PRICE 15 CENTS.

DECEMBER 17, 1898.

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. LXII. * REGULAR EDITION * NO. 1199.

ARCHITECTVRE

ENGINEERING

DECORATION

CONSTRVCTION

211 TREMONT ST.

BOSTON MASS.

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THE AMERICAN ARCHITECT AND BUILDING NEWS.

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Entered at the Post-Office at Boston as second-class matter.

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IT was proposed, some time ago, to establish at the Massachusetts Institute of Technology a course in architectural engineering, and the announcement is made that the new course is ready. It is, as at present arranged, a branch of the regular course in architecture, diverging from it only at the beginning of the second term of the third year, when students who desire to qualify themselves for the science, rather than the art, of building discontinue academic design, and some of the purely artistic courses, and take up, instead, advanced applied mechanics, and the theory of structures, as applied particularly to modern buildings, devoting themselves to the design and computation of columns and girders, trusses, arches, foundations and fireproofing; and, in the fourth year, taking up laboratory tests of the strength of building-materials. Besides the undergraduate students who elect this option in place of the regular course, it is proposed to admit graduate students, many of whom, it is thought, will be glad of the opportunity to reinforce their general knowledge of construction with the study of the most difficult problems presented by modern buildings.

WHAT is known as the Copley Square case, in Boston, is likely to give occasion for the settlement of some nice points of law. After the appeal to the Legislature last year, which resulted in the passage of a law limiting to ninety feet the height of all buildings around the square, a new building, near the Museum of Fine-Arts, was carried up to ninety-six feet. The law contained a clause providing that "steeples, towers, domes, sculptured ornaments and chimneys" might be carried above the ninety-foot limit, with the approval of the Board of Park Commissioners. The upper story of the new building in question, the "Westminster Chambers," is adorned with caryatid figures in terra-cotta, and the drawings were approved by the Park Commissioners and the Department of Buildings before being carried into execution; so that, to the suit which has been begun against them by the Attorney-General, for violation of the statute, the Trustees of the Westminster Chambers reply that the upper story of their building is decorated with "sculptured ornament," and therefore comes within the exception allowed by the statute; that, as their plans were approved by the Park Commissioners and the Department of Buildings, the responsibility for a violation of the law, if there has been any, rests with the persons appointed to interpret and apply the statute; and that the statute itself is unconstitutional and void, so that there can have been no violation of it by any one.

THE first claim, that an upper story with caryatid pilasters is a "sculptured ornament," is not likely to find much consideration at the hands of a court. It is obvious that the upper story of an apartment-house is primarily intended to be used as a habitation, while by no stretch of the imagination can it be conceived that the Legislature intended the expression "sculptured ornaments" to include dwellings. With the other claims, however, the case is different. The question whether the approval of the person appointed to apply the law is conclusive evidence that the law has not been violated has never, so far as we know, come before a court in so distinct a form; and it must be acknowledged that the contention that a person who has, in good faith, submitted his plans to the proper officer of the law, authorized to reject them, or require modifications at his discretion, and has had them approved by such officer, ought not, after they have been carried into execution to be liable to prosecution for violation of a statute which was interpreted for him by persons duly authorized, at a time fixed by law, when it was still possible to make any modifications required, is a very strong one. In the present instance, the plans seem to have been passed upon, and approved, by two distinct authorities, so that the case of the defendants is about as strong as it could well be. The argument as to the constitutionality of the law is, of course, beyond our province, but the decision will be of interest to all concerned in building.

ONE lesson which has been taught before, and which the Broadway fire of two weeks ago repeats with emphasis, is the necessity, in very high fireproof buildings, of protecting the windows, which are by far the most vulnerable part, against the assault of fire from the outside. Under present circumstances, no matter how perfectly the frame of the building may be protected, the windows, of which the outside walls principally consist, immediately give way before a current of hot air from a fire in the neighborhood, leaving the contents of the rooms which they light nearly as much exposed as if they were in the open street. In office-buildings, where the amount of combustible furniture and fittings is not very large, the woodwork may burn out without serious damage to the building; but, in warehouses, the aggregate of combustible material so exposed may be sufficient to destroy almost any construction. The well-known remedy for this state of affairs is either to make the windows very small, which is in most cases impracticable, or to subdivide the glass, so that, when attacked by fire from outside, it will not give way in large masses. Glazing in leadwork is obviously insufficient, as the lead melts immediately under the influence of a fire, but there are various ways of setting small pieces of glass in brass or copper bars, which give a very ornamental effect, while the copper bars, especially, are not likely to be melted by the heat of an ordinary conflagration. Besides this, which is the most artistic way of making the windows secure against fire, wire-glass can be used, but the effect is hardly ornamental enough for exterior openings. Undoubtedly, the tenants of office-buildings would rebel, at first, against the loss of the wide sheets of plate-glass to which they are accustomed, but the advantages to be gained by using small pieces of glass, set in comparatively infusible metal, are so great that the high buildings of the future are likely to adopt the system, at least for their upper stories.

ANOTHER use to which, as it seems to us, wire-glass, or glass in brass or copper setting, or even wire-gauze alone, might be put is that of subdividing the great retail department-stores, which form a standing menace to the lives of thousands of persons. As every architect knows, there is a constant struggle between the proprietors of these stores and the fire-engineers. The former insist on maintaining as large an open area as possible, not only for better diffusion of light but also to facilitate the movement of customers from one department to another; while the latter, thinking of the thousands of people who crowd these stores all day long, and the fearful consequences of the breaking-out of a fire in the vast mass of combustible material with which they are filled from cellar to roof, urge on every possible occasion their enforced subdivision, by incombustible walls, into spaces not too large for control by the ordinary fire-service, aided by the automatic sprinklers with which most of them are equipped. If city ordinances or building-laws could be so modified as to permit the use of wire-glass or similar partitions, in place of brick walls, it might be possible to reconcile the two interests, to the advantage of both. Of course, partitions of this kind should be placed at much more frequent intervals than would be necessary with brick walls; but a store covering, let us say,

twenty thousand square feet of ground might be divided into ten, or even twenty, sections, by means of wire-glass partitions, leaving openings only at the passageways, with little disadvantage to the proprietors, and great additional security to the public. The automatic sprinklers in sections of this size ought to be capable, alone, of confining a fire for a time to the section in which it originated, thus giving opportunity for the people in the store to escape, while, under the present system, a conflagration is sure to run in a few seconds all through the space enclosed by the brick walls of the building; and, if the partitions were glazed in the lower portions with clear glass, very little light or convenience would be sacrificed. In fact, the glass partitions would give an opportunity for placing the signs which are indispensable in a large store, but are not easily accommodated on the counters, and any architect could think of many ways of making them ornamental, as well as useful.

AN extraordinary piece of technical information is going the rounds of the newspapers, in regard to the floor of the Fourteenth Regiment Armory, in New York. It appears that the floor of this structure has settled in certain places, so that repairs are needed, and an examination was recently made of the conditions. It was found, by driving a "gas-pipe" into the ground, that the floor rested on beams, between which "inferior concrete" had been filled-in to a depth of five inches. Below the concrete was earth-filling, ten feet deep, and below this thirteen feet of mud, which rested on hard-pan. It is not surprising that a floor thus constructed should have "settled" in places, but the remedy suggested for the trouble is more questionable even than the original arrangement. According to the proposed scheme, the present floor is to be taken up, a pile-driver got somehow into the building, and piles driven, about ten feet apart, to the hard-pan. The piles are to be "capped" with yellow-pine timbers, and a new flooring is to be laid on these timbers. It is hardly necessary to observe that the "settlement" in a floor of this sort would soon be much worse than in the present one, for the piles would inevitably rot at the water-line, letting everything above them fall. The flooring which would occur to every architect as most suitable under the circumstances would be one of concrete, spread in a uniform sheet, at least a foot thick, over the surface of the ground, and finished with asphalt; or, if wooden flooring were indispensable, planks laid over the concrete, spiked to tarred sleepers, lying flat upon the concrete, but not buried in it. Either of these systems would make a durable floor. It is unnecessary to remark that the five inches of concrete between the present beams, or, rather, sleepers, is useless as a support, being interrupted by the beams, and that it hastens the rotting of the latter. Its sole use is to keep down exhalations from the mud beneath it. A quarter of a century ago it was common to lay the basement-floors of houses and stores in New York with boards, nailed to hard-pine or chestnut "sleepers," which were simply joists, lying flat on the ground, about twenty inches apart. Little grooves were scratched in the earth, for the sake of levelling the sleepers, and, in special cases, the ground between the sleepers was covered with two or three inches of concrete, which was neater in appearance than the natural earth, and kept down the dampness. Of course, such floors soon rotted away, and it was considered usual and normal to replace them about once in every five years. The inconvenience of moving all the cases in the basement of a store for the semi-decennial renovation of the floors may be imagined, and the substitution of the sheet of concrete, with asphalt or wood over it, was a great, though unpretending, advance in the art of mercantile building. In an armory, the inconvenience of replacing a floor on sleepers is less serious than in a store, but a public building ought not to require periodical repairs of the sort; and, if a change must be made in the Fourteenth Regiment Armory, it should consist in the substitution for the present floor of something permanent, rather than a construction which would last only a few years, and could be repaired or replaced only at great expense.

