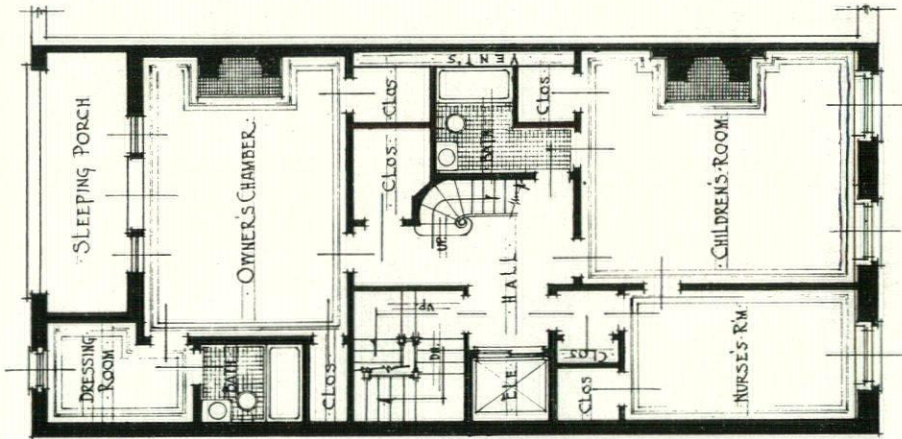


*Photo, Amemiya*

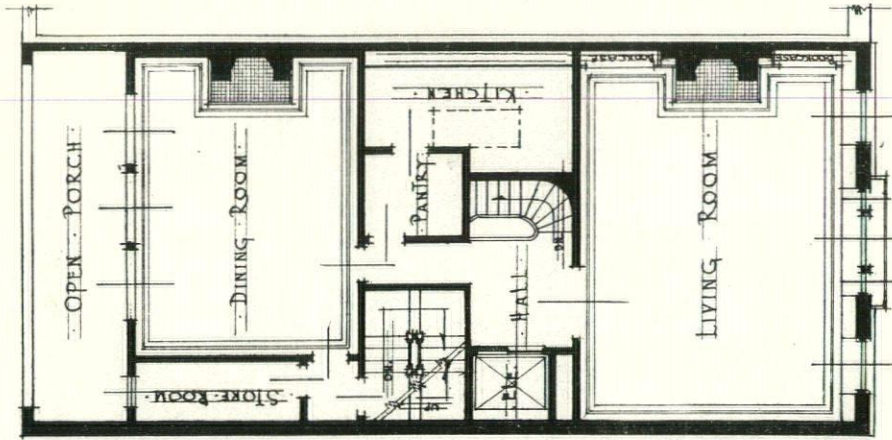
THE AEON REALTY BUILDING, NEW YORK CITY  
Joseph C. Schaeffler, Architect



THIRD & FOURTH FLOOR PLAN



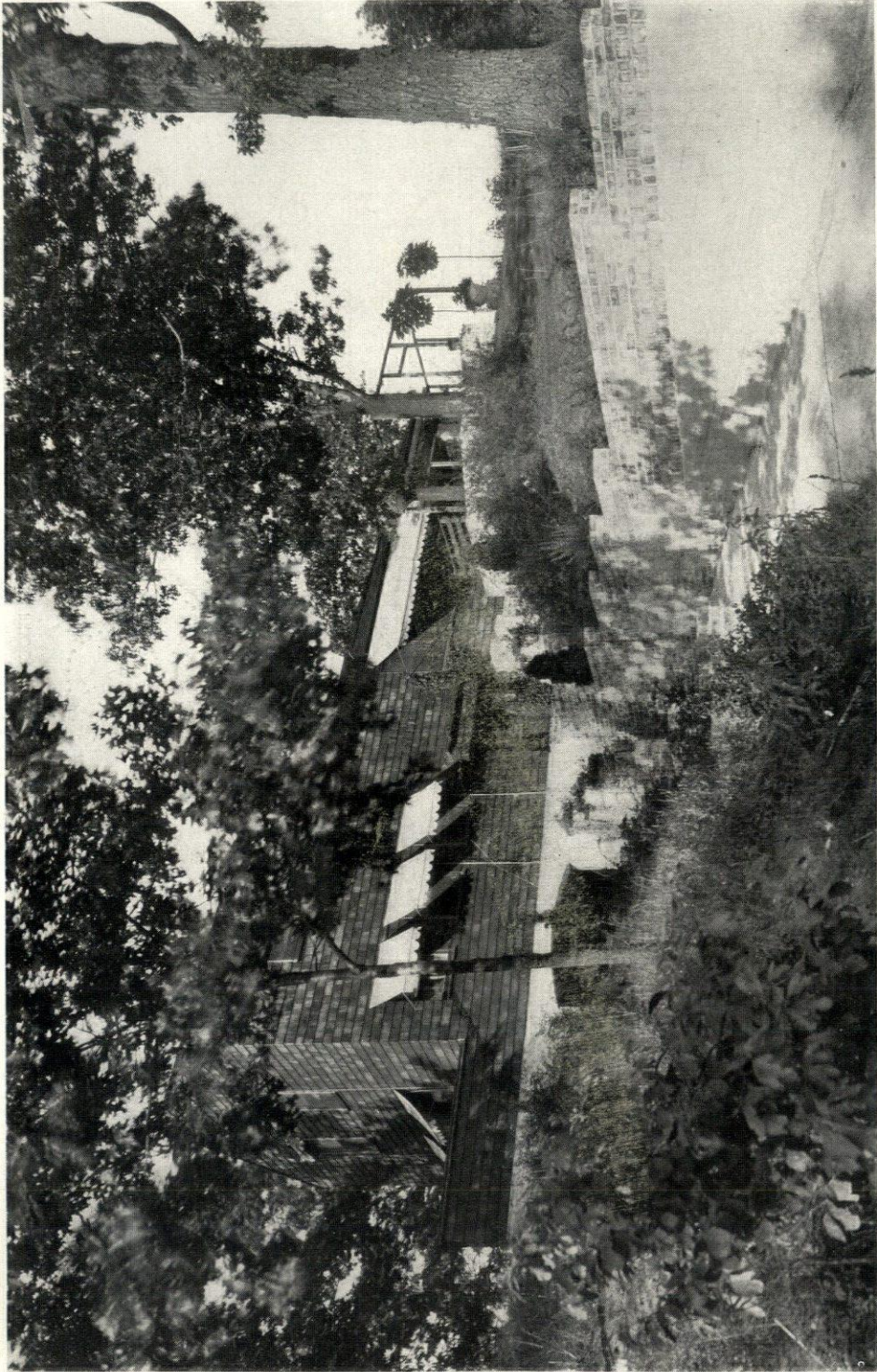
FIFTH FLOOR PLAN



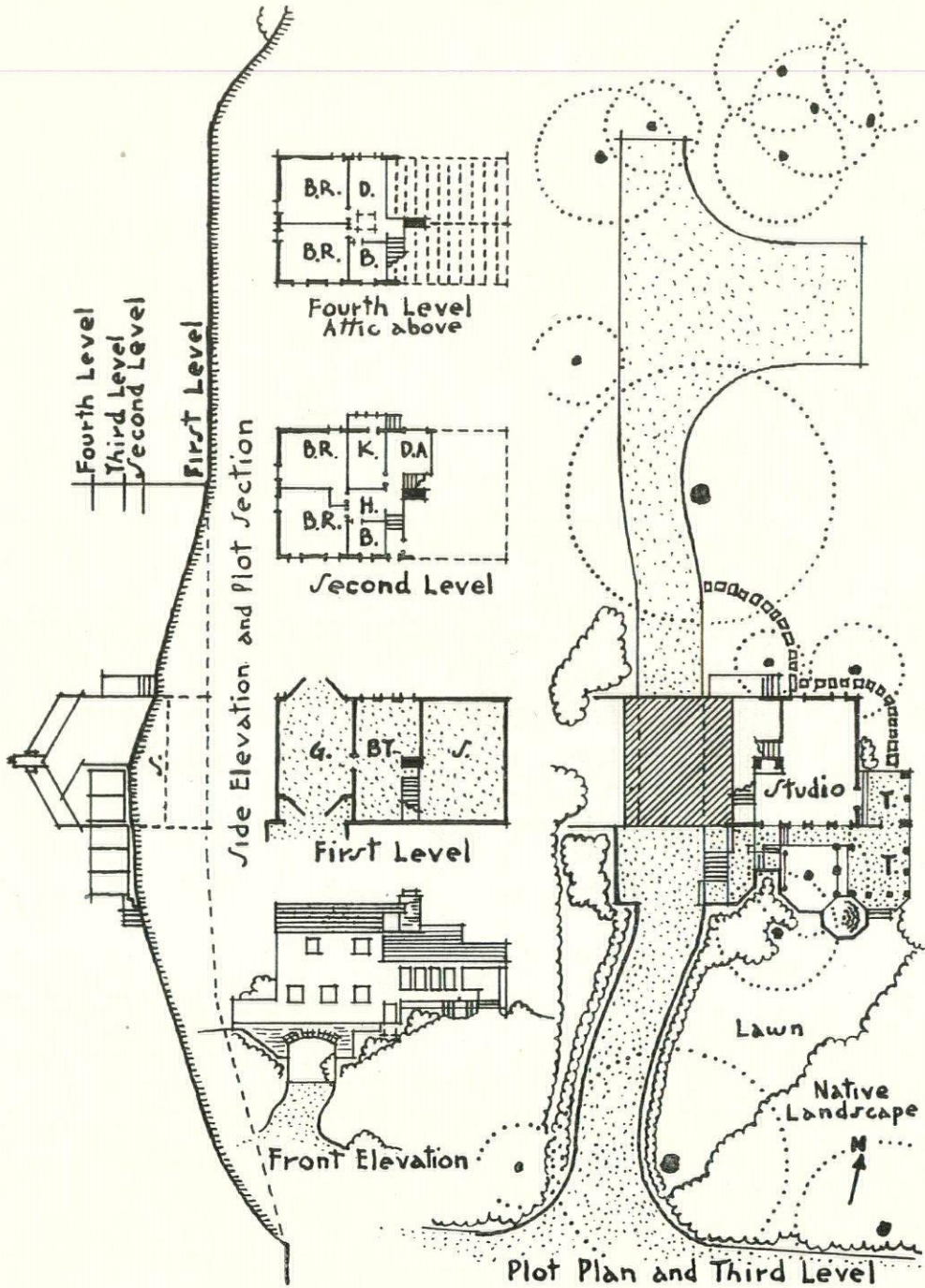
SIXTH FLOOR PLAN

THE AEON REALTY BUILDING, NEW YORK CITY

Joseph C. Schaeffler, Architect



THE STUDIO HOME OF JOHN LLOYD WRIGHT, ESQ., AT LONG BEACH, MICHIGAN CITY, INDIANA  
John Lloyd Wright, Architect



STUDIO HOME OF JOHN LLOYD WRIGHT, ESO., LONG BEACH, MICHIGAN CITY, INDIANA

John Lloyd Wright, Architect

# SCHOOLS *in* LONDON

*by*

*B. S. Towtroe, M.A.*

ONE OF THE urgent problems in post-war England is the provision of new schools. Many of the older schools, especially those belonging to religious denominations, are already condemned as unsuitable for modern needs, and even as insanitary. There have also been new districts growing up, especially around London and the great cities, the younger inhabitants of which need education. But the cost of building has more than doubled since 1914, and the burden upon the National Exchequer of Great Britain increased by war debts and pensions is so staggering that the amount now voted for schools is reduced to a minimum.

