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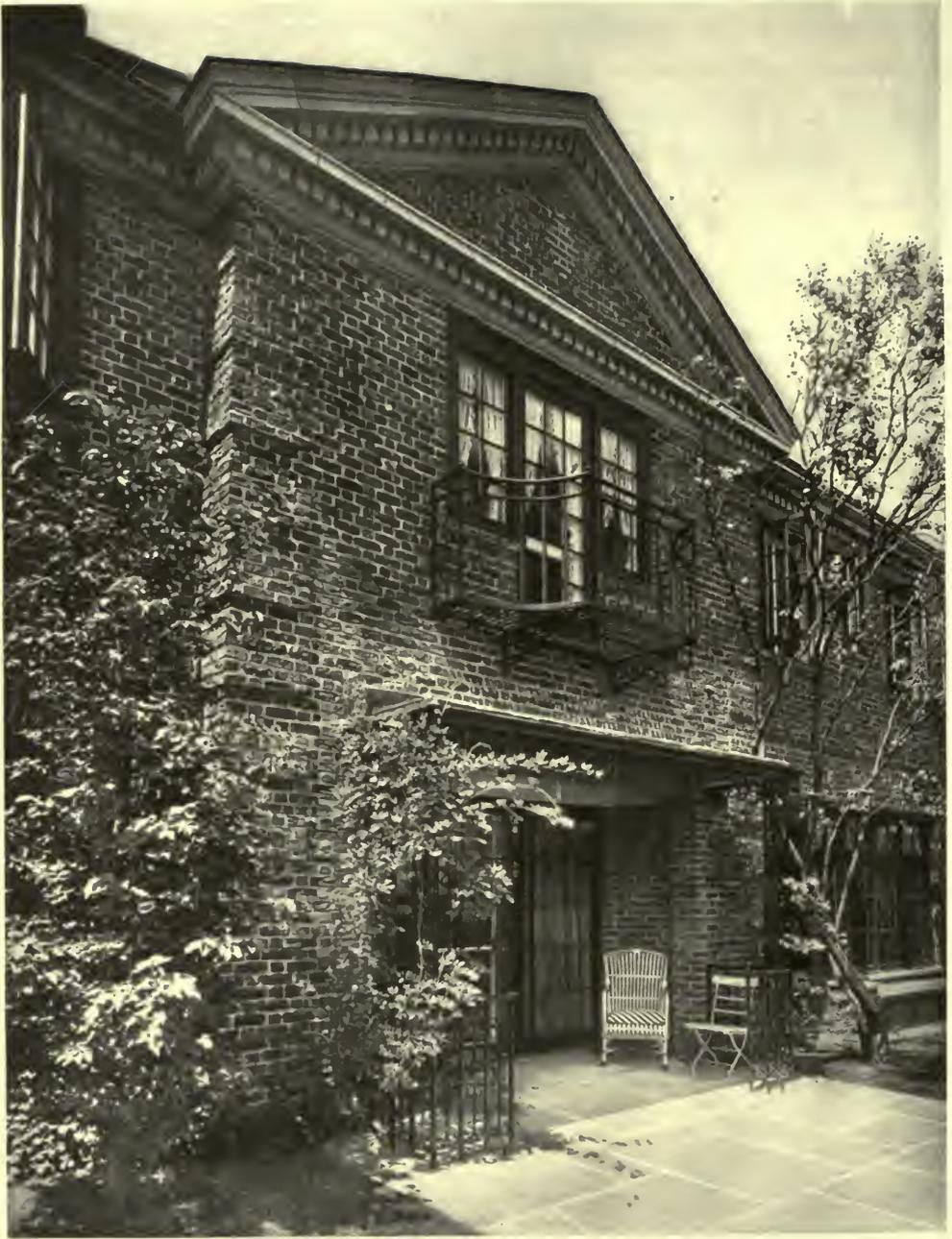
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DETAIL OF GARDEN FRONT—
HOUSE AT GREENWICH, CONN.
JOHN RUSSELL POPE, ARCHITECT.

THE ARCHITECTURAL RECORD

VOLUME XLIX



NUMBER IV

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A HOUSE AT GREENWICH, CONN. JOHN RUSSELL POPE, ARCHITECT



By Russell F. Whitehead

A REMARKABLE advance in the standard of our domestic architecture which has taken place during the last decade or so may be largely attributed to the fascination an architect finds in solving the various problems pertaining to residences, combined with a growing interest and keener appreciation of beauty on the part of the layman. The possibility of direct interpretation of the client's taste and mode of social life is very definite in the country dwelling, and offers a greater opportunity for diversity of treatment than does any other type of building problem the architect is called

upon to solve. It is because of this close relation between the requirements and the completed structure that the average architect likes to devote far more time and effort than the financial compensation warrants, to the design and execution of a house which shall adequately express the owner's individuality.

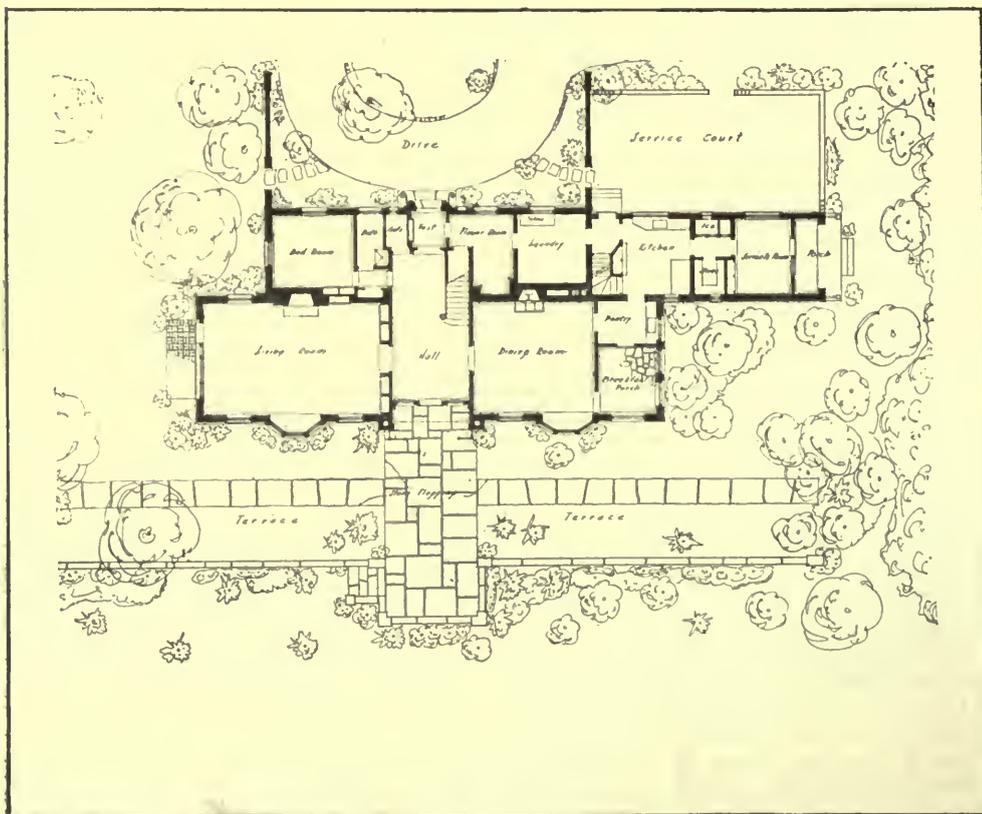
While it is an admitted fact that the design of country houses is steadily improving, the opportunity to observe this progress at first hand is seldom the privilege of the architect himself. The houses which are objects of delight for the trained man, as he searches the countryside to see what

his colleagues have contributed to the American Renaissance and to seek inspiration for himself, are so scattered and so remote from the highways that he is largely compelled to judge the work of his contemporaries from the illustrations in the current architectural press.

It is of particular interest, therefore, to note by the accompanying illustrations how John Russell Pope has interpreted the particular needs of his client in the house at Greenwich, Connecticut, and to appreciate, from the standpoint of architectural precedent, the versatility of treatment, that is possible in the work of any one architect. The June, 1911, number of *The Architectural Record* was devoted entirely to the recent works of John Russell Pope, architect. Therein it was pointed out that versatility was the most obvious characteristic of Mr. Pope's ac-

complishments. He has experimented in many different styles and sub-styles, and the range of his work is so considerable that one must hesitate to say that a particular house is unmistakably of his design. From the examples of Mr. Pope's work which have been illustrated in the architectural magazines, one may see how carefully the details of both exterior and interior have been made to conform with the period into which the house may be placed, while at the same time exhibiting a spirit of freedom and originality that makes his handling of the various styles notably distinctive.

The Greenwich house here illustrated is a free translation of some of the attractive English houses built in the later years of the Georgian period. The Georgian style is usually associated with formality—definitely prescribed modes of living



BLOCK PLAN—HOUSE AT GREENWICH, CONN.
John Russell Pope, Architect.



ENTRANCE FRONT—HOUSE AT GREENWICH,
CONN. JOHN RUSSELL POPE, ARCHITECT.



FORECOURT—HOUSE AT GREENWICH, CONN.
JOHN RUSSELL POPE, ARCHITECT.



FRONT DOOR—HOUSE AT GREENWICH,
CONN. JOHN RUSSELL POPE, ARCHITECT.

and of entertaining, worked out to the minutest detail. It is a style admirably suited to those who find the fullest expression of their personalities in the giving of staid and decorous functions. These considerations presuppose a formality in the disposition of entrance, windows and architectural embellishment to harmonize with high ceilings, spacious openings that afford broad vistas through

tere lines with an entire absence of modeled decoration and with the simplest and broadest color treatment. It is real simplicity, not mannered. The architect's thorough knowledge of the building materials he uses and his sympathetic understanding of suitable combinations with which pleasing effects may be obtained, are illustrated in this case by the selection of the brick. The walls are a mixture



GARDEN FRONT—HOUSE AT GREENWICH, CONN.
John Russell Pope, Architect.

the house, and with elaborate paneled walls and ornamented ceilings. It is not the least of the indications of the architect's skill in this instance that he has been able to achieve successfully the translation of an English Georgian style into a house which adequately meets the requirements of people whose tastes could not be satisfied with anything but good architectural design, and who wished to live simply. They wanted a home in which to live day in and day out, rather than a "show place" in which to entertain. In consequence, this house has been evolved—perhaps more truly American Renaissance in spirit than Georgian, in the subtle changes which separate it from the chosen precedent.

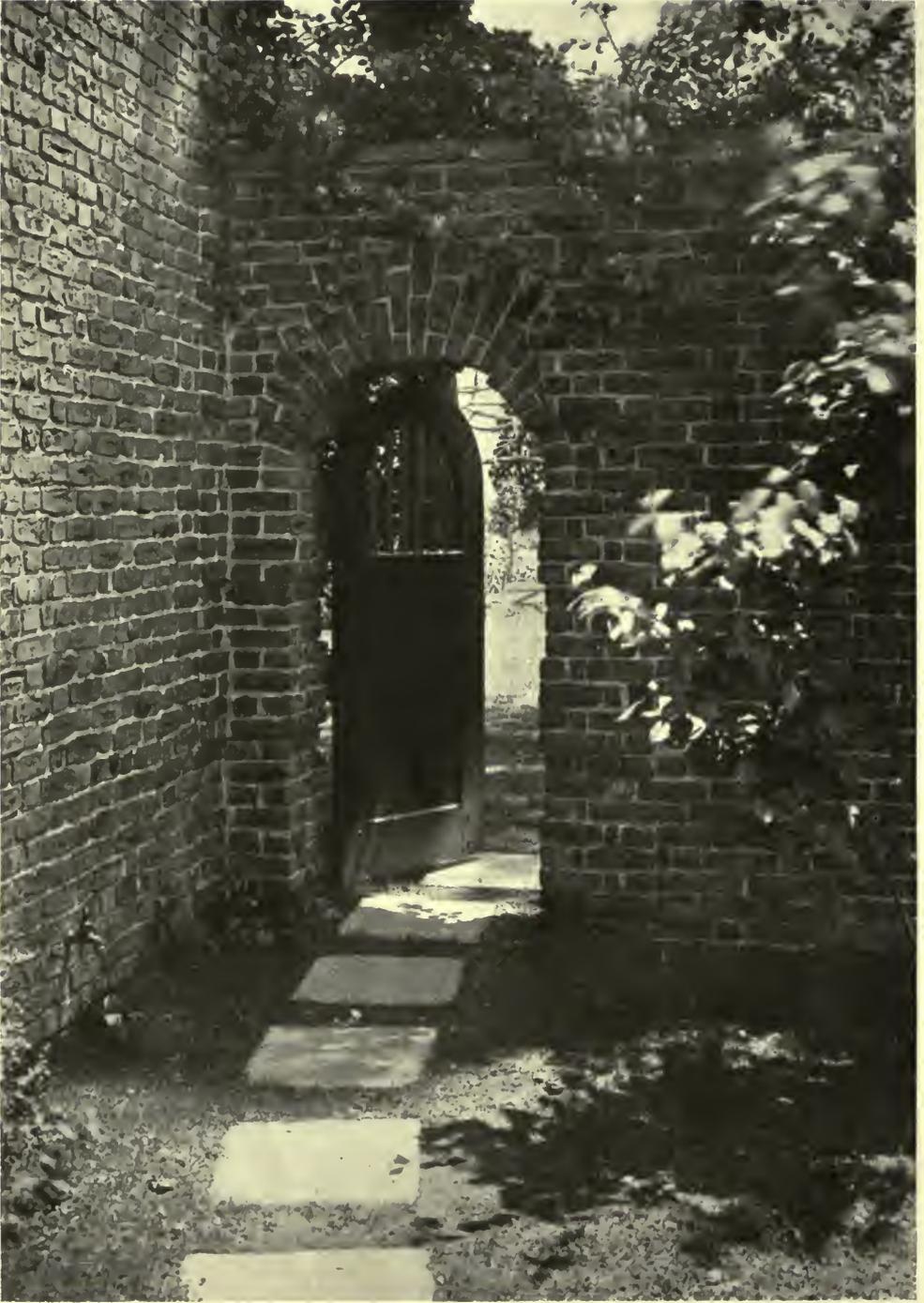
The exterior is executed on almost aus-

of so-called "seconds" or discarded bricks, practically hand picked, from the run of several yards, with dark headers laid in Flemish bond, disposed in studied irregularity with little attempt to run them to a line. This procedure creates that delightful surface texture usually looked upon as a concomitant of age. To complement the brickwork, and to accentuate the entrance feature and cornice, stone has been used, selected with the same painstaking care to assure harmony in color and texture.

A distinctive note of character is given to the design by a judicious use of wrought iron. The lanterns at each side of the main entrance are unusually well disposed. Placed directly in front of the grill which protects the side windows, they



GARDEN TERRACE—HOUSE AT GREENWICH,
CONN. JOHN RUSSELL POPE, ARCHITECT.



GATEWAY OF SERVICE COURT—HOUSE AT GREEN-
WICH, CONN. JOHN RUSSELL POPE, ARCHITECT.



SLEEPING PORCH—HOUSE AT GREENWICH,
CONN. JOHN RUSSELL POPE, ARCHITECT.

form part of the window composition. The simple yet essential iron rail at each side of the door also contributes its share to the inviting spirit of the entrance. No doubt this railing will be repeated eventually over the doorway to soften the

the dining room on the other. It is unusual in that a guest room and bath have been provided on the ground floor, immediately adjacent to the front door in the master's portion; and in the service wing the placing of the laundry on the



STAIR HALL—HOUSE AT GREENWICH, CONN.
John Russell Pope, Architect.

somewhat harsh appearance of the central window. Wrought iron has also been informally and suitably used to accentuate the garden elevation, and to frame the sleeping balcony which opens off the northeast bed room.

The plan is of the central hall type, extending from the front to the rear of the house—a very spacious arrangement with the large living room on one side and

main floor, instead of in the basement, makes for sanitation and convenience. A room where flowers may be arranged is also provided where it is most serviceable—a room whose importance in the administration of a country house is too often overlooked.

The interiors, though not technically in accord with the exterior design, are not at variance with it to a marked degree.

Unlike the traditional Georgian rooms, the ceilings are only nine feet high on the first floor. Instead of spacious passages between rooms, single doors have been used. The fireplaces and mantels are reminiscent of the early American houses,

it is built and among the stately old trees which surround it. Grounds and house seem part and parcel of each other.

The work of an architect, similar in essentials to the other creative arts, in one important particular differs from the arts



VIEW FROM HALL INTO LIVING ROOM—HOUSE AT GREENWICH,
CONN.

John Russell Pope, Architect.

and the treatment of the walls and ceilings suggests the same spirit rather than that of the elaborately paneled walls and ornamented ceilings of a Georgian house.

The great care given to the selection of the materials in order that they might not have a crude, new look, combines with the general outlines of the house to make it seem to belong on the knoll on which

of the painter, the sculptor and the writer, in that the expression of the architect's idea must be deputized, while the painter, the sculptor and the writer are able to work without intermediaries. The success of a building must rest largely upon the amount of sympathy and intelligent understanding which the architect is able to inspire in his collaborators. The most



LIVING ROOM MANTEL—HOUSE AT GREENWICH, CONN.
John Russell Pope, Architect.

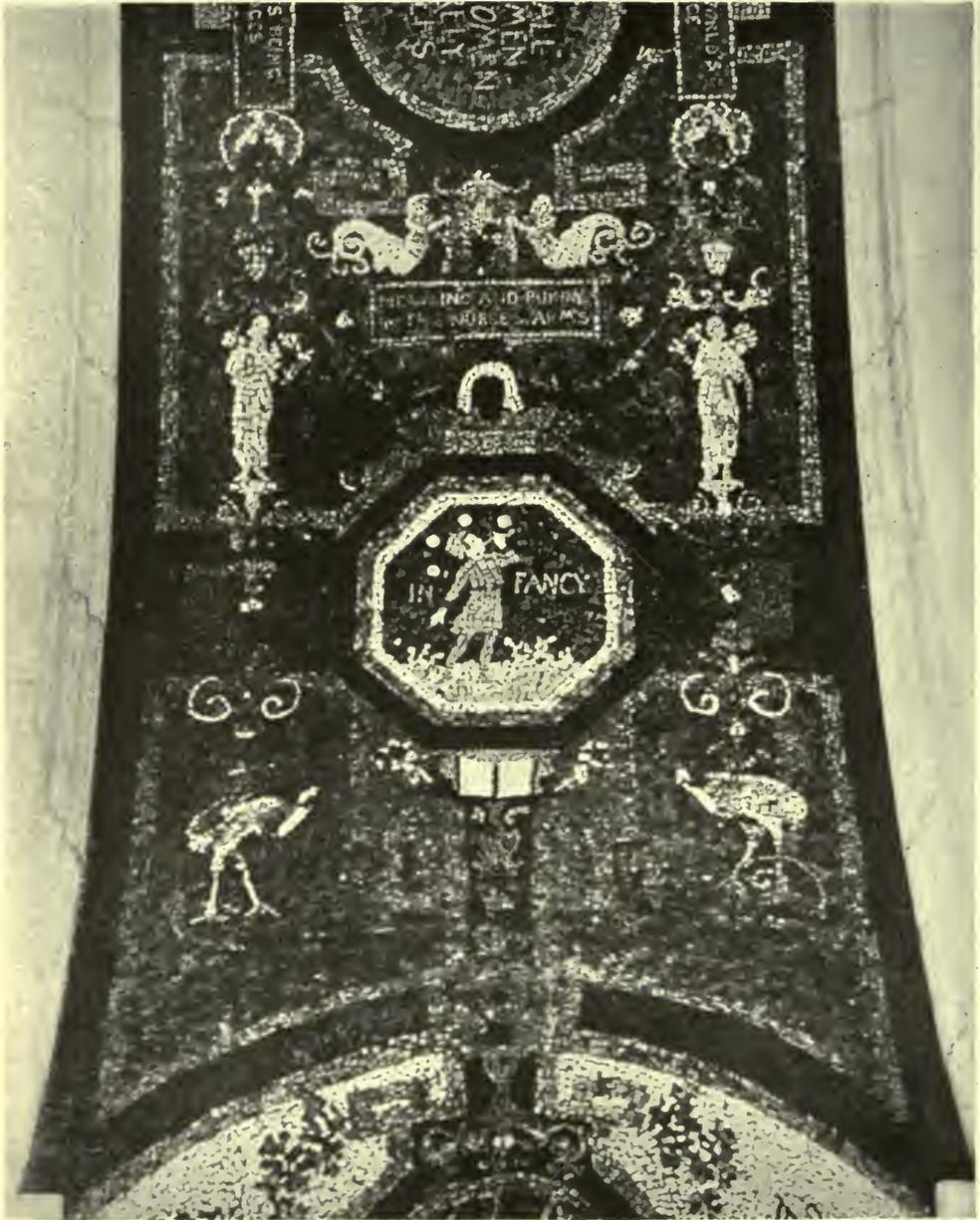
important and necessary of the men through whom an architect must work are the draughtsmen in his own office. Mr. Pope has surrounded himself with men who are loyal, sympathetic and capable, and he knows that they can be relied upon. He looks to them, not only to carry out his schemes, but also to advise about them and for actual criticism. They are artists themselves, sincerely anxious that their joint work may be as creditable as pos-

sible. No appreciation of successful work can be so pleasant as that of the men who have assisted toward its success.

Such a house as this recalls the phrase of Ruskin: "No architecture is so haughty as that which is simple; which refuses to address the eye, except in a few clear and forceful lines; and disdains either by the complexity or the attractiveness of its features to embarrass our investigation, or betray us into delight."



LIVING ROOM—HOUSE AT GREENWICH,
CONN. JOHN RUSSELL POPE, ARCHITECT.



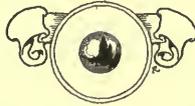
EASTERN HALF OF ARCHED PANEL OF "INFANCY"—MOSAIC,
DESIGNED BY FREDERICK J. WILEY, IN FRONTAL COLONNADE OF
THE DETROIT PUBLIC LIBRARY. CASS GILBERT, ARCHITECT.



DESIGN FOR THE DETROIT PUBLIC LIBRARY
Cass Gilbert, Architect.

————— *The* —————

MOSAICS IN THE FRONTAL COLONNADE OF THE DETROIT PUBLIC LIBRARY □ □



By William Francklyn Paris

WRITING in the sixteenth century, Vasari, who cannot be said not to have had the fullest opportunity for appraising the artistic value of mosaic, voices his surprise and regret that this most splendid and most permanent form of wall or ceiling ornament is neglected by both artists and governments. In his "Life of Titian" he makes this indictment of the artists and art patrons of his day: "In truth it is deplorable that mosaic, that art which is equally precious by reason of its beauty as by reason of the permanency of its materials, should not be more cultivated by artists and more encouraged by Princes."

The grievance of Vasari was no doubt justified, since mosaic had suffered a temporary eclipse from the fourteenth century until far into the sixteenth, and yet the Italy of Vasari's day was filled with pictorial mosaic dating back to the fourth

century, all in a perfect state of preservation.

Whether or not the influence of Vasari was felt by Pope Sixtus V, the truth remains that this pontiff in 1586 founded the mosaic factory in the Vatican, which persists to this day, and set to work a large corps of mosaicists in the decoration of the walls and ceiling of St. Peter's.

The reproach of Vasari is as true today as it was then, and the example of Garnier, who sought to bring mosaic back into favor by utilizing it in the decoration of the Paris Opéra, has only been very spasmodically followed.

In France the only notable modern mosaics are those in the Cathedral at Marseilles, the cupola of the Pantheon in Paris, the frieze of the Church of the Madeleine, the façade of the Sèvres factory, and the frieze of the Grand Palais,

designed and installed by Fournier in 1900.

There has been some attempt in Great Britain to utilize the splendid decorative value of mosaic, notably in St. Paul's and Westminster Cathedral, and also in Rome, where the American church has a mosaic decoration designed by Burne-Jones, and on which William Morris and Alma-Tadema both worked; but, generally speaking, mosaic is an orphan child knocking hopefully at many doors but being welcomed at few.

In view of this general abandonment in all parts of the civilized world of one of the most effective forms of exterior adornment, it is perhaps a hopeful sign to see a great architect like Cass Gilbert breaking a lance in its favor and so successfully proving his point as he has done in the decoration of the Detroit Public Library.

