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TO OUR SUBSCRIBERS.

DURING the coming year we shall pay especial attention to the architectural features of the World's Fair at Chicago.

The gelatine plates of the International Edition in particular will be largely selected from World's-Fair subjects, and subscribers to that edition, will receive also *twelve extra helio-chromes* mainly from the same sources, to be issued at intervals during the year.

All new subscribers for the year 1893, who remit to us their subscriptions *direct, in full*, before January 1, will receive the December numbers of this year gratis.

WHE burning of Mr. Cornelius Vanderbilt's house in Newport, from a "defective flue," has attracted much public attention; more, probably, from the immense wealth of its owner than from anything extraordinary in the circumstances. The house itself was built about eighteen years ago, for Mr. Louis Lorillard, by Messrs. Peabody & Stearns. It was then probably the largest house in Newport, already celebrated for its magnificent "cottages." Mr. Lorillard having inherited, some years later, another splendid Newport mansion, sold his earlier one to Mr. Vanderbilt, who remodelled it, at an expense which is said to have equalled the cost of the original building. Under the ordinary use of a country house, the mansion would probably have endured for centuries, but a few days of November chilliness led to the lighting of many fires in the house, and a spark probably escaped through a joint in a chimney among the wooden furrings, setting them on fire, and causing the rapid destruction of the building.

IN speaking of the fire, the New York *Tribune* makes some assertions in regard to modern building which ought not to go uncontradicted. After some tolerably just comments on the conduct of people who build chimney flues with holes in them, it says that "Appreciation of what is beautiful in form and surface may be more generally diffused than ever before, and indeed we think it is; but that essential element of intrinsic excellence which time and use disclose is less common than it used to be. The prevalence of inferior workmanship," it goes on to say, "is a serious, if not an ominous feature of the time." Now, if the *Tribune* means to compare modern workmanship with that, say, of the fourteenth century in Europe, it is undoubtedly right; but if it intends to say that American workmanship of the present day is, as a whole, inferior to that of the last century, every architect who has had much experience in the alteration of old houses will say that it is wrong. In certain points, carpenter's work, for example, was generally more skilful a hundred years ago than it is now. In those

days there was little wood-working machinery, and carpenters had to work mouldings, plane large surfaces, and do many things that are now done "at the mill"; and, as good hand-work is smoother and more delicate than machine-work, the old hand-wrought panellings and cornices excite the expert's admiration. Here, however, the superiority of the old building work ends. Notwithstanding the precision of hand gained by a long apprenticeship, and by much subsequent practice in the use of tools which are now little employed, the carpenter of the colonial period was in no way superior, either in intelligence or honesty, to his successor of the present day. We do not, of course, compare him with the Swedish or German or Provincial "wood butcher," who is sometimes to be seen blundering through the finishing of a house, but with the first-class American or English mechanic, and, in this comparison, the modern craftsman certainly has the advantage. Taking, for example, the matter of trussing, although trussed wooden roofs of great span were far more common then than now, the ordinary carpenter of the time seems to have had little idea of the principles of trussing. The knowledge of this science is, it must be confessed, less profound now among carpenters than it might be, but few modern framers would design trusses with nearly every member wrongly applied, such as are seen in multitudes of buildings from fifty to a hundred years old. As to the alleged superiority of the old houses in solidity and security of construction, it does not exist. Most of the colonial buildings were small, low-studded, and divided into many rooms. If it were not for this, their floor-beams, three inches by four, laid on the flat, their partitions of inch-boards, plastered on each side, and their roof-trusses, supported from the tie-beam, would long since have collapsed. The greater part of them have, in fact, already done so, and every old country town shows tottering examples of the fate which comes upon such constructions when left to themselves for a few years. Whether the masonwork of the last century was better than ours is rather a disputed point. It is not controverted that our cements are infinitely superior to anything that our forefathers knew; but some think that the masons of a hundred years ago could mix lime, and wield the trowel, more skilfully than those of the present day, and the hardness of the old interior plastering gives some color to this notion. They also used bricks more liberally than we do, but their bricks were very inferior to ours, and certainly no better laid. The *Tribune* appears to think that our ancestors did not build any "defective flues," and that the destruction of houses by sparks or heat straying from a fireplace into regions unsuited to such visits was a rare occurrence. A more unfounded notion it would be hard to conceive. To say nothing of the common practice of building fireplaces on the floor-beams, which has been fatal to thousands of old houses, chimneys and woodwork are very commonly found, on dissecting such buildings, to be in appalling proximity. We saw once a wooden mantel taken down from a fireplace in an important building of about a hundred years standing. The back of the mantel, which was of the high, colonial sort, was badly smoked, and behind it was a hole, something like a foot long, and six inches high, directly into the flue. Why the mantel should not have taken fire years before is a mystery. In the same way, it is quite common to find the chimneys in old-fashioned houses trained about the attics on sticks, or bricks missing here and there in the walls of the flues. It is quite possible that, in remote country villages, such work is done now, but it has long ceased to be done in large towns, and, while some carelessness of workmanship is inevitable, it is the old houses, rather than the new ones, which suffer from "defective flues," the modern buildings being more commonly the victims of over-heated furnaces, spontaneous combustion, short-circuiting of wires, or other sources of fire to which the old houses were not exposed.