THE *Bulletin* of the Department of Labor for November, 1898, contains some interesting information in regard to mutual-benefit associations in printing-offices. It is hardly necessary to say that the persons employed in printing-offices in this country have been, from Franklin down, noted for their intelligence, and their experience affords some valuable suggestions. The largest association of the kind here is that formed in the Government Printing-office, at Washington, which has now nearly six hundred members. The initiation fee is one dollar, and dues one dollar per month, but the surplus of receipts over expenditures is returned annually, in the shape of dividends, to the members, and, as the dividends average about nine dollars a year, and have reached eleven dollars and over, the net cost to members of insurance against sickness is very small. The benefit afforded is liberal, members being allowed ten dollars a week for a period not exceeding six weeks in any one year, under certain restrictions, no one being allowed to draw pay for sickness "arising from excessive indulgence or indiscretion," and the Governing Committee being authorized to decide when a member drawing sick pay has so far recovered that payment should cease; while those who have drawn sick pay to an amount larger than their annual dividend are not entitled to the dividend. Although so simply organized, this association has been very successful. A small salary is paid to its officers, who have to do a good deal of work in collecting and disbursing more than six thousand dollars a year. In certain private printing-establishments, particularly in New York, a banking feature is added to the scheme. Thus, in the *World* newspaper office, loans, to an amount not exceeding ten dollars to any one person, may be made, in one association, to members, at what the *Bulletin* calls the "moderate" rate of interest of two per cent a week, interest being paid weekly. As the treasurer is authorized to lend in this way all the funds of the association, beyond a reserve of thirty dollars, it may be imagined that the interest account forms a tolerably large item in the statement of income. The dues are fifty cents a week, but nearly half of this is returned in the form of dividends. Ten dollars a week is paid in case of sickness, for a term not longer than thirteen weeks, and sick members are exempt from weekly dues, and receive their dividends like the rest. Another association, also in the *World* office, lends money at five per cent a week, and this banking feature is so profitable that the dividends often exceed the dues. The economist will observe that in this way the chronic borrowers pay the sick benefits, but perhaps this is not unfair, and the reflection might be beneficial in checking borrowing. In several of the newspaper offices, a sum of money is paid at the death of a member, as well as in the case of illness; and one of the German societies, very thoughtfully, makes a payment of fifty dollars to any person who has been a member for not less than six months, on the death of his wife. The Boston *Herald* has an association, the books of which are kept rather peculiarly, the statement for 1895, for instance, showing receipts of nearly eighteen hundred dollars, and disbursements of seven hundred and ninety-six dollars, with no dividend, as well as, in general, a want of balance between income and expenses; and most of the other large printing-offices in and about Boston have similar organizations. At the Riverside Press, where many women are employed, the dues paid by them are reserved to pay sick and death benefits to women members only, the men's assessments serving to pay sick and death benefits to male members, and the "running-expenses of the association," whatever those may be.

THE death of Sir John Fowler, the renowned engineer of the Forth Bridge, and of the London Metropolitan Railway, should not pass unnoticed, even in a journal devoted to an art for which Fowler cared even less than most engineers. His greatest work, the cantilever bridge over the estuary of the Forth, with a clear span of something like sixteen hundred feet, is one of the least beautiful structures in the world, and unnecessarily so, as the conditions rather favored an artistic treatment. However, Sir John Fowler made up in energy and originality what he lacked in sentiment, and reaped the reward that engineers generally find who combine boldness of imagination with skill and care in working out details. His first important work was the underground Metropolitan Railway, the planning of which he shared with Sir Benjamin Baker, and his varied accomplishments as an engineer are well shown by the fact that he constructed for the road a locomotive, of what was then novel design, and great power, which served as a model for nearly all subsequent English locomotives. After this, he was called to Egypt by Ismail Pasha, and planned the railway system extending from Cairo to Khartoum. Returning to England, he was called upon to design the Victoria railway-station in London, and the Grosvenor Bridge over the Thames, and afterwards, with his former colleague, Sir Benjamin Baker, the Forth Bridge, which was one of his last works.

SOME PALACES ON THE GRAND CANAL.[1]—III.

A LAPSE of social prestige similar to that of the Palazzo Foscari attaches to the Palazzo Balbi (Fig. 21), designed by Alesandro Vittoria in the seventeenth century, and inhabited by the great geographer. This building, from whose balconies leaned Napoleon and Josephine when they were still lovers, is now the factory of a Mr. Guggenheim, the vulgar display of whose name mars the façade. The merit of Vittoria's design however is still evident. The distribution springs naturally from the plan; the light springing arches of the centre are flanked by strong abutments (a thing which we seek in vain in the Ducal Palace) and the unity, or connection of all the parts, is logical.

Fig. 21. Palazzo Balbi.

The Moncenigo Palace (Fig. 22), by Longhena, architect of the Palazzo Rezzonico, shows a similar unity, minus its grace. This was the home chosen by Lord Byron during his visit in 1818. Here he translated St. Paul's Epistles to the Corinthians into Armenian, made love to Mariana, wife of a cloth merchant, for whom, he says, his love was "fathomless," and lived at the same time with Margarita Cogni, a handsome contadina of La Mira. The latter "was a fine animal, but quite untameable," writes Byron. In a burst of jealousy at a carnival masquerade she tore the mask from the face of Madame Contarini, who was leaning affectionately on the poet's arm, and so comported herself generally that she was sent back to her husband, by her lover, with the aid of the police. In the Palazzo Moncenigo Byron also began his *liaison* with Countess Guiccioli of Ravenna, whom he had met at the house of the Countess Abrizzi, "the Mme. De Staël of Venice." Doubtless, it was under these various influences that he wrote:—

> "I like the women, too—forgive my folly—
> From the rich peasant cheek of ruddy brown,
> And large black eyes, that flash on you a volley
> Of rays that say a thousand things at once,
> To the high dame's brow more melancholy,
> But clear, and with a wild and liquid glance,
> Heart on her lips and soul within her eyes,
> Soft as her clime and sunny as her skies."

Leaving the Moncenigo and its licentious associations, we pass on to the Palazzo Corner Spinelli (Fig. 23), a fine building, happy in the assemblage of its parts, sturdy in its horizontal subdivision. The corners of the building are simple, strong, and in good proportion. The usual centralization of shadow, which obtains here, as in most Venetian palaces, is singularly lacking in its *vis-à-vis*, the Palazzo Grimani S. Polo (Fig. 24), erected by one of the Lombardi. In the latter the composition seems to sprawl without the gain of anything pictorial, and the windows are not in happy proportion. A finer specimen is the Palazzo Papadopoli, better known as the Tiepolo Palace (Fig. 25). The design is attributed to Sansovino and is held to be one of the finest examples of late Renaissance in Venice. How it derived its secondary name is unknown. Probably the hero of the Quirini - Tiepolo conspiracy occupied a house upon the same spot, which, like the Casa Tiepolo at San Agosto, was demolished by the Senate. However this may be, the present Tiepolo mansion belonged originally to the Coccina family, from whom it was purchased by the Counts of Papadopoli in 1864. During the life of the present incumbent the building was carefully decorated and sumptuously restored, and, though formal in outline, is distinctly monumental. Indeed, it has only one rival in its *genre*, namely, the home of the Grimani and masterpiece of Sammichele (Fig. 26). This palace is mentioned in "*Venezzia Descritta*" as one of the four "*principalissimi di tutti i palazzi del Canal Grande.*" Ruskin calls it "the principal type in Venice, and one of the best in Europe, of the Central architecture of the Renaissance schools." A striking feature is the position of the building as a connecting-link between the architecture of ancient time and the architecture of to-day. In the Gothic period, for example, windows were always grudgingly inserted, and shadows were used merely as a punctuation to the monotony of the wall-space. But during the Renaissance this rule was often reversed, and the constructive features became the punctuation of the shadow. To avoid any appearance of weakness in the eyes of people accustomed to fortress façades, these constructive features were often strengthened to an unusual degree, and light

Fig. 24. Palazzo Grimani S. Polo.

Fig. 22. Palazzo Moncenigo (Lord Byron's).

[1] Continued from No. 1195, page 64.

springing arches were introduced under lintels merely as a concession to sight, not as a necessity of mechanics. These marks of evolution are conspicuous in the Grimani Palace, designed by Sammichele, architect of the Bevilacqua, Canossa and Verzi palaces at

Fig. 23. Palazzo Corner Spinelli.

Verona. Here the sturdy groupings of columns and pilasters quarried from the hillsides of Istria and the light springing arches beneath bold sweeps of finely-profiled entablatures give an appearance of splendid durability. Yet light and air reign everywhere throughout the interior, and the plan is congruous and convenient.

Hence the same design which won the applause of the sixteenth century for its beauty recommends itself to day for its logic, whether the requirement be palatial or commercial.

Nearly all the more important members of the Grimani have dwelt in this palace: Marino Grimani, Patriarch of Aquilea, the Amphitryon of the family, whose gorgeous banquets vied with those of Antony and Lucullus; the Dogaressa Morosina Grimani, founder

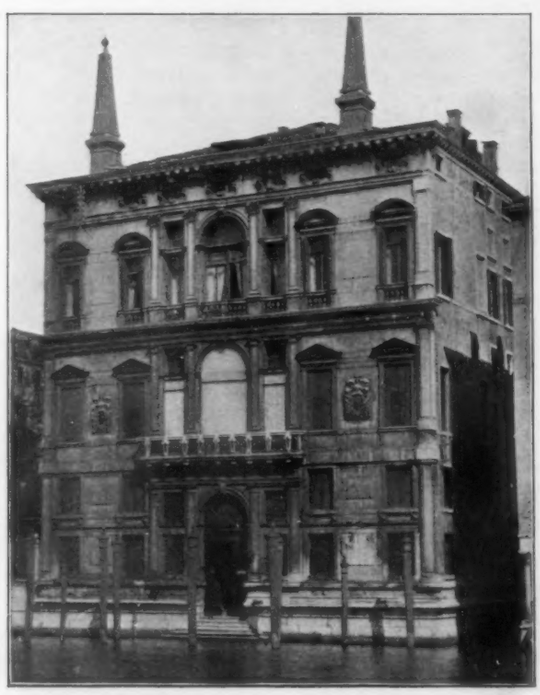


Fig. 25. Palazzo Papadopoli, formerly Tiepolo.

of those great lace industries, whose fabrics, fine as woven air, played so prominent a part at the coronation of Richard III of England;[1] Cardinal Dominique Grimani, the cultivated, eager collector, whose villa at Santa Maria Formosa contained masterpieces by Memling, Albert Van Ouwater, Joachim Patenier, and Albrecht Dürer, and a famous breviary for which he paid 500 ducats, as well as statuary from the hands of Donatello and Montelupo, and coins, medals, illuminated MSS., swords and helmets encrusted with jewels.

