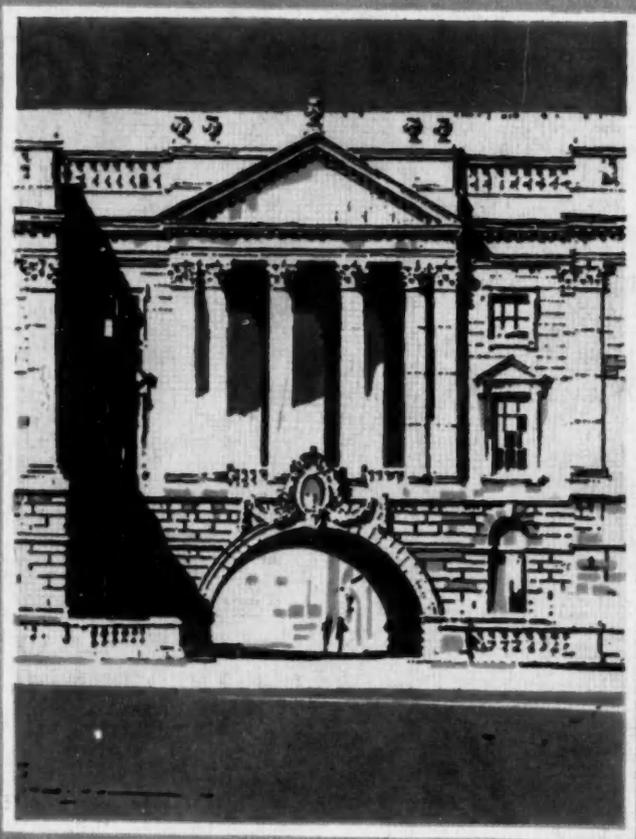


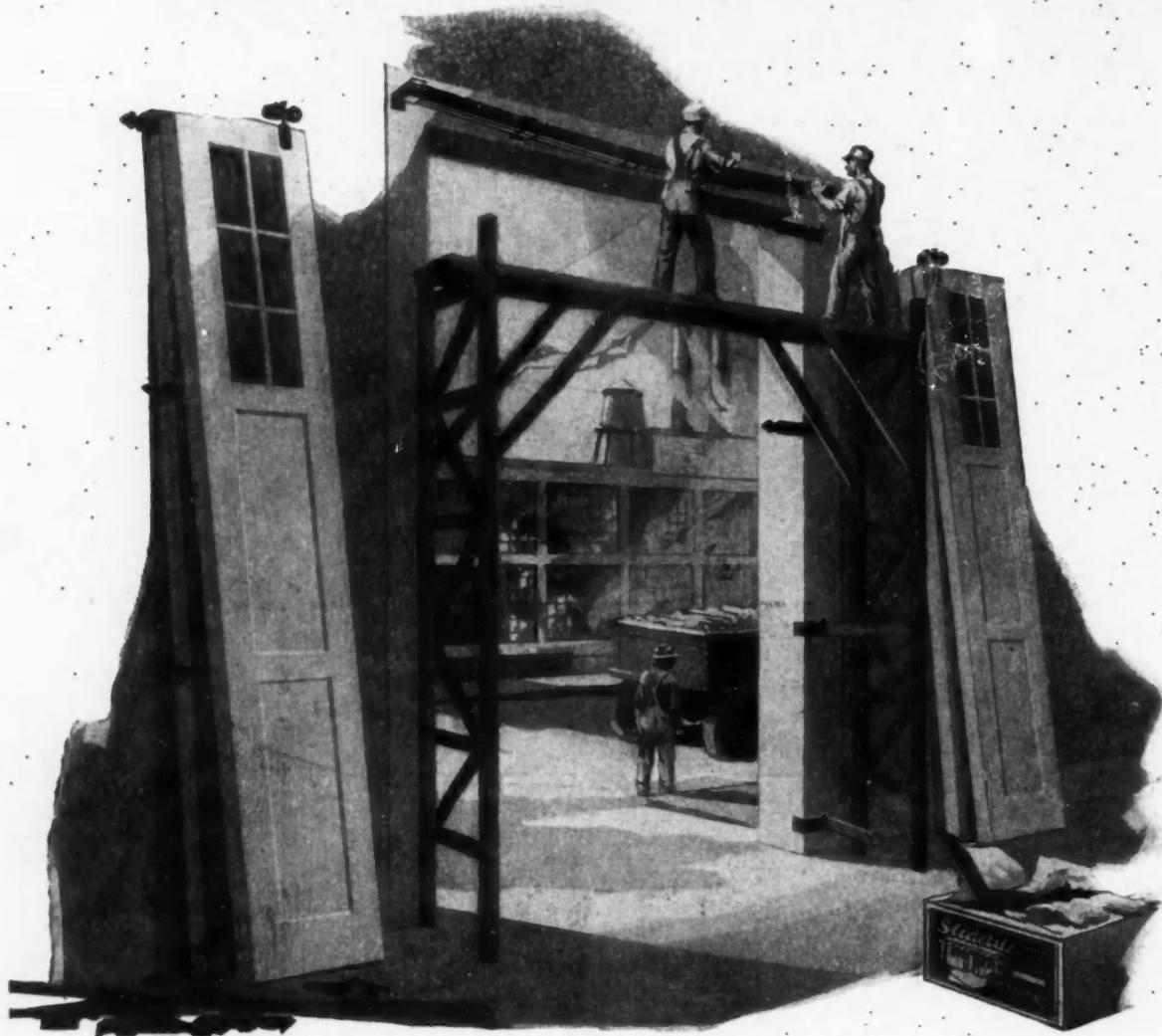
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# THE ARCHITECTURAL FORUM



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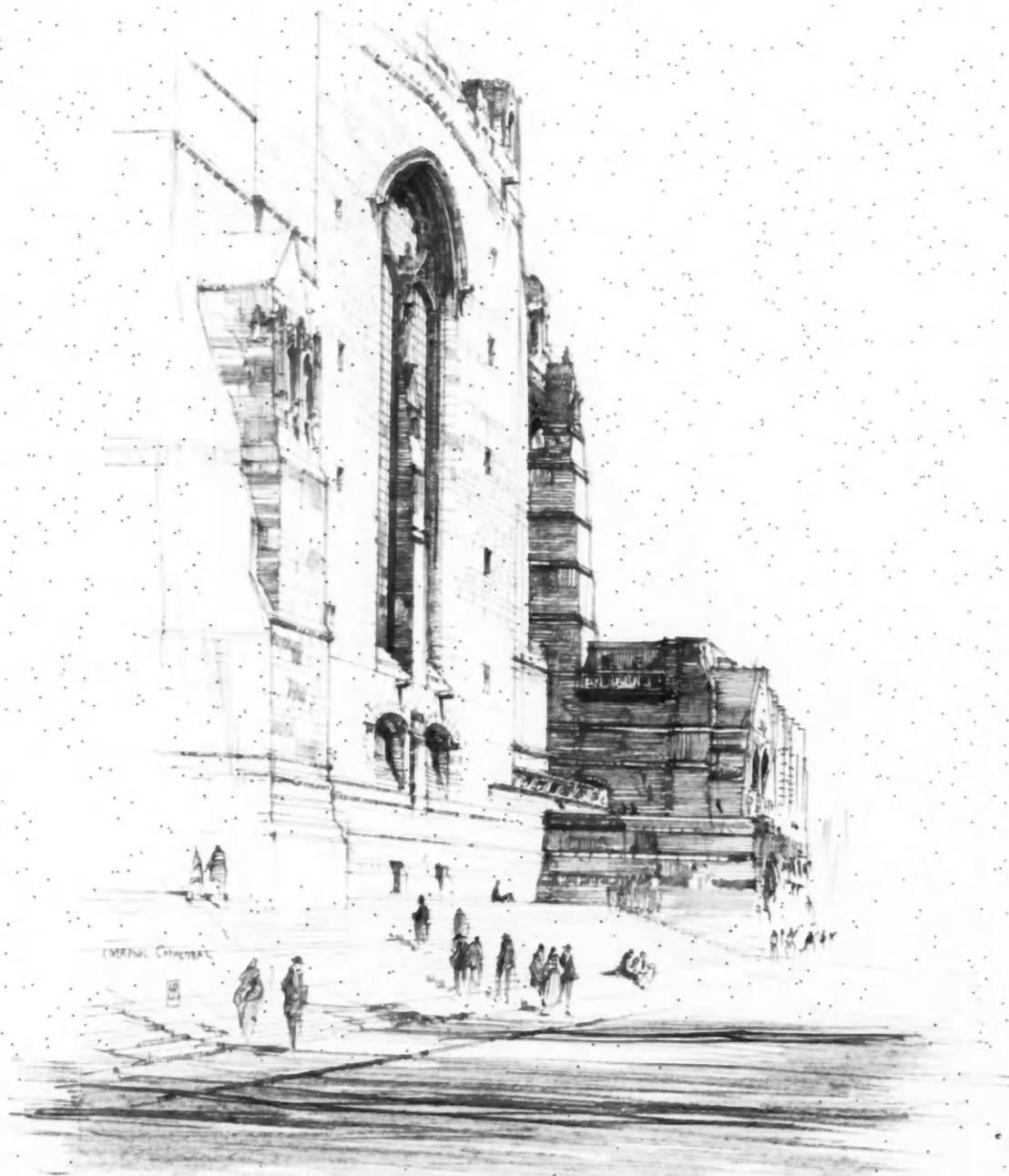
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SOUTHEAST TRANSEPT, LIVERPOOL CATHEDRAL

FROM AN ETCHING BY LOUIS C. ROSENBERG

*The Architectural Forum*

# The ARCHITECTURAL FORUM

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Number 5

## ✓ The Liverpool Cathedral

SIR GILES GILBERT SCOTT, *Architect*

By H. G. BIRNSTINGL

IN looking back over the last hundred years, those who believe that architecture affords a reflection of contemporary life might find some justification for thinking, as so many do, that the Church of England is divorced from contemporary thought and activity, for during that period the Church has persistently sought to express itself in terms of Gothic architecture. But true Gothic architecture was the un-self-conscious and spontaneous outcome of certain conditions, beliefs, modes of thought and social organization, as too of available knowledge and materials. Today all these conditions are completely changed, and to continue imitatively to use these architectural forms, to preserve intact the whole paraphernalia of a past mode of expression, is to divorce

architecture from life, is to create an anachronism, is to be guilty of an affectation, to disregard propriety.

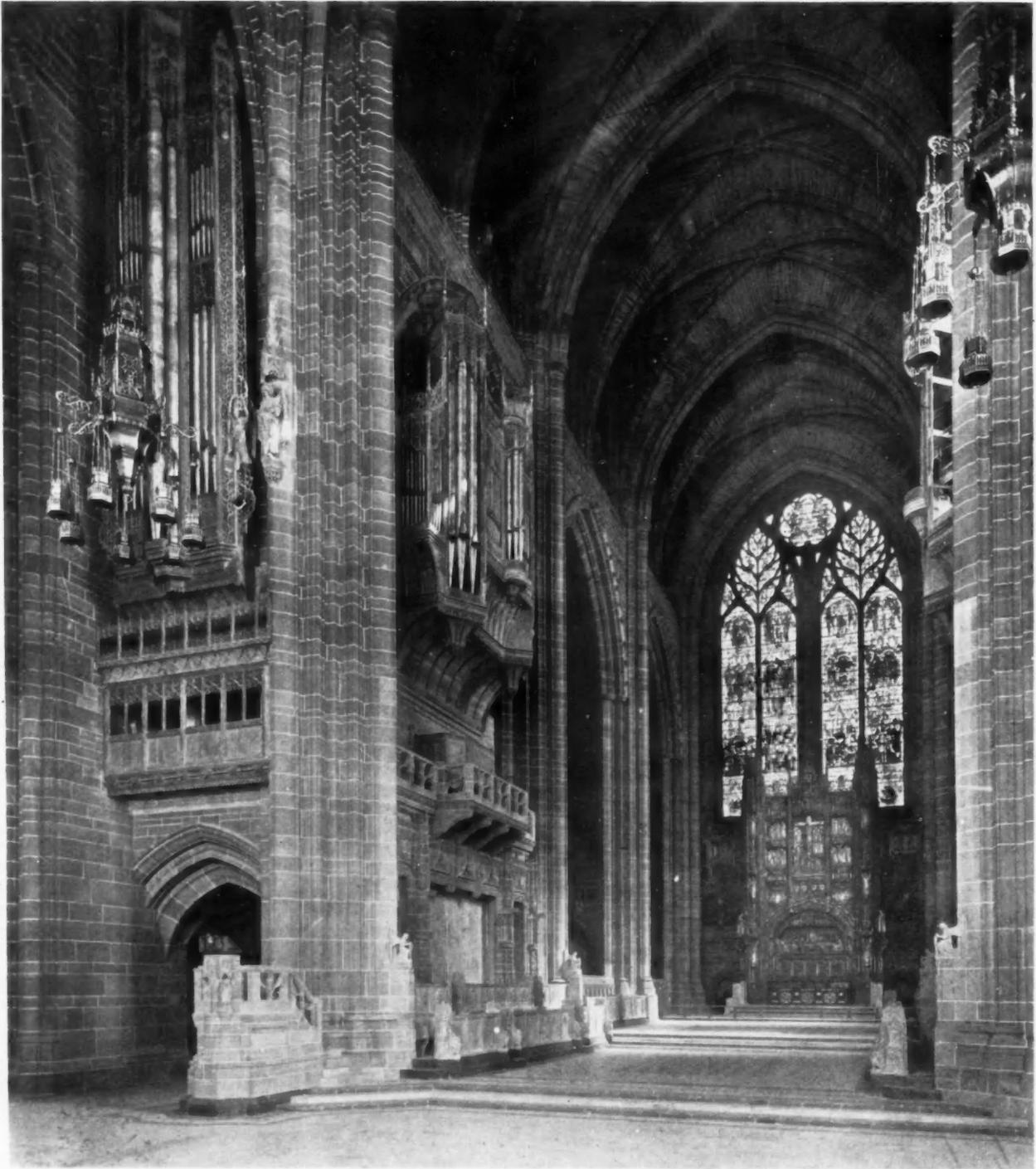
The heated Battle of the Styles of the last century ended in a compromise, by means of which the Classic idiom was accepted for secular buildings, and the Gothic for ecclesiastical; but whereas the Classic has been, except for a brief period of archaeological correctness, freely handled, reflecting the temper of the times and remaining subservient to requirements, being now refined and delicate, now coarse and vulgar, now austere and now sumptuous, according to its purpose and the spirit of the age, Gothic has, for the most part, under the heavy, restraining hands of those in supreme ecclesiastical authority, aimed throughout at correctness. In this respect Liverpool



Photos, Stewart Bale, Liverpool

Perspective Drawing of Liverpool Cathedral Completed

Sir Giles Gilbert Scott, Architect



The Choir Looking East, Liverpool Cathedral

Cathedral constitutes a break with the past, and it may be that it is indicative of a *rapprochement* between religion and life. It must be remembered that whereas before the Renaissance the great churches were an impersonal expression of the age, Liverpool Cathedral is personal; there is nothing fortuitous in its growth; it has been conceived as a whole by one man. And this has resulted in a balance and a unity which are scarcely ever to be found in any product of the great mediæval church builders. Unity and balance are Classic characteristics, for in Classic

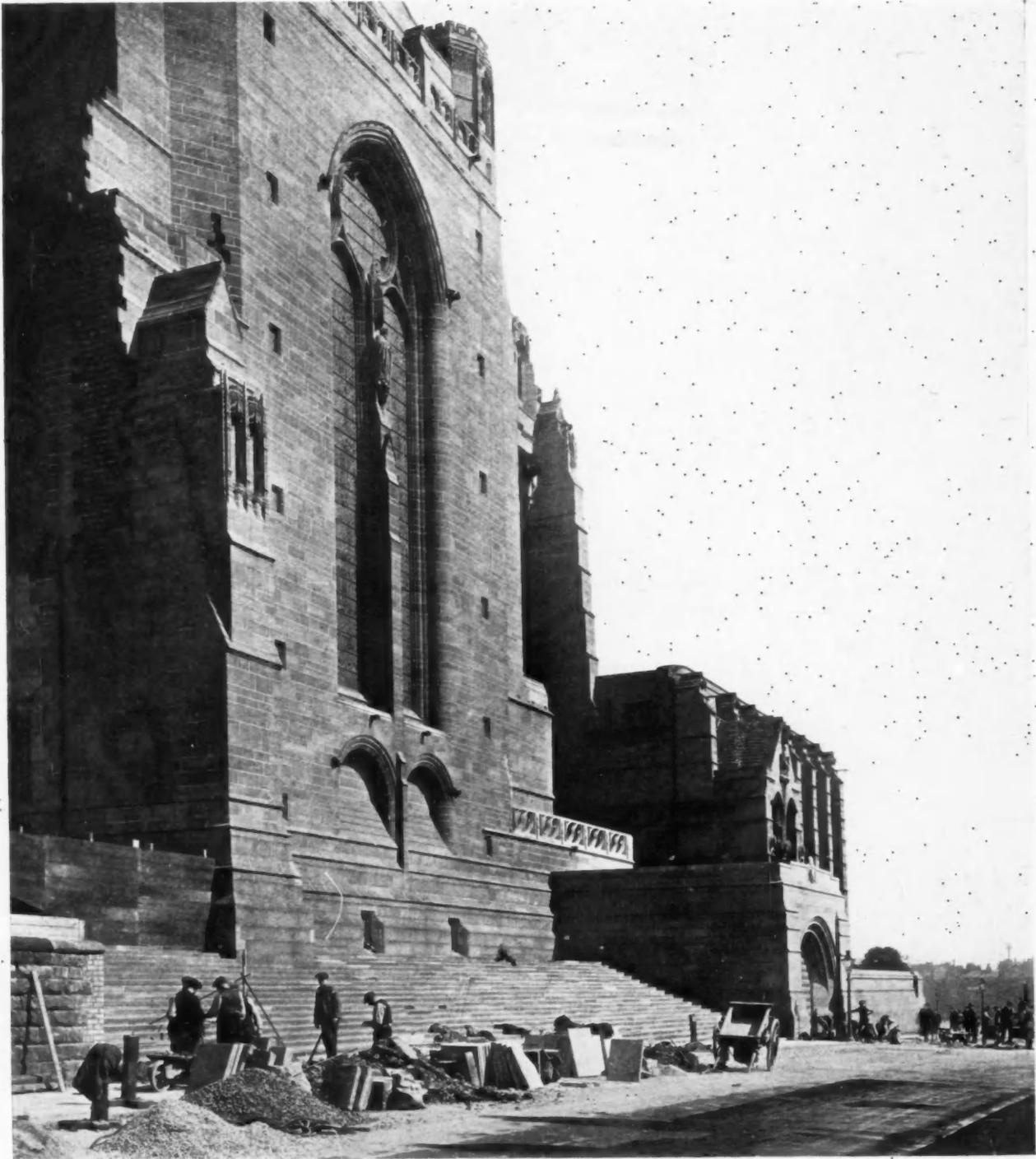
architecture the whole is always greater than the part. It is this Classical quality of unity that has struck every intelligent observer of Liverpool Cathedral as its outstanding characteristic. Those who strove in the famous Battle of the Styles were separated by differences of outlook which seemed irreconcilable. Those who delighted in analogy, in symbolism, who wished this building to express some moral outlook, who wished to find in art a reference to nature, who looked for a reason or a symbol in every stone, sided with the Gothicists. Those who



The Lady Chapel, Liverpool, Cathedral

delighted in abstract form, in balance, in unity, who refused to admit of a relationship between beauty and morality, sided with the Classicists. And so the two revivals proceeded, side by side, their adherents satisfied that the virtues which they looked for in architecture were incompatible. At last, after a century, it would seem that the essence of both of these sets of striving ideals has been distilled into a single building which will rank, when finished, with the finest in the world, and forever close the breach between the opposing factions. It will have achieved,

indeed, what has hitherto been deemed impossible. The competition for Liverpool Cathedral was won by Sir (then Mr.) Giles Gilbert Scott in the early years of this century, at the age of 22. The foundation stone was laid by the late King Edward VII in July, 1904. In another July, exactly 20 years later, his son, King George V, was present at the service of consecration of the first part of the building. During that time the original design has undergone certain radical changes, the most important being the substitution of a single central tower for



Southeast Transept, Liverpool Cathedral

twin towers. Undoubtedly the design has gained by this change, even if certain minor internal vistas have been sacrificed in order to give adequate support to the tower. The church is best seen, perched on its rocky eminence, from the river Mersey, and from here a finer effect of unity will be yielded by the one central tower than by the shifting and confused perspective of two. That the Classic unity already referred to is an integral part of the composition is at once apparent from the plan, which is, with the exception of the lady chapel and the chapter house,

symmetrical about both its major and its minor axes.

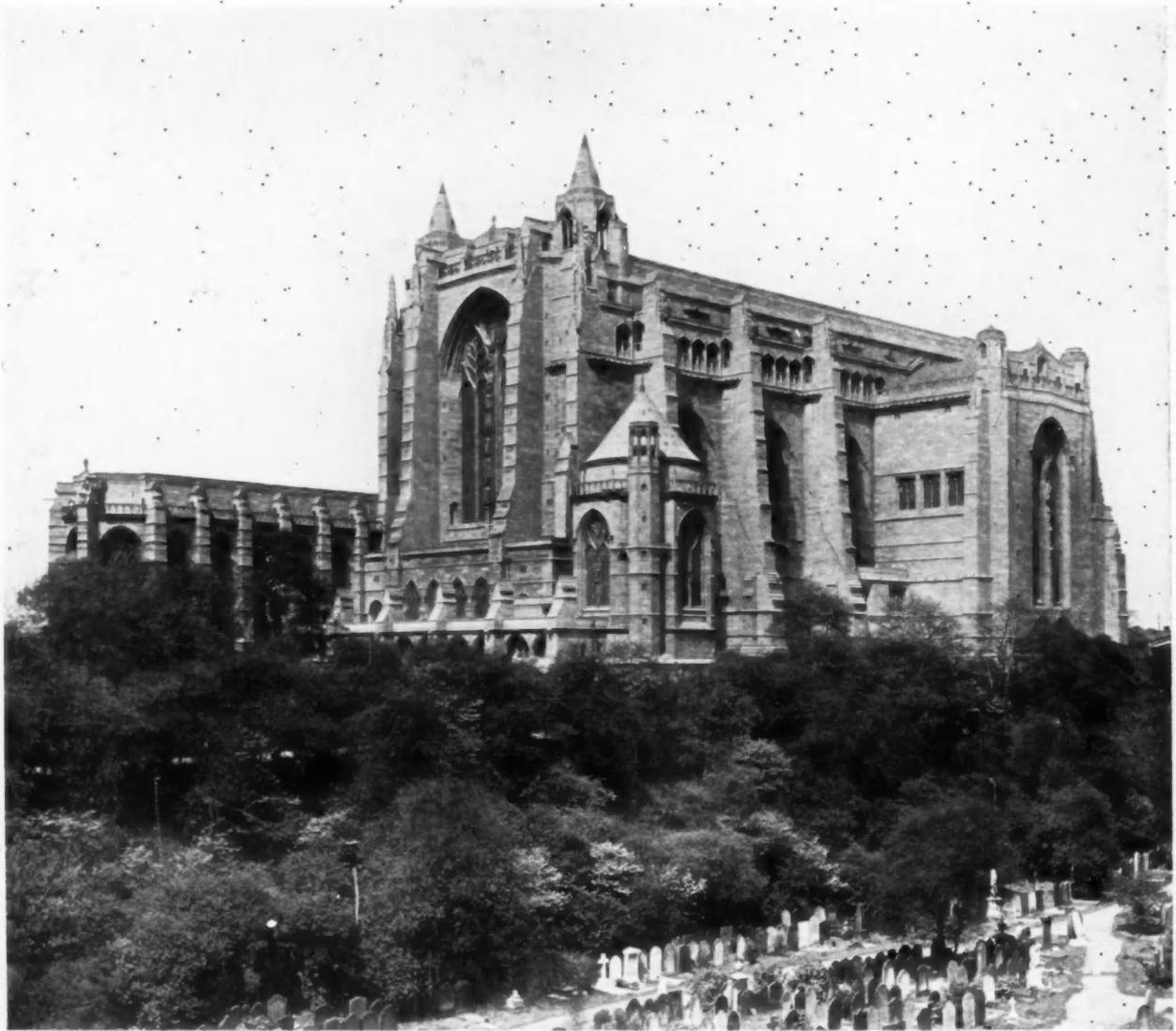
At the crossing of these axes is a large central space, above which rises the tower. East and west are the two sets of transepts, and between them are the great porches. Beyond the transepts are the two extensions forming the nave and the choir, the former terminating with a narthex, the latter, with an ambulatory, and beyond, jutting out below the main sill level, a range of sacristies. The suggestion of a Classic balance and rhythm, which is so clearly indicated by the plan, is enhanced by two things,—the



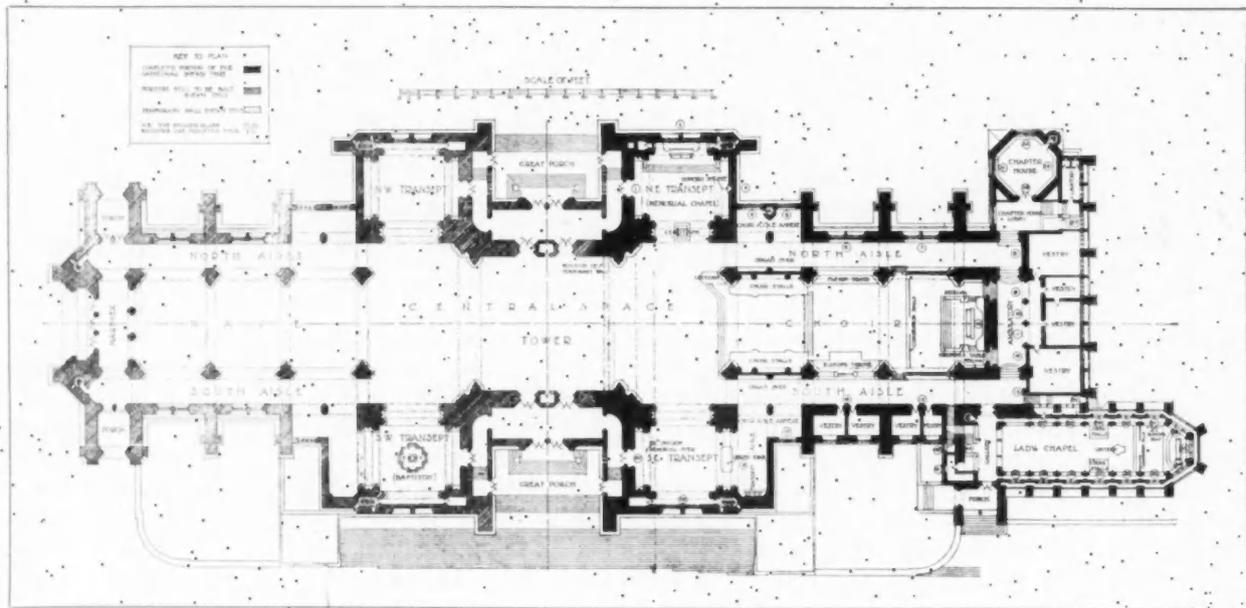
The Reredos, Liverpool Cathedral

bigness of the parts and the large, unbroken wall surfaces. The nave and the choir are each divided into only three immense bays. A mediæval church of such dimensions would have had twice or thrice the number. But if the plan itself departs from Gothic precedents, its structural development displays even more noteworthy departures from tradition, and deals with a problem, the handling of which by Wren at St. Paul's, has been the subject of much criticism. In any vaulted structure, in which the thrusts are alive, the buttresses become the dominating feature.

The very existence of the building depends upon their presence at certain fixed points. In most mediæval churches they are seen jutting out at regular intervals from the main walls, sometimes *flying* across from the main to the aisle walls. When Wren designed St. Paul's he was loath to have his wall surfaces broken up, and so he devised the expedient of a screen-wall above the aisle. Sir Giles Gilbert Scott, faced with much the same difficulty, has handled it differently and, some may think, more successfully than his rival predecessor. The aisles are



LIVERPOOL CATHEDRAL: ST. JAMES' CEMETERY IN FOREGROUND

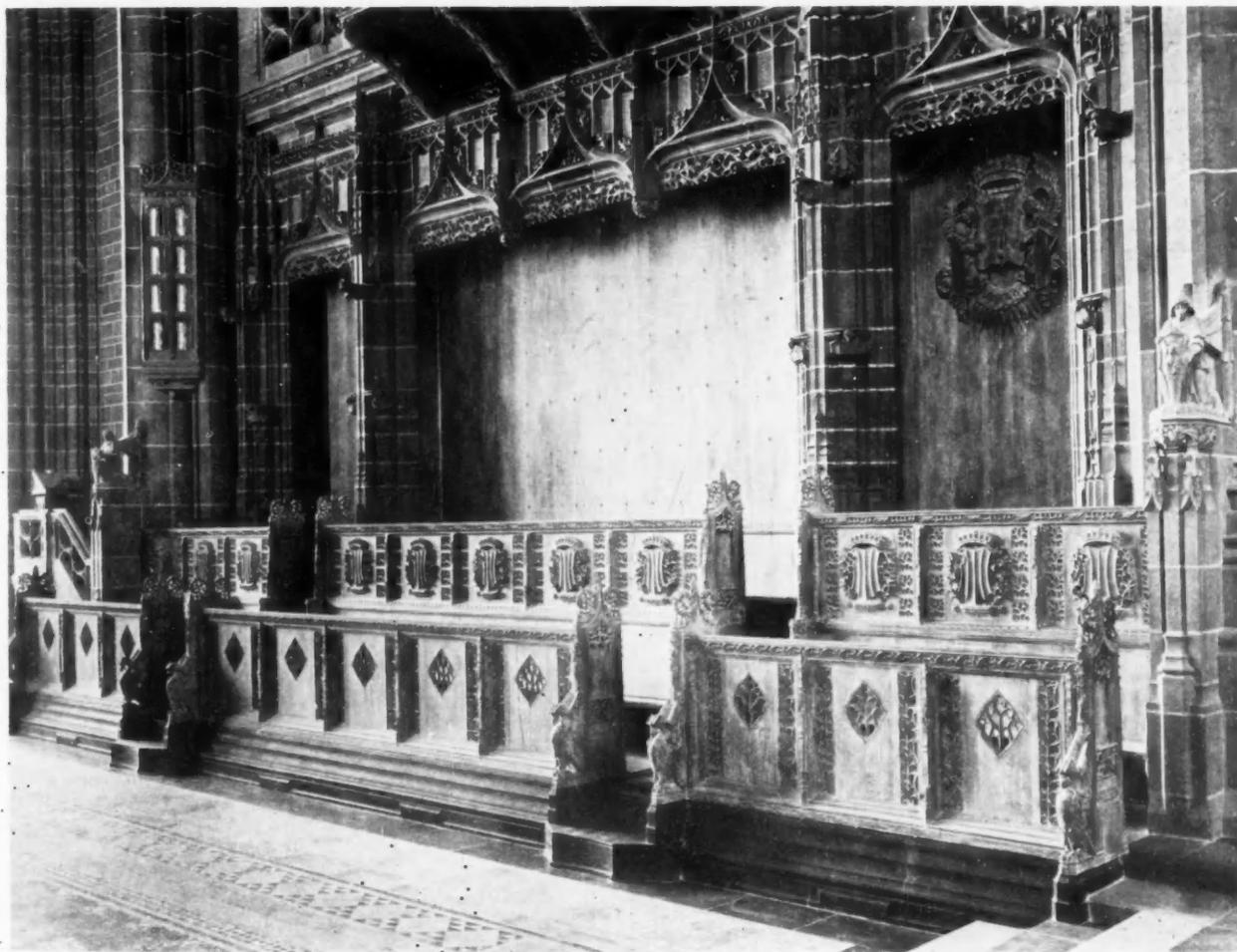


PLAN, LIVERPOOL CATHEDRAL COMPLETE

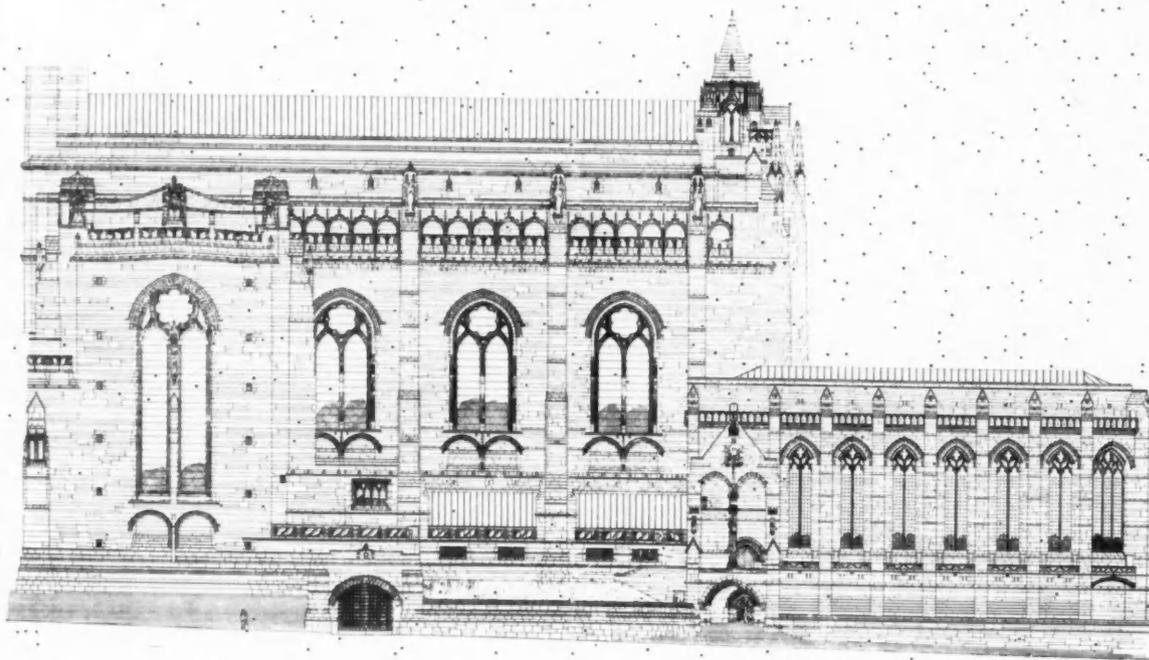
kept the same height as the main arcade arches, and above runs a triforium the same width as the aisles. The walls between the buttresses are therefore no mere screening device, but are roofed and enclose the aisles and triforium. Above this the buttresses are connected by an external gallery, and here, at this level, is a wealth of detail, on such a scale that it can be appreciated from the ground, but contrasting with wonderful effect with the massive, unbroken surfaces below. With such lofty aisles the clerestory has been altogether omitted, and each bay is lighted by a single two-light window in the aisle wall.

In a vast undertaking of this kind, where of course all the money cannot be raised in advance, there are two alternative methods of procedure; the one is to complete the fabric, carrying out the decoration and furnishing as funds become available; the other is to undertake the erection of the building, section by section, each section, however, being complete in every detail. We have recently had instances of the use of both methods. The Roman Catholic Cathedral at Westminster, opened in 1903, presents an instance of use of the first method, Liverpool an instance of the second. There is now completed a little more than one-third of the whole building, including the lady chapel, the chapter house, the choir, the two eastern transepts, and the space between

them, but this portion contains many costly features such as the organ, the reredos, and the great east window. Despite the vicissitudes of a prolonged war, the erection of this great enterprise of faith has marched steadily forward since the laying of the first foundation stone. It is computed that the entire cost will be approximately £2,000,000. The next part to be undertaken is the great central space and the two western transepts. This is expected, without carrying the tower to its full height, to cost some £300,000 and to occupy the next six or seven years. The completion of the nave and the tower will probably take a like period. It must be remembered that in point of size Liverpool Cathedral will be the third largest church in the world, being exceeded only by St. Peter's and the Cathedral of Seville. Its total length is 619 feet, its width 197 feet, and its height to the top of the tower 342 feet. But it was never the ambition of those who originally promoted the scheme to aim at mere size. One of the requirements was for a large, open space in which a congregation of 3,000 persons could, on special occasions, see and hear a preacher and join in acts of public worship. This requirement set the scale for the building, which exceeded in size the anticipations of the committee. Nevertheless, they decided that even such a vast and costly building was



Choir Stalls, Liverpool Cathedral



Elevation, Eastern Portion, Liverpool Cathedral

within the resources of the diocese, if its erection cost were spread over a sufficient number of years.