IT has been common talk among architects for some years that Mr. Leroy S. Buffington, of Minneapolis, a man of much note in the profession, claimed to own a patent covering the principle upon which the lofty steel and brick buildings of Chicago and other cities are constructed, but it has not until recently been supposed that he would seriously attack those who, unmindful or ignorant of his monopoly, have erected such buildings. Now, however, it is announced that he has arranged to begin suits at once against the owners of all the

steel and brick buildings in Chicago, for infringement of his patent, or patents, and will claim, as damages, five per cent on the cost of each building. At this rate, his claims in Chicago alone would amount to about four and one-half million dollars, and it is said that he will follow his suits there by similar ones in various other cities where the same sort of construction has been used. Architects will watch the course of the suits with much interest, not only on account of the importance of determining whether this peculiarly American system of construction is the monopoly of one man, but as an indication of the manner in which the courts are likely to treat patents covering essential principles of construction.

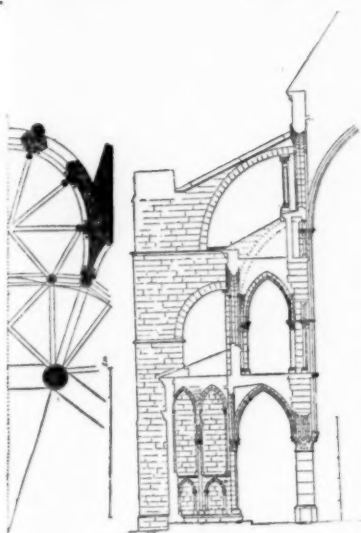
WE are particularly pleased to publish elsewhere the protest of Mrs. Nichols—who has proved her own ability to work side by side with masculine architects without asking favor on the score of sex—against the injustice which has been done to Miss Hayden, the designer of the Woman's Building at Chicago, an injustice which has not been wrought by the criticism on her accomplished work, but by the ignorant self-confidence of her fellow-women. The "lady-managers" who have charged themselves with the interests of womankind at the World's Fair have taken the ground, seemingly, that because some women, through long and serious training and experience have equalled and sometimes surpassed man's work, therefore any woman, simply because she is a woman, can do any work as well or better than men who have had long experience and practice; and when they find that competent critics do not agree with them as to the real merits of the result, they and their friends seem disposed to ascribe all adverse criticism to indifference and sexual prejudice. It is painful to learn that Miss Hayden has been victimized by her fellow-women to such an extent that her health has been seriously, but we hope only temporarily, impaired, but we fancy the results would have been much the same—both in the accomplished fact and in the physical result of the unkind strain—had the work been as unwisely imposed upon a masculine beginner who had acquired only the same imperfect training and was guided by the same immaturity of judgment and experience. As to the building itself, we feel that whatever applause it deserves is due to its merits as the work of a beginner, while we are too earnest in believing in the real capacity of American women to ask any one to excuse the architectural short-comings of the work because it was designed by one of them.

