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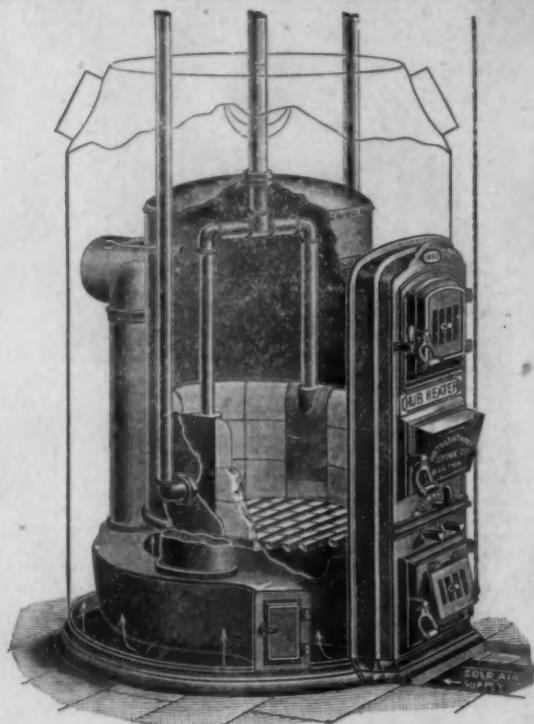
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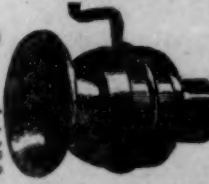


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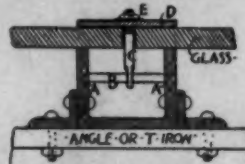
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THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XLVIII.

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APRIL 13, 1895.



SUMMARY:—

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TWO very important decisions have recently been made by State courts, in regard to the limitation of the hours of labor. Penal actions were brought against certain manufacturers, in Illinois, for employing women more than eight hours a day, in contravention of the statute, which provides that "No female shall be employed in any factory or workshop more than eight hours in any one day, or forty-eight hours in any one week." Under the penal clause attached to this statute, the manufacturers were fined. They appealed from the judgment, on the ground that the statute was unconstitutional, and the test case, known as *Tilt vs. Illinois*, has just been heard and decided by the Supreme Court of Illinois, which has reversed the judgment, and declared this section of the statute unconstitutional and void. The Court rests its decision on the principle that a woman is a citizen, and that the right of a citizen to make his or her own contract for labor or services is part of the protection of liberty and property guaranteed by the fourteenth amendment of the Federal Constitution, by Section 171 of the Revised Statutes of the United States, and by the Constitution of Illinois. The Court says also that the statute is not within the police powers of the Legislature, no evidence being offered to show that it was passed for any sanitary purpose, and it holds that, the occupations engaged in being expressly lawful for women, the hours of each day which they should devote to such work could not be limited by statute. The difference between police powers and constitutional authority is shown by a suggestion of the Court, that if the statute had applied to minors only, it might have been sustained as a police regulation. The Court says, in its decision: "This enactment is a purely arbitrary restriction upon the fundamental right of the citizen to control his or her own time and faculties. It substitutes the judgment of the Legislature for the judgment of the employer and employé in a matter about which they are competent to agree with each other. It assumes to dictate to what extent the capacity to labor may be exercised by the employé, and takes away the right of private judgment as to the amount and direction of the labor to be put forth in a specific period . . . Liberty, as has already been stated, includes the right to make contracts as well with reference to the amount and direction of labor to be performed as concerning any other local matter. Hence the right to make contracts is an inherent and inalienable one, and any attempt to unreasonably abridge it is opposed to the Constitution."

THIS decision comes like the breath of a bracing north wind through the enervating mists of Nationalism, Collectivism, Socialism and the other theories of glorified slavery. About a year ago, the Supreme Court of Nebraska rendered a similar decision, and, within a few weeks, the New York courts, in an action brought against one of the street railway lines, for keeping men employed more than ten hours a day,

said that the statute did not forbid men to contract to work more than ten hours a day, if they wished, and it would be unconstitutional and void if it did so prohibit them. We do not know whether the apostles of class legislation will "rise and sweep the courts away," as we are informed they propose to do if the income-tax law is declared unconstitutional, but, while they exist, it appears settled that they will continue to uphold the principles of freedom which have been held sacred by our race for many centuries, and on which our whole social and political system is based.

THE New York Fine-Arts Federation has organized for business, by the choice of Russell Sturgis as President, George L. Heins as Vice-President, and Frederick Dielman as Secretary and Treasurer. The *Evening Post* assures us that "the most perfect harmony exists among the different associations and the different arts," which it is satisfactory to know, for, as will be observed, the architects, holding the Presidency and Vice-Presidency of the Federation, have a preponderance of influence which might arouse jealousy under other circumstances. Besides Messrs. Sturgis and Heins, architecture is represented in the directorate by A. J. Bloor, Walter Cook, Thomas Hastings, C. F. McKim, Henry R. Marshall, George B. Post and R. M. Upjohn, all the other arts together, including the amateurs, as represented by Mr. Perry Belmont, only mustering nine representatives, against ten architects. In reality, this is a very satisfactory state of things, for the architects have more business experience than the painters and sculptors, and maintain a better understanding among themselves, while they serve at present, to a great extent, as the intermediary between the public and the other artists.

THE friends of the late Francis Parkman, of Boston, are raising a subscription for a monument, to be erected, it is hoped, on the border of the lake known as Jamaica Pond. His own house was on the border of this pond, and, as the surrounding territory has now been taken for a public park, nothing could be more appropriate than such a memorial, erected on the very scene of his labors. Already, something like fifteen thousand dollars have been subscribed, and additional subscriptions are invited from all who wish to testify their appreciation of "the high endeavor, heroic constancy and noble achievement," of Mr. Parkman. The treasurer of the fund is Mr. Henry L. Higginson, 44 State Street, Boston.

A DECISION of some importance to builders, as well as to persons who advance money on building loans, was rendered in the New York Court of Common Pleas the other day. One Lipman had agreed to advance money to one McCormack, for building operations in New York, taking a mortgage as security. The money was to be advanced in instalments, under certain conditions, one of which was that the building should be kept clear of mechanics' liens. The subcontractor for the plastering obtained an order from McCormack on Lipman, for eight hundred and fifty dollars, and Lipman accepted it. The action was by the assignee of the plasterer against Lipman and McCormack, to recover the amount of this order, with interest. McCormack failed to appear in court, and Lipman claimed that this order was to be paid out of a certain instalment of the building-loan, but that, before this instalment was payable, it was found that, contrary to the conditions of the loan, mechanics' liens had been filed against the estate, and had remained more than ten days without being discharged; and that therefore, under the contract of loan, the instalment was no longer payable. McCormack seems to have been in hopeless difficulty, for, soon after, Lipman foreclosed his mortgage, and the property was bought in by his brother-in-law. The jury, apparently under instructions from the Court, brought in a verdict that Lipman's acceptance of the order was unqualified, and that the amount was due, with interest.

PROBABLY there is something in this case not apparent on the surface, for it seems evident that any acceptance of an order drawn by McCormack on Lipman must be subject to the conditions of the contract between the two relating to the payment of money for building, whether the acceptance

referred to those conditions or not. Of course, it is rather hard on a sub-contractor to find that his principal has not complied with the conditions under which he is to get his money, and that he must suffer loss in consequence; but it is equally hard on a man who advances money for building to find that the contract on which he had relied for protection against having to pay his money twice over has not fulfilled its purpose. The result will undoubtedly be that Mr. Lipman and his friends, and all the other people who have money to advance for building, will mark up their interest rates for the future, to cover the additional risk which this decision imposes; and the poor people who are to live in the houses built with borrowed money will have, in the end, to pay the extra cost, just as they generally have, sooner or later, to pay the cost of interference with the security of investments, and the sacredness of contracts.

A NOTEWORTHY competition is announced in Germany. The City of Barmen, acting, apparently, in connection with the Society of Fine-Arts of the same place, proposes to erect a "Ruhmeshalle," or Hall of Honor, to the memory of the Emperors William I and Frederick III, providing in the building for the city library, and for the collection of pictures belonging to the Society of Fine-Arts. The competition is, as usual in Germany, restricted to German architects, but the terms are so straightforward and fair as to be worthy of note. Four months are allowed for preparing the designs, which are to be mere sketches, the floor plans at a scale of 1 to 200, answering about to our sixteenth scale, while the elevations, sections and perspective view are at 1 to 100. As the cost of the building is limited to four hundred thousand marks, or less than one hundred thousand dollars, it cannot have a very extensive floor-plan, and the drawings will be necessarily small. Notwithstanding the moderate extent and cost of the structure, the Society of Fine-Arts, which appears to be managing the competition, is determined to have it well designed, if it is possible to obtain that object by attracting able competitors, and placing the choice in the hands of a good jury. It is declared that the competition shall be judged in accordance with the principles adopted by the Society of German Architects and Engineers, and three money prizes are offered. The first prize, for the design adjudged best, is four thousand marks; the second is two thousand, and the third one thousand marks. The idea of spending seven thousand marks, or nearly two per cent of the proposed cost of the building, merely in prizes for the preliminary sketches, would strike an American court-house commissioner as something wildly extravagant, but the people of Barmen evidently think it good policy for them to do so. The award is to be made by a jury of five members, four of whom, Professors Paul Wallot, of Dresden, and Hubert Stier, of Hanover, and Messrs. Schnieden, of Berlin, and Winchenbach, of Barmen, have already been engaged to serve; while Dr. Jordan, Director of the National Gallery, at Berlin, has been invited to serve as the fifth member, but has not as yet signified his acceptance. To our mind, the distinction of the judges will prove quite as much of an attraction to competitors as the liberal prizes. Any architect worthy the name would rejoice at an opportunity of winning notice and commendation from such men, while even an unfavorable judgment from them would not be very much resented. What gives the real bitterness to competitions as ordinarily conducted is the feeling of the unsuccessful contestants that they have been judged by incompetent persons, and have thrown away their labor and skill on people incapable of appreciating it. In very many cases, this is really true, and it is notorious that the success of a competition, in producing results of value, is in proportion to the skill and learning of the experts in whose hands the decision is placed. We do not know whether any of our readers have any personal interest in this particular competition, but if so, they can obtain further particulars, and a plan of the lot, by addressing Herr Wegner, Oberbürgermeister, Barmen.

A LITERARY novelty has just made its appearance, in the shape of a French monthly illustrated magazine, modelled very closely after the pattern of the great American monthlies, but with certain interesting differences. This newcomer, published by A. Quantin, 5 Rue Saint-Benoit, Paris, at twenty-one francs per year for the Postal Union, is known as *Le Monde Moderne*, and dates only from January, 1895, three numbers having so far made their appearance on this side

of the water. As might be expected with the practical French, the proportion of history, science and politics to fiction is considerably larger than in our magazines. There are three or four stories, by Jules Claretie, Paul Dys, Ricard and Chantavoine, but the practical part is of remarkable interest. Without counting the fashion supplement to each number, the "Review of Inventions," and the chapter of cooking receipts, we find, in the three numbers, good and carefully written articles on the recent excavations at Dashoor; on photography in colors; on modern infantry equipment, offensive and defensive; on traction by compressed-air on tramways, and many similar ones; while, in the field of political geography, there are important studies of the situation in Africa, on the production and distribution of wheat, and so on. History is represented by an interesting investigation into a grand, not to say scandalous, speculation undertaken by the Cardinal de Rohan, in connection with the sale of the Hospital of the Quinze-Vingts, and by an article on the contemporary caricatures of Napoleon; and the fine-arts by an account of the young girls' section of the School of Decorative Art, in Paris, illustrated by eleven designs, by the pupils; by some "Notes on Architecture," by T. Brisson, and a sketch of Ingres, by Arsène Alexandre. Even the athletic sports are represented, by articles on fencing, and on sports in general, by Paul Meyan. It will be seen that the choice of subjects closely resembles that adopted by our magazine-editors, and their French contemporary seems determined to rival them also in his illustrations, which are, for the most part, fine examples of half-tone work. We do not know how many of our readers have felt, as we have, the difficulty of finding contemporary French publications for general readers which could be admitted to one's house with confidence; but it is certainly a satisfaction to be able to put on one's library table something between *L'Ami de la Jeunesse* and *La Vie Parisienne*.

AMONG the scientific articles in the new magazine, the most curious and suggestive is, perhaps, one by Dr. E. Monin, on the Medical Relation of the Physical and the Moral. Dr. Monin, it may be well to say, deplors what he calls "the useless and premature diffusion of those microbial doctrines which see nothing anywhere but contagion." To his mind, the idea, for instance, of the communicability of tuberculosis, by making of a consumptive person a sort of leper, to be avoided by those who would avoid contagion, has, without doing anything to repress the disease, tended to shorten the lives of patients, by depriving them of that companionship and consolation which, as he thinks, is so great a factor in curative treatment. "*Les joyeux guérissent toujours*," he quotes from Ambroise Paré; and, long before Paré, Galen declared that happiness gives efficacy to medicaments. "*Pars sanitatis velle sanari fuit*," he says, and he pleads, in the name of the patient, for "a medical science which shall not be the infernal ruin of all hope," and a medical habit of mind which shall not, as it does at present, "take pleasure in denying the powerful influence of a good mental condition on the course of disease."

A WRITER in the *Deutsche Bauzeitung* has some ideas in regard to the method of propelling the air-ships of the future, which have a certain interest, although they are not altogether new. Regarding as necessary conditions of flight through the air the employment of sustaining planes, and of some propelling force, he says that, instead of the revolving helix commonly used, it would be, in many respects, advantageous to employ a simple jet of air to produce the reaction necessary for driving the craft in any desired direction. The water-jet has already been applied to the propulsion of steamers, with rather indifferent success; but he points out that, for sailing through the air, a jet which could be directed to any quarter, at pleasure, by simply turning a valve, would have great advantages, as no other steering mechanism would be required; and the rotary fan for producing the blast would be a very compact affair in comparison with the helical propellers used, for example, in the Maxim flying-machine.

WHE twelfth annual examination to determine the selection of the Rotch Travelling-Scholar has resulted in favor of Mr. W. S. Aldrich, who wins at a rather more mature age, we believe, than was the case with any of his predecessors. Of late years he has been in the office of Messrs. Blackall & Newton, both quondam holders of the scholarship.

ON THE APPLICATION OF COLOR TO ARCHITECTURE.



Monument to the Memory of Charles Segoffin, Paris, France. MM. Leroux & Bitner, Architects. From *La Construction Moderne*.

IN none of the subsidiary arts connected with architecture has there been in modern practice so little agreement with all ancient rules and customs as in this. It is only of late years that any one has conceded that the duty of architects is to give the best possible combination of form and color, and that the completest form of architecture is that which affords examples of such a combination.