Mr. Gilbert, having a façade consisting of seven arches to decorate in a building designed to endure perhaps for centuries, has wisely resorted to mosaic as the one medium wherewith to obtain not only permanency but also a high decorative effect requisite in an architectural ensemble consisting for the most part of white marble.

To the great advantage of the population of Detroit and those visitors who may come to view the Detroit Public Library, Mr. Gilbert has been given such authority over the execution of this noble architectural pile that he is in every sense of the word the *maitre de l'oeuvre*, and as such has been in a position to dictate the nature and character of the decorations entering into the making of the finished library.

Too often the work of decorating our public buildings is an after-thought coming long after the completion of the edifice and made possible by appropriations granted several years apart. This has caused different artists to bring together elements that frequently would not mix. Mr. Gilbert, however, has designed the Public Library at Detroit down to the last detail, and no anomaly is to be feared through the application of a form of ornament composed and imagined by another mind than his. This insures a homogeneous ensemble, and nowhere is the blending of architecture and decoration so

happy as in the mosaic ornamentation of the apses of the frontal colonnade of the library.

This work was given by Mr. Gilbert into the keeping of Frederick J. Wiley, known for his decorative work in the New Haven Railroad station at New Haven, the Woolworth building in New York, and the Fine Arts building at Oberlin College.

Mr. Wiley has chosen as a subject for the decoration of the seven arches Shakespeare's Seven Ages. The mosaic is executed of *grès flambé*, which is to say that the tesserae are of enameled baked clay and not of glass. This new form of mosaic composition is a product of the Pe-wabic Pottery, conducted by Mary Chase Stratton and Horace James Caulkins in Detroit.

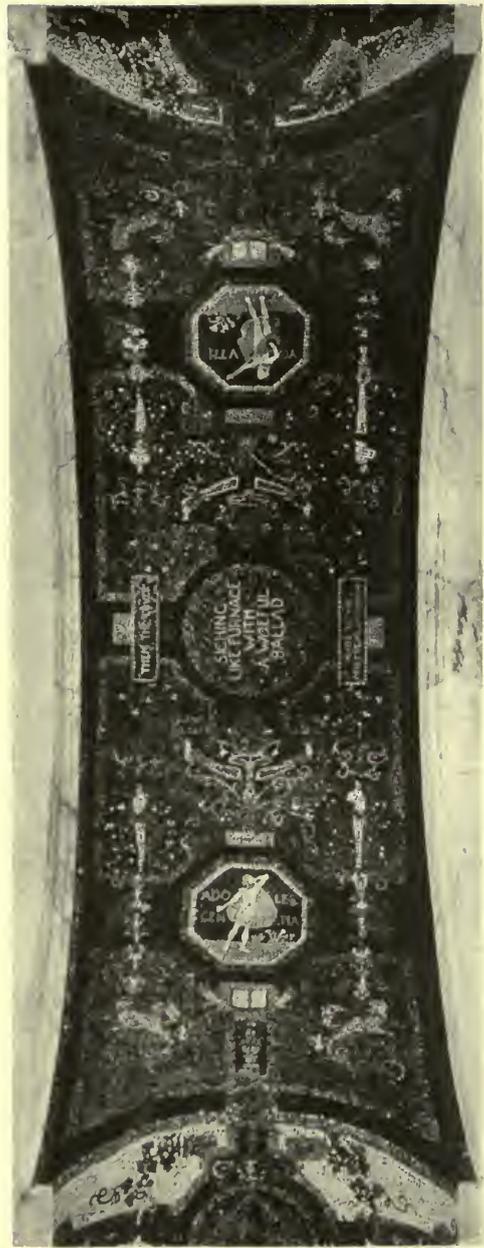
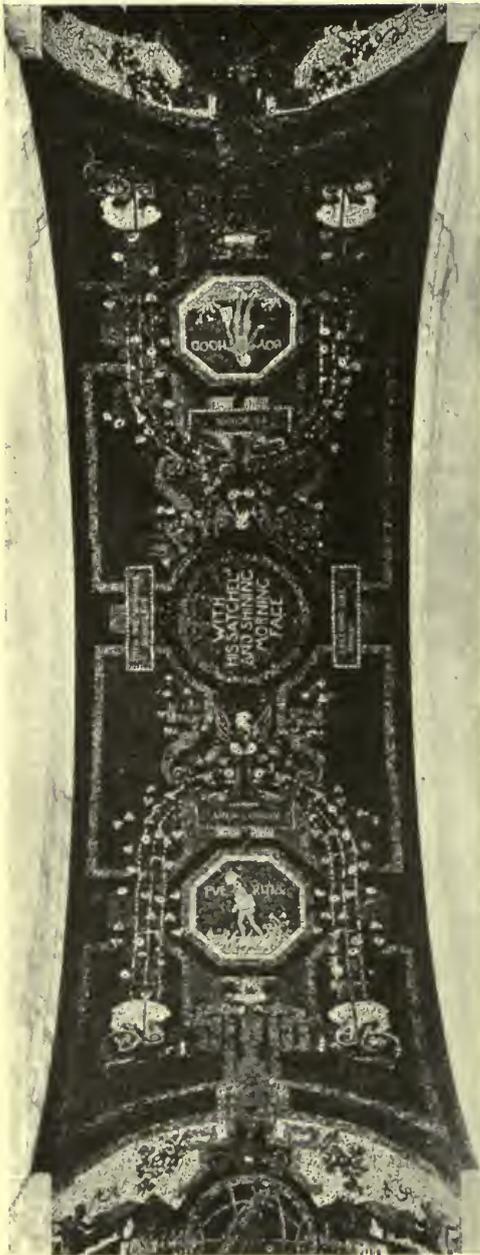
Needless to say the spirit of the decoration is in keeping with that of the general building and is inspired by the best examples of Italian Renaissance. Each arch is divided into four irregular panels, symmetrically connected with garlands and ornamental motifs, while one circular and two octagonal cartouches are set in between the four panels. Each arch portrays one of the Seven Ages, and the appropriate quotation from Shakespeare is lettered in the apex of the arch.

Mr. Wiley has been very happy in the treatment of his theme, and this will contribute not a little to the success of the decoration as a mosaic. It is not enough to assemble a quantity of multi-colored cubes into a design—too many have done it and in so doing have added nothing to the vogue and appreciation of mosaic as a medium of artistic expression. Mr. Wiley, by the rhythm of his design, the balance of every motif introduced, not only with the corresponding motif opposite, but with the scale of the loggia itself, has obtained a harmonious and yet brilliant effect that will do much in convincing architects of the value of pictorial mosaic decoration.

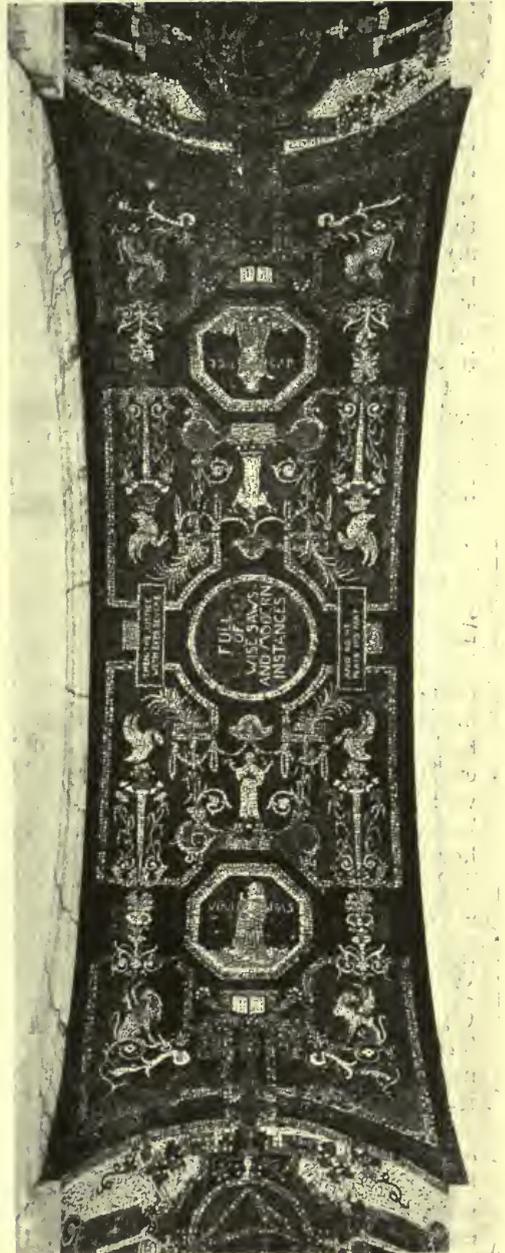
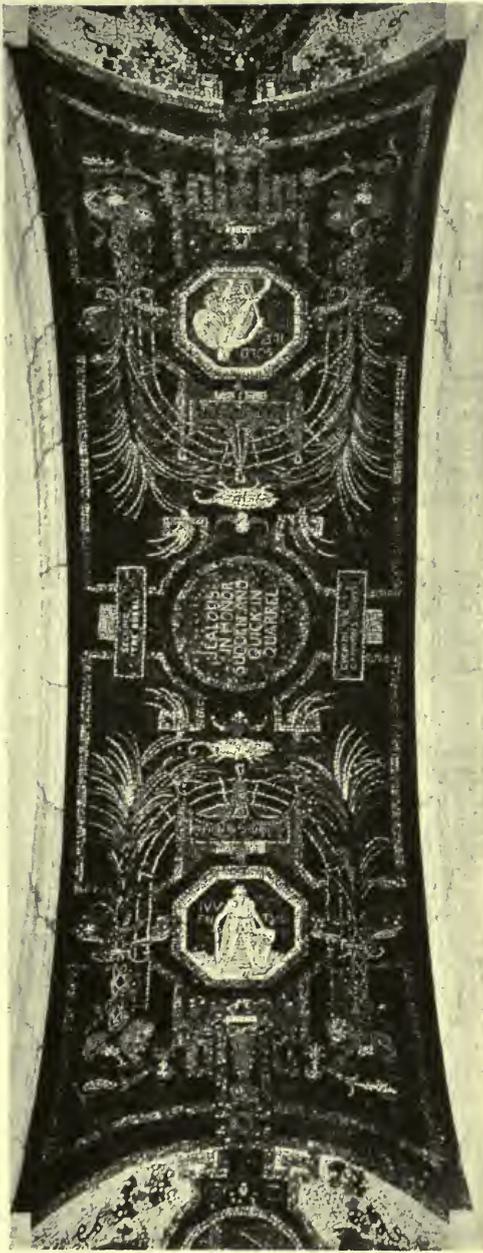
All seven mosaics have now been installed and the effect of the entire decoration may be judged. A great feeling of delicacy emanates from the work, together with a strong sensation that the finest tracery, the most fragile line, is yet fixed for



WESTERN HALF OF PANEL OF "INFANCY"—MOSAIC, DESIGNED BY FREDERICK J. WILEY, IN FRONTAL COLONNADE OF THE DETROIT PUBLIC LIBRARY. CASS GILBERT, ARCHITECT.



MOSAIC DECORATION OF SECOND AND THIRD ARCHES OF COLONNADE OF THE DETROIT PUBLIC LIBRARY.



TWO OF SHAKESPEARE'S SEVEN AGES POR-
TRAYED IN MOSAIC, IN FRONTAL COLONNADE
OF THE DETROIT PUBLIC LIBRARY.

all time in imperishable material. The shades blend gradually, yet all the sharpness of outline, requisite in a mosaic as in a tapestry, is retained. Here are sapphire tints that will never fade, and soft yellows that will not turn into browns. The stone of the façade, the masonry of the arch, will grow mellow with age and acquire that "patine" that time gives to cathedrals and marble palaces, but the enamel of the mosaic is impermeable and whatever dust accumulates thereon may be washed off and leave the Seven Ages as resplendent in color as when originally installed.

Only the other day, in 1909, a fourth century mosaic was unearthed in the Basilica of Aquila, erected about 320. It pictures the Old Testament story of Jonah and the whale and the colors are as distinct and vivid as if the work had been done yesterday. What triumph won over the all-destroying power of Time! Have we not mosaic to thank for having brought down to us the outline and coloring of an ancient Greek painting? The Battle of Arbela mosaic, found in 1830, in the House of the Faun in Pompeii is undoubtedly a reproduction in stone of an earlier work of art painted on canvas or wood and long since destroyed. It is a battle scene in which are shown fifteen horsemen, twenty-six warriors on foot and a chariot bearing a figure said by archeologists to be that of Darius.

Think of recovering a mosaic mentioned by Pliny in his "Historia Naturalis": the famous Doves of the Capitol, found in Hadrian's Villa near Tivoli. Undoubtedly, if not the original mosaic executed at Pergamos, it is at least a copy of this famed piece.

The churches of Rome contain many examples of mosaics dating back to the Christian era, and the mosaics of Ravenna are a thousand years old. Cimabue used mosaic to ornament the apse of the Cathedral at Pisa, and his pupil Giotto used it to good advantage in decorating the Basilica in the Vatican. The walls and ceilings of St. Peter's are rich with them.

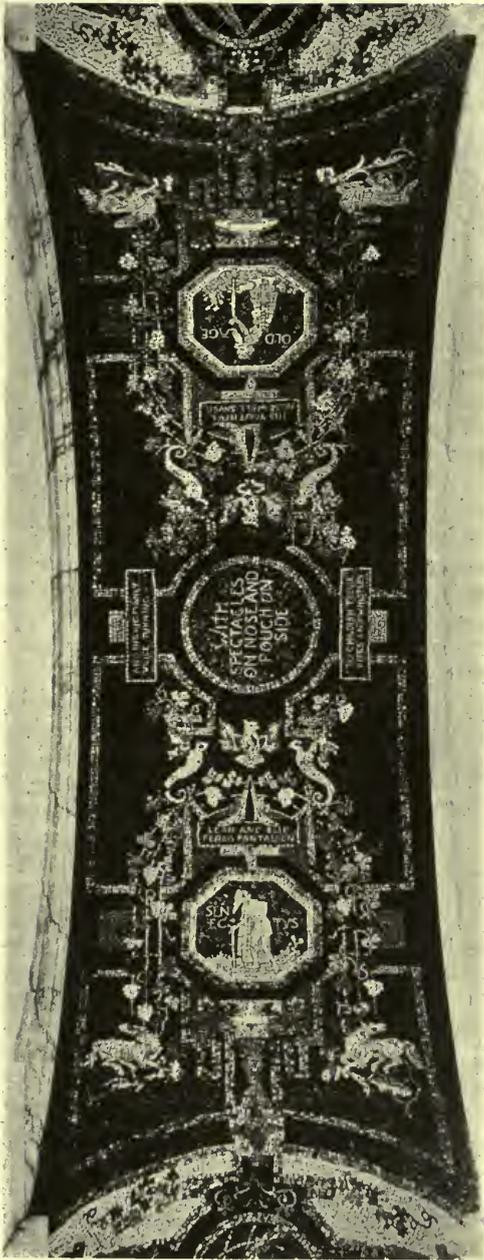
Why is it that, with such living lessons as the mosaics in Santa Sophia, Constantinople, St. Vitale in Ravenna, St. John Lateran and Santa Maria Maggiore in Rome, St. Mark in Venice, and those in

the Church of Monreale in Sicily, this form of mural decoration should have suffered practical banishment?

The answer may be found in the fact that, beginning with the seventeenth century, the mosaicists of the time applied themselves to the impossible task of reproducing paintings. The mosaics of St. Peter's do not fulfill the true aim of monumental wall decoration, because there is apparent in them a desire to imitate as closely as possible the finish of oil or fresco painting. In art it can be laid down as an axiom that the material dominates the treatment. There are effects obtainable with a brush that cannot be rendered on a loom or with assembled cubes of glass or enameled clay. Conversely, there are effects, and splendid and glorious they are, that mosaic, and mosaic alone, can produce. The domes and spandrels of St. Mark and the Capella Palatina hold spaces of changing lights and glorious mysteries of shadow that bring out the glow of mosaic as a flat surface would not. The apse is the ideal position for the setting of mosaic, as here the illumination is all from below. Even on flat surfaces, however, mosaic, treated as mosaic and not as a "stunt" to imitate fresco, has a decorative value that architects have not begun to realize.

It may well be also that architects have been turned from their purpose of utilizing mosaic by the consideration of time and the difficulty to find competent technicians. The tradition is that it took one hundred and thirty-three artists ten years to do the mosaic in the Church of Monreale. It is also recorded that, nearer the present day, mosaicists were engaged more or less intermittently from 1863 to 1892 in installing the mosaic in the dome of St. Paul's Cathedral, London. This decoration, which is placed within eight spandrels, represents the Four Evangelists, designed by Watts, and the Four Apostles, designed by Alfred Stevens. The apse, sanctuary bay and choir are also decorated with mosaic, and the ensemble constitutes the most pretentious and most important use of pictorial mosaic of the present day.

No doubt it is quicker and easier to decorate the inside of an arch, or any wall



VAULTED MOSAIC DECORATION IN FRONTAL COLONNADE OF THE DETROIT PUBLIC LIBRARY. THE STYLE IS ITALIAN RENAISSANCE.

surface whatever, with fresco than with mosaic; but should this consideration sway the artist who plans a lasting monument, and should not the advantages be weighed as well as the difficulties? That it does not take forever to install a mosaic is demonstrated by what Mr. Gilbert and Mr. Wiley have done in Detroit. Each of the seven panels measures fourteen feet in length by four feet, five in breadth. The work was begun in the Fall of 1919 and finished in November, 1920. The actual time occupied in the execution of the work, i. e., the assembling of the tesserae, their manufacture, the setting in place, in fact all the manual labor involved, was less than seven months.

The technique employed is interesting enough to deserve description.

The first process, naturally, is the mixture and composition and subsequent baking of the clay and its enameling. There is a departure from the processes utilized in the mosaic works of the Vatican or those employed by the Salviati establishment in Venice, and, until its disappearance, by the Imperial Manufacture of Mosaic at St. Petersburg.

The tesserae manufactured in the Minton Pottery for certain figures in the mosaic of the South Kensington Museum, London, come nearer to the product manufactured by the Pewabic Pottery and utilized in the Detroit Public Library mosaic. The frequent reproach addressed to mosaics made of glass tesserae is that they sparkle excessively and that, instead of reproducing high lights, they present a glare when the mosaic is looked at from a certain angle. The best opinion demands that tesserae made of opaque material should be used for the high lights, and the transparent pieces reserved for the shadows.

The degree of baking cannot be stated in calories as it depends on the size of the kiln or furnace. The maximum degree of heat can be obtained in a kiln muffle ten feet by ten feet in one hour which would take one hundred hours to obtain in a kiln twenty feet in diameter. In certain potteries there still persists a tradition regarding the time element, and in these medieval kitchens they point with pride to a red or green which has taken forty

hours to develop. Nor would it be possible to convince these primitive ceramists that the same result could be obtained in forty minutes in a test kiln.

The substance out of which the Pewabic tesserae are made is clay body, both with and without sand or "grog." The tesserae come out of the kiln in three states—unglazed, bright glazed and matt glazed. The coloring is obtained by metallic oxides, carbonates and sulphides; but there are different degrees of oxidation, and copper, for example, will yield not only three primitive colors—yellow, red and blue—but also mixed shades, like orange, green and violet. The metals chiefly employed are gold, silver, copper, manganese, lead, tin, antimony, cobalt, chromium and iron. Carmine, purple and rose colors are obtained by gold; yellow is produced by silver, lead and antimony; blue by cobalt; red by copper; brown by manganese; black by iron; green by copper and chromium, and orange by lead.

The material comes out of the kiln in long sticks or ribbons of various widths, which are then broken up into small cubes about three-eighths of an inch square.

As for the assembling of the tesserae into the finished mosaic, there have been two methods, the one consisting in assembling the small cubes face down over a tracing of the design prepared with glue, and the other by setting them one by one "*in situ*." This last, because it offered so many difficulties, has been practically discarded. The second process, as used in the St. Petersburg *ateliers*, consists in setting the mosaic within a frame about one-half inch deep. In this frame a white surface of plaster is laid out, upon which the composition is sketched piece by piece, it being thus determined with precision just where each tessera is to lie. The plaster, which yields softly to the knife, is cut carefully away, and just as carefully is each square ground, filed and fitted into its proper cell. This is a very slow process, and the Last Supper, made for the St. Isaac Cathedral in St. Petersburg, measuring eighteen feet in length and engaging the labor of five different artists, took four years to finish. The weight of such a work is so great that the enclosing

framework requires the utmost strength and solidity. A mosaic sent to the Paris Exposition of 1867 from the Russian Imperial Mosaic Factory weighed no less than seven tons. When the last of two or three hundred thousand tesserae entering into the composition, as the mosaic of the Last Supper, is in place the whole picture is turned on its face and the plaster cut away from the back. The roots or fangs of the cubes being thus laid bare, Roman or Portland cement is run over the whole surface. A solid back being thus put to the picture, the work is ready for its final installation. During its execution it has been in the nature of an easel picture, and upon being completed it is built into an architectural structure and assumes a monumental character.

The method employed in the Detroit Library mosaics, however, is far in advance of this antiquated procedure. Here the tesserae are glued face up on a working drawing so that the work may be seen and corrected and changes made as it progresses. It is not uncommon for the design to be pasted five or six times before the desired result is obtained. When the mosaic is finished, a second paper is glued on the face and the first paper is sponged off.

The cement into which the mosaic is finally imbedded also plays an important rôle, since upon its durability depends the life of the mosaic itself. The early mosaics were all set in lime cement, which means that the mosaicists of the time had to set the tesserae into a quick-setting substance, rendering correction of shading or design almost impossible. It was not until 1528 that Muziano di Brescia thought to set the tesserae in oil cement, which did not harden for two or three days. Since the sixteenth century practically all pictorial mosaic has been done upon a foundation of oil cement.

As to the number of colors available, it is only necessary to recall that the ateliers

of the Vatican boast twenty-eight thousand gradations. This profusion of shades, however, is not at all necessary to the decorative success of a mosaic; and it is due to the fidelity with which the Vatican mosaicists reproduced every tint and nuance of a fresco or oil original that the mosaics of the Pontifical ateliers owe their ill repute as monumental decorations.

The rôle of mosaic as mural adornment has been much better understood by the French painter and decorator, Louis Edouard Fournier, who designed the frieze for the façade of the Grand Palais in Paris, and who used three tones only against a uniform background of red.

Any attempt to reproduce light and shade, or the delicate chiaroscuro of a canvas, must be doomed to inglorious failure when the medium to be used is mosaic. One of the great qualities of the Detroit Library mosaic is that while it throws off light from the surface quite as forcibly as a fresco, it does not reflect light as when tesserae of burnished surface shine like a multitude of small looking glasses.

The ateliers of St. Petersburg are no more, and the South Kensington shops are closed. In a small way mosaic is being manufactured at the Sèvres factory near Paris and in the Vatican factory in Rome. Here in this country we have few opportunities for utilizing the work of mosaicists. At first, artists in this medium were imported from Italy. Some, in fact, continue their calling here and there whenever the occasion arises or the opportunity presents itself. The Detroit Public Library mosaics, however, were set for the most part by young American girls who have engaged in this work not as if practicing a trade but in the spirit of artists following a career. Under the direction of Mr. Wiley and the supervision of Mrs. Stratton they have achieved a masterpiece.



DOORWAY—WYCK HOUSE,
GERMANTOWN, 1690.

The EARLY ARCHITECTURE of PENNSYLVANIA

PART V - WITH PHOTOS by FRANK COUSINS
HORACE M^{AC}FARLAND & OTHERS



By A. LAWRENCE KOCHER.

A CLASSIFICATION of the doorway may be made on the basis of form or by a grouping of periods. An arrangement into periods would appear to be unprofitable because, at best, the divisions must be arbitrary, since the colony of Penn was not entirely settled at one time and the "peculiar turn" assumed by the style in one locality at a given time did not hold true in another region. On the other hand, by the division into forms we can recognize the organic growth of a feature from the rude beginnings of the first home-builders to the graceful and polished types of the late eighteenth century. We may thus observe the development which at first followed the lines of utility and later swung in the direction of adornment.

The changes which crept into the architectural style are most readily perceived in the physical aspect of the doorway, so that in this single feature we see mirrored the gradual transformation of the architectural style. It will be found that the examples described belong to a period that may be almost included within a single century—a flourishing age in which domestic architecture attained a fine and native expression in spite of bonds of kinship that linked the new world to the old.