Perhaps the most important Grimani was the Doge Antonio (1436–1523), the founder of the family, who commanded the fleet of the Greek colonies against the Turks under Bajazet. Being compelled to retreat, he was accused of compassing his own defeat, in order to bring disgrace upon Loredano, his second in command, and was condemned to exile. His son, Dominique, besought the Grand Council to be allowed to suffer in his father's stead, and, on refusal, wished to share his sentence. This devotion so touched the Senate that the great deed of Antonio was reviewed, a second vote was taken, and his penalty was remitted. He entered Venice in triumph, amid the wildest acclamations and the grandest festivities which the city had ever seen, and he was raised to the rank of Doge, taking up his residence in the palace which now bears his name.

The Palazzo Grimani, as well as all the other palaces of the territorial nobility, was sumptuously decorated internally. Floors were of marquetry or mosaic, ceilings were coffered and elaborately carved. Paintings by Francia, Pardenone, Carpaccio or Gentile Bellini adorned the walls of the State apartments, and corridors were hung with Flemish tapestries, or stretched over with *cuori-d'-oro*, a kind of gilded stamped leather very popular in Spain. Venetian mirrors reflected the light of hanging-lamps wrought in bronze, niello, or chased silver, divans were loaded with tapestried cushions from

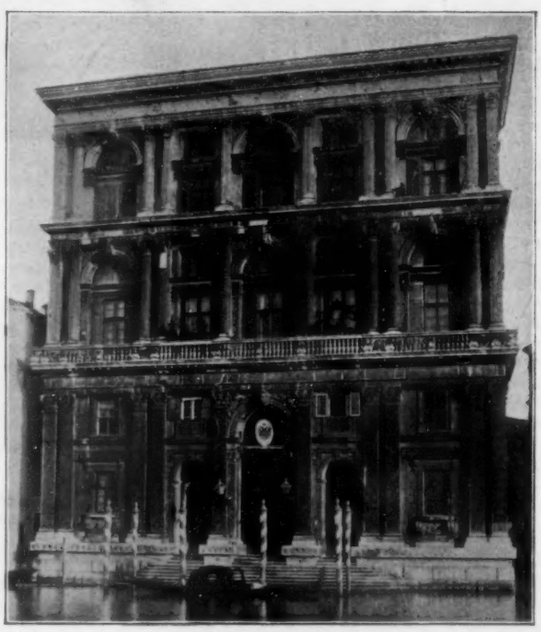


Fig. 26. Palazzo Grimani.

Beyrouth, Alexandria and Damascus, and vases of agate or chalcedony were filled with those rare plants from the gardens of Murano which Castaldi di Feltre set to music. Precious parchments and illuminated manuscripts were laid away in carved chests of mediæval manufacture, and even the beds were hung with cramoisie velvets or silks embroidered with turquoises. Stimulated perhaps by these luxurious surroundings, the patricians and merchant princes of Venice vied with one another in the number and costliness of their entertainments, and gathered together the most brilliant minds of the day. Sperone, Bembo, Goldoni, Aretino, Girolamo Molino and Bernardo Tasso lent the wit on these occasions. Catherine Conaro, Lucrezzia Capello, Paulina Donato,[3] Marietta Caravella[3] and the Duchess of Ferrara added beauty, and thoughtful scholars and cultivated bibliophiles from the Academy of Pellegrini, clad simply according to custom, supplied a quiet background to the splendid suites of the senators, prelates and ambassadors of foreign courts, and to the silks and embroidered velvets of court-pages and cavaliers. Indeed, the magnificence of Venetian costumes added great *éclat* to all festivities and became a matter of marvel to all the courts of Europe. Sanudo tells of the surprise of Tan Gavardino, the envoy of the Sultan of Egypt, on seeing fifty gentlemen-in-waiting clothed in gold brocades.[4] And Casola, the Milanese historian, draws a striking comparison between a Venetian lady of noble family and the Queen of France.

[1] See "*Molmenti*," Vol. II, p. 72.

[2] "*Dominichi*," pp. 261, 262.

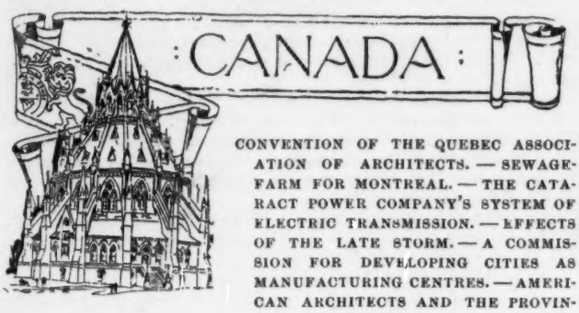
[3] Marietta Caravella was exiled for ten years for defacing the doors of the Countesses Veniero and Diedo with suggestive pictures, those ladies having refused to accompany her to an evening entertainment provided by Marco Grimani.

[4] "*Sanudo*," Vol. VI, p. 20.

Court-pages of ordinary noblemen were dressed in violet velvet embroidered with seed pearl, or ruby brocade slashed with white grosgrain, and laced over with golden guilloches. Every bride of good birth was given a dozen gowns of velvet, a dozen gowns of brocade, and a dozen gowns of satin with cuts of curious needlework in gold, to say nothing of coffers, mirrors and gems; while the heads of the women at ordinary entertainments were so loaded with pearls and jewels that a tax was imposed by law in 1574 restricting their profusion.

Such was the wealth of tone and color which adorned the *interiors* of Venetian palaces during the Renaissance. C. T. MATHEWS.

[To be continued.]



CONVENTION OF THE QUEBEC ASSOCIATION OF ARCHITECTS. — SEWAGE-FARM FOR MONTREAL. — THE CATARACT POWER COMPANY'S SYSTEM OF ELECTRIC TRANSMISSION. — EFFECTS OF THE LATE STORM. — A COMMISSION FOR DEVELOPING CITIES AS MANUFACTURING CENTRES. — AMERICAN ARCHITECTS AND THE PROVINCIAL ASSOCIATIONS.

THE Province of Quebec Association of Architects convened for the purpose of holding its eighth annual meeting on the 3d and 4th of November. This convention was the most important and the most interesting of any, in that it was the first to be held after the victory it has gained was won. It met this year congratulating itself upon the success of the labors of the past eight years and with a feeling of intense satisfaction that that for which it had striven so long and earnestly in the interests of the public was at last achieved. The President, Mr. J. F. Peachy, of Quebec, in his address, subsequent to his relinquishing the chair, said, "Our Association, founded eight years ago, has made yearly progress and gained public consideration. . . . We may now feel that the Province of Quebec Association of Architects is firmly established."

"We have at last obtained," said the Council in its report for the year, "what we desired as much for the welfare of the community as our own, but which we failed to obtain at the inception of our Association, namely, the right to prohibit unauthorized and unqualified persons from calling themselves architects. . . . The profession is now closed to unqualified practitioners and only three alternatives are left to outsiders who wish to qualify themselves to practise: —

"1. Old members having allowed themselves to be disqualified may reënter by paying their arrears, subject to the action of the Council.

"2. Members of a well-known sister society who come to settle and practise regularly in the Province, by presenting their credentials.

"3. Those who shall pass the examination prescribed by the charter and by-laws.

"The arduous task of the material organization is now nearly completed and the Association may congratulate itself on having secured an authority much coveted by many similar and more influential associations than ours. Not only the interests of the profession but more especially those of the public are now protected against incompetent and doubtful practice. The time has now come to put into practice the ideal formulated in the constitution, and aiming to foster the dignity and integrity of the profession, to encourage a better companionship and mutual respect between architects, and, last but not least, to promote the progress of the art, without which all the rest will be useless. . . . Your Council did not lose sight of the important duty imposed, of endeavoring to obtain the sanction of the Lieutenant-Governor to our schedule of charges, as provided for in our original charter. It was thought desirable to obtain legal co-operation, and this has been secured. Your Council trusts that this matter also may soon be brought to a satisfactory issue."

Mr. Alphonse Raza is the newly elected President of the Association for the year. In his opening address Mr. Raza pointed out the absolute necessity of the work of the Association being backed up by "good, intelligent, well-directed, city by-laws." . . . "Such by-laws are of immediate necessity, not only from an artistic point-of-view but for the security and comfort of the community, as it often happens that through eccentricities and exaggerations one endangers neighboring properties." The necessity for such by-laws with reference to building is very great all over the Dominion, and they must in turn be backed up by an intelligent system of inspection; plans must be submitted to an enlightened Board of Examiners, advised by a qualified architect, who shall be above jealousies and petty meannesses; all this must be taken in hand by the Association without delay, and the merits of the system clearly expounded and firmly insisted on.

The City of Montreal is about to make the experiment of the disposal of the sewage of one of its wards, St. Denis, by means of a sewage-farm. This is the first time the attempt has been made to operate a sewage-farm in so cold a climate. Since the harbor on the St. Lawrence River which accommodates the ocean-liners has been protected from the rapid current by a guard-wall, the water within the guard has become a pool of still water in which the sewage collects and floats, much to the detriment not only of the appearance of the harbor but also to health. A ten-acre farm is expected to do the work for the ward. The scheme has been prepared by Mr. C. Janin, C. E., who has had a considerable amount of experience in France in sanitary work, and the estimated cost for the construction of the necessary buildings and sewers, including equipment, is $16,000. The City has secured the option of purchasing, in the neighborhood of the ten-acre-lot, sufficient land to accommodate all the sewage of the city if the experiment proves successful.