For the last three centuries architects have shown almost a contempt for color: to such a degree, indeed, that the world, till lately, was taught to believe that purity of style and absence of color always went together; and that it was only a vulgar and uneducated eye which saw the greatest evidence of good and matured thought in the harmonious application of color and form. Our sculptors encouraged this feeling by their dislike to the application of color to their work, even when it was purely architectural. Both architects and sculptors found it convenient, apparently, to disencumber themselves of one-half of the responsibilities of their calling, and escaped all obligation of studying the laws of color, or of entering on the large field of its application to architecture; while our painters, partly because they lacked the opportunity, partly, it is true, because their art had ceased to be executed for the public benefit in the old sense, had ceased to regard wall-painting as their legitimate work, and had so completely sunk into the habit of treating only small subjects in a small way, that it will take an age to develop in them the power of dealing properly with those large wall-spaces which present them with the grandest opportunity of achieving real distinction. It is abundantly clear that those who argue against the application of color to architecture, do so without the authority their ancestors would have given them. Of late years much attention has been devoted to this point; there has been considerable discussion, and in the end, though there has been much difference of opinion as to the extent to which color was applied by the Greeks and Romans, there has been none as to the fact that, at any rate, some introduction of color was well-nigh invariable in their work. Professor Semper, of Berlin, in treating of the origin of architectural polychromy, proves that the Syrians, Persians, Egyptians, Chinese, Indians, Jews, Phœnicians and Greeks, all, used color in their

architecture and sculpture; and we may safely conclude, therefore, that there is no country which has been in any way remarkable for its architectural monuments in which the necessity of the combination has been ignored or forgotten. This statement is sufficient on the subject, so far as it affects all ancient schools of art.

If we turn to later times we shall discover in all the schools of mediæval artists a still greater and more pronounced adhesion to the same principle. It seems, indeed, almost superfluous to say that there are most abundant evidences of the fact that the architects of the Middle Ages were seldom satisfied until they had covered their walls with color—in one place, with those in which nature has been so lavish in marble and precious stones; in another, with the artificial tints of tiles and bricks; in another, with the bright stencillings of gay diapers over entire walls; or, lastly, in the teaching of Scripture story, or legend, or history, by the aid of the greatest painters of the day.

If we look, for instance, to Italy, we shall see what a lesson these artists have left us. There is, for instance, the Arena Chapel at Padua, designed by Giotto, and then painted by him with his own hands in such a fashion that, to the present day, this simple little room—some 20 feet by 40 feet in its dimensions—is one of the greatest shrines in Europe for all lovers of Christian art; and again, in that far grander work, the noble church so nobly stationed on the steep slopes of the Apennines, at Assisi, we see how Cimabue, Simone Memmi and Giotto, and many others, hoped to cover with pictures, conceived in a really divine spirit, the walls which would otherwise, no doubt, have been resplendent with the less artistic, but still most effective, labors of the patient stenciller. The same lesson is taught if we look at the Campo Santo at Pisa and see how Andrea Orcagna, the great architect, painter, sculptor and poet, and besides him a succession of artists, among whom we count Buffalmacco, Simone Memmi, Giotto and Benozzo Gozzoli, helped, each in his turn, in this illumination of architecture; or at the Church and Refectory of Sta. Croce, and the Church and Chapter-house of Sta. Maria Novella, and the crypt of San Miniato, Florence; or at that masterpiece of decorative art, St. Mark's, Venice, where precious marbles and mosaics, rich in gold and bright color, almost dazzle the eye with their magnificence, but combine to make an interior in which none can fail to admit that the effect of the mere architecture of the building has been extraordinarily enhanced.

Nor was such practice as this peculiar to mediæval artists; for the earlier Renaissance men had the same feeling in some degree, and Benozzo Gozzoli has shown us in his exquisite paintings in the chapel of the Riccardi Palace, at Florence, and Perugino and Raphael in the Stanze of the Vatican how their work might be best adorned.

But it was not only in Italy, the land *par excellence* of color, that men had a true appreciation of its value. It need hardly be told how St. Louis, in the palmiest days of the French kingdom, covered the walls of the Sainte Chapelle, at Paris, with gold and color and mosaic, and filled its windows with stained-glass of the richest hues, so that to the present day it is an example of the most gorgeous coloring it is possible to conceive; or how, when the English monarchs wished to rival the zeal and enthusiasm of St. Louis, they gave, in St. Stephen's Chapel, at Westminster, an example equally sumptuous and rich in color; while at the same time, not only in the English cathedrals, but in almost every parish church throughout the country, traces of more or less coloring are found to have existed over nearly the whole surface of the walls. Taking for granted, therefore, that every one will allow that it was, at any rate, the intention of all architects, so far as possible to combine color with form, it remains to be seen how this was accomplished. There were two great and distinct orders of architectural colorists—the constructional and the decorative. The first were those who built their walls partially or altogether with colored materials; the second, those who so built them that color might afterwards be added, and with an especial view to its introduction. It is of the works of the former of these two classes that it is right to speak first, because the way in which they did their work was, on the whole, a more thoroughly enduring and proper way than that of the other school. It was also more definitely the work of architects.

The works of the constructional school of architectural colorists may be subdivided into two classes: (1) Those in which the colored materials were part of the substance of the walls, and necessary for the stability of the whole fabric; and (2) those in which the walls were covered with decoration, such as mosaic or tiles, or thin veneers of marble, which had nothing whatever to do with their structural requirements. The first class was that which was, on the whole, both the best and the most frequently adopted. The few examples we see in England, and, indeed, generally throughout the north of Europe, belong to it. The poverty of England in colored stones or marbles will account sufficiently for the comparative rarity of the examples we can adduce. Among them are many of the Northamptonshire churches—as Irchester, Strixton, and St. Peter's, Northampton—which are built with horizontal bands or courses of dark-red and light stones, used alternately; in other districts we find courses of stones and flint, alternately, as in the church at Penton Newsey, near Andover, and in a gateway at Rochester. In others, flint and stone are used, but with inferior effect, in a regular checker-work over the whole surface of the wall. In the church standing close to the north side of Rochester Cathedral, a course of checker-work of flint and stones is introduced under

one string-course, and two courses of flint, separated by one of stone, under another. The Churches of Essex, Suffolk and Norfolk abound in examples of tracery, and other devices formed by cutting out patterns in the stone, and filling them in with carefully cut and faced flints of very dark color, so as to produce a very elaborate system of decoration in two tints. In the cloisters of Westminster Abbey the groining is executed in chalk with occasional lines of dark stones at regular intervals. Finally, throughout the thirteenth century the use of polished marble columns, of a color much darker than that of the materials of the walls, is one of the most marked features in all the best English work, and cannot properly be omitted in any catalogue of modes of colored construction.

Every one of these arrangements is noticeable as having been introduced intentionally, and with a sole view to variety of color. In France, examples are much more numerous than in England and the very interesting church at Vézelay is an early instance of the alternated use of dark and light stones in the interior as well as the exterior. Sta. Maria in Capitolio, at Cologne, had some good remains of the same kind; and St. Anne's cloister, at Lübeck, is built with alternate courses of red brick and stone. It is in Italy, however, that we find the most plentiful store of examples of this kind of work, of which a few may be mentioned. The cathedral, baptistery, and the buildings generally, in Pisa and Lucca are built, both inside and out, with white stone courses, with thin courses of black marble occurring at about every fourth course. This is a very delicate and effective mode of dividing the wall-space. The baptistery and campanile of the cathedral at Pistoja, and the campanile of Siena, are built in almost equal courses of black and white. In Genoa we find the same equal division of the courses in the façades of the Cathedral and of the Churches of San Matteo and San Stefano. At Bergamo the Porch of Sta. Maria Maggiore is executed in red, white and gray marbles. It is of three divisions in height, the highest stage being entirely of gray marble; the middle stage has all the moulded parts of red, and the arches and the spandrels of gray marble; the space at the back of the porch and over its main arch are built in equal courses of red and white; the groining is in black, red and white marble, fitted to diamond-shaped panels, and all the shafts are of red marble. The whole design depends for effect almost entirely upon the arrangement and counterchanging of the three primary colors, the white becoming by age sufficiently yellow to take its place very well as one of them.

Similar to this in the colors of its marbles is the thirteenth-century front of the Broletto or town-hall at Como; but here the courses are very irregular in their height, and not arranged after any symmetrical rule. The campanile of the Cathedral at Florence is the last example of this class that need be mentioned, and it is the very finest of all: here the component colors are red marble, of Perugia, green serpentine and white marble (the latter two have the effect at a slight distance of being black and yellow); but these colors are further varied by the introduction of very elaborate patterns inlaid in delicate marble mosaic on almost every available space, while glass mosaic is introduced behind sculpture in the stages near the ground, in order to make the figures as distinct as possible. It is important to observe that in this unsurpassed work Giotto showed not only his sense of the value of color, but equally his feeling for true architectural proportion. No building was ever more carefully designed in this way, and the result is so great a success in outline, in detail and in color, as to make it one of the most worthy of study of any work in Europe. Here it may be observed, that in the doorways of St. Mark's, Venice, we have examples of exquisite beauty, of sculpture, of foliage and figures in marble set off by a ground filled-in entirely of mosaic, similar in idea to the way in which figures are set upon a mosaic ground in Giotto's work at Florence.

In the great Church of San Petronio, at Bologna, the flat space between the two stone-moulded plinths is of red marble and above the plinths the walls are all of red brick. This colored plinth is very fine in its effect, and dignifies the whole building. The upper part of the Ducal Palace and the house called the Ca d'Oro, at Venice, are examples of a colored checker-work over the whole surface of the wall. In the Ducal Palace this is arranged so as to form a regular diaper divided by lines of white and gray marble.

The monument of Can Signorio, one of the Scaliger family, in the churchyard of Sta. Maria l'Antica, at Verona, is a good example of the successful application of colored materials to works of delicate detail. It is a lofty erection composed of a great canopied monument in the centre, with a number of smaller canopied niches rising out of it, or standing upon shafts around it. The base is all of red marble, the niches have red-marble columns, white gables and red pyramids above them. The central mass is mainly of a yellowish tint, with white-marble niches and pinnacles of red marble, and, owing to the extent to which the colors are counterchanged, the effect is very good. The west doorway of Sta. Anastasia, and the north doorway of San Fermo Maggiore, both at Verona, are beautiful examples of the simple alternation of white, red and gray marbles in the jambs and arches; and in both these cases the extreme beauty of the effect appears to be owing to the delicacy and harmony of the tints of the marble employed, and to the absence of the very violent contrasts of color which are sometimes seen.

There are other examples of buildings decorated with inlaid ornaments which belong to this class; such are some of the French

churches, as, e. g., those throughout the Puy de Dome, of which we may select as a typical example Notre Dame-du-Port, Clermont-Ferrand. Here the lower part of the walls is of uniform color, the windows have alternate *voussoirs* of light and dark stone, and the wall above them is entirely covered with a mosaic diaper; the walls are crowned with a heavy cornice supported on corbels, between each pair of which the space is filled-in with a star in mosaic. Similar examples occur at St. Etienne, Nevers, in Poitou, on the banks of the Loire, and frequently in volcanic districts, where dark and light materials, tufa and scoræ abound and suggest the treatment which has been adopted. Some of the churches at Pisa are very beautifully and delicately enriched by inlaying. The little Church of San Matteo has around all its arches inlaid chevrons, diamonds, or triangles, and a line of inlaying under the moulded eaves cornice of the aisle. The front of San Michele, also at Pisa, is covered with inlaid patterns filling-in the spandrels, or following all the architectural lines of the arcading with which the whole upper part is covered; similar inlaid patterns are to be seen between corbels under the tympanum of the south door of San Paolo, Pistoja. An inlaid pattern is carried along under the string-course below the aisle windows of the Cathedral of Lucca, and here, as in the other examples which have been given, the inlaid material is dark, on the white ground of the stone wall, and the object of its introduction was, no doubt, to give as much emphasis as possible to important features. In the case of the windows at Lucca the label is of dark marble, whilst the rest of the head of the window is white. In the Church of San Domenico, Perugia, a window-arch is built of gray stone, with occasional *voussoirs* of red, and on these, in order to make them as conspicuous as possible, small rosettes are carved. Another window in the same church has *voussoirs* of red and white stone, and a red shaft for a monial. In the Palazzo Pubblico, of Perugia, the cornices and strings have ranges of corbels, the spaces between which are filled-in with red marble to make the shadow deeper and more effective; in the windows, the shafts are of red marble; and in the doorway, the tympanum is of red marble with figures in white in front of it. The west front of Lucca Cathedral is inlaid in the most elaborate manner, the upper part with illustrations of field sports, and the lower part with geometrical patterns. Here, too, and in Giotto's campanile at Florence, the shafts themselves are inlaid in the same way as the rest of the work.

In the arcades outside the walls of San Fermo Maggiore and in the windows of the little church opposite the cathedral at Verona, great effect is produced by the ingenious combination of brick and stone; and throughout the north of Italy examples of this sort of arrangement of color occur, and there are none more easy of imitation or reproduction with good effect at the present day. In Santa Antonio, at Padua, an arcade of brick and stone in the west front has all its spandrels filled-in with red marble; and the case of the east end of the church at Murano will be remembered by all who have read Mr. Ruskin's "*Stones of Venice*." Here the substance of the walls is red brick for a few feet from the ground, and above that a rather coarse yellow brick; red brick is used in place of labels, etc., to define the arches; the shafts are of various marbles; and courses of marbles cut in triangles, and alternately colored and carved, are also introduced.

The examples here given are enough to show, at any rate, the general prevalence of a love of color in the Middle Ages throughout Europe. It would be somewhat beyond the scope of the examination of such a subject from an architectural side to go at any length into the mode of decorative painting, which was almost universally adopted at the same time. In this application of color all countries agree, and there is hardly room to doubt the beauty and expediency of the practice. The passage to the Chapter-house, at Salisbury, the early Church of St. Mary, at Guildford, the chapels at the east end of Winchester Cathedral, are interesting examples of early work. The Norfolk screens and roofs are still more interesting and beautiful works of the richest description, and so numerous were these that at one time no church seems to have been thought furnished which had none of this kind of decoration. These had every portion of their moulded surfaces adorned in the richest way with gold and colors, while their solid panels were covered with pictures of single figures or subjects. English roofs were decorated in the same fashion, and of these the finest examples are in Peterborough Cathedral and St. Alban's Abbey Church. If we turn to the pages of illuminated manuscripts, we shall find views of towns in which whole houses are decorated with masses of color on the outside to distinguish them from their neighbors. And in rather later times, as we see in Florence, in Brescia, at Augsburg, at Meran, and often elsewhere, most brilliant effects were produced by painting subjects on the external walls of palaces and houses. But, generally speaking, beautiful as this sort of decoration was, it erred rather in ignoring to a considerable extent the architecture which it adorned — unlike the earlier works where the effort of the colorist was usually and rightly to make all the mouldings or members of the work decorated more distinct and intelligible than any can be in the absence of color. Without colored illustrations of an elaborate description it would be impossible to explain any or all of the features of architectural polychromy. But enough has been said to show that the subject is one not only of interest to architects, but of importance to all who care for architecture, for it is hardly possible that works such as those which have here been shortly referred to should be passed over by the student or amateur of architecture as though

they had no interest for us, and it may be confidently asserted that modern schools of architecture cannot with safety ignore so interesting a development of the art.

A. T. SIBBALD.

THE RELATION OF ARCHITECT AND CLIENT.¹

VERY few young architects, and not many old ones, have any adequate idea of the immense responsibility that they incur in carrying out their professional work. They hear of the old French architect, who, after a life of honorable and successful practice, was deprived of all his property, and thrown into prison, because some sketch-plans which he had made at the solicitation of one of his friends were carried out in such a way as to involve the failure of the building erected from them; they read in the newspapers of the St. Louis architect, who had to pay five thousand dollars damages to the widow of a man killed by a mishap during a building operation, carried out solely by the contractors; or about the Chicago firm of architects, who were pursued in the courts for manslaughter, because, as was alleged, they were not present to see that the contractor set properly a roof truss in one of their buildings; and yet they go on in the same old way, trusting to luck to prevent anything of the kind from happening to them.