Among the motives for which the early craftsmen evinced a special preference may be mentioned the simple framed doorway, the pent-roof hood, the shell-shaped over-door, the pediment surmounting an arched opening with supporting pilasters and the flat entablature upheld by attached supports.

The doorway in its simplest terms consisted of a framed opening with no "trim" except the molds of the doorcase which were set in the thickness of a stone or brick wall. It was the earliest in point of time and the most consistent in con-

struction. Wyck, in Germantown, has such an entry. Here the absence of any studied attempt at adornment indicates plainly enough that utility was a first consideration. There is no ambitious striving after pretense or display. The austere simplicity recalls the pioneer era with the prevailing need of protection and seclusion. Possibly because of the restraint of outward form the doorway presents the appearance of a side-door or one with a subordinate purpose.

The space above the door was deemed essential to lighting the hall and was at first treated with four panes or "quarrels" of glass. Occasionally the place of these panes was filled by "bulls-eyes" of heavy greenish glass. The double or "Dutch" door is believed to be a legacy left by the Dutch settlers on the Delaware. It operated with the upper part swinging independent of the lower and was a cherished and fondly praised device. "Quaint it was," writes Townsend Ward, referring to the ingenious feature, "quaint it was, but how appropriate for a single-minded, hearty people, among whom no depredation was ever known until there came among them the evil days of single doors and locks and bolts. . . . While the lower half of the door was closed no quadruped could enter the dwelling house, but the refreshing air of heaven could, and the rest that it afforded a leisure-loving people was most agreeable."

Another entry, in vogue early in the century, differs from Wyck in having a hood overhead for shelter and adjacent seats for convenience. The porch-doorway of the Johnson house is an instance of the step in advance. In the Johnson example the characteristic pent-roof is made to break boldly forward and assume the shape of an unsupported pediment. A

shelter as well as an air of importance is effected by the arrangement. The overhanging pediment, here illustrated, produces upon the mind an impending sense of heaviness and insecurity. The effect appears the less happy on account

forded a resting place and point of vantage in viewing the "passers-by." The pent-roof porch was a part of the social system of the Pennsylvania forefathers and revives the days of precise manners and picturesque dress, when everybody



MAIN ENTRANCE—JOHNSON HOUSE, 6306 GERMANTOWN ROAD, GERMANTOWN, SHOWING CHARACTERISTIC HOOD AND "STOEP."

of an absence of height to the porch, which in early days was elevated several feet above the street pavement and was approached by steps. There is, withal, a "homely" and open-armed, hospitable quality which compensates in a measure for the untrained and unsophisticated air of the grouping.

The seats flanking the entrance were familiarly termed the "stoep." They af-

knew everybody else; when stiffened petticoats, quilted hoods, knee-breeches and powdered wigs were the fashion of the day. "Philadelphia," says Watson in his "Annals," "had a porch to every house door, where it was universally common for the inhabitants to make their occasional sitting beneath their pent-houses.

'Our fathers knew the value of a screen
From sultry sun or pattering rain.'

"Such an easy access to the residents as they afforded made the families much more social than now, and gave also a ready chance to strangers to see the faces of our pretty ladies."

The pent-roof pediment was destined

ter protection of the entrance. The hood above was not supported by brackets and it is obvious that none were intended. This is rather curious, since the shell-over-door, prevalent in England in the time of Queen Anne and the early



DOORWAY—WASHINGTON'S HEADQUARTERS, VALLEY FORGE, 1742-52.

to undergo a change, for from it was developed the graceful, shell-shaped door-hood, as on the building familiarly known as "Washington's Headquarters" at Valley Forge. This constitutes one of the most charming arrangements to be found in all of Pennsylvania. It will be noted that the door proper has not been altered from the two preceding examples, but that attention was being centered upon the bet-

ter protection of the entrance. The hood above was not supported by brackets. The conclusion must be that the idea was not brought from overseas, but emanated from the pent-roof hood.

The cove-shaped, under side of the hood is plain and finished with plaster. If modeled plaster had been used within the cove and if carved wooden brackets had been adopted to uphold the over-

hang, the result would have been without purpose and out of character with the rough stone setting.

Wood-carving, in point of fact, was not favored in the treatment of exterior details in Pennsylvania. There was none

ear molds and diminutive triglyphs planted upon a frieze which is not separated from the architrave by the usual taenia. The molded members are decidedly lighter, greater in number and more pleasing in scale than heretofore.



DOORWAY IN QUAKERTOWN, PA.

of the delicate ornamentation in America which gave distinction to the Georgian doorways of the British Isles. Such ornament as was used was "carpenter-made," often lacked grace and buoyancy, and resulted in an austere and, at times, a provincial aspect.

With the doorway at Quakertown we enter on a variation in design which consisted of a pediment surmounting a framed door, simply "trimmed" with dog-

Doorways with pediments placed over pilasters or engaged columns constitute another group in frequent use during the eighteenth century. The example at 5011 Main Street, Germantown, may be considered typical. This was a generally approved composition and one that is most often associated with the Pennsylvania style. By being oft repeated with minor variations, a degree of perfection and refinement was discovered which was not

approached by the more classical doorways of formal mansions and manor-houses patterned after familiar British models. The delicacy of moldings, the scantiness of projection and the chisel ornament are in proper keeping with the

reveal. The original purpose of the projection to serve as a shelter has gradually lapsed into a mere excuse for adornment, "although surely not even the strictest utilitarian, with such an example before him, would think that this degeneration



ENTRANCE AT 5011 MAIN STREET, GERMANTOWN.

nature and limitations of wood. In the many repetitions of this form there is a systematic regularity and a strict adherence to established practice which demonstrates a dependence upon handbooks used in the craft-shops and the current practice of builders who imitated the success of a neighbor.

It is interesting to note how the boldly projecting hood of the earlier years has changed by slow degrees to one of scant

of purpose was without its advantages."

The doorway at 402 Wood Street, Philadelphia, in which engaged columns appear in place of pilasters, is to be added to this same group. Columns when used on the exterior seem always to have been attached to the wall. The porch-doorway with free-standing columns, so much used elsewhere, is here strangely absent and convinces one of the deliberate choosing of motives without reveal.

The flat over-door placed above an arch is another well-known type. This treatment is illustrated by the doorway at York. Finely-fluted, attached columns are placed beneath an architrave which is paneled and crowned by a thin molded

the use of delicately wrought lead bars, and the result was praiseworthy because light flowing lines were favored which were in keeping with the refined spirit of the work of the late eighteenth century.

There are in Germantown a surprising



DOORWAY AT 402 WOOD STREET, PHILADELPHIA.

cornice. Many of these moldings have undercutting and sharp arrises to produce a crispness of shadow. The heavily framed door panels contrast unpleasantly with the surrounding woodwork. An effective part of the design consists of the lead patterning of the fan-light with its graceful rosettes, husks and swinging pendants. On account of the growing influence of the brothers Adam, the wood muntins were to be partly superseded by

number of specimens with the unbroken entablature flanked by columns that are almost detached. The doorway of the Wister House coincides with the York doorway and has an added attraction achieved by the enriched band at the base of the cornice, and the chisel cutting beneath the frieze and on the arch moldings. With this arrangement, the column extends above the crown of the arch so that a greater height is effected—perhaps

a necessary accompaniment to the increased ceiling heights of the times. To the group should be added the chaste entrance at 6105 Main Street.

We perceive that the general trend of design was on new and very different

as practiced in England during the eighteenth century. This particular example makes use of the Roman Doric order with an entablature set back between the columns and the triglyphs spaced as if by rule. The aspect of so



MAIN ENTRANCE AT 123 MARKET STREET, YORK, PA.

lines. With the growing knowledge of Georgian prototypes the character of the doorway was becoming more elegant, more scholarly.

The Bensell doorway on High Street, Germantown, marks the advancing trend in Pennsylvania design. It is the Georgian or Roman phase and is characterized by a close adherence to classical exemplars. There is a correctness in proportion and detail which follows the style

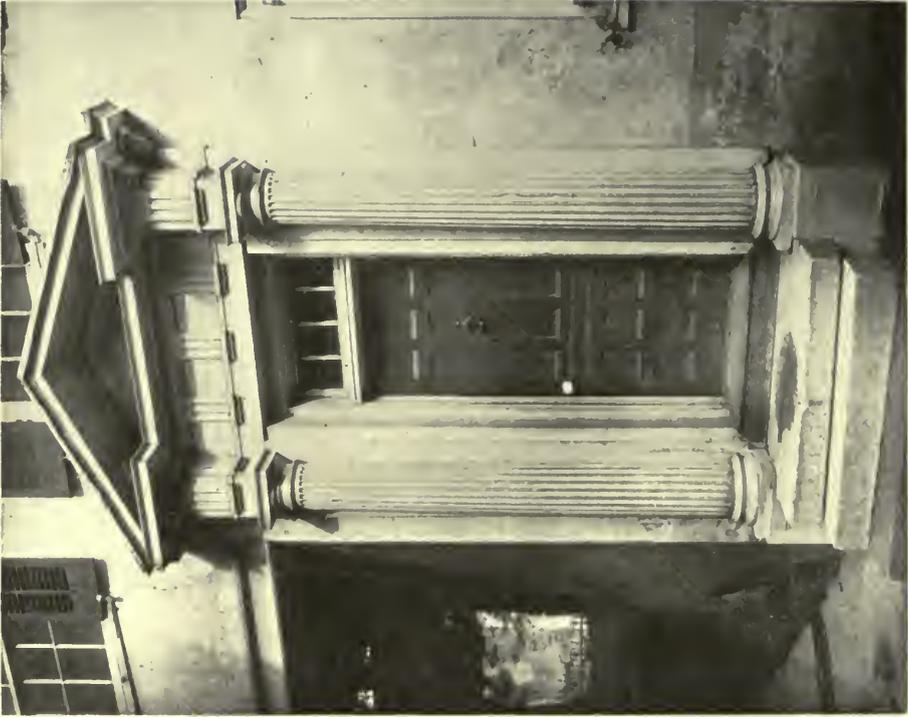
academical a design is rather incongruous on an informal dwelling, for it lacks the freedom and spirit of its setting. It would appear more at home on a semi-public building and a certain kind of formal residence. We can readily appreciate that the orders in themselves are heavy and entailed with formulæ expressed in terms of stone. To relate these orders to domestic architecture or even to churches or town halls requires some-



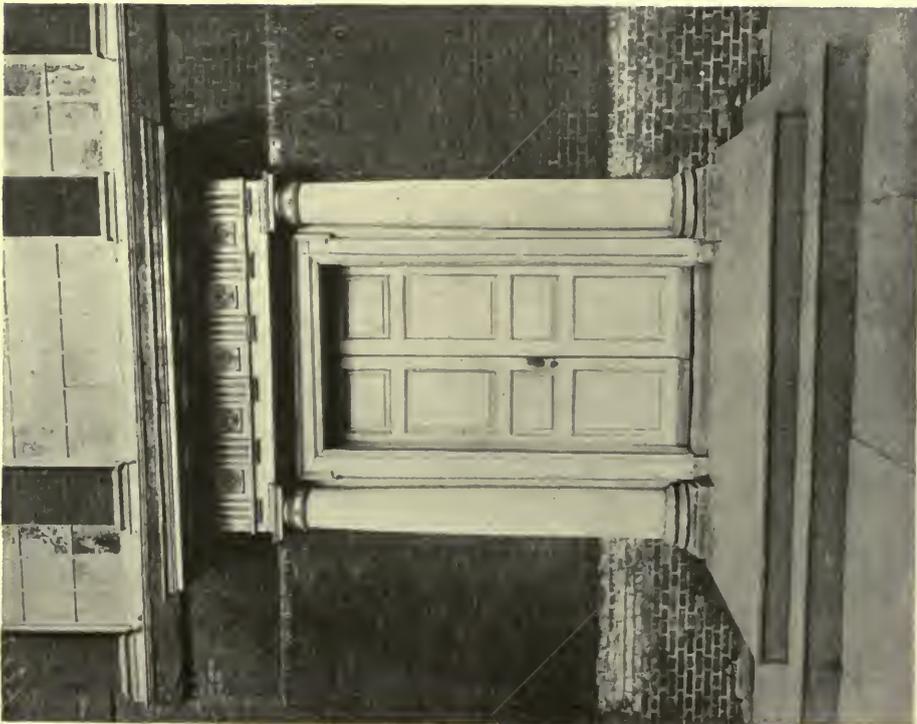
MAIN ENTRANCE—WISTER
HOUSE, GERMANTOWN, 1744.



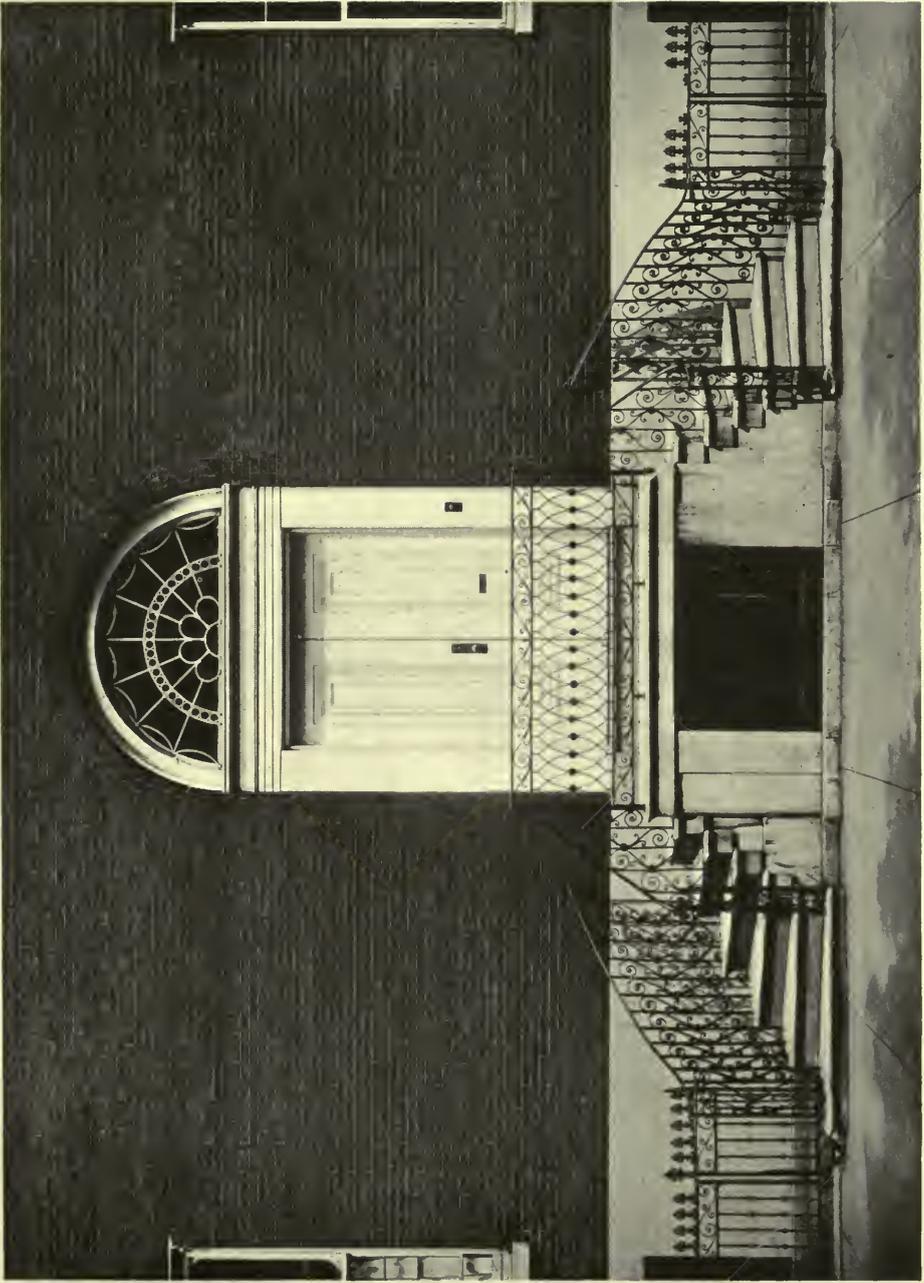
MAIN ENTRANCE AT 6105
MAIN STREET, GERMANTOWN



BENSELL DOORWAY, HIGH STREET, GERMANTOWN



MAIN ENTRANCE—STATE HOUSE TOWER, PHILADELPHIA, 1752.



DOORWAY AT EIGHTH AND SPRUCE STREETS,
PHILADELPHIA. EARLY NINETEENTH CENTURY.



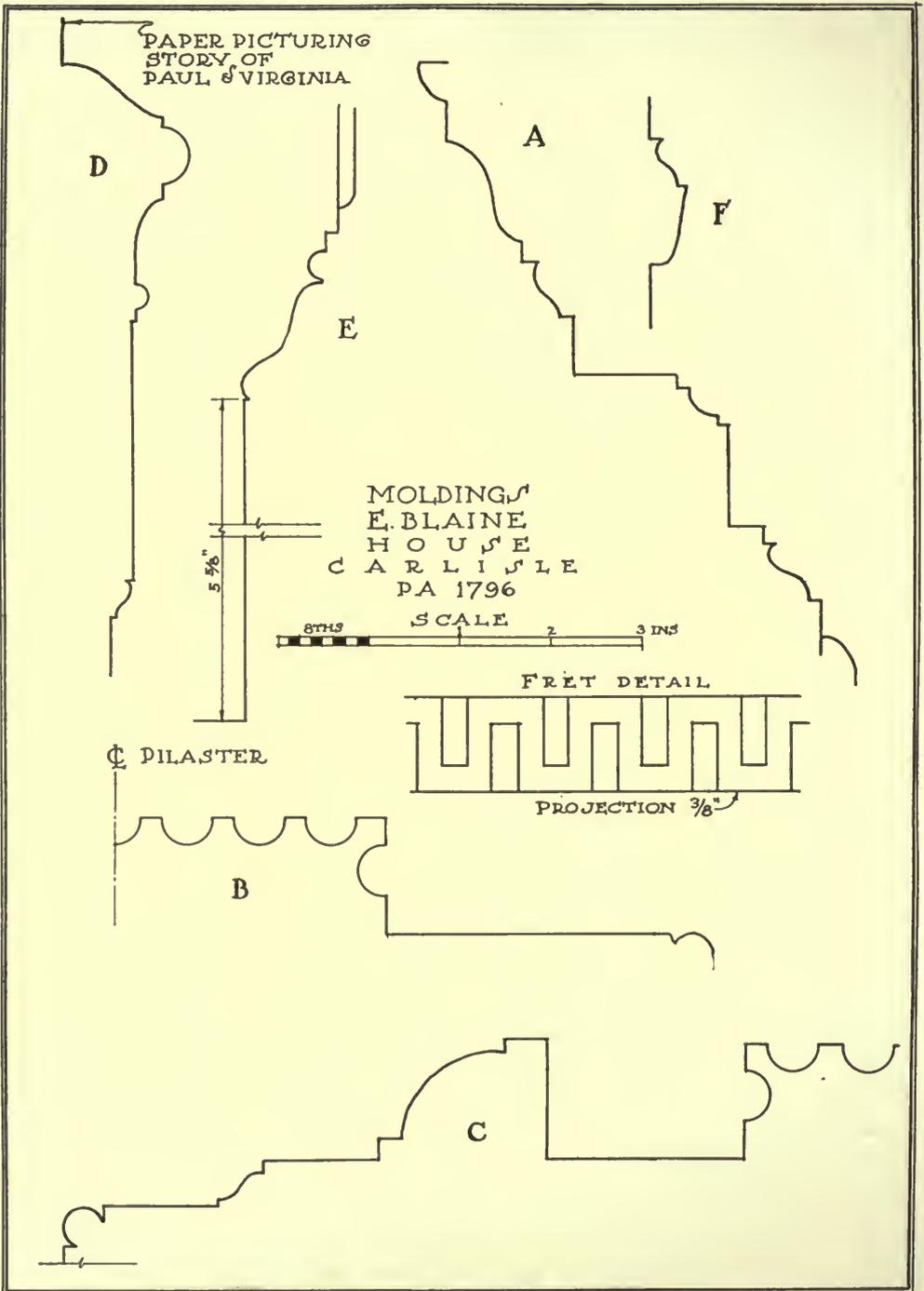
DOORWAY ON FRONT
STREET, HARRISBURG, PA.

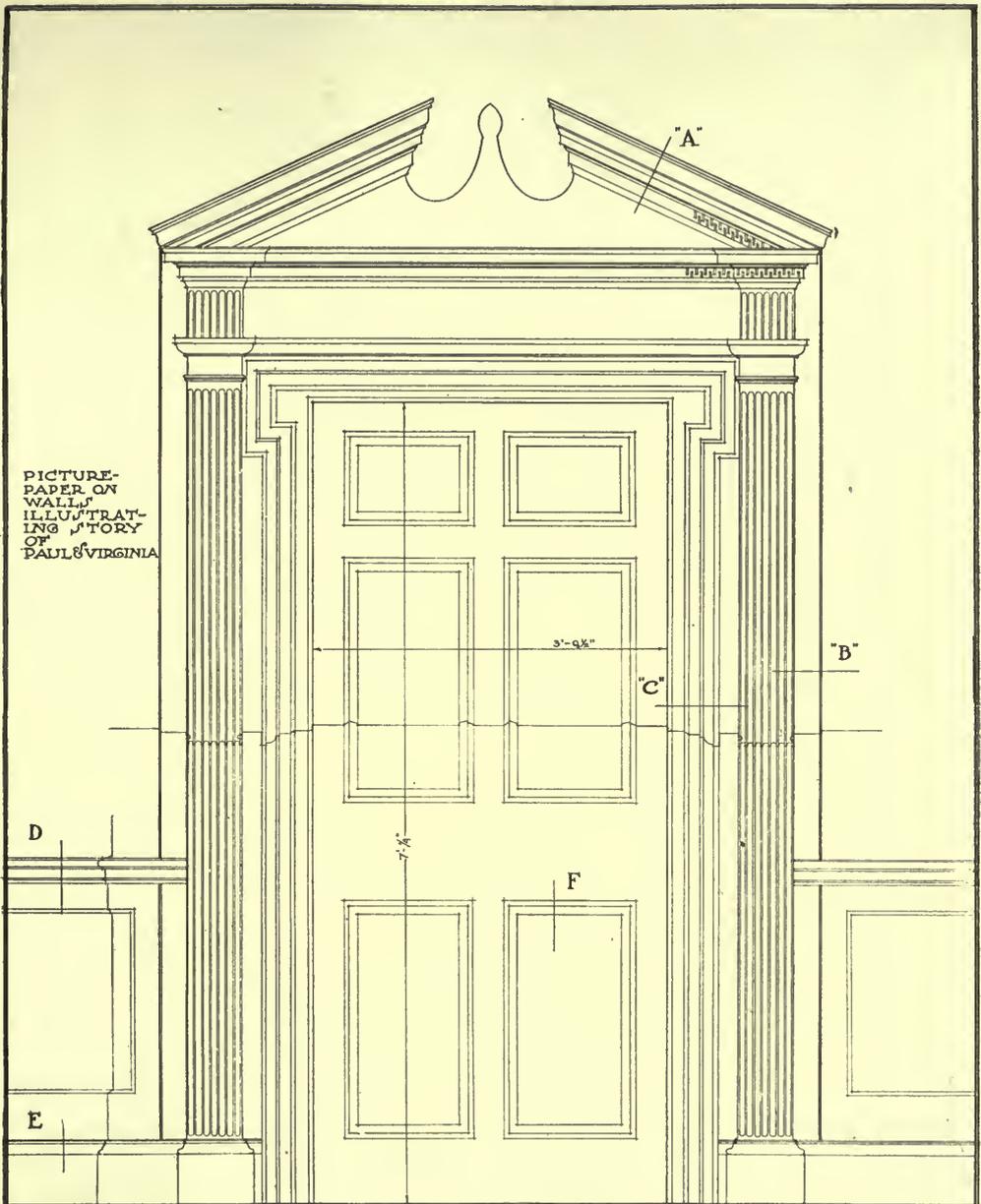


DOORWAY IN HALL—HOPE
LODGE, WHITE MARSH, PA. 1723.