A red sandstone has been used throughout, giving a rich, red glow to the internal and external surfaces. If the success of a building is to be in any way measured by the quality of the emotions to which it gives rise, Liverpool Cathedral is an undoubted masterpiece. The entrance at present is through the temporary screen wall at the west end. No sooner has one entered than one is overawed by the superb majesty of the place. The lines of the great piers soar up unbroken to the vaults, losing their sharp outlines in the dimness that the vast place encloses. The climax of the vista is the great reredos, constructed of the same red sandstone and thus becoming an integral part of the structure and not a mere adjunct. Like brightly colored threads in the texture of a tapestry, the intricacies of the rich ornamentation concentrated here and there run through the whole design, all contributing to a deep emotional expression of exultation and serenity. Liverpool Cathedral would tend to confirm another abstract theory, that architecture is, at its best, the outcome of the union of emotion and intellect. Fused into it are the finest emotional qualities, but they are wisely tempered by a supreme intellectual control. All this and much more one becomes aware of as one first enters and allows the mind and the senses to react to the full and overwhelming beauty of the place, dispelling once and for all any doubts that may exist as to the capabilities of this age to produce a building equal to the greatest structures of the ages past.

A modern building, just on account of our in-

creased knowledge, is necessarily more complicated than similar buildings which preceded it. A great deal of care has been devoted to such subsidiary matters as heating, ventilation, fire prevention, and lighting. For the heating a combined system of warm air and hot water with an accelerated circulation has been adopted. With this system the heat lost through windows and at similar places is made up for by local hot water pipes and radiators; the remainder of the heat is provided by warm air stoves. On account of the height of the Cathedral and the elevation of the site, special electrically-driven pumps are installed to supply the fire hydrants. Among its electrical equipment is included electric vacuum cleaning apparatus; equipment is of the most advanced type. And so this stupendous undertaking proceeds steadily forward to its ultimate completion, 15, 20 or 25 years hence. The characteristics of this age, we are told, are cynicism, flippancy, and vulgarity, but of these there is never a sign in Liverpool Cathedral. Is this an indication that the building is false to its period? We think not, for are not these qualities, painfully in evidence as they undoubtedly are just now, superficial? Underneath the soul of man is striving toward better and nobler things. Liverpool has now become the gateway to England. As the great ships draw close, those upon them will see this majestic, glowing pile pinnacled above the city, a visible testimony of the fundamental nobility of mankind; an expression, as magnificent as any that he has ever erected, of his faith. A cathedral is, or at any rate should be, an always visible symbol of truths which are themselves unchanging and eternal.

# The Women's Athletic Club, Los Angeles

ALLISON & ALLISON, Architects

By MARGARET CRAIG

THE Women's Athletic Club of Los Angeles is one of the most recent buildings designed by Allison & Allison, and is a splendid example of a happy combination of beauty and utility. To understand sympathetically the needs of a group of people, whether it be a club, a church or a school, and to express in a suitable building the unified architectural consciousness of the organization with dignity and with spiritual feeling, combining the various departments of the organization into a functioning unit of satisfying comfort, is not an easy task, but here it has been done with comprehensive skill. Every need has been given thoughtful study.

The structure has been built in the business section of Los Angeles, and is owned and used by a large number of women who find it a convenient center for civic and social activities. In the midst of a rapidly growing city, it has indeed become a quiet haven where several hundred women are permanently housed, where congenial women gather for acquaintance, for entertaining of friends in small parties, and for the reception of guests from other

cities. The activities of the club determined the general first-floor plan of the building, which consists, in brief, of a rather formal entrance, including a vestibule; a large inner hall, used as a place to receive friends; the telephone exchange and information desks on one side, and the elevator shaft on the other.

A foyer on the second floor opens into the spacious lounge, into the dining room, and into the offices and dressing rooms. Above this social section are four floors of sleeping apartments, separated completely from the activities of the part of the house open to the more active interests of the club. The roof is reserved for tennis courts, while the lower southwest corner of the building is occupied by athletic rooms, which include a Pompeian swimming pool and a gymnasium. The French doors of the lounge open upon a walled garden which is overlooked by every window and door on this side of the building. The structure itself is of solid concrete, monolithic in type, and is covered with a light coating of warm gray stucco, applied in such a way as to permit the form marks to remain in evidence. The



Women's Athletic Club, Los Angeles

best period of palatial architecture of the early Italian Renaissance was drawn up for the greater number of the details used in the ornament of the building.

Since it is a club for women, and has a specific mission to fulfill, a definite feminine touch has been bestowed upon the details of construction, as in the fenestration as well as in the pediments over the lower row of second-story windows, in the sgraffito work on one section of the facade walls, and in the delicacy of the majority of the pillars and arches. The use of sgraffito on a modern building is not common, but when applied with skill, as it is on this women's club house, it becomes an outstanding feature and an unusual form of enrichment. Sgraffito is an ancient form of art that was practiced particularly in the fourteenth and fifteenth centuries. Russell Sturgis gives as a definition: "The scratching or scoring of the surface, as of fresh plaster, with a point to produce decorative effects. Sometimes, in plaster work or pottery, the scoring is done so as to reveal a surface of different colors beneath. The process is sometimes carried far, even to the decoration of large wall surfaces." In this instance, the color that has been revealed beneath the darker material is of a reddish tinge, a color that corresponds excellently with the tufa stone used in the balustrades, the pillars, and the lower stone walls of the building.

It would be interesting to analyze the fine piece of consistent design appearing in the exterior of this building, which is a departure from the usual monotonous, rectangular elevations that are usually employed in business structures. Here one perceives in the obvious division of the exterior a genuine indication of the functional departments of the interior. The stone entrance, arcaded with three arches, is

flanked on either side by groups of shops, a source of revenue to the club. Thus the entire first floor is more formal and allows the actual club quarters to begin on the second floor. This suggested division is accented by a picturesque balustrade extending over the west group of stores and at the base of the garden wall, forming a logical outlet from the garden. The second and third stories are used for social activities, and this function is perhaps indicated by the graceful balcony extending over the three entrance arches which also form a dividing line between the two parts of the building; and by the sgraffito ornamentation which is spread over the broad rectangular spaces between the window openings. The wing at the right is closely tied to the main building by the parallel cornices, and is used for the business offices. It forms an attractive design by itself, with its window shutters, the grille over one window and the line of dark openings in the wall of the third story screening an awning-sheltered balcony.

At the left of the sgraffito-decorated section is the second story garden, the wall enclosing it suggesting by its simplicity and height the seclusion of the gardens belonging to Italian villas. The balustrade, which also serves as a fire escape, leads to the outer exit of the garden. In this manner the architects have beautified the necessary structural features which so often are discordant notes in a general scheme of building, and which frequently destroy its harmony.

A simple broad cornice separates the social unit from the four stories of sleeping apartments above. The walls here are of plain texture, broken only with the unvaried, rhythmic lines of dark shuttered windows. This arrangement affords an appropriate expression for the exterior of that portion of the club



Dining Room



Garden Court

house. Just beneath the gabled red tiled roof, topping the entire building, are the three groups of arcaded openings that beautifully balance the first-floor loggia. The upper loggia is used as an outlook for a view over the widely extended, outstretched city.

The central arch of the ground floor loggia forms a frame for the vestibule, suggesting the charm of the club house, since it has a painted ceiling and potted shrubs that contribute softening lines. The handsome carved doors swing open into the main hall that is constructed with three different ceiling levels graduated in height so as to give a feeling of distance and to suggest a division of room space without the use of walls which would divide the area.

As has already been noted, the first division of this floor is into the areas for elevators, telephone booths and information desk. The next division is used as a reception room, where guests are announced and inquiries are made. A tall Gothic bench together with a few formal chairs facing the main doorway reflect the dignity of the room. The ceiling here is formed by exposed cement beams painted with rich colors in conventional design. The third division of this hallway has a lofty ceiling and includes the easily rising stairway. This arrangement naturally forms a little open sitting room or nook at the right of the lower group of stairs that is very cozy with a deep couch, easy chairs, reading lamps and desks. All of these rooms are carpeted with heavy golden rugs that blend well with the carved furniture and with the wrought iron lanterns.

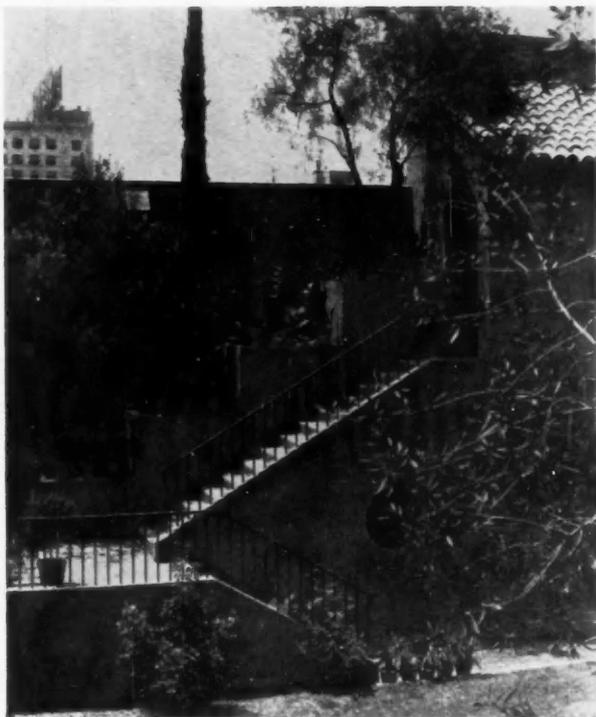
The second story is devoted to the social activities of the club. The ample stairs rise easily to the lobby which opens into the lounge on the left, into a writing room on the right, into the large dining

room on the west, and into the business offices and directors' room at the head of the stairs. This second floor is manifestly the heart of the building and centralizes the important activities of the organization.

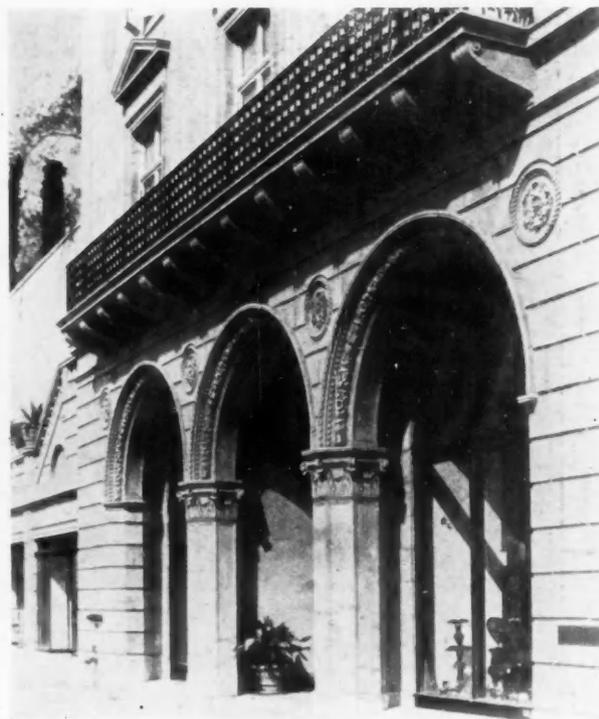
The lounge is extremely spacious, the tall ceiling adding height. The furnishings are grouped about the fireplace, near the piano close to the windows, and in several corners. The architects have so planned these social rooms that are used for general visiting, for receptions and for recitals that there are smaller connecting rooms, such as the cozy library with fireplace, including little nooks, a silence room that always proves a boon, and a card room on the balcony, with a window overlooking the lounge. These minor details of design bespeak an understanding of human nature, as a builder must be sympathetic with the whims of groups of people who like to be a part of a crowd of people and yet be semi-isolated. The stairway that leads to the balcony card room is quite picturesque, and is in harmony with the furnishings of the room, the chairs and tables Chinese red, the hangings of black, red and yellow. A small dining room is also included.

The main dining room extends across the southern portion of this section of the building. Its ceiling is lofty and beautifully painted; the windows are tall and rather narrow and hung with golden brown curtains, tied back with heavy cords. At one end of the room is a large buffet, and tall candelabra of wrought iron are symmetrically placed on either side of this heavy piece of furniture. At the other end of the room is the plainly constructed stairway, an actual necessity that has been made a thing of beauty.

Perhaps the most unusual part of the club is the second-story garden. The broad French doors of the



Stairway in Garden Court



Detail of Entrance

lounge and of the smaller dining room open directly upon this refreshing space of outdoor beauty, in reality a very integral part of the general structure. It is quite amazing how a substantial garden of broad proportions could be made of practical value so far above the street level, and could be so cleverly and skillfully furnished with trees, shrubbery and garden seats. The foundation of the garden is the same as the structure for any tall, modern building, a comforting assurance for those who might doubt its stability. Its architectural setting is indeed most charming. It is interesting to note that the ornamental balustrades, picturesque arcades, terraces and stairways accented with pillars and railings of tufa stone, are all functioning, and are not applied as mere features of embellishment. They are all structural.

Miss Florence Yoch, the landscape architect, was called upon to plant the garden, and she used as a type the gardens of northern Italy, since these are known to be more simple and naïve than those around Rome. Her endeavor was to maintain continuously an atmosphere of age and delicate reserve, and she found Italian material more suitable. She used the cypress for height and the gnarled olive trees to furnish a thin screen of lacy pattern so as not to cut off too much light from the neighboring rooms. Another reason for the choice of these trees is that both varieties can easily be transplanted, and are capable of withstanding the winds of the second-story exposure. The main part of the garden is carpeted with grass. The use of color in the garden is confined to the flowering plants, which are changed according to season. Rose vines, wistaria and ivy are trained against the walls. Oleander, fragrant olive, boxwood and myrtle are used at the borders of the lawn.

Each of the wall treatments of this beautiful Tuscan garden forms an individual pattern of architectural design of lively color and decorative line. The wall of the building is broken by an arcade balustrade that parallels the ceiling lines of the lounge of the interior. The tufa stone pillars that uphold the arches are of a pastel pink that blends exquisitely with a wall background of vivid blues and luminous yellows. The stairs that lead to the arcaded balcony above the terrace on the south side of the lawn have a landing a few steps above that extending into a corner garden retreat. This is made very engaging with stone benches and seats, all partly hidden by a leafy bower of shrubbery and olive trees. Miss Yoch says that one day she playfully pictured some olive trees walking right up the steps to the second-story arcade. As a consequence, she planted several trees along the stairway, and they were found to thrive as well as they do in Italy, often in the most unpropitious places. The arcades on either side broaden out into a terrace on the north exposure which forms another retreat and adds one more to the comfortable details of the club house. A brightly colored awning is swung over part of this upper terrace and gives a touch of gaiety to the setting.

Thus every part of the club house has been logically united to the whole plan, and from every corner there is some view of a variety of fine architectural details, arched openings, colonnades and alluring corners in which to meditate or converse. The building is an expression of the finest and most romantic period of domestic architecture, fittingly adapted to form the home of an active group of women who are furthering the improvement of the social and civic usefulness of their community.



One Corner of the Garden Court

# House of D. C. Prince, Esq., Schenectady, N. Y.

THOMAS HARLAN ELLETT, Architect

IN the design of the house in Schenectady, which we have under present consideration, the architect, Thomas Harlan Ellett, has done two things. First of all, at the very outset he has shown very plainly a regard for local precedent in casting the contour of his masses and determining the broader characteristics of style; then, in the second place, he has stamped the finished result with the clear impress of a distinctly individual interpretation.

Before entering into an examination of any of the particulars of style, however, it will be to the point to note in a general way the more conspicuous features of the fabric, indicating the materials and the manner of their use. The walls of the north or entrance front, and those of the south or garden front, are of stucco worked down to a fairly smooth surface, while the walls of the gable ends, at the east and west, are of common brick whitewashed. The eastern extension for the service quarters and the garage is stuccoed and whitewashed below, with quoins formed of unwhitewashed cement blocks, and a shingled gable end above. Cedar shingles cover the roofs and are also used for the walls of the upper story of the south front. Such are the materials used.

Inasmuch as the house stands in the heart of the region with which the early Dutch settlers of New York were closely identified, a region where ingrained Dutch traditions still manifest their wonted vitality, it was quite natural to fix upon a Dutch form of architectural expression as long as no other specific preference was to be taken into account. Indeed, a Dutch mode would be the first thing suggested by the imagination in shaping the initial stage of design. The Dutch Colonial type is not only indigenous to the spot in its development but it has also shown itself through many generations to be eminently fitted to the local conditions of climate, conditions which demand sturdy structure, compactness and warmth to withstand the rigors of winter weather and, at the same time, a general scheme of arrangement

that will ensure airiness in the heat of summer. The old Dutch colonists, unconsciously it may be but none the less certainly, developed such a type of house under stress of circumstances and in the light of experience. To have overlooked or disregarded the claims of this type would have been a foolish denial to the promptings of the imaginative faculty as well as a negation of common sense in house designing.

Outwardly the house conforms in appreciable measure to the gradually evolved precedents that marked the later phases of the American Dutch house,—enough to indicate the source of its derivation so far as its general lines and contour of mass are concerned,—but the indications of ultimate ancestry do not extend to the treatment of the windows, the use of an overhang, the introduction of a balcony, the employment of quoins, or sundry other features that enter conspicuously into the composition to contribute very materially to its strongly individual aspect and, to evidence the originality of its conception. With reference to these items of design and construction, the architect has exercised the liberty of interpretation and interpolation in the light of circumstances and personal choice. To such a course there can be no possible objection advanced, except on the part of archaeological purists to whom architecture is not a living organism but a dead letter, and who would suppress initiative and invention, stifle all healthy, legitimate growth, and kill the very traditions they profess to hold in such reverence. Good archaeology is one thing; mimetic triviality is entirely another thing.

In the matter of materials, there has been perhaps a closer adherence to Dutch Colonial usage, although here again tradition has served the purpose of suggesting background and has not figured as a rigid, prescriptive canon to shackle freedom of action. The Dutch builders were invariably opportunists in the choice of the materials they employed in the course of construction. Stone, weatherboarding, stucco, brick,—whatever came readily to hand and filled the



Main Facade, House of D. C. Prince, Esq.



Entrance Detail

needs they had to meet,—they used without scrupling about the dictates of established custom. Consequently, they produced the many fascinating and varied combinations that we now sincerely admire. In this Schenectady house the use of varied materials in combination is not only perfectly logical but agreeable and, in point of texture and color, the results are notably happy. As to texture, the white-washed brick walls of the gable ends call for a word of commendation, while the juxtaposition of uncolored cement quoins and white stuccoed walls in the garage and service wing is a bit of pleasant ingenuity. Incidentally, such engaging conceits as the wren house atop the gable of the garage, the carved oak lintel of the house door, and the boldly contoured oak brackets beneath the overhang, all add their share of interest and accent to the ensemble in which diversified materials and textures are such appreciable factors.

Inwardly, no following of Dutch Colonial precedent in-plan can be discovered, for the very good and sufficient reason that there was no precedent of plan, save the precedent of absolute independence and license to do whatever each builder found would best suit his own convenience. In this respect, perhaps, the architect may be said to have followed Dutch Colonial precedent completely, for he has adopted a plan economical of space, comfortable, adequate in pleasant exposures and light, and instinct with informal domesticity. Such were the qualities of plan in the old Dutch Colonial houses with their endless diversity and what often seems to us their fortuitous



View of House and Garage of D. C. Prince, Esq.

arrangement, and such is the quality of plan of this modern Schenectady house which is being considered.

It is plain by now in what manner the architect has done the two things it was said at the beginning of these paragraphs that he had done. It remains to say, however, that in his doing of them he has added one more item to the increasing total of the same and wholesome development of domestic architecture in America. This contribution he has made not so much by the design of the particular house here being considered—whatever its individual merits may be—as by the spirit in which he has created the design and the principles manifested in its working out. He has quite obviously not disregarded tradition and precedent. Had he done so, the contour of the house would not have been reminiscent of the dwellings built by the Dutch colonists and their descendants; there would have been no white pine staircase with balustrade of engaging design, nor would there have been the admirable pine paneling in the dining room, fashioned in an early New England manner. At the same time, he has not refrained from exercising his imagination very actively in departing from local precedent by introducing features that never had any association with Dutch Colonial architecture,—such, for example, as casement windows, the balcony on the garden front, the overhang with its shaped oaken brackets, or the wren house surmounting the gable of the garage. He has also exercised his imagination in combining in one composition various features of widely divergent origins. The design of the



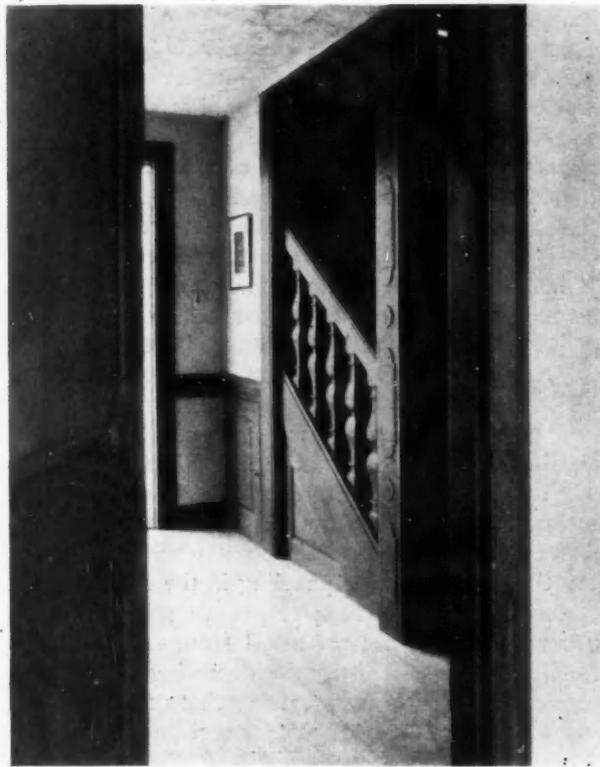
Dining Room



Living Room



Detail, South Front



Entrance Hall and Stairs

balustrade for the staircase is an adaptation from an Italian prototype; the raised and shaped panels that appear on the newel post are distinctly of seventeenth century Bolognese character; the oak brackets beneath the overhang belong historically to seventeenth century England or New England; the dining room paneling finds its prototype in early Connecticut work; and some of the casements are French in their derivation. Other instances might be cited of freedom exercised in the important matter of design.

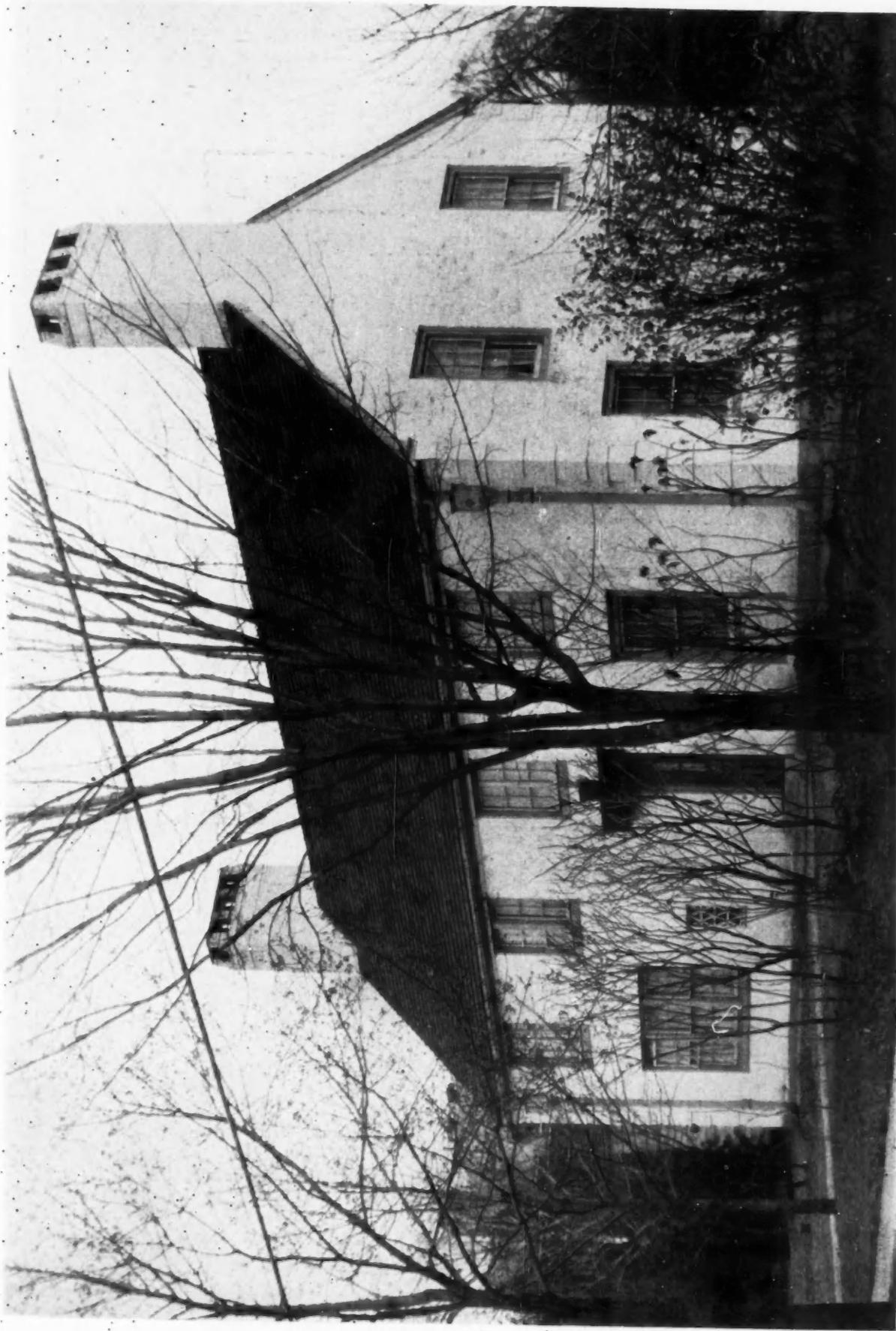
In this departure from strict precedent and introduction of incidents drawn from widely different sources, imagination has been brought into play, but imagination has always and everywhere been tempered with common sense and discretion. Knowledge of precedent, respect for tradition and discernment in judging when and where it is expedient to depart from them, on the one hand, and imagination guided and tempered by common sense and an appreciation of the fitness of things, on the other—these are the fundamental elements of the truest and most fruitful originality; these are the qualities that have contributed most to the vitality of the best modern domestic architecture in America and that have given it preeminence above architecture of other countries.

There are several factors always militating against the growth and continuance of such vitality. One of them is imperfect knowledge of precedent and the blind adherence to only a part of tradition, exalting it to the position of a sort of fetish, until design becomes a perfunctory, ossified thing, stupid to look at and so hopelessly inelastic that it is utterly incapable of any freshening variation or of adaptation to the

demands legitimately made upon it. Of this sort of thing we have an apt illustration, often too painfully evident, in the Georgian or so-called "Colonial" manner as it finds expression in the work of certain architects who are culpably content with a superficial knowledge and an unworthy, inadequate conception of its flexibility and resources. By way of Nemesis for this sort of thing, there are plenty of people to be found who are willing to entrust a moderate-sized Georgian house to a building contractor, without calling in an architect, because they feel that plan, design and details are all merely standardized routine matters to which architectural skill is not necessary.

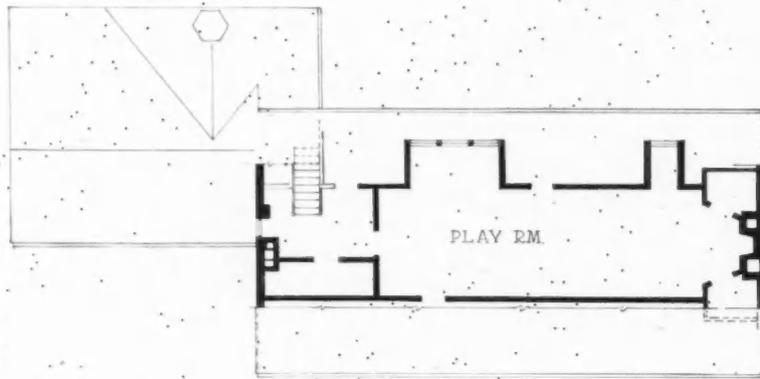
The other factor prejudicial to vitality is the deprecatory attitude so frequently assumed toward the faculty of imagination. Exercise of imagination on the part of the architect is only too likely to be looked upon with grudging tolerance and shamefaced concession, as though it were a thing to be guarded against and mistrusted. It is all right, apparently, for an engineer to draw freely upon his imagination in conceiving bold schemes for viaducts, canals or bridges; but an architect's imagination, by some strange process of reasoning, it seems, ought to be bottled up. As a matter of fact, the part imagination ought to play in the work of an architect cannot be too strongly emphasized, nor its rightful place too insistently asserted,—so long as imagination goes hand in hand with common sense in house-building.

In view of this comment, it is gratifying to note the evidence of a wholesome, constructive point of view displayed in the design of this house at Schenectady in entire accord with its surroundings.

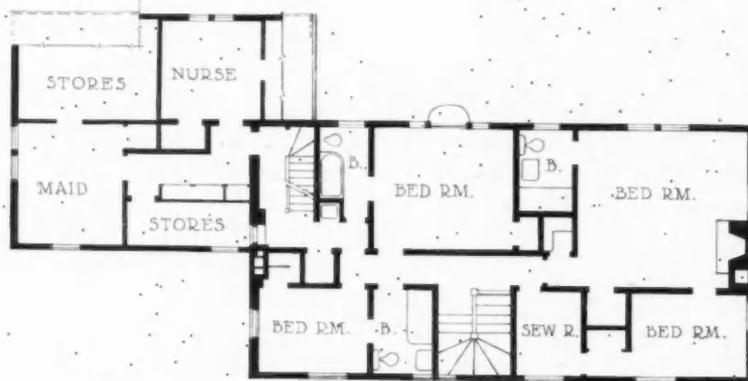


*Plans on Back*

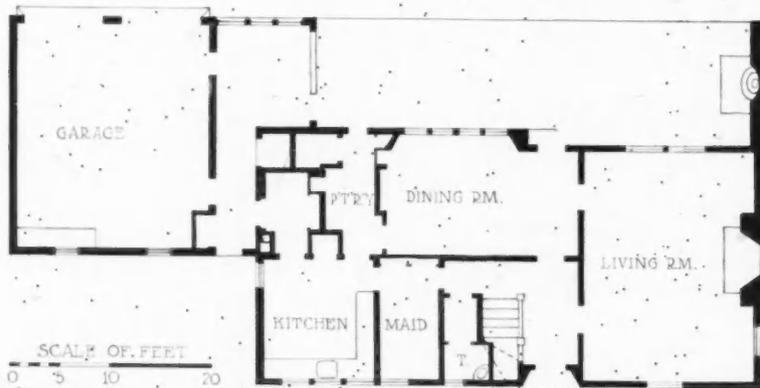
HOUSE OF D. C. PRINCE, ESQ., SCHENECTADY, N. Y.  
THOMAS HARLAN ELLETT, ARCHITECT.



THIRD FLOOR



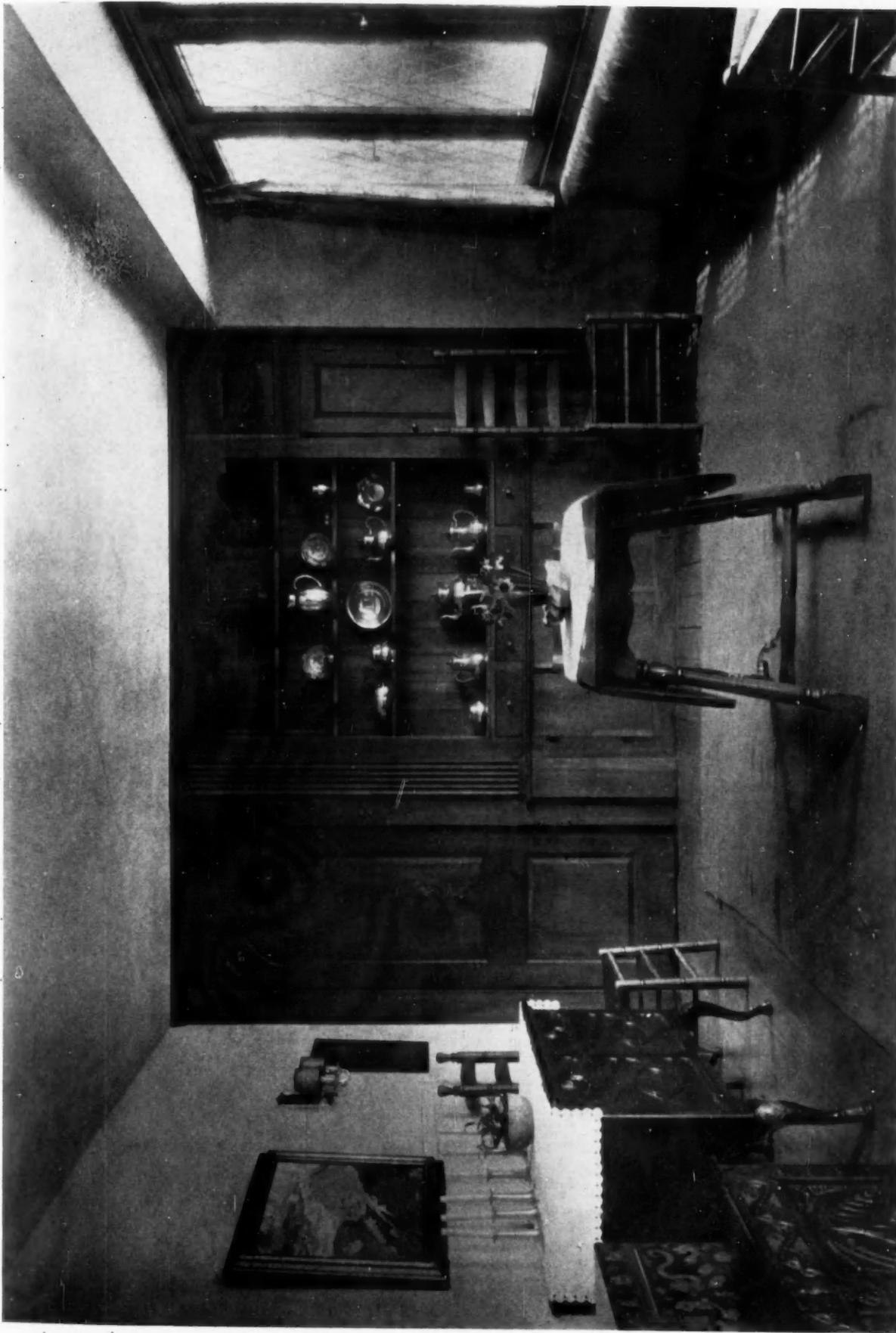
SECOND FLOOR



FIRST FLOOR

PLANS, HOUSE OF D. C. PRINCE, ESQ., SCHENECTADY, N. Y.