Trusting to luck is not the best way of guarding against accidents, and I propose to point out in a few words how architects may best prepare themselves to meet a liability, the money-value of which has been estimated by the French courts at one and one-fourth per cent on the cost of the building carried out under the architect's direction, while it is considered here, by those best able to appreciate it, so grave that I have heard a lawyer of experience say that, if he were an architect, he would never hold any property in his own name, but would put all his savings in the name of his wife, or a trustee of some kind, to prevent them from being swept away as the consequence of some oversight, or the mistake of a subordinate, or, perhaps, by the fault of some other person, simply fastened on the architect by the whim of a jury.

The first, and always essential condition of the safe practice of our trying and responsible profession is constant care. It is, in one way, a misfortune for us that we have to be not only engineers and business-men, but artists; and the sympathetic, enthusiastic temperament which makes a good artist is rather liable to be led away from the cold consideration of dollars and cents which is essential to the business-man; but it is quite possible for the most brilliant artist to guard himself so effectually against being carried off his balance by passing fancies as to become also a model man of business, and the quick sympathy and active imagination belonging to the artistic character may be, and should be, useful to the architect in applying that best of all rules for determining one's conduct in affairs with other people—a rule which the architect should engrave in large letters on his mind—try to think how you would feel about the matter if you were in the other man's place.

It is safe to say that nine-tenths of the law-suits in the civil courts arise from failure to apply this maxim in the early stages of the controversy between the parties, and we shall do well to exercise our imaginations in that way on every possible occasion. Let the architect, while making his plans, frequently put himself mentally in the owner's place. He will find that the little difficulties of arrangement, which, as architect, he had smoothed over somehow, as being of little moment amid the general merits of the design, will have a very different aspect to him as owner. As architect, for example, he will probably attach very little importance to the location of the bath-room over the front porch, or the introduction of a few extra winders in the back stairs; but, as soon as he assumes, in imagination, the character of the owner, he will see in his mind's eye the group of plumbers, hot-water pails, disconsolate housekeepers and wondering children, that will surround the water-pipes in his bath-room every cold morning, or will hear, in fancy, the crash of the servants, landing in a heap at the foot of his insufficiently-studied staircase, and will apply himself, in consequence, with renewed vigor to the task of re-arranging his plans, until they satisfy him as householder as well as architect; and, a little later, when he hears of one of his brethren, who has been compelled by a court to pay the cost of altering the plumbing in a building, to get it out of reach of frost, or has been sued for damages resulting from a fall down stairs carelessly planned, his conscience will reward him.

Not only in the designing of his buildings, but still more in carrying them out, must he have constantly in mind, not alone the interests, but even the prejudices of the owner. It is common for young architects to imagine that their quality as artists gives them authority to act for their clients in matters of taste; as, for instance, in the selection of decorations, mantels, and so on, and they make contracts for such things, without their clients' knowledge, only to discover, perhaps, that their client repudiates their interference, and that they have made themselves personally liable to the dealers for the amount of the bills. It is true that the owner may expressly authorize the architect to select furnishings, and contract for decorations, and, if he does so, he will be bound to pay for whatever the architect furnishes for him under this authority; but such authorization should be given in writing, or before witnesses, and the architect is bound strictly by its terms.

To many architects, both young and old, this limitation of their artistic discretion is very annoying. "What!" they say, "can the owner do what he chooses with my design, paint the outside in red and green stripes, put a tower on the piazza roof, or paper the front hall with imitation malachite, relieved with dashes of vermillion, and have I, the artist, the responsible author of the design, no right to interfere, or to confer a benefit on him by exercising my superior knowledge on his behalf, without having to ask his leave to do so?" In France or Italy, the answer to such a question might be doubtful, for art and artists are both respected there; but, in this country, the unanimous answer of the courts would be that the owner is sole master of everything relating to the appearance of his building, and that the architect cannot involve his principal in a penny of extra expense for artistic purposes without his special and express authority.

In regard to matters of construction, the case is different. Here, even in this country, the authority of the architect is paramount to that of the owner; and while the owner would have a just cause of complaint against the architect if the carrying out of the latter's plans and specifications involved constructive difficulties, the occurrence of contingencies which could not reasonably have been foreseen by the architect might make it necessary to take special precautions; and, in such a case, if the necessity were urgent, and the owner could not well be applied to for special authority, the architect is not only entitled to order the necessary work to be done, and to make the owner responsible for payment for it, but is bound to do so, and the owner would have a good claim for damages against him if he stood by and saw the building under his care suffer injury through his neglect to exercise this authority.

Between the responsibilities which he incurs for doing anything, and those which fall upon him if he does nothing, the architect's professional career looks a good deal like a perpetual voyage between Scylla and Charybdis; but the channel is not so difficult to trace, if one keeps in mind the principle of putting one's self, in cases of difficulty, in the place of the owner. Let the architect imagine what he would say, if he should order a new suit of clothes, and the tailor should send them home with a lace frill around the bottom of the trousers, and a substantial addition to the bill on account of this extra Elizabethan ornament, and he can judge of the feelings of the owner who finds that his architect has ordered mantels built for him, at a cost far exceeding that of the job-lot of ready-made ones which he had just agreed to purchase; or had secured for him a Morris couch for the alcove which he had intended expressly for his grandmother's haircloth sofa; while, in the same way, the sentiments of an owner toward an architect who will take no responsibility in looking out for his pecuniary interests are very similar to those that would be entertained by the architect himself toward a negligent and careless assistant.

To the young and generous practitioner, there is something revolting in the idea that it is necessary to guard himself against his clients, and he would generally much prefer to wear, as it were, his professional heart upon his sleeve, throwing himself with enthusiasm into what he imagines to be his employer's wishes with regard to his new building, and sacrificing, with conspicuous recklessness, his time and trouble to that end. So far as earnestness for the owner's interest is concerned, this is all very well, for zeal must, in young architects, make up for their want of experience; but it is the zeal tempered with discretion that will be of most benefit to his patron, and discretion will soon teach him that his patron's interest, as well as his own, is best served by his own steady maintenance of his professional position. If he shows an incautious ardor in seconding the owner's wishes in regard to the building, without keeping strictly within the limitations of the contract, he is likely to find that he has been regarded by the contractor as the agent of the owner for waiving the contract stipulations, and that his zealous suggestions have formed the basis for a long bill of extras, which his departures from the proper judicial attitude of the architect have precluded him from rejecting. Contractors are quick to see, and take advantage of, this sort of carelessness on the part of the young architects, and the latter should make up their minds that this is one of the disadvantages of their inexperience, which they should make good to their patrons by special caution.

In general, there is but one rule to be remembered in regard to the architect's authority,—that it is exactly what is granted him, by agreement of the owner and the builder, in the contract, and neither more nor less. If the contract says that the work shall be satisfactory to the architect, it must be made satisfactory to him, if it has to be pulled down and rebuilt a hundred times in order to make it so, provided that his dissatisfaction is genuine, and not fraudulent or wilful. He is not obliged to give any reason for his dissatisfaction; it may even be proved, as it has been in one case, that the work, as executed, is better than it would be if it were done as he wants it; nevertheless, the contract will hold good, and the work must be done over again to suit him, or the contractor cannot recover payment for it. His objections need not even be reasonable. It has been proved that the dissatisfaction was due to ignorance of the subject, but without avail, the law holding that, when one undertakes to do work to the satisfaction of another, his contract is not fulfilled by doing it to the satisfaction of some more learned person. In most contracts, this clause gives practically all the authority that the architect possesses over the conduct of the work. Although contracts often say, very unwisely, that the work

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is to be done under the direction of the architect, this clause has not much meaning, for it does not give him any power to change the provisions of the contract and specifications, and to carry these out to his satisfaction obviously involves compliance with the conditions on which, as he informs the contractor, his satisfaction will depend. To give the architect, in so many words, the direction of the work, gives him, therefore, no more real power in looking after the owner's interest, while it may involve the owner in liability for accidents occurring during construction.

Many contracts constitute the architect arbitrator between the owner and the builder, in disputes over matters concerning the building; and a few give him authority to order extra work done. In regard to arbitration, it is well enough to appoint the architect arbitrator between the parties. He always knows more about the subject-matter of the dispute than any outsider, and generally decides fairly; and his services cost nothing; while a regular arbitration, or a law-suit, is almost invariably, after great trouble and expense, decided by the adoption, by the arbitrators or the jury, of the architect's opinion, as shown in his testimony. As to the architect's authority to order extra work, independent of the owner, it is perhaps sufficient to say that this provision in contracts is becoming obsolete in this country. It is of very little advantage to the owner, and is a burden and nuisance to the architect, and the misunderstandings which arise between the owner, contractor and architect, where it is inserted, and acted upon, are so frequent and serious that it is better omitted.

The contract being signed, and the authority of the architect defined by it, let him beware of exceeding this authority in the slightest degree. Many architects appear, when the construction of the building is fairly begun, to put the specifications away, and forget all about them, giving orders as if no document existed, to show in black and white just what the contract required to be done. It is hardly necessary to say that this is a most hazardous proceeding. Unless the contract expressly gives him the right to do so, the architect has no authority whatever to alter or waive a single item of the contract between the owner and the builder, and, if he does so without authority, he is liable in damages to the party injured. If he sees that the interest of the owner would be promoted by a modification of the requirements of the contract or specifications, he may very properly suggest to the owner the advisability of having the modification made, of course by the owner's order; but he should not order it himself, and still less should he take upon himself to authorize the omission of any work that the contract and specifications call for. Clients of a dyspeptic disposition sometimes reproach an architect who points out to them the propriety of a modification of the contract with having failed in his duty in not having thought of that improvement before; but neither the law nor common-sense expects an architect to make plans at the outset which cannot be improved upon, and the bashful architect, who would rather sacrifice safety than confess that he is not infallible, is likely to find his client still more dyspeptic, and with more reason, when he comes to inquire, at the completion of the building, into the cause of the departures from the specification which he has discovered.

Supposing that the architect has set out, with well-matured plans, a good and full specification, a clear and precise contract, and a settled resolution not to exceed his authority, and to try to look at the owner's side fairly, in case of differences of opinion, he has still something to do in the way of guarding himself against intentional deception and oppression on the part of contractor, or owner, or both. So far as private owners are concerned, it is only fair to say that the great majority of them mean to treat their architects honestly, and even generously; and that, in the disputes which arise from their connection, the architect is generally to blame, either for having really neglected his client's interest, or for having failed to come to an understanding in proper season as to what he should be expected to do, and what he should be paid for doing it. Owing, no doubt, to the pernicious practice, which formerly prevailed much more in the profession than it does now, of offering to "submit sketches," without charge, for projected buildings, most people have a most exaggerated idea of the amount of work that an architect is willing to do for the bare chance of being employed; and many are the cases in which an owner, who may be a building-committee, or a clergyman, leads an architect along from sketch to sketch, alternative plan to alternative plan, supposing, all the time, that the architect is doing, what he supposes to be, this trifling service as an amusement, or as a favor to the church, while the architect, as the number of drawings, and charges for draughtsmen's time, pile up, grows more and more discontented, and anxious to know when he is going to get paid, until, in desperation, he sends in a bill; and from that time there is war between him and those who supposed themselves to be his patrons. In order that such mishaps may be avoided, the architect should set a fair value on his work, and should give notice, when he intends to ask payment, before he does the work. There is no objection to an architect's doing a certain amount of work gratuitously. Many building projects cannot be carried out without interesting a number of persons in them, and, in order to interest them, it is often necessary to have plans, and perhaps estimates, ready to show them. In such cases, some one man usually goes to an architect of his acquaintance, and asks him if he will make such plans, with the understanding that his time may be lost, if the project fails. The architect is, of course, free to accept or decline the proposal, but if he accepts what is, in most cases

honestly meant to be a favor to him, he should make his acceptance distinct in its terms, showing that he considers his services of value, but that he consents to make an important contribution of work, to assist in carrying the project through. In this way, all parties know what they have to count upon, and the architect will maintain the essential point of the value of his work. It should not be forgotten that most people value professional service in proportion to what they pay for it; and the architect who is ever ready to submit a sketch on approval is very apt to find that he is set aside in favor of some professional brother whose superior merit consists mainly in the fact that he will do no work without being well paid.

Where, however, the person employing the architect has no claim to gratuitous service, let it be distinctly understood just what the charge will be before anything is done for him. If he does not wish to pay the charge, the architect will have escaped a quarrel, as well as a waste of time, and if he is willing to pay it, the whole affair will then go on smoothly and satisfactorily to all parties. It may be said, in passing, that the would-be clients who think that the proposed charge is too high very often come back subsequently with altered notions on the subject, and make admirable clients; while, unless this preliminary explanation had been gone through, their relations with the architect would probably have resulted in making them his enemies for life.

With public bodies, or the representatives of such bodies, the architect must be far more cautious. It would take many hours to detail the disappointments, the deceptions, and the swindles which architects suffer from committees. As individuals, the members of such committees may be perfectly honest, but where the responsibility is divided, the sense of honor is divided also. To my mind, architects should show no favor to any representative whatever of any public body, or place any confidence in them. If such bodies wish for professional service, let them contract for it on proper terms, and by a contract which cannot be broken or repudiated. The profession has seen enough of poor old architects, hanging year after year around the lobbies of Congress, trying to urge the passage of a bill to reimburse them for work done for the public benefit, and under the order of Congressional committees, but without the proper guarantees of payment, and of men of talent, dying in the prime of their faculties, sometimes even by suicide, through the burden of ingratitude and oppression which they have endured in trying to serve their fellow-citizens; and it has made up its mind that hereafter the public shall come to it honestly, or shall go without its services.

For these reasons, let the architect who has to work for a State, or town, or city, or for a church, guard every step. In such cases, where building-work is done in pursuance of some statute, or ordinance, accompanied by a definite appropriation, it is of the greatest importance that the cost of the work shall not exceed the appropriation. If the young architect will reflect, he can easily see how embarrassing is the position of the members of a public commission, or a building-committee, who are compelled to report that they have, without warrant of law exceeded their appropriation. Such a confession is at once seized upon by the political opponents of the commissioners, to injure them; and they are tolerably sure to visit their resentment on the architect, if he can be made to appear at fault in the matter. He should, therefore, never be at fault in this way, either really or apparently. If the appropriation is inadequate, as it usually is, he should warn the commission of this fact at the outset, fortifying his opinion, if possible, by a careful estimate, from some contractor of reputation, as soon as the plans are in shape for estimating. If the commissioners grumble, it is better to have them do so at first than afterwards, and the architect may be well assured that, in their hearts, they will prize him all the more for his disposition to see that they do not get themselves into financial trouble. If they tell him, as may happen, that there will be more money ready when the first appropriation is exhausted, he may take them at their word; but he should not fail, in this, as in every other case where he talks of business matters, and particularly in regard to the cost of the building, with them, to make notes of the conversation immediately afterward, in the memorandum-book which every architect should always have with him, recording, as nearly as possible, what was said by each party, and making a list of the persons present at the discussion. Such a precaution may seem to show a painful lack of confidence in the members of the commission, but it is absolutely necessary. Even if the architect is not obliged, later, to use his note-book for summoning witnesses in his own behalf, and for cross-examining the people who are endeavoring to throw on him the blame for troubles in connection with the building, it may be of immense value in various ways to the commissioners themselves. Remembering, therefore, that in all public work financial precision is superior to every other consideration, the architect, armed with his well-filled note-books, and with skill, diligence and honesty, can pass with tolerable safety through the dangers of public employment; and the same precautions will help him in his relations with private individuals. In most cases, the financial consideration is not really so paramount in private as in public work, as a private owner does not have to get a law passed to enable him to put his hand in his pocket for a little more money to carry his building to completion; but it must never be forgotten that if a man wishes to quarrel with or defraud his architect, he always begins by charging him with having exceeded his instructions in regard to the cost of his building; and it is useless for the architect to explain that the owner instructed him to introduce features which could not be included in the speci-

fied sum, courts always holding that where the owner's instructions in regard to the cost of his building, and its accommodation, or design, are incompatible, the architect must be ruled by those relating to the cost; so that, unless he can prove, to the satisfaction of a jury, and against the solemn asseverations of the owner, that he gave plain warning to the owner, in all cases where the latter expressed a desire for increased accommodation, or a richer style, that this would involve greater cost, in the establishment of which his note-book will be of inestimable value, he must be prepared to find that the jury will side with his opponent.