For these reasons architects and engineers have been giving a good deal of attention recently in England to devising more economical ways of designing and building elementary and secondary schools. A Committee appointed by Lord Eustace Percy, the President of the Board of Education, is at present at work investigating the possibilities of concrete, wood, steel and even of cast iron as possible materials, in order to reduce costs.

Accompanying this article are floor plans of an elementary school and of a secondary school recently constructed in London. The prints reproduced on Pages 572-574 show details of the latest type elementary school completed early this year at Downham, one of the London County Council's new housing estates south of the Thames, and the façade of the new Tooting Secondary School.

The principle now followed is that children should enjoy as much fresh air as possible in their work. Accordingly many of the windows extend right to the ground so that they can be opened in the summer time, and the children study practically in the open air. (See Page 572.)

It is also thought advisable not to build too strongly or too permanently, for edu-

cational policies change as the years go by. For example, many of the larger schools in London, built before the War, were constructed for large classes; whereas today educationalists believe in small classes. Accordingly the general arrangements of the design of the schools in London are made flexible so as to meet any requirements which might be anticipated in the future.

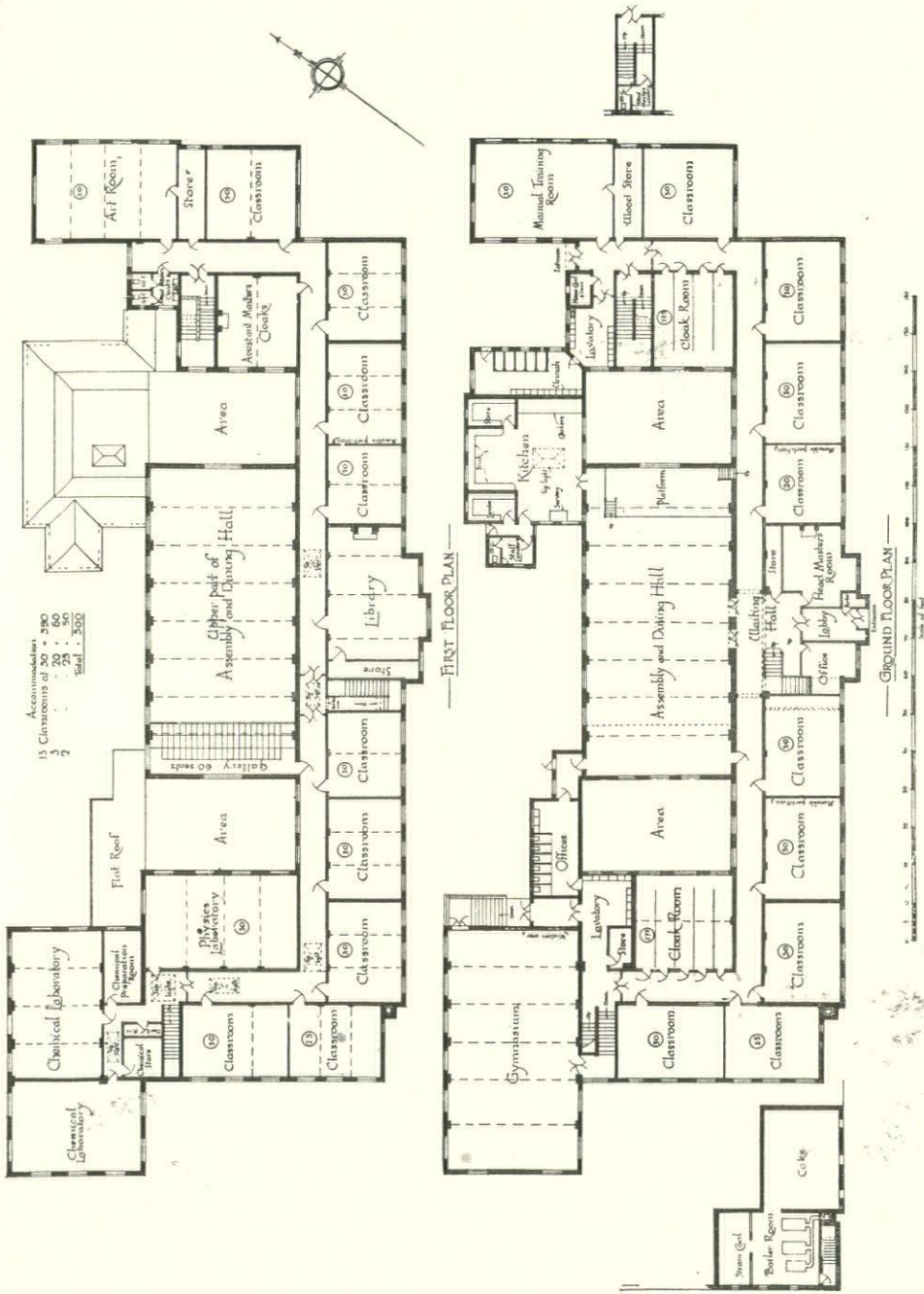
Mr. Topham Forrest, chief architect of the London County Council, who made a study of American schools in 1924, confesses that apart from the question of organization, the better type of elementary schools in America appears to be superior to London elementary schools. This is especially the case, as far as general accommodation and equipment are concerned. American schools allow fourteen feet clear from floor to ceiling, whereas London classrooms have twelve feet. In America, kindergarten rooms are provided for children up to five years of age, and in London also babies' rooms may be found.

It will be seen from the illustration on Page 574 that the width of the corridors in London is less than that found in many American schools. For example, in a school at Detroit, described by Mr. Topham Forrest, the corridors are about 14 feet wide. Whereas in America the necessary offices and lavatories are generally inside the building, in the elementary schools of London they are placed outside, although in some cases they are approached by covered ways.

Gymnasias are provided in both elementary and high schools in America, 30 sq. ft. being allowed for each pupil, but in London they will not be found at all in elementary schools. Dining rooms are not provided in London. There are medical inspection rooms in all schools of the latest type.

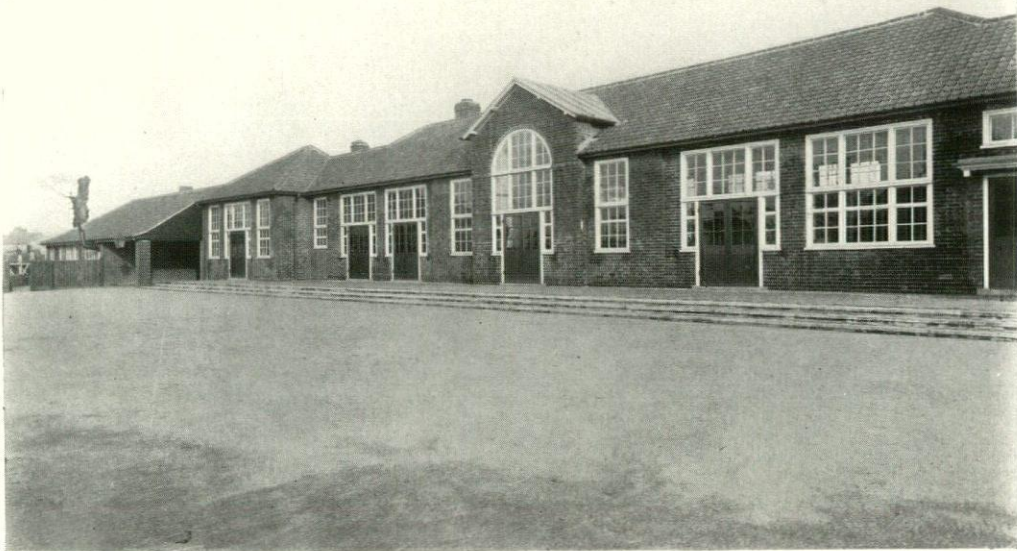






December, 1926

The Architectural Record  
 Plans for a Recently-built Secondary School in London  
 TOOTING SECONDARY SCHOOL, BEECHCROFT ROAD, LONDON, S. W.



The Infants' Department  
DOWNHAM ELEMENTARY SCHOOL, LONDON, S. W.



