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The Architectural Exhibition at the Brooklyn Museum

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THE recent installation at the Brooklyn Museum of its exhibit of architectural photographs undoubtedly deserves to be brought to the notice of the architectural profession. It therefore gives me great pleasure to offer to the readers of the AMERICAN ARCHITECT some account of its dimensions, character and history, and to supplement this account by some explanation of the present standing and general significance of these original contributions to the history and criticism of architecture.

Generally speaking the subject-matter of the exhibition is the church and cathedral building of the Middle Ages, although some highly important monuments of classic and Renaissance architecture are included.

DETAIL OF THE CATHEDRAL AT RUVO

The collection comprises about sixty framed and publicly exhibited ground plans, sections and elevations, and otherwise consists of framed and publicly exhibited enlarged photographs to the number of about 570, varying in size from 18 by 22 to 40 by 56 inches. These 632 exhibits occupy a hanging space of about two thousand linear feet. In this method of computing the dimensions of the exhibition the linear wall space is multiplied by the number of lines in the hanging. In other words the installation covers all the walls of the long eastern gallery of the museum, first floor, third section, which measures 110 by 38 feet, to the height of 12 feet from the floor, and also covers the walls of one of the spacious stairways with an overflow of 198 exhibits, occupying 500 linear feet of hanging space.

Thus, from the standpoint of dimensions, either of the individual photographs or of their colective number in the given dimensions, this is a unique architectural exhibition, without parallel in Europe or America.

This installation has been completed within the past few weeks. No official opening has taken place, no public announcements through the daily press or through architectural journals have been sent out by the Museum, and as far as architectural publications are concerned no mention of this installation has been made so far. Thus, in this busy New York world, there was some danger that a highly interesting and undoubtedly imposing architectural exhibition might be forgotten, even before its existence had be-

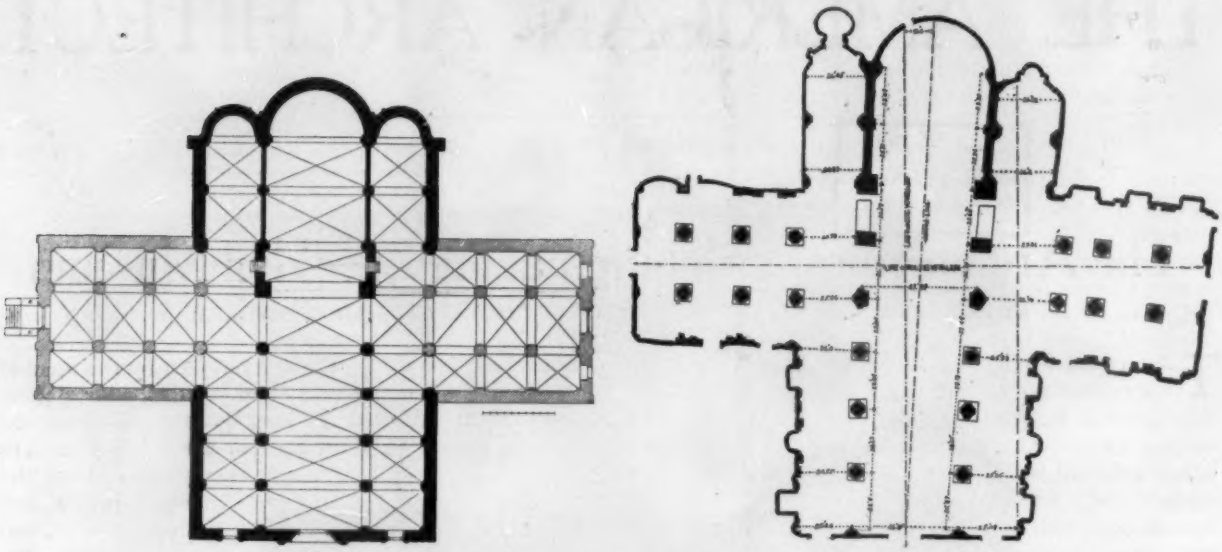


FIG. 1 FIG. 2

PLANS OF CREMONA CATHEDRAL

FIG. 1.—From Dehio and Von Bezold—*Kirchliche Baukunst des Abendlandes;* showing a rectangular plan, with symmetrical measurements. FIG. 2.—Plan of Cremona Cathedral in the Brooklyn Museum, showing the cathedral with an oblique axis, 13 feet off the normal line at the choir. The nave is 6 feet wider at the choir than at the entrance. Each aisle widens about 1 foot from entrance to choir. The left side of the nave is 3 feet longer than the right side. The second bay of the nave, from the entrance, is the widest on each side. The bays narrow from this point toward the end of the choir (4 feet 8 inches on either side). The transepts bend in plan, 3 feet 3 inches, away from their normal axis.

come known, were it not for the enterprise and appreciative enthusiasm of the editors of the AMERICAN ARCHITECT, who wished me to devote several papers to this subject.

To collect an exhibition of this dimension is not exactly as easy as pouring milk out of a pitcher. How does it happen that the Brooklyn Museum has so suddenly installed an architectural gallery of such large dimensions? The answer is that the growth of the collection has been gradual, but that appropriate exhibition space was never previously available, even for the initial stages of the collection.

As to the general architectural interest and as to the excellence of the enlarged photographs it is sufficient to say that they have always attracted the admiration of experts, as far as they have been known. At the time when the Series of 1903 was exhibited at the Public Library in Boston, early in 1904, Prof. William R. Ware said of this relatively small series: "They constitute the finest exposition of Gothic architecture ever made, except by the buildings themselves."

Prof. H. Langford Warren of the Department of Architecture in Harvard University, said of the same series: "They are certainly the most interesting photographs of French Gothic architecture I have ever seen."

M. Auguste Choisy, who saw the Series of 1907 in Paris, showed a portion of them at a meeting of the *Académie des Inscriptions et Belles Lettres* and declared at that session that at least a portion of "this precious collection" ought to be accessible in French museums. He also expressed to me personally the opinion that Berlin, London and Paris ought to have counterparts of this collection, and that the photographs were superior to those made for the French Commission of Historic Monuments.

Before the exhibition at Edinburgh in 1905 had been installed the Committee of Arrangements published a poster, stating that it was "probably the finest architectural photographic exhibition ever shown." After the installation the Committee substituted another poster, in which the word "probably" was removed from their announcement.

The attractiveness of these pictures has several explanations. First, they include a very large number of fine capitals and other details of mediæval architectural decoration, which have never previously been photographed, and in dimensions never previously attempted for the same class of subjects. The large and beautiful details from Toscanella, Troja and Ruvo are notable examples, and many others might be mentioned. A second explanation lies in the hitherto unexampled profusion of views for a given individual building. For instance, the Cathedral of Amiens is illustrated by 133 enlargements from a total of 268 negatives for this single building. Notre Dame at Paris has 59 enlargements from a total of 115 negatives. Rheims Cathedral has 20 enlargements from a total of 85 negatives. The Pisa Cathedral has 43 enlargements from a considerably larger number of negatives. St. Mark's at Venice has 42 enlargements.

From the mere mention of these figures it may be gathered that such an exhibition of all the various individual features of certain celebrated cathedrals, taken in detail and at close range, has never hitherto been attempted.

A third element of attractiveness is, undoubtedly, the unusual and, so to speak, unpremeditated, selection of the points of view from which the majority of the pictures have been made. A photographer is usually in search of the picturesque and usually carefully selects his position accordingly. From this very search for the picturesque a certain conventional quality asserts itself in the picture. The photographs of the Brooklyn collection having usually been made with a given purpose, to be presently mentioned, the resulting pictures have, in contrast with those usually made, a certain novelty

of appearance due to the unusual points of view into which the camera has been forced by the necessities of the given problem. I remember especially M. Auguste Choisy's comments on this matter after I had listened to his enthusiastic eulogies on the picturesque features of the enlargements from Rheims, which had been made for the purpose to be subsequently mentioned, and wholly without reference to picturesque results. It so happened that I had carefully selected at Rheims a few points of view from the standpoint of the picturesque, as usually sought by photographers. I picked out the five by seven photographic prints from these negatives, which had not been enlarged, because not available for the demonstration of the widening refinement, but of which I was extremely proud, and asked M. Choisy to admire them. He pushed them away, saying: "No, you are wrong; these others are far more interesting, because you did not select your point of view; you were simply forced to take an unusual position."