If he should be so unfortunate as to have any of his controversies decided in court, he will find it desirable to know just what the law requires of him as a professional man. Many clients imagine that it is the architect's duty to divine exactly what his client wants, to satisfy all his requirements, at the first trial, in a plan which will need no modification, and can be carried out for just what the client wishes to spend, and, during the progress of the work, and afterwards, to guarantee the exact compliance of all the contractors with their agreements. Fortunately for the profession, this view is an erroneous one. The law is well established that what is required of the architect is reasonable skill and care, with, of course, perfect honesty. What is reasonable skill and care is, by the best decisions, a matter to be decided in accordance with the testimony of other experts, that is of architects, and, perhaps, builders; that is, the jury is not to be allowed to infer, from the circumstance of defects in a building, that the architect is at fault, but must ask other architects whether his conduct was such as reasonable professional care and skill required. The same rule applies to the architect's responsibility for defects in workmanship. It is not he who has agreed to build the house in accordance with the specifications, and he cannot be held, under our law, accountable for the contractor's misdeeds, unless he has failed to show reasonable care and skill in supervision, a matter which must, as before, be established by expert testimony, not by inference.

It would be easy to add much in regard to the precautions which the architect should observe in other relations, but the principle is the same in all; that his client's pecuniary interest is the first to be considered, and that he should give fair warning where extra cost will be incurred; and should be prepared to prove that this warning was given; and that, having thus looked out for his client's pocket, he must do what he is instructed to do, skilfully, diligently and carefully, without assuming any authority not expressly delegated to him, and, at the same time, without abandoning the authority which is so conferred upon him.

ROSTOCK.

FROM Berlin to Rostock is a trip of four or five hours across the flat land of Northern Prussia, then over the breadth of Mecklenburg to the shores of the Baltic Sea. It is on the high route to Copenhagen, from which city it is, in direct line, only about a hundred miles distant. It is but a short ride over the channel to the Danish islands at this point, and the tall church towers of Rostock guide the mariner nearly all the way. Rostock was one of the old cities of the great Hanseatic League, next to Lübeck the strongest and richest of them all; but she holds political relations to-day with Mecklenburg, one of the most ancient, feudal, non-progressive and, governmentally, most strangely equipped of the States which compose the modern German Empire. The Grand-Dukes of Mecklenburg trace themselves back to the twelfth century, and theirs is the only reigning house in the Western World of Slavonic origin. It is their aim to keep up the purity of their race by constantly marrying into the Russian Royal family, so that they may be qualified to sit at the head of the meeting when the Pan Slavists realize their dreams and break over the bounds into Western Europe.

Though not large if it had been kept together, the country was obliged to divide in 1701, owing to the lack of proper laws in regard to primogeniture, and two Grand-Duchies were formed instead of one, Mecklenburg-Schwerin and Mecklenburg-Strelitz. The latter is a bunch of land located in a kind of rectangle to the southeast of Mecklenburg-Schwerin, only 1,131 square miles in area. Mecklenburg-Schwerin, on the other hand, is about five times this size. More than one-half the land in the two duchies belongs to the Grand-Dukes, and most of the inhabitants live on it in a kind of feudal personal relation which has survived out of the Middle Ages. The population of both duchies is not much over 600,000, and the statistics show that it is decreasing. Most of the people outside of the cities are engaged in cattle-raising and agriculture. A large part of the land is still covered with woods, in which the Dukes rear deer for their private purposes and for the venison markets. The Government of the smaller Mecklenburg, Mecklenburg-Strelitz, is the exclusive affair of the Grand-Duke. The whole State revenue goes into his own pocket. The people are his employes and feudal vassals. He is one of the wealthiest of German sovereigns. Mecklenburg-Schwerin has a slightly more modern system of administration, but the people have no part in the Government. The affairs of the two duchies are in many respects managed in common. There is a common Legislature which meets for a few weeks every autumn, none of whose members is elected by the people. The Government, however, is mostly in the hands of a small committee, in which the Grand-Dukes, the knights and the cities have their representatives. The courts of justice also operate in common for the two

duchies. It is only by some such knowledge as this of the separate States which go to make up the German Empire that we can have any proper understanding of those narrow, conservative influences which are constantly cropping out from the national Government at Berlin.

Rostock is the largest city in Mecklenburg. It has about 45,000 inhabitants, while Schwerin, the capital of the bigger duchy, has but 33,000, and Neu Strelitz, the capital of the smaller, only about 9,000. Rostock is in some senses the capital. There is a palace here for the Grand-Duke, Friedrich Franz III of Mecklenburg-Schwerin, though he seldom occupies it; also the Supreme Courts of the two duchies, the Chambers in which the so-called *Stände* meet; and that the Legislature itself does not favor the city when it assembles is because it prefers to camp around in alternate years at two little villages in the interior, down among the lakes and fir-trees of this antiquated realm. The city is also the seat of the 475-year-old University of Mecklenburg, and it is the centre of about all the culture and civilization the little land is able to muster. It is by all odds the most interesting thing in Mecklenburg, and with its mammoth old churches, its curious houses, its walls, gates, and moats, and the checkered history of its brilliant past, no traveller in these parts ought to pass the city by.

Rostock is situated up a bay of the Baltic Sea, about six miles from the coast. The bay is called a river, the Warnow; but this does not prevent it from having the character of a bay, for above the city it dwindles suddenly away and is navigable for only the smallest boats. In the bay proper the depth is such that large ships may enter, and were it not so far to the east it might have harbor adaptabilities of a kind to eclipse Hamburg. It was its harbor which early made the city such a powerful member of the Hansa, and which gives it still to-day one of the strongest merchant fleets in the Baltic Sea.

Rostock was founded in 1170, though much earlier than this there had been a heathen settlement of Wends on the opposite bank of the river. It reached the pinnacle of its power and prosperity in the sixteenth and the beginning of the seventeenth centuries. Its navy was then the terror of the northern seas; its walls and gates repelled every attacking foreign host; its merchants were the types of luxury and wealth; its university drew to it the ripest scholars of the time, and students came from many lands. The history of this old city is, in short, an Arabian Night story, which the visitor comes to feel as a modern reality as he walks through the ancient streets, among the ancient walls and houses, under the ancient arches adown which portcullises used to fall, over the wharves where for centuries have trodden the feet of trade, and into the venerable churches, the rare religious monuments of a wealthy past. The city's historical character unfortunately suffered much by a great fire which broke out in 1677, completely destroying many of the smaller buildings and damaging the churches and the larger buildings in such a way that their disfigurement is still noticeable at the present day.

Perhaps the first thing to attract a visitor in Rostock would be the remnants of the city's great fortifications. The city at the height of its power was completely enclosed in walls, outside of which, on the landward side, was a moat, one of the most extensive things of the kind in Europe. Though parts of it have been levelled off and converted into park grounds, and other parts have been used by a railroad company to effect an entrance to the town, a very considerable piece of the monstrous ditch is carefully preserved. It is no less than 50 or 60 feet from the top of the earthworks to the bottom of the stream, little though it is to-day, which flows below. Such an excavation was undoubtedly the labor of years, and is marvellous to view when it is recalled how slow and laborious were the methods for doing such work at that ancient time. Having crossed the moat, climbed the high steep bank and mounted the earthworks, there was yet a wall of masonry to pass. All these features of the old fortification system are shown at Rostock. The ditch is now grown up with trees, among which the visitor may walk and look up. He may then walk on top of the great embankment and look down. In summer there are fountains and handsome flower-gardens along these promenades, and the whole thing makes a charming, original and instructive piece of park land.

In the old days everything went by sevens in Rostock, and there was an ancient stanza in circulation among the people which celebrated this peculiarity of the city. It, therefore, had seven gates, through which outsiders, if they were friends, could come into the city. Of these, only three survive—the Petri Thor (Peter's Gate), so called on account of its nearness to St. Peter's Church; the Stein Thor (Stone Gate); and the Kropeliner Thor. These all date from the thirteenth century. The most interesting of the three, on account of its pictures and inscriptions, is perhaps the Stein Thor. The decorations are of a very ancient pattern, and the city arms are portrayed here in a particularly curious manner. A black griffin with a double tassel-hung tail, with his wings spread and his feet up ready for motion, is the symbol of the city everywhere, and it is still in use at the present day. The shields which hold the coat-of-arms are pictured on the inside of the Stein Thor as held up by two lions, which, for curly tails, long lank bodies and wicked, grimacing expression of the faces excel everything in the catalogue. This piece of mediæval art is calculated to bring forth a smile from every one who passes under this curious archway. The griffin in various attitudes is also portrayed on the other two gates. The Kropeliner Thor is architecturally the handsomest of the three. It is of great height, though it has lost most of its earlier ornamentalations.

The great churches, once he is inside the walls, will next arrest the visitor's attention. Of these there are four—St. Mary's, St. James's, St. Peter's and St. Nicholas's. St. Mary's is a curiosity which is alone worth a stop in the city to see. There are cathedrals in Southern Europe, but for the man who wants to see something new, let him come to the North. Let him visit Denmark, Sweden and Norway, and some of the Northern German cities which have partaken of the Gothic Baltic influence. He will see then what, if it is not always beautiful, is at any rate curious, and that is more than half the joy in looking at a church.

This old St. Mary's is a pile of bricks of massive and stupendous dimensions. Its walls are as thick as a castle's, and on the outside as plain and forbidding. The interest, however, centres in the interior. Here the visitor will at once be impressed with the size of the place. He will run his eyes up the high and fleckless whitewashed walls, so tall that his vision tires before it comes to the ceiling. The narrow windows reaching nearly to the roof seem also to have no end. Yet the ceiling is there, the lofty arches kept from falling together by wooden beams, also whitewashed. In the middle of each little white dome up there is a single gilt star on a blue background. Not another thing to give it color or decoration. At intervals are suspended chandeliers of candlesticks. The long chains which support these luminaries in mid-air are rough links hooked together centuries ago at some blacksmith's awkward forge. The floor is of gravestones, all bearing dates of two or three hundred years ago.

Once in the middle of the church—with a view of the altar at one end, the magnificent organ and the Grand-Duke's private box at the other, and the pulpit at one side—it is seen at once that this is no mere common provincial church. There is a simple, graceful, artistic beauty here that one may well stop to inspect. There is no way to heat such an immense place in winter, and those who come here every Sunday must sit in the cold. The Grand-Duke has provided against this. In his elevated gallery, surmounted with its golden crown and decorated with its elegant tapestries, he may in cold weather withdraw behind glass, where he can still see and be seen. Beneath the Grand-Duke's box are elevated seats, reserved and labelled for the burgomasters, the senators, the judges, the professors, etc. These benches have cushions and fur foot-warmers.

The congregation, when it seats itself in this monstrous place, will see always before it a cheerful sight. This is the burial chapel of an old Danish King. Over the door of this melancholy vault is a great funeral casket held up by two figures, whom the weight of it well-nigh overcomes. On top of this casket, lying down full-length, with his head comfortably rested on one hand, is the grinning figure of a skeleton. In the other hand it dallies with an hour-glass and the sands of time. At either end of this casket is the figure of a man and woman portrayed as warriors, with exposed abdomens which are absurdly expanded and deformed. High in the chapel, over this display, hang the tatters that are left of the war banners of the old King. This is, beyond any question, one of the most ludicrous things of the kind to be seen anywhere in Europe.

Behind the altar is a wonderful old astronomical clock which dates from 1644. It is of most peculiar and ingenious construction, the work of several local geniuses. There is also a baptismal font here which is reckoned as a treasure. An inscription upon it ascribes it definitely to the year 1290. It will be noticed that at places in the aisles and side chapels models of merchant ships under full sail are suspended from the ceiling. Rostock being a great maritime city, this was anciently done as a propitiation to the gods for the safety of Rostock mariners.

If the other churches of Rostock are not as interesting as St. Mary's, this is not saying that they are without interest. All are built in massive proportions. All are paved with gravestones. All have ships suspended from their ceilings. All have their treasured baptismal fonts. Some contain specimens of wood-carving of very curious pattern. One, St. Nicholas's, has been renovated recently. Its great arches have been closed up and the interior construction so altered that it now admits of heating, a sacrifice to history, but doubtless a comfort to those who are obliged to sit there every Sunday. Another, St. Peter's, is famous for its spire, a long pointed construction, roofed with slate, 440 feet in height. It is a guide to Baltic mariners when they are many miles from shore.

The old houses in Rostock in mid-city are a sight on every hand. These are notorious for their front gables, which go up like a stairway on each side to a central peak. This triangular-looking front is set sometimes with as many as forty windows, arranged in rows. In the first row will be only one or two, but the number increases as the space widens until the lower row is set as thick with them as sparrows on a telegraph wire. Such of them as are preserved in their original form out of the olden time, when glass was scarce, are of wood, except for a small glass eye-hole. Some of these gables are one slope, so that the rain can run down.

There are two old market-places in Rostock; immense plain squares, set with rough stones. The streets are in like manner roughly paved. Even what is new in Rostock is curious. A new monument to Blücher, who was born in Rostock, contains reliefs which represent the warrior driving the demons, bats and wolves, that is the French, out of Germany, by his victory at Waterloo. There is also a monument to the soldiers who fell in 1870-71, with a pair of cannon taken from the French at Metz.

The University was founded in 1418 by special sanction of the Pope, at a time when his consent was necessary. This makes it,

with the exception of Heidelberg and Leipsic, the oldest University in Germany. The institution got a new building in 1867-70, which is curious, like everything else in the town. The library is said to have about 150,000 volumes. It is to-day chiefly noted for its chemical school, in which department more than a fourth of its students are registered. The rules still on the books here are extraordinarily peculiar and antiquated. A new student must go and call on the Dean within a certain number of days, or be fined so much for contempt. If a student is challenged to duel by another, and does not accept within two weeks, the Faculty can oblige him to fight; and so on, *ad nauseam*.

Rostock is a city which practically governs itself. Though nominally in Mecklenburg, it, like its old Hanseatic sister cities—Hamburg, Lübeck and Bremen—has a kind of republican constitution by which it has acquired in all essential respects the rights of self-government. It has long had independent police and legislative powers, its own courts, and its own harbor and shipping privileges. It earlier could coin its own money. It flies its own flag, mounted by its own black griffin, on the high seas, and it has gone on attending to its own business and developing along its own lines, as every rightly-governed city ought. It is still subject in some respects to the ancient laws of Mecklenburg, but it has political liberties possessed by no city in Prussia. Rostock got some new grants from the Grand-Duke as late as 1887, and it looks forward to the time when it may be able to get some more. To the city belongs a great deal of property in the locality, especially along the Baltic coast. It owns about 14,000 acres of woodland on the east bank of the Warnow, known as the "Rostocker Heide." It owns the popular seaside resort of Warnemünde. Its domains, indeed, sum up to the very considerable area of more than 100 square miles.—*Ellis P. Oberholtzer, in the Philadelphia Evening Telegraph.*

ORNAMENTAL PLASTER-WORK.