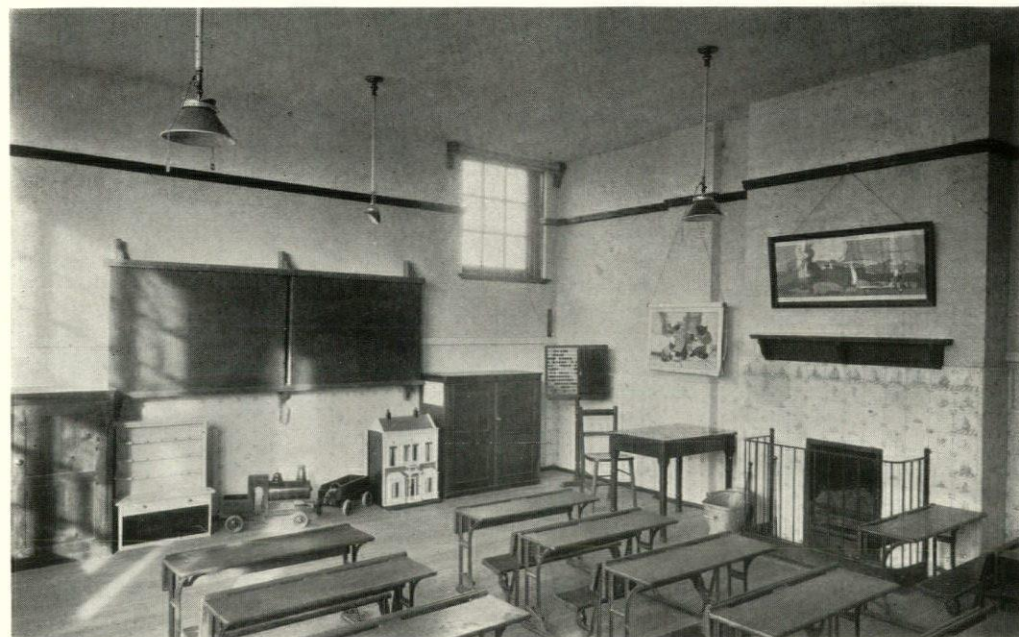
*The Architectural Record*

*December, 1926*

A Secondary School of the latest type  
TOOTING SECONDARY SCHOOL, BEECHCROFT, LONDON, S. W.



Hall, Boys' Department  
DOWNHAM ELEMENTARY SCHOOL, LONDON, S. W.



*The Architectural Record*

*December, 1926*

Infants' Classroom  
DOWNHAM ELEMENTARY SCHOOL, LONDON, S. W.



CORRIDOR, INFANTS' DEPARTMENT, DOWNHAM SCHOOL, LONDON

Heating in American schools is by means of radiators and low pressure steam, with the air heated and washed, whereas in London a low pressure hot water system with radiators and cast iron sectional boilers is used. In the Babies' rooms open fireplaces are provided, supplemented where necessary by radiators.

The largest school accommodation in London is for 1,500 and the tendency now seems to be to provide for even a smaller number than that.

London's secondary schools are, of course, superior to the elementary. Accommodation is provided for twenty, twenty-five, or thirty pupils in classrooms, and 16 to 18 sq. ft. floor area is allowed per unit. Auditoriums are provided for more than one hundred and fifty pupils with a floor space of five sq. ft. for each pupil. The cloakrooms are provided and arranged so as to obtain

cross ventilation, and are heated by radiators. The various kinds of London secondary schools, for academic, commercial, vocational or manual training, contain special rooms such as the library, drawing room, science laboratories, manual training room, cookery, art room as are needed. Dining rooms are also provided for 50 per cent. of the pupils, but there are no medical or clinical rooms in the secondary schools. Swimming baths are not provided in the intermediate and high schools, as in London it is customary to provide accommodation for not more than 500 pupils of one sex only, whereas in American high schools the place accommodation provided runs as high as 3,500 to 5,000.

The cost of building a school in London on the basis of the expenditure for the place for each pupil is \$150 to \$250, as compared with \$75 in 1914.

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# BOSTON DRY POINTS



By  
*Hubert G. Ripley*

## IX. THE OLD GRANARY BURYING GROUND

THE OLD GRANARY Burying Ground lies on the westerly side of Tremont Street between the Tremont Building and Park Street Church. It was established about 1660 and takes its name from the Town Granary which once stood there. The yard level is about three feet above the sidewalk and rises gently to the west where it is terminated by the hederigerant walls of the Boston Athenaeum and other buildings. One of these buildings is the Union Club, and a graceful iron balcony, overhanging the yard, runs in front of the tall casement windows of the billiard room on the main floor.

During the Summer months this is a delightful spot, most pleasantly obumbrated, and previous to July 1, 1919, every afternoon between five and seven, daylight saving time, Lovell Little, Bob Bellows, and Ralph Gray could be seen seated there in wicker arm chairs, ruminating on the permutations of cosmic existence, and studying the detail of Peter Banner's and Solomon Willard's Park Street Church.\*

\* Considered by many to be the best remaining example of early XIX century ecclesiastical architecture in the city. Its graceful spire picturesquely punctuates the corner of Park and Tremont Streets. Charles Edward Hooper, in his poem, "Immortals," recognizes the influence of Sir Christopher Wren in the design of the spire, in the lines beginning:

"As for Sir Christy, legends say,  
His roving spirit still  
Doth haunt the upper story near  
The bone-yard on the hill."

Peter Banner was an English architect of some repute. He made the scale drawings for the church, which were often the only drawings the builder had in those days, but in this case Solomon Willard, who was as meticulous as Strickland, Blodget and Law or even Jo Chandler himself, made careful full sizes of all the capitals, urns and ornamental parts.

From time to time they would pause in their conversation, the while thoughtfully and reverently raising to their lips tall glasses containing an amber liquid that filled the interstices between particles of finely shaved ice. The ice was level with the brims of the glasses and their summits were crowned with an herbulence of mint, slices of orange and pineapple. There was a thick coating of frost on the outside of each glass and little wisps of aromatic fragrance, as of the Elysian Fields, floated softly in the Summer air, mingling with the scent of flowers and the lazy drone of honey bees.

Sometimes in Winter after a sleet storm, or when the snow falls quietly in dazzling white flakes, the Old Burying Ground is transformed into a fairyland in the heart of the city. When "the groaning woods yield 'neath the pressure of one pile of snow—and frost whitens all the lea,"\* then before a fire of heaped up logs in the hospitable dining rooms, gathered 'round a steaming jorum of Talabogus, one may picture Daniel Webster, Charles Dickens and Edwin Booth gazing out of the shuttered windows of the Old Tremont House on the scene.

On the northerly side of the Old Granary is Tremont Place. A large office building now covers the spot formerly occupied by the Architectural Club. In Beacon Street and the westerly side of Tremont Place, during the early nineties, there were harmonious rows of dignified old houses, the Old Tremont House

\*Hor. Car. I. 9.

filling the lot between Tremont Street and Tremont Place and extending from Beacon Street to the Burying Ground.

The contrast to its present "improved" appearance is striking. A more diversified group of ill-assorted buildings could hardly be imagined in any city. The block bounded by Tremont, Park and Beacon Streets contains about five acres and in the early half of the previous century, it was a splendid example of civic art, rich in historical association and a source of justifiable pride to the inhabitants of Modern Athens and to the nation.

The Old Granary contains the remains of a large list of notables, provincial and colonial governors, signers of the Declaration of Independence, celebrated preachers, chief justices, founders of societies, and statesmen. The headstones and monuments are rich in inscription, detail and proportions. The sturdy cast iron fence and splendid granite gate and terminal posts are of a later period, about 1810 or 1820.

Quincy granite never had a finer surfacing given it than these gates show. The art seems to have been lost since 1850 as the present way of treating it is coarse and vulgar in comparison.

From the front windows of the P. D. Club in the garret above the Architectural Club, a fine view could be obtained of the stately Elms of the Old Granary, and the window seats were favored lounging places in Summer and Winter. There was no irreverence intended in the assumption of names of famous men by the members of the club, as it may be conceded that the Great Ones had their lighter moments.

Garnier Frères was the keeper of the archives of the P. D.'s and the records still exist from which a few extracts may give a glimpse of the life of draughtsmen in Boston thirty odd years ago. Garnier and Ictinus were together in the club late one afternoon when San Gallo and Viollet le Duc entered, exhausted after a long walk and shopping tour around town. It was not evident at first that in both the

visitors' heads "there was more than falls with the comb."

Then it was noticed that there were peculiar red streaks on San Gallo's face, one orb was closed entirely and the other only partly open. Viollet looked at him with wine-bright eyes, and, smiling dreamily, began to speak, "We're just from T Wharf," he said, "I met San Gallo at eight minutes to twelve this noon, and have been trying to get him back to his office ever since. It is now six and a half and here we are!"

"There seems to be material here for study and use, and I move that Viollet le Duc be elected toastmaster—second the motion—it is a vote," said Garnier. The prescribed rules of the constitution being thus carried out, Viollet was at once inducted into the chair.

Like—

"Unfaded Amaranth, when wild it strays  
Through the old garden-ground of boyish days,"

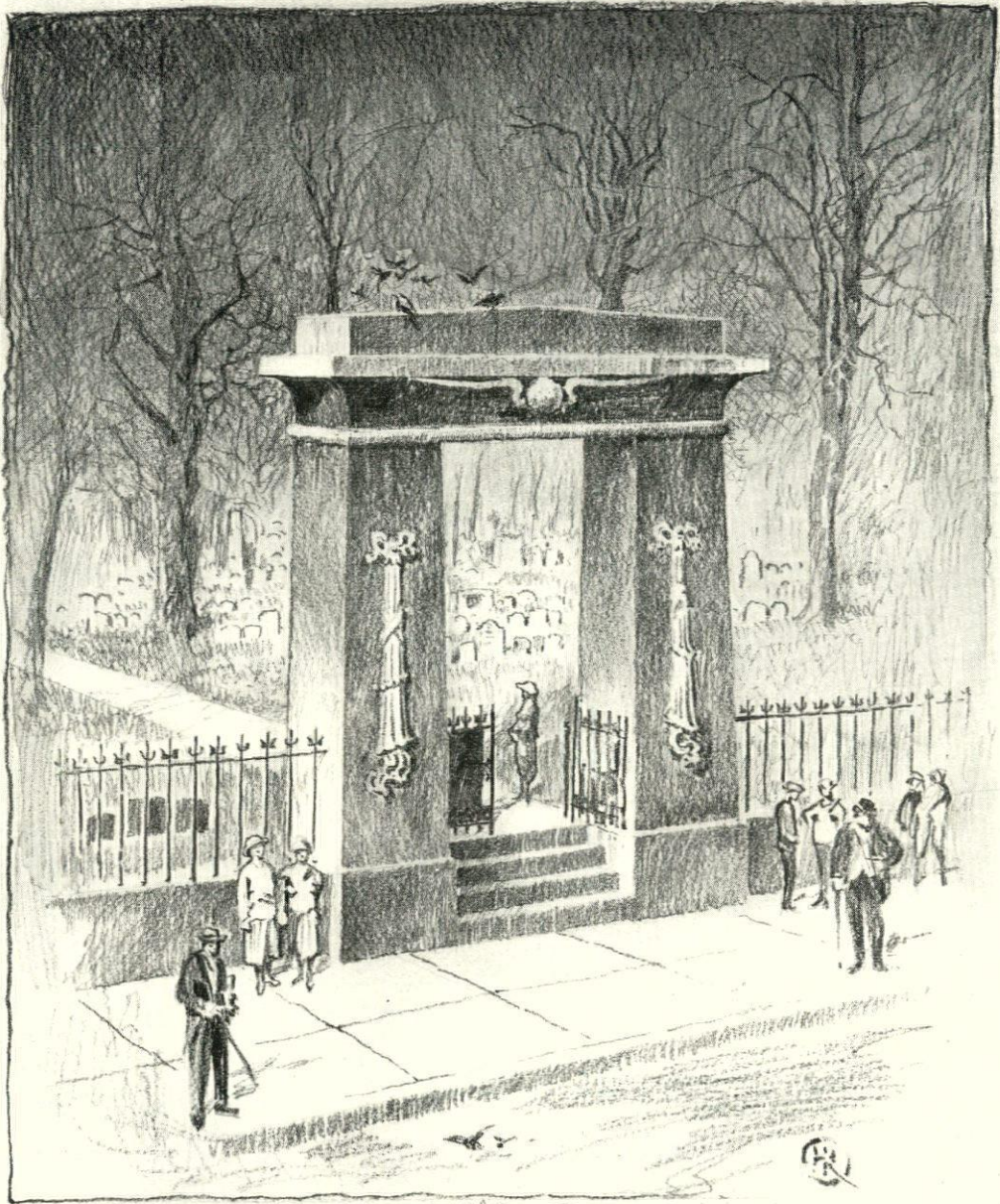
his hair he softly brushed aside, saying, "Is there any regular business to come before the meeting?"