An interesting piece of electrical engineering has recently been accomplished with great success. It is the transmission of electric-power from the Decew Falls, a distance of 34 miles, to the City of Hamilton. The Decew Falls are 4 miles south of St. Catharine, on the south shore of Lake Ontario. The water is taken from the Welland canal at the Lake Erie level at Allanberg and carried by a canal to the brow of the cliff at Decew Falls, where it is stored in three large reservoirs. It is conveyed over the brow to the power-house at the foot by a great steel pipe 8 feet diameter at the top and 6 feet at the bottom — a fall of 270 feet. From this power-house it is carried by four copper cables to Hamilton and there distributed at the power-house throughout the city. There are two new and significant features in the system inaugurated: first, that it employs the highest head in America using turbines, and, second, that it represents the highest pressure at which current is transmitted. The great power-system on the American side of Niagara transmits power at 10,000 volts' pressure, this one at 22,000. The company calls itself the Cataract Power Company of Hamilton, Ont., and was organized in the autumn of 1897. Work was begun in October of that year and power generated for the first time on August 26th last. The President of the company is Hon. J. M. Gibson and Mr. John Patterson, the originator of the scheme, is the Secretary. The capital is $1,000,000, of which $400,000 has been already invested. The electric-lights of the streets in Hamilton are the first to employ the new power, and only thirteen months have been occupied in all the work.

On December 4th the southern portion of Ontario and the northern portion of the State of New York was visited by a heavy snow-storm coming from the east and having its centre down the middle of Lake Ontario. The City of Hamilton, therefore, came in for the full force of the storm, and even the traditional "oldest inhabitant" has no recollection of any storm to equal it. The weather being mild, the snow was soft and every flake stuck where it fell. Telegraph and telephone wires were gradually converted into 6-inch cables, the weight of which was so great that their supports gave way. The main lines of telephone communication, to the number of from 80 to 100 wires, are strung on poles 30 feet high and 2 feet diameter at the ground. These poles snapped like matchwood, and where one pole gave way every other along the block was forced to go also. The falling of the telephone-wires brought down numerous cross-lines and the heavy copper wire of the street railway, and until the power was shut off at all generating places the display of electricity was interesting to watch, but the danger from the loose live wires was very great. The weight of snow on the trees that line nearly all the streets bent all branches to the ground, heavy boughs were rent off and the ground was strewn with branches, wires and poles to a degree that baffles description. At places the streets were completely blocked. The loss is figured at $500,000 to the different electric companies but the damage to the shade-trees is irreparable. The clearing away of the wreckage was immediately begun and the Bell Telephone Company telegraphed for assistance to Montreal and Toronto and were supplied, within twenty-four hours, with 100 trained wire-men. It will, however, be a week before the streets are again lighted by electricity, while the telephones are not expected to be in thorough working order for a fortnight. Nor do the street and radial railway companies expect to have their cars out before a week is passed. Toronto, which has had two such storms in the last five years, escaped with little damage this time; but for all this we are not likely to see the wires put underground, although, of course, there is the usual flood of correspondence on the subject in the daily papers.

The City of Toronto a year or so ago began to make an experiment with a view to increasing the importance of the city by making it as far as possible and by degrees a manufacturing centre. A commissioner was appointed whose principal duty is to keep his eye open for manufacturers in other places who might be induced to remove from their present locations and settle in Toronto and then to interview them with this object.

Inducements such as freedom from taxes, water-rates and similar burdens are offered by the city, provided an agreement is entered into for the employment of so many hands, and so on. Sometimes it is a free site that is the bait, or it may be that the city will bear the expense of removal; but whatever the inducement, the result is looked upon as very satisfactory, and so much so that other cities have been awakened to the desire to do likewise. Montreal has formed an association of leading business men to forward the interests of the city in that direction, and Hamilton, Ont., is about to follow Toronto's example and appoint a commissioner. This movement has a very substantial effect upon the building-trade, as may be expected. It has in Toronto, through the extensive advertising that the city has received, resulted in bringing to a head a scheme which

has long been discussed, namely, the erection of an immense hotel, and the present hotels are to be very much increased in size and modernized where they need it. The value of property rises in proportion and business generally is fast improving.

The Province of Quebec Association of Architects has had an unpleasant duty to perform, which has given rise to a considerable amount of discussion in the papers, and a great deal has been said that had better have been left unsaid, and would not have been said if the facts of the case were known, and it is as well that the truth should be stated to clear up a great deal of misunderstanding. Mr. Richard Waite, an architect of Buffalo, N. Y., applied to be admitted to membership in the Association and, to his surprise and the indignation of others, his request was refused. The Secretary of the Association, Mr. Joseph Venne, found it necessary to address a letter to the local press, in explanation of the Association's action, in which he states that, "under an Act of Incorporation and By-laws, without reflecting in any way on the ability or status of Mr. Waite, it is not in our power to accept him. Membership is restricted to those who were definitely and regularly practising in the Province of Quebec previous to the date of the passing of the amendment of the Act, and excludes those who may be domiciled in a foreign country." The above letter ought to satisfy every one who reads it that no insult was intended by the Association to Mr. Waite and also that there was no feeling of personal animosity to him in the minds of the members, but it was unfortunate that this should have been one of the first acts of the Association to come before the public since the amendment to the Act of Incorporation was made law.

TRIAL BY FIRE.

NOTHING less than great loss of property or life will teach some lessons. In the recent New York fire we have at last solid proof that the "sky-scraper" is dangerous to its tenants, its neighbors and the public, and that it is likely to be a bad risk for underwriters.

With thoughtful and public-spirited people this type of edifice has always been deemed an unjustifiable venture in what might be termed real-estate piracy — a means by which greedy and unscrupulous owners could enrich themselves at the cost of more conscientious and prudent neighbors, to the great injury of such neighbors and the people at large. No man has the moral right to indulge in building excesses that imperil his fellow-citizens.

The ordinary evils of obstructed light, increased draughts through narrow alleys or streets, congested streets and sidewalks, and overtaxed sewerage, water, gas and electric pipes and conduits, have been repeatedly pointed out by experts and are patent to any careful observer. The loss to all real property not within a limited area has also been clearly shown.

Why shrewd business men should have been enticed into this indulgence in excessive height in building is one of the puzzles of our day. Some of the first experts called on to satisfy the demand did it under protest. But this passion for aërial "expansion" seems to have swept away all reason. Every child knows that it is easier to roll a weight on a level than to lift it bodily into the air. It takes only the commonest common-sense to estimate the multiplied risks of high buildings through increased opportunities for the spread of disease by massing large numbers of people together, the multiplied chances of more serious elevator-accidents, the hazard of panic, the possibilities of the obstruction of all means of escape through fire, smoke or explosion in lower stories or in the immediate neighborhood, and by countless other evils, that increase in almost geometrical progression when a building is carried up above the normal limit of general average.

Added to such dangers is that of the probable early failure of the light steel-and-veneer system of construction, which has made it possible to make these (so-called) "buildings" profitable for the time being. They are really no more "buildings" in the true sense than the Eiffel Tower or the Ferris Wheel. A proper building should have enough surplus material and strength not only to ensure stability under all ordinary conditions but to allow a fair margin for accident, or even abuse, and considerable deterioration. This extra stability the steel-and-veneer building lacks. It is a hazardous work of engineering, not architecture. Its "factors-of-safety" are very small. And instead of allowance being made for misuse and deterioration, its strength is not ordinarily calculated to equal the stresses that its normal use may demand. There is every reason to believe that the light steel frame will suffer from strains and rust, and its weakest part may wreck the whole. And adequate proof or test of time to show the contrary has not been given.

For misuse there is the most probable result in the near future. The demand for offices being limited, and subject to fluctuation, and the same spirit governing the leasing of the "sky-scraper" that prompted its erection, rooms built for offices will be leased for sample-rooms, and then, perhaps, for light storage and manufacturing, with the consequent accumulation of combustible stock in upper stories, where the light is best. Then we have suitable food for the hottest of fires, beyond the reach of any fire-department, and overtopping whole neighborhoods. When the heat becomes intense enough to affect the light steel frame there is the added risk that the whole structure may crash on to the roofs of the lower neighboring buildings. A few such buildings, if crippled in the midst of large areas of conflagration, would furnish such obstructions to fire-fighting as have never been known before, at the same time offering no obstacle to the spread of the flames. Questions of good taste are left for another opportunity. The general appearance of New York City is, for the time being, substantially ruined and parts of Boston are fast taking on a similar look. But until investors realize that there is a substantial money return in fair and harmonious architecture, which there surely is, such considerations, must be left to the few who recognize and profit by them.

Hitherto all criticism of "sky-scrapers" has been met by the assertion that they were substantially fireproof; in fact, barriers against fire. To this claim the recent New York fire gives an emphatic negative.

No building can be called fireproof against any considerable accumulation of combustible storage, except, possibly, one of solid brick construction, with very limited floor-areas to its compartments. A building above the reach of the fire-department can never be fireproof. Private fire-departments and water-storage are most uncertain and deluding protectors.

In a tall building every area and shaft becomes a blast-furnace, increasing in effectiveness with increase in height. If surging flames are to sweep through every office, destroying all the contents, finishings and furnishings and endangering life, even though some semblance of a structure remain, one would be infinitely more secure in a low building of ordinary design.

Even admitting that the danger to this type of construction is at first largely from the outside, it is made a serious menace to all neighbors by its excessive bulk, flimsiness and probable deterioration.

This peculiar construction and excessive height — "architectural scenery" it may well be called — is a Western craze, and not much better adapted to our Eastern conservative tried-and-safe methods of building than the "stick-and-staff" combinations of the Chicago "White City."