F. W. POMEROY recently read a paper on "Plaster-Work" before the Architectural Association. After a few preliminary remarks, Mr. Pomeroy said: The material known as plaster-of-Paris is the basis of nearly all work I shall consider this evening, and is used by sculptors and others for taking casts, etc. It was well known to the ancients, who obtained from Syria, and probably other countries, a stone called by Theophrastus "gypos," which resembled alabaster, and was converted into plaster by burning in a suitable furnace, grinding and sifting. If one part of plaster is mixed with about two and one-half parts water, after a time it sets into a hard and enduring mass. It was employed in the same way and for similar purposes as at the present day. One of the most important deposits is that of Montmartre, Paris, but it is also found abundantly in Derbyshire, in this country, and many other parts of Europe and America. The purer semi-transparent specimen of gypsum or alabaster is used for ornamental work, such as fine masonry and statuary, and is a very durable and beautiful material for interior work. By adding a little lime to plaster-of-Paris, it causes it to set slower but increases its hardness. Substances other than lime are also employed for the purpose of rendering the mass hard; thus Parian cement consists of fine plaster mixed with alum and borax, and re-burning.

A cement used by marble masons is made of the same plaster mixed with a small quantity of alum and soda. For building-work, a first coat is generally laid on of lime thoroughly slacked (so as to be free from all tendency to contract moisture) and mixed with sand and cow-hair.

The face of this coat (which should be of considerable thickness) is trowelled or indented with cross-lines to form a key for the finished coverings. The second coat is applied when the first is thoroughly dry. [This is a necessary precaution, or the damp will work through and destroy or discolor any decoration that may be applied.] It is then rubbed with a flat board or float, so as to fill the indentations and cover the surface equally. The ornamental or finer plaster-of-Paris is then applied before the second coat is quite dry.

Many architects desire that their ornament should be modelled *in situ*, and I am fully aware of the importance of this, but have always found that it is quite impossible under the present conditions of building to carry out entirely a design of an elaborate nature, such as figure-work or intricate foliage; a simple design is possible only, and the plan generally adopted is to model in clay or wax a piece sufficiently large to form an idea of the scale and projection of the modelling, and fix it up in something like the position it will eventually occupy. As a ceiling is generally lighted from windows that come underneath, a good way of testing the effect is to lay the model flat on the floor and hold a good-sized looking-glass as high as necessary above it; by this means, one can get a good general idea of the effect of the whole.

But reflected lights and other reasons demand that the work should always be considered in a liquid state, *i. e.*, to be worked on and completed after it is fixed. This may be said to apply to all architectural decoration.

Where the windows run up close to the ceiling, I have found flat or low relief most agreeable, and very high relief is never desirable;

it harbors dirt and dust and throws shadows, which become very troublesome to the people who have to live in the rooms.

The charm of much of the old ceiling-work, I venture to think, is enhanced by the many coats of paint or whitewash they have received, which has stopped up the small cracks in the work and accidentally given breadth to the whole, and much modern work would be improved by the same treatment.

I have tried, in ceiling-work that I have been engaged on lately, to avoid sharp undercutting, and where undercutting is necessary to give accent to the design, it should be done with a rounded instead of a sharp edge, and a much softer shadow is thus obtained. But as each fresh work is a new problem, so the modeller, to have the true decorative spirit, must constantly bear in mind the general scheme of the mouldings that surround his work and govern the scale, and perhaps the most noticeable feature in modern surface decoration is overcrowding, and one of the greatest difficulties of the designer is to know how much to leave out rather than what to put in. Indeed, the designer who understands this quality has got well through his troubles, and the value of an occasional plain space cannot be over-estimated.

Of course, the well-trained figure-sculptor understands the value of tone, light and shade, and envelopment, but unfortunately the common or everyday carver has little or no time allowed to consider such abstruse problems, consequently his only idea is to make the particular piece of work that he is engaged on "sing out," without any regard to the *ensemble*.

For repeating ornamental plaster models, gelatine, wax and piece-moulding in plaster are the methods usually employed. Gelatine is the simplest and best when only a few casts are required, as it can be done without any complications in the case of undercutting. Wax moulds are generally used for the so-called fibrous or canvas casts of commerce, as the canvas in the plaster holds the moisture too long and destroys the face of the gelatine.

Piece-moulding is a more complicated way of obtaining reproductions, and is used by moulders who may desire to preserve their moulds for future occasion. The object to be cast is covered by a number of small pieces of plaster, the edges of which are trimmed with a knife, so that they will each draw freely, and moistened with a little sweet-oil and soap mixed, to prevent sticking together; when the object is completely enveloped by a number of pieces, it is necessary to hold them together by means of a case, also made of plaster. The liquid mass is then poured in slowly, and the mould turned, so that it may be covered equally. When set, the outer case is removed, and then each piece carefully drawn away from the reproduction and replaced in the case. The thin seams which one sees on the plaster-casts are caused by these joints in the piece-mould. For work executed *in situ* a mixture of Parian cement, well-burnt slacked lime, putty and silver sand, the proportions varying for different kinds of work, but generally about two parts Parian cement to one of sand and one of lime, but this is more properly stucco-duro, and a ground of Portland cement and common hair mortar is used, the Portland cement stopping the suction and allowing the applied stucco to set more slowly.

Stucco-duro, as practised by the Italians, is a very ancient method, and is mentioned by Vitruvius. It was almost lost, but was revived again in Italy in the sixteenth century.

Raphael and Giovanni da Udine were then so interested by the discoveries during the exhumation of the Baths of Titus, under Leo X, that they at once made experiments in this material, and the Loggia of the Vatican was one of the first results. It was composed of plaster-of-Paris, silver-sand and marble-dust, and was capable of taking a high polish. In Kensington Museum there is a beautiful model of the central hall of the Villa Maclama, in Rome, which was decorated by Giulio Romano and Giovanni da Udine. The model also exemplifies the possibilities of this composition, for its maker, Professor Mariana, of Perugia, has employed stucco-duro for the modelling of the ornament, which shows it can be used for the finest work; indeed, it is used by modellers for goldsmith's work as less liable to injury than wax. If used too quickly and heavily, it will crack, but it must be modelled rapidly and surely, and only those of great dexterity should attempt it.

A stucco composed of plaster and glue-water is used by modern sculptors, and is preferred to clay for very large work. Mr. Watts modelled his great statue of Hugh Lupus for Eaton Hall in it, and the groups in front of the Trocadero, in Paris, by Falguère, were modelled in the same material.

You first make a sketch-model in clay or wax to scale, taking great care to have your proportions exact; then the large framework is made of iron supports and wood covering, and a rough coat is laid on. After this, the work is modelled in the stucco. Finish can be obtained by using flat brushes. It has a very loose and pleasant surface if done properly.

Stucco-work was much employed on the Palace of Nonsuch, built by Henry VIII. It was executed by artists brought from Italy, but every trace of this palace has disappeared; but the men left their influence, and stucco was employed to decorate houses until the end of the reign of Charles II, when it began to decline.

Graffio, or sgraffito, is another way of decorating by means of prepared plaster grounds, cutting away or scratching through the upper surface, and revealing in parts a background of a different color.

The first coat is made of sharp sand and Portland cement; the

second coat is usually colored with Indian red, yellow ochre or manganese black. About one part of prepared distemper color to one and a half of Portland cement is the proportion for this. Then a final coating of selenitic cement and silver-sand carefully mixed together is laid on very thinly, not thicker than one-sixteenth of an inch, before the second coat is quite dry. Then the cartoon, having been prepared, is placed on the surface, and the outline firmly pricked and pounced, the cartoon removed and the design cut into the surface of the second coat, which is done with a steel scraper. Parian cement may be used instead of selenitic if the outer coating is desired white.

Care must be taken in cutting, which should be with slanting edges, which gives roundness and softness to the finished work. A good draughtsman will have little trouble in learning this kind of work, and it should commend itself to architects for its durability.

Gesso is yet another way of using plaster, but this more properly belongs to the painter's art, and is most successful when confined to very low relief-work, as for the decoration of frames, caskets, panels of cabinets, etc. There are many kinds of gesso, and fine examples may be seen in Kensington Museum. For bold work, plaster-of-Paris and thin glue or size-water, a little tow pulled thin and steeped in the stuff is used for building up your projections; a few flat-headed copper nails are useful if they can be driven into the background to prevent the work lifting. This should really be applied to a wood or fibrous plaster background, and it is always necessary to stop suction by painting the ground over with a coating of thin shellac.

For fine work, laid-on with a brush, glass is good for backgrounds; you can lay it over the design and copy through the glass. The liquid, which must be used hot, is composed of whiting previously soaked in water and mixed with linseed oil, and a little resin added.

The proportions vary, but it can be made very easily, and a few experiments will insure success. A pot of hot water should be kept handy to clean your brushes as the stuff cools. I have used, on the recommendation of Mr. Walter Crane, a very good stuff called "Denoline," sold by most colormen. This is a fine powder done up in 1s. boxes, and is used by mixing with cold water only. You may make it stiff or liquid, as you require it. It sets hard, but slowly, and sticks fast — great virtues in gesso. Whiting and parchment size is the gesso used by frame-makers; ordinary house-painter's putty worked up with whiting, oil and water, is also used for scrolls, etc. Carton pierre is a material much used in France, but I have had no experience with it.

I was told of a method employed by an American artist, which struck me as being very ingenious. He had his gesso prepared and put up in leaden tubes, similar to those used for oil colors. Then preparing his background by tracing the design slightly on it, he squeezes the gesso on and flattens such parts that require it with an ivory or steel tool. For mere line-design this way is admirable; works are done with great rapidity, much quicker than would be possible with a brush.

There are many processes for hardening plaster-of-Paris; one way is to dissolve a quarter of an ounce of soft-soap in a pint of water, and an equal quantity of white wax is afterwards incorporated.

The cast is dipped in this liquid, or, if a surface of any dimensions, the mixture is laid on with a soft brush. After drying about a week, it may be polished with soft rag and French chalk.

Linseed oil and wax is used by some, but this turns very dark in time, and in places where hidden from the light it will become almost black.

Another way is to give the plaster a thin coating of white shellac, then paint over this a good coating of boiled soft-soap and polishing when dry with a rag. This is useful for stopping the porous surface of the plaster, but it must be perfectly dry before the coating is applied. I am told a Mrs. Laxton Clark invented a means of hardening plaster, but I think all modellers would prefer putting their work in a more durable material.

The tools and material required for gesso, stucco and similar work can be easily obtained at various oil and color warehouses in London. I have found that a child's rubber ball cut in half is an excellent vessel for mixing small quantities in; it can be cleaned easily by merely turning inside out, and does not break: a few basins, a glue-pot, some iron plaster-spoons and some small steel spatulas are also useful.

I have endeavored in as brief a manner as possible to explain some of the most important uses of plaster for decorative purposes; but to become thoroughly acquainted with any particular work, the student should spend a short time in the workshops, for the secret lies not in the tools or materials, but in the hand and brain of the worker. — *The Architect*.

LONDON BREATHING SPOTS. — Twelve thousand pounds down and a pound a year rent is the price at which London has acquired Lincoln's Inn Fields as a public playground. Sir John Hutton on opening the fields stated that London now possesses seventeen parks, eighteen gardens and thirty open spaces. Some of those lately acquired have been presented as a gift, and the others have been purchased by the Vestries, Ecclesiastical Commissioners and the County Council. There are about 600 years of the lease of Lincoln's Inn Fields yet to run. — *Philadelphia Telegraph*.

THE "ORCHARD ST. DISASTER": AN EXPLANATION
FROM MR. G. B. WAITE, C. E.

IN view of the finding of the coroner's jury which investigated the collapse of the building 151 and 153 Orchard Street (known as the "Orchard Street Disaster") that I was grossly careless in regard to the plans of said building passed in the Department of Buildings, and of the subsequent searching and impartial investigation by the Grand Jury which entirely absolved me from blame, while others were indicted, I consider it imperative upon myself and just to my friends that I should make a comprehensive statement of facts with regard to this matter.

To do so requires an explanation of my connection with and duties in the Department of Buildings, and an exposition of the ambiguous and, to say the least, peculiar testimony upon which it is evident that the coroner's jury based its conclusions so far as I was concerned.

Ordinarily, a man would be satisfied with the vindication of a Grand Jury, but as a professional man's capital is his reputation and ability, I am not contented until there shall have been removed the slightest suspicion that I was guilty of any fault or that I did or neglected to do anything for which blame could attach to me.

I was appointed Inspector of Buildings by ex-Superintendent Brady, in October, 1892, upon the recommendation of a prominent civil engineer, of this city. In view of the fact that I was a civil engineer, I was specially detailed to the examination of all the complicated construction which required a knowledge of modern sciences and their application to building structure, and in that connection was much engaged in originating extensive and difficult formulations and tabulations to facilitate the examination into the many tedious and complicated constructions which I was required to consider in a very limited time.

My duties rapidly increased until they included the following:

1. The examination and consideration of all of the largest and most important building structures, many of which require several months' study by architects and engineers.
2. The calculation for and especial determination of safe carrying-capacity of floors for all old warehouses, factories, storage-buildings, printing-establishments, etc., in the city, numbering during the last year not less than 2,000.
3. The making of special scientific examinations, inspections and reports for the Department.
4. The spending of a large part of the office hours in advising with architects and builders who were sent to me by the Superintendent or his deputy for that purpose.

In addition, while not officially required, it became necessary for me to prepare papers and criticisms upon new and complicated forms and combinations of construction, for the purpose of deriving substantial precedents. (See *Trans. Am. Soc. C. E.* for 1894.)

The simple and common forms of construction, such as that of the ordinary tenements and dwellings (to which 151 and 153 Orchard Street belong) I was not expected to follow in detail, because there was an examiner specially detailed for this class of construction by the Superintendent, and because it had never been required to show the details for this class of construction in plans and specifications.

In fact, it would be physically impossible for any one man to consider all of the details of construction, and it became necessary and was the custom to leave details of the simple classes of construction to the care and watchfulness of the inspector, who is required by law to supervise the building itself as it progresses.

It has, however, at times occurred that I have gone over the plans of simple constructions of this kind, at the direction of my immediate superior examiner. In view of my many other duties above stated, whenever I have thus gone over a plan of one of this class of construction, it has most usually been in some one or more particulars and has not been for the examination of the whole construction shown on the plans. This was well known and recognized in the Department. In fact, soon after my appointment, the Superintendent told me that I could leave the examination of walls and of simple constructions to my immediate superior examiner, who was not a civil engineer, while I was to devote myself to the examination of the most complicated constructions. Thus, even had I failed to note a defect (which in this case I did not), I could not in any way be blamed unless it could be shown that I examined that part of the plan where such defect existed.

The method then prevailing in the Department is illustrated in these Orchard Street plans. My pencil check-mark appeared on the girders, and they were the only part of the construction which I examined; and they were in accordance with law.