"I move that our first concern be to enquire into our present status," said Garnier.

"Speech is silver, silence is golden, but indigestion is leaden—however, we digress," replied Viollet as he arranged a mass of papers in order in front of him. "I have here the synopsis of a play. The idea of the play is to paraphrase architecture and show up its abuses. The time is 390 B.C.)\* At the conclusion of the reading of the play its author gave an account of his afternoon's wanderings.

"San Gallo and I started out to take a trip to the Banks of Newfoundland, and the first necessity was, of course, a good

\*Note—Unfortunately the ms. of the play cannot be found. It is believed that it is incorporated in the concrete footings of No. 6 Beacon Street, the office building that now covers the spot where these events took place. The reading of the play created a great sensation at the time and active steps were taken toward its production, stage and scenery being built, properties and costumes gathered and all arrangements made for its première. It was most regrettable to discover at the last moment that, distracted by the multitudinous detail that preceded its production, it was found that the cast, comprising the entire membership of the club, had neglected to study their parts and so the play could not be given.



ENTRANCE TO THE "OLD GRANARY."

*The Architectural Record*

*December, 1926*

THE OLD GRANARY BURYING GROUND  
Drawing by Hubert G. Rippey

foundation. We stopped at the 'Bell-in-Hand,' on the outskirts of City Hall, where we had a 'half-with-a-dish' and a mutton pie. As we were about to leave, we met a friend of San Gallo's who persuaded us to remain and further refresh ourselves, so we remained. By-and-by it got to be two o'clock, so we started for T Wharf again, stopping on business at a place called 'Conklins.' We had 'one' then another, then another, then another. We found our way out and started for the wharf once more, stopping on several occasions to do some 'errands' we had neglected to do up to that time. When we arrived at T Wharf we could find no steamer for Newfoundland, but seeing a large sign which read 'Cunard Steamship Company,' we gave up the idea of a Newfoundland trip and decided to go to Europe instead.

"We inquired of the clerk in charge when the next boat sailed. He said in two weeks — would we wait? No thanks, we thought we wouldn't wait, so we left that place and wandered along until we came to a square called 'Maverick' after a race of Texans. There, on all sides, were large and spacious signs advertising the fact that 'Gahn's Milwaukee,' 'Val Blatz's St. Louis,' 'Bass & Co.'s Pale,' and other such were for sale. We went into the nearest place and had 'one,' then another, and then another. It was warm and comfortable in there, so we stayed awhile. When we left, we came to some tracks where we waited for four hundred freight cars to pass. After they had passed, we discovered that the place

where we wanted to go was on this side of the tracks, but we walked across the tracks and back again as a matter of form. We came right back to the place we had just left and refreshed ourselves at some of the signs. Then we took passage back to T Wharf on the ferry boat.

"The lights were just being lit, and their elongated reflections were dancing about in the shimmering waves. We sat up front on the gang chains and sang some Scottish airs. This time we were not asked to stop, we were hit on the back with a club. We stopped.

"Leaving T Wharf we went and had some ale. Seeing a place where they were vaccinating people gratis, we went in and were much interested in watching the operation of a worthy municipal charity. We did not try our luck, however, and somebody spoke to us and asked us to go outside and see if that wasn't the place we weren't looking for. We went outside and then we went and had some oysters and something to drink. Wandering

along, we naturally wandered hitherward and here we are!"

Viollet-le-Duc paused, passed his hand over his brow, collected his papers, re-lighted the end of his cigarette, arose and carefully steadying himself, reached for his overcoat, put it on and departed.

During the narration of this saga of the sea, the company was augmented by new arrivals, and preparations made for a meal. The quaint and time-honored custom of "rushing the growler," (an obsolete term whose meaning is under-



Costume study for "Carrie H. Tide," heroine of Viollet-le-Duc's play. Although the time was 390 B.C., the P. D.'s believed in presenting the classics in modern dress.



stood by but few) was practiced, while Vitruvius, the Brillat-Savarin of the company, fried a few yards of country sausages on the chafing dish borrowed from the Architectural Club. After the sausages were nicely browned—Vitruvius was very particular that they should be just the right color, crisp and smoking hot—they were placed in a covered tin on the hearth near the wood fire. Next, eighteen fresh eggs were broken carefully into the dish from which the sausages had just been taken, the hot fat serving as an ideal friture. A little chopped parsley and a spoonful of Tarragon vinegar were sprinkled over them and the whole allowed to cook slowly under cover.

During the meal plans were discussed for the forthcoming periodical, for while the reputation of Boston as a literary center was beginning to wane, the old urge

ran strong and it was a cherished ambition of the P. D.'s to blossom out in print.

The evenings of the P. D.'s invariably closed in song. Every member had his special song, and it was considered discourteous to omit its recital when he entered or departed from the Club Room. The meeting just referred to was typical of many, with variations as to detail. Special meetings were held on holidays, pay days, and in honour of distinguished guests when the entertainment provided was of a far more involved and elaborate nature.

This little society was peculiar to its time and place. Conditions and locus were favorable. It brought sunshine into many lives and did its share in making the town a pleasant spot for work and play.



The P. D. Arms. Designed and built by Sody on Christmas Eve, 1893, from materials in the club room. A plaster cast, a pair of old buffalo horns from which healths were pledged, pipes, beer mug, and evergreens from the decorations. Sody also found the motto (Hor. Car. IX 93), and made the photograph. The P. D.'s had two mottoes, the above and "In Bock Signo Vinces." Life is like that!

# EUROPEAN STORE FRONTS and WINDOW DRESSING



*By Clinton H. Blake, Jr.*

ONE WOULD EXPECT to find the window displays in the foreign shops, especially those in England, simpler and perhaps richer in some ways than the window displays in the American shops. The natural conservatism of the Englishman, and his distaste for anything remotely resembling "show," might reasonably be expected to produce an extreme simplicity in his window displays. Limited and simple displays would be in keeping, also, with the lack of ornamentation which, as we have seen, characterizes in general the British shop-fronts.

So far as the window displays are concerned, the result is not, however, what one might reasonably expect. A careful observer will note that it is in the windows of our American shops that we find a tendency to concentrate on a few choice exhibits and on a combination of simplicity and richness, rather than in the windows of the shops of London or, for that matter, of other capital cities abroad. With a few notable exceptions, the English shop-keepers and the shop-keepers on the continent are prone to load their windows with a great quantity of merchandise. Their desire and purpose, apparently, is to show you, so far as the limitations of their window space allow, a sample of everything which they can offer to you within. Very few of them, apparently, have appreciated the psychology which dictates the ordinary high-class window display in this country. They do not attempt to arrest the attention of the shopper or passerby by a restrained and artistic window effect. They depend rather on catching his attention by showing to him some article of merchandise in which he may be interested. Theoretically, this may be logical enough. Practically, the effect of an over-crowded window, containing a heter-

ogeneous mass of different merchandise articles, is not calculated to induce the man in the street to become a purchaser. It may well be that some one of the articles in the window would appeal to him, if he were to make a detailed study of the display to find it. The effect upon his eye, however, is not such as to induce him, ordinarily, to make any such examination, but on the contrary to pass the window by as confusing rather than interesting.

The French and Italian shops are, many of them, worse offenders in this respect than the English shops. A few of the higher class shops in Paris, in the richness, simplicity and artistic effect of their window displays, will hold their own handsomely with the best corresponding displays in America. On the whole, however, the Paris shop-keeper follows the system of over-display, rather than restrained display. Anyone who has traveled in Italy will realize that the same is true of the Italian shops and that they are probably the worst offenders in this respect. No one who has strolled along the shopping streets of the larger Italian cities or given any attention to the displays in the thousand little shops of Venice can fail to have been impressed with the tremendous amount of "junk" with which their windows are loaded. The ordinary shop window in Italy displays in a mixed mass articles of rare beauty and value and articles which would much better have been sent to a rummage sale. It may be that this type of window-dressing appeals to the Italian shopper. To one to whom the simple artistic displays of the New York shops are familiar, however, it can not fail to seem to be poor merchandising.

In England and on the continent, also, there is still in use quite generally the



*The Architectural Record*

*December, 1926*

MAISON COUTARD, BOULEVARD MONTMARTRE, PARIS



AN ATTRACTIVE SHOP FRONT IN CONDUIT STREET, LONDON, W.  
Carried out in French polished oak



*The Architectural Record*

*December, 1926*

SHOP FRONT OF MESSRS. S. HARMAN & CO., DUKE STREET, LONDON, W

The showcase window type in bronze metal with blue marble stall risers. The name is carried out in black mahogany raised letters fixed to the stone fascia and the doors are of polished mahogany.