THE *Builder* is aroused to a long editorial article by a book just published, under the name of "*Architecture—A Profession or an Art*," consisting of thirteen essays, contributed by Mr. Norman Shaw, Mr. J. T. Micklethwaite, Mr. Reginald Blomfield, Mr. Bodley, Mr. Mervyn Macartney, Mr. Ernest Newton, Mr. E. S. Prior, Mr. John R. Clayton, Mr. Basil Champneys, Mr. Lethaby, Mr. W. B. Richmond, Mr. G. C. Horsley and Mr. T. G. Jackson. All these gentlemen are well known as brilliant and earnest artists; and it may be inferred from the title of their book, viewed in the light of professional polemics in England for the last few years, that they have devoted their essays, in great part, to the glorification of the artistic part of architecture, and to the belittling of the practical, or, as they call it, the professional part. It seems to have suited most of them to regard the Royal Institute of British Architects as the representative of the latter, and it appears that a good many disagreeable things are said in the essays about the Institute. The editor of the *Builder*, who has a keen eye for sentimental misrepresentation, examines some of the assertions made in the book with decided disapproval, and in defence of the practical architects, makes some counter-statements, with which, though they are more reasonable than some of those of the essayists, we think that American architects will hardly agree.

IT is never quite safe to judge of a book from a criticism of it, and the editor of the *Builder* acknowledges that the present one contains much that is true and well put, as well as much real enthusiasm for architecture in its highest sense, so we may content ourselves with noting only certain points, which are treated both by the essayists and the *Builder*, and have as much interest for architects here as anywhere else. Mr. Jackson draws a picture, not wholly new, of the sort of architect that he objects to as a person who "designs a large number of buildings, with the aid of a good staff of assistants," who "does not meddle much with art," but "acts as a middle-

man between his employer and the carver, the glass-painter, and other working artists, whose ideas he adopts as his own"; and like so many other essayists before him, he leaps to the conclusion that this sort of architect is produced by the Institute examination. The *Builder*, of course, replies that the Institute examination has no influence upon individual genius or character. It simply sets a standard of rudimentary attainment which no man could claim to be an architect without reaching, and leaves the candidates to develop themselves into either artists or business men later, as they may see fit. There is, however, among the essayists a general idea, which appears to us to be totally without foundation, but which the *Builder* does not combat as effectually as it might, that a man cannot be both of these at once. As we have often had occasion to say before, this idea is a pure assumption, and is not supported by facts. That men of mean capacity, when they undertake to practise architecture, are very apt to excuse their lack of intelligence and attention in managing the business interests of their clients by saying that they are "artists," and despise such things; while others, who prefer to bustle about the streets and talk to contractors, apologize for the shortcomings of their designs by claiming to be "business men"; but it by no means follows in practice that the designs of the "artist," or the prudence and efficiency of the "business man," surpass those of architects who try to be both at once. On the contrary, it is almost always the case that the men of the first rank are perfectly capable of turning their minds to beautiful ideals and to columns of figures, and to do so with a proper sense of the relation of the two things. To say nothing of Wren, who was good as an administrator and constructor as he was architect, in the artistic sense, it is certainly not found that the best modern architects in England, where, if anywhere, they would be thrown off their balance by specious sentimentalism, fail in business talent. Mr. Alfred Waterhouse, who, eighteen or twenty years ago, divided with Street the reputation of being the most brilliant architect in England, is, and was, a clear-headed and sagacious counsellor, who could direct his clients' affairs and his own with perfect success, and has acquired a considerable fortune, which was certainly not earned by letting his draughtsmen make his designs for him. Street, at his death, left a large property, which, like Mr. Waterhouse, he earned by the highest talent and unremitting labor, as an artist, accompanied by zeal and prudence in administration of the important affairs entrusted to him. It is said that Street was not always so careful as he might have been to see that the builders' accounts were accurately adjusted, and that he made himself rather unpopular in the profession by the extraordinary activity which he displayed in securing commissions; but the direction in which business talent shall be applied is another matter, the point here being to show that the fact that Street and Waterhouse made money, while certain other architects did not, is no proof that the latter were greater designers, or "artists," than the others.

THE question often comes up in another form, through the claim of persons of rather cloudy mind, that they are, in consequence of this defect, greater "artists" than others, who have no difficulty in understanding details of construction. Mr. Basil Champneys, for example, compares an architect to a Minister of State, and says that "he is not the most effective minister whose mind is most possessed of technical detail"; and Mr. Norman Shaw asks, "Who ever heard of a clerk-of-works being an authority on architecture?" As to the latter question, it may be remarked that as clerks-of-works in England rarely study anything about architecture, or have an opportunity to do so properly, it is not surprising that they should not be regarded as authorities on the subject; whereas, in France, where it is common for young architects, after their school course, to act as clerks-of-works, the case is exactly contrary, and there is hardly a single architect in France, of the highest eminence, who has not been glad to gain practical experience by acting as *inspecteur des travaux* for some older professional man. Even Mr. Norman Shaw himself is noted for his comprehension of details of construction. He once invented, and, we think, patented, a device for a soil-pipe, and, while this does not prove that he was also a great artist, it certainly does not show that great artists are incapable of understanding such things. In fact, as the *Builder* points out, the very people who denounce "practical" architects are constantly calling upon architects to spend more time upon their buildings, and learn to handle a chisel and mallet.