INTERIOR DOORWAY—WHITBY
HALL, PHILADELPHIA, 1754.





PICTURE-PAPER ON WALLS ILLUSTRATING STORY OF PALE & VIRGINIA

DOORWAY OF THE
 E. BLAINE HOUSE
 CARLISLE
 PENNSYLVANIA
 1796





INTERIOR DOORWAY—EPHRAIM
BLAINE HOUSE, CARLISLE, PA., 1796.



INTERIOR DOOR, FROM PHILADELPHIA,
NOW IN THE COLLECTION OF THE MET-
ROPOLITAN MUSEUM OF ART, SHOW-
ING INFLUENCE OF THE ADAM STYLE.

thing besides mere attention to details.

More appropriate is the entry-way in the tower of the Old State House in Philadelphia, which demands the very dignity that this style produces.

No date can be set for the ending of one phase of architectural invention and the advent of another. There is an appreciable impoverishment of design after the dawn of the nineteenth century, with here and there an outstanding exception to the rule.

The doorway on the corner of Eighth and Spruce Streets, Philadelphia, comes to us from Greek Revival times. This fashion was not without its appeal. What a dignified mien this doorway presents with its ample field of brickwork on either side! How easily this effect could have been marred by a closer spacing of windows. The Harrisburg example is contemporaneous and is a tribute to the good taste that lingered on into the new century.

The interior doorway naturally presents fewer modifications than we have found to be the case with the exterior. Its treatment was more a part of the disposition of the room and was often an integral part of wainscoting, paneling and cornice. This unity is most noticeable in early work when the cabinet-maker's task included the adornment as well as the construction of inner walls. The hall doorway of Hope Lodge illustrates this early handling. In the Ephraim Blaine House in Carlisle, we find even at a late date (1796) an elaboration of interior doors that shows the continuance of carpenter-made interiors in remote, inland districts. As mantels and other woodwork became the product of special craftsmen, both the mantel and the doorway contracted to an insignificant size and importance.

The door opening at Whitby Hall is typical of the middle of the century and is simply but effectively framed by a molded architrave. The influence of the Adam brothers is found in a growing delicacy and refinement of parts and decoration, particularly in the use that

was made of composition ornament applied to the frieze and moldings. An interesting example of this type is shown in the Philadelphia specimen now in the collection of the Metropolitan Museum.

The paneling of doors changed but slightly with the mutations of doorway arrangement. Doors with two panels in width and three in height were most common. The raised panel bordered by a narrow mold was adopted in almost all instances, and conformed in height with the paneling on the door jambs. Some doors were treated with a solid back, which was built up of two or three thicknesses of wood and held together with square-headed nails. The double doors differed from the single form in having a wider rail where the upper and lower parts meet. The thickness of doors varied from approximately one and three-quarter inches to two and one-quarter inches.

For more than a century, the doorway played an important role in the history of the domestic architecture of Pennsylvania. It must not be expected that within so short a time a continuous and unbroken succession of forms could be brought to light. Architecture is too closely allied to various utilitarian needs of man, to his changes of fancy, and is too much a part of the prevailing social and industrial system to offer a complete catalogue of ordered progress. Our interest has been focused upon the specimens which were an inseparable part of the Pennsylvania style—such examples as may be chosen to represent the kinds of design within this particular field. The doorway has mirrored the changes of architectural fashion and the modifications of taste which occurred within the century.

Arising from the praiseworthy attempts of the pioneers, and later succeeded by the free interpretations of classical designs, the style was finally brought to its conclusion in the more orderly architecture inspired by the English versions of Palladio and Vignola, and in the cold and uninspiring Greek monuments.

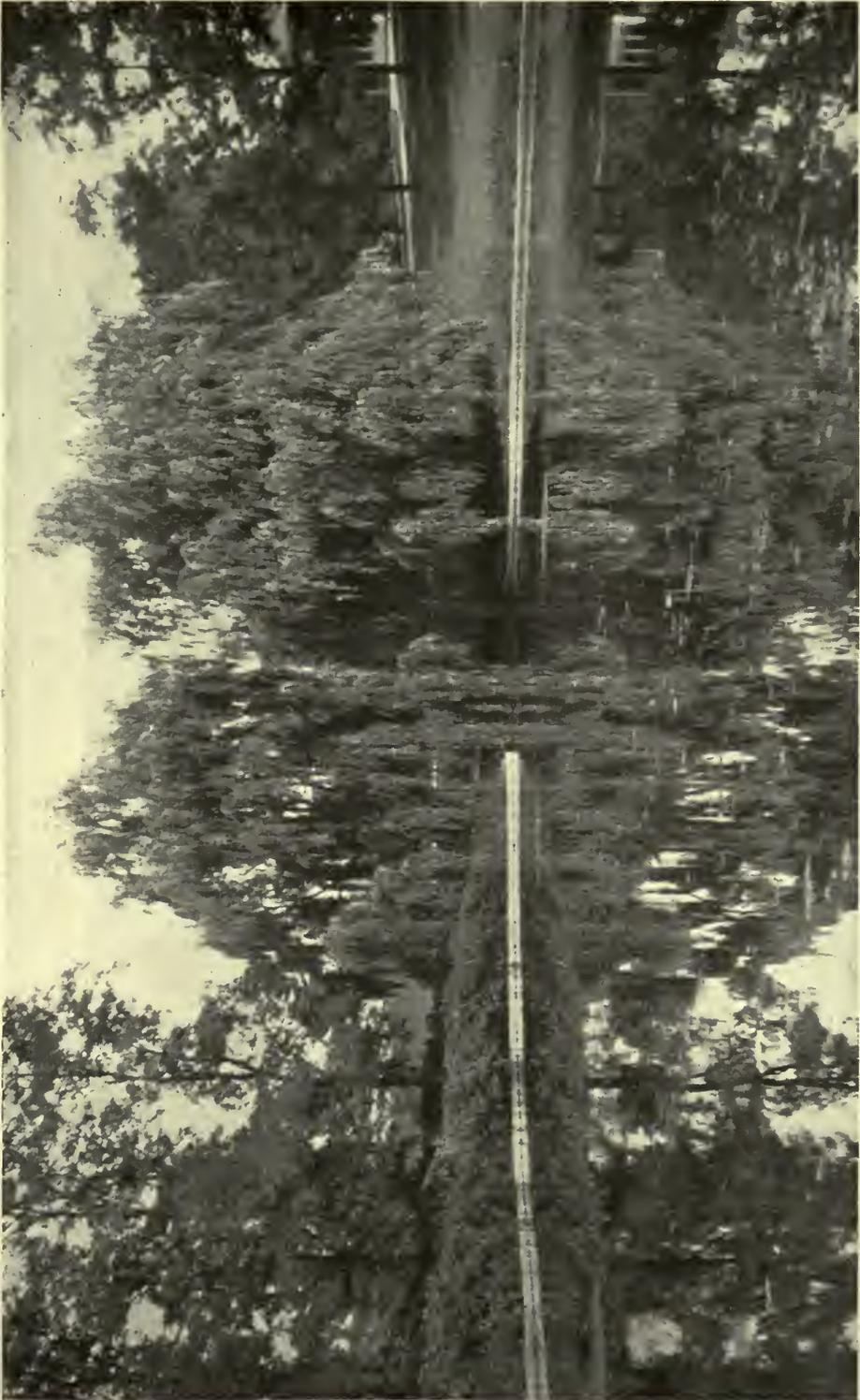
Water in the Garden

— A —
Portfolio of Photographs
by Antoinette Perrett





POOL ON LOWER TERRACE AT "ARDEN HOUSE," THE MOUNTAIN RESIDENCE OF MRS. E. H. HARRIMAN, ARDEN, N. J., WITH THREE FIGURES BY HER SON-IN-LAW, CHARLES CARY RUMSEY, THE SCULPTOR.



WILLOW POND MADE BY J. J. LEVISON, LANDSCAPE FORESTER, ON THE ESTATE OF GEORGE J. WHELAN, ESQ., OLD WESTBURY, L. I. THE POND IS IN FULL VIEW OF THE HOUSE.



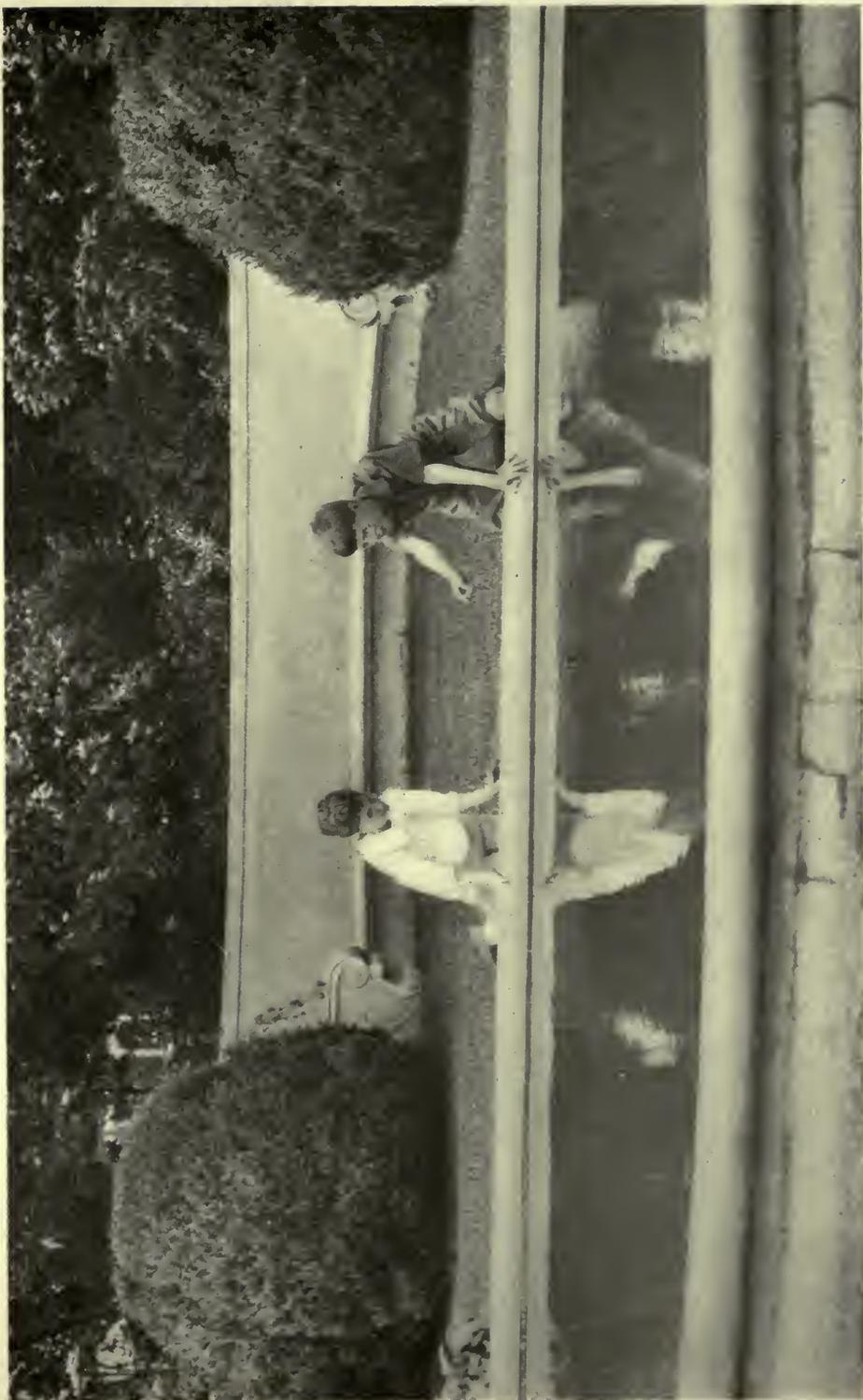
RIVER VIEW FROM THE DINING ROOM AT
"BRICK HOUSE," THE SUMMER HOME OF
ANDREW V. STOUT, ESQ., RED BANK, N. J.



POOL WITH TWO FROGS IN GARDEN AT
"AVALON," THE COUNTRY ESTATE OF ROB-
ERT S. BREWSTER, ESQ., MT. KISCO,
N. Y. DELANO & ALDRICH, ARCHITECTS.



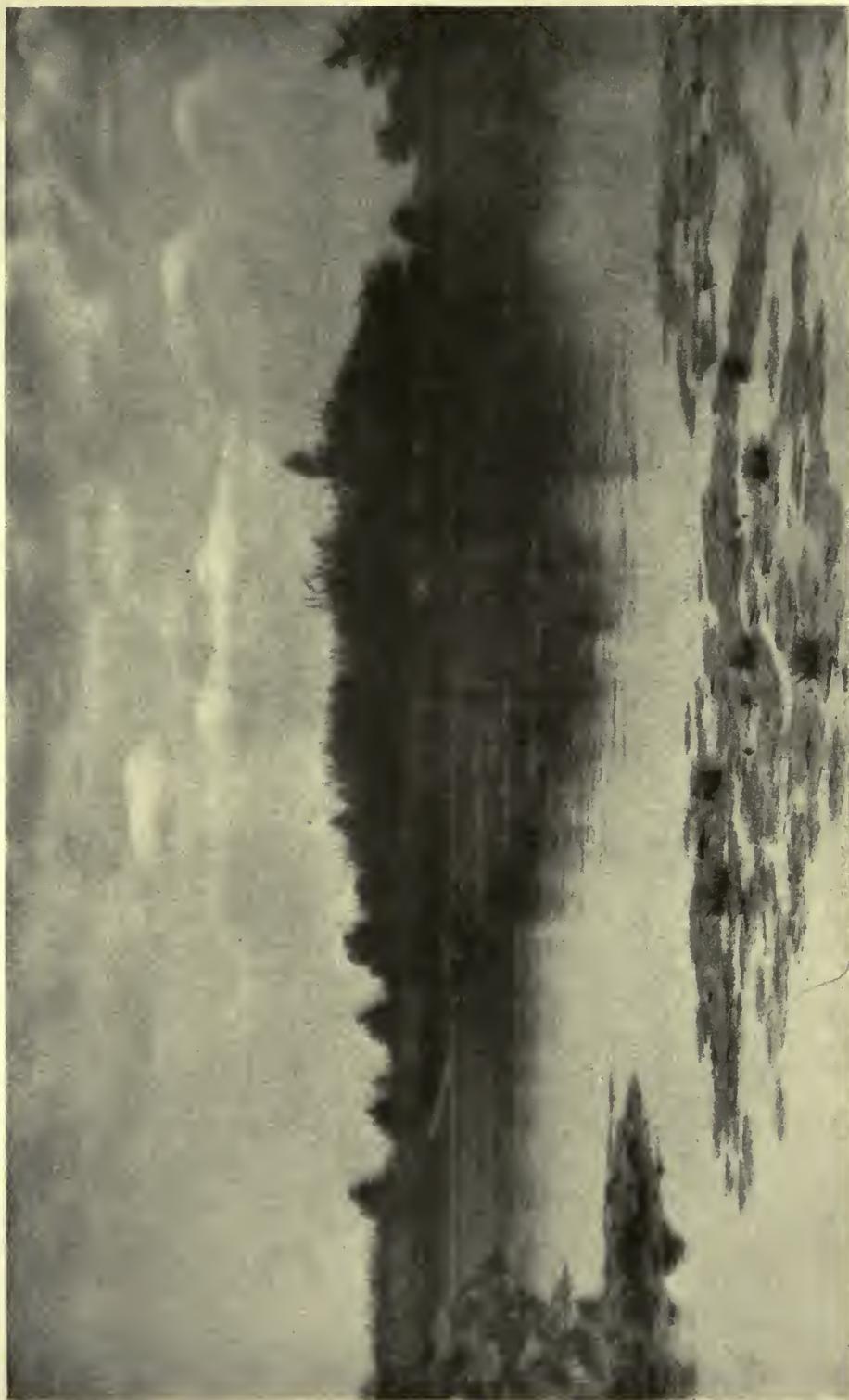
POND AT END OF WOODED LAWN ON THE
ESTATE OF CORNELIUS BLISS, JR., ESQ.
J. J. LEVISON, LANDSCAPE FORESTER.



UPPER BASIN IN THE GARDEN OF HERBERT STRAUS, ESQ., RED BANK, N. J. MARTHA BROOKES HUTCHESON, LANDSCAPE ARCHITECT, F. BURRALL HOFFMAN, JR., ARCHITECT.

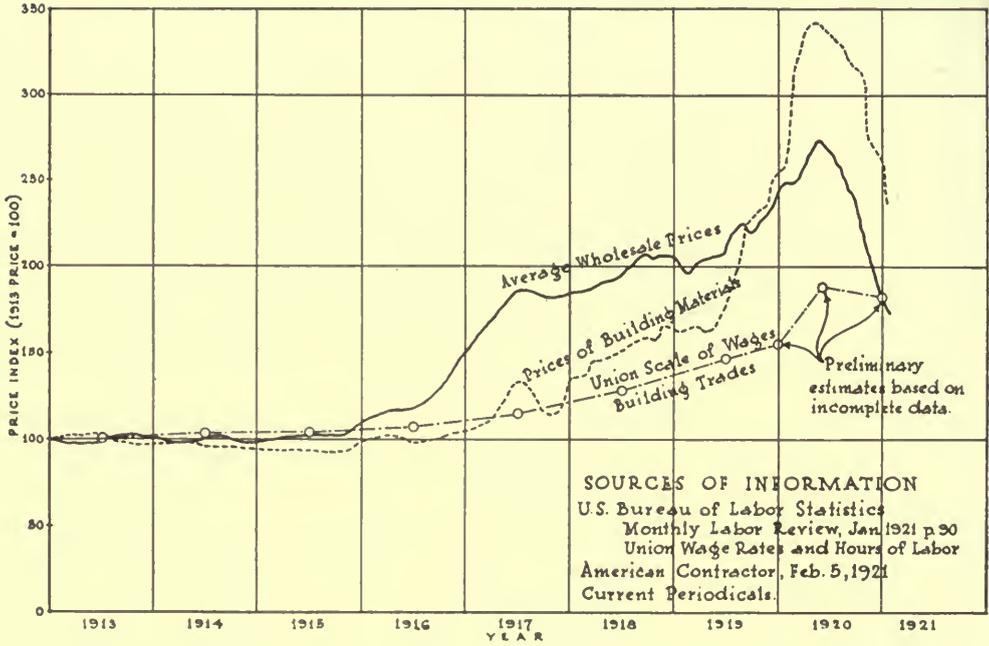


POOL WITH OLD TERRA-COTTA VASE IN
ROSE GARDEN OF MRS. STEPHEN J.
LEONARD, EASTHAMPTON, L. I. CHARLES
N. LOWRIE, LANDSCAPE ARCHITECT.



ROUND LILY POOL IN WEST HUDSON
PARK, KEARNY, N. J. CHARLES
N. LOWRIE, LANDSCAPE ARCHITECT.

RELATIVE CHANGES SINCE 1913 IN THE
PRICES OF
LABOR, BUILDING MATERIALS, AND OTHER COMMODITIES AT WHOLESALE



— THE BUILDING PROSPECT —

*A Study of the Major Economic Factors
Bearing on Present & Future Costs, Future
Income and the Demand for Buildings*

By

WILLFORD I. KING, Ph. D.

PART I — Building Costs —

THE man who invests his money in a building has on his hands a different proposition from that of one who buys sugar, steel or shares in a corporation. Purchases of the latter class can, as a rule, be converted into cash whenever one desires, but a building cannot be disposed of at a reasonable price on short notice. An investment in a building resembles more the purchase of some long-time bond for which there is only a very inactive market. Before risking his funds in a purchase of this type, it behooves the investor, therefore, to consider carefully all the possibilities of the situation, for it may be difficult to "switch" investments in case he changes his mind.

The different factors that logically determine the wisdom or folly of entering into a building contract may be grouped under three heads, as follows:

1. What would it cost to build today?
2. What changes in costs may be expected in the future?
3. What net returns will the building yield after it is finished?

The profitableness of any construction enterprise evidently lies in the excess of returns over costs, and this statement applies just as much to a residence or other edifice which one is building for one's own use as to a structure which is intended for sale or lease to others. The only difference is that, in figuring returns on a building utilized by the owner, it is necessary to estimate the rental value, and this, of course, is a less accurate process than that of recording actual amounts received. Nevertheless, it is only by making such estimates that one can gain any inkling of whether it is more profitable to build for one's own use or to lease a building from some other person.

Despite the fact that all builders alike

must keep in mind the principles just mentioned, it is nevertheless a fact that, in certain respects, builders of different types must use different figures in making their calculations. One class of builders, for example, build with the idea of selling promptly; another class expect to retain their buildings as more or less permanent investments. The first group may be likened to the traders on the stock market who buy for a "turn." The second group, on the other hand, resemble "long-pull" operators in securities, who hope to profit by excess of dividends over interest charges and by long-time swings in the market. The short-term operators do not care whether stocks are high or low, but they like an active market. Similarly, the builder who expects to sell his house by the time it is completed cares relatively little whether building costs are high or low if the market is active enough to make it probable that he can dispose of his building promptly at a good margin of profit. It is not to him a matter of great moment whether the man to whom he sells makes a good or poor investment, as long as the deal has been closed and everything has been placed upon a basis of contracts in dollars and cents with which as security the builder may proceed to further construction.

There is, it is true, always the danger present in a falling market that he will be caught with unsold buildings on hand, and thus sustain a heavy loss; but if his sales are consummated rapidly enough and his margins of profit are sufficiently large, he may be willing to run the risk of such a contingency and continue to build even when costs are far above normal.

For the man who engages in building as a long-time investment, however, it is

rarely wise to begin construction except when the expense of building is near bottom. Temporary fluctuations in the prices of building materials and labor may affect very greatly indeed the total costs of construction, but the total income from the building will be practically the same whether it is built when costs are at the top or at the bottom of the wave. It is a commonplace that the time for the long-pull investor to buy stocks is when the market is at the bottom of a cycle trough; it is just as true that the time to erect buildings for investment purposes is when material and labor costs are at the bottom of the wave.

The gain in profit from building at such a time is even greater than is indicated by the nominal differences in the prices of labor and materials. When the market is slow, the buyer normally has a wide range in the choice of materials and he is likely to receive unusually good service from the railways and from dealers. In dull times, also, since there is much unemployment the laborers are more anxious to retain their jobs; hence, they are likely to do more work in the same number of hours than when work can be had for the asking. Furthermore, when business is slack, interest rates tend to be lower than when industry is booming; hence, loans can be negotiated to better advantage. Everything militates, therefore, in favor of the man who starts his residence, his office building or his factory during the trough of the cycle, and every man who begins such an undertaking when the cycle wave is nearing its crest does so only at risk of heavy loss. In the latter period, the canny investor can well afford to keep his money in a reliable bank and simply bide his time. He may be assured that any shrinkage in current income due to the low return received on his money during such periods will be a mere bagatelle compared to the loss which he will incur by investing when costs are at the top rather than at the bottom.

If, then, the right time to build depends primarily upon the existing stage of the business cycle, it is to the interest of every prospective builder to study with care

all the available indicators in order to determine as closely as possible what phase the cycle is in at the given date. He is likely to benefit far more by such a study than by reading the abundant advice so freely given by many of the space writers in the financial pages of current periodicals, for if he depends upon these sources for guidance, he too frequently finds himself lost in a maze of contradictory ideas.

The average daily newspaper will show that there is a criminal combination of builders, labor unions and material manufacturers, which is holding up prices artificially and thus preventing the building of the houses absolutely needed to shelter the growing population. Stiff prison sentences for all the conspirators are advised as appropriate remedial measures.

A paper devoted to the interests of contractors will, on the other hand, show the absolute innocence of men engaged in this line of business and will point out that they are wholly at the mercy of the labor unions and of the material makers, who pretend that the war is still on and continue to hold their products at ridiculous prices. The inference is that both these classes of "profiteers" cannot be condemned too vigorously by the public who are suffering from lack of housing.

On turning to the columns of a labor union sheet, however, one discovers that employers are engaged in a conspiracy to rob the workers of all that they have gained by years of striving; that only recently have laborers in the building trade even approached a decent "standard of living" and that they have no intention of allowing themselves to be thrust back into poverty.

An organ devoted to the interests of the manufacturers of building materials will explain the impossibility of reducing prices further, showing that already the selling figures have fallen below costs of production and that the failure of builders to continue construction work is little short of criminal, for it is bringing ruin upon the whole construction industry.