A SHOP FRONT IN LEEDS, YORKSHIRE  
Carried out in granite and bronze metal

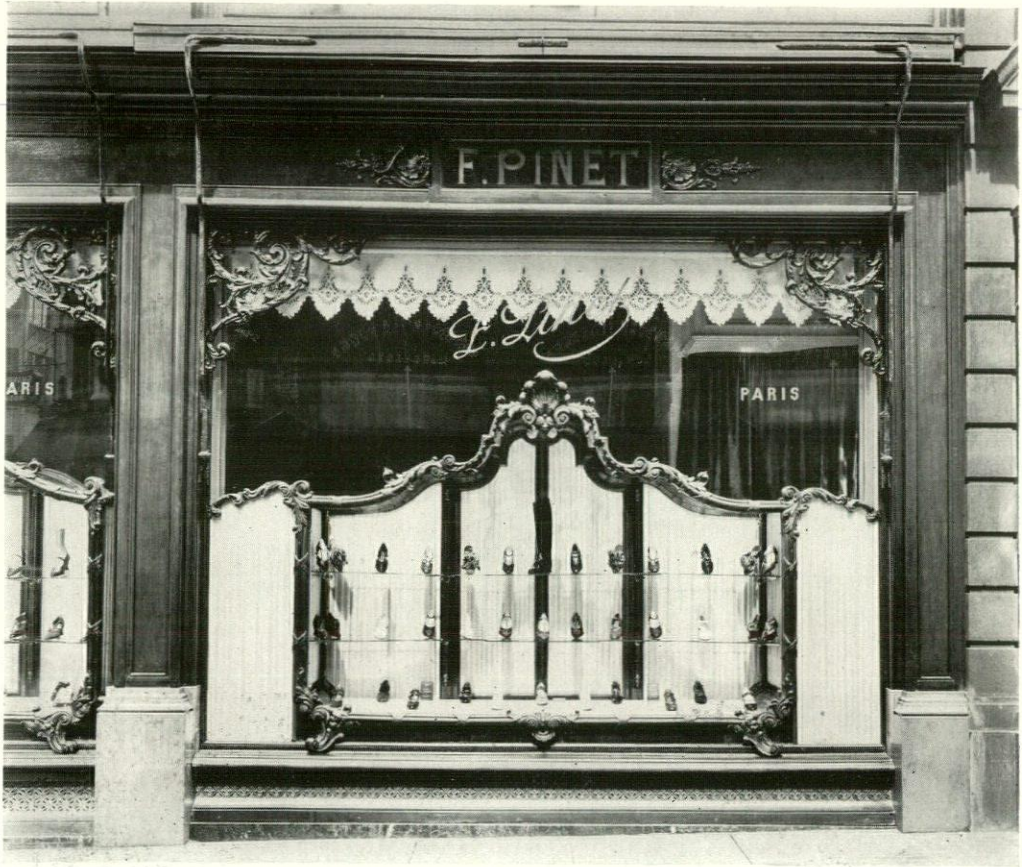


*The Architectural Record*

December, 1926

THE LONDON HOUSE OF WORTH IN HANOVER SQUARE, W-1

The shop front is carried out in green marble, with bronze metal fascia, sashes and entrance door



SHOP FRONT OF MESSRS. F. PINET IN MADDOX STREET, LONDON, W.

system of suspending merchandise from brackets and from hangers. This scheme was discarded some time ago by the better shops in the large American cities. There can be no question that the present day methods of display in the American shops are far superior to the old type bracket and hanger displays, infinitely less artificial and far more artistic and generally attractive. The modern methods are followed with great success by a few of the finer shops on Bond and Regent Streets and on the Rue de la Paix.

The foreign shops, too, are far behind those of America in the use of electricity as an aid to the window-dresser. Artistic and clever window-lighting is now a characteristic part of the window displays in most of the better class American shops. The subdued and unobtrusive lighting and the general effects se-

cured by proper attention to the potentialities of window illumination have been far better appreciated here than abroad.

An exception to the foregoing general comparison should, I think, be made in the case of retail tobacco shops here and in London. For some reason, the window displays of the London tobacco dealer are far superior, as a rule, to the displays of the corresponding dealer in New York and elsewhere in this country. The ordinary tobacco shop of London has far more character and dignity than has the American shop. Its windows are less laden with miscellaneous merchandise and the general effect is altogether preferable. This exception to the general rule is a curious one. It is difficult to determine why the retail cigar and tobacco shops in this country should not follow the tendency of the other Amer-



MILLINERY DEPARTMENT OF MESSRS. HARRODS, LTD., BROMPTON ROAD, W

ican shops with respect to window displays. There are, of course—in New York especially—some exceptional cases, where the window displays in these shops compare favorably with those of the other New York stores. The fact remains, however, that in this one field, the American merchant seems to have adopted rather the general English window-dressing procedure and the English merchant to have adopted something of the simpler and richer display procedure of the American merchant. It is a curious transposition of customs. It may be that there is something in the psychology of the

lover of tobacco that can account for it!

There must always exist fundamental differences in the treatment of shop-fronts and window-dressing among different peoples. The national characteristics of any people are and will continue to be reflected in the shops of which they are customers. The tendency, however, will be undoubtedly toward a more careful and artistic display of goods abroad as in this country and toward a realization that a display arranged with due regard to restraint, to purchasing psychology and to artistic effect may be a very potent factor in the up-building of any retail business.

## ANDREW C. McKENZIE

1861-1926

ANDREW C. McKENZIE, senior member of the firm of McKenzie, Voorhees and Gmelin, died suddenly at his home, 297 East 18th Street, Brooklyn, New York, after a severe attack of indigestion, on Sunday morning, October 10, 1926. He was born in Dunkirk, New York, and was educated in Buffalo.

He came to New York City in 1884, where he became associated with Babb, Cook and Willard. He was later associated with Cyrus L. W. Eidlitz, with whom he became a partner in 1902, at which time they designed the Times Building. Upon the retirement of Mr. Eidlitz in 1910, the present partnership with Stephen F. Voorhees and Paul Gmelin was formed.

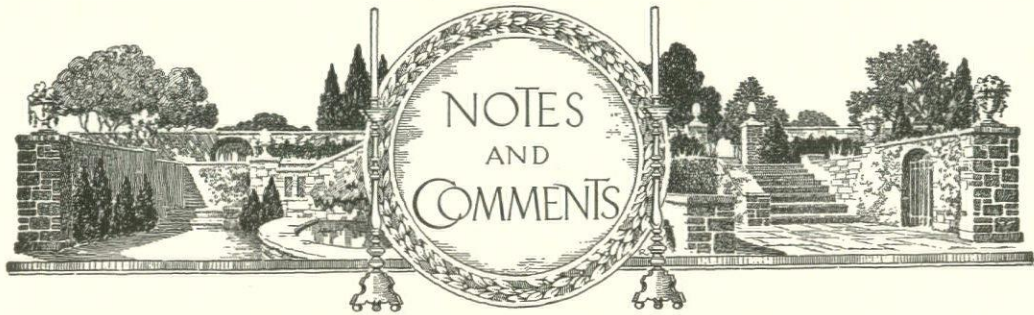
While a member of this firm, the West Street Building of the New York Telephone Company, the Telephone Buildings in Albany and Buffalo, the Brooklyn Edison Company Building, the Municipal Building of Brooklyn, and many other buildings, were designed and constructed.

Mr. McKenzie was a member of the following societies and clubs: The American Institute of Architects, the Architectural League of New York, the Union League Club, the Canadian Club of New York, the Railroad Club, the Briar Hills Country Club, and St. Andrew's Society.

He took a keen interest in the city's development and was on the City Planning and Survey Committee of New York.







### The Roosevelt Memorial Site

Congress authorized The Roosevelt Memorial Association to secure a design to fit artistically a designated area in Potomac Park. On this West Section of the park the Washington Monument, the Lincoln Memorial and the Roosevelt Memorial would form a great artistic composition.

The only conditions in the resolution, approved Feb. 12, 1925, were that recreation and traffic must be considered and that no work should be done on the site before Congress approved the design. The competitors were instructed, while emphasizing Roosevelt's accomplishments, to make the design a part of the proposed landscape. The best design, by John Russell Pope, embodying the above principles was selected by a competent jury and submitted to Congress in accordance with the resolution before Jan. 1, 1926. We could believe that the Roosevelt Association, having complied with all the requirements of the act, had only to await the decision of Congress on the design as the next step under the resolution. The drawings having been before Congress for some months, a tendency developed not to consider the merits of the winning plan, but to question the right of Roosevelt to associate with such distinguished company as Washington and Lincoln.

Impressed with the dignity and beauty of this design, I fully appreciated how it would complete the West Section of the Park Commission Plan. I was writing about it when the feeling in reference to the site was called to my attention. I naturally began to sum up what Roosevelt had done to make him worthy of such association. Remembering events of national importance which impressed me at the time, I soon had an imposing list.

He put the Civil Service on a practical and high plane, so that merit is rewarded; made our Navy so efficient by active drill that it

gave a good account of itself in the Spanish War; made a living thing out of the long moribund Panama Canal, to the great benefit, economically, of America and the world. He interested the people in the preservation of our national resources, that their descendants may have, not an arid waste, but a country full of nature's gifts; made the desert bloom, by irrigation, thus adding greatly to the country's productive area; kept us from war by preparing and showing the world we had an adequate fleet. After negotiating peace between Russia and Japan he was awarded the Nobel prize. It was through Roosevelt's wide interest and energy that we have more than a fair beginning of a National Gallery of Art. Intelligently interested in athletics, politics, nature, science, literature and art, he was ever ready to make this knowledge useful to the people. Ninety per cent. of our Presidents have been routine plodders—he was one of the few who had creative energy. Roosevelt, pre-eminently a crusader battling for right, justice and truth, vitalized the conscience of the people. He fought to preserve nature's gifts—to instill vigor and honor into young and old and to mold the varied and often antagonistic elements of our population into patriotic citizens. Roosevelt was alone—among our Presidents—in these wise and serviceable actions.

Although I felt personally satisfied that Roosevelt was entitled to a place in the park, I desired an opinion to satisfy the most skeptical; therefore I called upon that intelligent and broad-minded statesman, Elihu Root, who was kind enough to receive me and listen to my request.