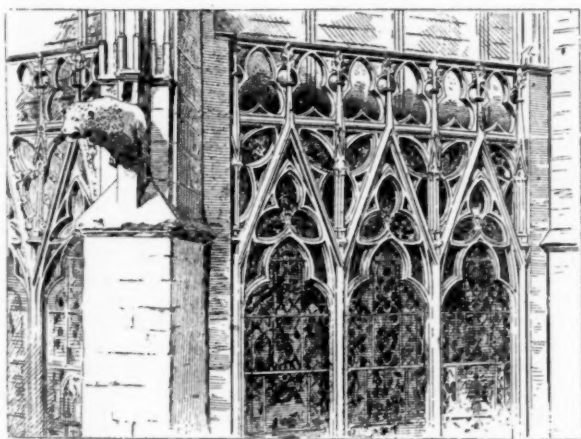
THE CHAMPAGNE SCHOOL OF ARCHITECTURE.¹ — II.

Plan and Section of the Apse of Notre Dame, at Châlons.

were preserved as well as the towers surmounting them. As to the nave, which already had side-aisles, it was raised and vaulted in pointed arches. The same disposition was also applied to the apse vaults on a circular plan.

However, architects were not yet far enough advanced, at the period of these early attempts at Châlons and Rheims, to meet the difficulties that would have been presented by the groined vault with convergent transverse arches, and the problem was indirectly solved by inserting a column at the entrance to the apsidal chapel. The trapezium to be covered was thus broken up into a square, admitting of a common groined vault, and a supplementary triangle, which was covered like one of the divisions of the ordinary vault.

An examination of the plan shows that the solid section of the buttresses is at a certain distance beyond the side-aisle. The chapels are very near together, the architect having evidently tried to make them as spacious as possible and airy and slender in appearance, as well as to enable the light to enter freely without the obstruction of heavy intermediary piers. The result is that the buttress begins, in plan, with a point which offers no resistance; it is necessary to carry the resistance to the thrusts of the vaulting farther out, to the solid portion of the real mass of the buttress. The section explains the



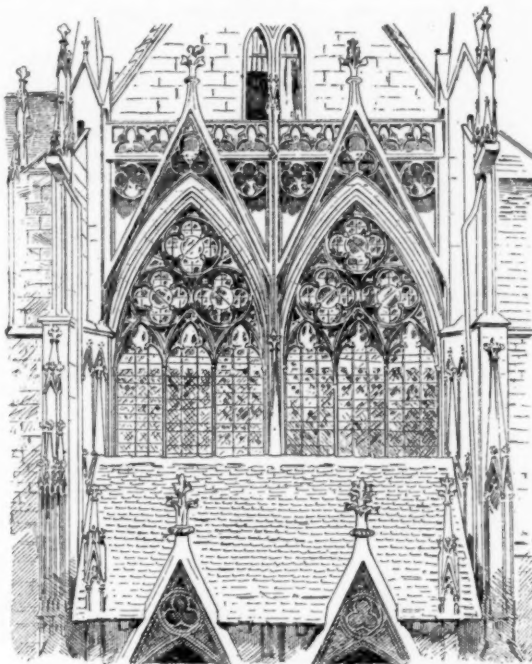
Window of St. Urbain, at Troyes.

disposition which was very rationally adopted, and which resembles that of the flying-buttresses of naves with double side-aisles.