The fact is that this game of "passing the buck," while partly based on honest beliefs, is not conducive to clear thinking on the part of any of the persons engaged

therein. Its success all depends upon the widespread prevalence of two pernicious fallacies: first, the idea that there exists a certain "fair" or "just" price which represents the "intrinsic" worth of an article or service; second, that values are, or at least ought to be, based upon costs of production.

The idea of a "fair" price has haunted the minds of would-be reformers ever since the days of Ancient Greece and thousands of earnest thinkers have sought to obtain a definition therefor which might be applied in the regulation of prices by governmental authority. Unfortunately, twenty centuries of diligent effort have as yet failed to produce the desired formula. As in the case of the medieval alchemists, the searchers always seem to be on the verge of success, only to be halted at last by some apparently trivial but nevertheless insuperable obstacle. Nothing daunted, however, by past failures, our administrators vigorously re-attacked the problem during the recent war. The chief spur to their activities was the success attained by State commissions in the regulation of rates charged by monopolies, such as railways and public utilities. The attempt was made to carry over this same method into the field of articles produced under competitive conditions. Prices of all sorts were fixed with great alacrity and with surprising results in many instances. Sugar soon developed a remarkable scarcity; the coal shortage became so acute that factories were compelled to close; and the wheat price fixed by the Government, while it failed in its fundamental purpose of stimulating production, was highly efficacious in adding to the Treasury deficit.

The attempt to set fair prices, therefore, produced decided effects of many kinds, but the one result which we unfortunately look for in vain is the development of any rule by which a court or commission can determine when the price in a competitive market is "fair." They can turn back to the prices of yesterday, but why are such prices better criteria than the prices of today? What gauge, then, shall we use by which to measure fairness?

Economists have long since given up the attempt and have classed the searcher for the definition of a "fair" price along with the man who spends his energies in building perpetual motion machines. The innate feeling of the average citizen is, however, that the "fair" price is a very definite thing. A little inquiry concerning his views will soon show that "fair" prices for the things he buys are always lower than those existing, while "fair" prices for the products which he sells are usually materially higher than the current market rates.

The man who thinks carefully and possesses a sense of humor is likely to see the ridiculous side of this individualistic view of the matter. He will explain carefully that "fair" prices must be based upon costs of production. In so doing, he brings forth the other fallacy, not so ancient as that of a "fair" price, but even more widespread in its acceptance. This fallacy has been blown to pieces a thousand times, but our writers on "practical" economics and finance inevitably gather up the fragments and piece them together into a new idol, which they worship with undiminished fidelity. This false god has the unique distinction of numbering among its devotees pseudo-scientists of the most widely divergent schools of thought, ranging from ultra-conservative captains of industry to fire-eating followers of Karl Marx. It is an unfortunate fact, however, that as long as this form of worship is continued, there is no hope whatever of developing any clear comprehension of the true laws of price.

Like most fallacies, this one is based upon certain degree of truth. Cost of production is undoubtedly a very decided factor in determining price, but it acts in a manner much different from that so commonly ascribed to it. It is easy enough to see that the present price of cotton or sugar is distinctly below what it costs many of the producers to put the commodity on the market. The price is evidently fixed by the existing supply and demand, and costs have been important in this connection only in so far as they affect the opinions of prospective purchasers or sellers as to probable future production and hence future market sup-

plies. The fact cannot be emphasized too strongly that actual competitive market prices are directly determined entirely by present supplies and needs and by what people think is going to happen, and never by records of what has happened.

The cotton farmers tell us that the present crop cost them thirty cents a pound to grow. Suppose that, on the cost of production basis, a "fair" price commission fixed the price at thirty-five cents in order to allow of a reasonable margin of profit. Their decree might be enforced, but where could the buyers be found? It is only at fifteen cents that there are purchasers enough to take the crop off the market. To fix the price at thirty-five cents would merely mean that a very large fraction of the crop would remain unsold. The weakness of the cost of production theory, therefore, lies in the fact that it will not work in practice.

The sane prospective builder is, then, the man who clears his brain of all such discarded theories as those of "fair" prices, whether based on cost of production or otherwise; who ceases to make himself ridiculous by preaching to his neighbors about the prices that they *ought* to charge or pay, and who accepts prices as they exist, and determines to study them with a view of using the knowledge thus gained to his own advantage. His policy will be to buy when and where he can get things cheapest and to sell when and where he can obtain the best prices for his products. He will expect others to follow the same course and will therefore cease to worry about imaginary "profiteering." Any other course necessarily bespeaks either ignorance or pure cant.

Since, then, it is existing and prospective prices under conditions as they are, and not as some one thinks they ought to be, with which the sensible business man is concerned, the logical procedure is evidently to study the facts in order to determine upon a sound course of action. In a later chapter we hope to consider the outlook for building returns. In this article, we can only deal with present and prospective construction costs.

As every one admits, these costs, while they have fallen sharply, are still very high as compared to pre-war times. The

question at issue, however, is whether or not present values are destined to undergo a heavy decline or whether, because of the existing tremendous currency inflation and the building shortage, which, according to most authorities, is very considerable, normal values have increased to the point where material and labor prices are at present located.

In the absence of an exhaustive statistical study dealing with all the factors involved, it is impossible to answer definitely the question suggested. It is, however, possible to compare a few of the figures along this line, and by so doing it is not impossible that we may be able to increase the accuracy of our judgment in this regard.

The United States Bureau of Labor Statistics, in its *Monthly Labor Review*, presents by far the best index of average wholesale prices that is available. It also gives at the same time a comparable index of the price of building materials. This index has been criticised on the ground that it represents too few commodities, but, on the whole, its trend is probably fairly representative. The same Bureau also publishes an annual bulletin showing the changes in union rates of wages in numerous trades, including those in the construction industry.

Mr. E. J. Brunner, associate editor of the *American Contractor*, has recently presented in that magazine some valuable studies of the course of prices of materials used in construction, and in the February 5th issue of the *American Contractor*, there appears an interesting comparison by Gerhardt F. Meyne of both material and labor prices at Chicago for the years since 1906.

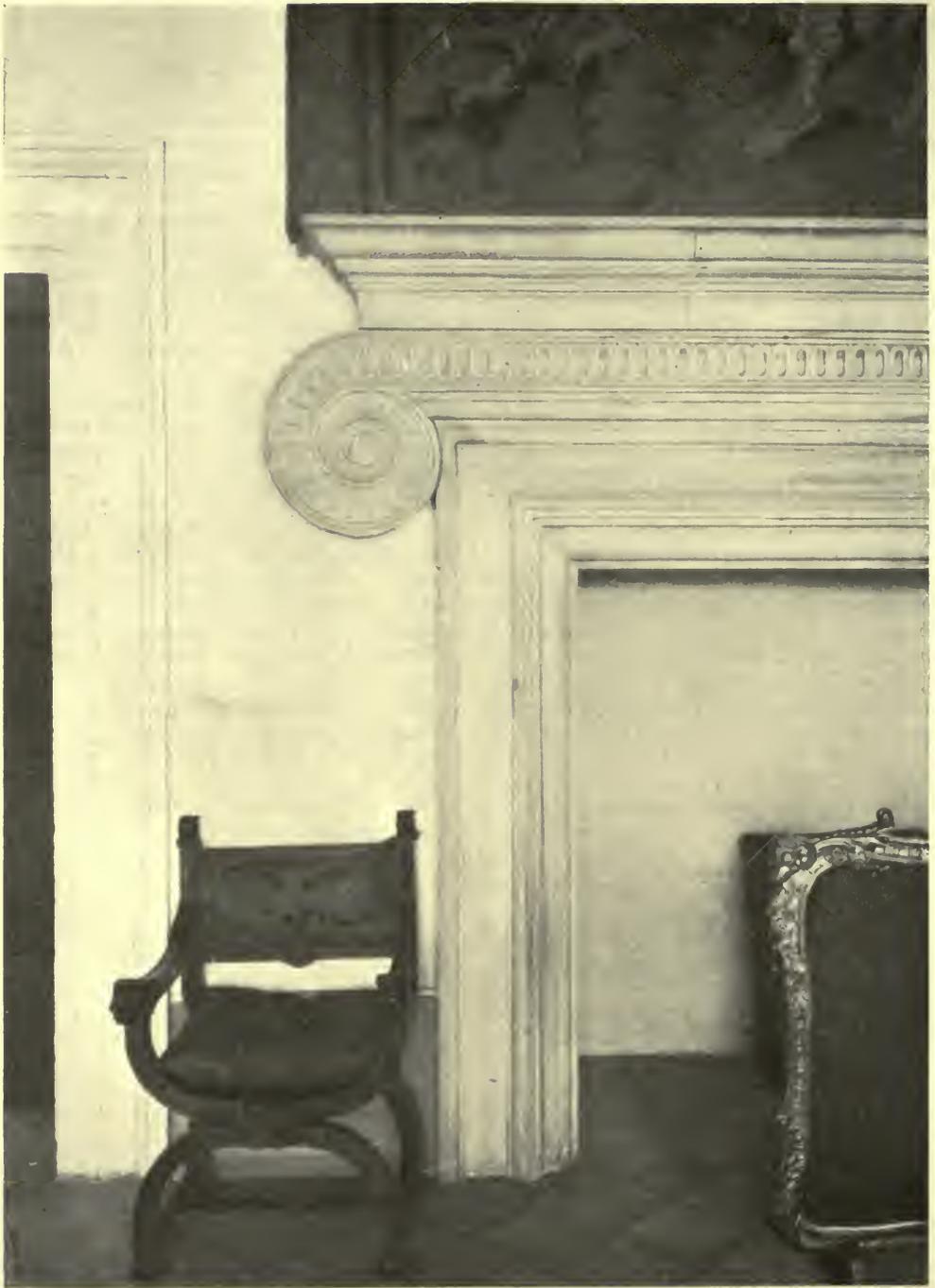
A glance at the accompanying chart makes it evident that, while the break in material prices has been great, nevertheless the index is not yet as low as that representing commodities in general. The fall in the general index during the last few months has been startling. There are reasons for believing that the most radical part of this decline is past, but, as was pointed out in the January issue of this magazine, it is improbable that the bottom of the trough will be reached for several weeks or months yet. Material prices

are governed by the same forces that control the market in general; hence, it is scarcely likely that the downward movement has run its course. It is possible, indeed, that the decline in this field may bring the index down to that of the wholesale average. On the other hand, it may happen that an exceptional demand for buildings will prevent the decline during this cycle from becoming comparable with what has occurred in the case of most other commodities. Wages apparently rose much less than other prices, and hence are less likely to fall greatly, especially since the monopolistic power of the unions is a stabilizing force of such strength that it may succeed in maintaining wage rates at a relatively high level.

The extent of the further decline in construction costs which may be expected is problematical, but there is relatively little doubt that the movement in the immediate future will be downward, or at least stationary, rather than in an upward direction. Under these circumstances, the man who is intending to build for investment, need not exercise undue haste because of fear lest he miss the favorable market. On the other hand, there is a

possibility of delaying too long, for it is not unlikely that prices will reach bottom at a date not later than the coming autumn and that 1922 may be a year of distinctly rising values. The builder who waits, therefore, for costs to decline to pre-war levels may easily meet with disappointment.

The points that should be kept in mind are that prices are still on their way down into a very deep trough and that the bottom has not yet been quite reached; that the next wave is almost certain to follow within the next two years, but that no way has yet been devised for telling whether it is to be high or low; and that, under the existing status of our banking and monetary system, there is no probability that the normal price level will soon readjust itself to anything like the pre-war basis. If such a readjustment is accomplished at all, it is likely to be the work of a decade rather than that of a year or two. The builder who takes into consideration these fundamental factors bearing on costs should be in a position to make better use of his resources than is he who bases his actions wholly upon conditions prevailing at the moment.



DETAIL OF FIREPLACE IN GIULIO ROMANO ROOM—VILLA MADAMA, ROME.

The
VILLA MADAMA ROME

*With Plan Restored by R. M. Kennedy
from the Original Drawings*

By Harold Donaldson Eberlein

PART II ~ *The Interior*

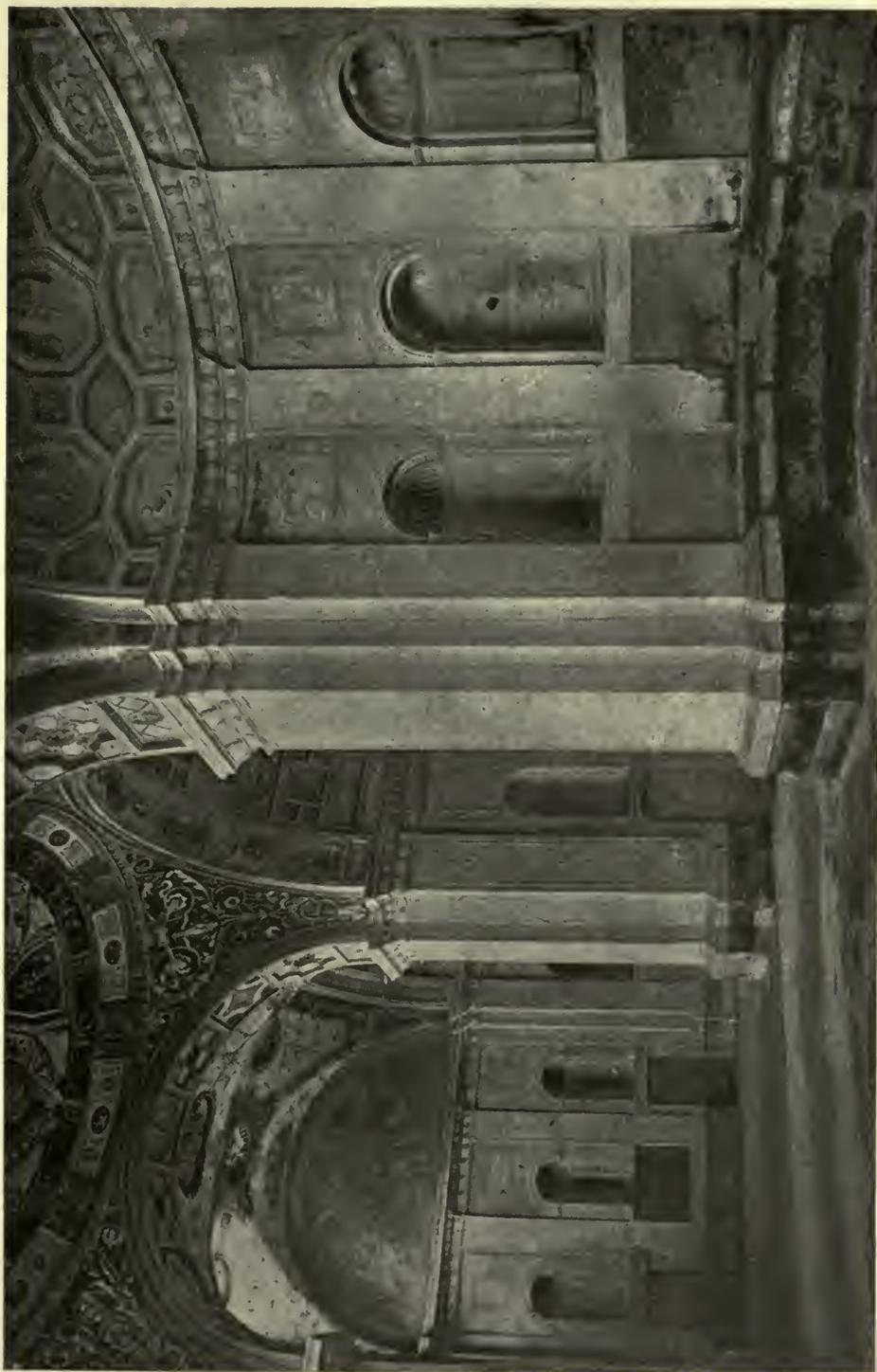
WITHIN the villa there is no need to discuss the Giovanni da Udine decorations of the loggia, as they have had so much attention elsewhere (*v. Architectural Record*, December, 1919); but some note should be made of the Giulio Romano frescoes in the large room called by his name. The deep frieze is rich in color and abounding in a wealth of graceful design with winged figures, *putti*, and exuberant festoons of fruit and flowers. The treatment of the coved ceiling is not less rich in conception, but is in marked and pleasing contrast by reason of its more severely restrained and rather Pompeian character. The marble fireplace in this room is interesting more for its scale (a man can stand upright within the opening) and for its whimsical oddity than for any inherent grace of design.

In the smaller room, next but one to the Giulio Romano room, the fireplace, though heavy in scale, is possessed of no little beauty and refinement. The frieze in this room also presents a delightful bit of vigorous and lively Renaissance design, full of inspiration. These rooms and their decorations are less important, in a way, than the Giovanni da Udine loggia, but they possess very substantial merit and should not be overlooked.

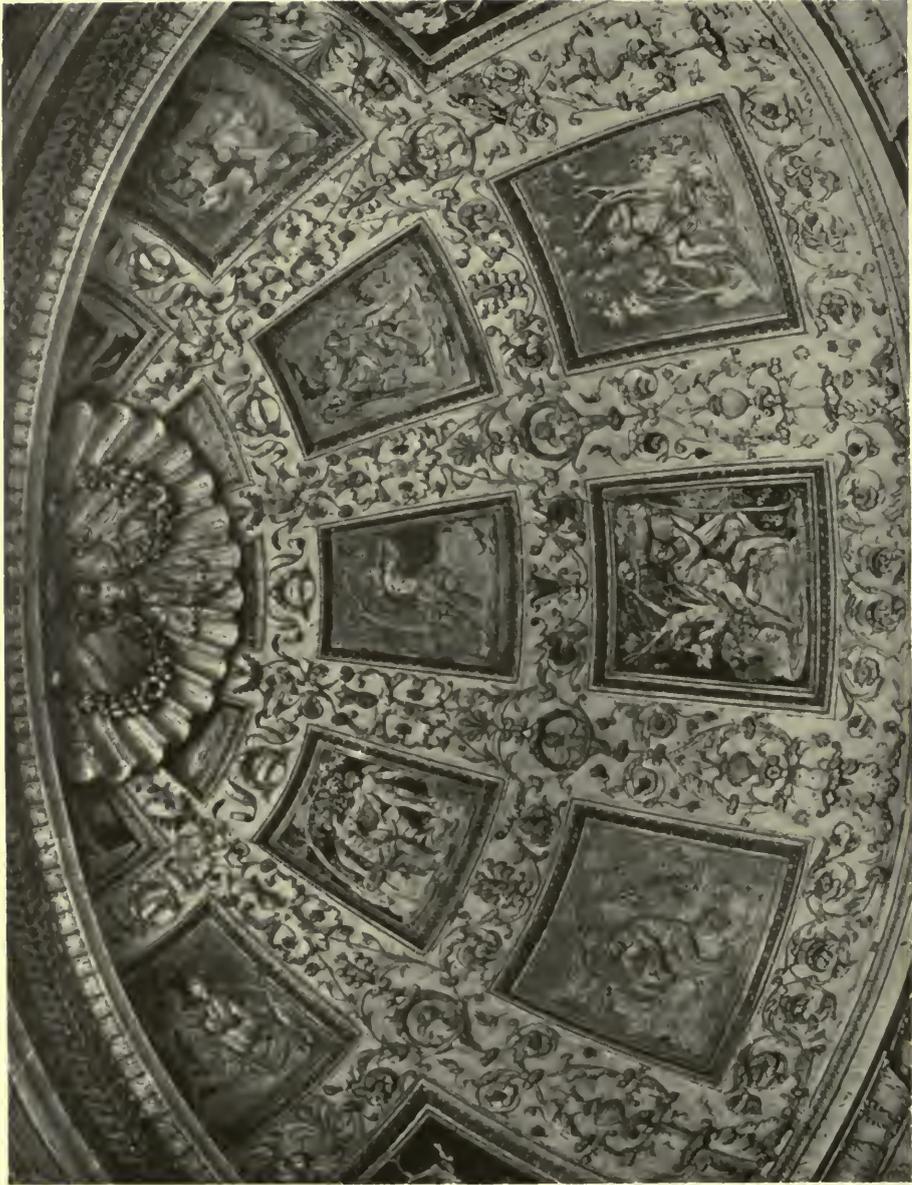
One feels crushed by the prodigious scale of the Villa Madama; the overpowering sense of magnitude is so appalling. Nor does this impression of overwhelming size lessen after repeated visits. One can only marvel at the men who dared to plan so boldly and regret that the great work was never finished. It is inspiring as it stands. What would it be if it had been completed?



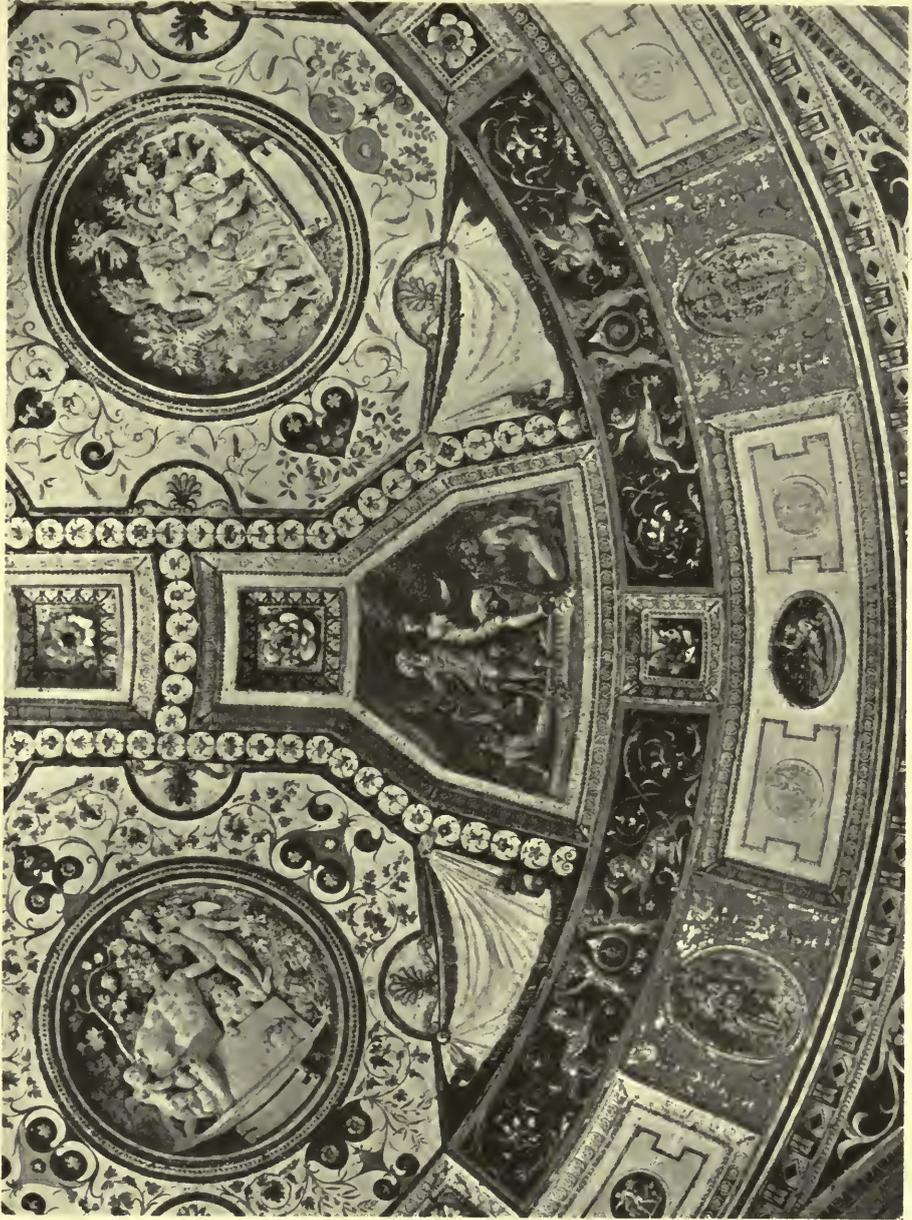
DETAIL OF STUCCO DURO DECORATION BY GIOVANNI
DA UDINE IN LOGGIA—VILLA MADAMA, ROME.



GENERAL VIEW OF LOGGIA
—VILLA MADAMA, ROME.