Roosevelt, he thought, deserved a memorial on the Potomac in the landscape composition with Washington and Lincoln. The most important service Roosevelt rendered the country, he said, was in uniting and harmonizing capital and democracy. Few of us,

I among the number, appreciated this service. He continued: There was a growing antagonism between classes, Roosevelt's wise and frequently uncomprehended actions saved this country from the disastrous condition now prevalent in Europe. While he did not go into details, let us consider briefly the foreign conditions mentioned. To save their countries from anarchy the people have delegated their control to Dictators in Spain, Italy and Turkey. France is in such a chaotic state that many think a dictator might become a savior. A universal strike in England against the Government, not against individuals, many might consider traitorous. Russia is in the worst throes of anarchy the world has known. We neither desire the dictators nor want the anarchy.

We honor Washington for founding an independent Republic, after a long and trying revolution brought on by intolerance. We honor Lincoln for preventing the disruption of this Republic and maintaining the Union of States through a long and bitter Civil War. We should honor Roosevelt for preventing the dissolution of the Republic through clashes between classes.

The analogy between Washington and Roosevelt in their relations to the Fine Arts is unique. They were the only Presidents to use the fine arts as a lever for the elevation of the public. They sought and obtained the most capable artists of their day. While Washington gave commissions to Thornton, Hoban, Gilbert Stuart and Houdon, Roosevelt advised with and commissioned McKim, Saint Gaudens and Millet. They were the only Presidents who had shown any interest in and appreciation of a park on the Potomac with a practical and artistic grouping of Federal buildings. Their interest in city and landscape treatment was uncannily similar. Washington called in L'Enfant, and the great plan for a Federal Capital was the result. Roosevelt from its inception supported the renovated L'Enfant plan presented by the Park Commission. His intelligence and energy helped the scheme through many trials; without his aid this wonderful vision would not have materialized into a reality. He re-established the plan left by Washington and brought it again to the attention of the world. This landscape now beautiful and attractive will, when completed, be one of the great artistic compositions of the world.

It is just and fitting that Washington who conceived it and Roosevelt who nurtured and brought it to manhood should have a resting place for their memorials upon its sacred soil.

GLENN BROWN

### An Architect's "Confession"

Certain photographs of country houses submitted for our November issue moved Prof. Kocher to enquire the architect's reason for the selection of the design chosen—what was the underlying problem to be solved?

Among the replies was one of such an edifying nature that we feel constrained to give our readers the benefit of it, so here it is in full:

My dear Professor Kocher:

You have been kind enough to ask me to tell you of the problems we were called upon to solve, our hopes and fears, our disappointments and our triumphs, in the design and arrangement of the William Gray House. For the architect to thus bare his soul to the pitiless gaze of a critical public is something of a wrench, but if it will be helpful to the thousands and thousands of bright-faced young aspirants, who sit on the steps of the throne of the Hesperides, we will reluctantly make the sacrifice.

As you so truly say, the designer embarks on a new project with a consciousness of a more or less open mind, where it comes to the question of "style." The arrangement, the exposure, and the setting are too often not entirely fortuitous. It is here that our English brethren possess a great advantage, due to climatic conditions. How many times have we seen a particularly fascinating house, so eminently suited to its environment, and satisfactory in every way, that, stripped of the warm embrace of vines and the artful aid of enshrouding frondage, becomes quite jejune and hackneyed! How many times have our parched souls longed for stately oaks, clipped yews, and climbing mezembryanthemums of old England to clothe our architectural nudities!

One Spring morning John Duff told us that William Gray had sold his old house. John Duff is a builder of no mean parts. He knows everything about building from test borings and quicksands to semi-gloss enamel paints and French wall papers; from vacuum steam pumps and combination floor slabs to shady lawn grass seed and cost accounting systems for sub-contractors. New England is fairly well sprinkled with schools, churches, public libraries, and domestic buildings, that are literally the work of his own hands, for there is no detail of construction that he cannot, and when the occasion demands, does not do. John had made extensive alteration at different times to the old house, and it was through him that we had "gradually" become acquainted with William Gray, by furnishing the necessary drawings for the operations. When somebody came along who wanted the house more than the Grays, seduced, who knows, by the beauty of our alterations, the place



RESIDENCE OF WILLIAM GRAY, ESQ., BROOKLINE, MASS.  
Ripley & Le Boutillier, Architects

was sold and we acquired another job. The choice of "style" was quickly decided by Mr. Gray before we even had an opportunity to make a suggestion. He took us to see a house near Cottage Farm bridge, just across the street from the charming old Georgian mansion designed by Henry Pennell and George Newton. "I want a house like that," he said, "only I don't care for the chimneys and the bay-window, and the front door is too elaborate and the dining room should be on the other side." We gathered that what the Grays wanted was a house of brick and stone, with gables and chimneys and things. The office was just undergoing a period of atrophy due to scarcity of jobs, so we tackled the problem with gusto and enthusiasm. The first tentative studies were shortly in form to discuss, and one hot afternoon Mr. Gray took us in his sporty Mercedes down to Allerton to talk them over with Mrs. Gray. The Allerton cottage is on the top of the hill about 200 feet above the beach and looks right over the roof of the Nautilus Inn, where Prichard and Dick Shaw and other noted people spend the summer months. There was a delightful breeze from the southwest and an excellent telescope mounted on a brass tripod on the front porch. We enjoyed them both until Mrs. Gray came down and spread the sketches out on a wicker table. "Billy," said Mrs. Gray, after she had studied the drawings for a few moments without comment, "tell Sarah to bring in a bowl of cracked ice and the shaker, my nerves need steadying. And Billy," she continued, "we'd better open a new bottle of that El Bart gin, the last one's empty, and tell Sarah to open a small can of pineapple and telephone for Mother to come over, I need her support." We waited in uncertainty and anticipation until Sarah in a starched apron appeared bearing a silver tray on which teetered the largest cocktail shaker we had ever seen up to that time (June, 1919), a Canton medallion bowl full of cracked ice, a small glass pitcher of pineapple juice and half a dozen thin-stemmed glasses.

A dignified silence was observed by all while Mrs. Gray artfully measured the gin and vermouth, pouring in three glasses of the former to one of the latter, with a slightly less quantity of pineapple juice. The exact proportion can only be learned after repeated experiments, but one is amply repaid for the labor expended in trying. Made as Mrs. Gray made them, agitated in the enormous silver shaker until our arms ached (we were allowed this privilege), and poured out, all foamy, into thin-stemmed crystal glasses, they came like a balm and a benediction. The conquassation of a two-quart shaker full of cracked ice and gurgling liquids, produces such a comfortable, jolly sound, inspiring celivagous thoughts and good will to all mankind! Mother had ar-

rived and smiled indulgently and reassuringly as she delicately sipped her aperitif. We began to see how we could improve the sketches, and concentrated on the problem, as absent-mindedly we allowed the hostess to refill our glass. "Look out!" said Mr. Gray, "you'll distract the artist. Don't you see he's thinking?" "Don't interrupt, Billy," said Mrs. Gray, pouring out another generous dividend, "I want this to be a good house." Then she made a number of suggestions that called for more revision and more dividends. Dinner was announced and we all sat down to a delicately browned leg of Spring lamb, a great platter of green corn on the cob, picked that afternoon from the garden behind the tennis court, and strawberry shortcake. Haffenreffer's Golden Cream Ale accompanied the lamb and green corn, and the conversation ran on Early Italian primitives. We sailed back to town up the harbor into the setting sun, full of noble thoughts.

Other architects may boast of satisfied clients; we have listened for hours to their tales of how they won the undying gratitude of old Colonel Winterbottom, cold and stern to the outside world, but warm-hearted and grateful to his architects for the job they did on his country estate at Winter Harbor, or how the imperious Cordelia Featherstonehaugh, that familiar figure in the exclusive set of Wenham and Louisberg Square, wouldn't think of even moving a picture on the walls of her reception room, or changing the position of the Vernis-Martin kidney desk in her boudoir, without first telephoning for permission to her architect. We don't envy such as these in the least, for we "have fed on honey dew, and drunk the milk of Paradise." John Duff built the house and he built it honestly and well. There were many changes from the original contract, many "extras" necessitated by these changes. Through it all John chuckled until he shook like old Falstaff, and William Gray smiled serenely and said "Fine" to everything.

I hope that this brief account of how the architect works and the problems with which he is faced, will prove helpful to others and of significance to the general public. I can only add that in all our experience we have never had such a paragon among clients as William Gray.

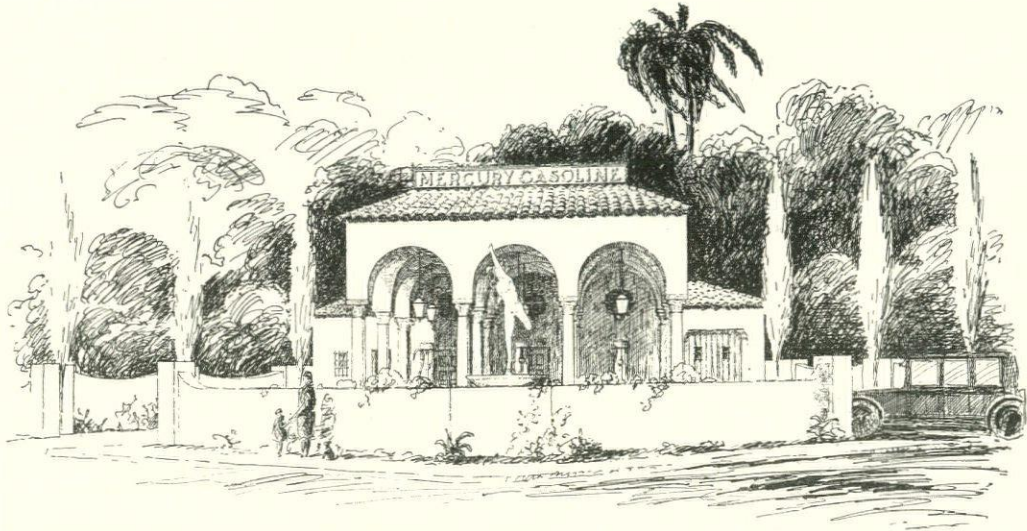
Very sincerely yours,

HUBERT G. RIPLEY

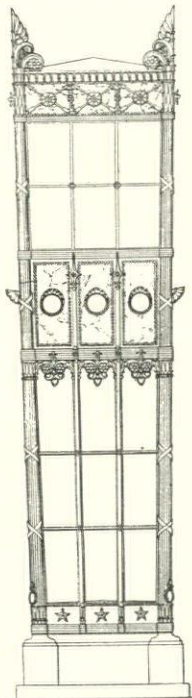
Boston, July 19, 1926.