THOMAS HARLAN ELLETT, ARCHITECT



DINING ROOM  
HOUSE OF D. C. PRINCE, ESQ., SCHENECTADY, N. Y.  
THOMAS HARLAN ELLETT, ARCHITECT





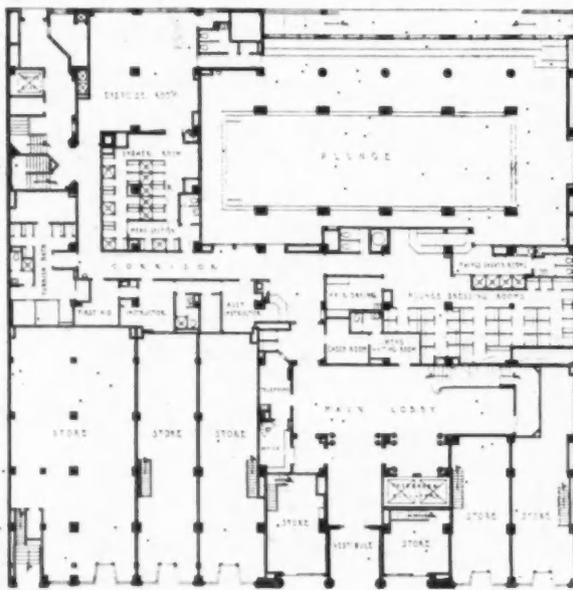
*Photos. Margaret-Craig*

WOMEN'S ATHLETIC CLUB, LOS ANGELES.  
ALLISON & ALLISON, ARCHITECTS

*Plans on Back*



A TYPICAL UPPER FLOOR



FIRST FLOOR



SECOND FLOOR

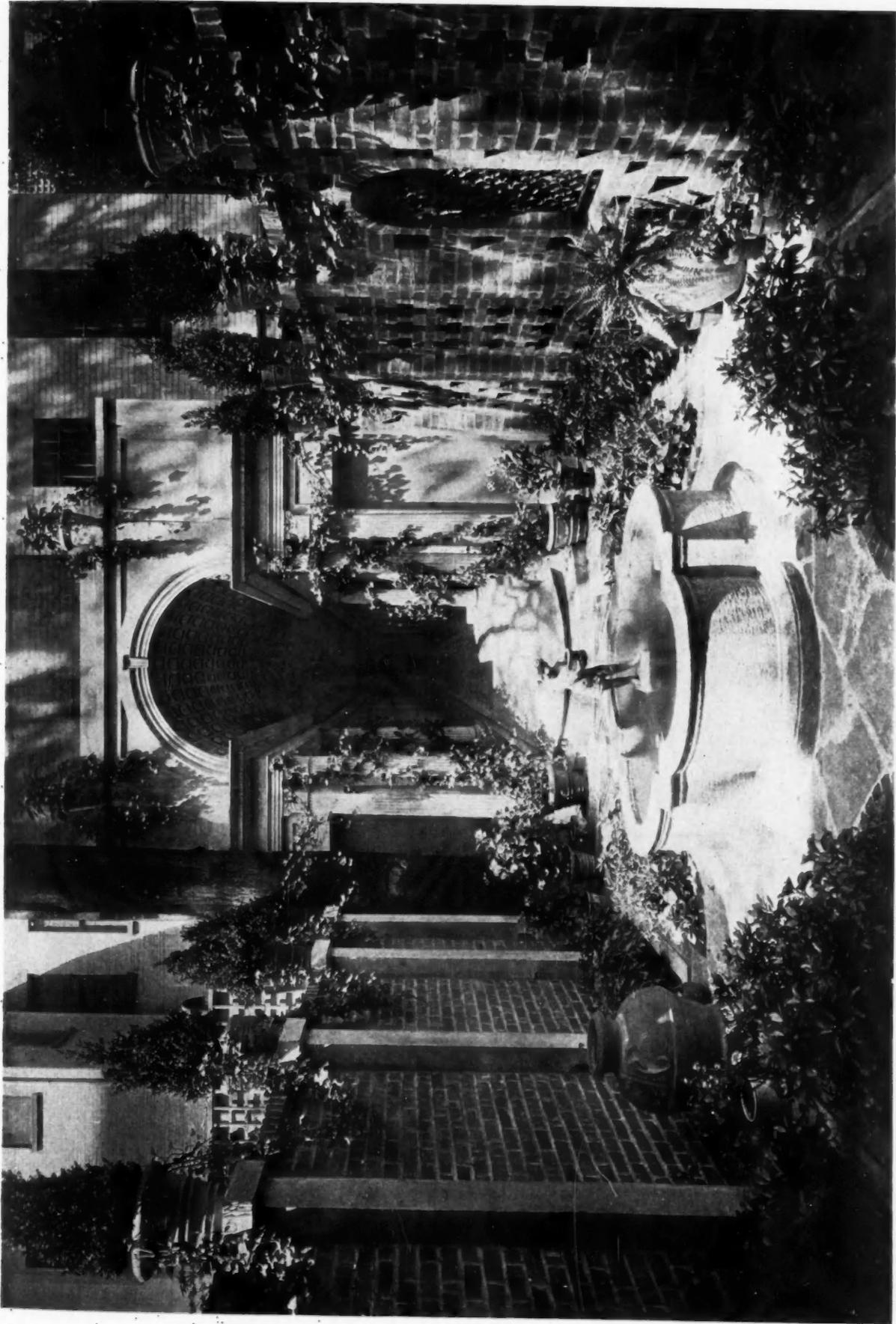
PLANS, WOMEN'S ATHLETIC CLUB, LOS ANGELES

ALLISON & ALLISON, ARCHITECTS



CORNER OF LIVING ROOM  
WOMEN'S ATHLETIC CLUB, LOS ANGELES  
ALLISON & ALLISON, ARCHITECTS.

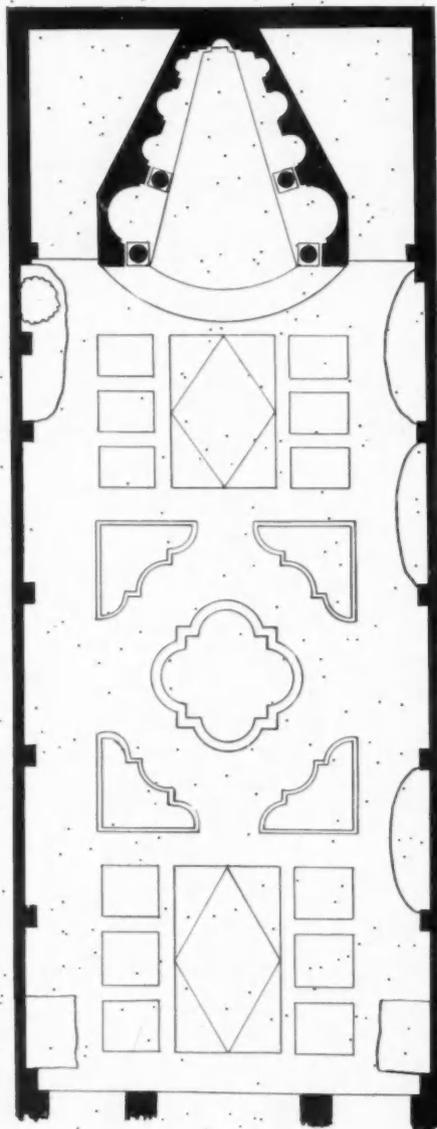




Plans on Back

THE GARDEN  
HOUSE OF BENJAMIN WOOD, ESQ., NEW YORK  
WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT

Photos, S. H. Gottscho



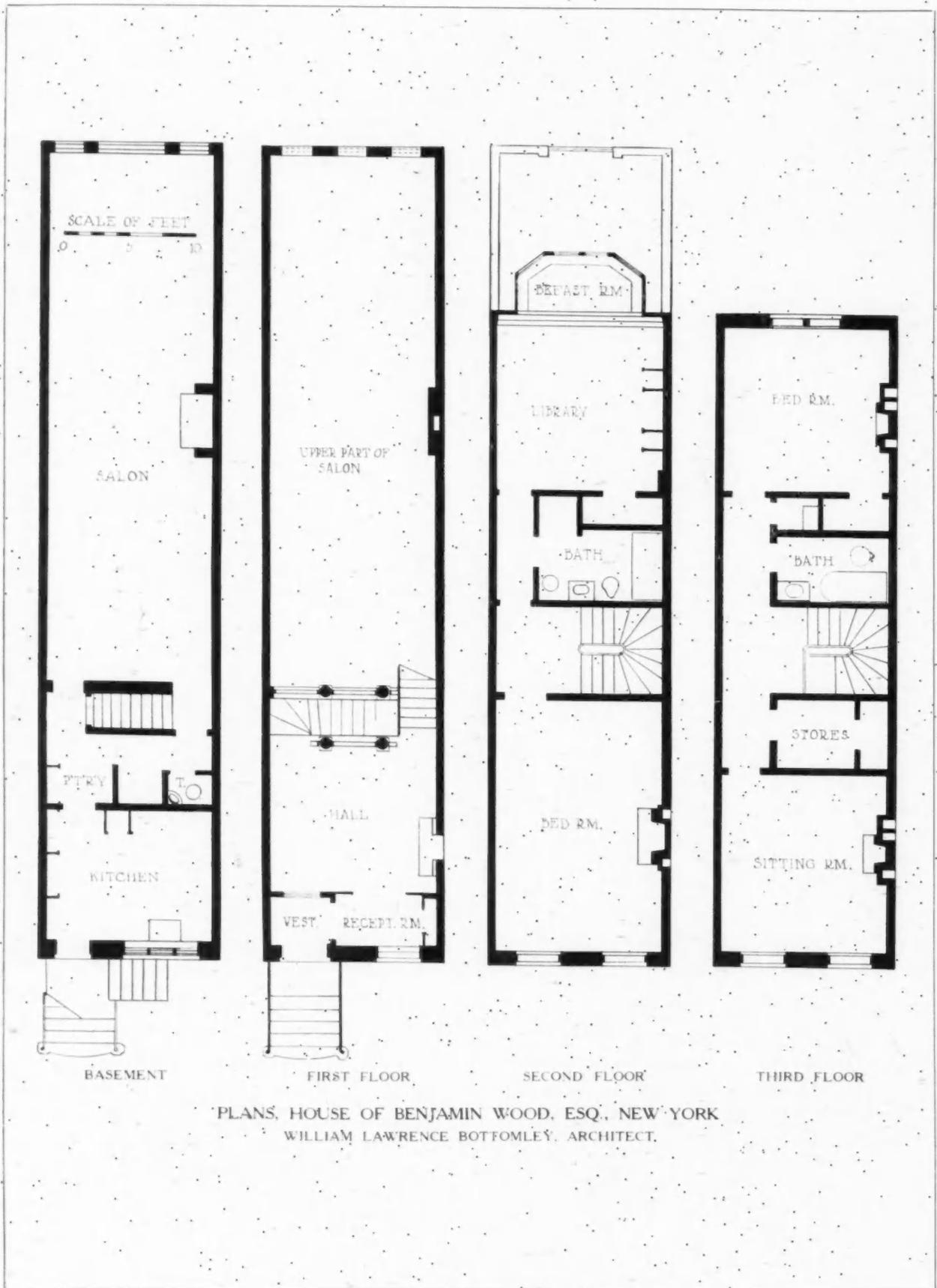
GARDEN PLOT PLAN

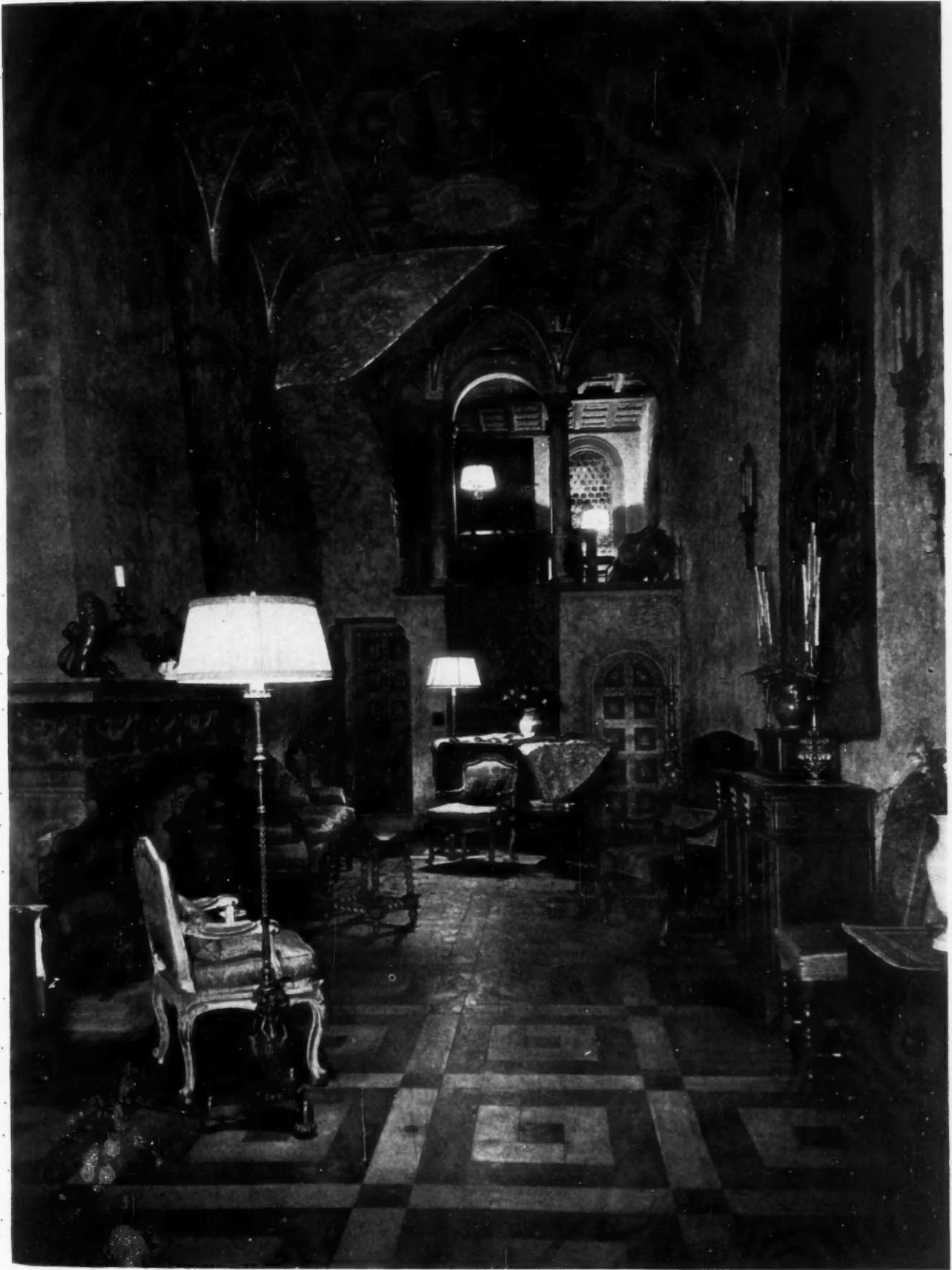
HOUSE OF BENJAMIN WOOD, ESQ., NEW YORK

WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT



ONE END OF BREAKFAST ROOM  
HOUSE OF BENJAMIN WOOD, ESQ., NEW YORK  
WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT





SALON, HOUSE OF BENJAMIN WOOD, ESQ.  
WILLIAM LAWRENCE BOTTMLEY, ARCHITECT





SAL N, HOUSE OF BENJAMIN WOOD, ESQ:  
WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT



# The City House of Benjamin Wood, Esq.

WILLIAM LAWRENCE BOTTOMLEY, Architect

ARCHITECTURAL opportunity is not always to be measured by magnitude, and one architect may design a simple doorway that is a thing of enduring beauty while another makes a botch of a state capitol. Of the reality of this thought, one is vividly and circumstantially impressed by the architectural ingenuity, imagination and taste revealed in William Lawrence Bottomley's remodeling of a narrow city house on 52nd Street, not far from Park Avenue, in New York for Mr. Benjamin Wood. Perhaps architect and owner shared some whimsical regard for the surprises that delight the mind in childhood tales of magic; at any rate, the exterior of the house was left in its original form, expressing or suggesting nothing of what might exist behind its reticent and modest front. The visitor, mounting a few steps, finds himself in a small vestibule, with an arched window of leaded roundels where ordinarily doors would be, and the door itself, also with leaded roundels, at his right. Once within the door, the house begins to declare its triumph of architectural design over literal dimensions. An old Italian grille of wrought iron, with gates, admits to a small foyer which occupies the whole 20-foot width of the house. Through the central arch of a graceful double arcade of three, there is a vista down into the lofty living room beneath. Through the right arch the stairs lead upward, and through that at the left, stairs lead, at right angles with the others, down to the living room floor.

Words could hardly be arranged to convey an exact idea of the sheer ingenuity of design exerted at this point in the house plan, nor would they accurately suggest the extraordinary scale given the living room. The illustrations show the charm and effectiveness of the vistas seen both ways,—looking down into the living room, through the double arcade, and looking back and up from the living room through the same arcade.

The living room has all the appearance of a great hall in an

Italian villa; its color has been kept in an admirably subdued key; there are no errors in scale, and there are no illusions to make its dimensions appear greater than they really are. There is well controlled color in the ceiling, which springs on vaults from corbeled pilaster caps, and the mantel is thoroughly a part of the picture. A paneled door beneath the stairs that lead down into the living room gives access to service quarters as admirably compact and efficient as are those on a yacht,—service quarters, indeed, reduced to a minimum in area, yet lacking nothing in completeness, carefully and economically planned.

Looking toward the garden, a tall, arched opening with French doors is flanked by single windows in a simple Palladian composition, and high above them, incorporated in the ceiling vault, are three small windows of leaded amber roundels given further decorative effect by wrought metal grilles over the openings.

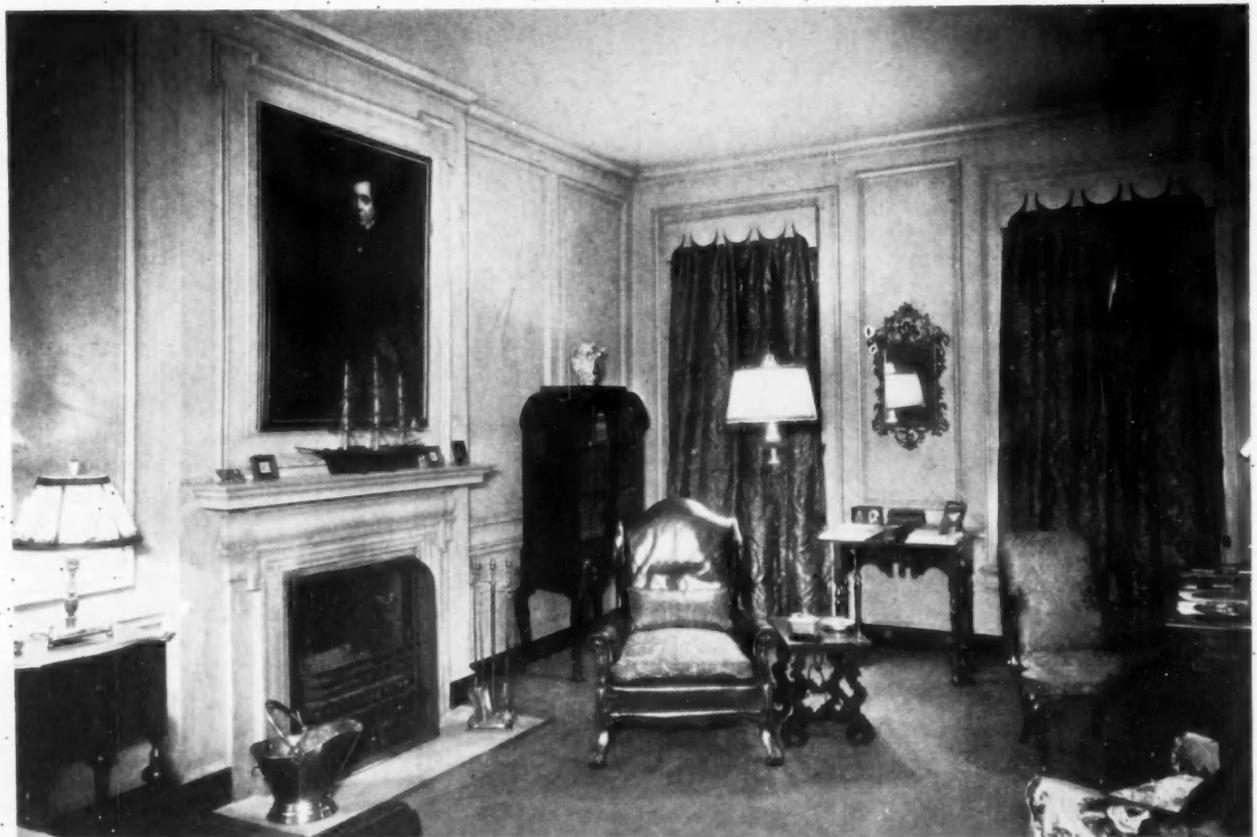
A glimpse through the central opening discloses a miniature formal garden, with flagged walks, brick-bordered flower beds and a lead fountain figure presiding over a basin of gold fish. But it is the back wall of this garden that seems to turn the pages of later-day architectural design back to the day of those resourceful architects of Renaissance Italy—of the designers who knew their architecture so well that they could play with it now and then. Looking at this back wall at close range there is the appearance of a long, barrel-vaulted corridor, running back perhaps 100 feet. It is there, seemingly in tangible, three-dimensional form, but its actual depth is not more than 6 feet. Mr. Bottomley has created an illusory perspective in three dimensions, skillfully counting the capitals of the columns, skillfully diminishing them in size, and skillfully inclining the lines of base and entablature at precisely the pitch to baffle optical detection of his artifice. Recourse to the camera in this instance seems only to heighten the illusion; and facing the actual thing, one undergoes the



Street Facade



ENTRANCE HALL AND GATES



*Photos. S. H. Gottscho*

CORNER OF BEDROOM  
HOUSE OF BENJAMIN WOOD, ESQ.  
WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT



THE SALON



BREAKFAST ROOM  
HOUSE OF BENJAMIN WOOD, ESQ.  
WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT

paradoxical experience of plainly seeing something and at the same time confirming with the same sight the fact that the thing one is looking at does not exist. Endeavoring always to draw conclusions from architecture, this happy and graceful artifice of Mr. Bottomley's leaves one with the thought that perhaps architecture since the heyday of the Renaissance has become too serious and conventional, and that a fear of being accused of doing "stunts" has stayed the hand of many an architect from doing things through the medium of sheer design that would create and stimulate a new interest and joy in architecture among the countless multitudes of people who think that architecture (when they think of it at all) is the dullest and least appealing of all the arts. Why not more bits of design like this brilliant illusion of a long vista? Theatrical? What of it, and why not? Was not a very large part of the work of the architectural genius of Renaissance Italy essentially theatrical? Losing the spirit that dared design and execute such a bit as this interesting vista, architecture has been left with nothing but a collection of forms once used by men who knew how to use them with the brilliant imagination necessary.

Returning to the house, two rooms on the second floor deserve special attention. One of these is the owner's bedroom, which is exactly what such a room

should be,—a quiet, restful room, furnished with a rare perfection of taste. Across the stair hall is a sitting room, done in dull green, its panels framing a set of admirably painted ship-pictures by F. Leo Hunter, beneath a zodiac frieze of silver and delicate colors by Barry Faulkner, who also decorated the ceiling and lunettes in the bay window. Here an array of colorful old glassware adds effective incident. Behind concealed doors, closets with sliding traps afford a surprising amount of storage space, and paneled doors open to disclose a charmingly appointed dressing table for the use of the dinner guest.

Not a few considerations impress themselves upon the mind in examining this very unusual house. One of these is a realization of the power of design to overcome dimensional limitations; another is a fresh revelation of the potency of imagination, coupled with measured skill, in creating illusions which almost become realities; still another is the rediscovery, in the device of the garden vista, of a part of Renaissance genius, supposedly lost. And above all, one cannot but feel that here is a house that resulted from perfect accord between architect and owner,—from a likeness in matters of taste, and from an unrestrained sharing of the vision without which no such charming, unusual and distinguished architectural accomplishment would have been in any way possible.



Salon, from Mezzanine Entrance Hall

# Old Plantation Architecture in Louisiana

## PART II: THE RESULT OF FRENCH AND ENGLISH INFLUENCE

*Text and Sketches by WILLIAM P. SPRATLING, Professor of Architecture, Tulane University*

FEW people know of the "Florida Parishes" of Louisiana and their unique history. Technically, the Florida Parishes were those included in the strip of territory along the Gulf which belonged to Spain at the time Florida was under Spanish dominion and which also included parts of Alabama and Mississippi. They stretched from what is now the Mississippi state line, at its southwesternmost corner, westward to the Mississippi River. They were formed, then, of the Louisiana parishes which extend northward from Lake Pontchartrain and westward to the river, and included St. Tammany, Tangipahoa, Livingston, East and West Feliciana, and several others. At the time of the Louisiana Purchase, which took place only three years after the territory had been ceded back to France by Spain, there was serious misunderstanding as to the status of these parishes. There is said to have been a determined movement among the inhabitants for complete independence, and that they even went so far as to commission an ambassador to Washington. These are simple facts, and it requires no great stretch of the imagination to evoke the stirring scenes that must have taken place in those exciting days. How significant of the diversity of material that has gone into the making of the traditions of this country—traditions from so many different sources!

The Florida Parishes, and the Felicianas in particular, formed the sphere, architecturally, of some amount of Georgian influence. This purely English tradition, as has been noted in the first of these articles, was the result of direct immigration by settlers from the Carolinas. "Waverly" represented probably the earliest and most complete use of the Georgian in Louisiana. Built in 1807 by an Englishman, and in somewhat modest proportions, it still reflects a certain provincialism and closeness to the soil notwithstanding an absolute detachedness from previous Louisiana tradition and in spite of an abundance of sophistication and refinement as exhibited in the classic and Adam-like elaboration of mouldings. "Waverly" is located about five miles above St. Francisville, that charming little town which is perched on high bluffs on the east bank of the Mississippi. A strange contrast is observed between the English "Waverly" on one side of the river and "Parlange Plantation" on the other, where

we find the French and Spanish spirit in colonial work given the simplest and most characteristic expression.

The most peculiar thing to be noted in regard to most of these old houses is that their effectiveness is achieved not by means of an accumulation of architectural fact or detail but in the subtlest and at the same time the most natural way. This simple formula we find clearly and honestly expressed in "Parlange," built in 1815. It is to be rather regretted that this "native" quality is not consistently present throughout this region, and that it becomes apparently somewhat lost sight of during the period just preceding the Civil War. This is the chief criticism to be lodged against "Burnside," a comparatively late example. "Burnside," located about halfway between New Orleans and Baton Rouge, possesses beauty and even some degree of magnificence. The grounds and the house itself are remarkably well kept, and the approach to the building is most effective. In type "Burnside" should probably be classified as distinctively Louisiana only as regards generousness of proportions in planning, the use of French windows, and in minor details, not omitting the two delightful *garconnières* placed symmetrically on either side of the house. Its crowning characteristic details,—the cornice, the dormers and the lantern and of course the "whale walk,"—are all strongly reminiscent of New England. Taken as an example of the old Louisiana plantation, "Burnside" must be considered as rather unique, and this in spite of the wealth of tradition of which it is possessed, accumulated by generations.

Another house which is also unique in point of design is on the estate called "Asphodel." Here, however, we have a house which is more perfectly indigenous to Louisiana. It is a building of rare charm, and was one of the most gratifying discoveries in our ramblings in search of material. Located vaguely some 38 or 40 miles above Baton Rouge and near St. Francisville, it is approached through a particularly wild stretch of virgin forest, and the road as it now exists winds up at the rear. The effect obtained on that side is of a tremendously broad reach of veranda with typical slender swelling colonnettes supporting the wide expanse of leisurely sloping roof. The front presents a sharp contrast. Here the main body of the house emerges daintily in the center, and a second



"Oak Grove," Near St. Francisville



"Rosedown," Near St. Francisville

story appears as evidenced in the two graceful pedimented dormers and the gable windows. The wings, with their little two-columned porticoes and classic pediments, give one the same feeling of quaintness as do some of the old Virginia manor houses. There is a remarkable purity as well as charm about it.

In the vicinity of St. Francisville are to be found several other examples of importance. Notable among them are "Rosedown" and "Oak Grove." The latter is a charmingly unpretentious house in which

both French and English influence may be traced. Its most remarkable feature,—and a very clever one,—is the treatment of the porch with its secluded and railed porch proper and beneath it a bricked terrace, the two marked each with its own row of colonnettes. These colonnettes, the inner row slender and the outer more sturdy, are very graceful and pleasing in their manner of clustering and in the contrast of their round whiteness with the tone of the old brickwork. The setting of this quietly informal and home-



"Burnside," Near Darrow

like building is felicitous, to say the least. The gently swelling knoll on which the structure is placed is graced on either side with an octagonal brick dovecote. These little buildings are very French in character, with the wooden upper stories and the corner pilasters adding a very distinctive touch to the ensemble. The actual approach to the building is through a long lane which is banked on either side with a luxuriant avenue of well grown mock orange.

"Rosedown" is almost as romantic and beautiful

as its name. Architecturally there are, of course, characteristics which may not always be found pleasing. In the main body of the house one feels a certain severity and lack of grace. This results undoubtedly from the use for the portico of a superimposed Greek Doric order with no delicacy of detail in the cornice or even in the balustrade to relieve its hardness. The columns themselves have been hewn from solid timber and are well in character. In the wings, which come down to single-story heights, we



"ASPHODEL," NEAR ST. FRANCISVILLE

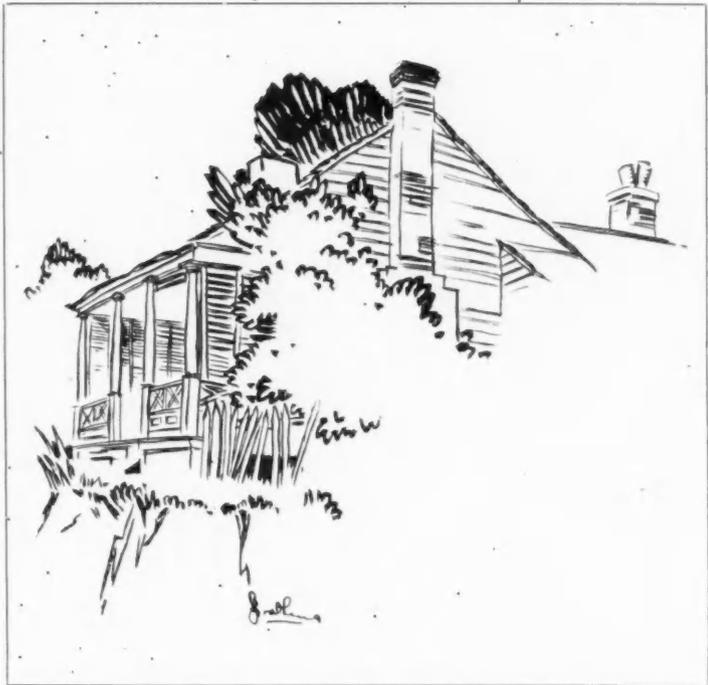


"PARLANGE," POINTE COUPEE PARISH

*Griffin*



ONE VIEW OF "WELHAM"



"OAKLEY," ST. FRANCISVILLE



"WAVERLY," ST. FRANCISVILLE

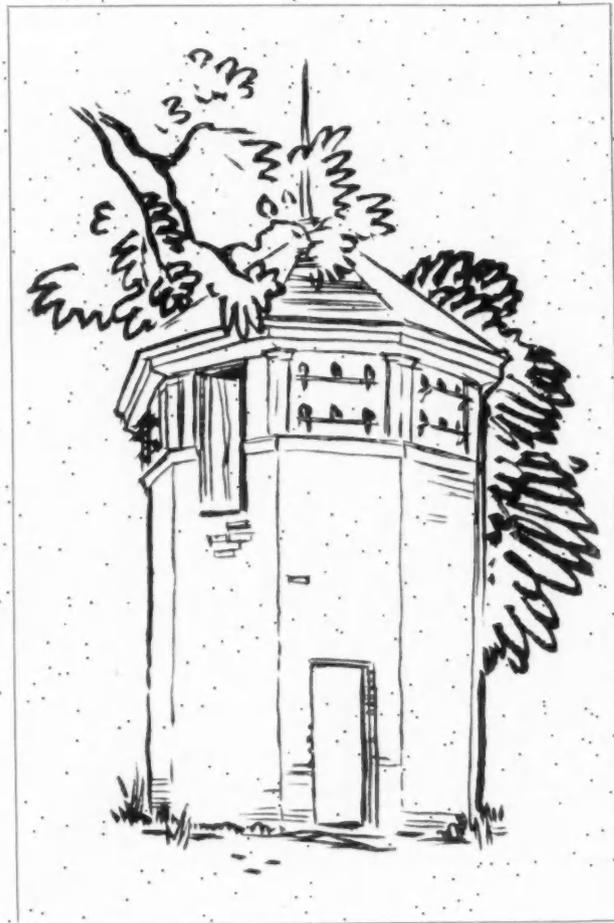
find more intimacy of expression and elegance. The approach is rather splendid, and must have been modeled after the garden architecture of Versailles and the Trianons. There is a certain kinship in the formal avenues with the luxuriant planting and particularly in the placing of many bits of quaintly classic statuary to the work of LeNotre and his contemporaries. It has been done on a very lavish scale, and the result possesses all the suavity and stateliness of the French gardens, together with that rarer quality that comes from proximity to the wilderness. There are many rare plants, with such things as cape jasmine in abundance, and boxwood like a miniature forest that grows 9 feet high. There is a central avenue, and from the front of the house a series of radiating walks and driveways that lead one to all sorts of charming spots. After Weeks Hall's "Shadows of the Teche" at New Iberia, "Rose-down," with its gardens, is probably the finest house of its kind in Louisiana. It is interesting indeed. "Bellegrove," at White Castle on the west bank of the river, forms a most imposing pile. Originally it must have been somewhat pretentious and "citified," or at least such a thought would naturally come to an architect, we believe, in critically surveying this urbane and extensive mass of structure. Time and neglect, however, have softened the lines and made the fine old house colorful. The type is characteristic

of the period just preceding the Civil War. In plan it is semi-formal and spreads in three directions, with a large right wing facing the garden, and at the rear another wing even larger for service, etc. The detail is what makes the building most worth while. It is all executed in the best spirit of the Greek Revival, the plasterwork cleverly modeled and the wood detail, as in the great cypress capitals of the portico, carved in a very spirited manner. Only one or two features of the building tie it in with other Louisiana work of the period. Among those should be noted the use on the facade of typical New Orleans cast iron balcony rails, and in the frieze of the large entablature the insertion of small attic windows such as are found in the old houses on Royal Street.

Today "Bellegrove" is more or less representative of the last of the old plantation days. The weather has stained the old pink stucco in great lavender splotches, and the green moss has entirely covered the walls in parts. Most of the land of the original plantation has been sold, and a wild, semi-tropical growth of vines and shrubbery is slowly creeping up from the garden side of the house. We were delighted with the picture qualities promised by "Bellegrove," but a little bit disheartened at the obvious decay. It was, however, one of only a few of the more important examples seen which are apparently threatened with serious neglect and approaching ruin.