From me, these plans went to the second deputy superintendent of buildings, who, after examination, gave them the first official signature. From him, they went to the first deputy, who officially signed them, he and the Superintendent being the only persons having the right to approve or disapprove plans. The signature of either of them is subscribed to the following form:

"This is to certify that I have examined the within detailed statement, together with the copy of the plan relating thereto, and find the same . . . to be in accordance with the provisions of the law relating to buildings in the City of New York; that the same has been . . . approved. Signature . . ."

It will thus be seen that in a case of this kind, I had no responsibility except for the particular part of the plan examined by me and none was ever expected of me.

The Orchard Street buildings belonged to that class of 25-foot tenements having a store in the lowest story and having the central light-courts carried over the store on steel beam girders. The usual lawful custom (see Sects. 478, 480 and 485) among most architects having this class of construction has been to carry the side party-walls of the store floor (the thickness of which is fixed by law) straight through from the front to the rear of the store, and to carry the light-court girders upon the central portion of these walls.

The aggregate load of the light-court walls, which were pierced with openings, together with the loads of the narrow portion of floors adjacent thereto, did not exceed that of a single solid party-wall and a full floor from party-wall to party-wall. Moreover, any one familiar with the elementary laws of construction understands perfectly that the thickness of masonry specified by law is not for the purpose of carrying loads to be imposed upon it, but for the purpose of making the construction stand up in a safe and stable manner, and therefore, when it is desirable to omit certain masonry and carry certain portions of imposed loads on other masonry (such as the omission of masonry in the front of stores and the carrying of the walls over same to the side walls), the conditions under which the masonry is used are entirely different, because in the one case it is placed for the purpose of making the wall stand up (said masonry being loaded to but a small fraction of the safe carrying capacity allowed by law) and in the other case it is for the purpose of carrying an imposed load.

The light-court (situated centrally from front to rear) was 38 feet long, having its walls carried upon four cross girders spaced 10 feet on centres. The court walls were 50 feet of 12 inch brick wall and 3 feet of 8-inch parapet wall, with about 35 square feet of openings in every story of each wall; the total loads from which walls aggregated 57 tons at each maximum concentration.

Now, this load was carried on the 16-inch standard wall of the low basement story, which was shown on plans to be only about 8 feet high. Section 478 makes it optional to use plain walls or piers with the same material in each and in this class of construction it has been the usual custom to use straight walls to avoid projections in the store.

The law provides that when masonry acts in the capacity of a pier it shall be laid in cement-mortar, upon which masonry the law allows a safe load of 15 tons per square foot. To distribute this load on the wall according to law it was only necessary to use a plate or a template of ordinary thickness, projecting slightly beyond the girder flanges (8 inches to 10 inches each side of girder). Such a provision is common and expected in the distribution of loads of this kind, and would require but ordinary knowledge on the part of the builders and the inspector.

As carried out, however, in this case the load was actually concentrated instead of distributed by placing a template narrower than the girder itself; the girder being 16 inches wide and the template but 12 inches wide.

According to the most recent standard tests of masonry piers with U. S. testing-machines at Watertown arsenal (see Baker on "Masonry," pp. 166 and 168), the ultimate strength of brick piers laid in ordinary lime-mortar (1:3) is 110 tons per square foot, and laid in cement (1:2), 180 tons per square foot. Thus, even with the small templates used, the accident could not have happened from the girder loads if the masonry had been good.

The cause of accident was doubtless due to some of the following defects:

1. The bricks used, as shown by experts, were old and consisted mainly of bats and uncleaned brick which necessitated uneven and excessively thick mortar-joints.
2. The sand used in the Orchard Street buildings was from the rear yard and was shown to contain a large proportion of earthy matter which is capable of absorbing excessive amounts of water.
3. The wall was laid in freezing weather, so cold that the mortar had not sufficient time to set and all excess of water held suspended in the earthy matter was dissipated on the advent of thaws, leaving the masonry a loose honey-comb mass.
4. The 16-inch wall in question, instead of being built about 8 feet high, as shown in plans, was raised to make a high first story and carried downward to make a cellar underneath, contrary to plans. The wall was not bonded together, but so built that it in reality consisted of two 8-inch walls laid back to back and under a load would, instead of acting together, tend to buckle and separate.

The plans of the Orchard Street buildings were in accordance with law in every respect and had there been a refusal to pass same, the architect could have demanded their approval.

The following few extracts from the testimony of ex-Superintendent Brady at the coroner's inquest will demonstrate how the jury obtained the impression that there was negligence with regard to the plans:

Q. — If it needed templates, was it his [Waite's] duty to call attention to it?
A. — He should make recommendations if in his opinion it required them.

This answer implied that there was a duty imposed upon me when, as I have shown, I was not expected and it was physically impossible

for me to examine or call attention to such details in plans of this simple construction.

By a juror:

Q.—You said he didn't have time: he was not, in fact, supposed to look into the matter of bond-stones and templates?

A.—He is expected and supposed to look after every section that the building law refers to.

This answer is absurd upon its face and subject to same comment as made on the foregoing answer, with the addition that there is an immense amount of detail provided for by law which must necessarily be left to the inspector.

Q.—He approved this plan that conflicts with the law?

A.—Not exactly, because it says that the bearing of the girders will be such as to safely carry the load above. If he calculated the load above as to those girders supporting, and figured the strength of the brickwork to carry it—

Q.—(Interposing.) Where the law is departed from, are you the only person who has discretion?

A.—Yes.

Q.—How could he then exercise his discretion to leave out 100 feet of wall and put in 38, when the law distinctly says that if a wall is omitted its equivalent must be there in piers?

A.—In walls or piers.

The first above question implies that the plan conflicted with law, which was not the case. The answer to it was indefinite and incomplete and was interrupted by the Assistant District-Attorney with the next question which again implied a violation of law.

The third question assumes that when a wall is omitted its equivalent must be there in piers and the answer assumes that the question is correct; when, as a matter of fact, there is no such provision required by law or by good construction, for the masonry used under entirely different conditions requires different amounts, as more fully explained by me above.

Q.—Well, the equivalent not being there, and he having no discretion in the matter, shouldn't that have been brought to your attention?

A.—If in his opinion the law has been violated, or that plan was an implied violation, then he would call that to my attention at once, and make a memorandum on calling my attention.

Here again is an unwarranted assumption of a departure from the law and an evasive answer to the question.

By a juror:

Q.—I believe that the law provides, when walls are omitted—masonry is omitted—that an equivalent must be supplied in piers and walls—something to that effect?

A.—Other supports of proper character.

Q.—No one has a right to depart from that except yourself?

A.—No person has a right to depart from it, not even myself.

Here again is a mistaken assumption on the same line as the preceding questions.

Q.—The equivalent of this 100 feet of wall was not supplied in the 38 feet. Now, they had a right to allow that departure from the original plans, did they, without referring it to some one above them?

A.—No. You are taking it for granted, according to your opinion, and according to your statement, that what was substituted was not sufficient for what had been removed.

Q.—No; I am not. That is the statement you made to me. I say 100 odd feet were omitted, and something was substituted? Had they a right to substitute less—to accept the substitution of a less for a greater amount, without consulting some one above them?

A.—Yes, because the law gives that right; if there was a discrepancy they mark it on the plan and call attention to the fact.

These answers need no other comment than that they were ambiguous and obscure and certainly tended to confuse the jury.

Q.—Of what use is the provision that calls for substituting an equivalent amount for the omission of masonry?

A.—That gives the architect or the designer of any plan, the right to adopt such construction as the best interests demand. In some plans an architect may wish to abandon it, and substitute some other manner of support, and that makes it discretionary with the architect; even he has the right to draw that inference.

Here again the question assumes a provision of the law which does not exist and the answer shows either ignorance of the law and an unfamiliarity with the simplest laws of construction, or a misapprehension of the question.

These illustrations from the testimony could be multiplied, but I believe that the above extracts are sufficient to demonstrate that the jury received a strong impression that a violation of law was apparent in the plans, and by reason of this impression thus wrongly created, arrived at its finding that I had not noticed such violation and that, therefore, such examination as I made was careless and subject to censure.

A stranger reading the jury's finding would naturally believe that I was unfamiliar with the simple laws of construction and the sections of the building-law applying thereto, and the grave injustice of this finding based on misapprehension can only be appreciated when it is remembered that the class of work confided to me was of the highest order and was assigned to me by reason of my especial technical training.

GUY B. WAITE, C. E.

F. HOPKINSON SMITH'S PAINTINGS BURNED.—The collection of paintings which F. Hopkinson Smith had on exhibition at Roebel & Reinhardt's art store, Milwaukee, were lost in the fire on March 26. The paintings, principally Venetian scenes and some Dutch subjects, were valued at \$18,000.—*Exchange*.

ILLUSTRATIONS

[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

COLUMBIAN CLUB-HOUSE, ST. LOUIS, MO. MR. A. F. ROSENHEIM, ARCHITECT, ST. LOUIS, MO.

[Heliochrome issued with the International and Imperial Editions only.]

DETAILS OF BALL-ROOM OF THE SAME.

[Issued with the International and Imperial Editions only.]

DETAIL OF PORTICO OF THE SAME.

[Issued with the International and Imperial Editions only.]

PLANS AND ELEVATION OF THE SAME.

SECTION OF THE SAME.

ENTRANCE-HALL; STAIRCASE; DINING-ROOM; CORRIDOR; BALL-ROOM; PARLOR OF THE SAME.

[Additional illustrations in the International Edition.]

PORTICO OF THE COLUMBIAN CLUB-HOUSE, ST. LOUIS, MO. MR. A. F. ROSENHEIM, ARCHITECT, ST. LOUIS, MO.

[Gelatine Print.]

EXHIBITIONS

BALTIMORE, MD.—The Walters Art Gallery will be open to the public on all Wednesdays and Saturdays in April, and on Easter Monday.

BOSTON, MASS.—*Winter Exhibition, including Pictures loaned by Quincy A. Shaw; Paintings by Puvion de Chavannes; Japanese Paintings; Line Engravings, Mezzotints, and Etchings by Rembrandt; at the Museum of Fine Arts.*

The Yamanaka Collection of Japanese Paintings; at J. Eastman Chase's, 7 Hamilton Place, April 4 to 15.

Annual Exhibition of Water-colors; at the Boston Art Club, April 8 to 27.

Pictures by Mr. & Mrs. J. Appleton Brown; at Doll & Richards' Gallery, 3 Park St., April 5 to 17. Du Maurier's Drawings for "Trilby"; opens April 18.

Architectural Exhibition; at 194 Clarendon St., opens April 15.

Seventh Annual Exhibition of Photographs; at the Boston Camera Club, 50 Bromfield St., April 3 to 20.

Water-colors of North American Woods by Mrs. Chas. S. Sargent; at the St. Botolph Club, April 8 to 27.

South End Free Art Exhibition; at 1151 Washington St., opens April 18.

Exhibition of Pictorial Posters; at Cowles Art School, 145 Dartmouth St., opens April 19.

CHICAGO, ILL.—*Annual Spring Exhibition of Water-colors and Pastels; at the Art Institute, April 11 to May 16.*

NEW YORK, N. Y.—*Loan Exhibition; at the Metropolitan Museum of Art, New North Wing, opened November 5.*

Drawings by Daniel Vierge; at F. Keppel & Co.'s Gallery, 20 East 16th St., April 2 to 16.

Seventieth Annual Exhibition of the National Academy of Design; April 1 to May 11.

Seventeenth Annual Exhibition of the Society of American Artists; at the Fine-Arts Building, 215 West 57th St., March 25 to April 27.

Paintings by the Old Masters; at the Macbeth Gallery, 237 Fifth Ave.

Modern Italian Paintings; at the Holland Art Galleries, 329 Fifth Ave.

Sketches by the Architectural Sketch-Club of the Senior Class of Columbia College; at the Avery Galleries, 368 Fifth Ave., April 8 to 15.

PHILADELPHIA, PA.—*Fifth Annual Exhibition of Water-colors and Pastels; at the Art Club, March 18 to April 14.*

Dutch and Flemish Old Masters, Water-colors of Egypt by Wilfrid Ball, Etchings and Mezzotints by Frank Short and Charles J. Watson; at Robert M. Lindsay's Galleries, 1028 Walnut St., until April 15.

PROVIDENCE, R. I.—*Loan Exhibition of Portraits of Women; at the Art Club, April 18 to May 8.*

WASHINGTON, D. C.—*Fifth Annual Exhibition of the Society of Washington Artists; at the Cosmos Club, opened April 8.*

NOTES AND CLIPPINGS

RUMOR RELATING TO THE ALHAMBRA.—There is considerable excitement in Spanish art circles over the news that, in spite of annual Government repairs, the Alhambra at Granada is in danger of collapsing.—*Exchange*.

THE COST OF POWER AT NIAGARA.—The company which has undertaken to develop electricity, at Niagara, on a large scale, for manufacturing and other purposes, has acquired more real estate there than it needs for its own use, in order to furnish sites to such of its customers as wish to establish their business close to the source of their mechanical power-supply. But the public has been led to expect that, in addition to serving local interests, the company would also furnish electricity to places scores, if not hundreds, of miles away, and there has been much speculation as to the feasibility of carrying such plans into effect. Owing to her proximity to the Falls and her great size and industrial activity, Buffalo has been regarded as the first centre of population, removed from Niagara, to be provided for. It is not yet quite clear whether that city feels that it is enjoying a privilege or conferring a favor in letting the Power Company invade its precincts. Perhaps she has not determined that point herself. The matter is evidently still under consideration. In reply to some inquiries from representative Buffalonians, the Power Company recently offered the following terms: It would let the municipality or a private corporation come to Niagara, take water from the Power Company's canals at the rate of \$10 a horse-power, and manufacture its own electricity; or it would furnish power off the turbine shafts at \$13, or electricity at the power-house at \$18. But if the Power Company undertook to do anything of this sort, it would not contract to deliver less than 10,000 horse-power; hence, Buffalo must agree to take, at least, that much or none at all. The Niagara people would not accept a franchise to operate a line to and in Buffalo for a shorter time than that for which its own bonds have been issued. No price is given for electricity delivered at a central station in the suburbs of that city, fifteen miles from the Falls, so that the company's own estimate of the probable waste and cost of transmission is still withheld. There would be four kinds of losses: (1) in transforming at the power-house up to a high voltage, (2) on the line, (3) in transforming down at Buffalo, and (4) in distribution over street lines to consumers. These could not well amount to less than twenty or thirty per cent altogether, and they might, perhaps, reach fifty or sixty per cent. But if, for example, they amounted to just one-half, the \$18 rate at the generator-shaft would mean \$36 to the consumer, without adding anything either for interest on the cost of the transmission plant, or for operating expenses. This, however, is probably an extravagant estimate. The prices actually given, by the way, are for a twenty-four-hour daily supply. Some establishments require power, however, for only ten or eleven hours. Whether it would pay to put in storage-batteries to utilize the surplus is a question which their managers must naturally consider. Richard Hammond writes to the *Buffalo Courier* to say that steam-power, on a scale of 1,000 horse-power, for ten hours daily, can be generated in Buffalo, where coal is very cheap, for \$21 per horse-power. The Power Company, however, denies this, and estimates the cost at \$32, besides quoting various experts as estimating the cost on a twenty-four-hour basis at between \$45 and \$60. In some other cities, where coal is more expensive, it is said to be from \$60 to \$75. If, after this discussion, Buffalo decided neither to buy on the terms offered nor to let the Power Company bring in its own lines and supply the market, more distant cities may possibly be deterred by her example from patronizing the Niagara concern; but as the latter supplies its local customers with electricity at \$20 per horse-power, in large quantities, there may be a greater industrial development at the Falls than would otherwise result. — *N. Y. Tribune*.