Although Boston has a lower limit of height than most other cities, it is not, in connection with its narrow streets, low enough. And our danger from fire is in some sections very great. Measures should be taken at once to restrict the height to a level which our fire-department can effectively reach.— *John A. Fox, in the Boston Transcript.*

BEAUX-ARTS SOCIETY.

THE annual meeting and dinner of the Beaux-Arts Society was held at the Café Flouret, on November 18th.

The retiring President, Mr. Walter Cook, addressed the Society, speaking of the work of the past year, and in particular of the success of members of the Society in the New York Library and California University competitions.

The reports of the Secretary, Treasurer and Committee on Education were accepted, that of the Treasurer especially being received with great enthusiasm.

The following officers were elected for the coming year; *President*, John Galen Howard; *Vice-President*, Edward L. Tilton; *Treasurer*, Joseph H. McGuire; *Secretary*, Charles Butler; *Corresponding Secretary*, Theo. Everinghim Blake; *Committee on Education*, Ernest Flagg, John M. Carrère, Charles Morris, Cary S. Rodman, and Atelier Blondel. Scellier de Gisors was elected a member of the Society.

An invitation was received from the Architectural League to take part in their dinner and meeting of January 3d, and it was decided to inform all the members of the Society in order that as many as possible might be present.

The meeting concluded with the enthusiastic reception of the six "*derniers nouveaux.*" CHARLES BUTLER, *Secretary.*

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

THE ROMAN CATHOLIC CATHEDRAL, BALTIMORE, MD. B. H. LATROBE, ARCHITECT.

[Gelatine Print, issued with the International and Imperial Editions only.]

THE first Metropolitan Catholic Cathedral, fronting on Cathedral Street at the corner of Mulberry, and running east to Charles Street, was commenced in 1800. Its outward length including the portico, is 200 feet; its width, including the arms of the cross, is 177 feet, and its height, from the floor of the nave to the summit of the cross which surmounts the dome, is 127 feet. Its style and decorations are of the Grecian-Ionic order. It is remarkable throughout for the chaste simplicity of its design and the beautiful proportion of all its parts. The great dome is 207 feet in circumference internally, and 231 feet externally. Circular panels, ornamented with rosettes and decreasing as they approach the vertex,

and terminating at the opening in the centre, 72 feet in circumference decorate the inner dome. Above this is the external dome, and the flood of light is introduced in such a manner that the means of its introduction are not seen from below. Between each of the supports of the principal dome springs an elliptical arch — the arch at the head of the cross forming the outer line of a smaller dome — which, supported by six Ionic pillars, covers the grand altar.

The organ-gallery rests on an Ionic colonnade, which contains an organ which is said to be the largest, or was up to a very recent period, in the United States. It has 6,000 pipes and 36 stops.

The side-aisles are terminated by two pictures. That on the right is the "Descent from the Cross," painted by Pauline Guerin — a present from Louis XVI to the Archbishop — and that on the left, "St. Louis burying his Officers and Soldiers slain before Acre." This very valuable painting is the work of the celebrated Steuben, and was presented by King Charles X, of France.

COMPETITIVE DESIGN FOR "SHATTUCK PRIZE" FOR ARTISANS HOMES. [OPEN COMPETITION.] SUBMITTED BY MESSRS. STICKNEY & AUSTIN, ARCHITECTS, 50 BROMFIELD STREET, BOSTON, MASS.

OUR solution of this problem shows a scheme of twenty-two houses, two single houses, and four flats or tenements in the second and third stories of the club-house, which, at rents varying from $15 to $22 per month, should yield, with good management, a net profit of 5 per cent and leave, besides, a sinking-fund at the end of twenty-five or thirty years sufficient, if the property were then sold, to insure the recovery of the capital originally invested. The appended tables of cost will explain the financiering by which we reach this result.

General Plan. — The houses are, in all cases, at least 20 feet apart, and generally, especially in the rear, are much farther.

Front doors and piazzas are as isolated as possible from their neighbors and simple fences mark the boundaries.

While each householder has some land of his own, the amount varies, and this fact accounts for the difference in the rent-roll, since the houses themselves are practically alike. We assume that artisans seeking suburban homes would be of the highest grade, with a love for country and garden and the ability to pay accordingly. It would be desirable to make possible for any and all of them to become owners instead of tenants.

Double Houses. — The double houses, separated by 8-inch brick party-walls, are of one general type of plan with three varieties of design for the exteriors. The cellars would be concreted, the foundation-walls laid in cement-mortar, the exterior walls of frame and boarding and covered with cement-plaster on wire lath; the roof shingled and unstained; the upper floors of spruce or pine, the finish of cypress or whitewood, the walls and ceilings plastered two coats on wooden laths; the cellar ceiling one coat; one room finished in the attic; flues for stoves in kitchen and parlor and rooms over, and all exterior finish of pine or cypress of simple stock moulding and painted two coats. Each house would have a bath-tub, water-closet and bowl on second floor, and a sink and two laundry-trays in the kitchen.

The parlors would be about 11′ 6″ x 13′, the dining-rooms 10′ 6″ x 12′ and the kitchens about 10′ x 10′. The two latter rooms are each rather small, but as they could be thrown together by means of a double doorway they would — practically — serve as one large living-room while retaining the advantages of separate apartments when desired. We believe that the arrangement would prove attractive to the class of tenants contemplated — a class that dispenses with servants — as the housewife's labor would be thereby minimized, while the family would feel a certain measure of increased self-respect in taking its meals in the dining-room, which could be shut off during these functions from the smell and heat of the kitchen.

Single Houses. — The single houses would be similar in construction but planned with a little more elbow-room and provided with certain luxuries in the way of fireplaces, coat-closets and additional bedrooms.

Tenements. — The tenements over the club-rooms would each consist of six rooms and a bath-room; the bedrooms in all cases being in third story and reached by a private staircase for each tenement from the second floor.

Club-rooms. — Partly to lend an architectural interest to the scheme by providing one dominating building and partly as a philanthropic measure, we suggest that the first floor of these tenements be given over to a general club-room for games, conversation and small parties, with adjoining rooms for periodicals and newspapers, etc., and with an office for the estate's bailiff or steward.

Bailiff or Steward. — In our schedule of current expenses we have included an item of $1,000 for salary of bailiff or steward, whose duty it would be to collect the rents, keep the club-rooms in order, act as real-estate agent in letting vacant houses, keep the park in good condition, and run the heating-plant in connection with the club building, and have a general oversight of the property. He would be accounted one of the fifty tenants and pay a rent of $15 a month for one of the tenements. By being constantly on hand, rents would be more readily collected and evasions less liable to occur.

The Park. — It seems hardly necessary to expatiate upon the added inducements which this park would furnish to prospective tenants. It would be possible to allot a portion of it to lawn-tennis and croquet, under restrictions, and while it is a part of the scheme to have the town or city accept it together with the roads and sidewalks, after completion, thus reducing the amount of taxable property, it is assumed that some arrangement could be made whereby the care and oversight of it would devolve upon the capitalist through his bailiff, thus insuring its continual sightliness. The cost of grading, seeding, planting, paths and a simple fountain need not exceed $500.

Roads. — Good gravel roads and sidewalks are contemplated, with a width of 40 feet to insure their acceptance by the town or city. Under favorable conditions, these roads and sidewalks could be built for $1.60 per foot.

Sewer, Water and Gas. — It is assumed that the capitalist would have to build the sewer, which would run from 6″ to 15″ at the junction with the main line. This sewer, with the necessary manholes, etc., could be built, under the assumed favorable conditions, for an average price of $1.00 per foot.

We assume that the city would carry the main water-pipes and branches to the various houses, and that the gas company or electric-light company would do the same with their pipes or wires.

Cost. — The double houses, constructed by the wholesale, could be built, under favorable conditions assumed, for $3,400 each, including the architect's commission. This figure is obtained partly from actual estimates made from quarter-scale drawings and partly from our experience with similar houses. The price covers a cheap wall-paper in the parlor and painted walls in the dining-room and hall, and simple gas-fixtures. As each double house covers about 1,300 square feet the cost per square foot would thus be $2.61 and per cubic foot a fraction less than ten cents, the first and second stories being respectively 8′ 6″ and 8′ high and the attic 7′ on an average.

The two single houses, estimated on the same basis, would cost about $2,000 each.

The club-house and tenements over would cost $4.00 per square foot, as the outer walls of the 12-foot first story would be of 12-inch brick with the cement and half-timber effect above.

SCHEDULE A. — COST.

Land, 174,240 sq. ft. at 15 cents		$26,136
836 feet of 40′ roadway and sidewalk at $1.60		1,337
850 " " sewer at $1		800
Grading, paths, etc., in park		500
COST OF HOUSES.		
44 houses cost, each $1,700	$74,800	
2 " " " 2,000	4,000	
Club-house with four tenements, cost	11,300	
Total cost of buildings	$90,100	$90,100
Grading private grounds and alley-ways		1,200
Fencing and brick walls		2,000
Add for interest, taxes, advertising, surveying, etc., during building operations, beginning October 1st and finished August 1st of the next year		2,900
Gross total expenditure		$124,973
of which 5 per cent net would be $6,248.65		

NON-TAXABLE PROPERTY.

55,000 sq. ft. of roads and park at 15 cents	$8,250	
Cost of roads and sidewalks	1,337	
" " sewer	800	
Grading, paths, etc., in park	500	
	$10,887	$10,887
Balance of taxable property		$114,086

SCHEDULE B. — INCOME AND OUT-GO. — INCOME FROM RENTALS.

16 houses at	$216	each per annum,	$18.00	per month				$3,456
2 "	" 264	" "	" 22.00	" "				528
4 "	" 222	" "	" 18.50	" "				888
8 "	" 228	" "	" 19.00	" "				1,824
8 "	" 234	" "	" 19.50	" "				1,872
8 "	" 252	" "	" 21.00	" "				2,016
4 flats	" 180	" "	" 15.00	" "				720
Gross rental								$11,304

ANNUAL EXPENSES.