A first flying-buttress spans the gallery above the side-aisle and rests on the outer wall of the apse. This must, conse-

¹ From the French of P. Planat, in Planat's *Encyclopédie de l'Architecture et de la Construction*. Continued from No. 884, page 145.

quently, be supported in its turn; a second semicircular arch is therefore made to carry the thrust to the buttress proper, beyond the chapel, whose very light side walls are thus relieved. At the top, a large flying-buttress is thrown from the



Window of St. Urbain, at Troyes.

wall of the nave to the buttressing mass. It will be noticed that the latter is broader here than at the base; this extra weight is borne on the haunches of the lower flying-buttress and causes no serious difficulty on account of the form of the arch. It will also be observed that the key of the huge upper arch is supported by a detached colonnette; the same arrangement exists at St. Remi; some learned archaeologists, among others Viollet-le-Duc, have thought that this disposition should be ranked among the many ingenious solutions reached by early Gothic architects, and that it furnishes fresh evidence of their keenness of observation and their wonderful cleverness. We confess that we do not find the arguments advanced in support of these ideas conclusive. We incline rather to the belief that the disposition in question is merely an indication of the hesitancy which constructors would naturally feel at abandoning to themselves, for the first time, semi-vaults with no key proper, and which would tend to slide against the vertical plane of support; they certainly could not be criticised for taking some precaution until they had had more experience. However bold the innovators of the twelfth century may have been, it is not to their discredit to suppose that they were prudent enough not to attempt everything at once, and that their progress was gradual. Must we force ourselves to discover depths of subtlety everywhere, especially when the processes resulting, as we are to infer, from such marvellous observation, were soon set aside as useless? These slight strictures, which are moreover of secondary importance, are made because unqualified praise here means lauding a constructional principle which is at the very best worthless. In the disposition of the bays similar examples of modifications and advancement are to be observed.

The architects of the Romanesque school generally kept to bays of moderate dimensions. To light the vast and lofty structures reared by Gothic art broader and higher windows were required. Champagne, which often anticipated Ile-de-France even in changes that had been proved to be necessary, early exhibited happy attempts in this field. In the twelfth century, the architect of Notre Dame of Châlons, not being able or not daring, with the material at his command, to make the bays very broad, adopted the plan of dividing the window



Section of the Clerestory of St. Urbain, at Troyes.

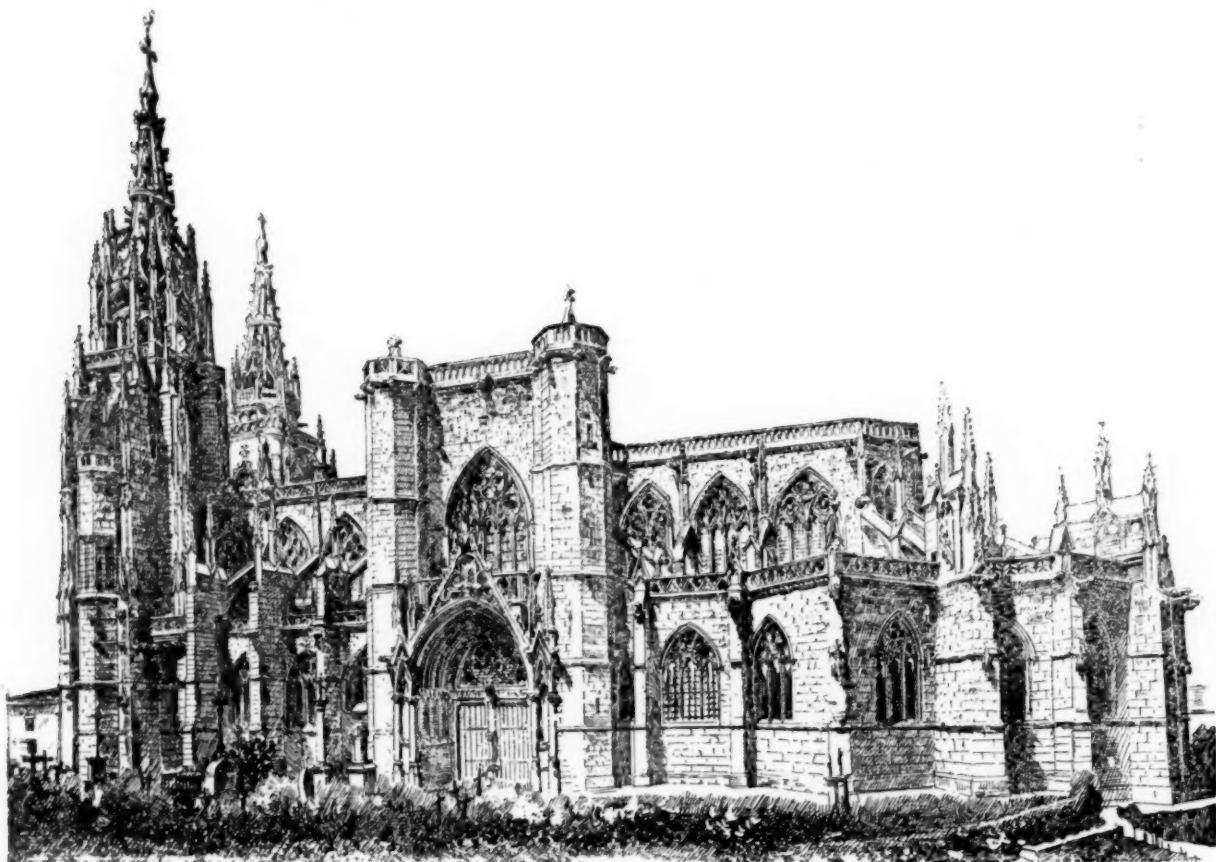
by three mullions the colonnettes of which extended down to the support of the triforium, itself disposed in like fashion. A formeret above provides a discharging arch.