#### A Correction

Our October issue, Page 351, contains a plate of the interior of the Congregational Church, Montclair, N. J. The credit line in this case should have read: "Bertram Grosvenor Goodhue, architect," in place of "Bertram Grosvenor Goodhue Associates," which unfortunately appears in error.



First Prize Winning Design for a Model Filling Station, Awarded to  
H. Roy Kelley, Los Angeles, California



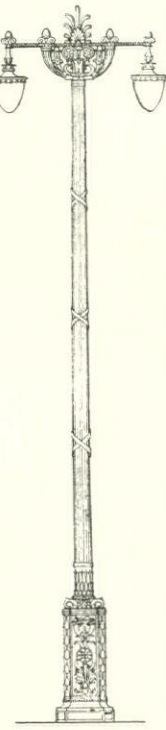
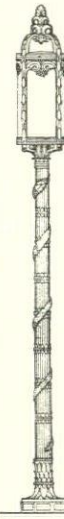
Traffic Signal Tower



Traffic Signal Standard for 100 ft. Street



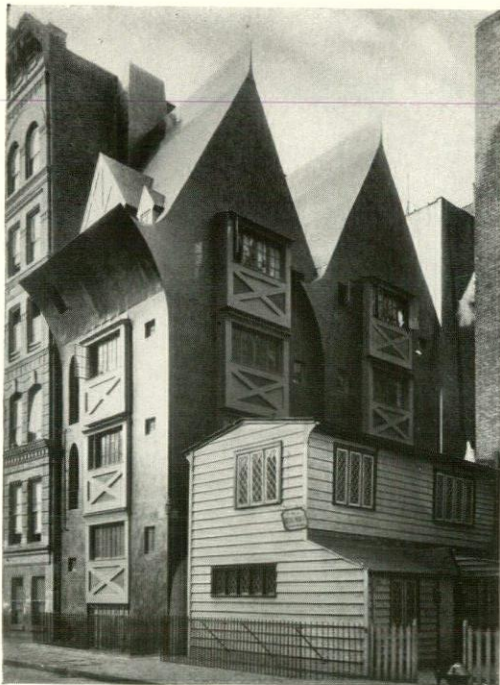
Promenade  
lighting



For Miami Plaza

First Prize Winning Design for Street Traffic Signal and Street Lighting Standards.  
Awarded to S. Grille, New York City

FIRST PRIZE WINNING DESIGNS IN TWO COMPETITIONS FOR  
BISCAYNE BOULEVARD, MIAMI, FLORIDA



"TWIN PEAKS," 102 BEDFORD STREET,  
NEW YORK

Designed by Clifford R. Daily

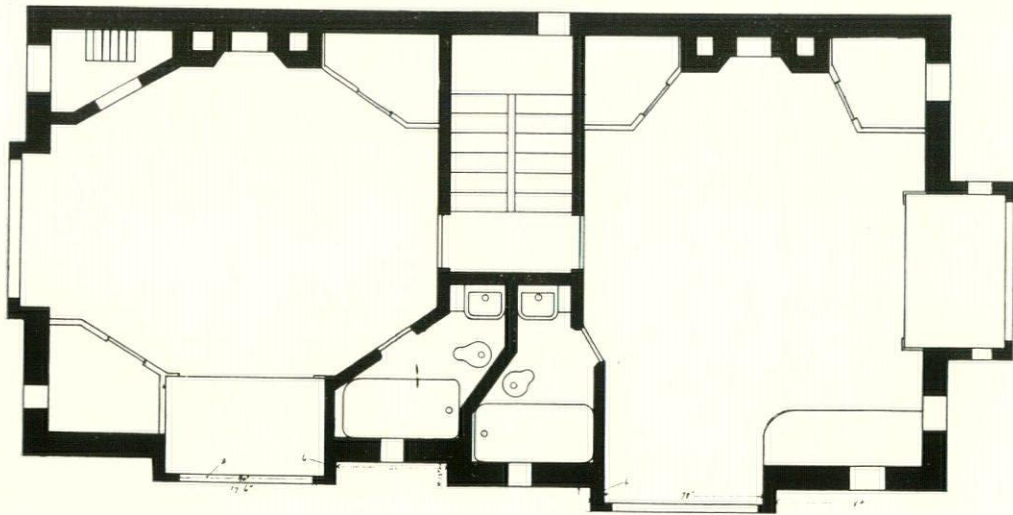
**An Apartment House in Greenwich Village**

In designing "Twin Peaks" an effort has been made to provide housing suitable for the "cultural worker." The general scheme

is the one-room and appurtenances apartment characteristic of San Francisco and London. Utmost utility of space is represented and such installations as a mediaeval peasant type bed, a desk and desk window, bench radiators, cedar closets, etc., are features specially designed to the needs of the busy worker and to harmonize with this unique type of building.



Apartment in Attic



FLOOR PLAN, "TWIN PEAKS"

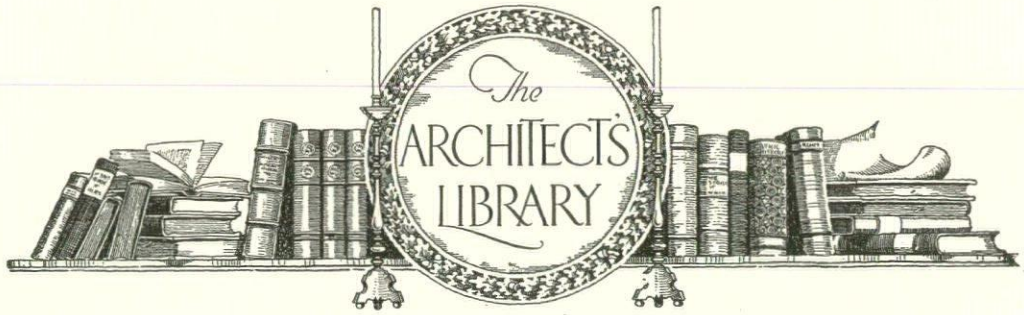


First Floor Apartment



Apartment in Basement

"TWIN PEAKS," AN APARTMENT HOUSE AT 102 BEDFORD STREET, NEW YORK



### Mexican Architecture, Domestic, Civil and Ecclesiastical\*

The most abundant and imposing monumental architecture in either of the American continents, earlier than the nineteenth century, is in Mexico. The greater part of all that is most interesting is the accomplishment of the two centuries following the Conquest. Except for a few massive prehistoric ruins, little remains of the Aztecs. Their work was mostly demolished and rebuilt. The architecture of the two centuries referred to was predominantly ecclesiastical, and even now, or until lately, buildings put up by the church are usually the most notable. The style of it all comes directly from Spain, and in general followed Spanish changes through the centuries. It is, curiously, more ornate than the architecture of the home country. The crowded ornament on some Mexican church façades is lavish enough to remind one of the sculpturing of Hindu temples. (See, for instance, the convent interior of Tepotzotlan, Pl. 60.)

Some of the reasons—and the chief ones—for all this are assignable enough. The English and French colonies in the north were small straggling settlements supported, so far as they were self-supporting, by hunting, farming and a little commerce; the only native population sparse, savage, of no economic value to the colonists and a considerable danger. Mexico, on the contrary, was rich, populous with enslaved or semi-enslaved Indians, who were partially civilized and thoroughly subdued, and the gold and silver from the famous mines did not all go to Spain. The conquerors, the monasteries and churches, had great estates. Sculptors and artisans were brought from Europe, and the vast population of Indians furnished the labor. Many of these, no

doubt, were trained to a considerable degree of skill. Power and wealth in the hands of aristocracy and church, with unlimited labor, are conditions which tend everywhere toward a massive and ornate architecture.

The Franciscans were the first builders. Their buildings were virtually fortresses and largely Romanesque. Their churches usually rectangular with a low uplift in the ceiling, a sort of rudimentary dome, forerunner of the beautiful domes that are so characteristic of Mexico today. Afterward, following the changes in Spain, came Gothic, Renaissance, Baroque, Moorish, Mudejar (see House of the Tiles, Pl. 20 and 21), and Churrigueresque. In all these styles the masonry was very solid; the domes usually sprang from octagonal bases; the ornament generally was concentrated at salient points, and at church entrances, and was generally in modeled plaster. The contrast of concentrated ornament with plain wall surface is, of course, a Spanish feature.

Broadly speaking, then, the main impressions made on the memory by old Mexican architecture are these: heavy powerful bulk; organic structure frankly shown; rich ornament, and strong contrast of plain and decorative parts, the transition from one to the other being immediate; domes everywhere, covered with glazed tiles. The sixteenth century work is Renaissance, which became Baroque in the later sixteenth century and through the seventeenth, rather heavy, corpulent, capricious, but picturesque. In the eighteenth come the extraordinary Churrigueresque style. Churrigueresque has been called "decorative delirium" and the Spanish architect, José Churriguera, "the heresiarch of bad taste." It is the extreme of decorative unrestraint (see the Church of Santissima, Pl. 16, Casa de Alféñique, Pl. 127, Church of Santa Rosa and Santa Clara, Pl. 113). The craze for Churrigueresque was

\*Mexican Architecture, Domestic, Civil and Ecclesiastical. By Atlee B. Ayres. 426 pp illus.; folio. Helburn. \$25.





Illustration from *Mexican Architecture, Domestic, Civil and Ecclesiastical*

followed, in the nineteenth century, by a rage for its extermination, which produced a melancholy nakedness of devastated surfaces. Bad Graeco-Roman work replaced the old magnificence. Modern students of the remains of old Mexican Churrigueresque tend to differ from older critics on the subject. It was florid, magnificent.

Mexico runs from a hot jungle country along the coast to a dry desert toward the north. The south central portion, however, is high, mountainous, with broad fertile valleys, and a climate remarkably even and temperate by reason of the latitude and the height. Building stone and timber are available; tile, brick and adobe brick are extensively manufactured. Tile roofs, however, are not common. Most of the house roofs are flat platforms, two or three feet thick, of timber, brick and dirt filling, with a heavy coat of mortar on top.