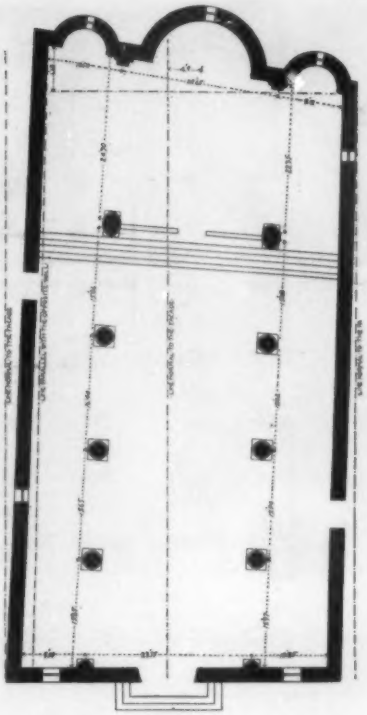


FIG. 3

So far nothing has been said of the special purposes which have controlled the creation of this collection or of the special features which it has been formed to reveal and illustrate. So far it only appears that a very fine collection of architectural photographs of unusual dimensions and of wholly unusual number, considering those dimensions, has been highly admired by the very limited number of qualified experts who have hitherto seen small portions of it and that the entire collection, as now exhibited, is so far wholly unknown to all but the few who may have chanced to see it in the last few weeks at the Museum.

From the same matter-of-fact point of view a word may now be said as to the ground plans, sections and elevations, before considering the features which they were made to illustrate.

For the entire number of these 60 cartoons of survey it may be said that they either absolutely supplant all previous surveys of the same church, or else that they represent churches which have never previously been surveyed at all. Take, for instance, the Pisa Cathedral. The Pisa surveys absolutely supplant those which are found in the elaborately illustrated folios of Taylor and Cresy and of Rohault de Fleury. The Brooklyn plan and section of Fiesole Cathedral also have no rivals and no counterparts.

No correct plans of any of the following churches have been published aside from those taken from the Brooklyn plans: Cathedrals of Ruvo, Arezzo, Prato, Troja; Churches of S. Stefano, Venice; S. Giorgio in Valabro and S. Bartolommeo in Isola, Rome; S. Pietro and S. Chiara, Assisi; S. Giovanni in Zozzoli, Viterbo; S. Pietro and S. Maria, Toscanella; S. Salvatore al Monte, Florence; S. Maria della Pieve, Arezzo; and Castel S. Elia (near Nepi).

The following elevations are unique, aside from those of the Pisa Cathedral: The side walls of the Pieve Nuova at S. Maria del Giudice, near Lucca; of S. Paolo Ripa d'Arno, Pisa, and of Troja Cathedral.

The following sections are unique, aside from those so far mentioned: S Maria Novella, Florence; S. Pietro, Assisi; S. Maria Ara Coeli and S. Saba, Rome; S. Giovanni in Zoccoli, Viterbo; S. Pietro and S. Maria, Toscanella; SS.

FIG. 4

S. GIOVANNI IN ZOCCOLI, VITERBO

FIG. 3.—Brooklyn Museum Survey, showing an obliquity in axis of (feet) 4.90. The left wall is the longer by 6.18. The spacings of piers are so distributed as to show that this extra length belongs to the original plan. The lines of the piers in the nave narrow in plan toward the choir 1.10. The left line of piers is more oblique than the left wall by 1.36. The right line of piers is more oblique than the right wall by 1.73. No other plan is known to be extant. (The section in Brooklyn shows pavement sloping up 2.15 in 57 feet and arches rising 1.30 feet to the higher choir arch.

S. GIOVANNI IN ZOCCOLI, VITERBO

FIG. 4.—The nave photographed on the normal central line, the camera being at right angles to the facade wall. This photograph shows that the optical effect *above the level of the eye* of this oblique plan is an obliquity *in elevation*, at the top of the choir end wall, corresponding to the natural effect of perspective in a normal plan when the observer or the camera is placed to the right of the central line, sighting at right angles, or when the observer or the camera sight slanting to the left at the centre line. The church is optically decentered by this obliquity and the plan itself consequently does not appear to be oblique.

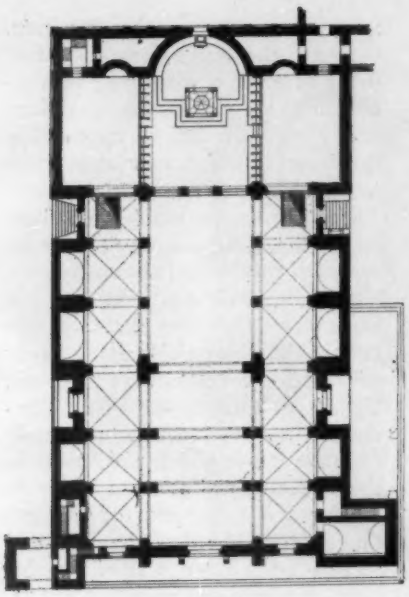


FIG. 5

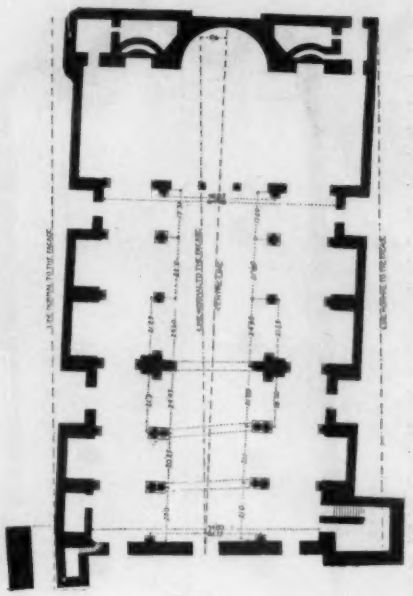


FIG. 6

S. NICOLA, BARI

FIG. 5.—Plan from Schulz, *Denkmaler der Kunst des Mittelalters in Unteritalien* (standard authority for Apulia), showing the church as having a rectangular plan, with normal axis. FIG. 6.—S. Nicola Bari.—Brooklyn Museum Survey, showing the church as having an oblique axis which is (feet) 8.60 off the normal line at the apse. The nave widens 1.05. The fifth bays are the widest and the others diminish in either direction (diminution toward the choir of about 7 feet). (The arches however lower in height toward the choir, starting from those at the entrance, 2.97 (left) and 2.36 (right).)

Pietro e Paolo, Bologna; S. Michele ai Scalzi, S. Frediano, and S. Stefano, Pisa; S. Frediano, Lucca; the Pieve Vecchia at Santa Maria del Giudice, near Lucca, and S. Nicola, Bari.

Finally the only accurate section of the Leaning Tower of Pisa and the only extant plan with measurements for the levels of the foundations of the Pisa Baptistery are in the Brooklyn Museum.

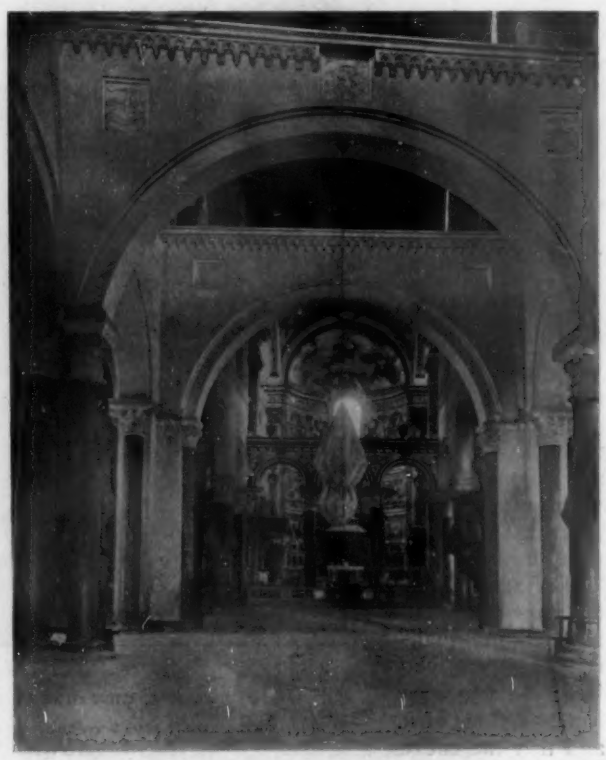
No doubt the interest of these various surveys may appear to concern the antiquarian or the art historian, rather than the architect, or at least to be matters for architectural publication rather than for public exhibition. Just here, however, the special interest of these surveys begins to appear, as related to the photographs and as related to the purpose with which both have been made and with which both are exhibited.

If we compare the plan of Dehio and Von Bezold for S. Pietro at Toscanella, with the plan in Brooklyn, it is not to criticize these authorities, but simply to point out that the plans of mediæval buildings, as hitherto drawn out, almost universally exhibit the same discrepancies with the actual facts which are represented by this contrast. Taken as a whole they are absolutely unreliable.

If I point out that the Cathedral of Cremona is 13 feet off the normal line at the choir and that the most frequently quoted authorities for mediæval plans have published the plan as absolutely rectangular, it is not to criticise Dehio and Von Bezold for making a mistake about Cremona Cathedral, but to point out that none of the plans in their weighty folio volumes are certain to be more accurate than this one. Many of them may be accurate because many of them may be normal, but the taint of unreliability attaches to all of them until the given church has been re-examined.