At the beginning of the twelfth century, as shown by the Cathedral of Rheims, the openings were already larger; above the ogival arches and the mullions, the tympanums were pierced by a rose-window. This delicate construction demanded the exercise of still greater care against any subsidence of the walls of the edifice than was called for at Châlons. The formerets making the interior splay of the bay are, hence, very powerful; the archivolt is built of stones independent of them, and the rose-window has also its separate structure. The same is true of the exterior, where the archivolt is surmounted by a genuine discharging arch built of independent stones.

The thirteenth-century architects went still farther, and endeavored to do away entirely with the tympanum of solid masonry, leaving the rectangular space between the vertical supports and the horizontal cornices wholly open. St. Urbain, at Troyes, offers one of the most perfect dispositions of the

hard, compact stone is found, but in quite thin layers. Generally speaking, we may say that the important edifices are constructed in courses of moderate height. Stone in large blocks and of fine grain had to be brought from a considerable distance, and, consequently, it was used sparingly. Again, the popular taste had always been in favor of lightness, airiness and grace, and this led to a greater and greater degree of slenderness.

In St. Urbain, at Troyes, which is usually thought to date back to the thirteenth century, it is curious to see to what artifices the architect resorted to satisfy this taste. The outer enclosure may be said to comprise little but buttresses and vast bays opening broadly on all sides. The massive parts are built of a coarse but tough limestone from the Burgundian frontiers, quite thin and in horizontal courses; the revetment is of slabs laid contrary to the cleaving grain, and obtained, apparently, from the neighborhood of Tonnerre. The stone is of fine texture, and admits of delicate carving. It was also used for the arches, gutters and piers, and for the clerestories mentioned above. Lastly, the chalky stone of the



View of Notre Dame de l'Épine, near Châlons.

kind. The two lateral piers have powerful, strongly projecting buttresses; the intermediary pier, which receives a transverse rib of the interior vaults introduced between the *arêtiers*, is reinforced by a buttress of less prominence. A light mullion separates the twin divisions of each half-bay. The gutter rests directly on the vertical supports. The clerestory is merely an open-work panel as to the tympanums, as well as the bays themselves, set in this rectangular frame. An analogous disposition is adopted in the interior, where an independent *formeret* receives the springing of the vaults, and beneath which there is a second clerestory between the piers.

In all the different schools, the development of Gothic art was marked by a constantly increasing effort to attain more elegant and bolder forms; but this struggle was more apparent in Champagne than elsewhere. And yet the building material which the Champagne architects had at hand was not always adapted to this tendency; considering their disadvantage in this respect, their ingenuity must have been doubly taxed to gain their end. The province had not, like Burgundy, tough stone in strata of any desired thickness; in certain sections a

province served only for the light vaults resting on the arches. To recapitulate: friable stone for surfaces subjected to little strain; coarse and resisting material for the supporting parts; fine stones in thin, large slabs for the revetments and for the open-work portions. Nothing could be more sensible or more economical.