Mexico is a picturesque country and full of color. Nearly every church has a dome covered with tile of a golden yellow, varied with white and dark blue. Some rural churches are faced with red volcanic rock rubbed with red pigment, and having tiles inserted at intersections. (See Church at Acatepec, Pl. 120.) Buildings constructed of adobe are plastered and then often a finish

in varied colors of water paint is given.

Domestic architecture, especially in cities, has the familiar Mediterranean features of iron grilled windows on the street level, and the patio or court inside with its fountains and flowers, balconies, and tiled or brick floors. Earthquakes have caused one peculiarity—the use of canvas, instead of plaster, for ceilings; the canvas stretched so tightly that it looks like plaster.

What there may be from Spanish or Mexican presses on the subject I do not know, but the chief work in this country on Mexican architecture is Sylvester Baxter's "Spanish Colonial Architecture in Mexico," with plans by the late Bertram Goodhue. It was published in ten volumes—and again in twelve—by J. B. Millet & Co., Boston. It is very expensive and probably now difficult to procure. Mr. Ayres' volume will be very useful in architects' libraries. It is possible, however, that the unprofessional student of the subject will regret the lack of a detailed commentary.

But whoever is unacquainted with the subject is sure of a surprise and liable to a thrill. One seems to have heard a great deal about the California missions, which, after all, were few, poor, far away in the wilderness, and their building period quite recent.



Illustration from *Mexican Architecture, Domestic, Civil and Ecclesiastical*



Illustration from *Mexican Architecture, Domestic, Civil and Ecclesiastical*

It is a small subject, whereas the old architecture of Mexico is a great subject. The bulk of it is not in Mexico City, but scattered in smaller cities, towns and haciendas from one end of the country to the other. Some of it is even across the border in Texas. It is the study of this architecture which may enable one best to realize the Conquistadores and their successors, and the mighty grip of the church on that old society; to realize that Mexico was, and perhaps is still, one of the richest countries of the world in metals and precious stones; that where wealthy planters to the north counted their slaves by scores and the land in acres, the lords of the earth in Mexico counted their peons by thousands and their land in square miles.

ARTHUR W. COLTON

#### The Smaller English Houses of the Later Renaissance\*

The earlier works on English architecture stopped, for the most part, at a deadline about 1760. Even in Sir Reginald Blomfield's history the Adams and their contemporaries were set down as belonging to a

\*The Smaller English Houses of the Later Renaissance. By Richardson & Eberlein. Helburn, \$10.

decadence. Recent writers have undertaken a rescue, and have shown for the first time the work of the late eighteenth and early nineteenth centuries. The first of them was Professor Richardson, of University College in London, in his "Monumental Classic Architecture in Great Britain and Ireland." This was followed by Swarbrick's "Adam" and Bolton's "Adam" and "Soane," and by the two volumes of Stanley Ramsay's "Small Houses of the Late Georgian Period." Now come Richardson and Harold Eberlein with "The Smaller English Houses of the Later Renaissance" (Batsford and Helburn), a well-printed quarto with some two hundred and fifty photographs, plans, diagrams of compositional schemes, and plates of detail.

Although the book begins with the Restoration, its emphasis is all on the period around 1800. It shows many unfamiliar houses with interesting compositions of mass, such as St. Paul's, Waldenbury and Moggerhanger, Bedfordshire; or, on a smaller scale, Lavenham, Suffolk, and Kent Grange, Hampstead. A large place is given to the work of Henry Holland, whose reputation has been obscured between those of Adam and Soane and of John Nash. Hol-

land's buildings include Southill in Bedfordshire and Wimbledon house. These have symmetrical dispositions of wings and loggias, with refined and simple treatment of stucco wall surface. A brick house of his, admirable in proportion and restraint, is Avenue House, Amptill, the doorway of which worthily forms the frontispiece of the volume. Another little known designer represented is Robert Mylne, whose plans have varied and interesting spatial effects.

The publication of the minor Georgian houses has made possible interesting

comparisons between English and American work of the time. Certain types, such as the one represented by Rainham Hall and Eggington Manor, with their segmental window-heads and brick parapets, are characteristically and solely English. The more frequent survival of Elizabethan features like the bay-window and the mullioned window also marks the minor English Georgian. On



From *Smaller English Houses of the Later Renaissance*

character have been well illustrated in a whole series of English books. For the Georgian work, the study of these varieties has been only begun, in such works as Richardson and Gill's "Regional Architecture of the West of England," which is amplified in certain directions by the volume before us. Let us hope to see it carried still further.

FISKE KIMBALL.

**Cathedrals, Abbeys and Shrines of History and Romance in the British Isles.** By W. H. Walton, F.L.A., New York: London, Midland & Scottish Rly. Co. (200 Fifth Ave.) 1926. 1st ed. ix. 184 pp. Ill. Maps. 5¼ x 9½ in. Cloth. \$1.00.

A guide to these landmarks in the British Isles. "While the greater churches of our land may have a few superiors in immensity and logical construction in the leading continental cities, nowhere can that combination of charming structure and exquisite setting, which is the general character of the unobtrusive rural churches and ruined abbeys of Britain, be found so effective outside these islands."

**Architecture.** By Lewis Mumford. Series Reading with a Purpose. Chicago: American Library Association. 1926. 1st ed. 34 pp. 4¾ x 6¾ in. Paper. 35c.

**The Scenewright.** By André Smith. New York: The Macmillan Co., 1926. 1st ed. vii. 135 pp. Ill. 5 x 7¼ in. Cloth. \$2.00.

Instructions on the making of stage models and settings, and how such material is utilized in the construction of the finished stage settings. The methods advocated, the author states, so reduces the cost of construction as to make a new set possible for every play.

**The Cathedrals and Churches of Italy.** By T. Francis Bumpus. New York: Dodd, Mead & Co., 1926. 1st ed. viii. 400 pp. Ill. (part colored.) 6¼ x 10¼ in. Cloth. \$7.50.

Detailed architectural and historical descriptions, accompanied by seventy-nine illustrations, eight of which are in color. Mr. Bumpus will be remembered as the author of "The Cathedrals of England & Wales" and other similar work.

**Some Lesser Known Architecture of London.** By James Burford, A.R.I.B.A., and J. D. M. Harvey, B.A. New York: William Helburn, Inc. 1926. 1st ed. 23 pp. LXX plates. 7¾ x 10 in. Bound in Boards. \$6.00.

Ecclesiastical buildings have been excluded and, the authors say, "Since the later Georgian architecture has been so adequately dealt with in recent publications we have restricted our choice, for the most part, to the work of earlier days."

**The Lighting Graphs.** By I. S. Dalglish, A.M.I.E.E. London, England: Crosby Lockwood & Son. 1926. 1st ed. 30 pp. Drawings. 9 x 7¾ x 7¾ in. Cloth. 5/- net.

A means of solving by graphs some of the constantly recurring equations which cannot be solved by an unbroken series of operations on a standard slide rule. Prepared for the use of engineers, physicists, architects, draughtsmen, surveyors, etc.

**Art Studies, Medieval Renaissance and Modern.** Vol. 4. Edited by Members of the Departments of the Fine Arts at Harvard and Princeton Universities. Cambridge: Harvard University Press. 1926. 1st ed. 153 pp. Ill. (plates). 8¾ x 12 in. Bound in Boards. Price \$7.50.

**Interior Decoration for the Small Home.** By Amy L. Rolfe. New York: The Macmillan Co., 1926. Revised 2nd ed. xviii. 169 pp. Ill. 5 x 7¾ in. Buck. \$2.00.

In this edition, price quoting has been eliminated and comparative values given instead. The text has also been revised and expanded to include the new ideas in interior decoration which have come into use during the past decade.

**How to Read Blueprints.** By William S. Lowndes, Ph.B., A.I.A. Philadelphia, Pa. David McKay Co., 1926. 2nd. ed. vii. 164 pp. Ill. Diagrams. 5¾ x 8¾ in. Cloth, \$2.00.

The vital difference between the building trade mechanic and the foreman is the latter's ability to read and understand blueprints. This book is intended to bridge the dividing line and make it possible for the mechanic to read and interpret blueprints for himself instead of getting his instructions at second hand.

**A.S.T.M. Standards adopted in 1926.** Philadelphia, Pa. American Society for Testing Materials. 1926. 1st ed. 102 pp. Ill. 6 x 9 in. Paper. \$1.50.

Twenty-three revised or newly adopted standards of the Society. The Second Supplement to the 1924 issue of the triennial Book of Standards.

**Handbook of Domestic Oil Burning.** New York: American Oil Burning Association. 1926. Tentative edition. 224 pp. Ill. 4¾ x 7¼ in. Boards. \$2.75.

Covers all of the fundamental information and data necessary to the successful sale, installation and operation of a domestic oil burner.

#### RECENT PUBLICATIONS

issued by manufacturers of construction materials and equipment.

[These may be secured by architects on request direct from the firms that issue them, free of charge unless otherwise noted.]

**Steel.** No. 679. Copper Bearing Steel Resists Corrosion. Treatise by Robert D. Snodgrass, Consulting Engineer, containing facts, figures and photographs showing the marked rust-resisting properties of steel containing a percentage of copper. Truscon Steel Company, Youngstown, Ohio. 8½ x 11 in. 16 pp. Ill.

**Sprinkling Systems.** Thompson Concealed Sprinkling Systems. Advantages and suitability for lawns of various buildings. Method of use. Instructions for planning and installing. Catalogue of other garden devices. Thompson Manufacturing Company, 2251 East 7th St., Los Angeles, Calif. 6 x 9 in. 36 pp. Ill.

**Arc Welding.** Automatic Arc Welding with "Stable-Arc" Automatics. Method of joining steel and table of speeds and costs of automatic electric arc welder. Capacities of the various welders. Instructions for construction of a single section tank. The Lincoln Electric Co., Coit Road & Kirby Ave., P. O. Box 683, Cleveland Ohio. 8½ x 11 in. 24 pp. Ill.

**The Arc Welding of Structural Steel.** A. I. A. File No. 13c2. Special Publication 1767. Treatise on erection methods for arc welded buildings and test and inspection of arc welds. Specification of a weld; the metallurgy of welding. Diagrams on results of tests. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., 8½ x 11 in. 32 pp. Ill.

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