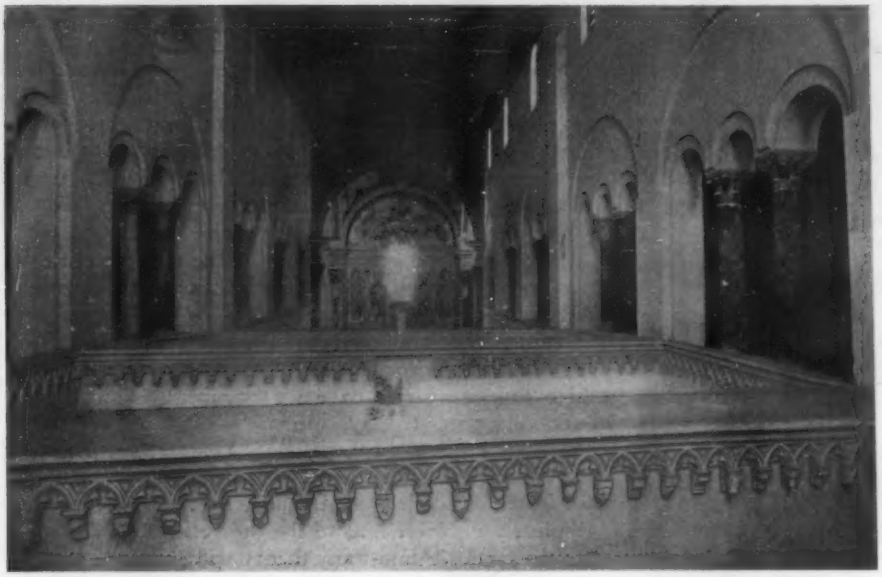
The list of inaccurate plans might be increased indefinitely, and the most celebrated special authorities can be included in the list. There is no reason for confining the instances noted to the authors named, in distinction from scores of others, save that their publication offers the best extant compendious collection of mediæval plans. It is by no means to be supposed that the asymmetric plans which occasionally appear in this and other works are more accurate than the others. The reverse is true. For this reason S. Pietro at Toscanella has been quoted, which is asymmetric in Dehio and Von Bezold, but wholly inaccurate.

That there are occasional exceptions to the unreliability of mediæval ground plans as so far published is not to be denied. Bowman and Crowther's *Churches of the Middle Ages* are an instance. De Dartein's *L'Architecture Lombarde*, is an example for Italy, but



S. NICOLA, BARI

FIG. 7.—The nave photographed by the Brooklyn Museum Survey on the normal central axis, the camera being at right angles to the facade wall, showing the optical effects of obliquities in plan to be effects of obliquity in elevation. This view also shows that the effect of obliquity in elevation increases with the amount of pitch in the angle of vision and that the effect therefore decreased (on the same plane) with the increase of distance from the observer. These varying effects are complicated by the variations in the obliquity of plan in the transverse arches, which are shown by Fig. 6, but the transverse arcades are absolutely level. Fig. 8 shows that a directly contrary effect is produced when the arches are below the level of the eye.



S. NICOLA, BARI

FIG. 8.—Commercial photograph by Moscioni of Rome, showing the nave from the facade gallery, and above the transverse arcades. This view proves that obliquities in plan *below the level of the eye* produce an exactly opposite effect to the one obtained when the obliquity in plan is above the level of the eye. Here the transverse arcades appear to rise in elevation toward the right; whereas, in the preceding view of the same obliquity, they appear to descend in elevation toward the right. This contrast proves that the spectator on the floor of a church nave sees two opposite effects in one and the same obliquity of plan—one effect in elevation below the level of the eye and an opposite effect in elevation above the level of the eye, both effects being produced at the same time and from the same standpoint.

such instances are exceptional.*Generally speaking, the method of the most conscientious surveyors has been to take one measure for a given dimension and to assume all the corresponding measures to be equal. The width of the church, or of the nave, at one end of the nave, thus determines the corresponding widths at its other extremity. The width of one bay determines the width of the opposite bay and of all the others. Certainly there are many mediæval churches in which a more laborious and accurate method would give the same results, after involving an enormous additional expense of time and trouble, but which are these churches? No one can tell until all have been re-examined. In other words, even the accurate plans are unreliable.

This leads to a mention of a feature of the Brooklyn Museum architectural research which appears in its records, and which does not appear in its exhibits. Limited in the matter of time and in financial resources, as such an undertaking must necessarily be, this research has only undertaken to draught and exhibit a portion of the plans or sections representing the aberrations or asymmetries which were found in Italy, but its records include the churches and cathedrals which were found to be normal. There is not a church in the Peninsula which is likely to be known to the average tourist or to the average architect, for which this information is not on record. The real strength of this research lies in its ability to mention the Italian churches in which the features illustrated by the draughted plans and sections are not found; or, at least, were not discovered by the search which was made for them.

*Four accurate plans are known to me as being in the architectural bureaus of Italian Cathedrals and as having been made to facilitate repairs, or relaying, of the pavements. These are the plans of the Cathedrals of Siena, Piacenza, Cremona, and St. Mark's at Venice. The correct plan of Cremona published in Fig. 2 is thus obtained, but its measurements were taken by me, none being offered on the plan.

Thus, in mentioning the total unreliability of the average mediæval plan or section, and in speaking of the more accurate methods which are illustrated by the Brooklyn Museum surveys and which have never otherwise, or by any other surveys, been applied to the same churches, the special subject-matter of the research which is represented by the Brooklyn Museum collection is suggested.

This subject-matter is the asymmetry of mediæval building, the examination of the question how far it is due to accident, decay, or carelessness; how far it is due to the imperfection of instruments or of methods to which some inaccuracy, without actual carelessness, was natural; how far it is due to a traditional continuance of classic and ancient systems and methods in which curved lines, leaning surfaces, and asymmetric measurements are already known to have been intentional; how far it is due to a praiseworthy and artistic sense which did not strive for a formal or mechanical accuracy as a standard of perfection in building; how far it is due to a conscious and intentional avoidance of mathematical symmetry for the sake of picturesque variety; and how far it is due to a study of optical effects, either in the direction of perspective illusion, of optical correction, or of optical vibration, resulting in an effect of "life." To put the matter more briefly, this collection represents a research as to how far mediæval asymmetry was good art and how far it was incompetence or accident?

The programme of this research may thus appear over-ambitious in the sense that, as above stated, it relates to mediæval architecture as a whole, when, as a matter of fact, the research has only covered one country (viz., Italy) with even approximate comprehensiveness, and has otherwise been confined to Constantinople and to Northern France, and even in this territory has made observations, in the main, for only one single phase of the general subject.

This leads to a mention of the distinction which ought to be made between a research and its conclusions, or ultimate results.

The word research implies that definite conclusions are sought for. It does not imply that they have been obtained. Men of science who are engaged in research hold their opinions in suspense, they change or modify them during the progress of the research, and architectural research naturally does the same. It is a very natural, but very mistaken, presumption that certain announcements which have been made, and which are based on these surveys, relate to mediæval architecture

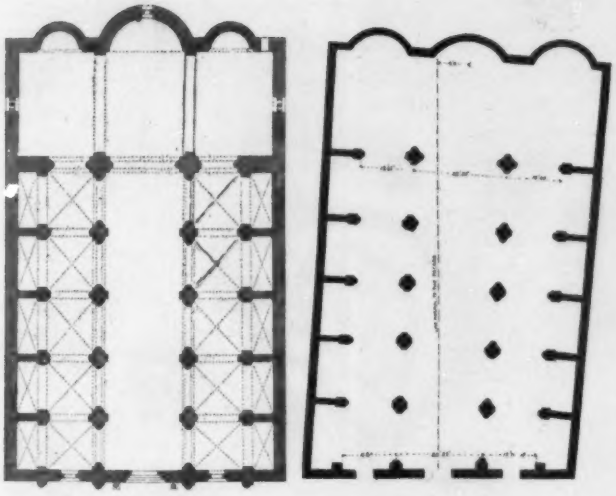


FIG. 9 FIG. 10

CATHEDRAL OF RUVO

FIG. 9.—Plan from Schulz, *Denkmaler der Kunst des Mittelalters in Unteritalien*, showing the church as having a rectangular plan, with symmetrical measurements. FIG. 10.—Cathedral, Ruvo, Brooklyn Museum survey, showing the church as having an oblique axis, which is 8 feet off the normal line at the choir. The lines of piers in the nave widen in plan 2 feet.

as a whole. Personally I am almost wholly in the dark as to England, Germany, Spain and Southern and Central France. I believe at present that the so-called widening refinement must be very general in Northern Europe, but nothing is definitely claimed beyond the churches which have been examined. As for Italy, the point cannot be urged too strongly that what has been published[1] applies to the individual buildings which have been surveyed or examined and which are specifically mentioned for specific facts, with corroborative photographs and measurements. As far as Italy is concerned it may be definitely concluded, with rare exceptions, that the absence of mention of a specific fact for a specific building implies either my total ignorance of the existence of such a fact in any other church of the Peninsula[2], or my indisposition to mention it, because it appears to be a doubtful case of constructive intention.