"Bellegrove," White Castle



Dovecote, "Oak Grove"

# THE BUILDING SITUATION

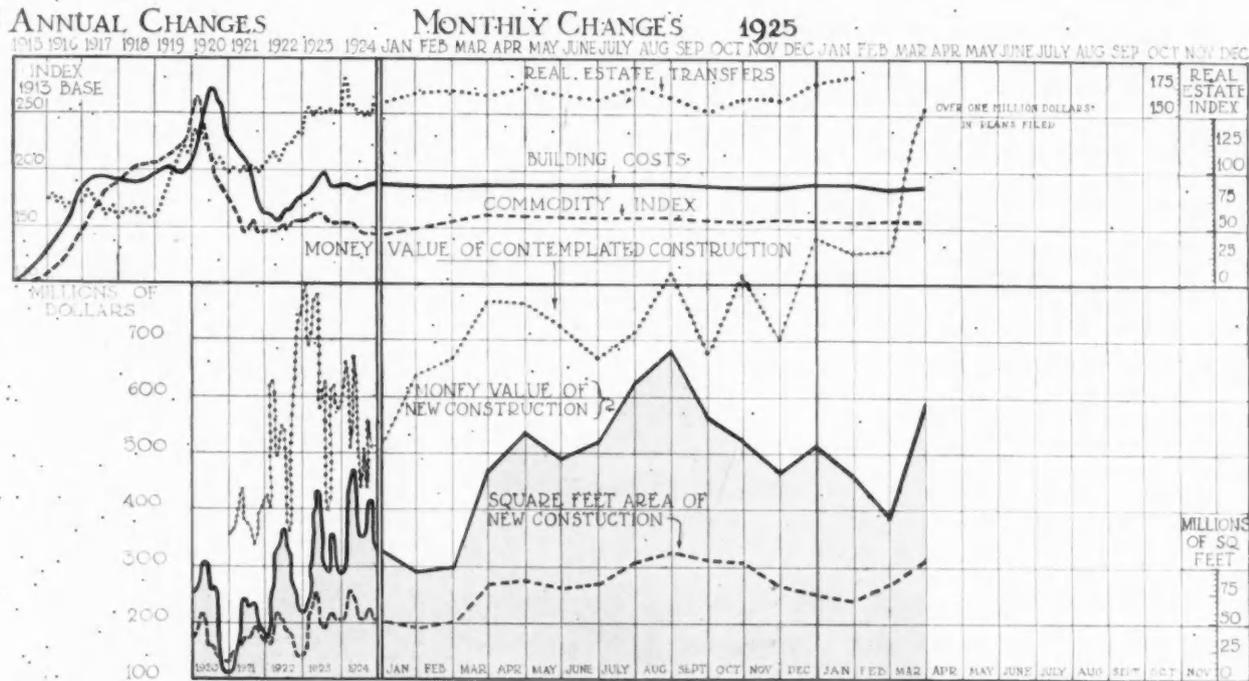
## A MONTHLY REVIEW OF COSTS AND CONDITIONS

**F**IGURES for the month of March, 1926 show a continuation of the record-breaking volume of construction as indicated in this chart. The total value of building and engineering contracts in the country for the month of March was well over \$600,000,000. This amount, according to figures of the F. W. Dodge Corporation, represents an increase of 53 per cent over the month of February and 22 per cent over March of last year.

The total value of contracts let during the first quarter of 1926 is over one and one-half billion dollars, which represents an increase of 30 per cent over the record-breaking figures for the first quarter of last year. It is pointed out that the building boom of 1925 started somewhat later and reached its peak in contract letting during the months of August and September, as will be seen by examining the line showing the money value of new construction on the chart. It is probable, however, that a similar period of large commitment volume will occur during this year as indicated by the amazing volume of contemplated construction shown for January, February and March of 1926 (see chart). Contemplated con-

struction in the form of plans filed during the month of March, 1926 broke all existing records by passing well above the one billion dollar mark—an unprecedented and almost unbelievable volume of prospective building. Approximately half of this proposed construction is in structures of residential types, including dwellings, apartment buildings and hotels. Commercial structures, particularly office buildings, predominate among the other classes of plans filed.

In New York state and northern New Jersey, values of contracts let for new construction during the first quarter of 1926 are over 50 per cent more than the total for the first quarter of 1925. In New England new construction during the first quarter is 4 per cent less than last year. In the Middle Atlantic states new construction is 9 per cent greater for the period. In the Pittsburgh district it is 10 per cent less. In the Central West 10 per cent greater. The Southeastern states show a great increase in activity this year, the increase being 72 per cent over the first quarter of 1925. The Northwest shows a 27 per cent increase for the first quarter, and Texas shows an increase of 47 per cent over the first quarter of 1925.



**T**HESE various important factors of change in the building situation are recorded in the chart given here: (1) *Building Costs*. This includes the cost of labor and materials; the index point is a composite of all available reports in basic materials and labor costs under national averages. (2) *Commodity Index*. Index figure determined by the United States Department of Labor. (3) *Money Value of Contemplated Construction*. Value of building for which plans have been filed based on reports of the United States Chamber of Commerce, F. W. Dodge Corp., and *Engineering News-Record*. (4) *Money Value of New Construction*. Total valuation of all contracts actually let. The dollar scale is at the left of the chart in millions. (5) *Square Foot Area of New Construction*. The measured volume of new buildings. The square foot measure is at the right of the chart. The variation of distances between the value and volume lines represents a square foot cost which is determined, first by the trend of building costs, and second, by the quality of construction.

## Three Types of Stokers for Coal Furnaces

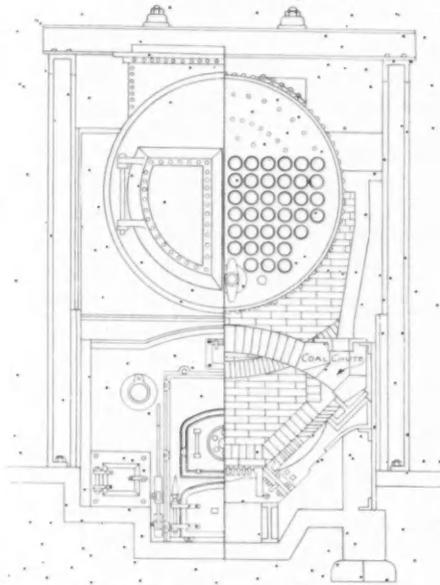


Fig. 41. Side-feed Furnace

*Hand-driven Mechanical Stokers.* When in operation, (Fig. 42) the grate is a plane surface, inclined from the dead plate at the fire doors to about the floor level at the bridge wall. When a new charge of coal is to be applied, the bed is prepared by giving a half throw. This raises the grate bars as shown in the illustration, carrying the coked coal forward. The pull of another lever opens the ash dump to empty the grate of accumulated ashes. By working the grate lever the coal can be moved forward, thickening the bed on the grates to the required depth. Low-fusing ash coal cannot be successfully used with this type of stoker on account of the clinker it would form. Hand-operated stokers are made hopper-fed and hand-fired. With the hopper-fed type the grate blocks are drawn back to allow coal to fall on the front of the grates, where it cokes.

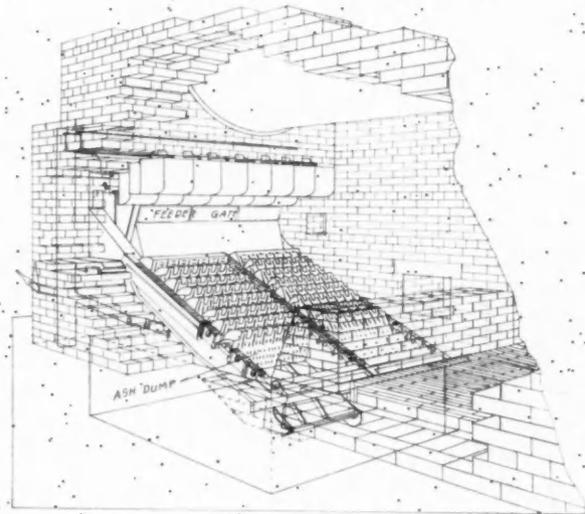


Fig. 42. Hand-driven Mechanical Stoker

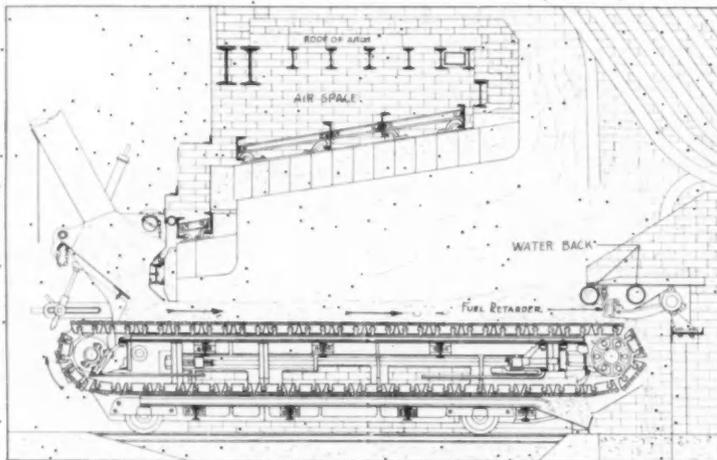


Fig. 43. Chain-grate Stoker

the furnace, so water-cooled barriers which will never become hot enough for clinkers to adhere to had to be substituted. The water back is connected to the boiler, so that all heat absorbed from the fuel by the water within will pass to the boiler.

The steel beams and members which support the arch are enclosed in an air space protected by fire-brick or fire-blocks from the intense heat of the furnace. A fuel box with an arch always has a higher temperature than one without. Exposing the first row of boiler tubes to the radiant heat of the fuel bed gives a lower furnace temperature and greater life to the brickwork. A chain-grate stoker requires for the stoker engine about 30 pounds of steam per hour. This is a more or less fixed amount, independent of the rating of the boiler.

*Side-feed Furnace.* The furnace shown in Fig. 41 is not a mechanical stoker, but as the principle of combustion on which it is designed is the same as for automatic stokers, it might reasonably be called a semi-automatic stoker. Coal is fed into hoppers at each side of the furnace, and by its own weight feeds down into the furnace as required. The coal is coked on the inclined grates, and the volatile gases distilled in the process of coking are burned in passing over the incandescent mass of coal on the horizontal grates below. The incandescent furnace top or arch deflects the heat downward, thereby maintaining a very high furnace temperature, a condition necessary for successful combustion, and which could not be maintained if the arch were omitted and the furnace exposed to the cooling surface of the boiler. The boiler is operated on natural draft. As it is not necessary to open the furnace door for stoking, there is no heat loss from the large amount of air that flows in when a hand-stoked furnace is being fired. This is often a great advantage.

*Chain-grate Stokers.* Power-operated stokers are divided into three classes:—chain-grate stokers; under-feed stokers, and over-feed stokers. A chain-grate stoker is shown in Fig. 43. This type of stoker is independent of the furnace in that it is not built into the boiler setting. It is mounted on wheels and can be set in place or withdrawn at will. It consists simply of an endless chain of grates which move in the direction of the arrows, carrying the coal progressively from the green fuel through coking and combustion of carbon to the ash pit. At the rear of the furnace the traveling grate projects under an overhang of the bridge wall. The problem here is dual, to seal this space against the infiltration of air, and to prevent live or unburned coal being carried away with the ashes. This is accomplished by means of the bridge wall overhang, the water back and the water-cooled fuel retarder. Fire-brick at this point would clinker and clog

# ENGINEERING DEPARTMENT

## Power and Heating Plants

### MECHANICAL STOKERS

By J. J. COSGROVE

EDITOR'S NOTE. This series of articles was begun in THE FORUM for April, 1925, when Mr. Cosgrove discussed "The Generating Plant: Boilers," continuing his treatment of the subject in the issues for August and October. In the November FORUM, Mr. Cosgrove wrote of "Commercial Types of Boilers and Furnaces." One article following the present paper on "Mechanical Stokers" will conclude the series.

**M**ECHANICAL stokers are indispensable in large plants using coal for fuel, from the standpoints of economy, efficiency and capacity to carry heavy overloads. Mechanically-stoked boilers are more nearly smokeless in operation than are hand-fired boilers, and generally smokeless combustion means more efficient combustion.

Cheap fuels, which are usually inferior fuels, can be burned on stoker grates when they could not be successfully used in a hand-fired furnace. This makes available local fuels, such as screenings; coal high in moisture; high in ash; high in sulphur or iron; and some grades of lignite, particularly those containing not over 30 per cent of moisture. While it is true that mechanical stokers will burn all kinds and grades of inferior fuels, all stokers will not burn every kind of low grade fuel. Some stokers are designed for anthracite and coke breeze. Others for high grade bituminous steam coals. Certain types require coal high in ash content, so that the ashes will protect the grates. Mechanical stokers are built for the burning of mine refuse or "culm" containing as high as 30 per cent of ash. Semi-bituminous and semi-anthracite are the fuels for still other stokers. Coal with a low-fusing ash cannot be burned on grates which agitate or disturb the fuel bed, as it will cause clinker, so every plant being designed must have selected for it a stoker designed for the fuel it is intended to use. Free-burning coals burn best when the fuel bed is undisturbed. Coking coals, on the other hand, require fuel bed agitation. High ash coals must have the ashes removed continually from the grate. In low ash coals this is not necessary. Clinkering coals must not be agitated or clinker formation will result. With non-clinkering

coal, agitation has a very much less troublesome effect.

Stokers are built to operate under natural draft or forced draft, and for different rates of fuel combustion and for different draft pressures. So far as efficiency of combustion is concerned, however, the different types of stokers will give approximately the same results, all conditions being equal, provided the right type of stoker is installed for the kind or grade of fuel to be burned and the conditions under which it will operate. These conditions must be determined first, however, and a type of stoker selected that will fulfill the requirements. A mechanical stoker makes possible the use of cheaper fuel with as much or even more economy than can be obtained under operating conditions in hand-fired boilers with a better grade of coal. Or, using the same grade of coal, the mechanical stoker will burn it with a greater degree of efficiency, so that the boiler will develop more power per pound of fuel, which is economical.

A greater amount of coal can be burned per square foot of grate on a mechanical stoker than in a hand-fired furnace, consequently allowing for a greater overload. A plant that must be operated frequently at ratings of 300 to 400 per cent, which is from three to four times the rated capacity of the boilers, based on the manufacturers' rating of one horsepower to 10 square feet of heating surface, must be equipped with a mechanical stoker and forced draft so it can be driven at the required rate. In large plants, operated mechanically with coal hoppers for feeding the stokers and automatic ash removal, the labor costs are reduced. One man can tend as many as 1400 developed horsepower as against one man to every 400 or 500 developed horsepower in hand-fired plants. In small plants, upon the other hand, the saving in labor over hand-fired boilers is negligible. It follows that mechanical stokers are not of so great an advantage in small plants, unless the saving in fuel will be large, or unless they have to be installed to prevent the smoke nuisance. Hand-operated

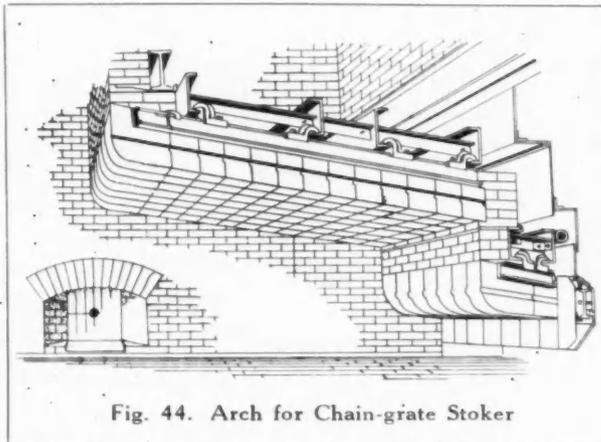


Fig. 44. Arch for Chain-grate Stoker

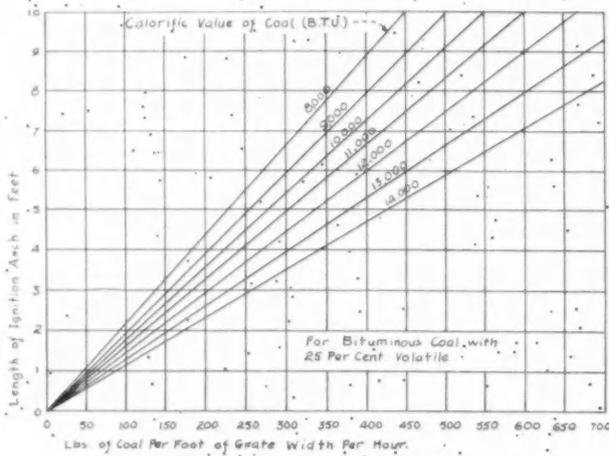


Fig. 45. Arch Lengths and Ignition Rates

stokers, however, can often be installed in small plants and effect both greater efficiency and higher economy of operation in addition to increasing the capacity. Much depends upon the size of the plant.

The expense for upkeep is naturally higher for mechanical stokers than for hand-fired boilers, and this cost, together with the cost of power for operating the stokers, must be charged against them. The power for operating stokers may be either electrical or steam. It requires about 2 per cent of the boiler rating for steam to operate mechanical stokers with natural draft, and from  $2\frac{1}{2}$  to  $3\frac{1}{2}$  per cent for forced draft. Another loss in stoker firing is the ashpit loss.

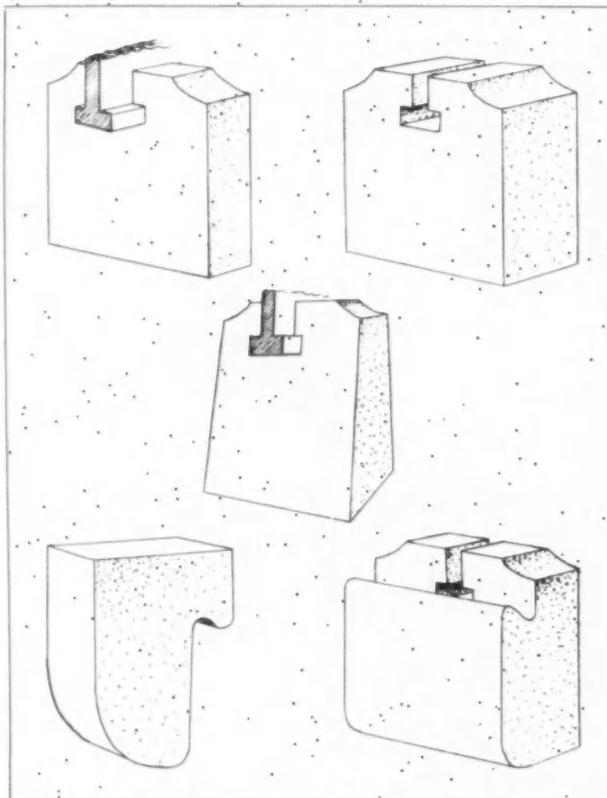


Fig. 46. Special Blocks for Flat-arch Construction

A certain amount of fine coal sifts through the grates into the ashpit. This loss is sometimes as high as 6 per cent and will average about 3 per cent. In some cases it has been kept as low as 1 or 2 per cent.

Mechanical stokers for coking coals are designed to burn coal by the progressive or coking process. Coal, whatever its grade, contains five major ingredients. They are: water, known as "moisture"; tar; coke; ash and impurities such as iron, sulphur, lime and magnesia. Of all the ingredients, the tar and the coke alone are the combustibles. The other portions are what cause trouble in firing. The tar, when distilled in the high temperature of the furnace, becomes gas, which mixing with air burns freely. It is what is known and generally spoken of as the volatile, and amounts to as high as 48.40 per cent, or nearly one-half the weight of the fuel. In anthracite, on the other hand, the tar or volatile is sometimes as low as 2.48 per cent. Owing to this difference, bituminous coal which is rich in tar is known as a "high volatile" coal; while anthracite which is poor in tar is known as a "low volatile" coal. The coke in some bituminous coals is of as low a proportion as 38.75 per cent, while in some anthracite it is as high as 86 per cent. Coke in coal is spoken of as "carbon," so that a bituminous coal is "low" in carbon content, while anthracite is "high" in carbon.

Iron and sulphur, also lime and magnesia, cause clinker. Ash, the residue after burning, clogs the grates, shutting off the supply of air unless removed. Moisture must be evaporated, and it requires as much heat to do so in the furnace as though in the boiler.

In the burning of coal, melting and distillation of the tar take first place. When introduced to the high temperature of the firebox, the light volatiles or oils are first distilled. Next comes the heavy tar, and finally, when all volatiles are driven off, the carbon is consumed, leaving only the clinker and ash which represent the impurities originally existing in the coal. The volatiles burn with a long flame, and as they distill rapidly they fill the combustion chamber and baffle passage between the water tubes of the boiler. The coke burns with a vivid glow but with comparatively little flame. The volatiles are known as the "long flame" combustion, the cokes as "short flame." As anthracite coal is almost all fixed carbon, there is so little volatile to drive off that it does not lend itself readily to the coking or progressive method of firing; therefore the same saving cannot be effected by using anthracite as can be had by burning all the different grades of bituminous coal.

In the coking process, which is the mechanical-stoker process of combustion for coking coals, the coal is fed in a continuous stream of uniform depth of bed and the full width of the stoker grate. The coal is then carried progressively forward by a movement of the grate or some of its parts. As soon as the coal enters the furnace, heat drives off some of the volatile, which is ignited and kept burning by the heat of the fire-brick arch and walls. The coking

process is completed before the fuel has traveled far, and then the carbon burns progressively until the moving mass reaches the place where the ash is discharged. When, therefore, a furnace and stoker are properly designed, the carbon and volatiles have yielded their heat by the time they reach this point, and the ash is automatically discharged into the ashpit or hopper below. This describes the coking process.

*Arch for Chain-grate Stoker.* The proper coking of coal in the furnace and the quick ignition of the gases depend upon a hot fire on the rear portion of the grate and a properly designed arch to deflect the heat from the hot fire onto the incoming coal. In hand firing, the green coal is thrown on top of glowing coals and readily ignited. With chain-stoker feed, a constant stream of green coal is fed into the furnace at one end of the grate or stoker, and against a bed of green or only slightly coked coal. The heat to coke this coal and ignite the gases arising therefrom must come from the back of the furnace and the arch. The design of the arch depends upon the type of stoker to be installed. In the chain-grate stoker, it is flat, as shown in Fig. 44. The variables which affect arch design are the amount of coal to be ignited per foot of stoker width per hour, the percentage of volatile in the fuel, and the heat value of the coal. The longer the stoker grate and the greater the amount of coal to be burned per linear foot of grate per hour, the greater must be the ignition effort. Therefore, all other items remaining constant, longer arches must be provided for higher combustion rates and for longer stokers.

In the chart (Fig. 45) can be found the arch lengths with the corresponding ignition rates possible with a variety of bituminous coals containing 25 per cent or more of volatiles. The use of the chart is thus explained. If it is desired to obtain a combustion rate of 35 pounds of coal per square foot of grate surface per hour, on a chain grate having an active grate length of 10 feet, and coal with a heat value of 10,000 B.t.u., the ignition rate would be,  $35 \times 10 = 350$  pounds per hour. Trace upward on

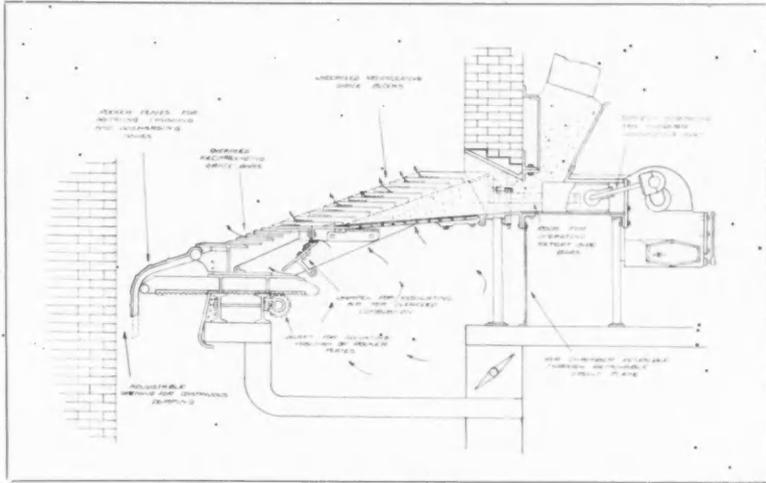


Fig. 48. Section Through Under-feed Stoker

the chart from the ignition rate of 350 pounds to where the line intersects the 10,000 B.t.u., coal line, and then level over to the left hand margin. This will show that an arch 6.3 feet long will be required. The graphs shown are based on actual performances with fuel of high volatility, under close observation.

Height of arch is equally important in the design of a stoker furnace, and the slope is as important as the height. It is found that the arch must have a pitch upwards toward the rear for the best results, and that it must have a definite height above the fuel bed. Experiments at all heights from zero to 24 inches above the top of the fuel bed indicate that for average conditions a height of 15 inches will give the best general results. As to the slope, experiments so far have not determined the exact pitch, but they have determined the limits between which the best results can be obtained. A pitch of 2 inches per foot is better than 1 inch. At a pitch of 4 inches and over there is a slight tendency to smoke. The best pitch, then, lies somewhere between 2 inches per foot and 4 inches per foot. It is probably around 3 inches per foot, which would be quite a fair average.

Parabola arches, when properly designed and proportioned to height, length and pitch, give very intense ignition results. They are hard to keep in repair, however, and if built as true arches, they exert a thrust, often very decided, on the side walls.

The limiting factor in the design of a stoker is the ability of the arch to ignite the coal. Arches can ignite as high as 60 pounds of coal per square foot of grate surface, which limits the rate of combustion to that amount. Stokers are designed to burn fuel at different rates, ranging anywhere from 20 to 60 pounds per square foot of grate surface per hour, and the ignition arches must be designed to ignite the fuel at the maximum rate at which it is designed to be used, if the best results are to be obtained. Special blocks

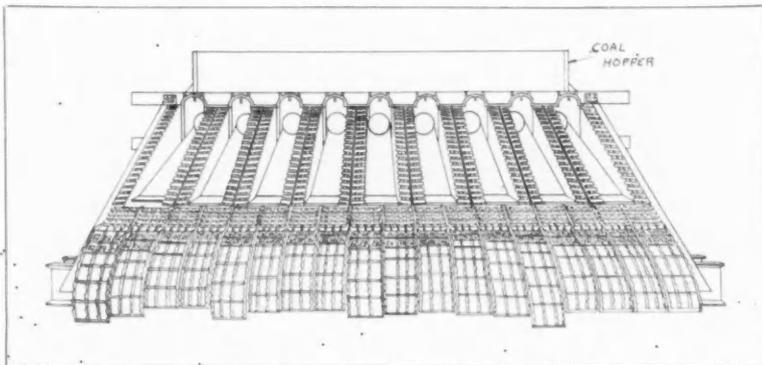


Fig. 47. Under-feed Stoker

are made for flat-arch construction. A number of flat-arch blocks of different shapes are shown in Fig. 46. The blocks are suspended from the lower flanges of I-beams, or from special T-beams on which they are strung. They interpose the full thickness of their bulk between the iron or steel beams and the interior of the furnace, as the illustration shows.

*Under-feed Stokers:* The distinguishing feature of under-feed stokers is, as the name would imply, that coal is thrust into the furnace under the coals and ashes already there, instead of on top, as in hand-firing; or continuously at one end at the top as in chain-grate firing. One type of under-feed stoker is shown in Fig. 47. Coal enters the furnace through a series of retorts, forced in from the hopper by a plunger. The retorts are separated from one another by a series of tuyeres through which heated air enters the furnace to carry on the process of combustion. The tuyeres forming the sides of the retorts are not stationary. They are made up of a series of plates, one on top of another, with air outlets between. These plates are reciprocating, those forming one side of a retort moving forward as the other side moves backward, thereby moving the fuel down the incline and thickening the fuel bed. At the lower end of the incline, near the bridge wall, the fuel bed

passes on to over-feed grate bars, then to reciprocating plates for agitating, crushing and discharging the ashes. The retort sides operate the over-feed grates.

*Over-feed Stokers:* A mechanical stoker, which operates on natural draft and is known as a side over-feed, or opposed type stoker, is shown in Fig. 49. At each side of the furnace extending from front to rear are coal magazines from which coal is fed to the furnace. To enter the furnace, coal must pass through a throat formed by a movable "stoker box" which rests upon and moves horizontally over a coking plate or ledge. The distance of travel of this stoker box regulates the feed to that side of the furnace. As the coal leaves the magazine it rests for a short time on the coking plate. Here the volatile gases are driven off and mixed with pre-heated air delivered through the arch-plate air-ducts.

The grates are made in pairs, one fixed and the other movable. The fixed grates rest at their upper ends against the coking plates. The lower ends are supported by the grate bearers. The movable grates are pivoted at their upper ends and actuated at the lower ends by a rocker shaft. This alternate movement breaks up the fuel bed, prevents avalanching, keeps the grate clinker free, and advances the ash gradually to where it is removed by the clinker grinder.

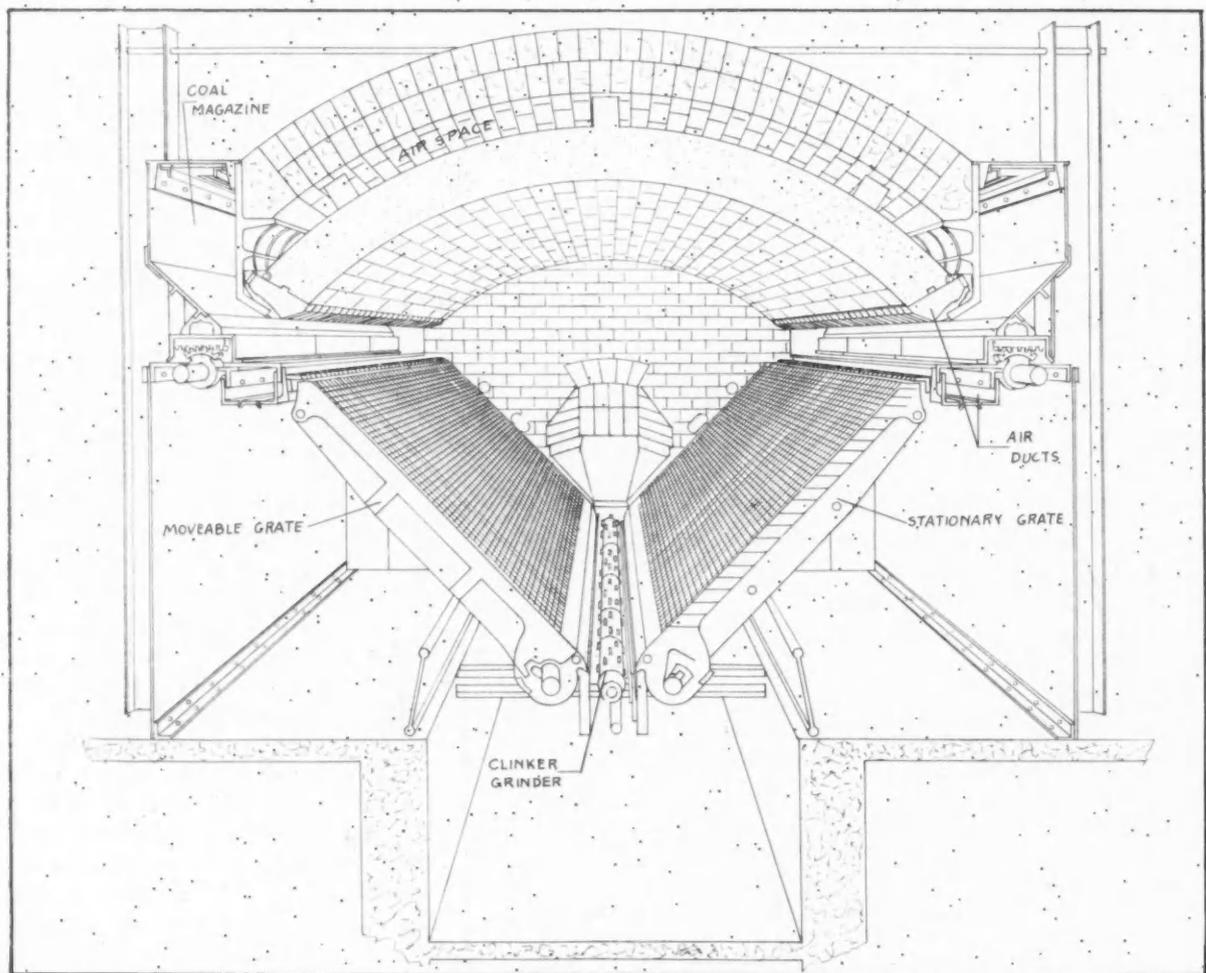


Fig. 49. Side Over-feed or Opposed Type Stoker

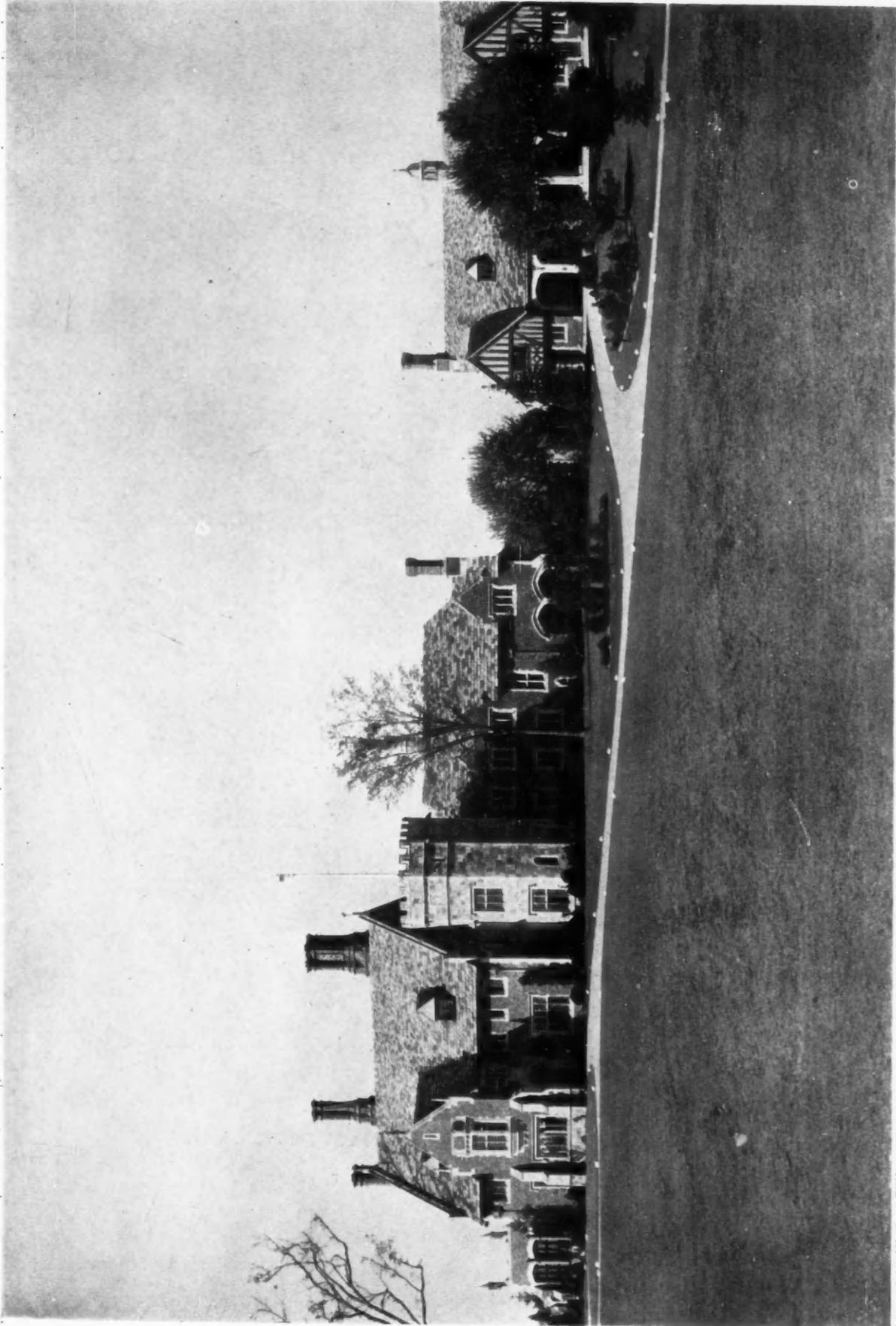
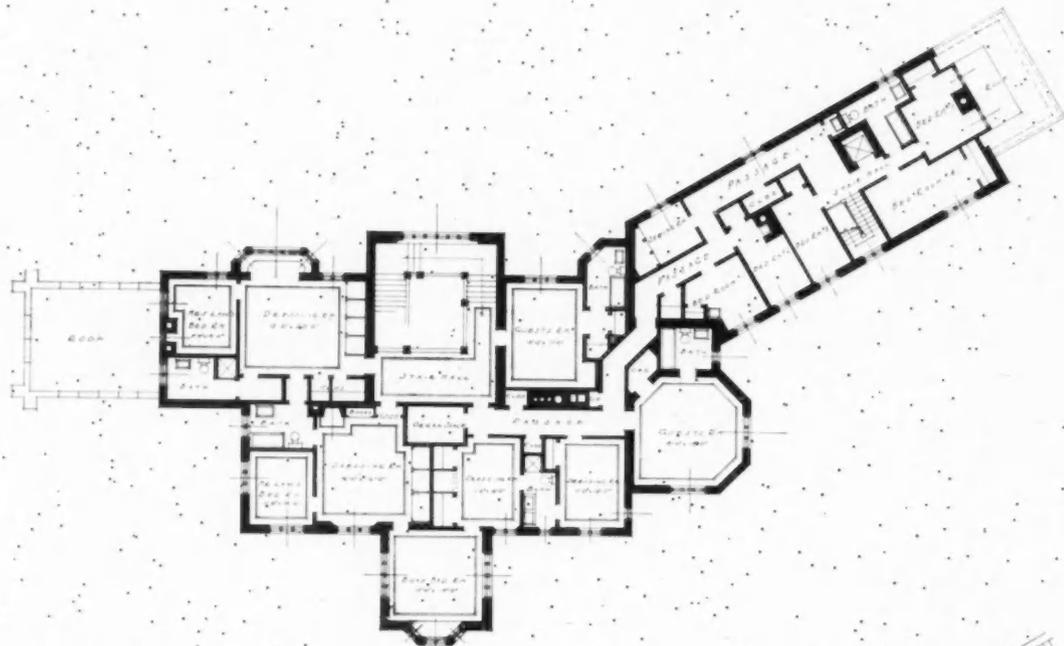