If we examine the clerestories, for example the row of windows adorning the choir gallery, we note that in the thirteenth century the architects of Champagne had reached the extremes of lightness; it was impossible for them to go farther in this direction, even at a later period when the revetment of their edifices became a veritable lacework of the finest pattern. These clerestories are double, with a narrow passage in the intervening space. A horizontal slab, forming a gutter, connects the framing slabs of the openings and holds them in a vertical position. The outer slab is higher than the inner and is crowned by the balustrade of the gutter, which is incorporated with it. In the upper part, the clerestories are likewise double and are also joined by a gutter; but the opening is no longer formed by a single slab; the archivolt and gable are

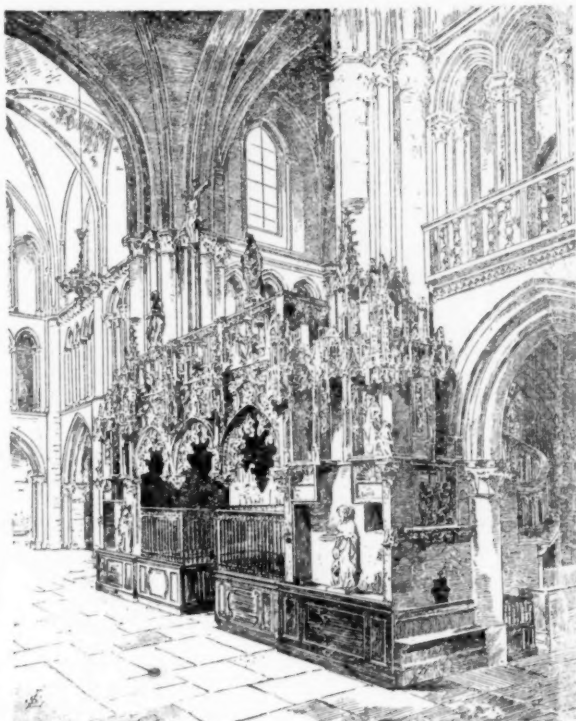
taken together in a series of constructed vousoirs; the support of the gutter is borne by the summit of the archivolt, by the rampants of the gable and by the openwork rose-windows in the tympanums. In order to avoid any leaning, the gutter is made of two sections which, instead of prolonging each other in the same plane, are slightly inclined and abut against each other in an obtuse angle.

In the celebrated church of Notre Dame de l'Épine, near Châlons, we find one of the most remarkable specimens of Gothic art in its latest period. It dates from the second half of the fifteenth century and was erected on the site of a miraculous apparition seen about 1419. The openwork stone towers, the rose-windows and the carved gables attain a degree of airiness impossible to surpass. The portals are covered with elaborate sculptures of great delicacy; in the one on the south side the sculptor went so far as to represent cloth hangings; the work is certainly remarkable, but it shows an exaggerated effort after rich effects.

Local tradition has it that the edifice, which was probably begun during the English invasion, was started under the supervision of an English architect; one might indeed try to recognize traces of such an origin in the character of the lateral façades and of the south portal. To the same period also the remarkable rood-loft of the Cathedral of Troyes must be assigned; it is of rare sumptuousness and elegance, but the multitude of pinnacles and certain other features indicate an almost complete neglect of the principles of reason and well-proportioned harmony, which must remain preponderant in any style of architecture and which must not be encroached upon or covered up by a superabundance of purely sculptural and decorative plant forms.

The transition toward entirely new tendencies is marked in the fine portal of Sainte-Marie-du-Pont, of the sixteenth century, where it is thought that the crescents of Diane of Poitiers may be recognized. It may be said that the transition is, as it were, caught in the act here, for the late Gothic forms are found allied with the wholly new forms of the Renaissance;

It is a somewhat curious fact that when the late Gothic exaggerations were abandoned the inspiration drawn from the Renaissance, which was itself so rich, so supple and so fertile in its beauty, seems, however, to have brought a more tranquil



Rood-loft in the Cathedral of Troyes.

harmony into the architecture of Champagne, just then on the point of sinking beneath the weight of carved ornamentation.

An interesting example of the Renaissance applied to church architecture is seen in the portal of St. Andrew's near Troyes, the sculptures of which are attributed to Fr. Gentil. It will be remarked that, under the more severe lines of this style, the school of Champagne still maintained, as in former times, its inherent qualities of delicacy, richness and refinement; the archivolts, *piedroits* and imposts are chiselled and sculptured lavishly; the columns are decorated with angels' heads and with gracefully-twining garlands. The Renaissance aimed, no doubt, at rich and sometimes even sumptuous elegance, but it preserved in this province a litheness and delicacy in conformity with the traditions of the past, and which still continue to characterize the school.

[To be continued.]