It may, or may not, be significant for the general importance of this work in Italy that the Italians, who, naturally, best know their own buildings, have been prodigal with titles of distinction, including honorary membership in the Royal Academies of Milan and Venice and in the Architectural Society of Rome. The annual bulletin of the Roman Society only mentions five honorary members besides myself, viz., the Marquis de Vogué, Rohault de Fleury (recently deceased), Paul Wallot, architect for the Reichsgebäude in Berlin, and two Spanish art historians. The Italians have been so chary of adverse criticism that I cannot mention a single adverse Italian critique. On the other hand, the French critics who have publicly differed with the results announced in publication have not been distinguished for their familiarity with the Italian churches, and not one of them has ever debated or mentioned a single one of the Italian surveys which have been published.[3]

Among the adverse English critics, Mr. Prior's personal statement is authority for the fact that he had never been in Italy, when he wrote his critique in the *Architectural Review*, and Mr. Bilson is better known to the world for his studies at Durham than for his familiarity with Italian architecture; neither did his criticism even mention a single Italian building.[4]

It has been the general habit of the adverse critics of this research to refer in a general way to their general disbelief in general conclusions which have never been announcd. For my own part I loudly profess my ignorance of the territories which I have not visited and of the buildings which I have not examined, and am, moreover, disposed to lay special stress on the Italian churches, which are believed not to exhibit asymmetries; for the only possible science in such a subject must consist in such knowledge. In the matter of theories, I am absolutely indifferent as to the theoretic explanations of proven facts. Almost any theory will suit me. All that I lay stress on is the evidence based on measures, or corroborative photographs, for facts which are proven to

CATHEDRAL OF RUVO

FIG. 11.—The nave photographed on the normal central line, the camera being at right angles to the facade wall; showing the optical effect of the obliquity in plan of the end choir wall to be an obliquity in elevation; showing also that the piers which would appear exactly opposite to one another in a similar normal view of a church with normal plan, appear as though the camera were slanted to the left of the normal central line

[1] Especially in the *Architectural Record Magazine*, Vol. VI, Nos. 1, 2, 3, 4, and Vol. VII, Nos. 1, 2, 3.

[2] As far as Italy is concerned, I am only ignorant of the Abruzzi territory and of Sicily, outside of Palermo and the Greek temple sites. I must add, however, that I have never published the list of pavements sloping upward toward the choir, for which I have taken levels in 85 cases.

[3] Among these adverse French critics are the distinguished antiquarians Count Robert De Lasteyrie, Eugène Lefèvre-Pontalis, Georges Durand and Camille Enlart. M. Enlart has spent some years in Italy, but his specialty there was the intrusive French Gothic.

[4] Mr. E. S. Prior's gracefully written critique of the Edinburgh Exhibition of Architectural Refinements appeared in the *Architectural Review* (of London) for February, 1906, and my reply appeared in the September and October numbers of that year. Mr. John Bilson's "Criticism" appeared in the *R. I. B. A. Journal* of June 16, 1906. My reply appeared in the same journal November 9, 1907. Mr. Bilson's "Rejoinder" appeared December 7, 1907. My reply to the "Rejoinder" is in type and will appear in the *R. I. B. A. Journal* probably in September.

be constructive and intentional. If a sufficient number of such facts be accumulated the theories will take care of themselves.

These references to controversy have been suggested by an account of the undisputed, but generally unknown, or unrealized, importance of the original surveys in the Brooklyn Museum exhibition.

Enough has thus been said as to the ground plans, for present purposes.

As to the sections and elevations, as distinct from plans, something more still needs to be said. The unreliability of the average mediæval plan has been mentioned and the consequent impossibility of knowing, in the case of a really correct plan, which represents the plan as normal, whether it be correct—without an independent personal examination.[5] In sections and elevations, however, the Brooklyn Museum surveys are not only unique for the given churches, but they are absolutely the first in existence to offer a series of measurements for variations of level or of height in a presumably corresponding series of measurements or in a presumably level construction.

The matter may be put in this way: Mediæval plans are so frequently incorrect that they are generally unreliable until retested, but accurate mediæval sections for the height of arches, or arcades, or accurate elevations for the arcades of façades and side walls have never previously even been attempted. Measurements in such particulars are never offered, excepting such as are to be calculated from a scale published with the drawing, the drawing itself being one on which no reliance can be placed.

Doubtless a very large proportion of mediæval churches, especially of the Gothic period, will prove to have been built exactly as the now published sections show them to be, but the Brooklyn Museum sections prove that a considerable number of Italian Romanesque churches have constructive variations in elevation which are systematic, and therefore intentional, and which are designed for optical effect.

That such constructions are lacking in Northern Europe is improbable. Several, in fact, are already known to me, and some have been recently mentioned by others, although none have been surveyed, as far as I am aware. At all events, the existence of constructive perspective illusions in mdiæval churches is now admitted by every writer who mentions the topic, including those who continue to forget that it was the Brooklyn Museum research which first undertook an examination of the subject. This holds of Mr. Prior, of Mr. Bilson, and of the editor of the *Builder*, among others.

In this general account of the Brooklyn Museum exhibition one main feature now deserves to be emphasized, by recurring to the contrast between plans from Dehio and Von Bezold and Schulz, and the real facts in the same churches. On paper these discrepancies are remarkable; for instance, at Cremona, because on paper the plan of Cremona is highly abnormal; but it is not so in fact, as regards the effect in the church. An obliquity of axis of 13 feet in mediæval churches of large dimension is practically invisible.

[5] From the standpoint of mediæval design an asymmetric plan would be perfectly normal, but the word "normal" is here used in a modern sense, as meaning a plan which is rectangular and symmetrical as to axis and measurements.

At Ruvo, where the cathedral is small, the obliquity is 8 feet, and yet when I brought Mr. McKecknie into this church he asked me, after looking around, what it was that I wished to have surveyed, and at this particular time Mr. McKecknie was engaged wholly in this class of work.

Such obliquities may be noticed if one is looking for such things, but even in that case my own experience proves that they may easily be overlooked. If the obliquity is noticed it only creates an effect to which the eye is already accustomed at some point off the center of any church. This effect is an obliquity in elevation, although the actual obliquity is in plan. Horizontal lines only appear horizontal when seen in parallel perspective. From every other point of view they always appear oblique in elevation, as a matter of course. Hence, an obliquity of plan is unnoticed, because it produces the effect of an obliquity in elevation to which the eye is accustomed, because such obliquities are universal in perspective.

How deceptive a bend in plan may prove to be is shown by the fact that I have announced, in the *Architectural Record* (Vol. VI., No. 4, p. 202), bends in elevation in the clerestory parapets at Cremona, which do not exist at all. In 1895 I saw bends in elevation, but when I undertook to photograph them in 1901, they proved to be bends in plan.

There is a diminution of spacing of 13 feet in S. Maria Novella, at Florence, which is equally inconspicuous. There is no point of view in any church from which the spaces will appear equal to the eye. They will diminish in apparent size with the distance. There is, therefore, no reason why this constructive diminution should be noticed. As a matter of fact, it will be overlooked, even by the person who knows it to exist. The effect is simply discounted by the eye as one of ordinary perspective diminution.

A Boston architect who surveyed S. Maria Novella has personally told me that he surveyed it as having bays of equal width and there is a published survey of this church, by an authority of distinction, which makes the same mistake.

Some mediæval churches were undoubtedly built to accent the perspective of the choir, allowing the reverse or return view to take its chances. As it is an arch near the center in S. Maria Novella which has the largest span, it will, to some extent, or for certain points of view, have an effect in both directions. It is, of course, a device based on the physiology of optics, rather than on the mathematical laws of perspective when applied to surface design. The eye tends to accept the nearest or most obvious magnitude as a standard for other apparently equal magnitudes which are more distant, and less easily estimated by the eye on account of the greater foreshortening.

We have thus offered an obvious excuse for these and other oversights of the surveyors of mediæval churches. They have not surveyed what they have not seen, and they have not seen what they were not looking for. I can offer many parallel instances of oversight or mistakes from my own experience, and without the excuse that my attention was not devoted to the subject.

The Brooklyn Museum Collection is an effort to cor-

rect these oversights. It relies on a photograph, or a survey, which prevents the eye from wandering and from discounting one appearance into a different effect, a picture, or a survey, which may be compared to a Muybridge picture of a horse in motion, which motion none of us see as the photograph proves that it really takes place. The collection proves by such means that certain builders of the Middle Ages exploited the fallibility of the human eye to a remarkable extent. In other directions, if not in this one, it proves that these builders were artists and not machines. Finally, if it proves anything, it proves that the individual mediæval builder thought out his own scheme and did not follow set rules.

It appears fairly certain, moreover, that a very considerable number of cathedrals and churches are exactly what the modern world has always thought them to be. It also appears, generally speaking, that these are not the churches which have been the most admired.

Without trenching on the subject-matter of later papers, it may be mentioned that the collection of the first floor, eastern gallery, of the Brooklyn Museum is hung according to the numbering of the catalogue of the Edinburgh Exhibition, held in 1905, and that this catalogue is in use at present for students of the collection and will be loaned by the attendants. The supplementary exhibits(not shown at Edinburgh) are labelled exteriors, or details, which do not affect the system or argument of this catalogue.