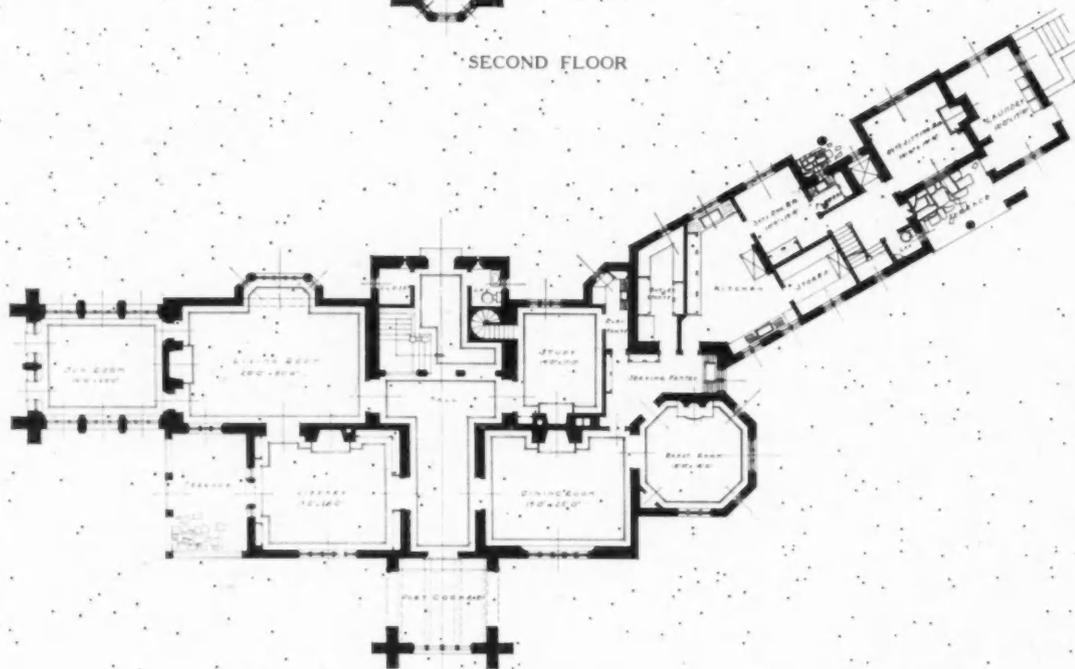
Photo. John Wallace Gillies

HOUSE OF ROBERT LAW, JR., ESQ., PORTCHESTER, N. Y.  
DWIGHT JAMES BAUM, ARCHITECT

Plans on Back



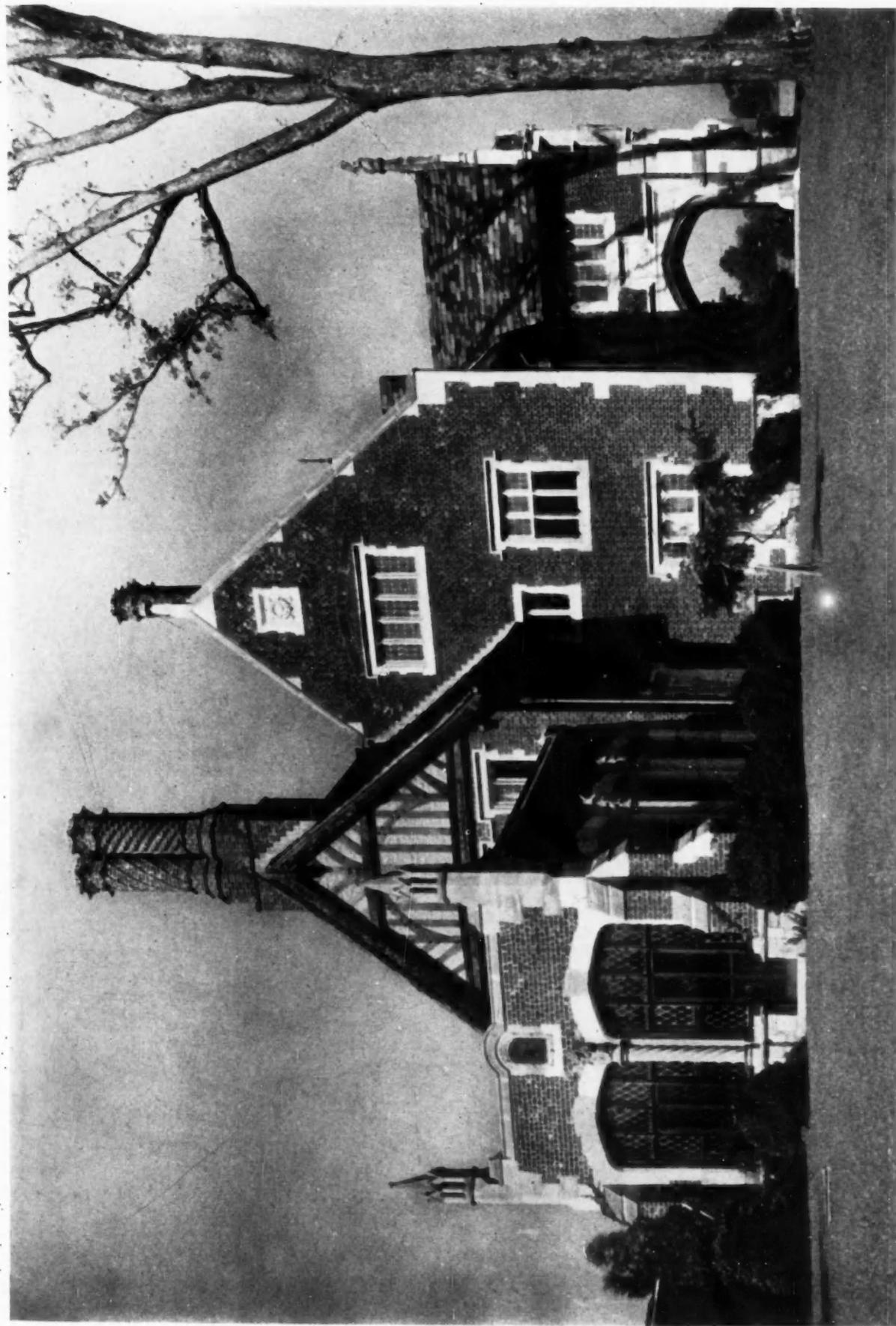
SECOND FLOOR



FIRST FLOOR

PLANS, HOUSE OF ROBERT LAW, JR., ESQ., PORTCHESTER, N. Y.

DWIGHT JAMES BAUM, ARCHITECT



*Photo. Paul J. Weber*

HOUSE OF ROBERT LAW, JR., ESQ., PORTCHESTER, N. Y.  
DWIGHT JAMES BAUM, ARCHITECT

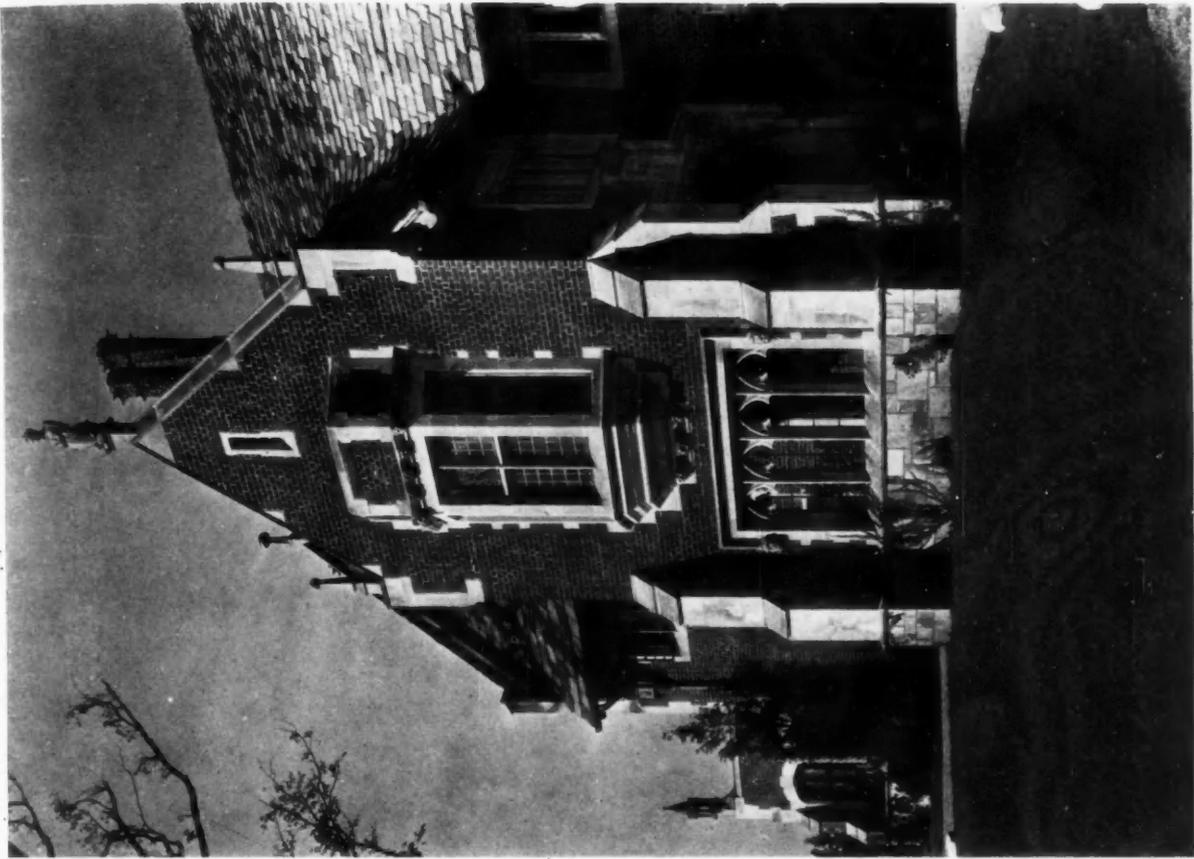




Photo, Paul J. Weber

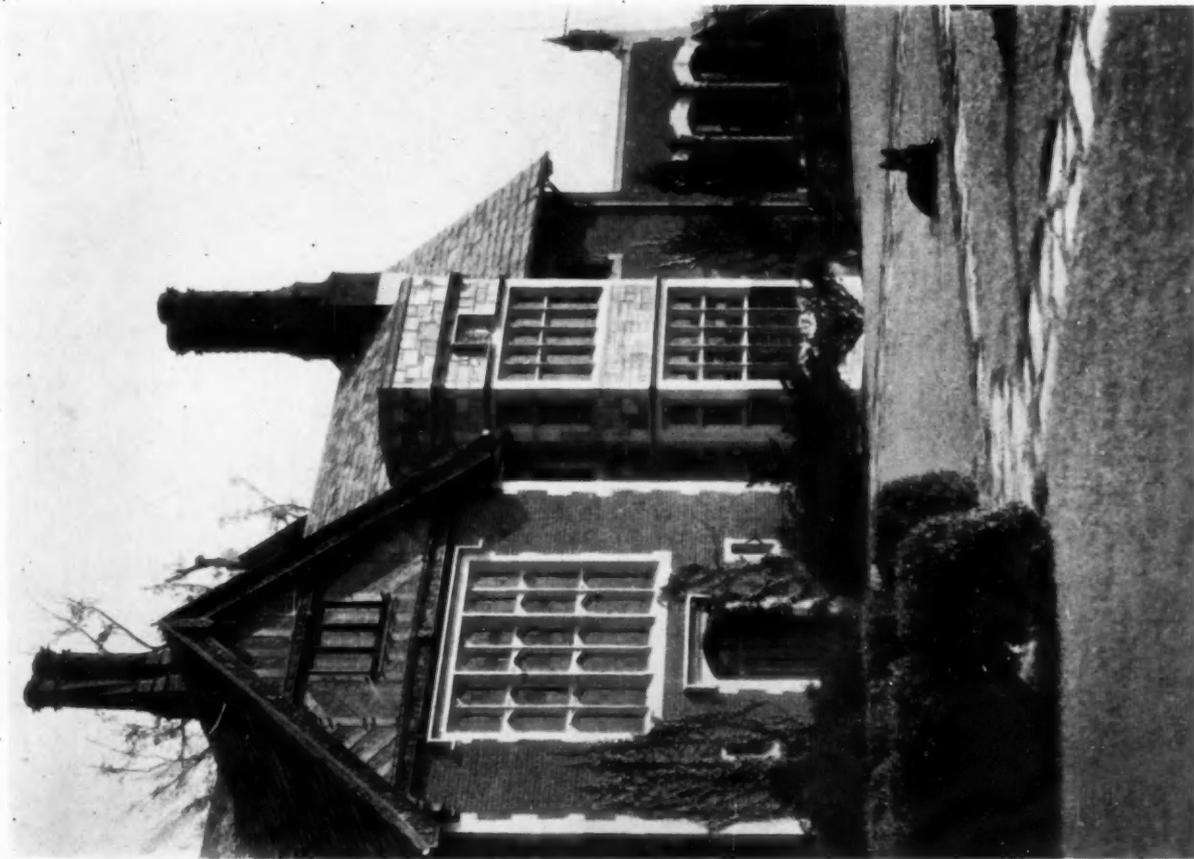
GARDEN AND GARAGE  
HOUSE OF ROBERT LAW, JR., ESQ., PORTCHESTER, N. Y.  
DWIGHT JAMES BAUM, ARCHITECT.





*Photo, John Wallace Gillies*

THE PORTE-COCHERE



*Photos, Paul J. Weber*

GARDEN FACADE

HOUSE OF ROBERT LAW, JR., ESQ., PORTCHESTER, N. Y.  
DWIGHT JAMES BAUM, ARCHITECT

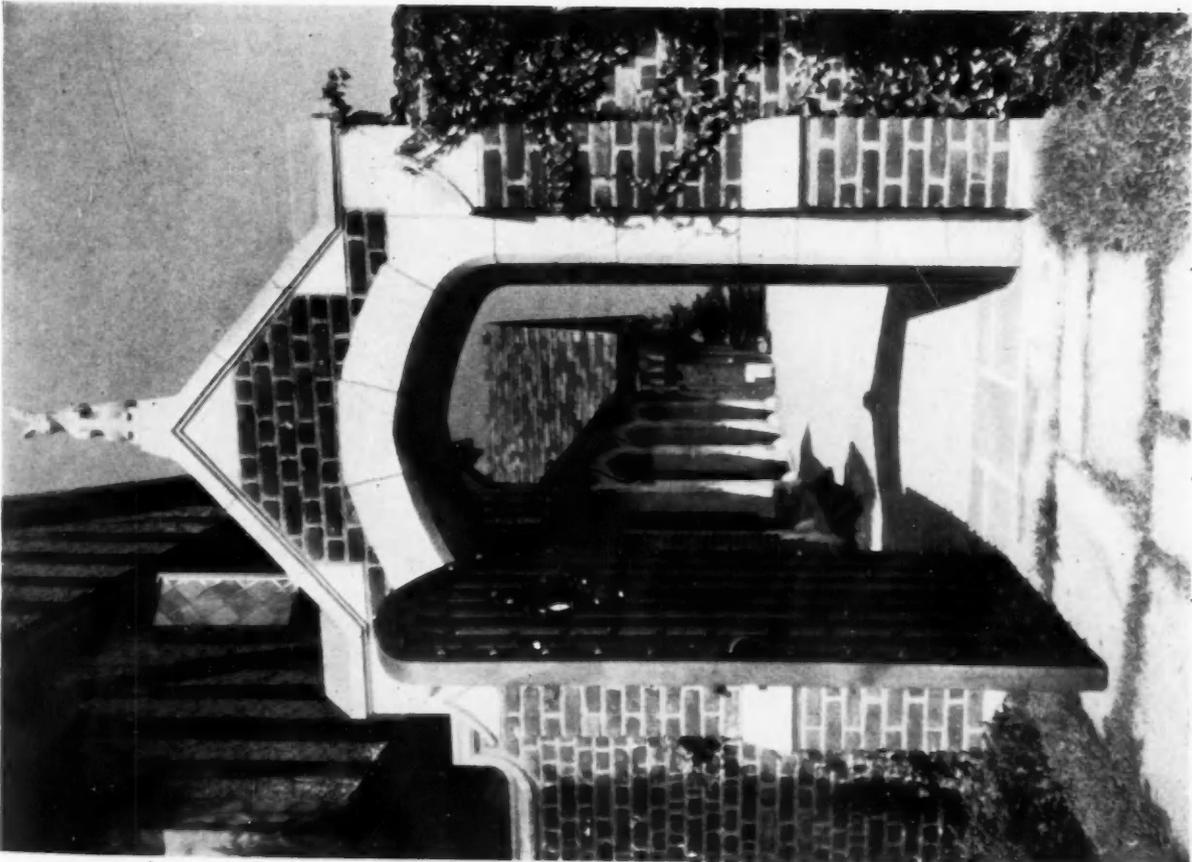




ENTRANCE FROM GARDEN

HOUSE OF ROBERT LAW, JR., ESQ., PORTCHESTER, N. Y.

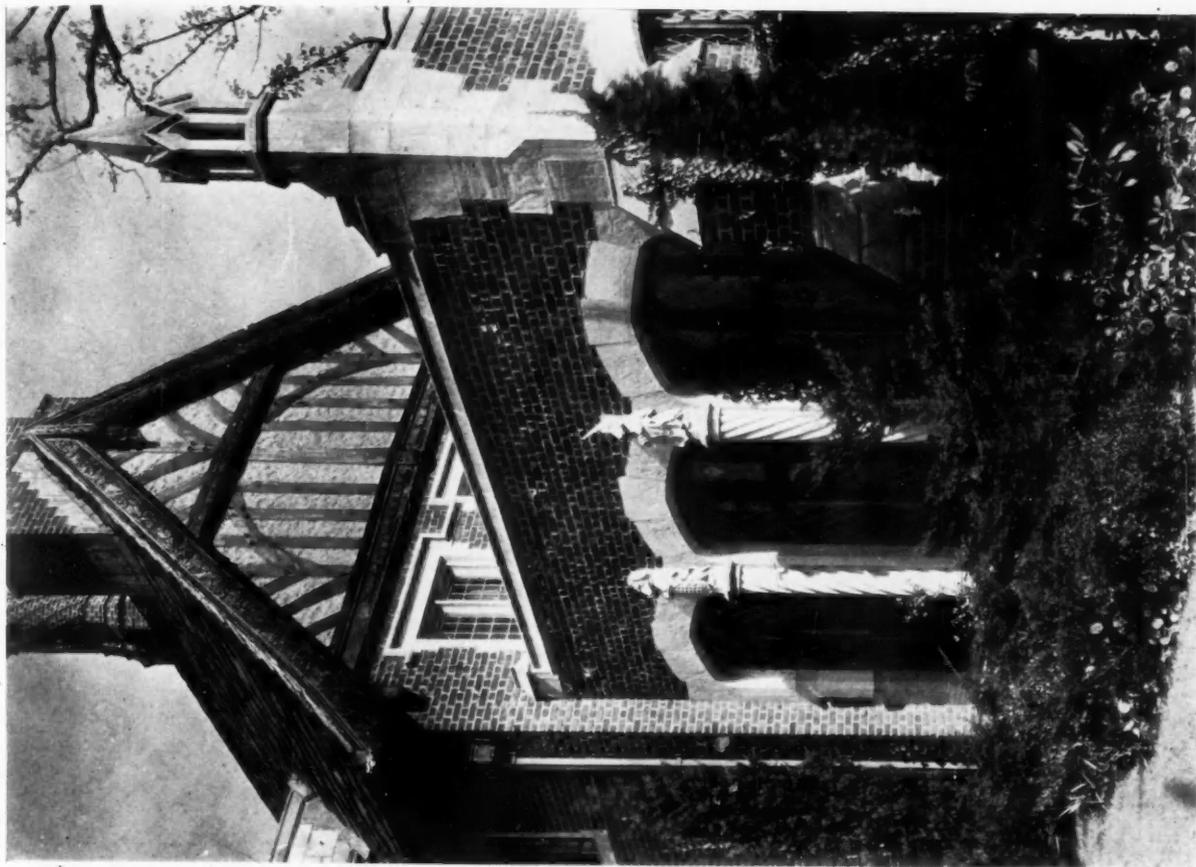
DWIGHT JAMES BAUM, ARCHITECT



GATEWAY, GARAGE COURT

Photos Paul J. Weber





SUN ROOM



SERVANTS' WING

HOUSE OF ROBERT LAW, JR., ESQ., PORTCHESTER, N. Y.  
DWIGHT JAMES BAUM, ARCHITECT

Photos, John Wallace Gillies





*Photo, John Wallace Gillies*

PART OF GARDEN FACADE  
HOUSE OF ROBERT LAW, JR., ESQ., PORTCHESTER, N. Y.  
DWIGHT JAMES BAUM, ARCHITECT





*Photo. Paul J. Weber*

GARAGE COURT AND ENTRANCE



*Photo. John Wallace Gillies*

GARAGE, FROM GARDEN  
HOUSE OF ROBERT LAW, JR., ESQ., PORTCHESTER, N. Y.  
DWIGHT JAMES BAUM, ARCHITECT



# SMALL BUILDINGS

## American Church Architecture

By AARON G. ALEXANDER  
*Of the Office of Hobart B. Upjohn*

RECENTLY I heard a statement attributed to a well known architect to the effect that there was no worthy church architecture in America until about 25 years ago. I wonder if that statement is true or even fair. To one who has for some years been intimately connected with church architecture and all the conditions which govern this particular type of building, it seems that it is not true. I believe that if one were to go back to some of the old churches and study them as to their architectural compositions, taking into consideration the conditions of the times when they were built and the number of churches erected during their periods, one would find the average good compared with that of any other type of building. Certainly, when one takes American church architecture, which is essentially Colonial, into consideration, it is easy to find many gems of merit, so many, in fact, that today we are continually referring back to their graceful spires and interiors for inspiration. They were of the meeting house type, but there is no denying that some of them are beautiful and stately. On the other hand, there are many who hold the view that to have the proper sense of dignity and religious character, a church can be only of Gothic design and must be built of stone. The Gothic style is, of course, not that upon which our earliest American architectural traditions are founded, so I believe this statement is made more often by those whose thoughts turn to the richness and beauty of craftsmanship and variety of materials so characteristic of Gothic, rather than to the simple refinement of our early Colonial architecture.

We, as Americans, are perhaps too much given to the habit of looking at a building and considering its materials, expensive stone tracery and leaded glass, costly interiors, furnishings; etc., and then at its general architecture. If we find the building is not a sort of jewel box, with stone walls inlaid with marble or stone trim, with foreign leaded glass and the interiors of carved wood with wrought iron fixtures, we feel like passing it by and hunting for one that is, as I might say, worthy of our attention. In other words, if we see a church building of Gothic design built of brick with wood tracery windows, we are not likely to consider the conditions which caused the architect to adopt these materials, but instead we simply pass on with a remark criticizing him who did such a thing. On the other hand, I

believe that any building that is built as a frank, honest effort with the funds available deserves attention. It may be built of materials which are not wholly in keeping with the particular style of architecture, and yet there may be many lines and details that are of interest. I do believe, therefore, that it is safe to say that we have advanced more in church architecture in the past 25 years than our predecessors did in the preceding 25 years, and the reason is simply that we have kept in stride, as it were, with the times. One reason for this is that in the past there were not the same opportunities for studying the old churches abroad nor such facilities for building as we have had in later years.

At the beginning of this article I speak of the conditions besetting an architect in the practice of church architecture, and I might mention what these are:—the funds available; the dictation by committees; and the general feeling in the past on the part of not only the architect but also of the contractor that a church is a poor sort of client, which feeling is invariably productive of poor design as well as poor construction. The most difficult problem an architect has is the designing of a small church, since the funds are generally unequal to the requirements, and even though the design may be rather good, the architect finds it necessary to specify materials that he would not use if he did not absolutely have to.

As church architecture has kept pace with the times, we now find the different denominations forming "boards" for the aid of small churches to help raise funds and finance buildings. We read in the press, from time to time, when general assemblies of the clergy are held, that the heads of the denominations deplore the poor average church architecture, and it is interesting to note the reasons that they put forward. Recently I read two addresses by bishops, who, instead of blaming the architects, placed the blame mostly on the fact that the building committees have too much to say as to designs and plans, and they recommend that the committees confine their efforts to financing and to the selection of proper architects. From my experience, I believe that following this advice would be a stride forward.

I do not say this with any sarcasm. It is natural that a man competent to serve on the average building committee should feel that he is quite capable of telling the architect what to do instead of just simply stating requirements. The committees are

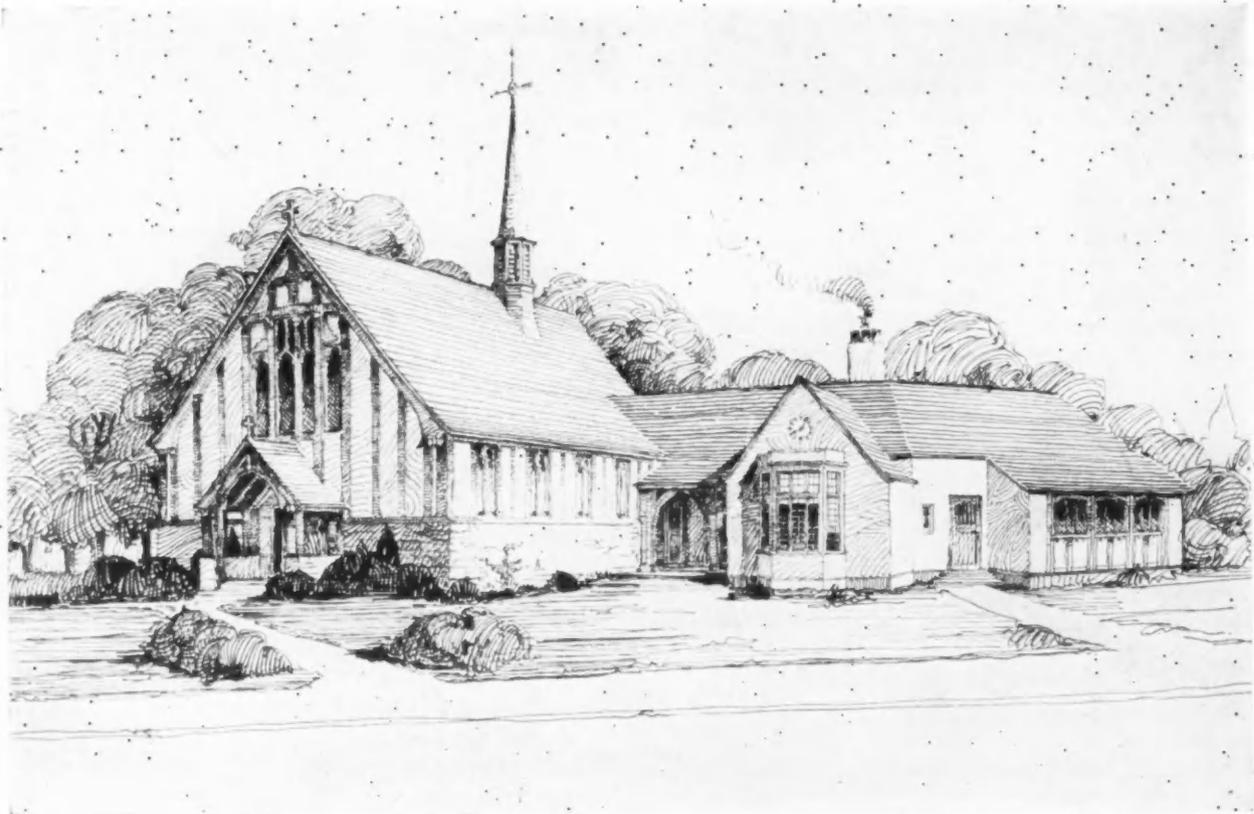
generally made up of members of the congregation who are intimately connected with, and therefore are thoroughly conversant with, different branches of the church activities, and are for the same reason interested each in only his particular department. One is interested in the Junior Department, another in the church, another in the organ, etc. Considering that committees are made up of such men, one can readily see that an architect has his hands full, and also why I heartily agree with the bishops' statements. Of course, such conditions as these enter into all classes of construction, but more so I believe in church work, because there are more people intimately connected with such a building, and a church is a sort of local community enterprise in which everyone has to be considered. Therefore, it behooves an architect when starting on a church to impress the committee with the fact that he is really familiar with all the different angles and phases of a church plan, and to do this in such a way as to gain the complete confidence of the different members of the committee. Once he has done this, he has half the battle won. If he really is not familiar with all the details, he should seek the advice of the church boards, already referred to, previously to appearing before the committee, or else associate with him an architect who has made a successful specialty of church work. When one considers that a church building is designed and planned in accordance with past history and the development of worship in the particular denomination to which the church belongs,

one can readily see that church architecture means not simply cribbing a former plan, but is a matter of studying the history of the church and applying it to the needs of the particular design one is working on.

As to the returns from a church commission, it is true that the remuneration is not as high as that from commercial buildings, but, on the other hand, it is not true that the poor returns are due to non-payment on account of inability to raise funds. I am finding more and more, as time goes on, that the contractors who in the past have held this view and refused to bid are realizing that times have changed. It is now possible to make a selection from a list of reputable contractors, and to assure the architect of having his ideas carried out as he wants them.

I recall hearing not long ago that a well known architect who had never built a church, had been awarded a commission for a Gothic church, although he had always specialized in Colonial architecture of an entirely different class of building. From my experience, I believe it is safe to say that he will do himself more harm with a certain group before he gets through than if he had turned the commission down or else associated with him a fellow architect. I might suggest to this architect that the two books entitled, "American Churches" would be very helpful. They were published in 1915 and cover recommendations on everything that enters into this work.

I am going to devote myself to passing along to my fellow architects some few suggestions as to handling the problem of a church building. First of



St. Luke's Church, Katonah, N. Y.

Hobart B. Upjohn, Architect

all, the proper recommendation to the committee. Almost all the different denominations have architectural service boards whose heads have drawn up certain recommendations which are always available for the asking, and are often helpful. After absorbing as much of this information as possible, first study the problem not so much on the money side as on the requirement side. Get the average attendance of the church for the past five years, and balance it with possible growth in the new church building. Study the essential requirements of the denomination in question, and ascertain the type of service in use; the number in the choir and the choir's location. In this connection, let me say that probably the most satisfactory arrangement is that of the choir stalls at either side of the chancel, with pulpit and reading desk on either side of the chancel arch, and other furniture grouped in the apse in accordance with the demands of the denomination.

The organ console should be placed in such a position that the organist is screened from view of the congregation, but so that he can see the choir without having to use the old fashioned mirror arrangement. I might say a word here as to the organ. A great many architects believe that an organ can be built to fit into any space, and that the console is about the size of a table. This may all be true for an installation in an existing church, but the organ that is built under such conditions has not as good a tone as it would have had if its design and space requirements had been taken into account originally

by the architect of the building. Try to have an organ chamber with a ceiling height of not less than 17 feet, and if that is not feasible, have one dimension of the floor plan that size, the other 9 feet, with the ceiling 12 feet. Avoid "pockets" by giving the organ at least 95 per cent of opening on one side into the auditorium, the opening extending from the floor to as near the ceiling as the architecture of the interior will permit. The organ screen can be designed so that the opening is not apparent to the eye but so that the sound can escape, which is the main thing to consider. The dimensions given apply to the average medium sized organ. The larger the organ, needless to say, the larger the space required. The motor or blower room should be situated in the basement in a dust- and soundproof room and connected to the organ chamber and console with wind pipes and conduits, the correct sizes of which can be obtained from any of the organ manufacturers.

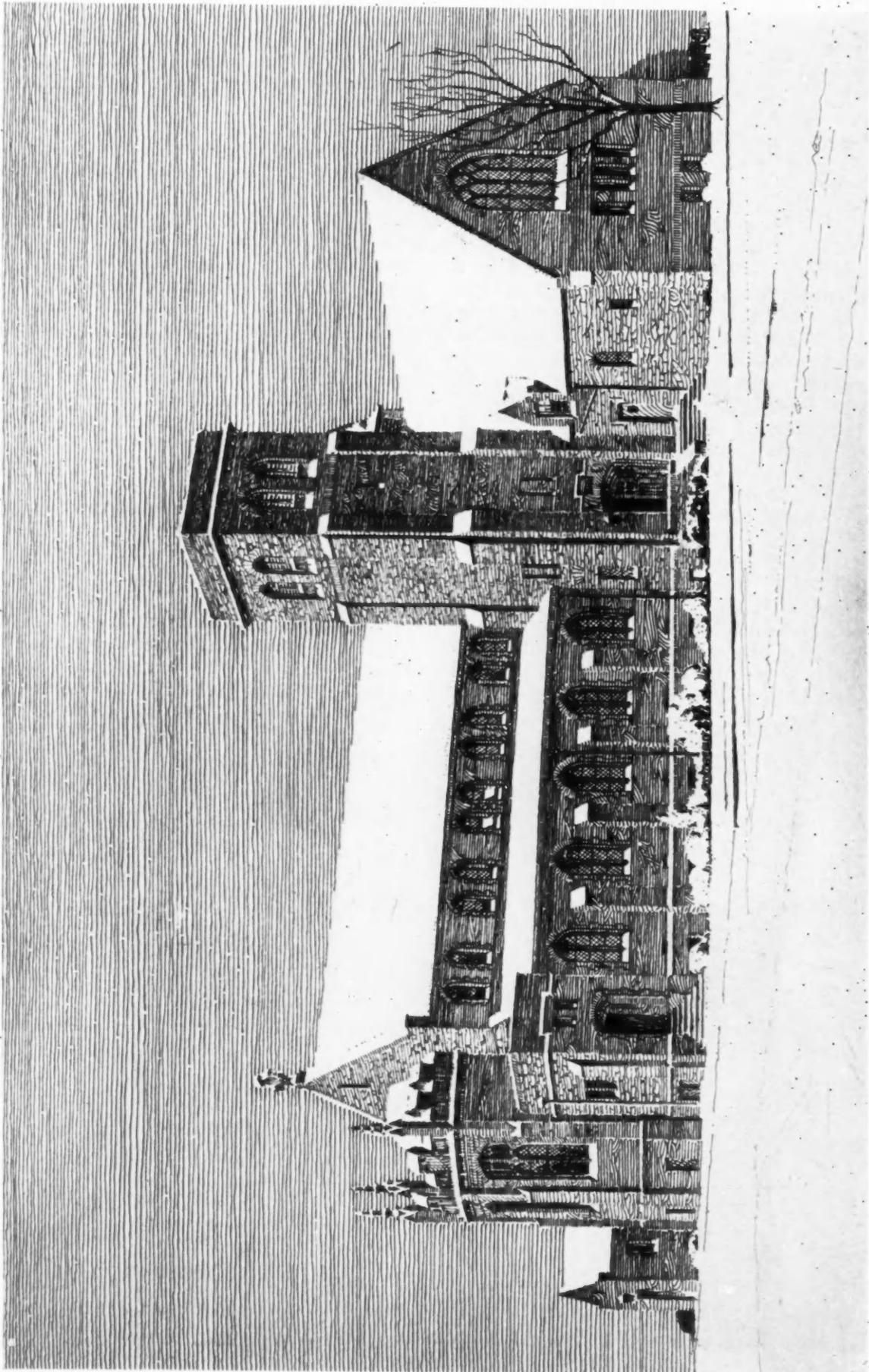
As for the designing of furniture and equipment, this would take more space than could be given it here, so let it suffice to refer again to the books already mentioned. They contain chapters devoted to the pulpit, lectern, pews, altar, etc., and by consulting them, one cannot go far wrong.