Salary of bailiff or steward	$1,000	
Loss from unoccupied rentals, say 7½ per cent of gross income	842	
Taxes on, say, $75,000, at $15 per thousand	1,125	
Sinking-fund, say	550	
Insurance on, say, $60,000	190	
Repairs, say $27 per house	1,350	
Average gross annual expense	$5,057	$5,057
Annual net profit		$6,247

NOTE. — Of course many of the expenses are prob'ematical and it is possible that an improvident owner might derive 6 or 7 per cent net for several years, by saving on his repairs and sinking-fund, but, in the long run, by this method he would be likely to find that his average net profit had been 4 rather than the 5 per cent which he might have had by careful management from the beginning, and without the sinking-fund which, at the end of thirty years, at compound interest, would amount to $27,000, or $28,000, he would probably be unable to even recover the full amount of capital invested, unless the land had greatly appreciated during that time.

PLANS OF THE SAME.

UNITED STATES POST-OFFICE, OMAHA, NEB. MR. J. K. TAYLOR, SUPERVISING ARCHITECT OF THE TREASURY DEPARTMENT.

UNITED STATES PUBLIC BUILDING, CHEYENNE, WYO. MR. J. K. TAYLOR, SUPERVISING ARCHITECT OF THE TREASURY DEPARTMENT.

[The following named illustrations may be found by reference to our advertising pages.]

CONCERT PARISIANA; PARIS, FRANCE. M. NIERMANS, ARCHITECT.

This plate is copied from *La Construction Moderne.*

HALF-TIMBER WORK.

[Additional Illustrations in the International Edition.]

ENTRANCE-HALL: BARNARD COLLEGE, NEW YORK, N. Y. MESSRS. LAMB & RICH, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print.]

NEW GENERAL POST-OFFICE, NOTTINGHAM, ENG. MR. HENRY TANNER, ARCHITECT.

HOTEL METROPOLE, FOLKESTONE, ENG. MR. T. W. CUTLER, ARCHITECT.

NOTES & CLIPPINGS

Vanbrugh and Castle Howard. — The first notice we have of Vanbrugh as an architect is in 1702, when he furnished the design for Castle Howard for the Earl of Carlisle. Why he should have been selected for such an important work cannot be divined. There was no lack of architects in those days. Wren, though seventy years of age, was in his full vigor. Talman had finished Chatsworth, Thorsley and Dyrham. Wynn was engaged on Buckingham House, and Gunnersbury, Marlborough House, Roehampton, Cliefden were all built within a few years of this period. Be this as it may, Vanbrugh here gave the first proof of his architectural genius. In endeavoring to avoid the rudeness of Gothic "magnificence," the "flutter of flying-buttresses," "the uselessness of pinnacles," "the discord of oblique lines," our architects, with the exception of Wren, had fallen into a cold, tame, flat style, making square blocks of their buildings, without decided masses, which cast bold shadows and give so much breadth. They affected horizontality, and strove as much as they could to get all the various departments of the house into one solid block. Such, too, was the passion for uniformity that all sorts of expedients were resorted to to make one-half of the building exactly like the other, and false windows and doors, screen-walls and parapets, and all sorts of shams were used to "balance" the points of the design. We seem now to run into the opposite extreme, and to go out of our way to make things irregular. Windows are made of various heights, and oriels are stuck here and there without meaning or any use, except for the studied purpose of making the building irregular, or, to use a common phrase, lop-sided. Vanbrugh avoided both errors. At Castle Howard he separated the subordinate buildings, and arranged them round the principal structure in a series of regular but picturesque groups. Even the laundries and breweries were not concealed, and were surmounted by domes, which served at once for ornament and the purposes of ventilation. Instead of striving to hide his chimneys, he clusters them together, and makes them, as well as his roofs, the means of breaking and enriching the sky-line. The main building is entered by a lofty portico, from which we pass into a noble hall lighted by a cupola 100 feet in height, and from which lengthened corridors extend, leading to numerous suites of fine apartments. Our limits will not permit a further description. Suffice it to say, that this picturesque but at the same time symmetrical building presents a frontage of 660 feet, or 130 feet more than the entire length of Westminster Abbey, and, with the exception of Blenheim, is the noblest palace in the kingdom. — *The Architect.*

Conversion of Churches in Philadelphia. — Philadelphia churches in the business districts are passing through the experience of churches that were similarly situated in New York. They have begun their migration to the residential districts, and the church societies are realizing enough from the sale of the old and valuable church sites to enable them to erect more pretentious edifices, and in some cases to establish an endowment-fund. Coincident with this movement several instances of church consolidation are reported, the theory that fewer churches, but larger, better and stronger, are more efficient in a great city growing in favor. This process of consolidation is going on in all the Protestant denominations, and is an adaptation of the Catholic plan of large churches judiciously located. By the end of the year five of the largest, wealthiest, and most influential of the old-time churches in the city, now located on central Broad Street, will have been abandoned. One of the resultant new churches, the First Baptist, will be the wealthiest institution of its denomination in the country. — *N. Y. Evening Post.*

The Rate of Increment in London. — The density of the population of London has been doubled since 1857. "It is truly wonderful," says the *Lancet*, anent London, "that its vast population of 6,291,667, located on only 693 square miles, should have in 1897 so low a death-rate as 17.7 per 1,000. This rate is not greater than that of a fairly healthy rural district. England well deserves the name she has received as the birthplace and home of sanitary science and practice." — *Exchange.*

A One-sided Irish City. — Mr. W. G. McCartney, Secretary to the Admiralty, has the distinction of being a native of the most unique city in the three kingdoms. Clogher, situated in the south of Tyrone, Ireland, is an episcopal city, consisting of a single street with houses only on one side. There is a saying in the north: "All on the one side, like Clogher." The other side of the street is occupied by a wall and overhanging trees of the McCartneys' demesne, which gives the place a very picturesque appearance. Further, this city has a cathedral and episcopal palace without a resident bishop, and a deanery without a dean! — *Boston Transcript.*

Destruction of a Fifteenth-century Paris House. — A very curious relic of old Paris is about to be removed — the house in the Rue de Venise, built in 1402, by the celebrated alchemist, palmist and philanthropist, Nicholas Flamel. It is one of the few specimens of fifteenth-century domestic architecture still to be seen in the French capital. Until the Revolution its upper floors were let to poor old men and women who, in accordance with Flamel's will, had only to pray for the repose of his soul and to say an Ave every day at the hour he died to secure their lodgings rent free. Flamel was one of the most famous of mediæval palmists, and wrote a book on the subject. — *London Chronicle.*

Steel "Timbering" for Mines. — The use of steel instead of timber as a casing for the big shaft of the Portland Mining Company, in the Cripple Creek district, may be the beginning of a movement which will do much for the preservation of the forests in the far West. Enormous quantities of timber are used in the mines. The Anaconda of Montana devours 40,000,000 feet of lumber each year, while mountains have been denuded of their forests to meet the needs of the Comstock of Nevada. It may be, too, that the use of steel instead of timber will be found to be economical. All the timber has been cut in the vicinity of the great mines, and its cost is increased by the expense of transportation. That will lessen the difference between the first cost of the two materials. A second consideration is that the steel supports will afford equal strength, while occupying less space, thus lessening the expense for excavation. All the mine-owners in Colorado are watching the experiment. — *Boston Transcript.*

Slate Marble in Belgium. — According to a German report, Belgium exports a sort of black marble which is nothing else than prepared slate. The slate suitable for this purpose is first polished very smooth with a sandstone, so that no visible impression is made on it with the chisel; this is the rough polish. After this it is finely polished with artificial pumice-stone and finally finished with extremely light natural pumice-stone. The polished surface now presents a velvet-like soft appearance. The surface is then dried and heated thoroughly, whereupon the finely polished surface is impregnated with a heated mixture of oil and fine lamp-black. This is allowed to remain for twelve hours. According to whether the slate used is more or less gray, the process is repeated until it loses its gray appearance. It is then polished thoroughly with emery, which is taken on a linen rag, and finally polished with tin ashes to which is added some lamp-black. After the polishing is finished wax dissolved in turpentine is spread over it, and it is allowed to remain some time before it is rubbed off vigorously with a clean linen rag. The slate thus treated now has a deep black appearance, and looks like black marble, and the polish is just as durable as the latter. The polished surface can be etched, engraved, gilded and silvered, just the same as genuine marble. — *Journal of the Society of Arts.*

The Simplon Tunnel. — Our Zurich correspondent writes, under date November 8: "The first operations in piercing the Simplon Tunnel, which began in September last, are represented so far by a boring 170 metres long on the Brigue side and 30 metres on the Italian side at Iselle. The temperature in the former tunnel reaches 85°, and the water constantly trickling through renders it necessary for the Italian workmen to wear complete coverings of oilskin and wide hats of the same material, the work and conditions of atmosphere being sufficiently arduous to render a change of gangs necessary every four hours. The rock-drills, which have now arrived, are reported to be so light that they can be carried by four men. In the construction of the St. Gothard, the Ferroux drills, making about 180 blows in a minute, were mounted on a carriage worked by some sixteen attendants, while the work of charging with dynamite, firing, and cleaning away was done by twenty-two men in three to four hours. In the present operations the Rhone water-power is used in working this machinery, in clearing the débris, providing the electric-light, etc. For the protection of the machinery a large building is being constructed communicating with the tunnel work by a gallery. Here, too, the workmen come to don their special clothing, each set being marked by its own number. They pass from the tunnel without the danger of exposure to the outer air, as in going through the gallery they take off their working clothes, which are at once aired and dried, their own clothing being then restored to them. A peculiar feature of the tunnel settlement is, according to the account from Geneva, the change of Naters, near Brigue, into a complete Italian village. Italian names and signs have superseded French in all the cafés, shops, and cabarets of the district, while the approaches to the tunnel show the impromptu effects of a newly opened settlement in the Far West. It is reported that the heavy duty the Italian Government lays on dynamite seriously interferes with the progress of the work on the Italian side." — *London Times.*