NOTES ON THE ILLUSTRATIONS.

This article does not debate the purpose of the oblique plans illustrated. Nor does it attempt to show that they are intentional. Such demonstrations pertain to the exhibition itself and are found in its catalogue. The plans which are oblique on axis, in straight lines, belong, however, to a newly discovered type, as distinct from the mediæval plans which bend on axis. The illustrations explain why this type has been unknown; partly because modern methods of survey have hitherto generally taken for granted that the plan is normal; partly because the optical effects produced are natural to perspective, and have been overlooked as the results of oblique planning. Without debating the purpose of these plans, it may still be pointed out that they confuse the eye and that *the effects illustrated in the photographs are not the only ones.* In the building itself there are also effects of optical confusion, of optical vibration; or of optical mystification; because in a central position there are some normal effects which persist, while others are changed. So in the side positions, some normal effects persist, while others are changed. The effects which persist are those due to the experimental computations of distance or dimension which the eye is constantly making automatically; although consciousness may not be aware of them. For instance, when the observer is in the center of the church some of the computations of distance or dimension may still be normal to a central position, although the obliquities in elevation are normal to a side position. Of course, these unconscious computations of distance or dimension are also frequently and unconsciously modified by the variations of spacing frequently found in the same churches.

The transverse arches of S. Nicola at Bari do not belong to the original construction. They are additions made in the Gothic period, together with the doubling of the columns, in order to strengthen the church after an earthquake. Thus the particular resulting obliquities here involved (as distinct from those at the choir) do not belong to the original plan; but as an illustration of optical effects they do not have less value for this reason. It may also easily be possible that the distortion of plan, as regards the lengths of the first three bays on either side, are related to irregularities in the walls which were incident to the asymmetries in plan of the towers.

THE MODEL FOR ARCHITECTURE

In architecture the creative power of Nature herself is the model imitated. It is an art which appeals directly to the understanding, and has not the means of flattering the senses in the same way as the sister arts; hence its productions are not universally appreciated. The beautiful models of Nature, however, are the index and guide of the painter and sculptor; a successful imitation of these models, even without an advance on the part of the artist towards those higher intellectual beauties which distinguish the historical painter, is capable of affecting us with very agreeable sensations.

There is no object on which the resources of the wealthy are more freely lavished, or which calls out more effectually the inventive talent of the artist. The painter and the sculptor may display their individual genius in creations of surpassing excellence, but it is the great monuments of architectural taste and magnificence that are stamped in a peculiar manner by the genius of a nation.

The Greek, the Egyptian, the Saracen, the Gothic—what a key do their respective styles afford to the character and condition of the people. The monuments of China, of Hindustan and of Central America are all indicative of an immature period, in which imagination has not been disciplined by study, and which, therefore, in its best results betray only the ill-regulated aspirations after the beautiful that belong to a semi-civilized people. We have it in our power to embody in enduring stone a record of our national character and history; to commemorate by the utility, durability and beauty of our edifices the political strength and moral elevation to which we have attained; to leave behind us, in these unerring witnesses, proofs of our refinement, opulence, science and progress in the useful arts. Do we desire that a remote posterity shall look back upon us with the admiration that we award to Egypt, Greece, Rome and Christian Europe? If we do, let us render to our architecture the homage of earnest study, cultivated taste and mature judgment.—*Architect and Engineer.*

A RECENT LEGAL DECISION

Architects' Authority to Order Extras.

A building contract contained no authority to the architects, who were thereby appointed superintendents, to order extras; it did contain a provision that all extras should be ordered in writing. A large amount of extras were ordered verbally by the architects and the owners subsequently disputed their authority to do so. The court held that the owners could not then deny the general authority of their agents, the architects, to order and contract for these extras after having allowed them to be done upon such orders, without protest at the time when done, after taking the possession and enjoyment of them; and that under such circumstances it became immaterial whether the technical requirements of the contract as to these extras being ordered in writing was strictly carried out or not, because it must be held to have been waived.

Jefferson Hotel Co. v. Brumbaugh, 168 *Federal Reporter* 867.

THE CURRENT ARCHITECTURAL PRESS

The issue of *The Western Architect* for July is devoted to the description and illustration of the Alaska-Yukon Pacific Exposition together with representative examples of architecture at Seattle.

Of the latter the more notable are the Alaska Building by Eames & Young; the White Building, by Howells & Stokes; the Federal Building, Mr. James Knox Taylor, supervising architect; the Clark Apartments, Graham & Myers, architects, and the residences of Mr. C. J. Smith and Mr. F. H. Osgood, designed by Cutter & Malgren and R. Clifton Sturgis & Barton respectively. It is doubtful if a more creditable showing could be made by any city of similar size in the country.

In addition to the very complete description of the exposition, the text of this issue contains short but interesting articles on

Lounging Room, University Club, Chicago. Holabird & Roche, Architects
(From *The Architectural Record*)

The Stuccoed House and Advancement in Apartment House Construction.

The leading article in *The Architectural Record* for July describes at some length the new University Club Building, Chicago, by Holabird & Roche, the exterior of which was illustrated in the AMERICAN ARCHITECT, issue of April 14. The subject is of more than passing interest, and it is unfortunate that the photographic reproductions are not of a higher order.

The Alaska-Yukon Pacific exposition, also previously illustrated in the AMERICAN ARCHITECT, is now more fully covered, the buildings having since been completed.

An article entitled "The Sculptor as His Own Architect and Builder," is suggestive to a certain degree of the man who is his own lawyer or makes his own shoes.

Part II, treating of the "Growth of Taste," of Claude Bragdon's series of articles on architecture in the United States, is a scholarly treatment of the subject and will repay careful reading.

Mr. Montgomery Schuyler's article on the Italian Gothic in New York, and Part III, treating of the architect during the dark ages, of Mr. A. L. Frothingham's series on "The Architect in History," completes the text.

The International Studio for July is artistically a particularly interesting number.

Of principal interest to the architect is Part II of Mr. Charles W. Stoughton's article on "Modern Brickwork," splendidly illustrated with many of the best examples of recent building in America.

An article from the pen of the late Russell Sturgis on the façade of St. Bartholomew's Church is a critical analysis of this work by McKim, Mead & White.

Other articles are a review, with illustrations of the Salon of the Société Nationale Paris, The Royal Academy Exhibition,

Russell Sage Memorial Hall, Northfield, Mass. Delano & Aldrich, Architects
(From *The International Studio*)

London, and an article by William Howe Downes on the work of Bela L. Pratt, sculptor.

An interesting series of American Etchings by Joseph Pennell, typical of the great industries, are important illustrations in this issue.

The New York Architect for June (the July issue has not yet been received) illustrates recent work of Messrs. George B. Post & Sons. While most of the material is familiar to the profession by reason of repeated illustration, its collection and publication in a single issue affords an opportunity for comparison, and the number will no doubt be considered of value and interest by the profession.

Unfortunately, owing to a rather indifferent process of reproduction, many of the illustrations seem to lack that crispness of detail that has become recognized as necesary to the best illustration of architectural subjects, where more than a pleasing picture is desired.

In addition to the work of Messrs. George B. Post & Sons, there are two views, an exterior and interior of the Opera Comique, Paris, M. Bernier, architect. The façade presents a well-proportioned and commendable result along the lines of the usual French building of this type. The decorative treatment of the foyer, as seen in the photograph, appears to be

Masonic Temple, Brooklyn, N. Y. Lord & Hewlett, Architects
(From *Architecture*)

White Building, Seattle, Washington. Howells & Stokes Architects

(From *The Western Architect*)

somewhat coarse in its detail, but is impossible of accurate criticism as no hint of the color effect is obtainable.

The text of this issue is largely devoted to an article by Mr. James Otis Post, describing the work of Messrs. George B. Post & Sons.

Architecture for July presents a wide range of subjects, each lacking in completeness of presentation and description. One or two indifferent views cannot be said to illustrate a building. As to descriptive text, while in many instances, we know from experience it is not always possible to present a full and comprehensive description of subjects illustrated, we feel that in the case of such a dignified example as the Masonic Temple at Brooklyn, by Messrs. Lord & Hewlett, something more than an indifferent photograph is necessary to its presentation.

The critical review of this subject, we believe, is unfortunate, as it seeks to instruct the judges at the coming architectural League Exhibition, who, no doubt, will be as keenly alive to the great merit of Messrs. Lord & Hewlett's splendid building, as the writer of the criticism referred to.

Other illustrations are the group of buildings for the Jewish Protectory and Aid Society, Hawthorne, N. Y. Harry Allen Jacobs and Max G. Heidelberg, associate architects. Messrs. McKim, Mead & White's well-designed building for the Knickerbocker Trust Co., and the Westchester County Court House by Lord & Hewlett. There is also a High School at White Plains, New York, by H. C. Pelton, which suffers perhaps by comparison with similar buildings erected in the northern part of New York City.

A series of sketches of bungalows by Aymar Embury II, presents little that is new or interesting on this class of dwellings.