THE TIMBER-BOOM.—Both in a saving of time and timber, the "boom" is a vast improvement over the raft. In the first place there is no boring of logs and afterwards fastening them together, as in the rafting method, and thousands of feet of fine timber are thus saved. Then the reduction in expense in caring for the logs is considerable. A lumberman's description of a boom is as follows: "In simple language, a boom is nothing more than a floating pen, in which the logs are corralled as they drift down stream. It may extend along the banks of the creek or river for one, two, three or even five miles, and is divided into pockets or sections of whatever length may suit the conditions under which the boom is constructed. At the head of each pocket there is an opening, and extending obliquely across the river, from the head of each pocket to the opposite shore, is what is known as the 'sheer,' a floating line of logs chained together, that serves to swerve the saw-log from its course in mid-stream at such an angle that it will go directly towards the opening in the pocket of the boom on the other side of the river. These sheers extend from every opening in the boom. It will be seen, then, that the boom, when rigged out for business, becomes a series of funnels and pens with which to catch and hold the logs, but it requires a good deal of expert manipulation to 'save the crop' when the tide is running high and flowing fast." Cheaper as the boom system is than the rafting, the cost seems a big item when put into figures. The construction of pockets, etc., for a two-and-a-half mile boom, in Breathill County, for instance, came to \$8,000 recently. Near the pocket ends of the sheers and at the openings in the booms, platforms are built on which the "sorters" are stationed, men, who, with pike-poles, pull in the logs as they float by. The work is sometimes fast and furious, as when logs are going by at the rate of from fifty to ninety a minute. Sometimes the men are obliged to work for two or three days and nights at a time, only the excitement of the work sustaining them. Their food during such an ordeal is taken by "jerks and snatches," and lucky is the "sorter" who is excused for a cat-nap. At night, the river is lighted by basket-torches, and for warmth fires are lighted on beds of sand, which have been laid on the platforms. During a recent big run at Beattyville, on the Kentucky River, one firm alone caught 80,000 logs. — *N. Y. Evening Post*.

THE BERLIN EXHIBITION, 1896.—The various plans for this exhibition are being advanced with considerable energy and everything is being done to insure ultimate success. The exhibition will not only be made instructive and representative, but due consideration is being

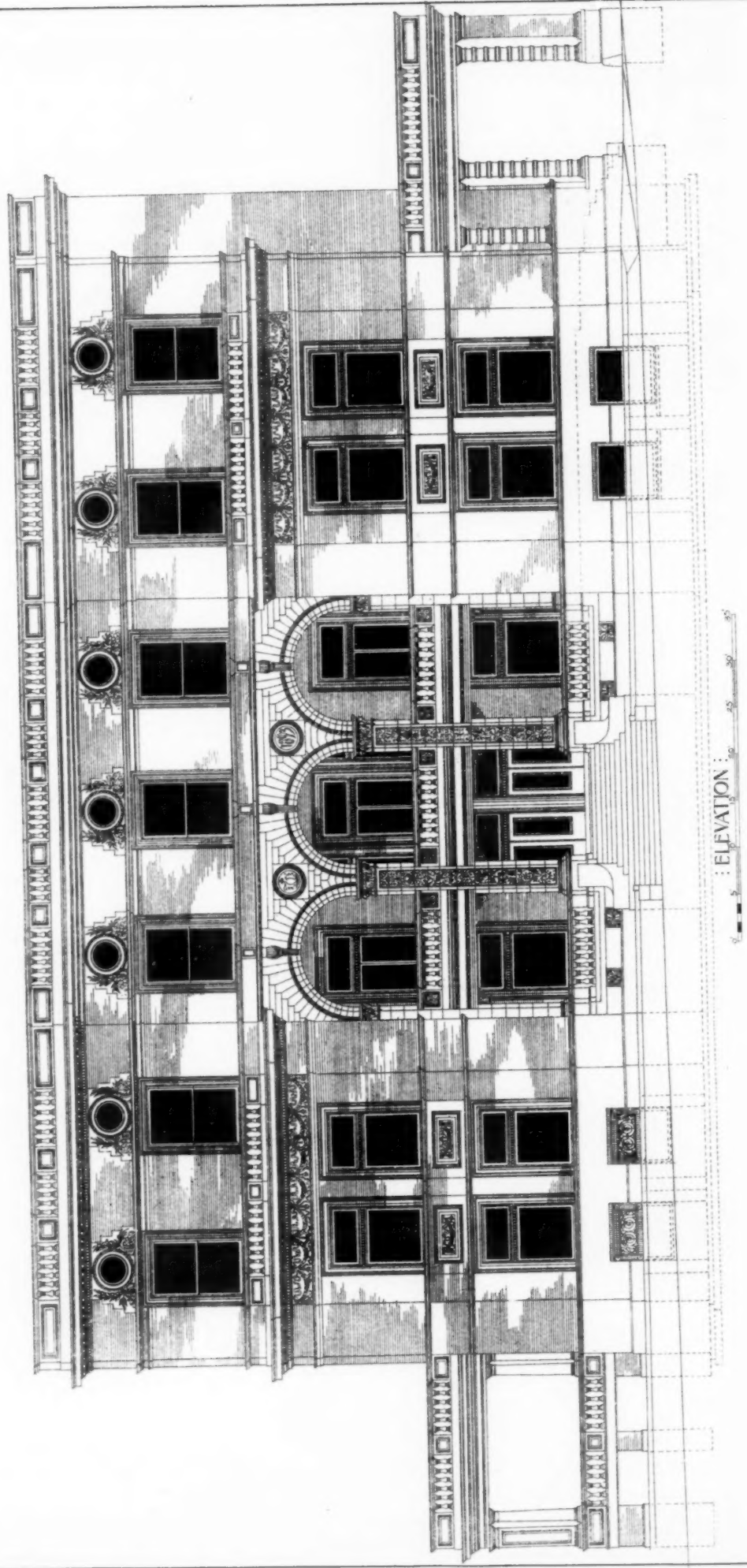
extended to the attractive side of the programme. It is proposed to build a Cairo Street, and although the idea is neither new nor original, it is likely to succeed, as special attention is being devoted to its realization. The Cairo Street is intended to cover an area of 25,000 square metres, and the building-materials will be of a more solid nature than is generally used for such purposes. It is also proposed to have an Egyptian panorama and diorama. A panorama, which will be of very large dimensions, will represent the famous Ziller Valley in the Tyrol. It is also under discussion to have an aquarium, a huge glass reservoir, containing as many of the animals and plants of the sea as possible. The aquarium will be so arranged that it can also be inspected from the bottom. Further, there will be a captive balloon, which will in all probability possess several new features, the German Military Balloon Department being celebrated for its ability, and all its inventions and improvements will be embodied in the balloon in question. The balloon will for every ascent be fitted with a registration apparatus, which will register height, temperature, moisture of air, etc., also an apparatus for registering the temperature of the gas in the balloon, and experiments will be made in transferring the gas, no longer needed in the large balloon, to smaller ones. The captive balloon will be in telephonic communication with the earth, and it will also carry a photographic apparatus. In connection with the balloon demonstrations will be a large and varied collection of all possible exhibits connected with balloons, their handling and filling, etc. The Colonial section has not yet finally settled its programme, but with Prince Arenberg as Honorary President and Dr. Kayser, Director of the Colonial Department, for its President, there is every likelihood of this section also being a very interesting one. — *Engineering*.

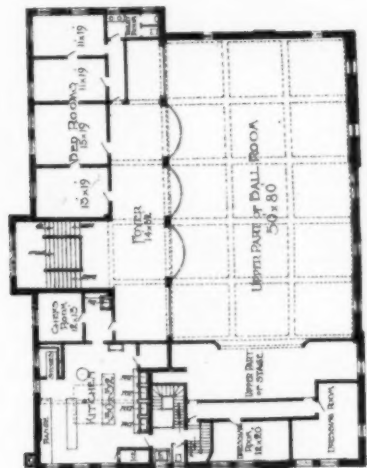
OFFERED A MILLION FRANCS RANSOM FOR A PICTURE.—On the throne of Modena was an Austrian archduke: his government was remorselessly shattered and virtually destroyed. The ransom was fixed at 10,000,000 francs and twenty of the best pictures in the principality. But on that of Parma was a Spanish prince with whose house France had made one treaty and hoped to make a better one. The grand-duke, therefore, was graciously allowed to purchase an armistice by an enormous but possible contribution of two millions in money together with provisions and horses in quantity. The famous "St. Jerome," of Correggio, was among the twenty paintings seized in Modena. The archduke repeatedly offered to ransom it for 1,000,000 francs, the amount at which its value was estimated, but his request was not granted. Next came Bologna and its surrounding territory. Such had been the tyranny of ecclesiastical control that the subjects of the Pope in that most ancient and famous seat of learning welcomed the French with unfeigned joy; and the fairest portion of the Papal States passed by its own desire from under the old yoke. The successor of St. Peter was glad to ransom his capital by a payment nominally of 21,000,000 francs. In reality, it was far more; for his galleries, like those of Modena, were stripped of their gems, while the funds seized in Government offices, and levied in irregular ways, raised the total value forwarded to Paris to nearly double the nominal contribution. All this, Bonaparte explained, was but a beginning, the idleness of summer heats. "This armistice," he wrote to Paris, on June 21, 1796, "being concluded with the dog-star rather than with the papal army, my opinion is that you should be in no haste to make peace, so that in September, if all goes well in Germany and northern Italy, we can take possession of Rome." — *Prof. Sloane's Life of Napoleon, in the April Century*.

THE METROPOLITAN MUSEUM OF ART.—The Metropolitan Museum of Art was the outcome of a meeting of the Art Committee of the Union League Club, held in the autumn of 1869. The committee's trust in the public spirit of the citizens of New York was gratified by the substantial results of an appeal. The institution was incorporated in 1870, and the corporation's first home was at 681 Fifth Avenue. Thence it was moved to 126 West Fourteenth Street. It then possessed the Di Cesnola specimens. In 1871, an act of the Legislature authorized the Park Commissioners to erect a museum building, which was finished in 1880. This structure has been added to from time to time, and the south wing was completed six years ago. The public were first admitted on Sundays, in 1890. The last financial statement of Treasurer Hitchcock showed more than \$500,000 invested at about five per cent, and a total of more than \$600,000 in the hands of the Finance Committee. The annual receipts were \$134,141.44 for 1893, and the general income, including \$70,000 from the Park Department, \$106,255.18, a total of \$240,396.62. There was \$119,493 in disbursements, and \$111,704.18 expenses of administration, which comprised \$70,848.42 in salaries and wages. The principal funds which bear interest are: Vanderbilt, \$100,000; Astor, \$47,751.25; Marquand, \$50,000 and \$30,000; Reed, \$50,000; Wolfe, \$200,000 and \$21,288.89; Lazarus, \$24,000; Coles, \$20,000 and \$13,000. — *N. Y. Times*.

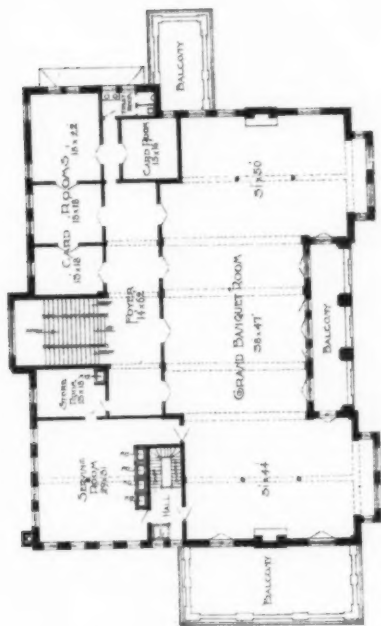
HOW SIR HENRY RAWLINSON EARNED HIS HONORS.—Old Sir Henry Rawlinson, who has just died at a very advanced age, was an amusing example of the manner in which services to the State are recognized and awarded. As an explorer, a diplomat, a student of Oriental lore and as an administrator he rendered invaluable services to the British Empire. These, however, received scanty recognition at home, and, like the prophet of the Bible, he enjoyed but little honor in his own country, although his name was celebrated as an Orientalist throughout Continental Europe, Asia and America. Honors, however, were showered upon him lavishly when he undertook the duty of piloting about the drunken and reprobate old Shah of Persia on the occasion of the latter's visit to England. He acted as that Asiatic potentate's bear-leader and mentor and prevented his royal charge from committing two flagrant breaches of etiquette and conventionality. For this he received the Grand Cross of the Order of the Bath, besides other tokens of gratitude of the sovereign. — *Marquise De Fontenay in the Philadelphia Press*.

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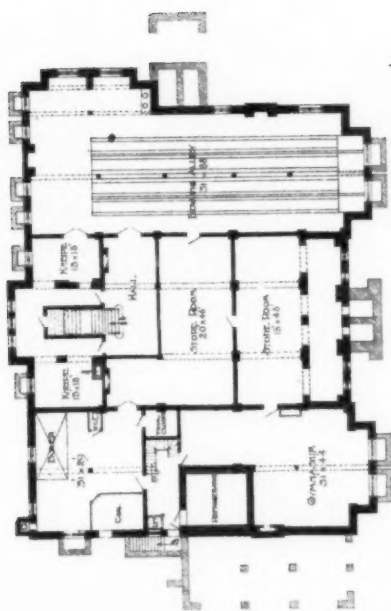




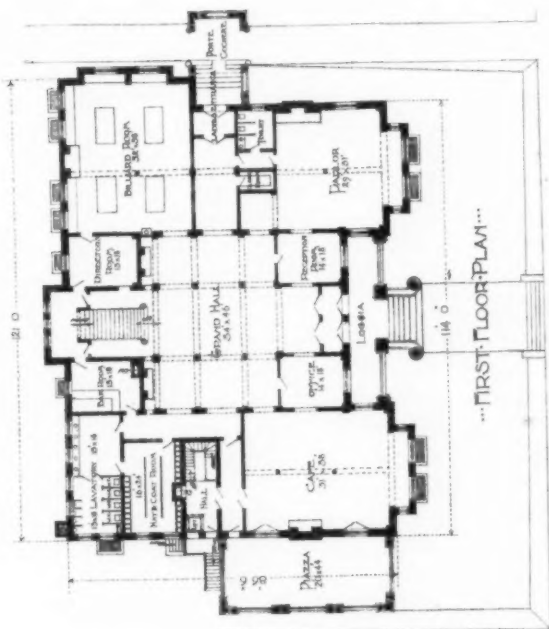
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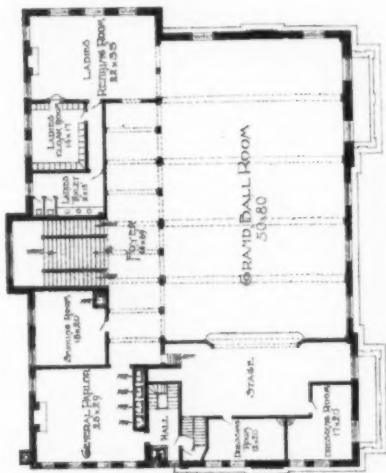