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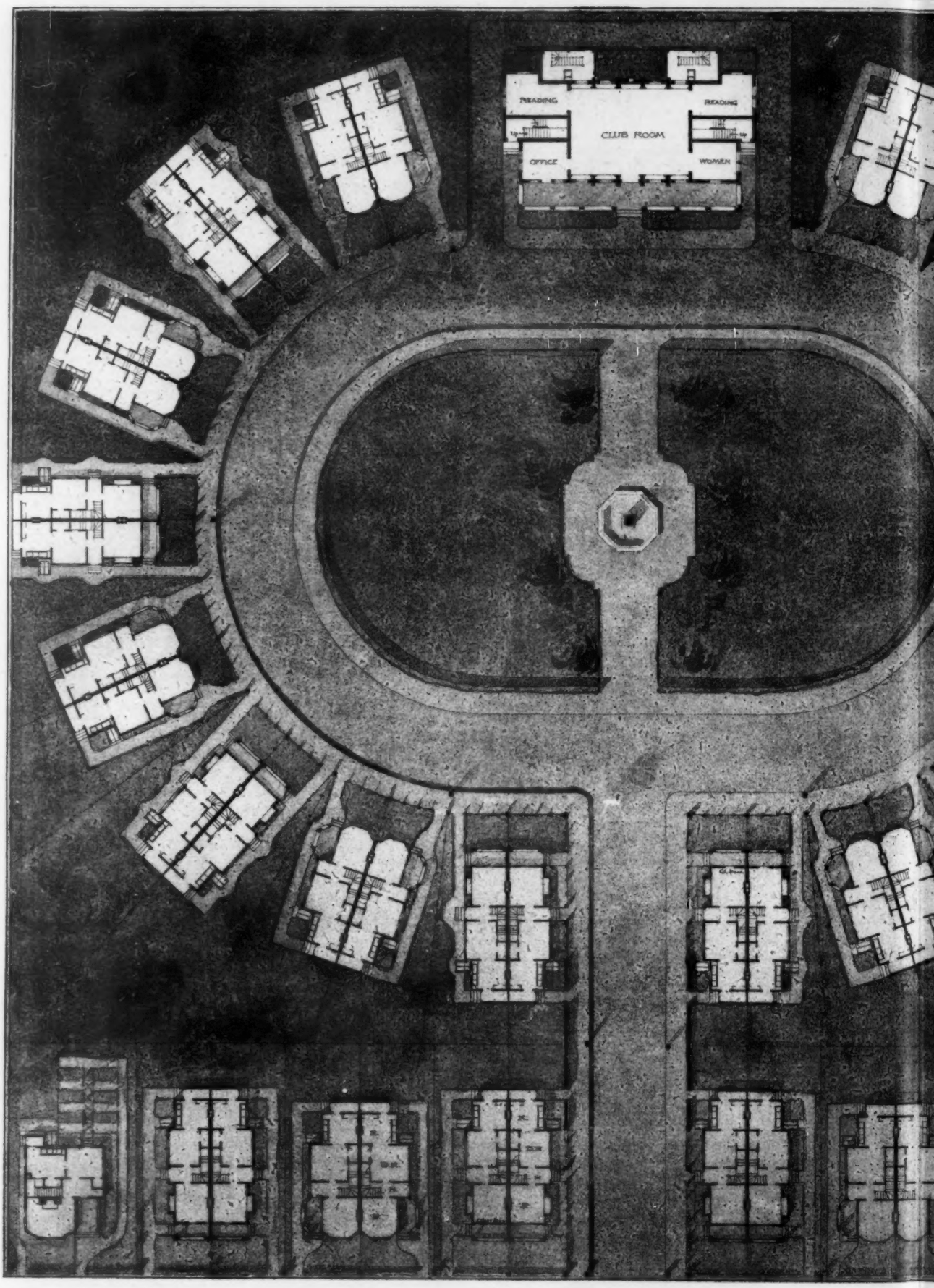

PLAN OF FIRST FLOORS.

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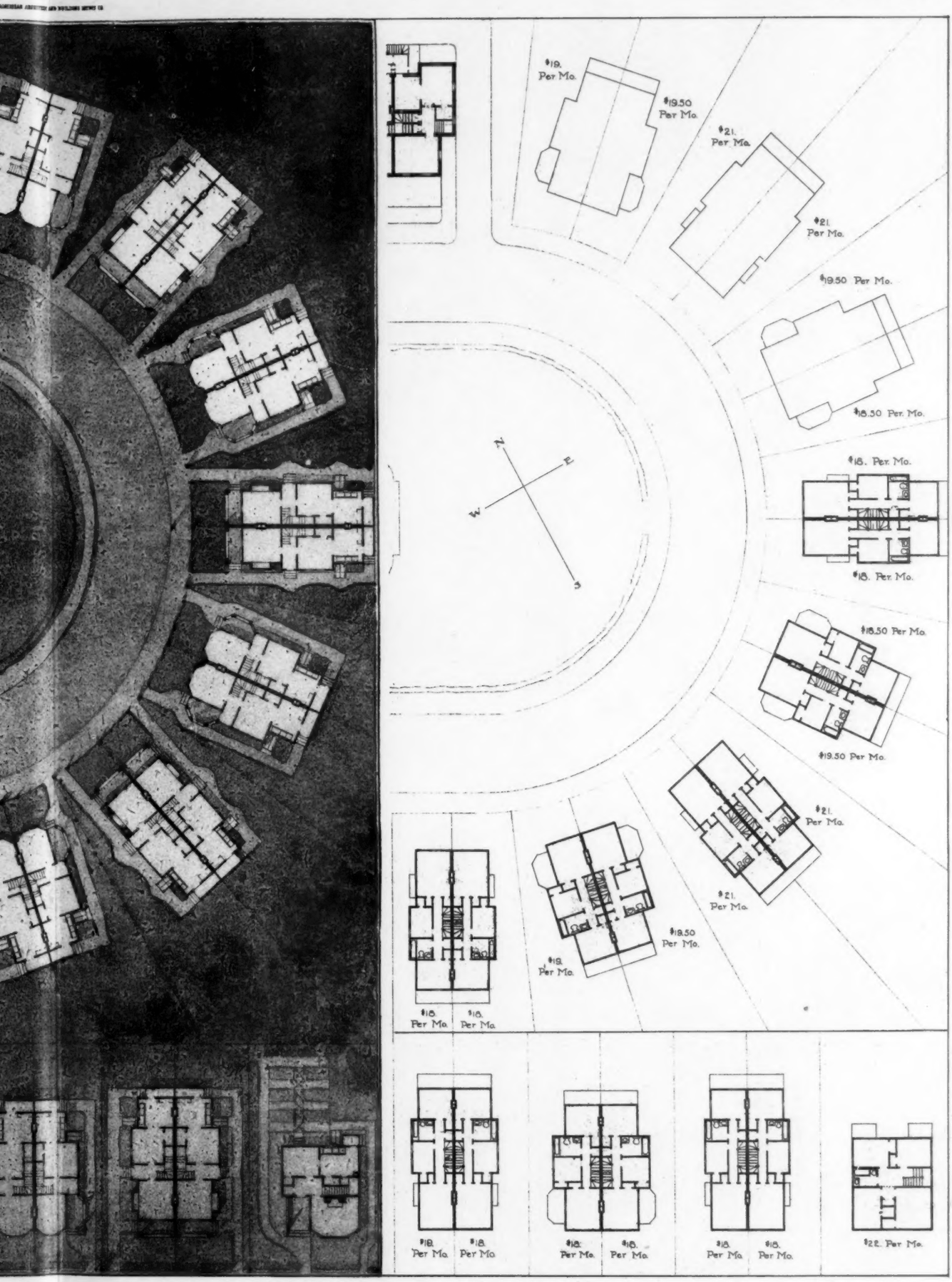

DESIGNS FOR ARTISANS' HOMES (OPEN COMPETITION.)