In the text, besides the usual criticism and description of the work illustrated, there is an unsigned article, "A Plea for True Democracy in the Domestic Architecture of America," "The General Public and Architects," by Sidney Warren, and "Geography and Architecture," by Charles A. Cutler.

The Brickbuilder for July illustrates a number of Masonic Temples, the work of Messrs. A. B. Groves, Lord & Hewlett and Pell & Corbett, associates, Newhall & Blevins, Olds & Puckey and Wood, Donn & Deming.

The Masonic Temple at Washington, D. C., illustrated in full in THE AMERICAN ARCHITECT of April 15, 1908, and the Temple at Brooklyn by Lord & Hewlett, and Pell & Corbett, associates, are already familiar to our readers.

What other periodicals have lacked in the presentation of the Brooklyn Temple, *The Brickbuilder* has supplemented by a very thorough and comprehensive presentation of this dignified subject.

The Irem Temple, at Wilkes-Barre, Pa., is an interesting example of modern brickwork, but somewhat insistent in its architectural expression.

The leading article of the text treats of "Thatched Roof Effects with Shingles," by Harrie T. Lindeberg. The many iltrations that accompany Mr. Lindeberg's article are all familiar to readers of THE AMERICAN ARCHITECT, having with few exceptions been published in these columns.

Mr. D. D. Kimball's series of articles on "Warming and Ventilating," with special reference to hospital buildings, is continued, as is also Mr. Ford's on "The Housing Problem." Mr. C. Howard Walker's critical description of the Brooklyn Masonic Temple, coupled with the illustrations already referred to completes a remarkably good presentation of this subject, and the only one of any value that has come to our notice.

The July issue of this publication was received too late to admit of reproduction of any of the illustrations.

THE TIMBER SUPPLY OF THE UNITED STATES

Forest Service Circular 166, issued by the Department of Agriculture, treats of the timber supply of the United States. It answers as far as present knowledge permits many questions constantly arising concerning the extent of our forest resources.

The subject is treated in an exhaustive manner and the circular is a valuable contribution on a vital topic.

Opera Comique, Paris. M. Bernier, Architect

(From *The New York Architect*)

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CONTENTS

IT is doubtful if the architect, in the discharge of the various duties in connection with the practice of his profession, is ever called upon to render a more important or valuable service to his client than that of selecting materials of construction and finish. We have no intention or desire to belittle the importance of the art of design. Upon it as a foundation the entire structure of architecture rests, but designs of great promise have so frequently been almost ruined by unfortunate choice of materials, either as to composition, texture or color, that we have been moved to consider whether perhaps a commonplace design would not, if it had been executed in well chosen materials, have produced more gratifying results. Of course, the goal toward which all should strive is the combination of good design and appropriate, carefully selected materials, but a marked tendency of recent years to consider of little consequence the materials chosen, if only the paper design commends itself, cannot be too strongly deprecated. One of the most cogent reasons for objection to the competition method of selecting an architect seems to exist in the fact that the rough incomplete sketches ordinarily required, furnish little or no indication of an architect's taste or ability in the selection of materials, or success in securing desired effects from their handling and treatment. It is the possession and exercise of these faculties that has made the artisan or craftsman product pleasing in so many instances, where a building of a nobler conception or design lacking the qualities that are imparted to it by good workmanship and appropriate materials, has failed signally.

TO the thoughtful observer of the trend of affairs in the architectural field, it cannot but appear more than ever evident that an architect must be constantly alert and watchful if he would keep abreast of the times. He must have a keen eye for coming events, and can ill-afford to ignore the progress being made by his co-workers in all parts of the country. Entirely without prejudice, and as a simple statement of what we regard as fact, uninfluenced by personal interest, at least to an extent that could be said to warp our judgment, it seems probable that journals of his professional class are of greater service to the progressive architect in his efforts to keep informed in this regard, than almost any other agency. By continually presenting to members of the profession the best examples of contemporary work, by illustrating the designs submitted in current competitions, by publishing comments, opinions and articles of timely interest by members of the profession, the journals render an undeniable service, and one few architects of either ability or ambition are willing to dispense with. Aside from the illustrations of current work, there are published numerous historic buildings which may safely serve as standards in judging the measures of our modern accomplishments. Not alone in the realm of architectural design does it become of interest and value to know the result of the study and experiments going on throughout the land, but in the province of the constructor and engineer as well, progress is being made of which all may well take note. New methods of construction, new materials, or new adaptation of materials well known, are all of very real interest and moment to those members of the profession who are concerned in seeing that their clients shall not suffer by reason of unwise selection of an architect.

THE subject of architectural refinements which is treated by Professor Goodyear in a series of profusely illustrated articles, the first installment appearing in this issue, has long attracted the attention and in a few instances rewarded the study of architects and students of architecture. It is probable, however, that Professor Goodyear has given more time and intelligent study to this remarkable feature of ancient and mediæval buildings than any other man, and his utterances, therefore, may be considered authoritative. To whatever explanation we may incline in searching for the cause responsible for the results set down in these articles, both by measured drawings and photographs, these results or records of actual conditions are of greatest interest and importance. They are the foundation upon which the true theory must be built, and it appears that, regardless of whether the correct one has been advanced or not, no rational person can longer maintain that these irregularities, in their various manifestations, were the result of either ignorance or fortuitous circumstance.

Alaska Building, Seattle, Washington. Eames & Young, Architects
(From *The Western Architect*)

MAY LIMIT THE HEIGHT OF CHICAGO'S BUSINESS BUILDINGS

It is stated in the local press that the committee of architects, engaged in revising Chicago's building code, will recommend that in future the maximum height of buildings permitted by law, be changed from 260, as at present, to 200 feet.

It is claimed that there is every possibility in the near future that, owing to the many high buildings already built and projected, the business section will become congested, and it is sought, in the proposed limitation to 200 feet, to force the business section to extend over a greater area.

ILLUSTRATIONS

A Cottage on Oak Road, Tarrytown, N. Y.,
Messrs. Ewing & Chappell, Architects

The small cottage, plans of which are shown, was remodelled from a featureless house, of rather bad style, the general object architecturally being to remove objectionable detail and to simplify the floor plans.

The large porch with easy acccess from the dining room and living room is one of the chief features of this house, and forms a very important part of its success as a livable dwelling.

House of Douglas Kent, Esq., Tarrytown, N. Y.
Messrs. Ewing & Chappell, Architects.

The exterior of this house is finished in broad white shingles. As in most of the houses on the right bank of the Hudson, the problem was to find a disposition of rooms affording the greatest amount of openness on the side opposite the entrance, locating all accessories such as kitchen, pantry, entrance hall, baths, etc., on the entrance side.

A House on Cobb Lane, Tarrytown, N. Y.
Messrs. Ewing & Chappell, Architects.

The location of this house on a steep hillside offered an interesting problem in architectural treatment. As the plan shows, the view is to the west, on the opposite side from the main entrance, the principal rooms, on all floors, being located on the west side of the house.

In architectural style the house is simple Colonial, with white painted clapboard exterior, with green shutters, and white interior trim throughout, except in main hall, which is of chestnut, and the study, where the trim is painted a dark green. The dining room is panelled with simple moldings, the space between the moldings being painted a very light gray, which has proved a very successful treatment.

Cottage for Mr. Charles E. Johnson, Summerville, Augusta, Ga.
Messrs. Kemp & Wendell, Architects.

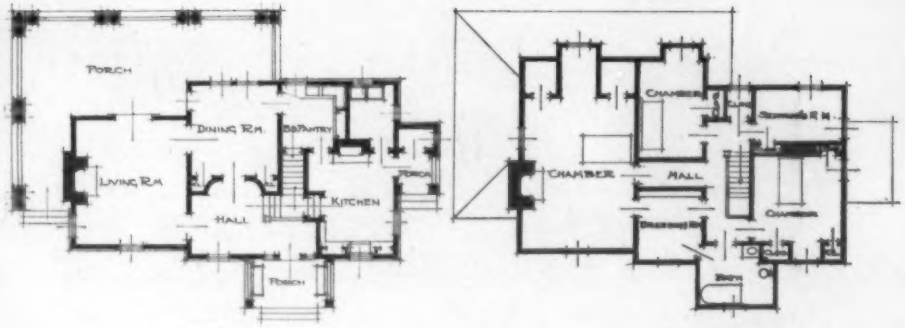
This house, situated directly opposite the entrance to the Country Club, is the winter residence of the owner and was designed purely with that idea in view. Directly overlooking the beautiful grounds of the Country Club, it was desirable that all rooms, if possible, face to the front, and to accomplish this a very long and narrow house seemed to be the proper solution. The house, while very simple in plan, contains a large living room and dining room, the former with sun entering it from three sides during the day. The four main bedrooms all have a charming view of the Country Club grounds.

Y. M. H. A. Building, New Orleans, La.

This building on the exterior is faced with a dark brown iron spot brick laid in white mortar, and all ornamentation is in white terra cotta, both profiles and projections. Its cornice extends 7 feet and is covered with warm brown Spanish tile, while its woodwork, rafters and brackets are stained a darker hue.