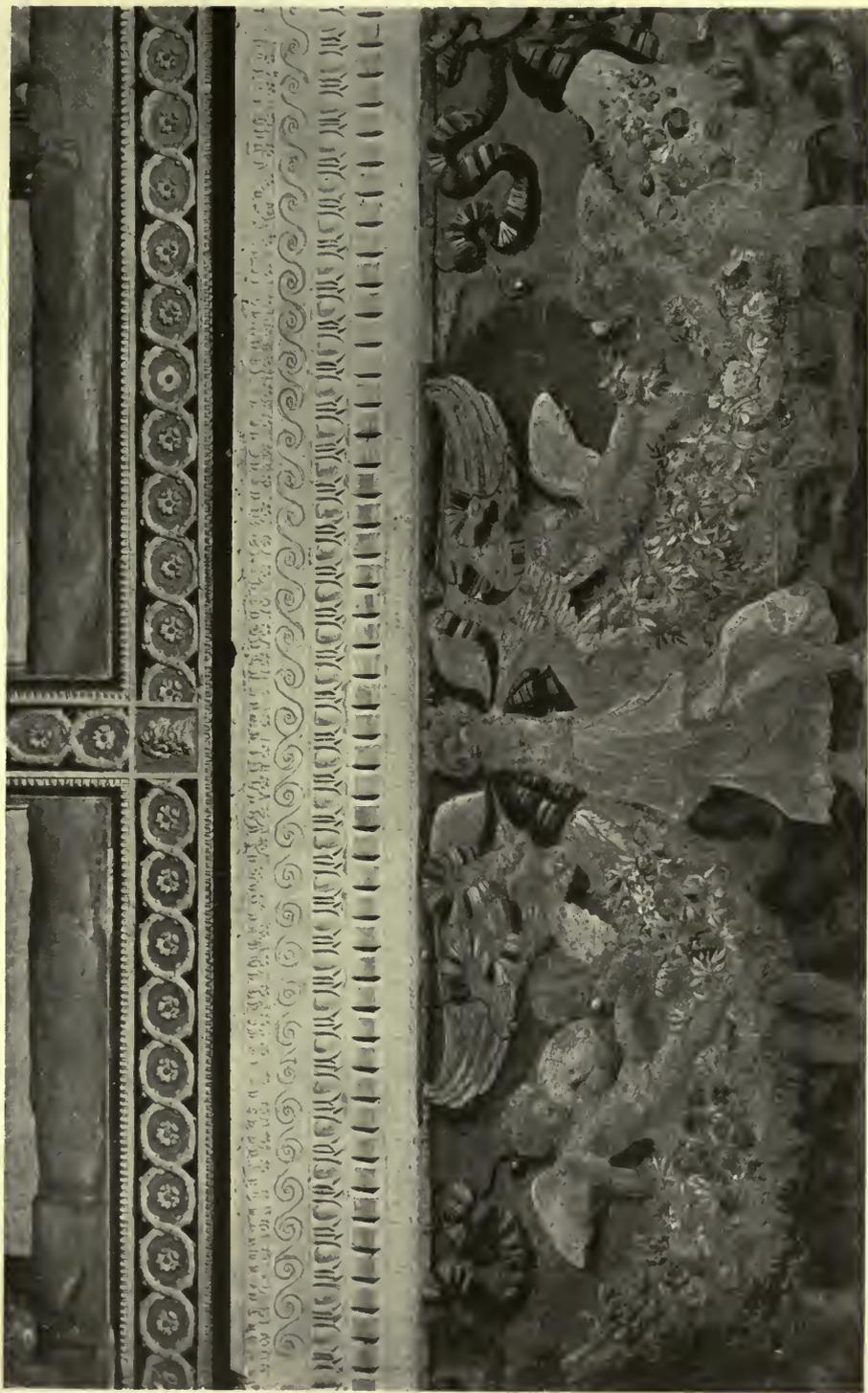
DETAIL OF GIOVANNI DA UDINE'S
VAULT DECORATION IN LOGGIA—
VILLA MADAMA, ROME.



DETAIL OF GIOVANNI DA UDINE'S VAULT DECORATION IN LOGGIA—VILLA MADAMA, ROME.



GIULLO ROMANO ROOM—
VILLA MADAMA, ROME.



DETAIL OF FRESCOED FRIEZE BY GIULIO ROMANO — VILLA MADAMA, ROME.



DETAIL OF CEILING FRESKO BY GIULIO ROMANO—VILLA MADAMA, ROME.



DETAIL OF CEILING FRESCO BY GIULIO ROMANO—VILLA MADAMA, ROME.



SMALL ROOM WITH MARBLE FIREPLACE AND
FRESCOED FRIEZE—VILLA MADAMA, ROME.



SECTION OF FRESCOED FRIEZE AND PANELED WOOD
CEILING IN SMALL ROOM—VILLA MADAMA, ROME.