When the requirements are determined, the design of the church can be started. There is a growing tendency among the different denominations to favor certain styles, but whatever style the architect adopts, he must employ materials that mean permanence and necessitate the smallest possible upkeep cost. A

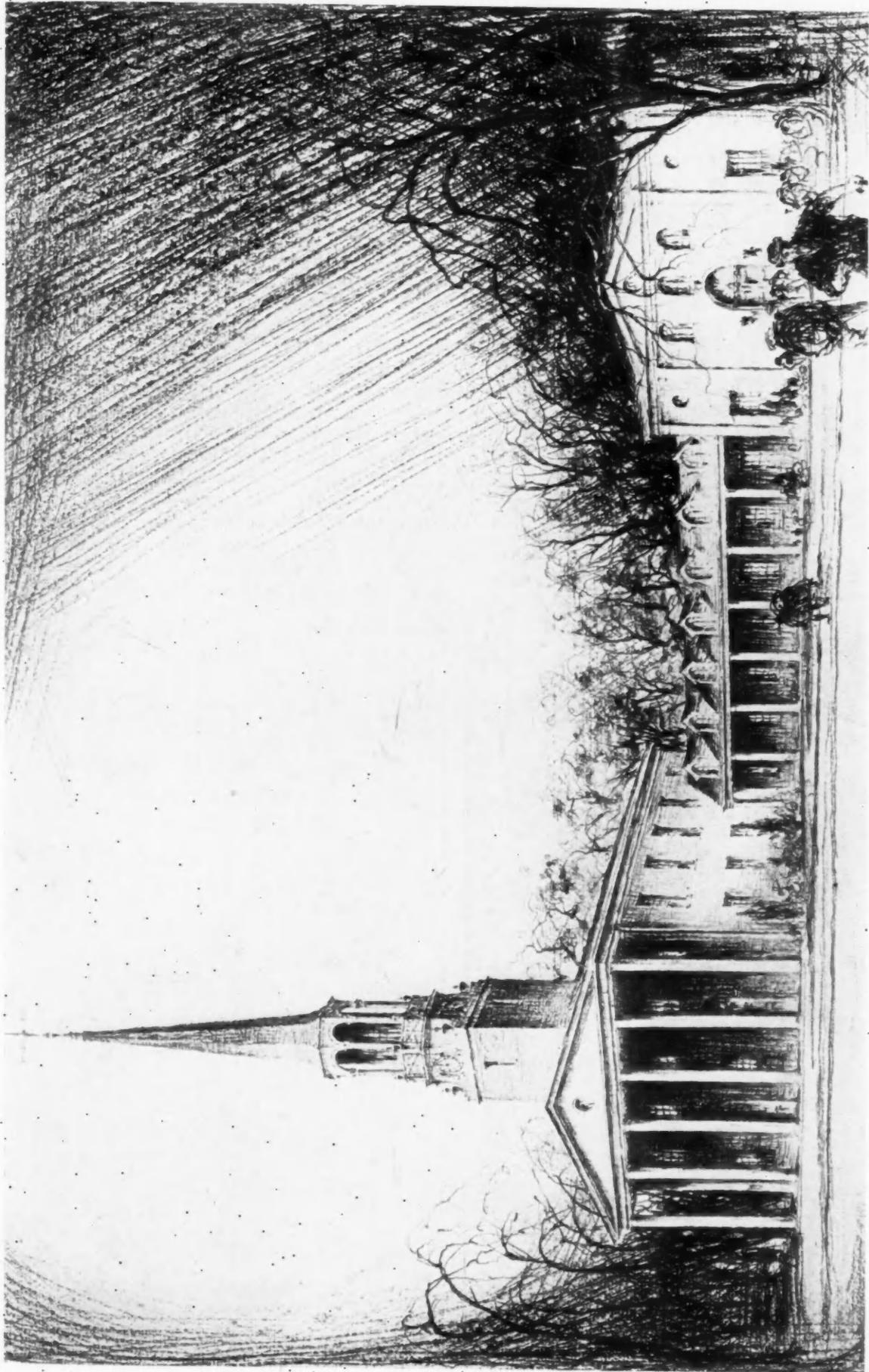


Sunday School Building, Church of St. James the Less, Scarsdale, N. Y.

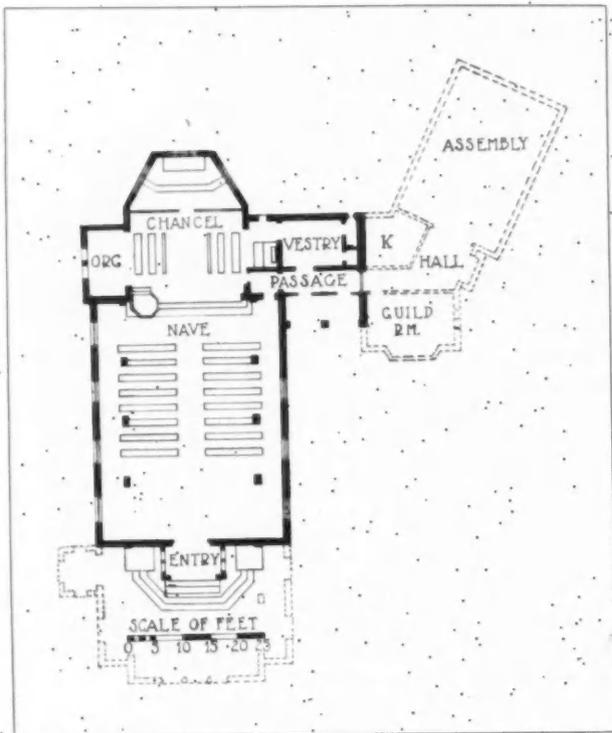
Hobart B. Upjohn, Architect



FLATBUSH PRESBYTERIAN CHURCH, BROOKLYN  
ALTERATIONS BY HOBART B. UPJOHN, ARCHITECT



PREBYTERIAN CHURCH, FAYETTEVILLE, N. C.  
HOBART B. UPJOHN, ARCHITECT

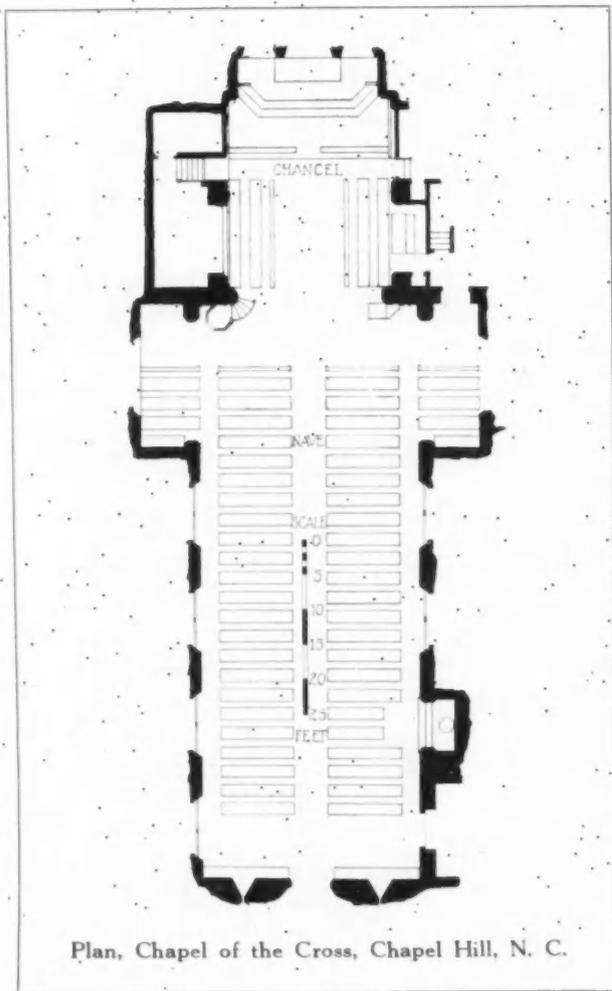


Plan, St. Luke's Church, Katonah, N. Y.

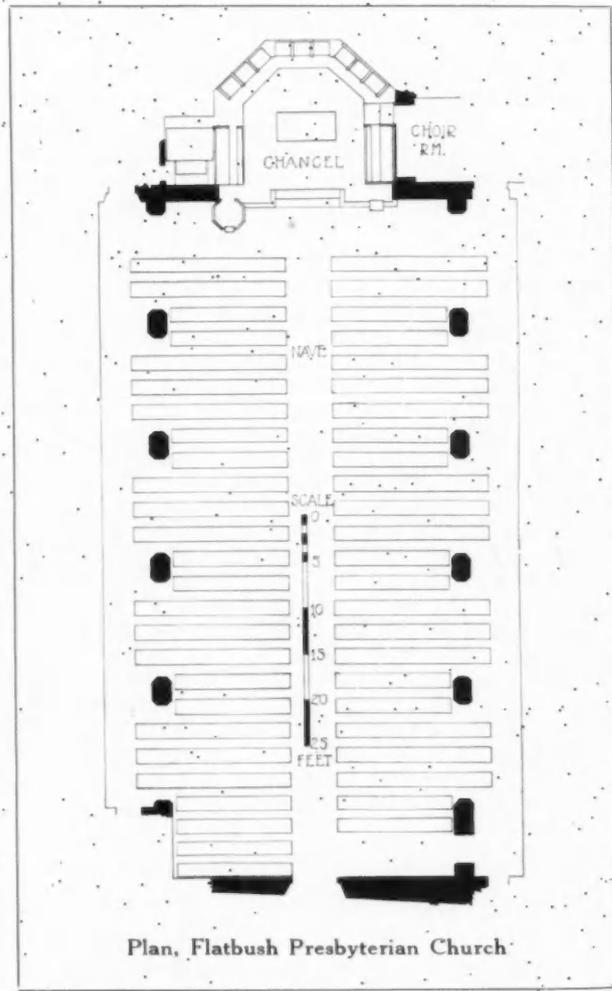
church is not just a building in which to have meetings. It must have dignity, character and permanence as its inherent qualities. The use of masonry in the walls is likely to give these qualities, whereas wooden walls fail to give the same effect and should not be considered unless financial considerations absolutely compel their use. On the other hand, wooden ceilings and exposed rafters add much warmth and charm to a stone or rough plastered interior and are in accordance with the best architectural tradition.

The plan of the church, parish house and Sunday School building should be suited to everyday and departmental use. The old "Akron" plan of small classrooms opening from the main auditorium, separated by folding doors, is a "one-day" or "Sunday" building. Each department should have a separate room, designed with a decorative interior so as to attract members. A department will grow more rapidly under such conditions.

If the funds at hand do not meet the needs, design the building so that it can be added to in the future. Take, for instance, the plans of St. Luke's Church, Katonah, N. Y. This is a small church, designed in a simple English style, with provision for future extension as shown upon the plan by the dotted lines. It was found that the present congregation numbers about 100 and with the new church would number



Plan, Chapel of the Cross, Chapel Hill, N. C.



Plan, Flatbush Presbyterian Church

150, and in the next five years it will undoubtedly increase to 250, since the community is growing. Additional seating is to be taken care of by simply extending the present front wall and adding two bays to the length of the nave. The dotted lines on the plans of the parish house adjoining indicate the future additions to the Sunday School rooms. The building is planned on the basis of seating 150, and is a complete, temporary unit, but the committee knows how to take care of the future without having to build some sort of a "bump" out on the side. Additional seating can often be provided in a balcony, but as this means a higher building and therefore more cubage, it is not especially feasible where the saving of costs is important. This church at Katonah was erected in 1922, and is of field stone up to the water-table, with the rest of the walls of timber and stucco in half-timber patterns. A comparison of this church with the Sunday School building of the Church of St. James the Less, at Scarsdale, N. Y., will illustrate readily the point about dignity and permanence made here. The boiler room of the church at Katonah is placed under the chancel, which position saved in the excavating, owing to the extra headroom necessary to raise in the chancel floor above that of the nave. The cost of general construction at Katonah, exclusive of furniture, was



Nave, Holy Trinity Church



Holy Trinity Church, Greensboro, N. C.  
Hobart B. Upjohn, Architect

39 cents a cubic foot. The church is fortunate in being able to meet its present requirements and in knowing that it can enlarge the church and parish house without in any way injuring their harmony.

Alterations and additions to existing buildings are other things that the architect must continually consider. One difficult part of this is the matter of quoting an intelligent price for such work. The only sure way in the case of additions and alterations is to obtain a preliminary estimate from a reputable contractor. The cost of the new part can be figured on the cubage. The Flatbush Presbyterian Church, Brooklyn, which is illustrated here, is a case in point. The main church building and tower are new, but the part at the right is the old church which was turned into a Sunday School building. These alterations consisted of the installing of a second floor in the old church auditorium and dividing the space into classrooms, and the cost of this was about a fifth of the total contract for the enlargement and new building. The main church is constructed with stone walls, imitation stone trim, slate roof, oak trim inside, with stone arches and cypress ceiling in nave. The gymnasium with stage, locker and shower rooms, and the kitchen adjoining are situated in the basement under the main church. Although a Presbyterian church, the chancel is laid out on much the plan common in Episcopal churches, with pulpit, lectern, etc. The church building was built in 1923 at ap-

proximately 45 cents per cubic foot, exclusive of furniture or the many varieties of equipment necessary.

Taking up a different style of architecture, the Colonial, we find that, for reasons of general construction, this type of building can be usually built more economically, say, from five to ten cents per cubic foot less than the costs of the churches already described. In writing these paragraphs I have merely scratched the surface, in the hope that I may, in a way, bring to the attention of some architects the problems that church architecture entails. As a help to some in quoting to a committee the cost of a building, I believe one can safely count on these cubic foot costs, exclusive of furniture and equipment:

A small, simply designed English type church, 35 to 40 cents a cubic foot.

A Gothic church, with stone walls and stone trim, 47 to 50 cents a cubic foot.

A simple Colonial building, 40 to 45 cents a foot.

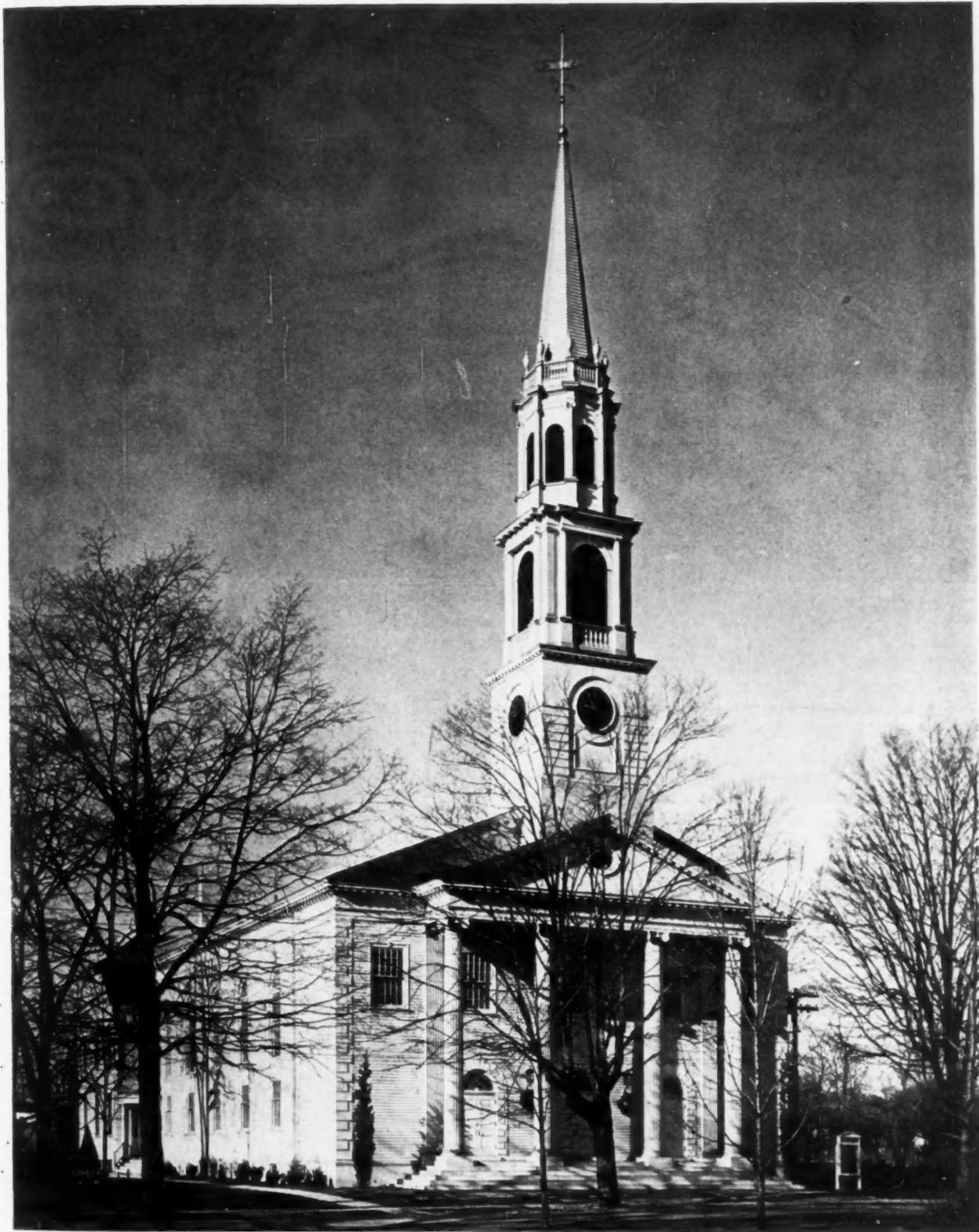
A more pretentious Colonial design, 42 to 48 cents a cubic foot.

Use is frequently made of the so-called Colonial style, indeed, wholly because of its economy. Detail may be properly developed in wood rather than in real or artificial stone, likely to be considered necessary in using Gothic forms; then too the very simplicity of design and plan, which characterizes a Colonial building is well suited to certain surroundings. It is a type which is flexible and easily handled.



Sunday School Building, Church of St. James the Less, Scarsdale, N. Y.

Hobart B. Upjohn, Architect



*Photos, Kenneth Clark*

FIRST CONGREGATIONAL CHURCH, NORWALK, CONN.

CHARLES C. GRANT AND JERAULD DAHLER, ARCHITECTS

AMONG several splendid examples of churches in the Colonial style built within the last two years, there is none which surpasses in charm and refinement of detail as well as excellence of scale and composition, the First Congregational Church on the

Green at Norwalk, Conn. A little circular published at the time it was proposed to build a new church to replace the old First Congregational Meeting House of Norwalk, says that the new church structure is to be in keeping with the best traditions of the Con-

## FORUM SPECIFICATION AND DATA SHEET—104

First Congregational Church, Norwalk, Conn.; Charles C. Grant &amp; Jerauld Dahler, Architects

## OUTLINE SPECIFICATIONS

## GENERAL CONSTRUCTION:

Fireproof. Steel trusses, floor beams, and tower frame. Hollow tile and brick walls. Reinforced concrete floor slabs.

## EXTERIOR MATERIALS:

Clapboards; wood trim.

## ROOF:

Slate.

## WINDOWS:

Double-hung, wood. Tinted glass.

## FLOORS:

Cork tile on concrete.

## HEATING:

Recirculated hot air.

## ELECTRICAL EQUIPMENT:

Concealed, cove lighting in auditorium.

## INTERIOR MILL WORK:

White wood, painted. Doors, mahogany.

## INTERIOR WALL FINISH:

Paint.

## DECORATIVE TREATMENT:

Paneled walls; run plaster moulds.

## SEATING CAPACITY:

About 520.

## APPROXIMATE CUBIC FOOTAGE:

356,500.

## COST PER CUBIC FOOT:

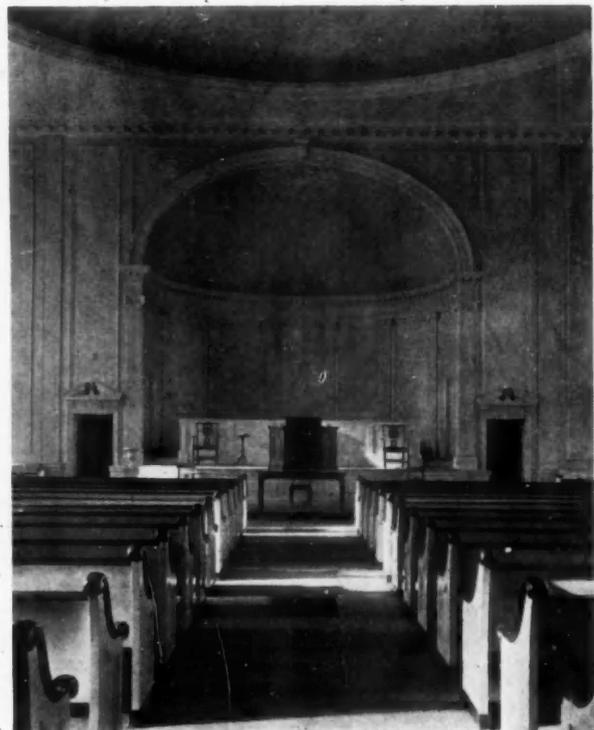
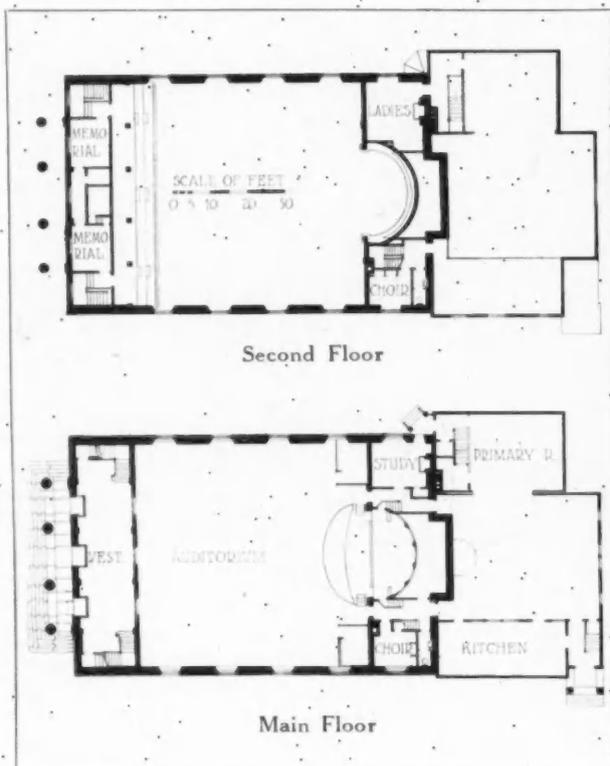
Approximately 45 cents.

## DATE OF COMPLETION:

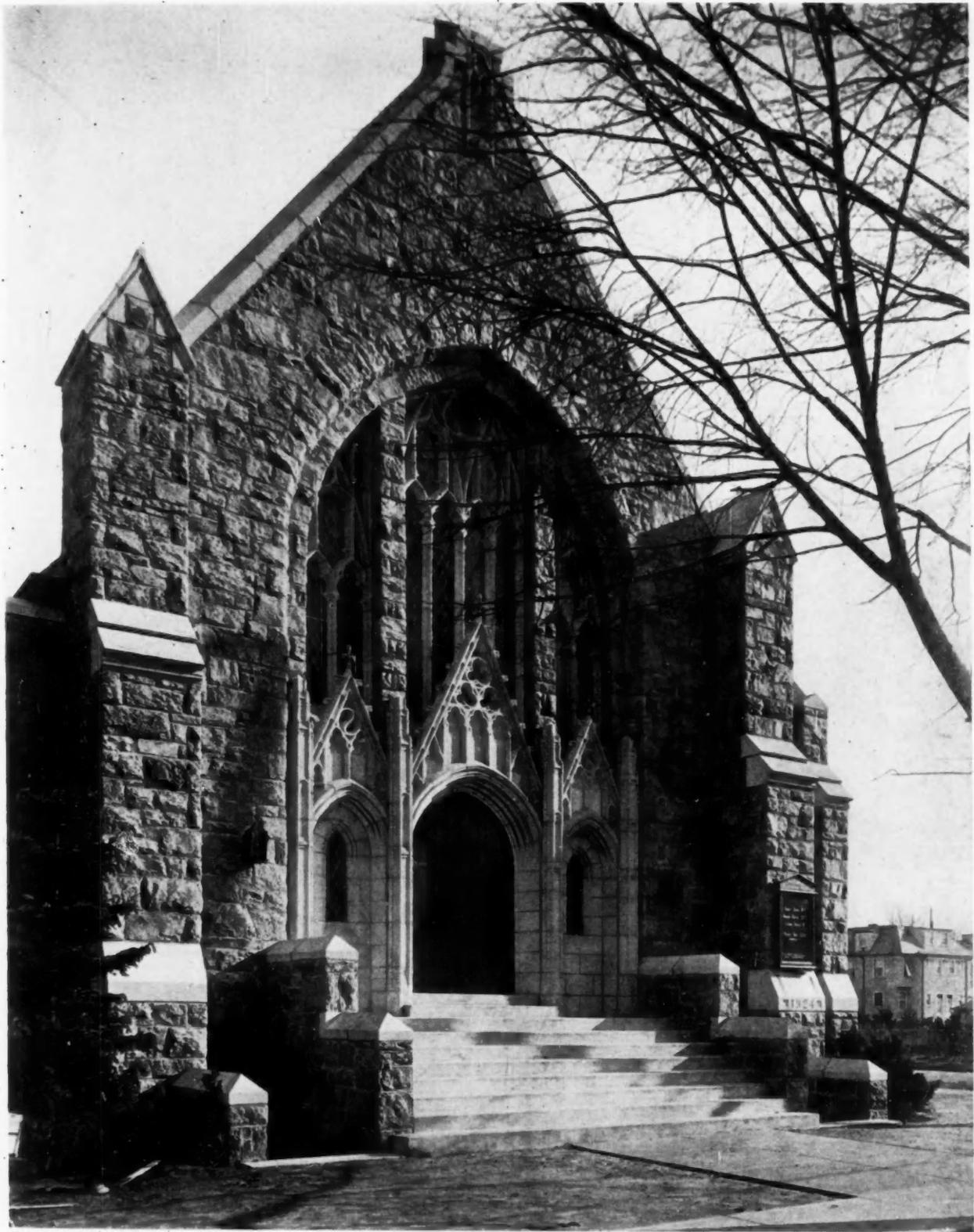
April, 1925.

gregational Church; that the Ionic portico and slender, graceful spire are to follow precedents established by the best examples of Colonial churches in New England, and that the portico with its white marble platform and steps is to shelter three main entrance doors opening into a spacious vestibule 15 feet wide by 40 feet long, with a stairway at each end leading to the gallery across the end of the main auditorium; that three large glass doors will lead from the vestibule into the main auditorium, a room 62 feet square, with a seating capacity of 420 on the main floor and 180 in the galleries, making a total of 600 sittings; that the interior architecture of the auditorium will be designed after the best types of

old churches of the colonial period; that a wide, spreading, elliptical arch will frame the pulpit platform and apse-like chancel, back of which will be the low choir gallery and organ console; that directly back of this chancel, but concealed from view, will be the organ itself; that choir rooms, a pastor's study, a women's parlor and rest room and a memorial room over the entrance vestibule will complete the plan of the church; that the building will be of reinforced concrete and brick, with the exterior masonry walls covered with clapboards in order to produce the desired Colonial effect of a white painted wooden meeting house. All of these provisions of the original program for rebuilding have been carried out.



Interior, Norwalk Congregational Church



Photos. George H. Van Anda

ST. MATTHEW'S LUTHERAN CHURCH, WHITE PLAINS, N. Y.

W. J. CHERRY and H. E. MATZ, ARCHITECTS

BUILT of rough stone laid up with irregular joints, the exterior of this church possesses a roughness of texture perhaps a little inconsistent with the refinement of detail shown in the cast stone Gothic detail of the entrance door and the tracery

of the window above. A treatment of the entrance door and window somewhat more rugged in character would have given greater consistency to the exterior design. The plan shows a long nave, the walls of which are divided into six bays by heavy

FORUM SPECIFICATION AND DATA SHEET—105

St. Matthew's Lutheran Church, White Plains, N. Y.; W. J. Cherry and H. E. Matz, Architects.

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:

Stone.

EXTERIOR MATERIALS:

Stone.

ROOF:

Slate.

WINDOWS:

Cast stone.

FLOORS:

Cork and rubber.

HEATING:

Steam.

PLUMBING:

Open fixtures.

ELECTRICAL EQUIPMENT:

Lighting.

INTERIOR MILL-WORK:

Cypress.

INTERIOR WALL FINISH:

Plaster.

SEATING CAPACITY:

450.

COST OF BUILDING:

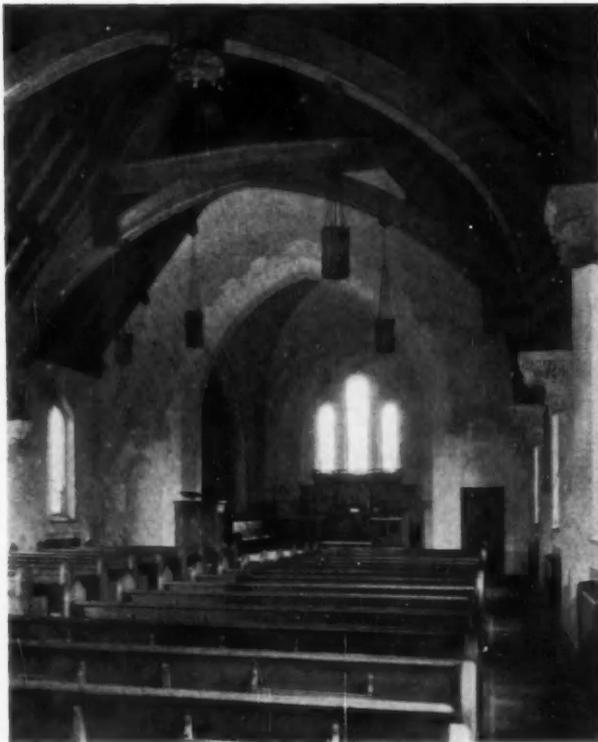
\$75,000.

DATE OF COMPLETION:

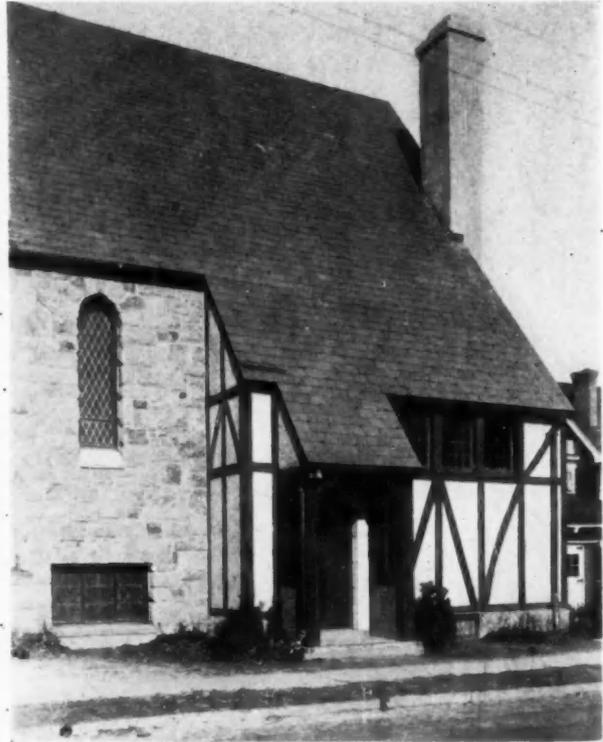
June, 1925.

roof timbers supported on massive carved wall brackets. The side entrance and the exterior of the minister's study show a consistent and successful use of half-timber, stucco and brick, in contrast to the rough stone main walls of the church. It is

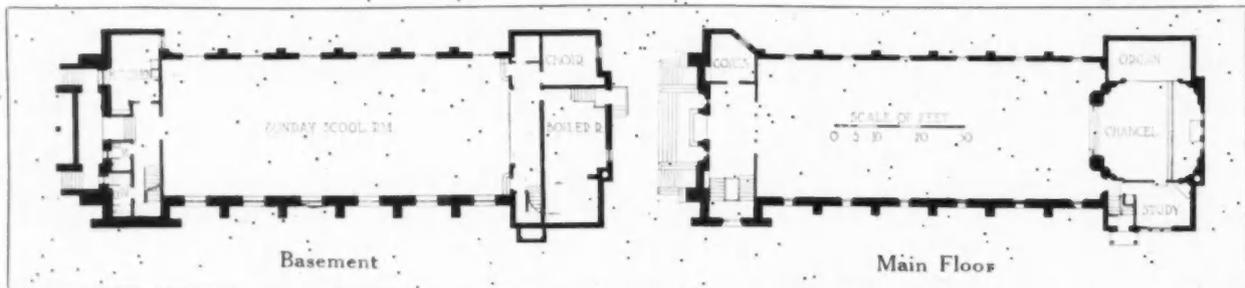
rather unfortunate that the use of the basement for the Sunday School necessitates the introduction of the wide, low windows in the bays of the nave. These windows are not in harmony or in scale with the graceful lancet windows but are, of course, necessary.