The interior of the building is sub-divided for its various requirements as a club room and has a public auditorium, and the entrances are arranged for use by either club members or the public without interference with each other.

This building throughout is of steel frame with reinforced concrete floors and has elaborate plaster and marble effects. Its main hall or auditorium seating, with the gallery, is 1,954.



FIRST FLOOR PLAN

SECOND FLOOR PLAN

A COTTAGE ON OAK ROAD
TARRYTOWN, N. Y.

MESSRS. EWING & CHAPPELL
ARCHITECTS

HOUSE OF DOUGLAS KENT, ESQ.
TARRYTOWN, N. Y.

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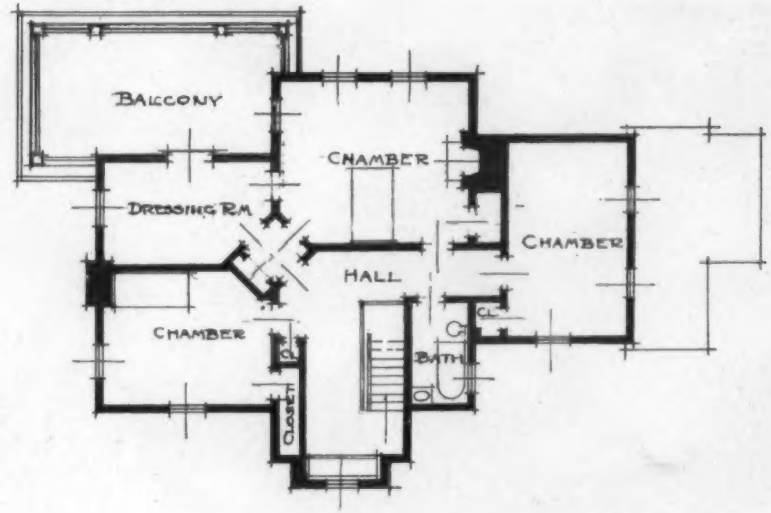

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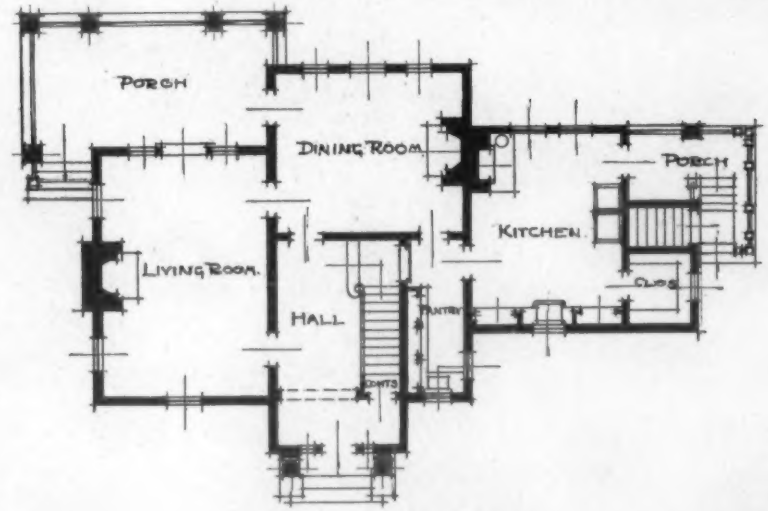

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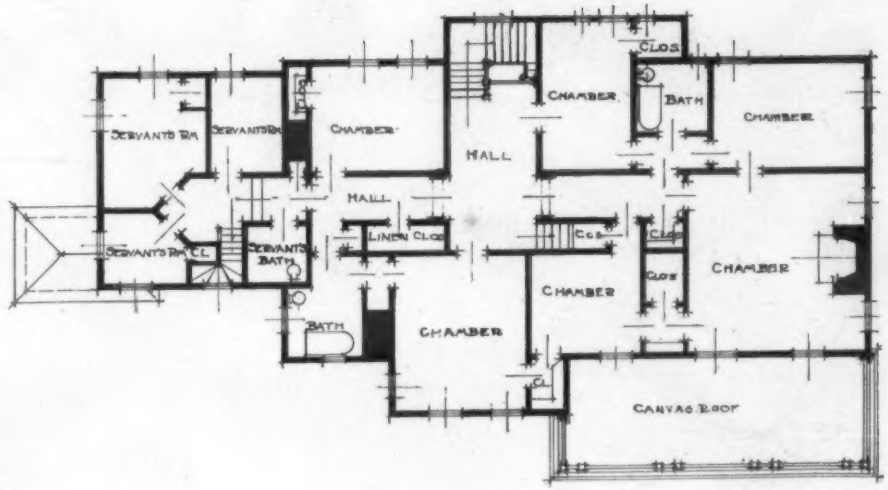

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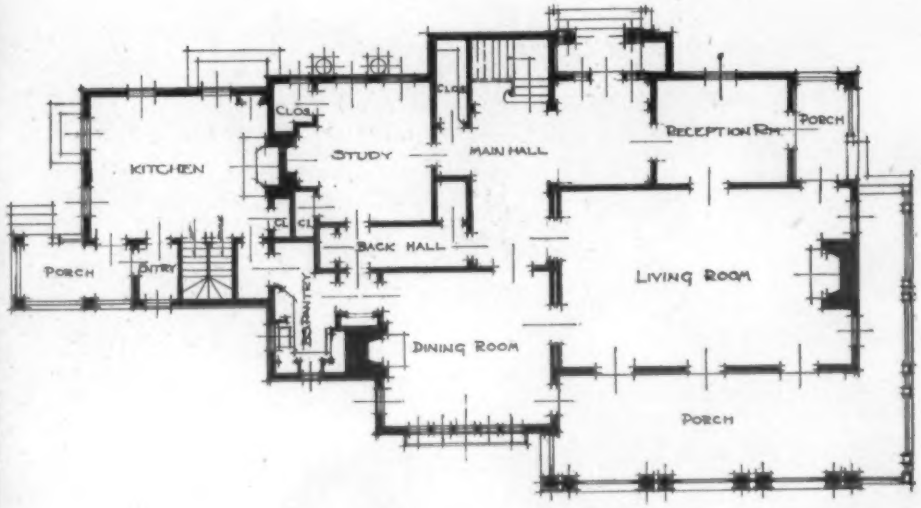

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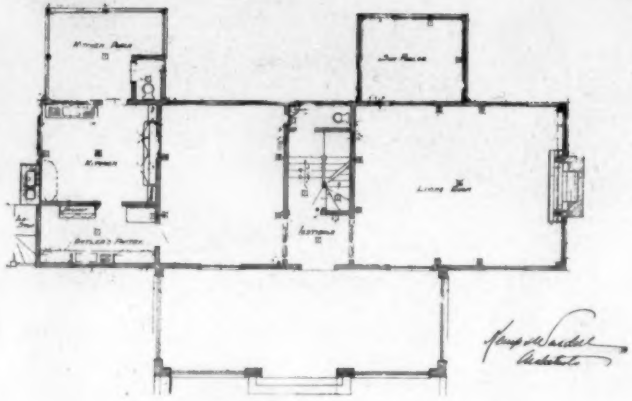
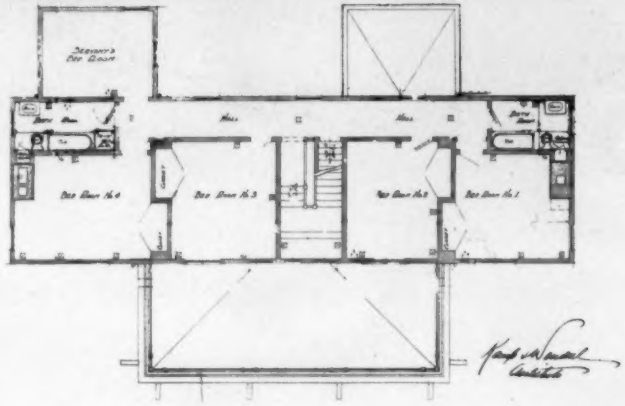


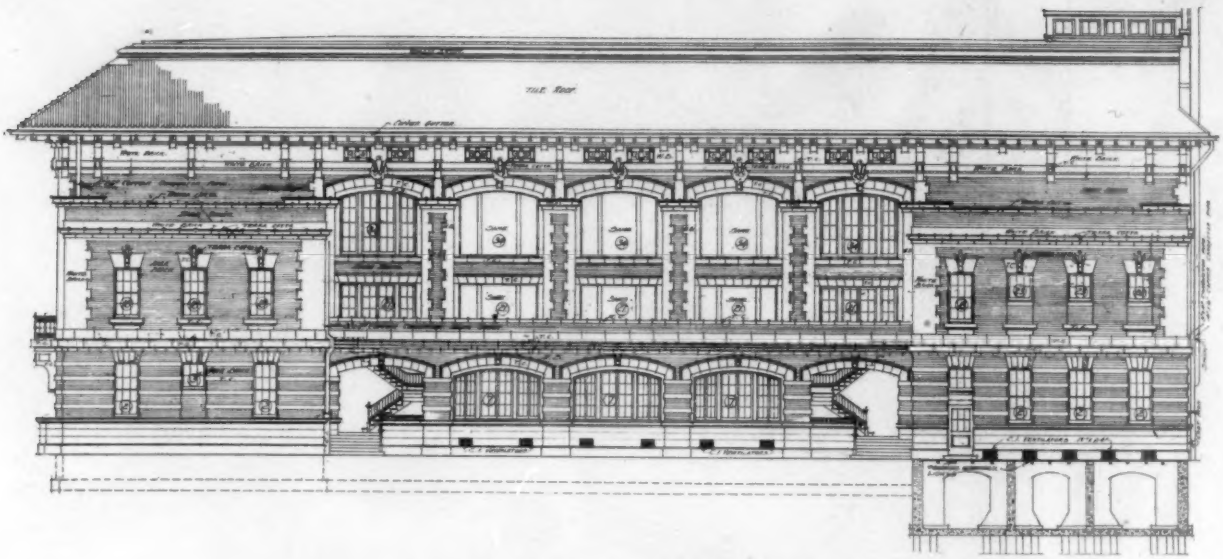
COTTAGE FOR
MR. CHARLES E. JOHNSON
SUMMERVILLE, GA.