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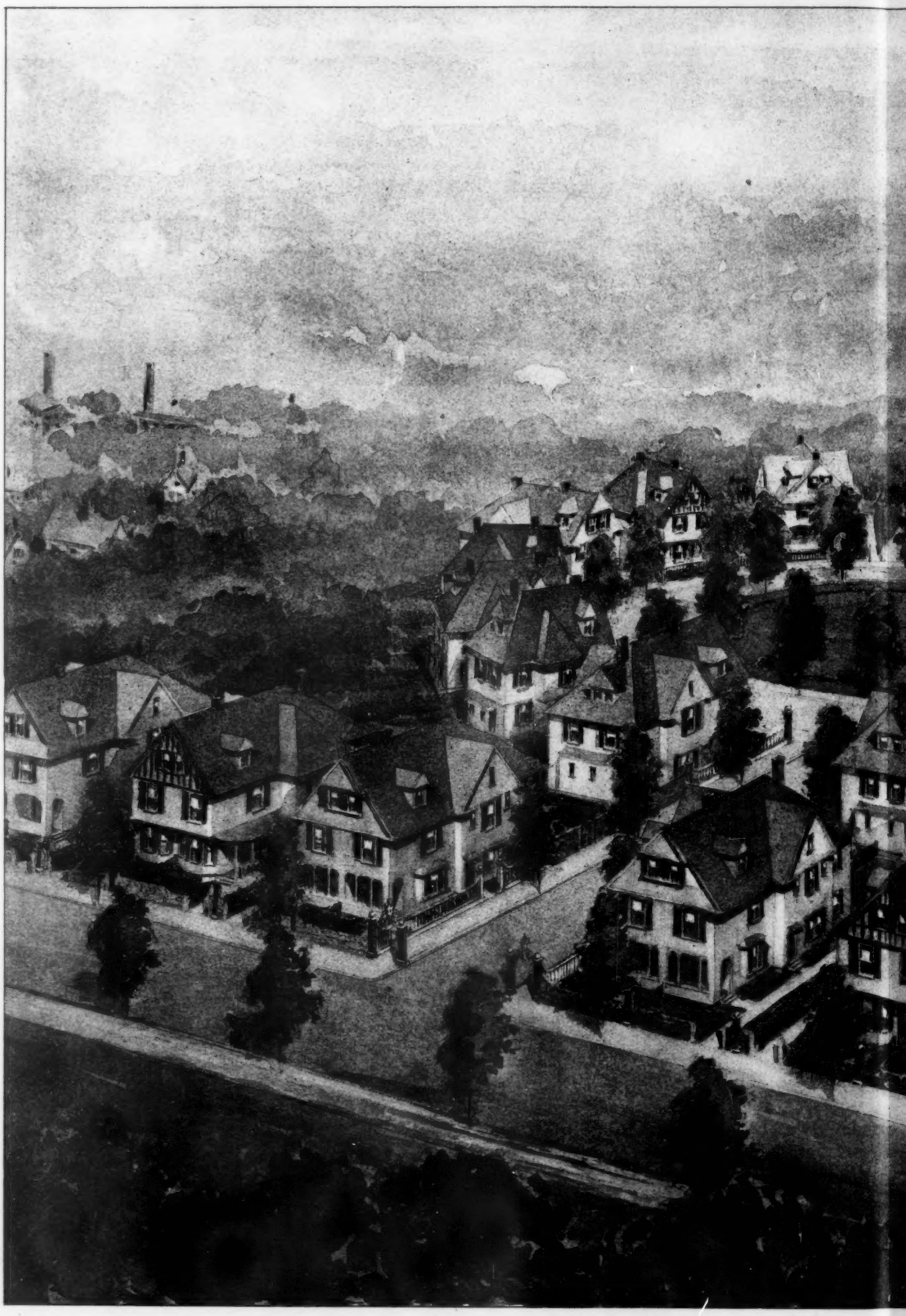

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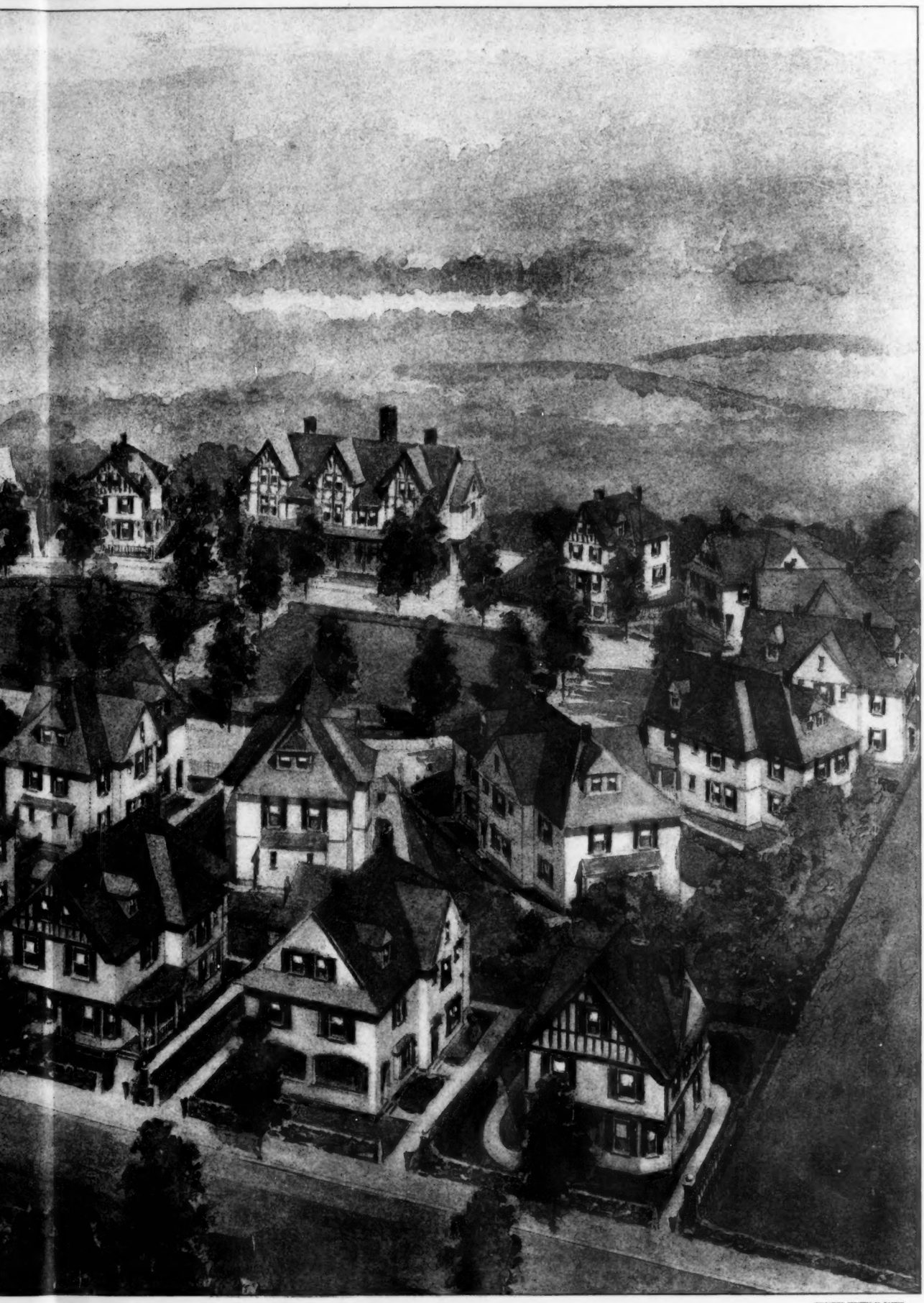

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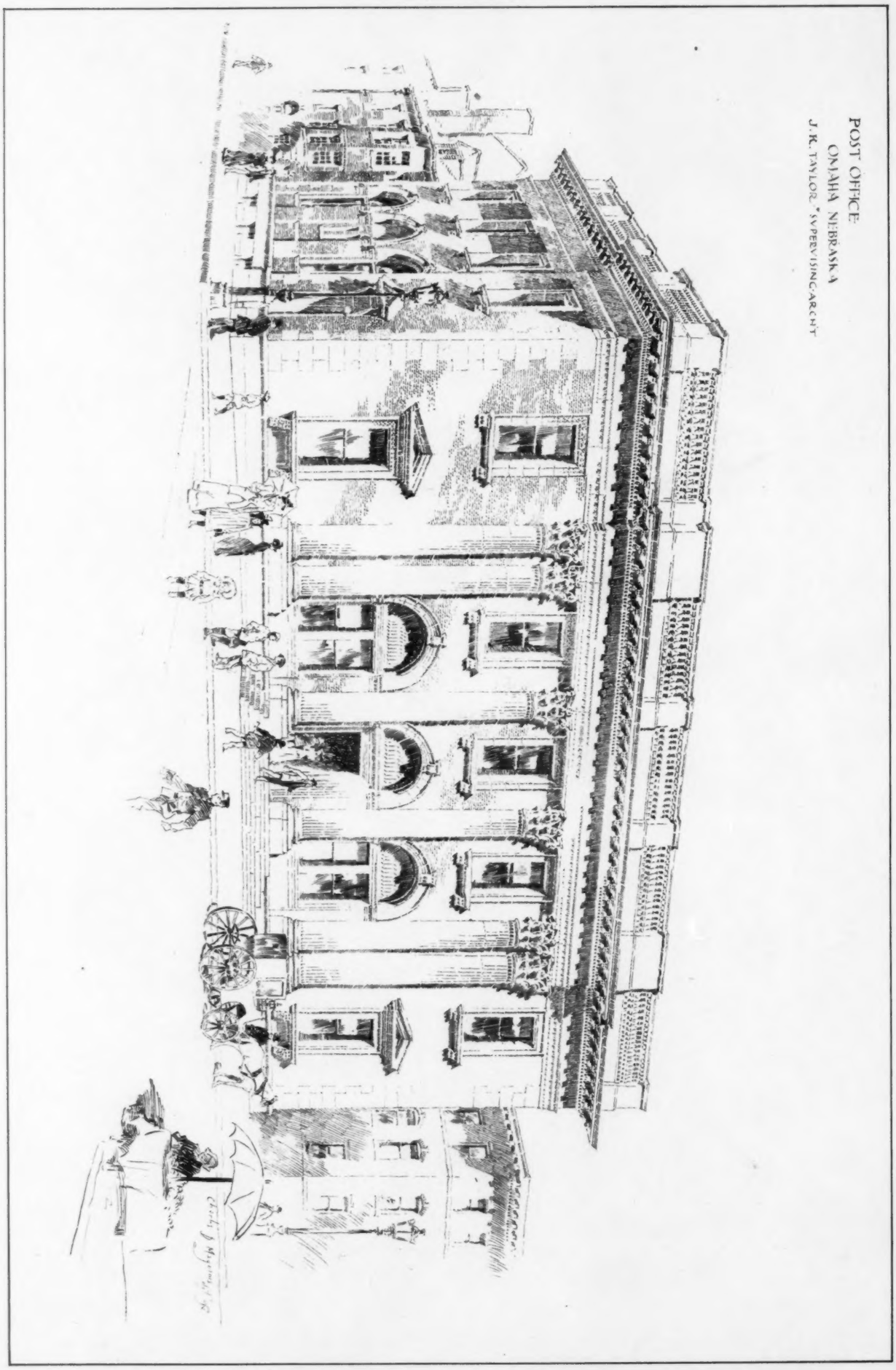

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