Interior Looking East



Study Entrance

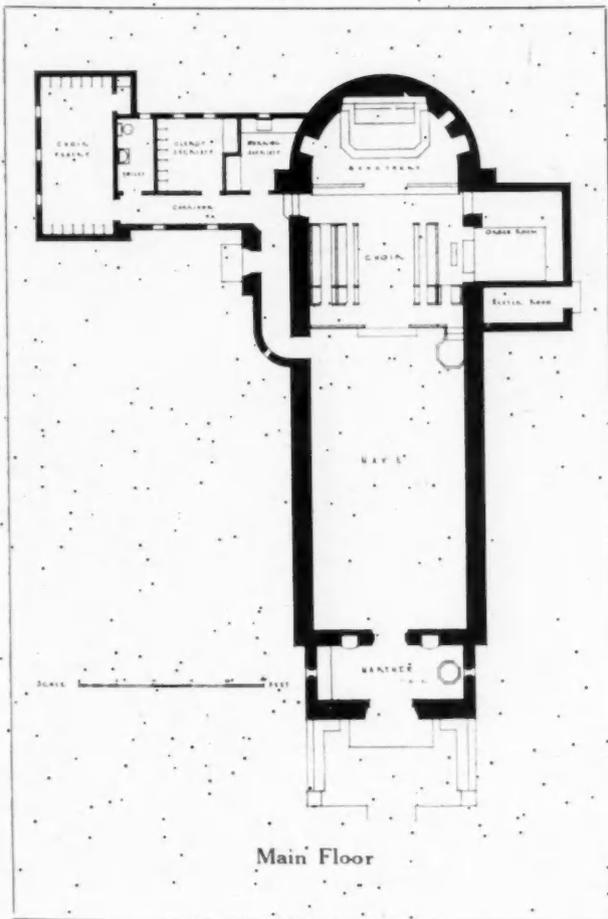


Basement

Main Floor



ALL SAINTS' CHURCH, BEVERLY HILLS, CALIF.  
 ROLAND E. COATE, ARCHITECT



THAT it is possible to be original in the free handling and adaptation of a particular style of architecture without being bizarre or exotic is evidenced by this unique but excellent piece of architectural design. There is unusually fine scale as well as simplicity shown in both the exterior and interior of this adaptation of the Spanish Renaissance style. The narrow arched windows, located high in the exterior walls, and the simple round window in the west front, suggesting a simplification of the typical Gothic windows, are so well spaced and well proportioned that it is possible to give a pleasing importance to the wall surfaces themselves. The importance of the height and the scale of the walls enclosing the nave or auditorium is strongly emphasized by the low tile-roofed entrance porch and wing. The plan is exceedingly simple and direct. An unusually long, narrow nave, terminating in a semi-circular sanctuary, together with the space set apart for the choir, occupies over a third of the interior of the church. On one side of the choir is a good sized organ room and a small heater room, while on the opposite side a narrow passageway connects the nave and the choir with a side entrance to the church and the corridor or cloister leading to the various rooms used by the choir and clergy. In the entrance vestibule, or narthex a simple but massive font with ornamental wrought iron cover is located. Although simple in character, every detail of this church is designed with the utmost care and consideration for scale and style. Stained to imitate Italian walnut, all the details of

## FORUM SPECIFICATION AND DATA SHEET—106

All Saints' Church, Beverly Hills, Calif.; Roland E. Coate, Architect

## OUTLINE SPECIFICATIONS

## GENERAL CONSTRUCTION:

Reinforced hollow concrete.

## EXTERIOR MATERIALS:

Whitewashed concrete.

## ROOF:

Hand-made Mexican tile.

## WINDOWS:

No sash in church proper; sash in vestry.

## FLOORS:

Tiles.

## HEATING:

Hot air, forced system.

## ELECTRICAL EQUIPMENT:

Lighting.

## INTERIOR WALL FINISH:

Whitewashed concrete.

## SEATING CAPACITY:

Approximately 120.

## APPROXIMATE CUBIC FOOTAGE:

74,800.

## COST PER CUBIC FOOT:

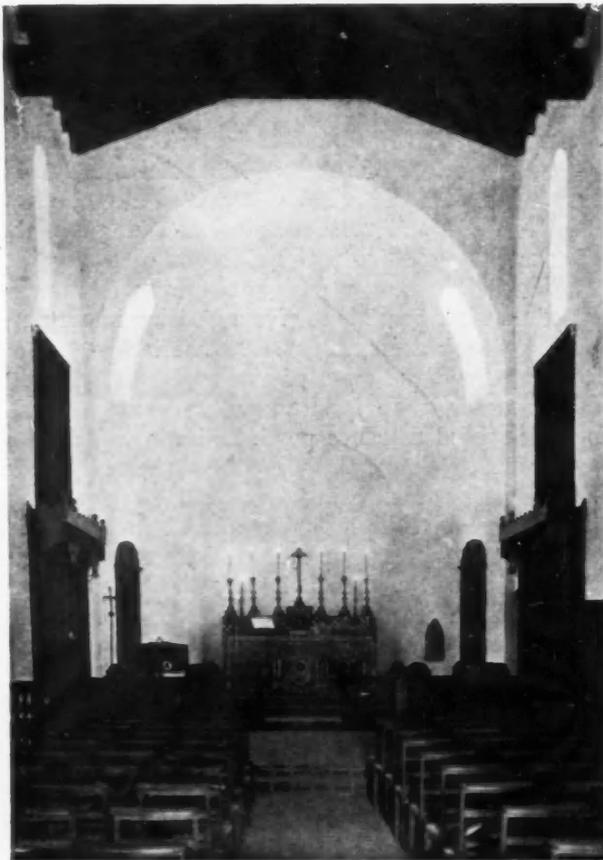
24 cents, not including furniture.

## DATE OF COMPLETION:

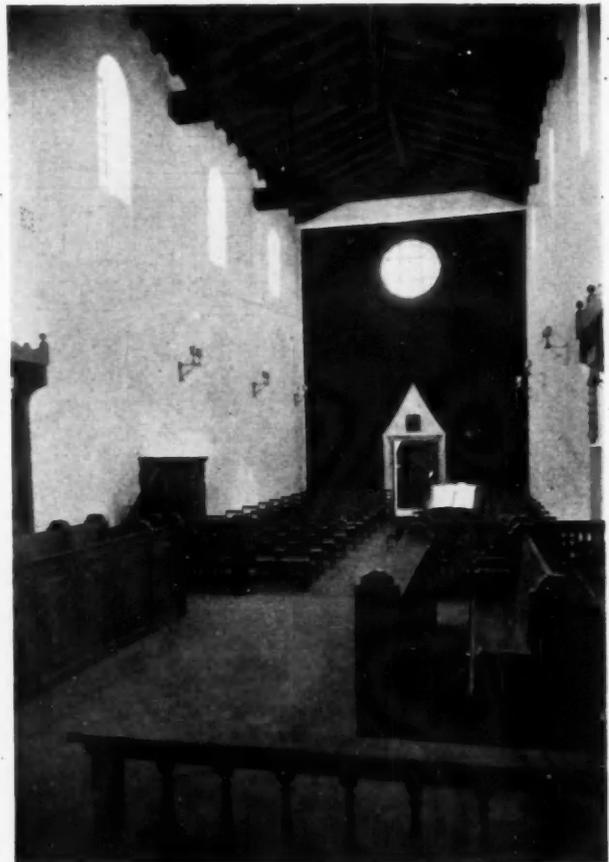
May, 1925.

church furniture, such as the pulpit, choir stalls, sanctuary seats and chancel rails, are original and interesting in design on account of the manner in which they indicate a free adaptation of Spanish detail. The use of long wall hangings back of the choir stalls and covering the entire west end of the nave is effective from an artistic point of view, and serviceable from a practical consideration, as they have a very definite use in improving the acoustic proper-

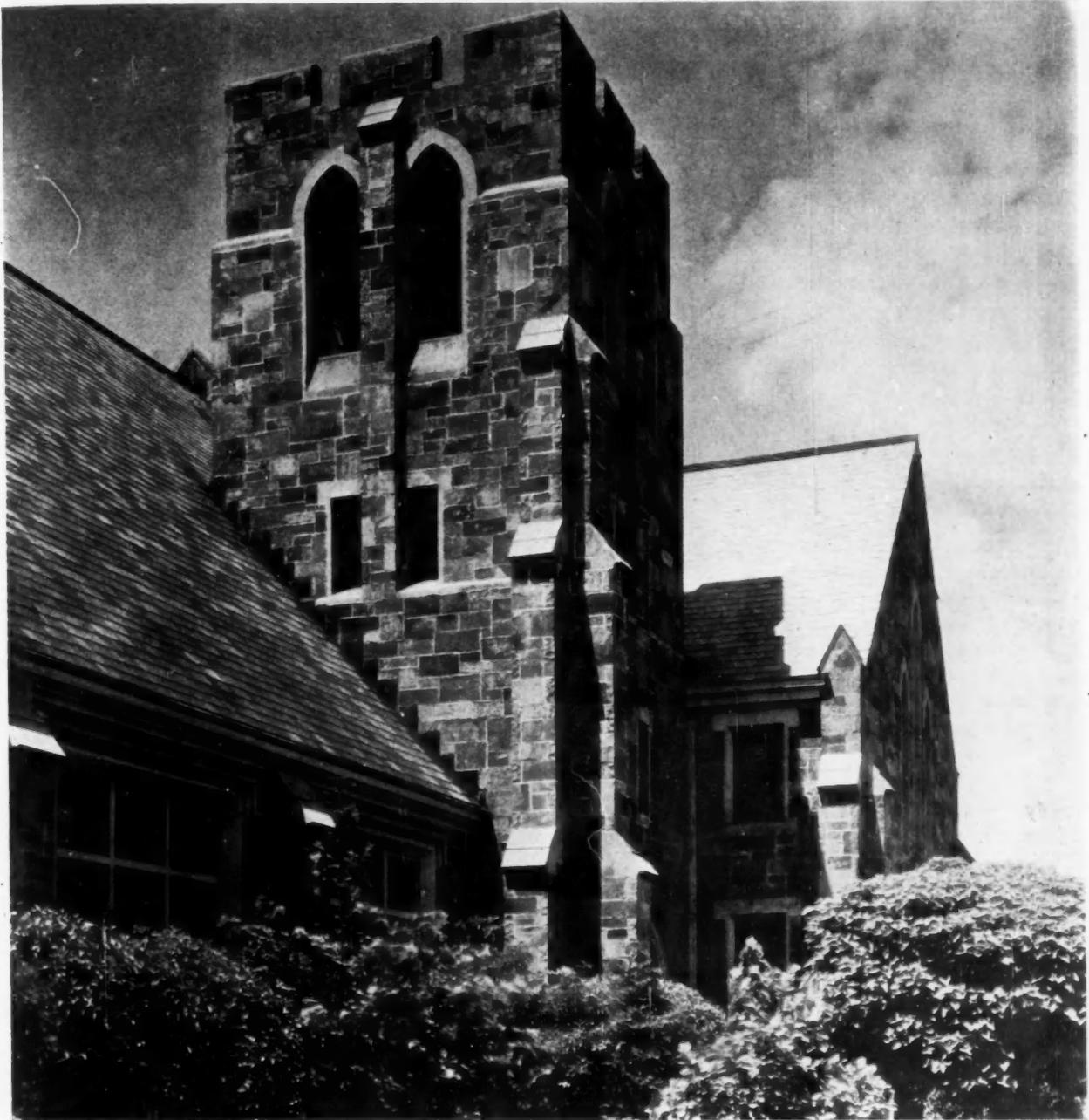
ties of the church. Such height and extent of hard plaster walls uncovered by tapestries or hangings are not favorable to the best acoustic conditions. The rich tones of these hangings are repeated in the dark stained wooden girders and rafter beams of the roof, giving the proper balance of light and dark to the interior design. It is rare to find a church, large or small, designed, built and furnished with such judgment, taste and regard for architectural tradition.



Choir and Sanctuary

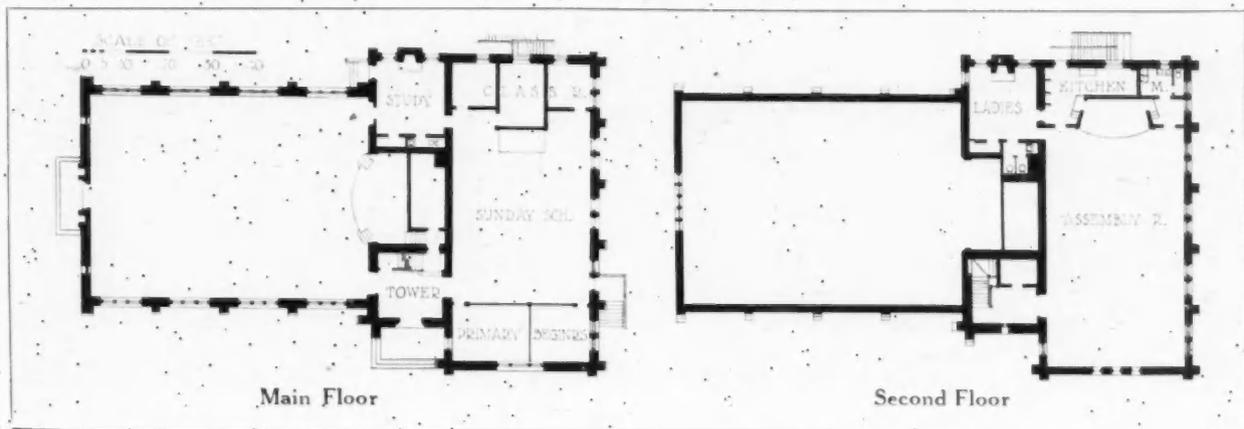


Choir and Nave



*Photos, Tebbs & Knell, Inc.*

CHURCH OF THE COVENANT, WILMINGTON, N. C.  
KENNETH M. MURCHISON, and GAUSE & LYNCH, ASSOCIATED ARCHITECTS



## FORUM SPECIFICATION AND DATA SHEET—107

Church of the Covenant, Wilmington, N. C.; Kenneth M. Murchison, and Gause & Lynch,  
Associated Architects

## OUTLINE SPECIFICATIONS

## GENERAL CONSTRUCTION:

Masonry walls, frame structure.

## EXTERIOR MATERIALS:

Seam-faced granite.

## ROOF:

Slate.

## WINDOWS:

Leaded glass.

## FLOORS:

Pine.

## HEATING:

Hot air.

## PLUMBING:

Cast iron pipe, and fittings with back ventilation.

## ELECTRICAL EQUIPMENT:

Cable with outlets for lights, receptacles and switches.

## INTERIOR MILL WORK:

Oak.

## INTERIOR WALL FINISH:

Caen stone plaster.

## DECORATIVE TREATMENT:

Gothic; oak screen on platform.

## SEATING CAPACITY:

Main auditorium, 400.

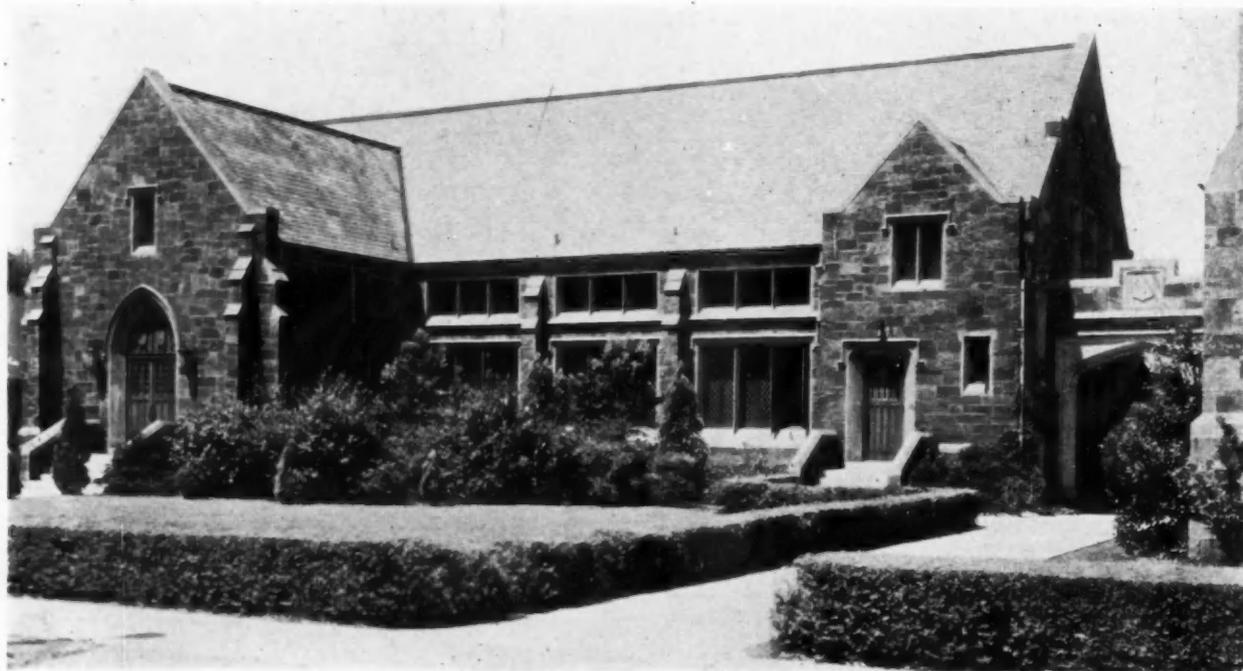
## DATE OF COMPLETION:

About June, 1917.

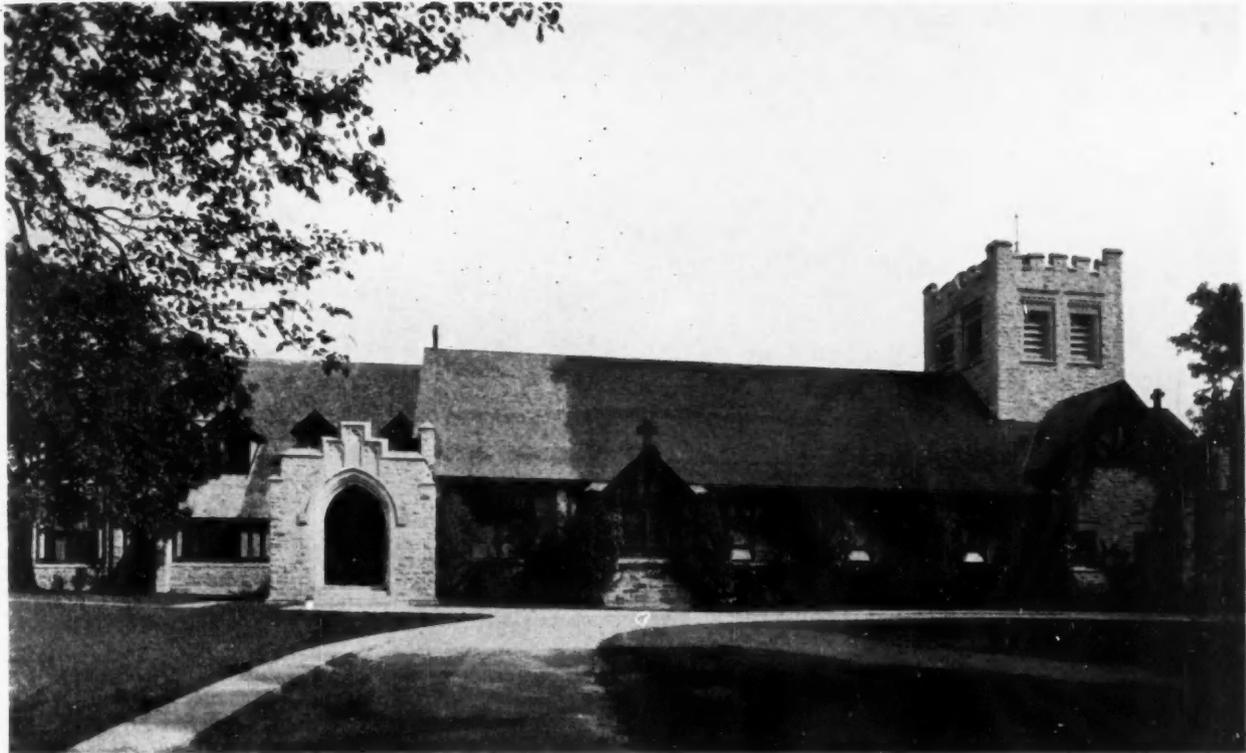
As an example of simple adaptation of the English parish church, this building at Wilmington is excellent. The seam-faced granite, varying sufficiently in color to obviate all monotony of color and texture, makes a most attractive material for this English type of small church. The interior plan of the building, which includes not only the church auditorium but also rooms for the Sunday School and a large assembly room above, is clearly indicated in the exterior design of the building. The wing of the building occupied by the Sunday School and assembly room is placed at right angles to the church auditorium, the low square bell tower pleasantly breaking the angle between these two parts of the building. The steep roofs are covered with slates of varying shades which harmonize pleasantly with

the color of the stone walls. Limestone is used for the trim, window and door details. The latter show simple Gothic mouldings and treatment in keeping with the general style of the building. The windows of the church auditorium show flat tops and are of sufficient width to well light the interior.

Although not indicated on the plans shown here, a large parish house, designed in a simple Gothic style similar to that used in the church itself, is connected with it by an archway on the side of the church occupied by the minister's study and women's room above. A driveway from the street leads across the churchyard through this archway, making it possible for wedding and baptismal parties to enter through the side door leading into the minister's study. The plan of the church building shows pleasing balance.



Parish House, Church of the Covenant

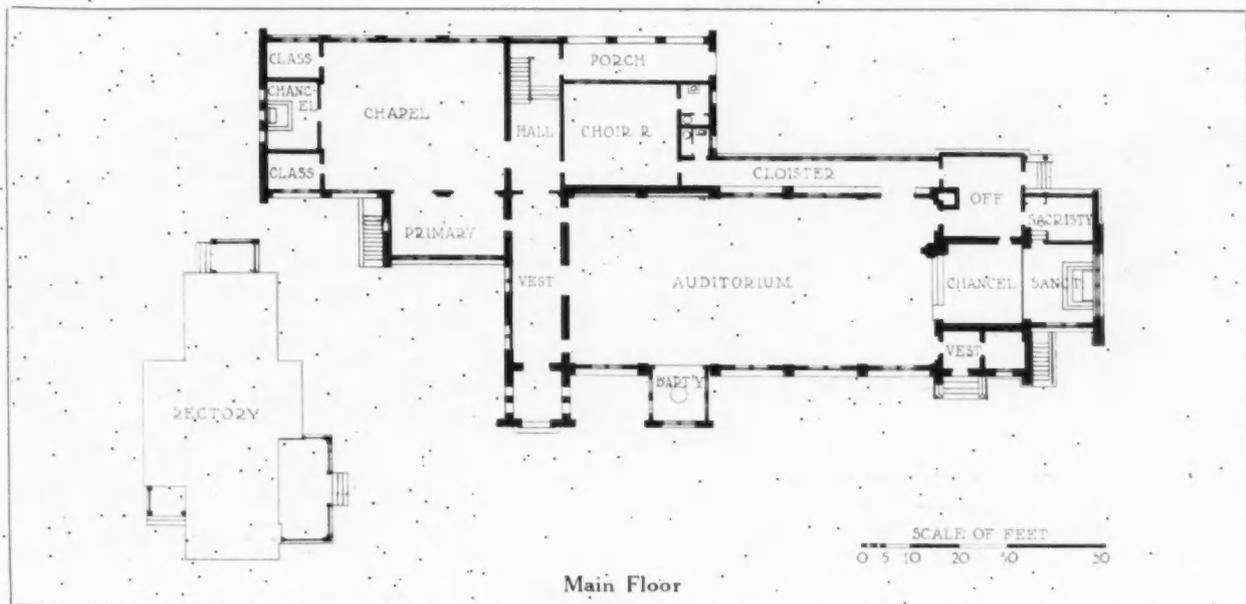


CHURCH OF THE HOLY SPIRIT, LAKE FOREST, ILL.  
GRANGER & BOLLENBACHER, ARCHITECTS

IN this small church at Lake Forest a suggestion of the English parish church is found in the low square tower above the choir and the long, unbroken lines of the roof. Suggestive of the cruciform plan, small gable-roofed bays break the length of the church like short transepts at the point where the tower rises above the main roof. At one side, and parallel to the church, is a large parish house containing Sunday School rooms and an auditorium. This building, like the church itself, is constructed of rough-finished stone laid up random with irregular

joints. Half-timber and stucco have been introduced in the gable ends of the church and parish building, and also in the panels between the first- and second-story windows of the parish house. In design both of these buildings show a very free use of English parish church precedent. The effect of the whole composition is pleasing on account of its long, low lines.

The interior architecture of the church is less restful than the exterior, largely on account of the sharp contrast between the light plaster surfaces and the dark toned brick piers and dark stained roof timbers



## FORUM SPECIFICATION AND DATA SHEET—108

Church of the Holy Spirit, Lake Forest, Ill.; Granger &amp; Bollenbacher, Architects

## OUTLINE SPECIFICATIONS

## GENERAL CONSTRUCTION:

Masonry walls, wood floor; roof construction, non-fireproof.

## EXTERIOR MATERIALS:

Limestone.

## ROOF:

Slate.

## WINDOWS:

Wood casements.

## FLOORS:

Wood, tile and slate.

## HEATING:

Steam, oil burner.

## PLUMBING:

Open fixtures.

## ELECTRICAL EQUIPMENT:

Usual conduit wiring.

## INTERIOR MILL WORK:

Oak.

## INTERIOR WALL FINISH:

Sand-finished plaster.

## DECORATIVE TREATMENT:

Stained woodwork.

## SEATING CAPACITY:

About 350.

## COST:

Parish House cost \$69,000.

## DATE OF COMPLETION:

Parish house completed June 1, 1925.

and rafters. Even the brick arches of the east wall stand out conspicuously against the light toned plaster walls above them. The placing of the tower between the sanctuary and the nave of the church gives added depth and importance to the choir itself. This division is emphasized by the heavy rood beam

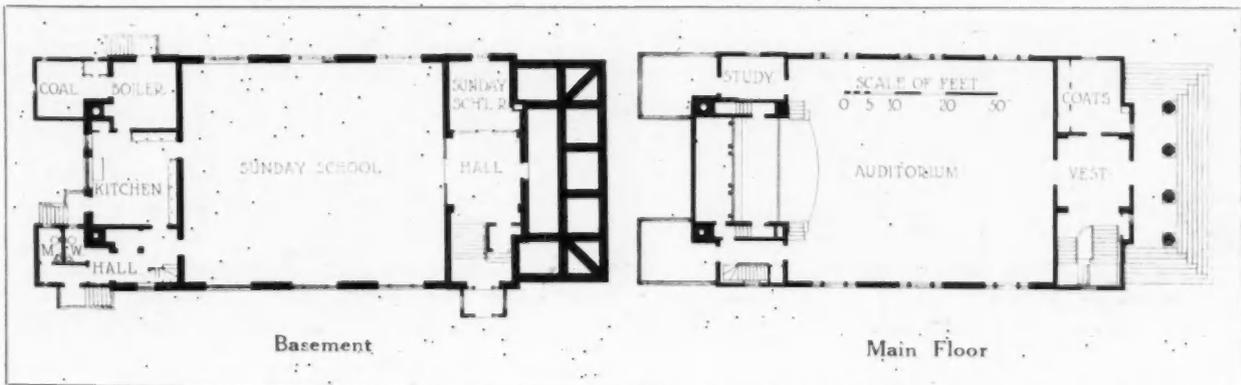
with its cross between the nave and choir. The general proportions of the interior as shown in the relations between the length, the width and the height of the nave, extending as it does up to the peak of the roof, with rafters and girders largely exposed to view, are successful and pleasing as well as appropriate.



Interior, Church of the Holy Spirit



ELLINGTON CONGREGATIONAL CHURCH, ELLINGTON, CONN.  
CLARK & ARMS, ARCHITECTS



## FORUM SPECIFICATION AND DATA SHEET—109

Ellington Congregational Church, Ellington, Conn., Clark &amp; Arms, Architects

## OUTLINE SPECIFICATIONS

## GENERAL CONSTRUCTION:

Basement, brick and frame above, wood frame,  
with steel construction in tower.

## EXTERIOR MATERIALS:

Clapboards and matched siding.

## ROOF:

Black slate.

## WINDOWS:

Double-hung, wood.

## FLOORS:

Maple.

## HEATING:

Steam.

## PLUMBING:

Toilets in basement.

## ELECTRICAL EQUIPMENT:

Lighting, and blower for organ.

## INTERIOR MILL WORK:

Pine.

## INTERIOR WALL FINISH:

Plaster.

## DECORATIVE TREATMENT:

Paint.

## SEATING CAPACITY:

280.

## APPROXIMATE CUBIC FOOTAGE:

192,157.

## COST PER CUBIC FOOT:

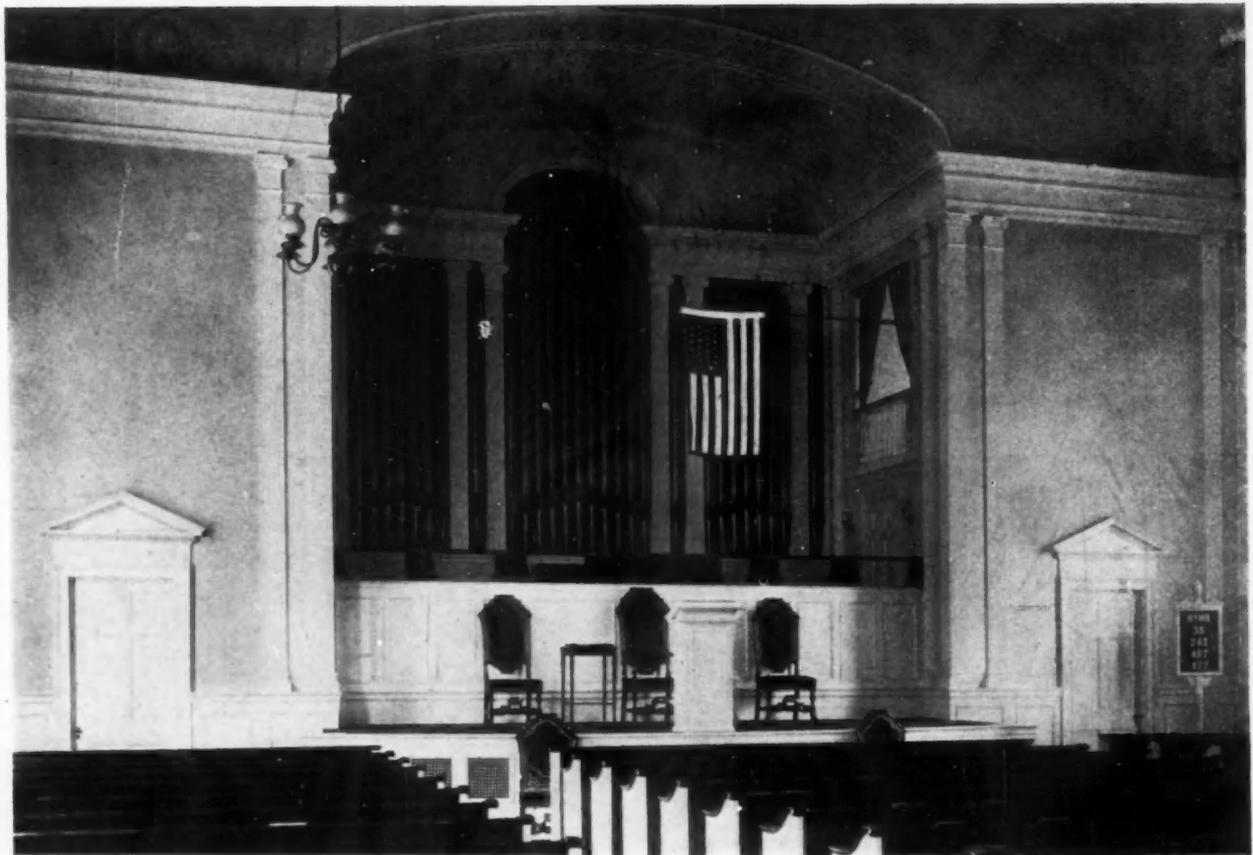
17½ cents.

## YEAR OF COMPLETION:

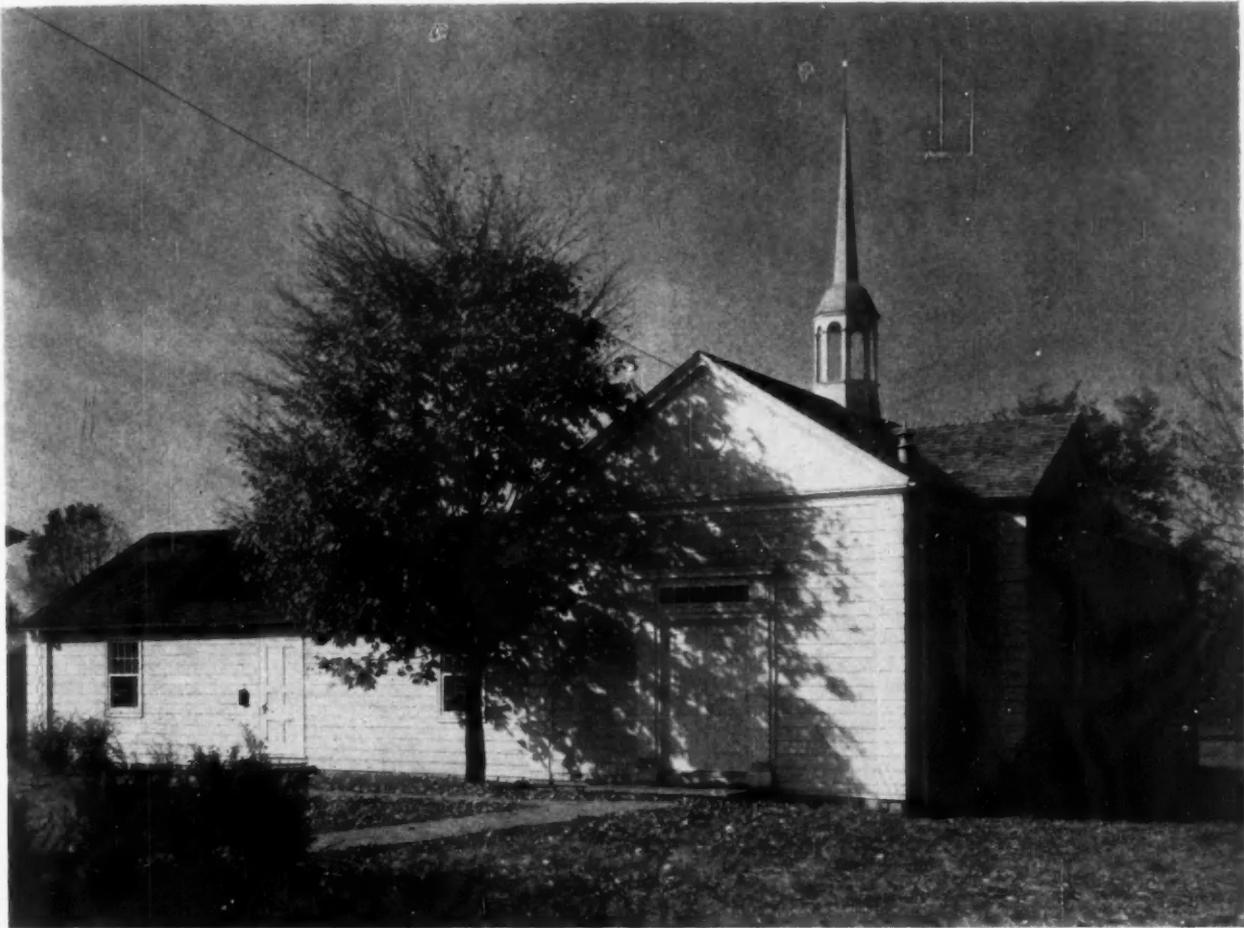
1916.

THIS white painted wooden church shows unusually careful study of Colonial proportions and details. So consistent is the entire design that the casual observer might easily believe that this church was built 150 instead of only ten years ago. The graceful entrance portico with its four Ionic columns standing on an imposing flight of eight broad steps, and backed by pilasters and a flat wall surface obtained in the old fashioned way by the use of close-matched siding, adds much to the old time appearance of the entrance front. The use of wooden quoins for the corners of the building, to give an

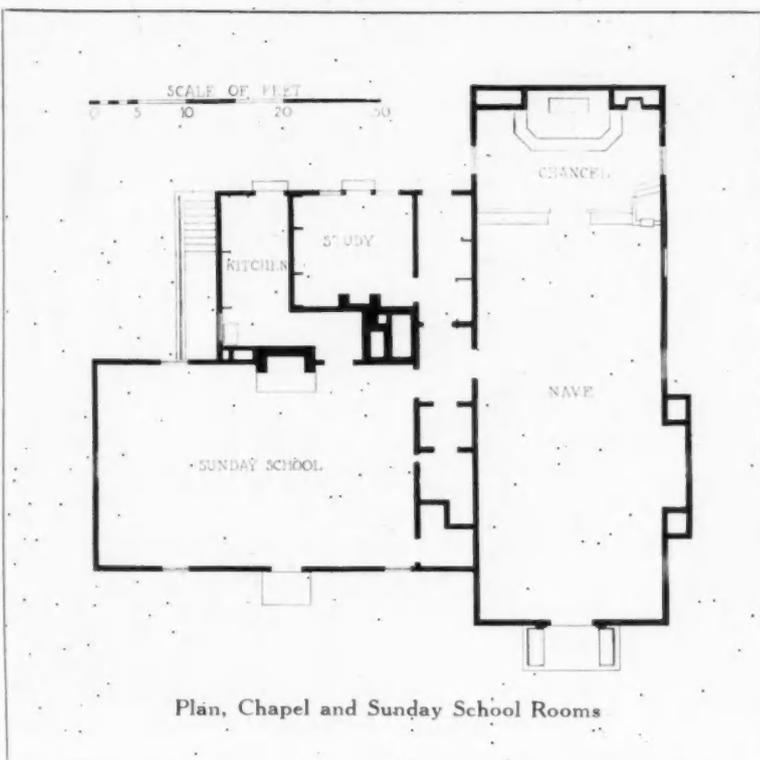
exterior indication of the interior divisions of the plan, is another pleasingly old fashioned treatment. Although there are a few such examples to be found in Colonial architecture, the use of the Palladian type of window for all of the large side windows of the church is a little unusual. White painted woodwork, old fashioned pews with mahogany rails, an interesting and pleasing treatment and location of the organ and choir gallery back of the minister's platform and reading desk, strike a harmonious note in reflecting the congregational and old fashioned New England character of this fine church interior.