A BIBLIOGRAPHY OF SCHOOLHOUSE ARCHITECTURE

~~~~~ By ~~~~~

*William Caldwell Titcomb*

THE following bibliography of works on American schoolhouse architecture has been prepared with the idea of indicating the sources which an architect would find of the greatest value and interest. Since much of the material consists in actual documents, plans, elevations, etc., the field of magazine publication has been carefully gone over, and the result is an index to periodical literature as well as a bibliography in the ordinary sense of the word.

Since a school building is primarily a working unit designed to house definite activities, all works on school management, curriculum and relation of school to community, although not directly architectural, have been included, as it is obviously important that a clear idea of the functions to be provided for precede the design of the means to accomplish them. Reference has also been made to school surveys and building programs for the sake of representing this modern preliminary to building, although the interest of any one of them is evidently purely local. It is significant of the newer and better conception of the school as a social institution that a "social survey" of the location is considered in connection with a building program.

Of nothing is it more true than of education that ideals, conditions and requirements are in a continual state of evolution. It follows, then, that books on school building, like the buildings themselves, become "out of date" somewhat rapidly. On this account no works, however authoritative and complete at the time of their publication, have been included which are not of value in the present "state of the art."

The present is a period of post-war reconstruction from an educational as well as every other point of view; and the effect is quite as definitely to be seen in

the changing standards of curriculum, which include re-education, vocational subjects, military training to a greater extent than before, continuation and night schools, and in general an enlarged school-plant, especially in extension and community use.

There are parallel changes in construction and design, notably the restriction to one- and two-story buildings, the increasing use of open-air schools and open-air features in plan, etc., which indicate that the present is a well defined period in school building. One of its most excellent features is the increasing realization of the responsibility of the school in relation to civic design as a whole, its landscape embellishment, etc., its treatment, in a word, not only as a mechanical plant but as a public monument.

The field covered by the bibliography is definitely that of the American public school; no attempt has been made to include the interesting problem of the private school, so special and individual as to put it outside this field, nor the college and university, institutions of higher and technical education, which are evidently in a category apart. Public schools in Hawaii and the Philippines, even were they of sufficient importance architecturally, seem really foreign and not American, though school systems, under U. S. commissioners, give promise of much interesting architectural development in the future.

The division of the subject has been made according to the heads under which it seems naturally to fall and has been divided to facilitate reference to any particular phase of the subject. It is hoped that it will provide a useful survey of this most interesting department of American architecture, one which quite corresponds to the importance of what is perhaps the most democratic of American institutions.

I.—RURAL SCHOOLS.

BARKER, CREIGHTON, M. D. *Small Country Schoolhouse.* (In *Architectural Record*, Feb., 1911.)

Data on light, ventilation, medical standards, etc.

CHALLMAN, S. A. *Desirable Rural Schoolhouses.* (In *Kentucky High School Quarterly*, April, 1917.)

*The Rural School Plant for Rural Teachers and School Boards, Extension Bureaus, Etc.* (Milwaukee, Wis., Bruce Pub. Co., 1917.)

An able discussion by the Commissioner of School Buildings for Minnesota.

*Standard Rural Schoolhouses.* (In *Kentucky High School Quarterly*, Jan., 1917.)

Gives four standard plans for rural schools used in the construction of new schools in Minnesota.

CUMMINS, R. A. *Small Items of Great Significance in the Building and Equipping of Schools.* (In *American School Board Journal*, Feb., 1919.)

Discusses, first, items pertaining to rural schools; second, items of importance to all schools and, third, items pertaining to consolidated rural and city schools.

DRESSLAR, FLETCHER B. *Rural Schoolhouses and Grounds.* (U. S. Bureau of Education, Bulletin No. 12, 1914. Washington, D. C., Government Printing Office.)

An exceptionally full treatment of the adaptation of schools to community needs. Detailed specifications, many plans and photos of models of schools, including a particularly noteworthy school at Cocoanut Grove, Fla. Teacher housing is carefully considered. Still the most exhaustive and authoritative work on the subject.

ENGELHARDT, N. L., and STRAYER, G. D. *Score Card for Rural Schools and Bulletin of Standards.* (Teachers College, Columbia University, N. Y.)

A tabulated score for the evaluation of the school plant.

FINNEY, R. L., and SCHAFFER, A. L. *Administration of Village and Consolidated Schools.* (Macmillan, 1920.)

"Rural schools as they are and the progress in school design likely to occur in the near future." A masterly exposition of the latest conception of

this important phase of democratic education, particularly good in statement of "new attitude" toward physical education of pupils; incidental chapters on technical equipment; less an architectural work than a stimulating summary of modern conditions, which make it, however, a valuable book for the library of an architect.

JENKINS, W. H. *Model Rural Schoolhouse and Garden.* (In *Craftsman*, May, 1911.)

The interesting model school and school garden constructed for demonstration on the Cornell campus.

MICHIGAN DEPARTMENT OF PUBLIC INSTRUCTION. *Rural Schoolhouses, Building Plans, Requirements, Suggestions, Illustrations.* (Lansing, Mich., 1917.)

MISSOURI. *Commission to the Louisiana Purchase Exposition, Plans and Specifications of a Model Rural Schoolhouse.* (St. Louis, Press of Buxton and Skinner, illus., 1904.)

The admirable model schoolhouse, winner of the L. P. E. gold medal.

MINNESOTA, DEPARTMENT OF EDUCATION. *Rural School Buildings.* (Design No. 1-4 of the Minnesota standard school plan. Minneapolis, Minn., 1916.)

*New School Buildings: Plans of One-room School Buildings in Minnesota.*

RAPEER, L. W. *The Consolidated Rural School Building.* (The American School Board Journal, Milwaukee, Wis., Bulletin for American Childhood, No. 2, 1919.)

Reprint of short but valuable article in *American School Board Journal*.

RURAL SCHOOL EQUIPMENT. (In *Teaching*, Jan. 15, 1916.)

Contains articles on the modern rural schoolhouse and its outside and inside equipment with especial reference to use of school as community center.

SCHOOLHOUSE FOR THE RURAL DISTRICTS. *Diagrams, Plans.* (In *Building Age*, Aug., 1917.)

Two classrooms with space for 64 pupils; details of construction.

WILLIS, B. F. *The Ideal Rural School Building.* (In *American School Board Journal*, June, 1916.)

The ideas of "the leader of the movement for better schools in the Keystone state."

II.—ELEMENTARY AND GRADE SCHOOLS.

ARCHITECTURAL FORUM. (School Number, April, 1917.)

Contains: Winnetka, Ill., Skokie school; Perkins, Fellows & Hamilton, architects. Rockville Center, L. I., school; Blanchard & Bro., architects. North Easton, Mass., grade school; Baker & Parker, architects. Cincinnati, O., Lafayette school; Barker & Woodward, architects.

BELMONT, MASS. *Kendal School, Views and Plans.* (In American Architect, Jan. 31, 1917.)

BERKELEY, CAL. *John Muir School Group*; J. W. Plachek, Architect. (In Architect and Engineer, Cal., Sept., 1918.)

BETELLE, JAMES O., A. I. A. *New School Buildings in the State of Delaware: Illustrated by the Work of Guilbert & Betelle, Architects for the Delaware School Auxiliary Assn. for the Administration of the Dupont Fund for School Buildings.* (In American Architect, June 16, 1920.) Part I.

"Most important school building program ever undertaken by any state," on basis of survey and standards by experts Strayer and others of Teachers College. Especially interesting on rural and colored school problems and in variety and adaptability of types evolved for community use. Typical plans of consolidated and other schools and charming adaptations of Colonial to modern requirements.

Part II. (In American Architect, June 23, 1920.)

Plans of grade schools and consideration of the "teacherage" problem, i. e., housing of teachers in isolated districts.

BRUCE, W. G., compiler. *Grade School Buildings.* (Bruce Pub. Co., Milwaukee, Wis., 1914.)

254 pages of plans and details of school buildings from files of American School Board Journal. A representative selection of work up to that time. "Simple and substantial," is the author's ideal.

CARDIFF, CAL. *Cullen School*; J. S. Sirbert, Architect. (In American Architect, Jan. 8, 1919.)

Typical example of the prevailing one-story California type.

CHALLMAN, S. A. *Standard Features of Grade School Buildings.* (In Na-

tional School Building Journal, August, 1919, pp. 34-36, 89-90.)

CINCINNATI, O. *Hoffman Public School*; S. Hannaford & Sons, Architects. Plans and elev. (In Architectural Record, Jan., 1919.)

Very interesting asymmetrical design for an unusually complete plant, comprising open loggia for outdoor classes, school gardens, etc.

COLUSA, CAL. *Grammar School*; W. H. Weeks, Architect. (In Western Architect, Aug., 1918.)

EAST ORANGE, N. J. *Elmwood School*; Guilbert & Betelle, Architects. (In American Architect, June 16, 1920.)

HAYS, W. C. *One-Story and Open-Air School in California.* (In Western Architect, June, 1918.)

Contains: Garfield Intermediate, Berkeley; Chrystal school-district school, Suisan; Emerson school; Oakland Azuca school; Marengo school, Alhambra.

HAYS, W. C. *Recent Distinctive Schoolhouses in California.* Part I. (In Architectural Forum, Nov., 1918.)

Contains: Frances Willard Intermediate School, Berkeley; L. P. Hobart and C. H. Cheney, architects. Interesting as having exclusive open-air circulation.

— Part III. (In Architectural Forum, Jan., 1919.)

Contains: Lake View school, Oakland; Julia Morgan, architect. Group plan, with the open one-story characteristics of this type, play shelters and other interesting local features. Incidentally interesting as the work of a woman designer of several distinguished Western schools.

HIGHLAND PARK, ILL. *Grammar School*; Holmes & Flinn, architects. (In Western Architect, Feb., 1918.)

Expressive use of sculpture in elevation.

ITTNER, W. B. *The Intermediate School.* (In American School Board Journal, Aug., 1919.)

Contains architectural plans, etc., for the intermediate school at Buffalo, N. Y.

JACKSON, MICH. *West Intermediate School*; L. H. Field, Jr., architect. (In Architecture, Jan., 1920.)

Exceptionally full provision for vocational, arts and crafts, commercial and domestic science subjects, and for physical education, with swimming pool, gymnasium, etc.

- KOOSE, L. V. *Space Provisions in the Floor Plans of Modern Elementary School Buildings.* (In *Elementary School Journal*, Sept., 1919.)
- LOS ANGELES, CAL. *Grammar School*; Allison & Allison, architects. (In *American Architect*, Aug. 14, 1918.)  
*Grammar School*, La Canada District. (In *American Architect*, Aug. 14, 1918.)
- MODERN SCHOOLHOUSES. Part II. *Illustrating and Describing Recent Examples of Schoolhouse Design Executed in the U. S.* (In *American Architect*, N. Y., 1915.)  
 Articles and illustrations of schools by leading architects: with Part I, published in 1910, it forms a very complete résumé of school building up to 1915.
- MORROW, IRVING F. *The Work of John Reid, Jr., A. I. A.* (In *Architect and Engineer*, Cal., Feb., 1920.)  
 Contains: Hillcrest Primary School. Fairmount School; interesting treatment of brick and plaster. Monroe Grammar School; notable elevation, two stories in brick, and an exceptionally fine school playground. Twin Peaks Primary School. Park Presidio School; open corridor two-story type. A synopsis of one of the representative Western designer's work. "Best of the recent work in California, individual rather than standardized in type."
- MOST NOTABLE BUILDINGS OF OREGON. (In *Architect and Engineer*, Cal., Mar., 1919.)  
 Couch School; F. A. Narramore, architect.
- NEWARK, N. J. *Cleveland School.* (In *Brickbuilder*, Apr., 1913.)  
*Ridge School.* (In *Brickbuilder*, Sept., 1913.)
- OAKLAND, CAL. *Santa Fe Elementary School*; J. J. Donovan, architect. (In *Western Architect*, Mar., 1918.)  
 Interesting example of the open type with "arcaded" playground as well as open corridors and cloister court.  
*McChesney Elementary School*; J. J. Donovan, architect. (In *Western Architect*, Mar., 1918.)
- PITTSBURGH ARCHITECTURAL CLUB. *11th Annual Yearbook. Schoolhouses.* 1916.  
 Plates, front, plans.
- PLAINFIELD, N. J. *Evergreen Avenue Grammar School*; Wilder & White, architects. (In *Architectural Forum*, Apr., 1920.)
- SAN JUAN, PORTO RICO. *Grade School at Santurce*; A. C. Finlayson, architect. (In *Architectural Forum*, Jan., 1919.)  
 Interesting in its similarity to the California type.
- PORTLAND, ORE. *Fernwood Grammar School*; Lawrence & Holford, architects. (In *Architectural Record*, Feb., 1918.)
- SCHOOL BUILDINGS IN NEW YORK CITY. (In *School and Society*, June 3, 1916.)
- SCHOOLS OF CALIFORNIA. (In *Western Architect*, June, 1918.)  
 Glendora School. No hallways or stairs, all rooms being entered from arcaded loggia. Interesting Palladian elevation.
- SNYDER, C. B. J., HAMLIN, A. D. F., and others. *Modern Schoolhouses.* Being a series of authoritative articles on planning, sanitation, heating and ventilation. 145 pages of recent schoolhouses. (Swetland Pub. Co., N. Y.)  
 Still a standard book and a valuable survey of work up to the date of publication.
- ST. JOSEPH, MO. *Whittier School*; Eckel & Aldrich, architects. (In *Architectural Forum*, June, 1920.)
- TOLEDO, O. *Walbridge School*; E. M. Gee, architect. (In *American Architect*, Apr. 24, 1918.)  
*Garfield School*; E. M. Gee, architect. (In *American Architect*, Apr. 24, 1918.)
- WASHINGTON, D. C. *H. D. Cooke School.* (In *Brickbuilder*, Nov., 1909.)
- WHEELWRIGHT, E. M. *School Architecture.* A general treatise for the use of architects and others. Rogers & Manson, Boston, Mass., 1901.  
 Necessarily out of date, but remains one of the best written of the treatises on the subject, particularly strong on the treatment of the plan and its monumental qualities. Illustrated by many of Mr. Wheelwright's own schoolhouses, done while city architect for Boston, which are among the best in Massachusetts and consequently in the country.
- WIGHT, PETER B. *Public School Architecture in Chicago.* Illus. (In *Architectural Record*, June, 1910.)

WIGHT, PETER B. *Two Schools in California.* (In *Western Architect*, Mar., 1918.)

Glendora Grammar School.

III. HIGH SCHOOLS.

ARCHITECTURAL FORUM. April, 1917. Schoolhouse number.

Contains: Detroit Northern High, Malcolmson and Higginbotham, Exeter. Tuck High School, Cram, Goodhue and Ferguson. Framingham High School, C. M. Baker.

Many plates of important schools with brief descriptions of buildings.

BRUCE, W. G. *High School Buildings.* (American School Board Journal, Milwaukee, Wis.)

An illustrated work by the editor of the School Board Journal.

CAMDEN, N. J. *High School Building.* P. A. Davis, architect. (In *American Architect*, July 3, 1918.)

CORDOVA, TENN. *High School;* Jones & Furbinger, architects. (In *American Architect*, Aug. 14, 1918.)

CROLY, H. *The Work of Kilham & Hopkins, Architects.* Illus. (In *Architectural Record*, Feb., 1912.)

DRESSLAR, F. B. *American Schoolhouses.* (U. S. Bureau of Education Bulletin, No. 5, 1910. Washington, D. C., Govt. Printing Office.)

An exhaustive treatise by the consulting schoolhouse expert for California and Alabama. It is especially strong on hygiene and allied subjects, but is quite complete on all details of plan and construction and is perhaps the best résumé of the subject up to the time of its publication. Very full of representative illustrations of the work of Snyder, Ittner and other schoolhouse experts. "DeWitt Clinton High School, C. B. J. Snyder, architect, is probably the finest high school in America." Foresees larger functions of school now already exemplified in contemporary work. Excellent critical analyses of the Soldan, Sumner and other high schools. A superb work.

DURANGO, CAL. *High School;* C. E. Thomas, architect. (In *American Architect*, Apr., 1920.)

One of the interesting recent Western schools. Contains theatre and other provisions for extension of use in community.

HAYS, W. H. *Recent Distinctive Schoolhouses in California.* Part III. (In *Architectural Forum*, Jan., 1919.)

Contains: Merced Union High School, a remarkable group plan on a very irregular site. Palo Alto Union High School, one of the most interesting and important examples in the country, particularly so in elevation.

JOHNSTON, C. G. *The Modern High School.* (Scribner's, 1920.)

One of the most recent and complete expositions of the subject. Written more particularly from the administrative point of view, but gives an excellent idea of the nature of the activities to be provided for in building.

LUCY, TENN. *High School;* Jones & Furbinger, architects. (In *American Architect*, Jan. 8, 1919.)

A modern school of the one-story type.

MAYNARD, MASS. *High School;* C. R. Greco, architect. (In *American Architect*, Mar. 20, 1918.)

MERCED UNION HIGH SCHOOL; Allison & Allison, architects. (In *American Architect*, Jan. 23, 1918.)

MIKKELSEN, M. A. *Edward Lee McClain High School*, Greenfield, Ohio, and *Central High School*, Washington, D. C. (In *Architectural Record*, Nov., 1917.)

Descriptive and critical accounts of these fine modern schools, of which the Washington school, by W. B. Ittner, has an especially complete plant, including an armory, rifle range, etc., among other unusual features.

MODERN HIGH SCHOOL BUILDING. Illus. (In *American City*, Feb., 1917.)

MORRISTOWN, N. J. *High School;* Betelle & Guilbert, architects. (In *American Architect*, June 23, 1920.)

Elevations, plan and details of one of the classics in high school design. The plan, in particular, is quite the last word in modern equipment, including hospital and dental clinic, greenhouses, unusually full manual and domestic science arrangements, moving picture equipment, etc.

NEW YORK CITY. *Stuyvesant High School.* Illus. plan. (In *Architecture*, Jan., 1908.)

*Washington Irving High School.* (In *Architecture and Building*, May, 1913.)

PERKINS, H. H. *High School Planning.* Illus. (In *American School Board Journal*, Oct., 1917.)

The article is illustrated by four examples of high school buildings from

- the work of Perkins, Fellows and Hamilton, of Chicago.
- PITTSBURGH, PA. *Schenley High School*. (In *American Architect*, Feb. 7, 1917.)
- PHILADELPHIA, PA. *High School Building*, Girard College; J. T. Windrim, architect. (In *American Architect*, Apr. 24, 1918.)
- PORT CHESTER, N. Y. *High School*; W. L. Bottomley, architect. (In *Architectural Forum*, Nov., 1919.)  
Elevation in "Adam" style.
- SANTA BARBARA, CAL. *Proposed New High School*. (In *American Architect*, Sept. 19, 1917.)
- SANTA FE, N. M. *Lena High School*; Rapp & Hendrickson, architects. (In *Architectural Forum*, Nov., 1919.)
- SCHOOLS OF CALIFORNIA. Contains: *Santa Monica High School*; Allison & Allison, architects. (In *Western Architect*, June, 1918.)  
One of the most interesting and beautiful of modern schools. In addition to a complete plant in the latest sense of the word, the athletic equipment is very ample, with tennis courts, two gymnasias beside the track and field locker provisions. The elevations, very rich and full of detail, are creative adaptations of the brick styles of North Italy.
- SHORT HILLS, N. J. *High School*; Guilbert & Betelle, architects. (In *American Architect*, June 16, 1920.)
- SNYDER, C. B. J. and HAMLIN, A. D. F. *School Architecture*. (See under *Grade Schools*.)
- SOUTHAMPTON, L. I. *High School*, W. L. Bottomley. (In *Architectural Record*, Feb., 1918.)
- ST. LOUIS BUILDINGS. Illus. (In *Architectural Record*, Feb., 1908.)
- SAN FRANCISCO, CAL. *Girls' High School*. Illus. (In *Brickbuilder*, Oct., 1912.)
- SPRINGFIELD, MASS. *High School*; W. B. Ittner, architect. (In *Western Architect*, Nov., 1919.)
- TOWNLEY, S. D. *The Palo Alto High School*; Allison & Allison, architects. (In *Western Architect*, Feb., 1919.)  
One of the most important of the schools of the "California" type, a large group plan and genuinely original and effective elevation, especially interesting in its adaptation of style. With the Santa Monica High perhaps the two most representative Western schools.
- WATSONVILLE, CAL. *High School*; W. H. Weeks, architect. (In *Western Architect*, June, 1918.)  
An interesting elevation in stucco, attempting not wholly without success a decoration inspired from the Moorish.
- WHEELWRIGHT, E. M. *School Architecture*. (See under *Grade Schools*.)
- WICKES, W. K. *New Building of the Syracuse High School*. (In *School Review*, June, 1903.)
- WIGHT, PETER B. *Two Schools in California*. (In *Western Architect*, June, 1918.)  
The Santa Monica High School; Allison & Allison, architects. One of the most interesting and beautiful of modern schools. In addition to a complete plant in the latest sense of the word, the athletic equipment is exceptionally ample, with tennis courts, two gymnasias and track and field locker provisions. The elevations, very full and rich, are creative adaptations of the brick styles of North Italy.
- WHARTON, G. W. *High School Architecture in the State of New York*. (In *School Review*, June, 1903.)
- IV. SPECIAL TYPES OF SCHOOL.
- ALBANY, N. Y. *New York State Normal School*. Illus. plans. (In *Brickbuilder*, Jan., 1910.)
- AYRES, M., *Open Air Schools*. Double-day, Page Co.  
An excellent recent work especially concerned with the hygienic and physical features of this modern development.
- BALTIMORE, MD. *Maryland School for the Blind*. Illus. plans. (In *Brickbuilder*, Dec., 1913.)
- BETELLE, JAMES O. *New School Buildings in the State of Delaware*. (In *American Architect*, June 16, 1920.)  
Part I.  
Contains: Edward Russ Memorial Dormitory, State Normal School, Upper Montclair, N. J., Guilbert and Betelle, architects. See also under *Elementary Schools*.
- BOURNE, RANDOLPH. *Gary Schools*. (Houghton Mifflin, 1916.)  
A description of the much discussed "Gary System" and indications for the intensive use of the school plant in the community.
- BOSTON, MASS. *High School of Com-*

- merce; C. H. Walker and Kilham & Hopkins, architects. (In Architectural Forum, Apr., 1917.)
- BROOKLYN, N. Y. *Training School for Young Girls*; Ludlow & Peabody, architects. (In American Architect, May 28, 1919.)
- CALIFORNIA. Department of Public Instruction, Sacramento, Cal., *Schoolhouse for \$500—Outdoor Schoolhouse for Fresno, Cal.* Illus.
- CALL & SCHAFER. *Laboratory Manual of Agriculture*.  
Appendix contains instructions for equipment of agricultural departments.
- CHICAGO SCHOOLS. *Portable Schoolhouses in Chicago*. Illus. diags. (In Building Age, May, 1915.)
- CLEVELAND, O. *Cleveland Technical High School*; F. S. Barnum, architect. (In School Board Journal, Apr., 1913.)
- CONSOLIDATED SCHOOLS. (In American Architect, June, 1920.)
- CRONE, F. L. *School Buildings and Grounds in the Philippines*. (In National Education Association Proceedings, 1915.)
- DORCHESTER, MASS. *St. Gregory's Parochial School*. (In American Architect, Mar. 20, 1908.)
- ELLING, GEO., *Scarboro-on-Hudson School*. (In American Architect.)
- FRESNO, CAL. *State Normal School*; G. B. McDougall, architect. (In American Architect, July 30 and Oct. 15, 1919.)  
Plan around an effective cloister, admirable domestic science equipment with cafeteria, etc.  
*State Normal School*. (In Western Architect, Feb., 1919.)
- GORDON, WM. *The Consolidated High School*. (In American School Board Journal, Mar., 1918.)  
Attractively illustrated.
- HAYS, W. C. *Recent Distinctive Schoolhouses in California*. Part I. (In Architectural Forum, Nov., 1918.)  
Contains: Oakland, Cal., Technical High School; J. J. Donovan, architect. Ingenious plan of grouped schools on very irregular lot and well planned athletic field, particularly interesting in plan.  
*Recent Distinctive Schoolhouses in California*. Part II. (In Architectural Forum, Dec., 1918.)  
Contains: Oakland, Cal., Luz School of Industrial Training; an institution for all fields of industrial education and for household and domestic arts. San Jose, Cal., California State Normal School, State Bureau of Arch. (V. de Maris, architect.) Santa Barbara Normal School; winner of A. I. A. medal for architecture; very interesting in plan and with an original and very decorative elevation.
- HAYS, W. C. *One-Story and Open-Air Schools in California*. (In Architectural Forum, April, 1917.)  
Polytechnic Elementary High School; Myron Hunt and Elmer Gray, architects.
- HUGHES, H. F. *Elastic Schoolhouses*. (In American City, Jan., 1918.)  
School plant units in Fresno, Cal., described with illustrations. "We see bookcases which grow with the library and in Fresno, Cal., the same plan is being used with building schoolhouses."
- HUMBOLDT, CAL. *Humboldt State Normal School*; G. B. McDougall, architect. (In Western Architect, Feb., 1919.)
- ITNER, W. B. *The Intermediate School*. (In American School Board Journal, Aug., 1919.)  
Contains architectural plans, etc., for the intermediate school at Buffalo, N. Y.
- KOOSE, L. V. *Space Provision in the Floor Plans of Modern Elementary School Buildings*. (In Elementary School Journal, Sept., 1918.)
- LAKEVILLE, ILL. *School Chapel and Gymnasium*, Allendale Farm, Ill.; L. Buck, architect. (In Western Architect, June, 1919.)  
Illustrations of portions of this new social communal institution.
- LOS ANGELES, CAL. *State Normal School*; Allison & Allison, architects. (In Architectural Forum, Apr., 1917.)  
Large group plan, almost collegiate in effect.
- MCCOLL, J. R. *Heating and Ventilating the Portable Schoolhouse*. Illus. diags., plans. (In Metal Work, Mar. 23, 1917, and in American Society of Heating and Ventilating Engineers, Proceedings, 1915.)
- NEWARK, N. J. *Central Commercial and*

- Manual Training High School.* Illus. plans. (In *Architecture and Building*, Nov., 1912, and *Brickbuilder*, Aug., 1912.)
- Normal School.* Illus. plans. (In *Architecture and Building*, Sept., 1913, and *Brickbuilder*, July, 1913.)
- Essex County Parental School.* (In *Architecture*, Sept., 1917.)
- NEW BRITAIN, CONN. *Prevocational School, Plans.* (In *Manual Training Magazine*, May, 1915.)
- OBERHOLTZER, E. E. *Tulsa Unit School System.* (In *American Journal of Education*, Dec., 1916.)
- PAROCHIAL SCHOOLS BY MAGINNIS, WALSH & SULLIVAN. (In *Architectural Forum*, June, 1920.)  
Contains: Our Lady of Lourdes, Jamaica Plain; St. Mary's Parochial School; Winchester, Mass., Parochial School.
- PERRY, C. A. *Social Center Features in New Elementary School Architecture.* With plans of 16 "socialized" schools. Russell Sage Foundation, N. Y.  
With Dresslar's work the two standards on the new school architecture.
- PICHEL, IRVING. *Stage Construction for Small Theatres.* (In *Theater Arts Magazine*, Jan., 1920.)  
"Up-to-date, indispensable for architects of communal buildings."
- PORTABLE SCHOOLHOUSES. "*Getting a Schoolhouse in Twenty-four Hours.*" Illus. (In *Craftsman*, Oct., 1916.)  
An emergency solution for overflow of children in cities and in inaccessible country districts, not a very practical one owing to difficulty in heating nor a very architectural one.
- RAPEER, L. W. *The Consolidated Rural School Building.* (Reprinted from *American School Board Journal*, June, 1919, and appearing as chapter in "The Consolidated Rural School," to be published by C. Scribner's Sons, N. Y.)  
*The One-Story Rural Consolidated Building.* (In *American School Board Journal*, Sept., 1919.)  
Gives some of the principal advantages and special features of one-story consolidated schools.
- ROSENBERG, G. R. L., JR. *Philadelphia Adopts the One-Story Building Policy.* (In *Architectural Record*, Sept., 1916.)
- SALT LAKE CITY. *Technical High School;* Connon & Fetzer, architects. (In *Architectural Forum*, Apr., 1917.)
- SAN DIEGO, CAL. *Francis W. Parker Open-Air School.* Views and plan. (In *Architectural Record*, Jan., 1915.)  
One of the earliest examples of this now successful type of school.
- SANTA FE, N. M. *New Mexico School for Deaf and Dumb;* Rapp & Hendrickson, architects. (In *Architectural Review*, Feb., 1918.)
- SCARBORO - ON - HUDSON. W. Bosworth, architect. (In *American Architect*, Apr. 2, 1919.)  
Private school built for Frank Vanderlip, with many interesting and novel features for education de luxe.  
*Private School for Frank Vanderlip.* (In *Architectural Forum*, Sept., 1919.)  
Many attractive views of this exceptional school.
- SCHOOLS FOR THE BLIND AND DEAF (U. S. Bureau of Education, Washington, D. C., Govt. Printing Office.)  
Official "Bulletin" on the special features of these schools, a virtual treatise on the subject.
- SCHOOL FOR SUB-NORMAL CHILDREN. (In *Architect and Engineer*, Cal., Feb., 1920.)  
In article on work of John Reid.
- SPRINGFIELD, MASS. *Parochial School of Our Lady of Hope;* J. W. Donahoe, architect. (In *American Architect*, May 21, 1919.)
- STUDYING OUT OF DOORS. *An Open-Air School that Furnishes a New Idea in Education.* (In *Craftsman*, Sept., 1916.)
- STURGIS, R. C., Watertown, Mass. *Perkins Institution for the Blind and Mass. School for the Blind.* (In *Brickbuilder*, Apr., 1914.)  
Perhaps the finest architecturally of such institutions.
- TRENTON, N. J. *School of Industrial Arts.* Illus. plans. (In *Brickbuilder*, July, 1911.)
- TUBBS, E. V. *Part Time Plan in the Centralia High School.* (In *School Review*, Univ. of Chicago Press, Feb., 1918.)

- Description of system whereby students alternate in school and shop for correlation of industrial and academic education.
- URBANA, ILL. *Education Building, Univ. of Illinois.* (In *Western Architect*, May, 1919.)
- U. S. FEDERAL BOARD for Vocational Education, Buildings and Equipment for Schools and Classes in Trade and Industrial Subjects. (Washington, November, 1918. Govt. Printing Office, 1918. Illus. plans. Bulletin No. 20, Trade and Industrial Series, No. 4.)  
One of the government Education Bureau's careful treatises, with full illustrations. The best single work on the architectural and mechanical sides of vocational education.
- VAN PELT, J. V. *Architecture of Open-Air Schools.* (In *Heating and Ventilating Magazine*, Sept., 1913.)
- WORK OF CALIFORNIA STATE ARCHITECT B. J. CAHILL. (In *Architect and Engineer*, Cal., Sept., 1918.)  
Contains: Santa Barbara Normal School, Fresno Normal, Humboldt Normal.
- WORK OF JULIA MORGAN. (In *Architect and Engineer*, Cal., Nov., 1918.)  
Contains: Marysville School, Miss Burke's private school.
- V.—CONSTRUCTION, HEAT, VENTILATION, ETC.
- ALT, H. L. *The Heating and Ventilating of Grouped School Buildings.* (In *American School Board Journal*, Apr., 1917.)  
*Mechanical Equipment of School Buildings.* (Milwaukee: Bruce Pub. Co., 1916. Illus.)
- AYRES, M. *A Century of Progress in Schoolhouse Construction.* (In *American School Board Journal*, June, July, August, Sept., 1917.)
- AYRES, L. P. *Fire Protection in Public Schools.* Russell Sage Foundation, N. Y.
- AYRES, M., and WILLIAMS, J. F. *Healthful Schools: How to Build, Equip, Maintain Them.* Houghton, Mifflin, 1918.  
The best recent work on the subject, similar to Dresslar's work with more material.
- BALDWIN, E. C. *Terminology of School Building Construction and Repairs.* (In *American School Board Journal*, July, 1915.)  
"The first comprehensive, and, we think, workable plan for classifying school buildings."—Editor's Note.
- BALDWIN, WILLIAM JAMES. *The Ventilation of the Schoolroom.* (The author, 107 W. 17th St., N. Y.)  
Author an expert consulting engineer.
- BASS, F. *Experiment in School Ventilation with Reduced Air Supply Through Individual Ducts.* Illus. (In *American Soc. Heating and Ventilating Eng. Proceedings*, 1913.)
- BETELLE, J. O. *Assembly Halls.* (In *American School Board Journal*, Apr., 1916.)  
Discusses the betterment of assembly halls in general appearance, seating accommodations, stage arrangements, acoustics and other important elements.
- BETELLE, J. O. *Architectural Styles as Applied to School Buildings.* (In *American School Board Journal*, Apr., 1919.)
- BRUCE PUBLISHING CO., Milwaukee, Wis. *Checking Schedule for Projected School Buildings.*  
"Of practical use to architects in planning and specifying details of school buildings."
- BURRAGE, S., and BAILEY, H. T. *School Sanitation and Decoration.* A practical study of health and beauty in their relations to the public schools. (Boston: Heath.)
- CASELL, J. D. *Heating, Ventilating and Electrical Equipment of Philadelphia Public School Buildings.* Illus. (In *Am. Soc. of Heating and Ventilating Eng. Proceedings*, 1917.)
- CHALLMAN, S. A. *A State Program of Schoolhouse Hygiene.* (In *American School Hygiene Association, Proceedings*, 1915.)
- CODE OF LIGHTING SCHOOL BUILDINGS. Illus. (General Science Quarterly, Jan., 1919.)  
Report by committee on school lighting of the Illuminating Eng. Soc.
- COOPER, F. I. *Economies Gained in Standardizing Schoolhouse Plans.* (In *American School Board Journal*, Aug., 1919.)  
*Planning the School Against the*

- Fire Hazard.* (In *Better Schools*, Dec., 1915.)  
Suggests means, especially by State legislation, to insure safety of school children.
- Report of the Committee of Standardization of Schoolhouse Planning and Construction.* (In Nat. Ed. Assn. Proceedings, 1917.)
- Schoolhouses and the Fire Hazard.* (In Nat. Ed. Assn. Proceedings, 1916.)
- Standardization of Schoolhouse Planning.* Parts I and II. (In *American Architect*, Aug. 21, 28, 1918.)
- Authoritative articles by the chairman of the Nat. Ed. Association committee on standards.
- DRESSLAR, F. B. *American Schoolhouses.* (See *Elementary Schools*, ref. on hygiene, p. 107.)
- School Hygiene.* The Macmillan Co.  
"A valuable book on the furniture, facilities and equipment of a modern school plant and their care and upkeep."
- DONOVAN, J. J. *Odds and Ends About the Building of Schools.* (In *American School Board Journal*, Apr., 1920.)
- DUNN, J. W. *Daylight and Ventilation Problems, Notes on Requirements of School Lighting, for Nat. Comm. for Prevention of Blindness.* (In *Architect and Engineer*, Cal., Feb., 1918.)
- ENGELHARDT, N. L., and STRAYER, G. D. *Score Card for City School Buildings and Bulletin of Standards.* Teachers College, Columbia Univ., N. Y.  
A tabulated scheme for the evaluation of the school plant.