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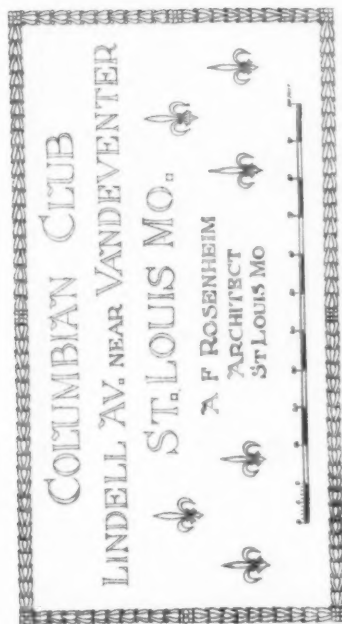


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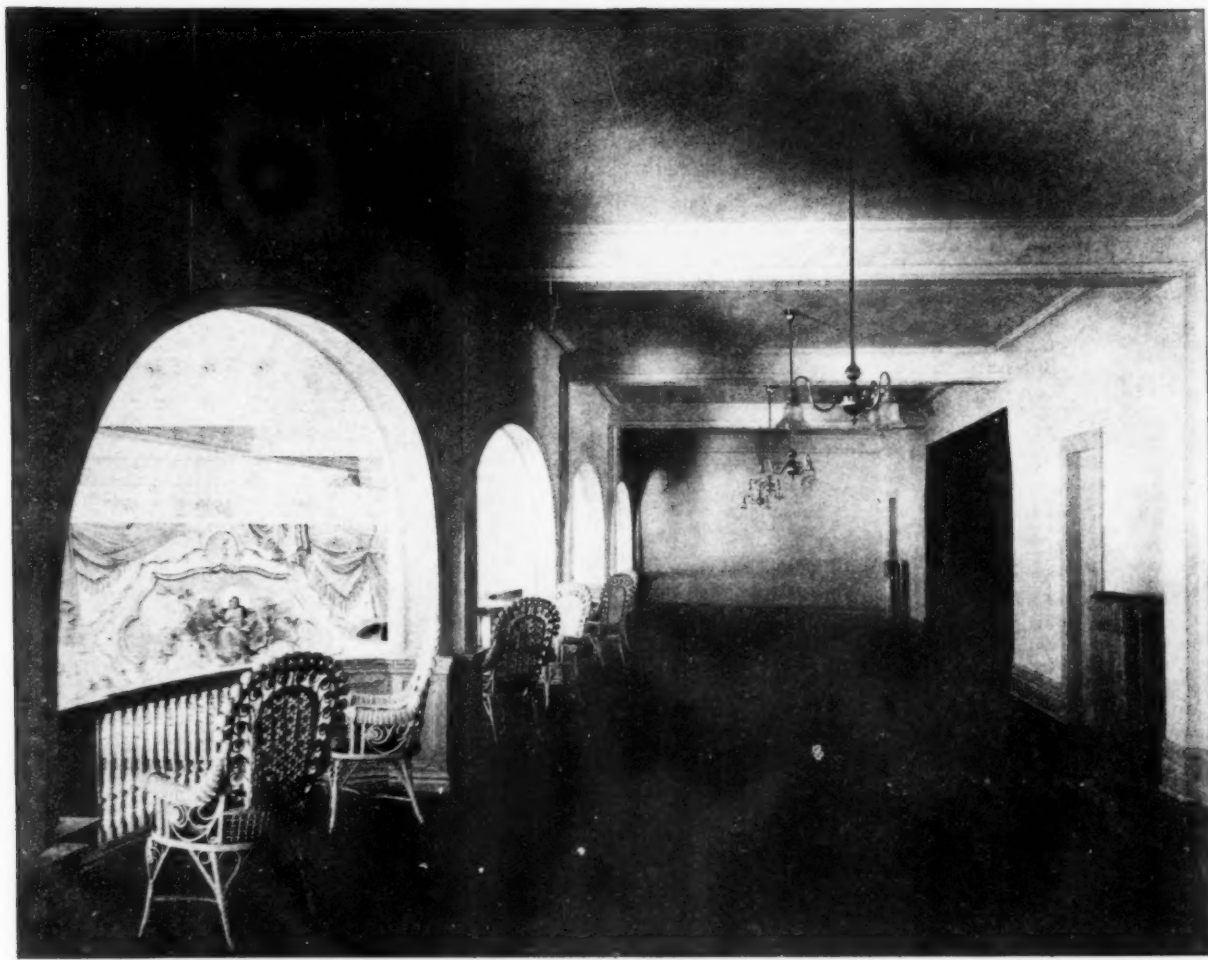
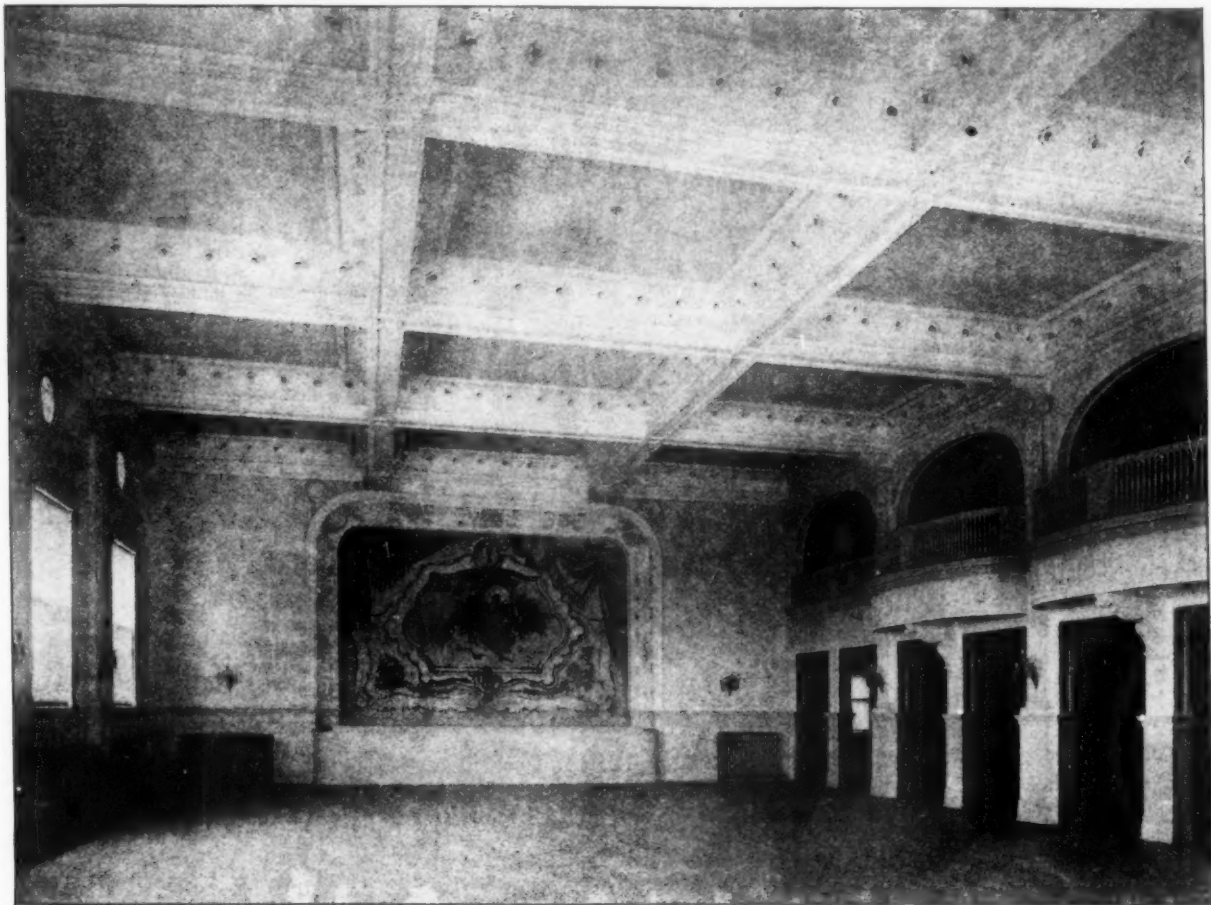
...THIRD FLOOR PLAN...



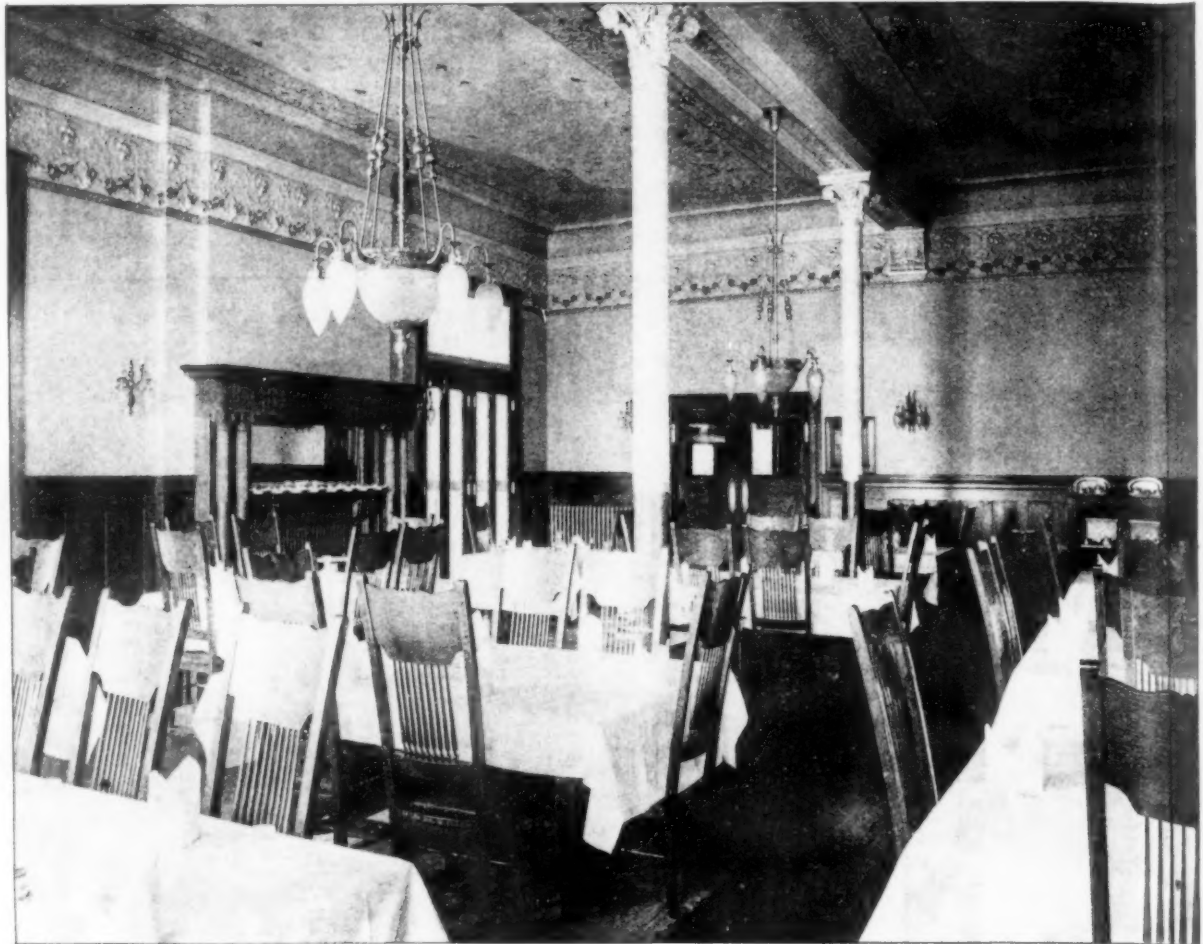


COLUMBIAN CLUB-HOUSE,

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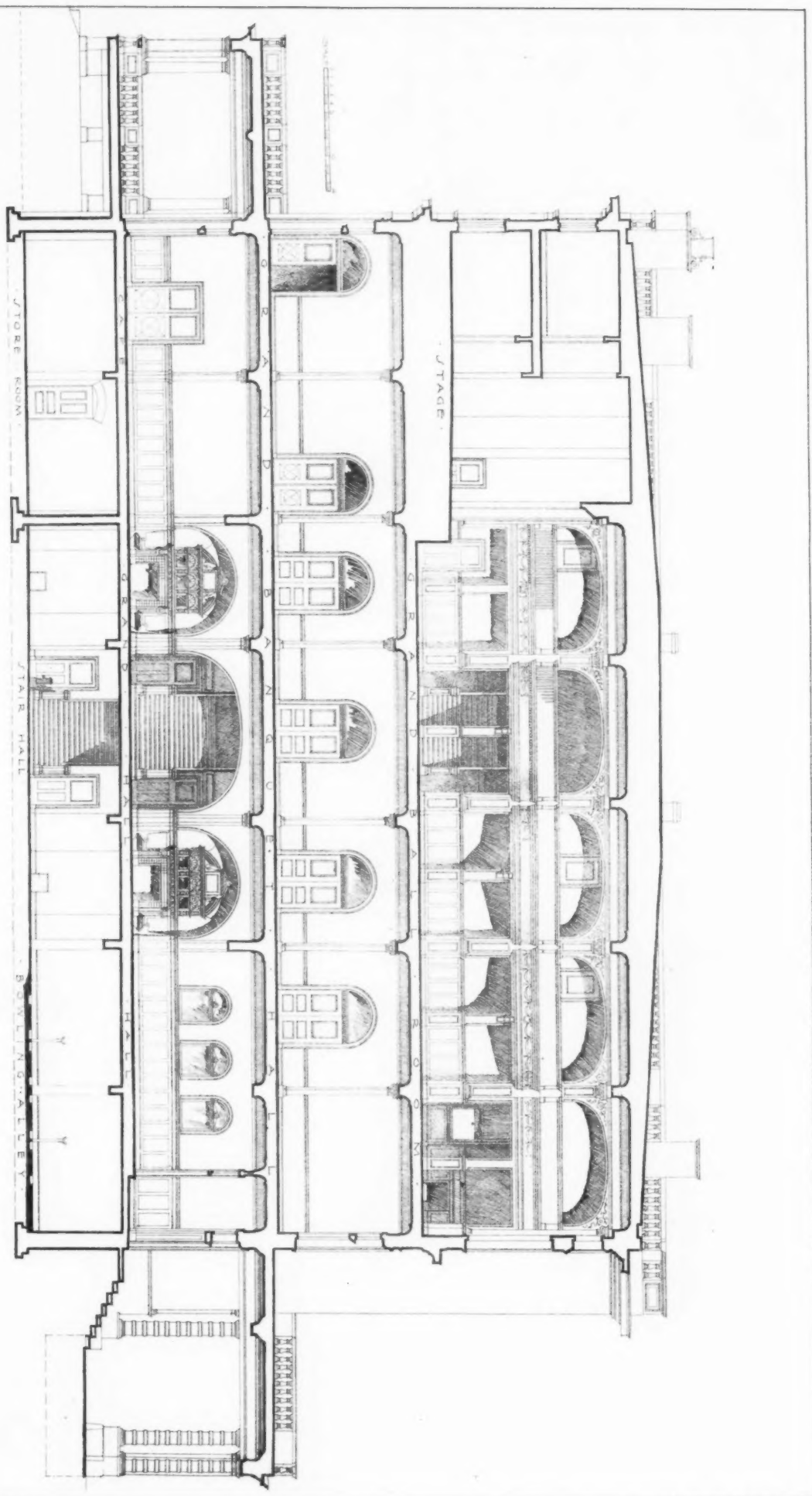


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