East End, Ellington Congregational Church



CHAPEL FOR ST. ALBAN'S PARISH, BEXLEY, COLUMBUS, O.  
MILLER & REEVES, ARCHITECTS



IT is interesting to note that one has to travel all the way to Ohio to find one of the best small churches built within the last three years in a modified type of the Colonial style. Delicacy of detail, simplicity of design and excellence of composition give to this small ecclesiastical edifice real distinction. The main door, although ample in size for its purpose as the principal entrance to the small nave, is so well designed and proportioned that it does not overpower the little end elevation of this small church. The use of quoins for the several corners of the building, together with the delightful pedimented treatment of each of the gable ends, gives an architectural stability and dignity seldom found in wooden architecture, whether the building be large or small, old or new. The long, low wing containing the Sunday School rooms easily takes its subordinate position as a part of the whole composition, suggesting as it does the old fashioned New England school house. The little

## FORUM SPECIFICATION AND DATA SHEET—110

Chapel for St. Alban's Parish, Bexley, Columbus, O., Miller &amp; Reeves, Architects

## OUTLINE SPECIFICATIONS

## GENERAL CONSTRUCTION:

Non-fireproof; concrete foundation; frame superstructure.

## EXTERIOR MATERIALS:

Shingles.

## ROOF:

Gray shingles.

## WINDOWS:

Double-hung, wood.

## FLOORS:

Oak.

## HEATING:

Warm air.

## PLUMBING:

Usual installation and good fixtures.

## ELECTRICAL EQUIPMENT:

Conduit.

## INTERIOR MILL WORK:

Poplar, painted.

## INTERIOR WALL FINISH:

Sand-finished plaster.

## DECORATIVE TREATMENT:

Stained wood ceiling; plain plaster walls.

## SEATING CAPACITY:

100.

## APPROXIMATE CUBIC FOOTAGE:

62,000.

## COST PER CUBIC FOOT:

Approximately 24 cents.

## DATE OF COMPLETION:

June, 1925.

Note: This is a temporary structure for a new parish.

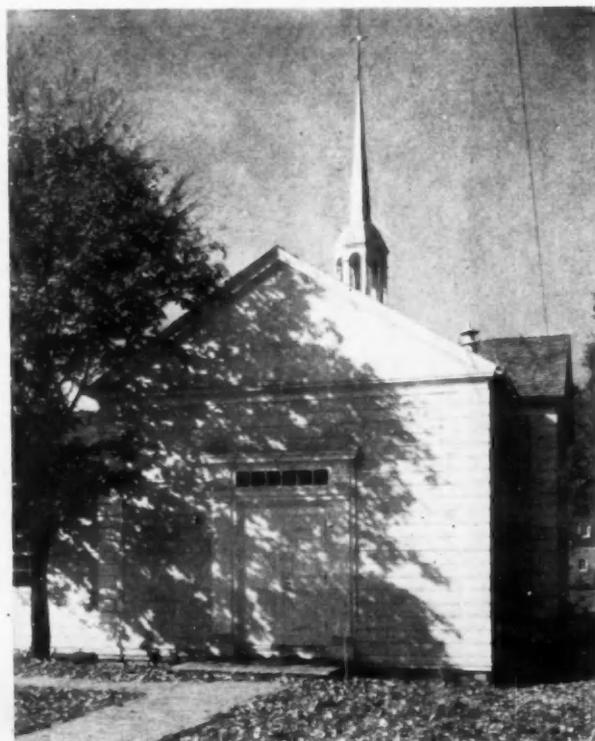
belfry and sharp spire create the final architectural notes needed to complete the "song of frozen music" to which Ruskin compared architecture long ago.

The interior design of this exquisite bit of architecture shows the same severity and simplicity as the exterior. White painted wooden benches capped with carefully detailed mouldings in mahogany harmonize with the soft gray of the plain plaster walls. The chancel rail of delicately turned balusters and the white paneled altar contrast agreeably with the monastic severity of the interior design. Relieving the gray and white of the furniture and walls, the ceiling rafters and beams are stained deep brown,

and the beams are decorated at intervals with heraldic devices in colors. The rafter directly over the chancel rail becomes a rood beam, through the placing upon it of a small cross of carved wood. At one side of the small church auditorium a passage between the seats leads to a door which connects with the Sunday School rooms in the wing of the building. Although simple to the point of austerity, the interior of this little church possesses an atmosphere truly religious. The pomp and glamor of the material world have been successfully eliminated. A spirit of rest and repose, of sanctity and silence pervades this building, the work of creative architectural ability.



Nave, St. Alban's Chapel



The Main Entrance



*Photos. Walter Dole*

EVANGELICAL CONGREGATIONAL CHURCH, BRIGHTON, MASS.  
BLACKALL, CLAPP & WHITEMORE, ARCHITECTS

ANOTHER excellent example of a modern suburban church, the plan and details of which have been carefully copied from Colonial precedent, is this brick-veneered church with white painted wood trim at Brighton, Mass. The tall tower with its

solid rectangular base, penetrated by clock faces on four sides and its well proportioned and pleasingly detailed belfry above, sits solidly above the entrance portico of the church. This portico shows four fluted Tuscan columns standing on low, spreading

## FORUM SPECIFICATION AND DATA SHEET—III

Evangelical Congregational Church, Brighton, Mass.; Blackall, Clapp & Whittemore, Architects

## OUTLINE SPECIFICATIONS

## GENERAL CONSTRUCTION:

Brick veneer on wood frame.

## EXTERIOR MATERIALS:

Brick, stone and wood.

## ROOF:

Slate.

## WINDOWS:

Wood sash and frame; cathedral glass.

## FLOORS:

Oak, and tile in lobby.

## HEATING:

Vapor.

## PLUMBING:

Enameled fixtures.

## ELECTRICAL EQUIPMENT:

Lighting.

## INTERIOR MILL WORK:

Oak and white pine.

## INTERIOR WALL FINISH:

Plaster, painted.

## DECORATIVE TREATMENT:

Main auditorium, white and gray; social room, oak and tan plaster.

## SEATING CAPACITY:

Main auditorium, 374; main balcony, 217; Sunday School room, 400.

## APPROXIMATE SQUARE FOOTAGE:

8,584.

## COST PER SQUARE FOOT:

\$12.80.

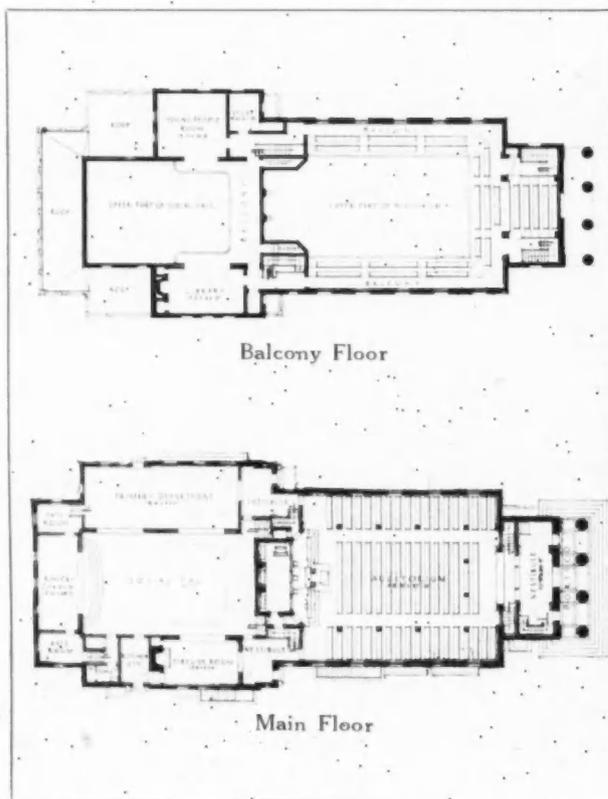
## DATE OF COMPLETION:

June 26, 1922.

marble steps and supporting a heavy but simple entablature and pediment. As the columns and entablature are of wood, it would seem to have been more consistent had the face of the pediment itself been constructed of the same material instead of brick. In fact the use of some decorative Colonial details in the pediment would have tied together more happily the severe and stately entrance portico and the more decorative arched detail of the tower above. The white painted pews with mahogany rails; the plain, stout columns supporting the balconies; the pulpit-like reading desk in the center of

the chancel; and the high singing gallery and ornamental treatment of the organ at the rear of the chancel all add dignity and a consistent Colonial character to the church auditorium.

The floor plans show the excellent provision which the architects have made for what might be called the "working departments" of the parish. Nothing in a church of this size could be more complete than the rooms for the Sunday School;—a main hall together with smaller classrooms opening from it, and with the necessary retiring rooms. These are reached either from the main auditorium or directly from outside.



Interior, Brighton Congregational Church

# INTERIOR ARCHITECTURE

## ✓ The Boudoir of Madame Du Barry, Versailles

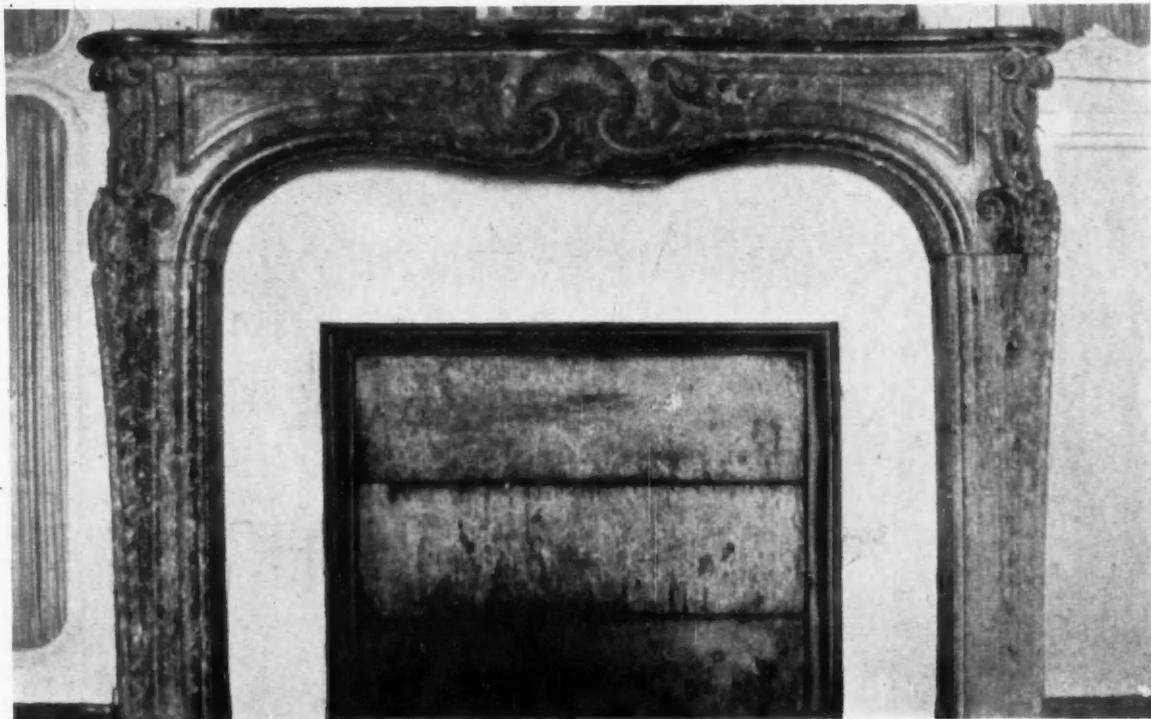
By C. HAMILTON PRESTON

OF all the rooms composing that famous suite at Versailles known as the *Appartements Du Barry*, created by Louis XV for the royal favorite, the subject of our sketch is the most interesting; as to both design and detail it is unusual.

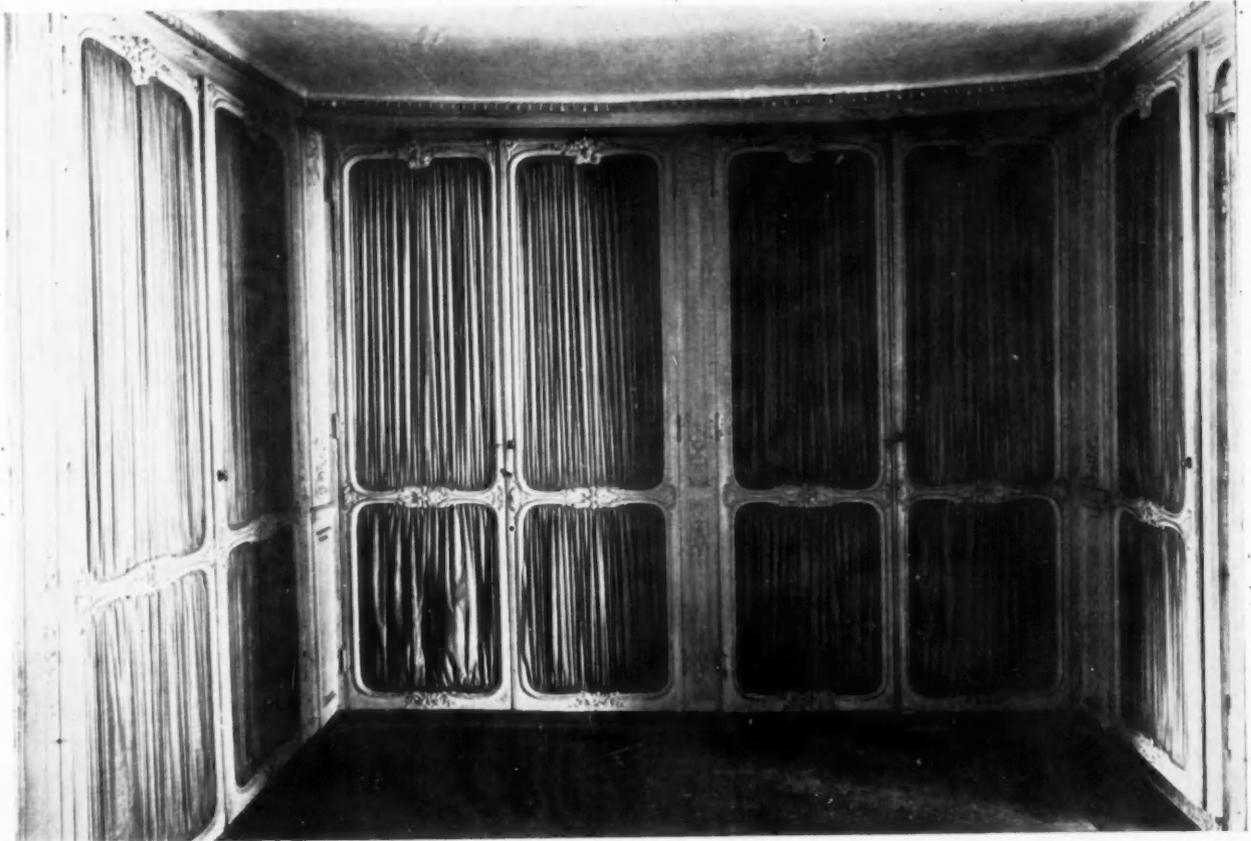
Apparently the room was planned as a combination boudoir and dressing room. The customary alcove for the bed is there, though not so deeply recessed as usual, while all around are the closets arranged to include practically all the paneling of the room. This room, facing on the town side of the Palace, is lighted by a single dormer which, though one of those beautifully designed and detailed dormers of which there are so many at Versailles, is nevertheless none too large and gives so little light that the room is rather gloomy. The problem of getting the requisite height for the room was managed by placing the ceiling high in the roof and stepping down twice to the height of the dormer. This treatment is most ingenious in spite of the fact that the dormer seems low in appearance and tunnel-like in effect, owing to the length of the jambs. It is the best solution of a difficult problem, and the effect is greatly enhanced by the beauty of the detail involved.

In detail of the Louis XV manner, this room is

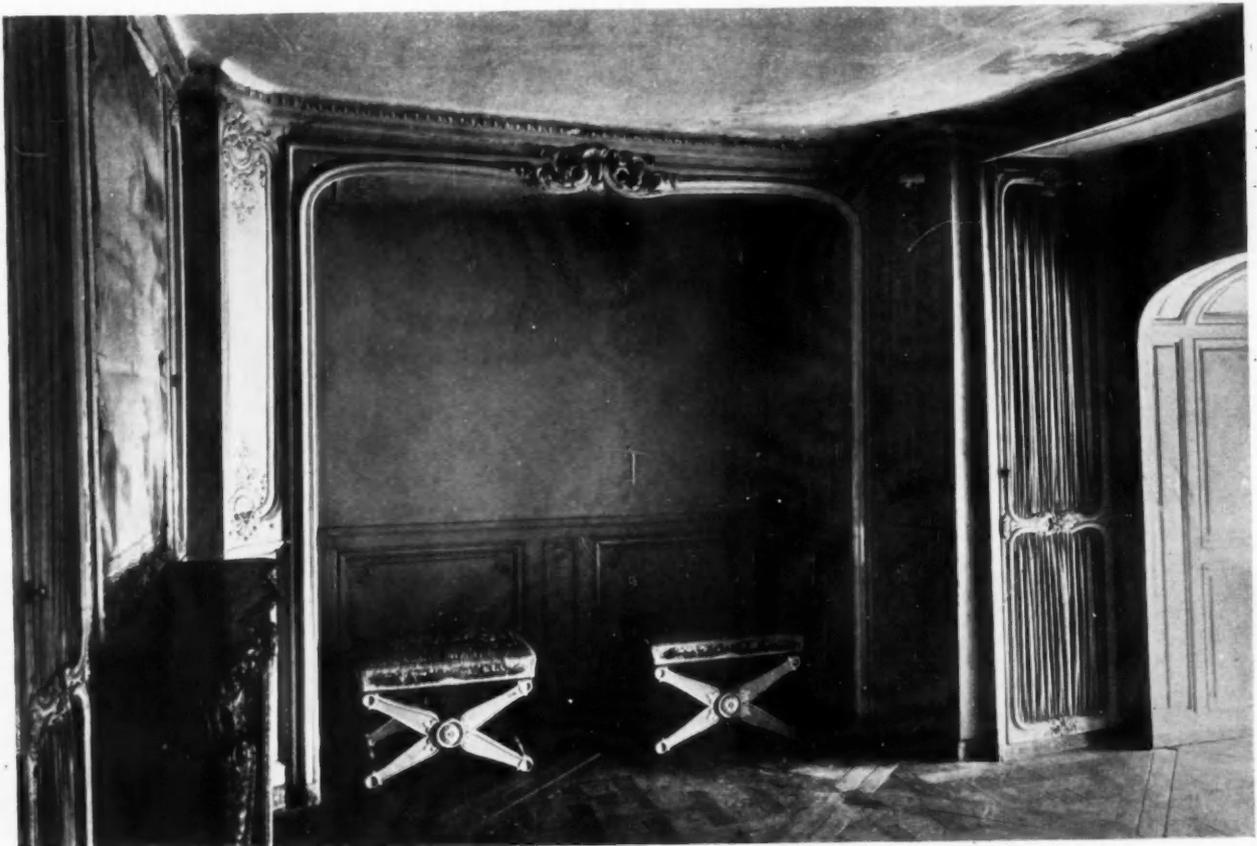
unsurpassed. The graceful curve and center motif of the alcove; the top, bottom and intermediate motifs of each of the panels which form the closets; the narrow panels wherever they occur; and the curved panels at either side of the alcove are all exquisite in the grace and beauty of their curves and the rare delicacy of their detail. Nowhere in France is there a more satisfactory piece of work of this period. The mouldings are varied as to design and scale, yet properly related one to another, robust in scale, and never finical. In this room we find expressed the best traditions of the Louis XV manner—strength throughout and utmost beauty of detail. The mantel is elaborate in design and unusual in ornament, though the design is somewhat marred and confused by the extraordinarily mixed mottlings and markings of the marble, a strange mingling of dark yellows and reds. In the time of Du Barry this room must have been charming in color; now it is the usual gray, as modified by the Second Empire. As an inspiration for either a boudoir or library in a slightly frivolous and gaysome manner, this room is without peer. The arrangement of the paneling is well adapted to use in a library where it is necessary to place the books in glazed cases.



Mantel, Boudoir of Madame Du Barry



PANELING

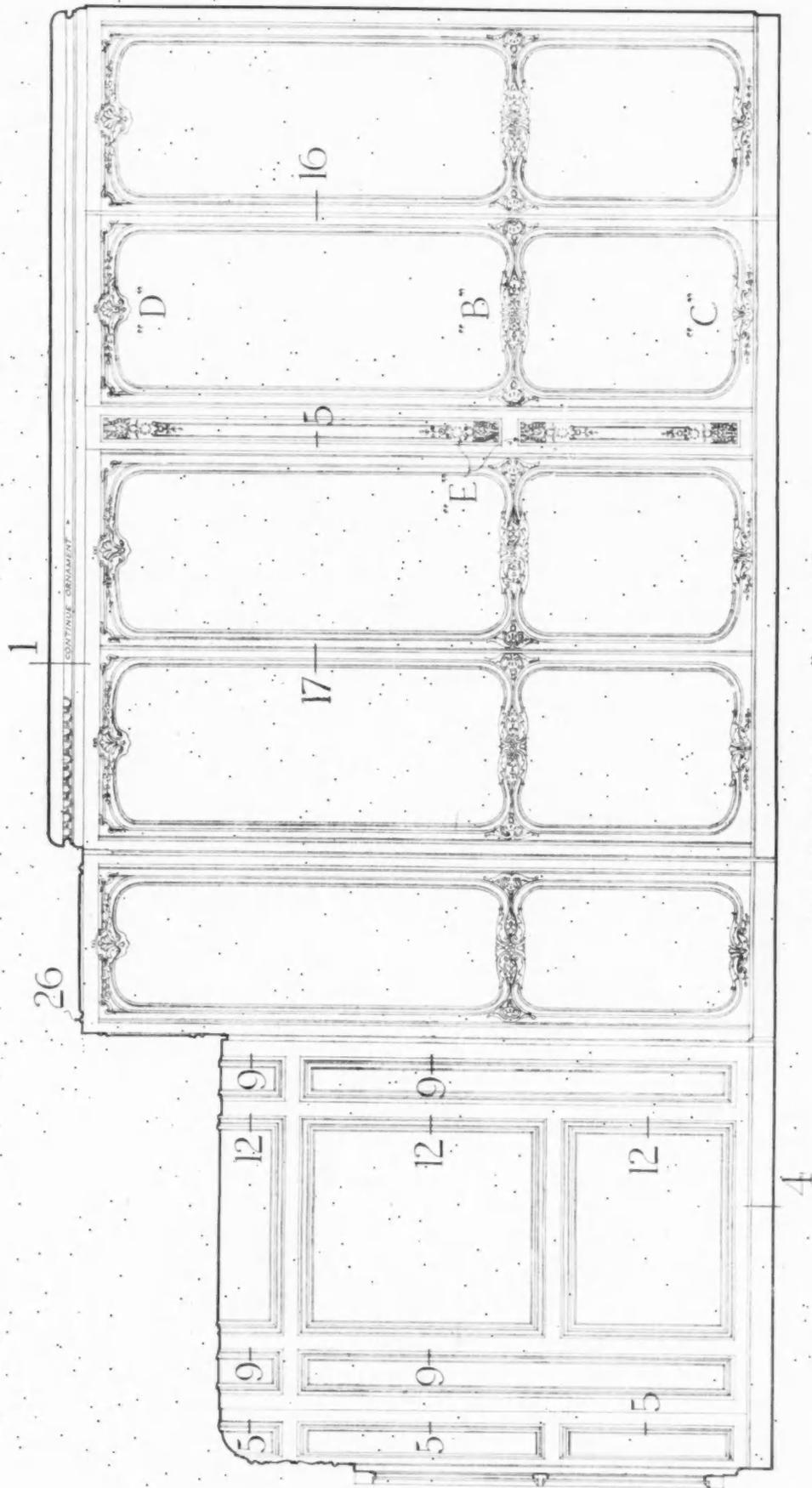


ALCOVE

DETAILS, BOUDOIR OF MADAME DU BARRY; VERSAILLES







ELEVATION "C~C"

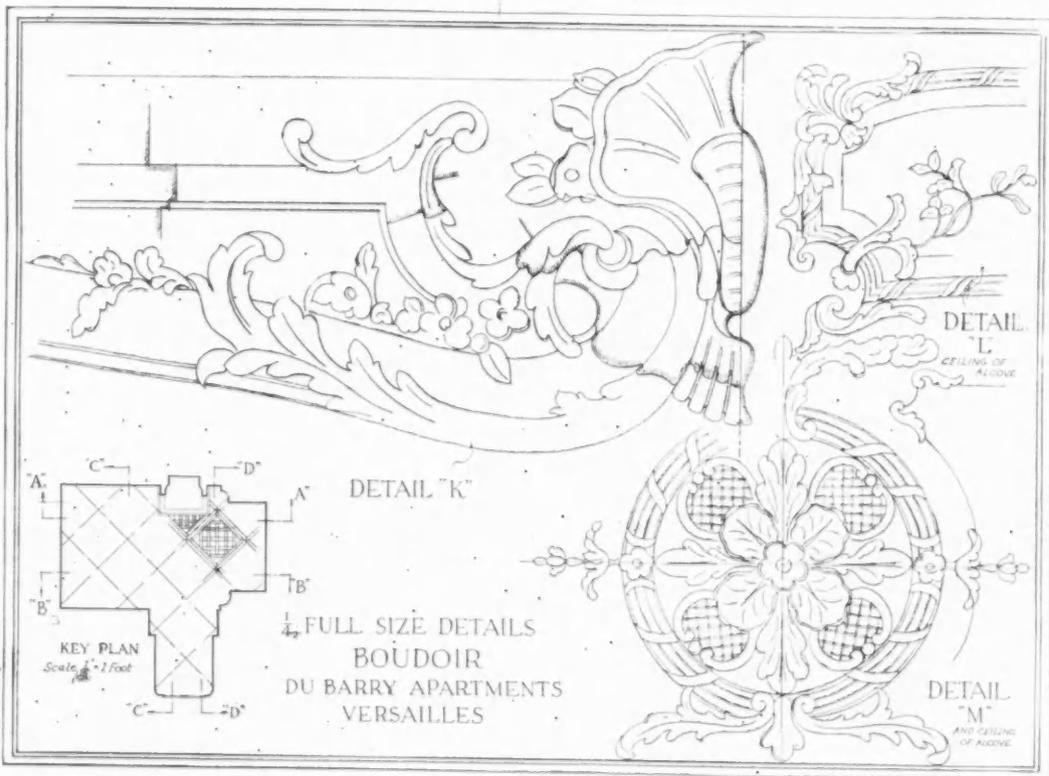
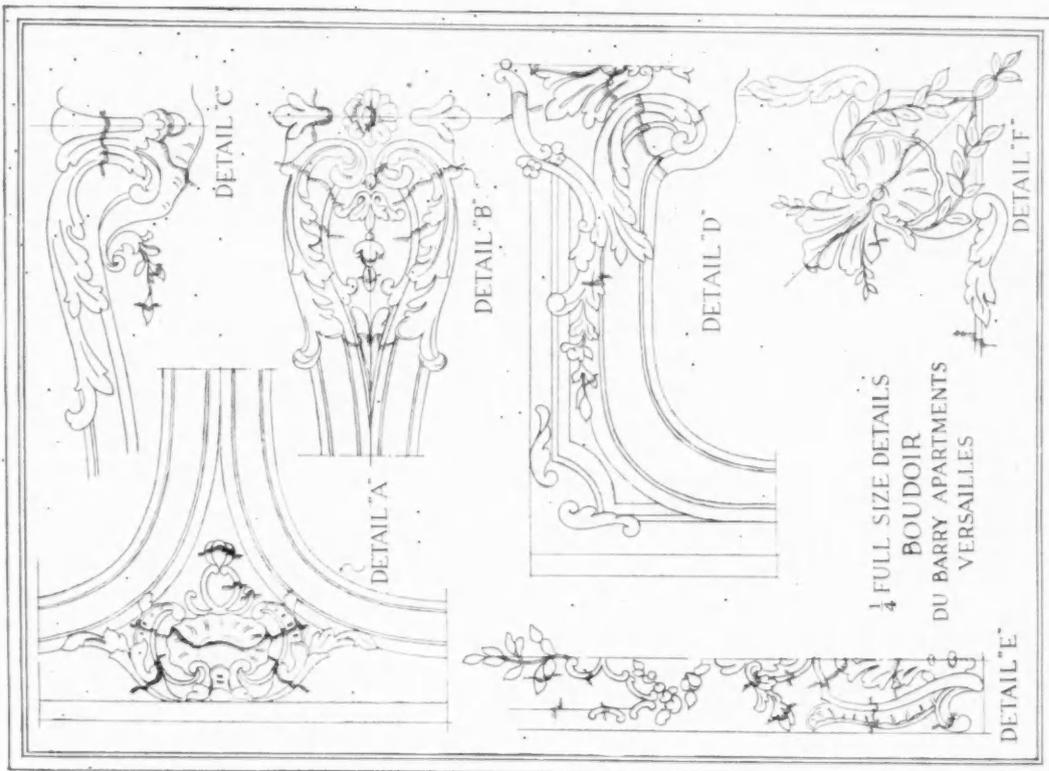
Scale  $\frac{1}{2}$ " = 1 Foot

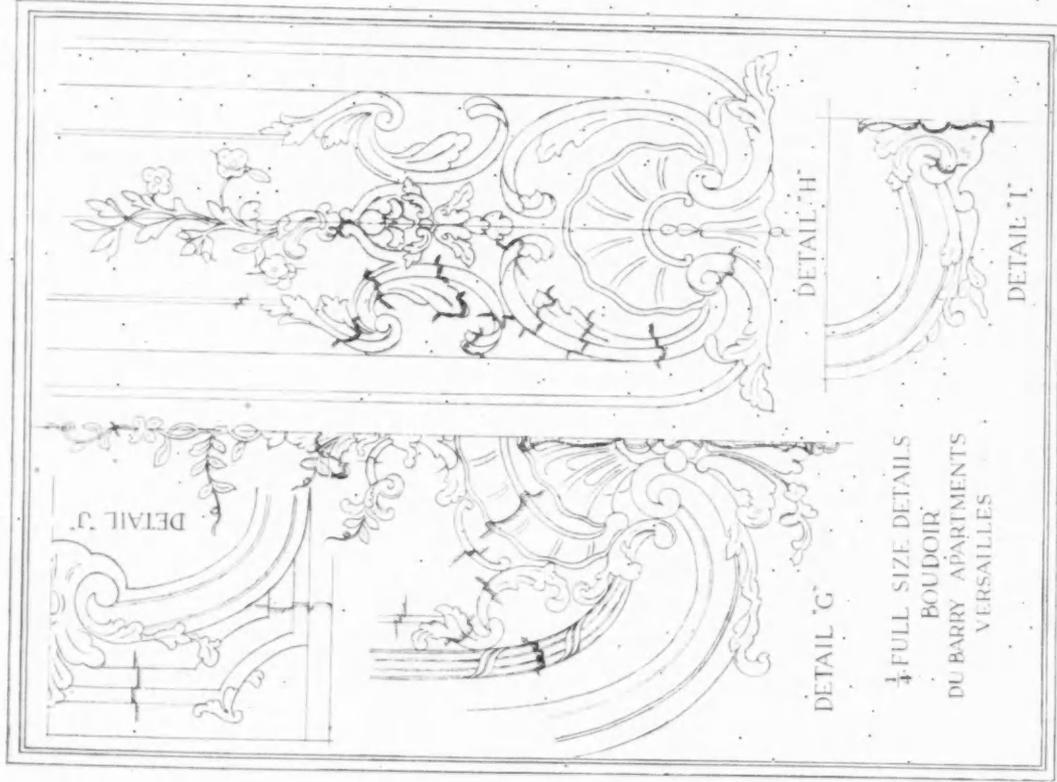
BOUDOIR

DU BARRY APARTMENTS

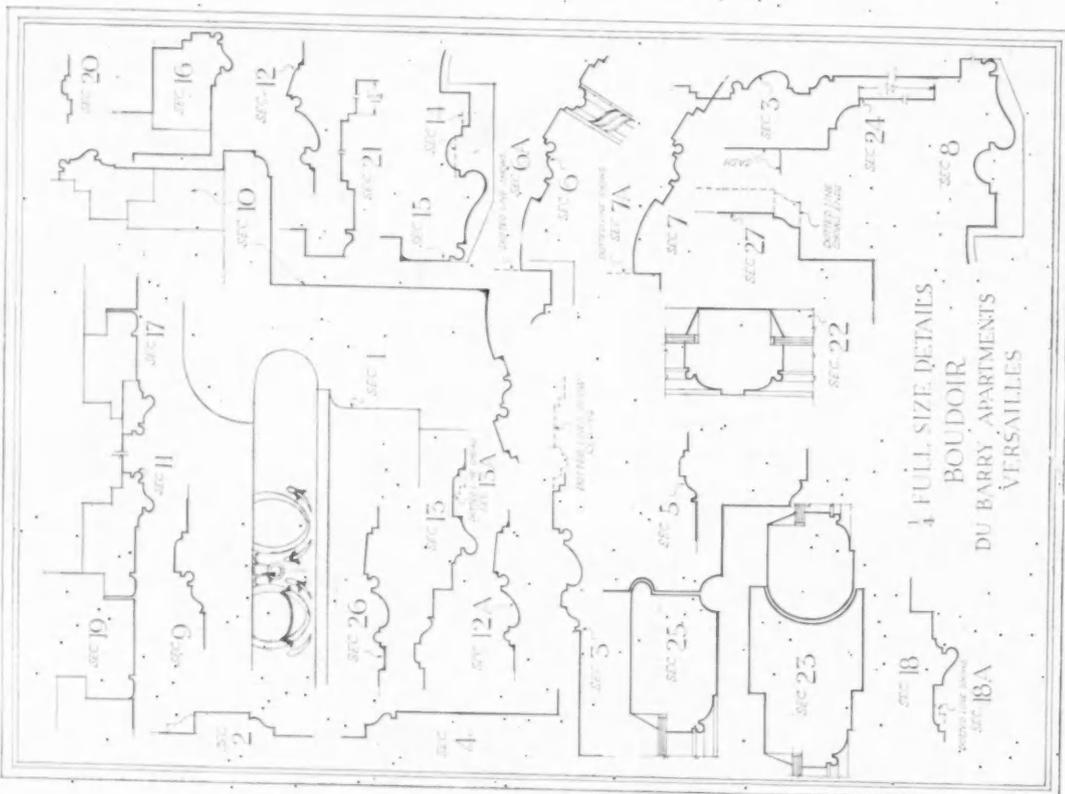
VERSAILLES







1/4 FULL SIZE DETAILS  
BOUDOIR  
DU BARRY APARTMENTS  
VERSAILLES



1/4 FULL SIZE DETAILS  
BOUDOIR  
DU BARRY APARTMENTS  
VERSAILLES