- EXPERIMENTAL PLAN of the New York State Commission on Ventilation in School 51, New York City. Illus. diags. (In *Heating and Ventilating Magazine*, June, 1917.)
- FIRE PROTECTION AND THE SCHOOLS; PLANS. (In *Architectural Record*, Apr., 1916.)
- FIRE PROTECTION. Illustrations from the Chicago, California, Mission group plan at Tulsa, and other one-story or similar types of construction. (In *American Architect*, Mar. 10, 1920.)
- FOUR-ROOM HOLLOW TILE SCHOOLHOUSE. Diags., plans. (In *Building Age*, June, 1917.)
- GERHARD, W. P. *Sanitation of Public Buildings.* (Wiley & Sons, N. Y.)
- HEATING AND VENTILATING for Schools, Based on the New Ventilating Ideas. Diags., plans. (In *Heating and Ventilating Magazine*, June, 1914.)
- ILLUMINATING ENGINEERING SOCIETY, *Code of Lighting School Buildings.* (N. Y., 1918.)
- ITTNER, W. B. *The Cost of School Buildings.* (In *American School Board Journal*, Aug., 1915.)
- School Buildings and the War and Standardization of School Buildings.* (In *American School Board Journal*, Sept., 1917.)  
Prepared for the Nat. Ed. Assn. from an exceptionally wide acquaintance with school building in widely separated sections of the country.
- Standardization of School Buildings.* (In *National Education Association Proceedings*, 1917.)
- JOHNSTON, W. W. *Safe Construction of School Buildings.* Illus. (In *American School Board Journal*, Apr., 1917.)  
"The fundamental principles that govern the safe construction of school buildings."
- JUDD, C. H. *Educational Specifications for School Buildings.* (In *National Education Association Proceedings*, 1919.)
- KEELER, F. J. *Standards of School Architecture and Schoolhouse Construction.* (In *National Education Association Proceedings*, 1917.)
- KILHAM, W. H. *Hygienic Construction of Schoolhouses from an Architect's Viewpoint.* (In *Journal of Education*, Sept., 1913.)
- KILHAM, WALTER H. *The Modern Schoolhouse.* (In *The Brickbuilder*.) I. The Classroom (Jan., 1915). II. Corridors and Stairways (Feb., 1915). III. Wardrobes, Toilets and Special Rooms (Mar., 1915). IV. Exposure and Plan (Apr., 1915). V. Cost and Cubage (May, 1915). VI. Special Features (June, 1915).
- KIMBALL, D. C. *Ventilation of School Buildings.* (In *American School Board Journal*, Jan., 1915.)

- LEWIS, S. R. *School Building, Heating and Ventilation*. Illus. diags. (In Heating and Ventilating Mag., Aug., Sept., 1918.)
- LOCKHART, G. L. *Public Schools, Their Construction, Heating, Ventilation, Sanitation, Lighting and Equipment*. (H. W. Kingston Co., St. Paul, Minn., 1918.)  
One of the most recent and full treatments of this subject.
- MECHANICAL EQUIPMENT OF WASHINGTON SCHOOL, Bayonne, N. J. D. G. Anderson, architect. (In American Architect, Jan. 1, 1919.)  
Typical equipment of one of the most complete modern high schools. The illumination has been particularly carefully studied.
- MECHANICAL REQUIREMENTS of a Modern High School Building. Schenley High School, Pittsburgh. Illus. (In Heating and Ventilating Mag., Mar., 1917.)
- METAL WORK MAGAZINE. *Heating and Ventilating a Schoolhouse*. (In Metal Work, Nov. 13, 1914.)
- NEWARK, N. J. *Heating and Ventilating Equipment of the Newark Normal School*. Illus. plans. (In Architecture and Building, Sept., 1913; Brickbuilder, July, 1913.)
- PITTSBURGH, PA. *Watt School. Independent Air Ducts in School Work; Mechanical Equipment of the Watt School, Pittsburgh*. Diags., plans. (In Heating and Ventilating Mag., April, 1914.)
- RAPEER, L. W. *The Case Against Unilateral Lighting*. (In American School Board Journal, July, 1918.)  
The author differs from the usually accepted practice and advocates a classroom lighted on three sides.  
*The Classroom of Rural and Village Schools*. (In School and Home Education, April, 1917.)  
Deals with classroom construction, equipment, color, and all incidental details of drainage of basement, etc.
- RAPEER, L. W. *Sanitary Architecture for the Rural School*. (In Educator-Journal, July, 1917.)  
*Standardizing, Lighting and Ventilation in Public Schools*. (In Journal of Education, Nov. 9, 1916.)
- REPORT ON CODE OF LIGHTING. *School Buildings*. Diags., plans. (In Illuminating Engineering Society Transactions, April, 1918.)
- SALT LAKE CITY SCHOOL SURVEY. (Board of Education, Salt Lake City.)  
Interesting "school survey" and valuable chapter on lighting.
- SCHOOL ARCHITECTURE. *Beauty, Economy, Convenience, Safety*. (Southern Pine Association, New Orleans, La., 1917.)  
A piece of "special pleading" in favor of wood construction for schoolhouses.
- STANDARDS AND RULES. (Dept. of Administration, Teachers College, New York.)  
A standardization of schools by Engelhardt and Strayer, inventors of the "score card" for the evaluation of school plants.
- STANDARD SCHOOLHOUSE EQUIPMENT. (In American Architect, April 30 and May 7, 1919.)
- STANDARDIZATION OF SCHOOLHOUSE. *Design and Construction*. (In School and Society, Oct. 14, 1916.)
- SNYDER, C. B. J. *After the Architect*. (In National Education Assn. Proceedings, 1916.)  
*Planning School Buildings for Safety*. (In American City, July, 1916.)  
*Standardization of Schoolhouse Design*. (In American Architect, Nov. 6, 13, 20, 1918.)
- SNYDER & HAMLIN. *School Architecture*. (See under Grade Schools.)
- SQUIRES, F. *New Development of the Hollow Square in Schoolhouse Planning*. Illus. plans. (In Architecture and Building.)
- VI. SITE, GROUNDS, GARDENS, ETC.
- DAVIS, K. C. *School and Home Gardens*. (Lippincott, Publisher.)  
A practical book on this increasingly important adjunct to the school plant.
- DRESSLAR, F. B. *Schoolhouses and Grounds*. (See under High Schools.)  
*Some Problems to be Considered in the Selection of Sites for School Buildings*. (In National Education Association Proceedings, 1915.)
- FRANCIS, J. H. *School Garden Army*. (U. S. Bureau of Education, Bulletin

No. 26, 1919. Washington, D. C. Govt. Printing Office.)

GRESS, J. W. *The Landscape Development of School Grounds.* (In American City, January, 1916.)

MANNING, W. H. *Directions for Surveying and Arranging Home and School Grounds.*

NEW YORK STATE EDUCATIONAL DEPARTMENT, *Div. of School Buildings and Grounds.* (Bulletin and Annual Report, 1915. Pub. by the University of the State of New York.)

A full report on the buildings of the State and an excellent consideration on the subject in general, many illustrations and diagrams, some in color on school decoration, etc.

PARSONS, SAMUEL. *Landscape Surroundings for Academic Buildings.* (In American Architect, Oct. 20, 1915.)

RECENT DISTINCTIVE SCHOOLHOUSES OF CALIFORNIA. (In Architectural Forum, Dec., 1918.) Part III.

Contains illustrations of the Palo Alto High School with one of the most complete athletic plants, grounds, etc., of any school in the country.

SCHOOLS OF CALIFORNIA. (In Western Architect, June, 1918.)

Contains illustrations of Santa Monica High School with notably interesting layout of grounds and athletic plant.

WOODLAND, CAL. *Primary School*; W. H. Weeks, Architect. (In Western Architect, Aug., 1918.)

The Spanish patio type, one story, open circulation from arcades.

VII. REPORTS, BUILDING PROGRAMS, PERIODICALS.

AMERICAN SCHOOL BOARD JOURNAL.

A magazine of school building and allied subjects. While the illustrations are not chosen with the discrimination of the regular architectural magazines, the field is covered more fully, the files constituting the most complete available source of documentation on the subject of current school building.

AYERS, L. P., & AYERS, M. *School Buildings and Equipment, Cleveland, Ohio.* (The Survey Committee of the Cleveland Foundation, 1916. Illus., Cleveland Foundation Publication Co., No. 1.)

ENGLEHARDT, N. L. *A School Building Program for Cities.* New York City. Teachers College, Columbia Univ.,

1918. Diags. (Teachers College Contribution to Education, No. 96.)

HARBACH, F. M., & HART, H. *Constructive Survey of Milwaukee School Building and Ten Year Building Program.*

One of the most thorough of "school surveys."

HOOD, W. R. *State Laws Relating to Education.* (U. S. Bureau of Education, Govt. Printing Office, Washington, D. C.)

A compilation of the different State laws.

NATIONAL EDUCATION ASSOCIATION.

Publishes frequent bulletins in their "Proceedings," on matters of educational interest, including school architecture and building.

NEW YORK EVENING POST. Edition of Saturday.

Publishes an excellent educational page, one of the most available sources of news as to educational movements, including building projects.

NEW YORK STATE EDUCATIONAL DEPARTMENT. *Div. of School Buildings and Grounds.*

Reports are limited, naturally, to New York State, but are of general value, the report of 1917 being particularly useful.

OAKLAND SCHOOL BUILDING SURVEY. (In American School Board Journal, April, 1913.)

The first comprehensive study of problems of school architecture for important cities by expert commission of specialists in education, engineering, sociology and architecture. Contains interesting conclusions here summarized by experts and plans and details of Oakland schools by Donovan, Reid, Mullgardt, and others, which are among the best in the West.

STRAYER, ENGELHARDT and HART. *School Building Program for Omaha.* Board of Education, Omaha, Neb.

One of the most carefully prepared of such surveys.

*School Survey of Butte.* Board of Education, Butte, Mont.

*School Survey of Brookline.* Board of Education, Brookline, Mass.

*School Survey of Denver.* Board of Education, Denver, Col.

*School Survey of Milwaukee.* Board of Education, Milwaukee, Wis.

*School Survey of Minneapolis.* Board of Education, Minneapolis, Minn.

*School Survey of Omaha.* Board of Education, Omaha, Neb.

*School Survey of Paterson.* Board of Education, Paterson, N. J.

*School Survey of Portland.* Board of Education, Portland, Ore.

*School Survey of Salt Lake City.* Board of Education, Salt Lake City, Utah.

The making of a "school survey" is a necessary preliminary to undertaking a modern school building program of any importance. Any one of the above would be a fit accession to an architectural library not only for its intrinsic interest but as an example of the manner in which the architectural program is established.

U. S. BUREAU OF EDUCATION. (Dept. of the Interior, Washington, D. C., Govt. Printing Office.)

Issues frequent valuable "bulletins," many virtually illustrated treatises, on all phases of education and school architecture throughout the country, including a monthly "Record," or bibliography of current literature on education and allied topics.

#### VIII. WORKS ON EDUCATION AFFECTING SCHOOL DESIGN.

BENNET, H. E. *School Efficiency.* (Ginn & Co., 1917.)

The efficient functioning of the school plant and its dependence upon an adequate equipment.

BLACKALL, C. F. *Architecture After the War.* (In *American Architect*, June 5, 1918.)

War and school planning tend to increase the importance of vocational, military, re-education and more practical subjects, and to make less difference in boys' and girls' curricula.

BLOOMFIELD, M. *Vocational Guidance of Youth.* (Houghton, Mifflin Co.)

BONSER, F. G. *Implications for Education from Experiments in Industry.* (In *Teachers College Record*, Jan., 1920.)

*New Status of Practical Arts in Education.* (In *Teachers College Record*, Jan., 1920.)

BUTLER, N. M. *Education After the War.* (In *Teachers College Record*, Jan., 1919.)

CHALLMAN, S. A. *The Adaptation of the High School Buildings to the School Organization.* (In *American School Board Journal*, Jan., 1918.)

"A revision of data prepared for the School Administration Dept. of the Nat. Ed. Assn. It is the first study of the general problem and of great value."

COHEN, H. L. *Americanization by Classroom Practice.* (In *Teachers College Record*, Sept., 1919.)

CUBBERLEY, E. P. *Public School Administration.* (Houghton, Mifflin, ch. xxiv, "Auxiliary Educational Agencies.")

Points out the use of "connection" libraries and museums with schools.

DEWEY, J., AND DEWEY, E. R. *Schools of Tomorrow.* (E. P. Dutton.)

"Shows how to organize school work on self-activity, social participation theory."

DEAN, A. D. *Our Schools in War-time and After.* (In *Teachers College Record*, Jan., 1919.)

ELIOT, CHARLES W. *Full Utilization of a Public School Plant.* (In Nat. Ed. Assn. Proceedings, 1903.)

FRETWELL, E. K. *Education for Leadership; Training Citizens through Recreation.* (In *Teachers College Record*, Sept., 1919.)

GILLETTE, J. M. *Vocational Education.* (American Book Co.)

Not architectural, but a general consideration of subject having many architectural implications.

HADDON, R. W. *Schoolhouses Planned with Reference to the Newer Educational Activities, Plans.* (In *Architectural Record*, Dec., 1914.)

LLEWELLYN, J. C. *The Building Question with Relation to Schools.* (In *American School Board Journal*, March, 1918.)

The problems before school boards in relation to school building programs and the war.

LUCY, J. V. *Motion Pictures as an Educational Agency.* (In *Teachers College Record*, Sept., 1919.)

PATTON, N. S. *Present Day Tendencies of School Architecture.* (In National Education Assn. Proceedings, 1911.)

PERRY, C. A. *The School as a Social Center.* (Macmillan Co.)

*Wider Use of School Plant.* (N. Y. Survey Associates, Inc. Russell Sage Foundation.)

Reports on practices in many cities on extension of school activities, chs. vi and x on playgrounds.

RE-EDUCATION OF SAILORS AND SOLDIERS. (In *American Architect*, Jan. 22, 1919.)

*What the Employers of America Can Do for the Disabled Soldier and Sailor.* (Federal Board for Vocational Education, Washington, D. C. Govt. Printing Office.)

ROORBACH, E. J. *Practical School Sys-*

*tem of Los Angeles.* Illus. (In *Craftsman*, Sept., 1912.)

ROBBINS, C. L. *The School as a Social Center.* (Allyn and Bacon.)

WEEKS, A. D. *Education of Tomorrow.* (Sturgis and Walton, N. Y.)

WILSON, MARGARET. *The Schoolhouse as a Community Center.* (American Civic Association, Washington, D. C.)

## WAR BOOKS OF THE CATHEDRALS

BY BARR FERREE

### PART IX.

THE period of the German war would seem to have been, of all modern times, the least available for the production of expensive books on the cathedrals of France. Very great credit is, therefore, due to the Abbé V. Hardy<sup>1</sup> and the patriotic supporters who made his book possible—this handsome monograph on the cathedral of Lisieux. It is a book of true worth, presenting at greater length than has hitherto been done the history and description of the cathedral of Lisieux, being printed in handsome type on fine paper, enriched with a vast collection of illustrations and offering a most welcome and valuable iconography of the cathedral in every aspect. The author is vicar of the cathedral and is thoroughly familiar with it. It has obviously long been to him the object of special love and veneration, and this splendid book is the fruit of many years of study and research.

The history of the cathedral of Lisieux is not richly documented; texts relating to its building are scanty; but the epochs of its building are clearly manifest, and its general chronology offers, therefore, few difficulties. It is a church of abounding interest and great charm, and, like many churches of its period in Normandy, appeals by reason of its architectural qualities, its sturdy structure, its good proportions, its admirable architectural orna-

ment; but of sculptural enrichment, as shown in other cathedrals, it offers scarcely anything. It is a very good example of what may be accomplished through architecture alone by competent medieval builders. It is a church that should be better known than it is, for apart from its own great interest, Lisieux is a most interesting city, with many quaint old houses, and is quite accessible to English and American travelers. No one will regret a day or two spent there, for it contains much of real interest. Not the least of the cathedral's claims to consideration is the fact that it has not been touched by the German shells.

The Abbé Hardy opens his book with a brief general survey and a rapid sketch of the previous historians of the cathedral. His first chapter is an outline study of the Romanesque building that preceded the present church, and he then plunges into his main topic, the Gothic cathedral, which he treats descriptively. Naturally, as he moves down the centuries, the historical details are more numerous, as references survive in contemporary writings. His lucid descriptions leave nothing to be desired, for every available source of information or comment is made use of, and the whole story of the cathedral presented as it has been given by no other authority. Two chapters by other hands are included—one on the chapel of Notre Dame, or Lady Chapel as the English would call it, by M. V. Lahaye; the other on the

<sup>1</sup>Abbé V. Hardy: *La Cathédrale St. Pierre de Lisieux.* Paris.  
Lisieux, Paris.

glass of the cathedral by M. Etienne Deville.

The chapel of Notre Dame has an interest quite part from its relation to the cathedral; for it was built at the cost of the notorious Pierre Cauchon, who was bishop of Lisieux from 1432 to 1442, and who achieved immortality for himself by the leading part he took in the condemnation of Jeanne d'Arc. The chapel is one of the most beautiful parts of the cathedral, with large traceried windows above richly paneled walls. Bishop Cauchon was buried here, but his tomb was destroyed some time between 1754 and 1783; a drawing of the slab is preserved in the Bibliothèque Nationale at Paris. It is possible, says M. Lahaye, that his ashes still remain below the pavement. Bishop de Condorcet was buried in the same tomb in 1783. This was opened and the body thrown out in the Revolution in 1793; but it is not known whether the violators discovered the remains of Bishop Cauchon.

Other chapters of the book discuss the age of the cathedral, its anecdotic history, the pictures, including a plan, and the dependencies of the cathedral. The author concludes with reprinting some interesting documents, and adds a very full bibliography.

Large illustrated books often make their chief appeal by their illustrations. Ample as are the illustrations in this book—they number more than two hundred—it would be a mistake to judge it by them alone. The text is of the utmost value, and displays on every page testimony of extended research. A word or two more on the illustrations. They are of the most varied origin, consisting of photographs by professionals and amateurs, reproductions of lithographs, engravings, water colors and wood cuts, and many drawings. The latter are chiefly by artists of Lisieux or of Normandy, and many of them are by heroes wounded in the war. The whole constitutes a magnificent collection of the utmost interest, reflecting great credit not only on the artists themselves, but on the author for the thoughtful care with which he has gathered such a rich and splendid series for his great book. It is well entitled to rank among the great monographs of French churches.

Of the *Recherches sur Chartres* by Charles Challine,<sup>2</sup> six copies are known in manuscript. One is in the Bibliothèque Municipale of Chartres. Charles Challine was born at Chartres in 1596, and died in 1678. None of the manuscripts is in the handwriting of the author, the oldest dating from the episcopate of Bishop Godet des Marais (1692-1710). The original manuscript appears to have been utterly lost. The book was never completed by the author.

The *Recherches* have long been known as a veritable storehouse of information on the city of Chartres. It is quite different from the nearly contemporary *Histoire du diocèse et de la ville de Chartres* by Souchet, which took the whole diocese for a theme, while Challine limited himself to the city. The topic was ample enough, for the printed version is a book of more than five hundred pages, a handsome volume brought out by the local archeological society, the Société Archéologique d'Eure-et-Loir. The present editor has, he tells us, followed his text very carefully, and while not overburdening his pages with notes has added them where necessary.

The inquirer, searching for details in the history of the city of Chartres, will find in these pages almost everything—nearly a hundred being devoted to the pagan era of Chartres, including a lengthy discussion on the Druids. The Christian period opens with a discussion of the famous Virgin of Chartres, whose shrine is still maintained in the cathedral; and is followed by an extended description of the cathedral, with chapters and notes on the most varied topics concerned with it. Other sections are concerned with the bishops of Chartres, the Church of Chartres—in effect a continuation of the history of the cathedral; and the whole is concluded with a section on the Counts and Dukes of Chartres. This bare outline, however, quite fails to reveal the very miscellaneous contents of the book, and the hosts of curious matters of which it treats. It is a book that may appeal more to the archeologist than to the stu-

<sup>2</sup>Charles Challine: *Recherches sur Chartres*. Transcrits et annotés par un arrière-neveu (Roger Durand) de l'auteur. Chartres: Société Archéologique d'Eure-et-Loir.

dent of architecture, but the latter cannot afford to overlook it. The editor has inserted a number of illustrations that add greatly to the elucidation of the text. Its publication during the German war was a fine patriotic effort on the part of the Société Archéologique at Chartres.

Of the cathedrals of Antibes, Grasse and Vence almost nothing exists in English, and comparatively little in French. David MacGibbon, in *The Architecture of Provence and the Riviera*, published in 1888, made reference to all three churches, and gave some illustrations of them. If Miss Clara Louise Wells, in her *Arrondissement of Grasse*,<sup>3</sup> be not the next historian, she certainly is the next English writer to discuss them, perhaps the only English writer to attempt a serious history and description of them. Of the cathedrals of Antibes and Grasse, indeed, she says little enough; neither are interesting churches, and that at Antibes, as the reviewer found with some pain, is hardly worth the trouble of a visit, nor would one visit Grasse for its cathedral. But it is creditable that an English writer should prepare a book in which these churches are treated, even though briefly. More space is given to the cathedral of Vence, which is rather adequately treated. It is a town seldom visited, and offering little to the visitor. The cathedral is a strange mixture of buildings and rebuildings, of little real interest; still, a book which gives somewhat extended treatment to it deserves a welcome. The table of contents concludes with an interesting note: "Since the printers only understand French, and have often been required for war service, any errors that may be remarked are surely excusable." They are; yet the book is remarkably free from typographical errors. Miss Wells gives much space to Roman inscriptions, many of which are reproduced, and which seem to have interested her greatly.

The *Guide-Express à la Cathédrale de Toul* by G. Clanché<sup>4</sup> is a brief guide book to an interesting French cathedral hardly known in America before the war. It was

obviously prepared for war use, that is for the use of troops located at Toul. The author has published several important studies on Toul cathedral, and announces the preparation of a *Monographie*, which will be awaited with interest. The present book is a sufficiently ample guide to the cathedral, and is well illustrated.

*The Department of Gironde*<sup>5</sup> by M. J. A. Brutails and Paul Courteault is a mere outline sketch, intended, primarily, for French school children, but translated for English and American guests and friends. It hardly can be considered as elementary in plan or scope; it is actually a useful handbook to this great French Department. Two cathedrals, those of Bordeaux and Bazas, are referred to. The former is barely more than mentioned; but that of Bazas, of which English and Americans know very little, meets with more extended treatment. An excellent little book of general information, well worth reading.

The cathedral of Viviers is another cathedral almost unknown to the general traveler, notwithstanding the fact that its walls rise high above the river Rhône. M. Bourg's<sup>6</sup> little book, therefore, has quite some elements of novelty. Although brief, it is of special value as almost the only one of this interesting little church. It is offered as an extract from a larger *Historie de Viviers*, now in preparation.

It is perhaps hardly just to include *The Romantic Roussillon*,<sup>7</sup> by Isabel Savory, in a review of monographs on French cathedrals. It is an account of travel in remote corners of the Pyrenees very interesting as such, and treating of a little known region. Two cathedrals are referred to, those of Perpignan and Elne. Little enough is said of either church, and Elne, in particular, seemed to invite the author's antipathy, for no good reason. The illustrations in this book, from drawings by M. Landseer MacKenzie, are

<sup>3</sup>J. A. Brutails and Paul Courteault: *A Short History of the Department of Gironde from the origins to 1789*. Bordeaux.

<sup>6</sup>Joseph Bourg: *Viviers: ses Monuments et son histoire*. Viviers.

<sup>7</sup>Isabel Savory: *The Romantic Roussillon in the French Pyrénées*. New York.

<sup>3</sup>Clara Louise Wells: *The Arrondissement of Grasse in the Department of the Alpes Maritimes, France*. Valence.

<sup>4</sup>Clanché: *Guide-Express à la Cathédrale de Toul*. Nancy.

extremely good, and are beautifully reproduced.

A considerable literature is concerned with the cathedral of Autun. The latest contribution by M. Victor Terret: *La Cathédrale S. Lazare d'Autun*,<sup>8</sup> is a brief but substantial historical and archeological study by a very competent writer. The book, which is a thin pamphlet, gives a very good account and history of the cathedral. It is published without illustrations.

The cathedral of St. Pons is a church of very slight interest, although it is the object of a commendable loving regard by a group of local writers. The latest is the Abbé M. Granier, who has published an interesting but brief review of the bishopric.<sup>9</sup> Founded in 1318 and suppressed in 1790, the diocese had, for France, a comparatively brief existence of six hundred years only. The Abbé Granier gives a list of the bishops, with notes, and summarizes admirably the whole history of the diocese in very brief space.

The period of the war has brought out a number of brief guide books to various

French cathedral cities, chiefly in the interest of the foreign troops. The interest of these little books is rather in the occasion of their publication than in the information they contain. One of the best relates to Senlis, and is by C. Meillac,<sup>10</sup> an excellent little book with good illustrations. Very competent, also, is the guide to Vienne,<sup>11</sup> published by the Société des Amis de Vienne, with small but good illustrations. A guide to Le Mans<sup>12</sup> is a rather summary production. Of different interest is *Fleur de Cathédrale*, by the Abbé F. Dubail,<sup>13</sup> a play presented for the first time in the Psallette of the cathedral at a reunion of former pupils. A new guide to Besançon<sup>14</sup> may also be mentioned; and a description of the astronomical clock<sup>15</sup> in the cathedral, a little war book in English. In English also, is a short guide to Dijon,<sup>16</sup> conveniently arranged in dictionary fashion.

<sup>10</sup>C. Meillac: *Senlis*. Paris.

<sup>11</sup>Vienne et ses Environs. *Guide Illustré du Touriste*. Vienne.

<sup>12</sup>*Itinéraire des Voyageurs à travers Le Mans. Le Mans Guide et ses Environs*. Le Mans.

<sup>13</sup>Abbé F. Dubail: *Fleur de Cathédrale*. Le Mans.

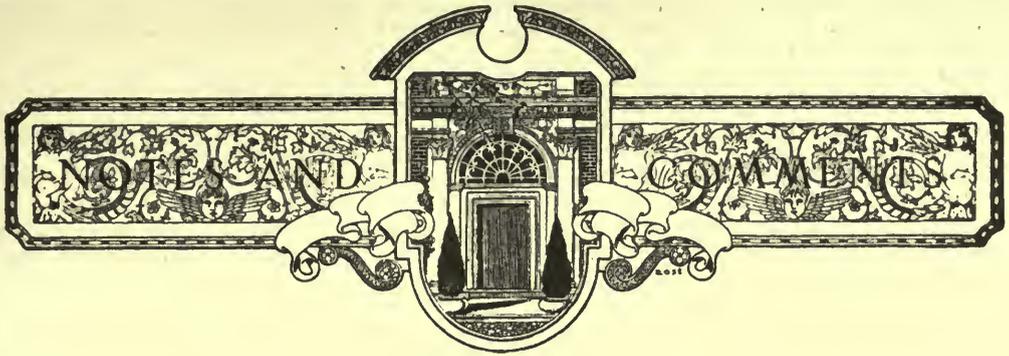
<sup>14</sup>Besançon et ses environs. *Petit Guide Indicateur*. Besançon.

<sup>15</sup>War 1914-1916. *Astronomical Clock of St. John's Cathedral*. Besançon. *Explanatory Notice*. Besançon.

<sup>16</sup>Eveline Warner Brainerd: *Dijon: A short guide in English*.

<sup>8</sup>Victor Terret: *La Cathédrale St. Lazare d'Autun*. Autun.

<sup>9</sup>Abbé M. Granier: *L'Evêché de St. Pons à l'occasion du sixième centenaire de son érection*. 1318-1918. Montpellier.



**Is Steel-Frame Construction Capable of Architectural Treatment?**

I have read Mr. Charles H. Moore's article on "Training for the Practise of Architecture," which appeared in the January Architectural Record, with great interest. It is an article which might well be read with profit by any one connected with the architectural profession in any way whatsoever. However, the Architectural Record is also read by a great many laymen who are likely to accept *ex cathedra* everything written therein, and therefore I feel called upon to take exception to certain opinions expressed by Mr. Moore. The following clauses quoted from his article, I am afraid, cannot help but cause glee among those construction companies who are so rapidly encroaching on the work of architects as practised in the old dignified way:

"In support of the new educational ideas, men speak of a need for meeting new conditions by new methods. But in architecture there are no new conditions, and therefore there is no call for new methods; though new forms may be evolved in the future, as in the past. The only materials suitable for architecture have long been established, and are the same now as in former times. The present use of iron and steel—which indeed requires new methods—comes of no needs of architecture. It is destructive of architecture if not kept apart from it."

If I have drawn the proper conclusions from Mr. Moore's article, briefly put, only architecture that is based on masonry principles is good. The application of this would limit the architect's field to buildings of moderate size and built contrary to modern economic needs. This expression, published in an architectural journal, only tends to confirm the impression already held by the general public that the architect is an ex-

pensive luxury. If the architect must design only buildings where art supersedes utility, and he is lucky enough to get a sufficient amount of work of this class to make it worth while keeping an office, it is questionable how long he could afford to keep it up.

Mr. Moore claims the present use of steel and iron comes of no needs of architecture. There is no reason why it should. It is not architecture which has determined the use of these materials, but modern economic conditions; and if architecture is to live and flourish, it must obey and conform to modern economic needs. Architecture has inherited forms based on materials used by previous civilizations. Must architecture therefore neglect so important a product of this age as steel? Mr. Moore admits new forms may be evolved in the future as in the past, but if steel is divorced from architecture, what agency is going to evolve these forms? Shall the entire designs of buildings containing steel be left to structural engineers or contractors? The steel skeleton must be clothed in some way, for protection if for no other reason, and surely no one is better qualified to do this acceptably and according to the canons of good taste than a well trained architect.

Mr. Moore says, "If the building must be a steel frame, let it frankly be shown for what it is." This is all very well, but buildings are not constructed primarily as exponents of truthful construction but for shelter. The structure must be enclosed in some way, and if the constructive forms are not actually revealed, they can at least be suggested in the enclosing shell. After all there is no great difference between Gothic principles and the present systems of steel construction. In both cases the principal weights of the structure are carried on points. For lateral forces the advantages are all in the favor of steel.

It is quite possible that architecture has not yet thoroughly utilized the great possibilities of steel. It is more than likely that there will be developments of which this age does not dream, but to gain these ends the materials must be used, experiment after experiment must be made until the best possible use is made of the material without sacrificing any of the true principles of architecture. Steel is here to stay. Modern economic needs demand it. Money, time and space are too valuable to neglect it, particularly in our crowded cities. If new forms of architecture result from an intelligent use of the material, it will be the imagination and the resource of the architect that will attain this end.

HAROLD LAWSON.

The exceptions taken in Mr. Lawson's communication (written in an entirely good spirit) to what I have said in your January issue, on training for the practice of architecture, are based on what appear to me mistaken economic grounds, and not on those considerations of excellence in design and construction which should be the sole concern of the architect. Mr. Lawson thinks that modern economic conditions make the use of what are called modern methods and materials imperative, saying that "if architecture is to live and flourish it must obey and conform to modern economic needs." But if it be true, as he rightly affirms, that "it is not architecture that has determined the use of these materials," it should be obvious that they are not suited to its needs; and to imagine that architecture can live and flourish on unsuitable materials seems to me a mistake. Only mechanical engineering can live and

flourish on the modern economic methods of building; and should these methods ultimately prevail, the vocation of the architect would be superseded by that of the engineer. But I do not think this is likely to happen. The architectural faculties of man are not going to be swallowed up in a deluge of utilitarian materialism, however things may look for the moment. Sooner or later it cannot fail to be seen that what are just now called economic methods do not make for good economics. These methods are essentially cheap and ephemeral. For duration, no modern engineering works are likely to last long in comparison with the masonry constructions of the past. There are stone bridges in Europe, some two thousand years old, that are still perfectly sound and serviceable.

I need not discuss Mr. Lawson's minor points, but I may add that he is mistaken in supposing that the application of masonry principles "would limit the architect's field to buildings of moderate size." It has not done so in the past. Hardly any building constructed on the modern lines encloses so many cubic feet of space as Amiens Cathedral—built of stone eight hundred years ago.

CHARLES H. MOORE.

#### A CORRECTION

There appeared in the February number of the Architectural Record two exterior views of The Cheesewright Studios, with a description in which the writer gave me credit for the designing of the building. As a matter of fact all credit is due Mr. Kenneth Gordon, of J. H. Woodworth & Son, who was sole author of the design. Please give this publicity in the Record.

EDGAR J. CHEESEWRIGHT.