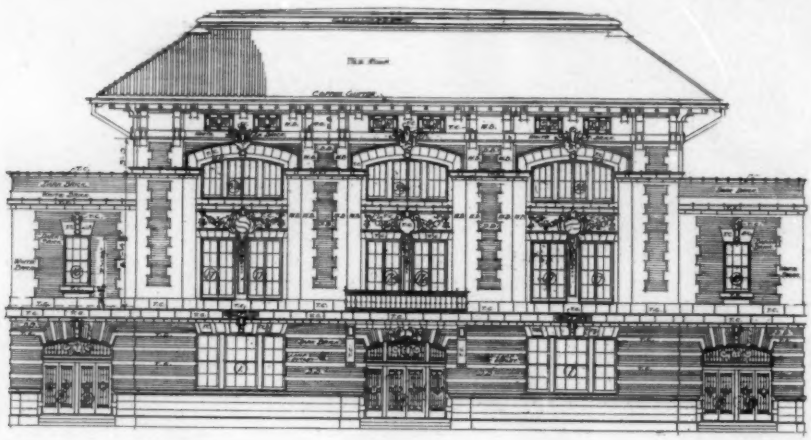
MESSRS. KEMP & WENDELL
ARCHITECTS

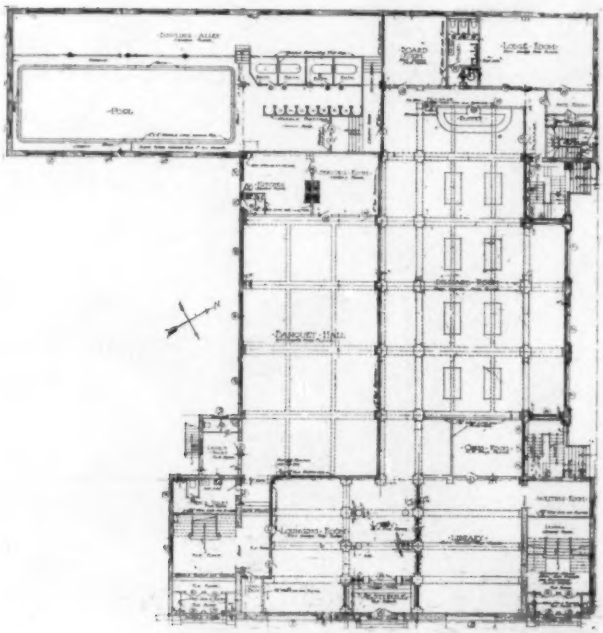


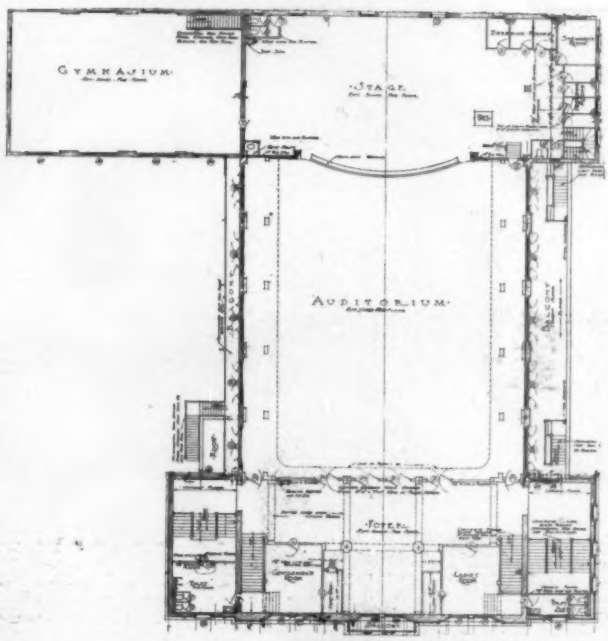
CLUB BUILDING AND AUDITORIUM FOR
Y. M. H. A., NEW ORLEANS, LA.

MESSRS. STONE BROS.
ARCHITECTS









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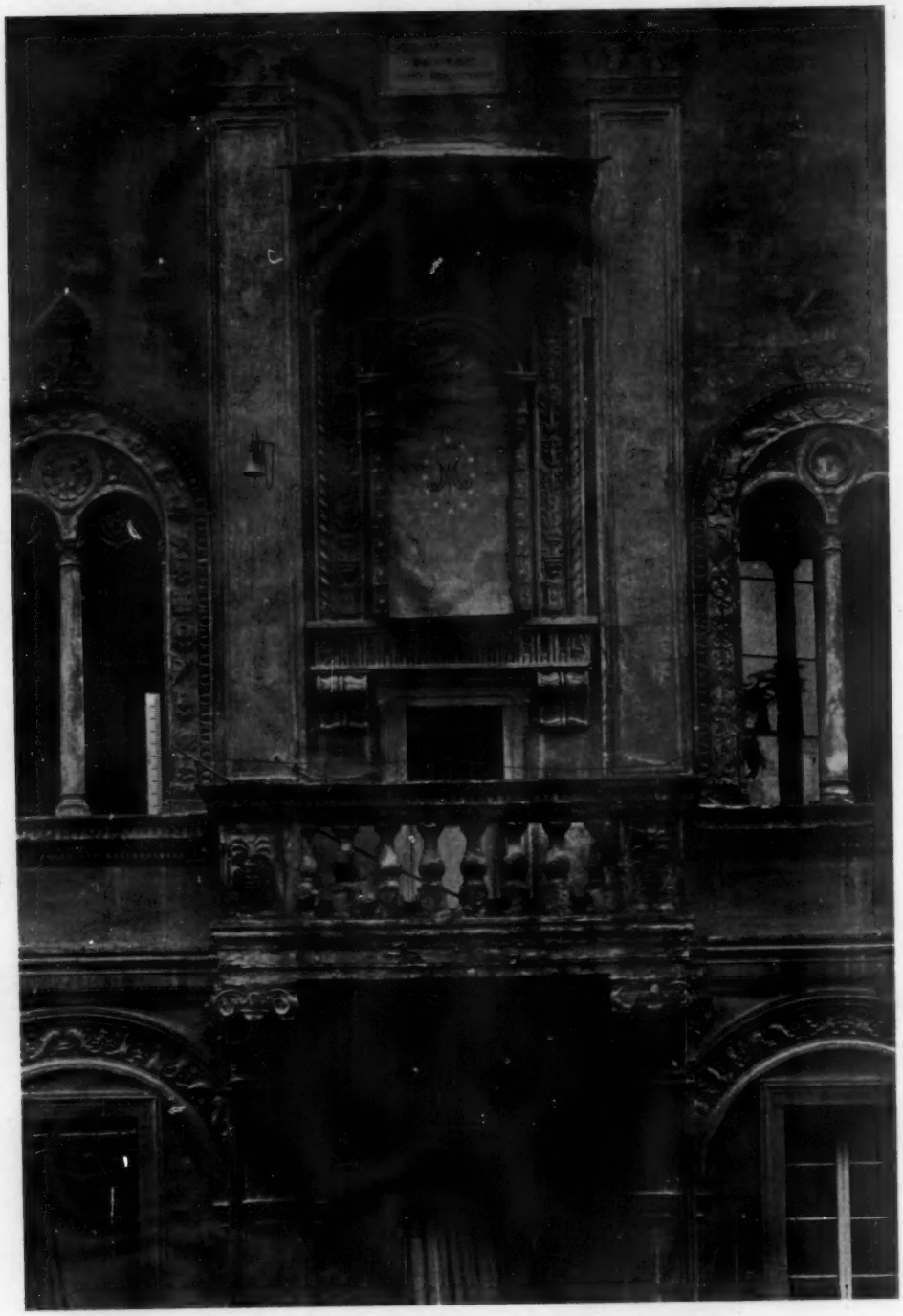

DETAIL OF THE PALAZZO MATACUTI, BOLOGNA, ITALY