ARCHITECTURAL PROBLEMS IN GREAT CITIES.¹



Designed by Daniel Marot. From *Der Formenschatz*.

THE problem of municipal life is almost wholly one of architecture. We hear a great deal of municipal problems nowadays, running through the gamut of necessities from rapid transit to sewage, yet the purely architectural side of the question has been almost wholly neglected. It is surely as important to be able to live in a city, that is, to be suitably housed in it, as to be able to move around in it, and, as I shall hope to show, the part architecture takes in the municipal life is extremely important and varied, so important and varied, indeed, that I do not consider it an exaggeration to say that of all city problems that of architecture is the most important. I feel the more justified in making the statement since by "architectural problems in great cities," I do not mean the building of ornamental and ornamented edifices, the building of churches or of great modern office-buildings, or even of homes for the rich or places of pleasure or of popular resort. Architecture in great cities, and in little cities as well, is a stern, hard, real problem, as unbending,

¹ A paper read before the Board of Trade of Newark, N. J., November 16, 1892, by Mr. Barr Ferree.



Façade of Notre Dame de l'Épine, near Châlons.

and if one examines the structure with an unprejudiced eye it will be difficult for him not to acknowledge that these elements, though so dissimilar, are nevertheless combined without any very shocking contrasts.

as heartless, as pitiless as the economic conditions which make our poor what they are, which make real life so largely unhappy, which bring misery, and desolation, and hunger, and death to hundreds of victims every day.

The architectural problem of cities is, in short, nothing more nor less than the whole problem of human existence. More than this, it is complicated with the progress of the human race, advances with many new inventions, is hampered by the introduction of new devices, is dependent both as an art and as a science upon a multitude of circumstances few of which are properly architectural, yet all exert an influence upon it, rendering its study more complicated every day, and its practical results more difficult of application.

In order that the topic at hand may be understood at the outset, and the position from which I invite your consideration entirely comprehended, I would define architecture as including any and all buildings, erected at any time, for any purpose, in any manner, of any material, good, bad or indifferent, ugly or ornamental, useful or artistic, large or small. You will not find such a definition in the books, but architecture is a practical art, which, in its most complicated form, is to be found in the modern cities, and in defining it there is no safer way than to tell what one sees. In New York, for example, the architectural wonders are popularly supposed to be located on Fifth Avenue and Broadway, and to include such miracles of art as St. Patrick's Cathedral, Madison Square Garden, the World Building, the Western Union Building, the Custom-house, the Hotel Waldorf, the Produce Exchange and the Equitable Building. I select these names at random, because they are all large and important buildings, some of them good, some bad, some indifferent, and some so atrocious as to be found only in the city of New York. Ninety-nine visitors out of every hundred who come to the metropolis look at these structures and go back into the country again satisfied they have seen the most important architectural specimens of the great city. They have seen nothing of the kind. The most important part of New York's architecture is the tenement-houses, the homes for the people, the dreadful rookeries along Second Avenue, the atrocities of Hester, Baxter, Mott and Thompson Streets, where sometimes as many as 3,000 persons inhabit a single block, where a single election-district numbers nearly 10,000 persons, where often as many as a dozen families are crowded onto a single floor, and every large room is cut up into smaller rooms that more families may be accommodated, more lives ruined, more misery engendered, more rent made. In some parts of New York the density of population is at the rate of 290,000 human souls to the square mile, a record that beats all competitors and gives New York the dreadful title of the most crowded city on earth.

It is in such places that the true architectural wonders of the metropolis are to be found, it is there that architecture becomes a matter of life and death, of health and wealth, of morality and religion. Before concluding this paper I shall return to this phase of the subject; I refer to the matter now in order to impress upon you, if I can, the true meaning and nature of architecture in relation to the municipality. Before the horrors suggested by the New York tenement, art fades away, leaving a stern reality which must, so long as it exists, remain as a frightful menace to the health and prosperity of the city.

To take up the architectural problems in the modern municipality in due order it is necessary to begin at the beginning. And first of all, as regards site. No city has ever been founded to be great, save a few modern instances, in which the growth has been entirely dependent upon advertising, and, in the marvellous sympathy which invariably exists between cause and effect, immediately ceased to grow when the founders' advertising appropriation gave out, or when some deeply cherished boom failed to materialize. Paris was originally a small town on an island in the River Seine, and as late as the second decade of the present century the City-hall of New York was built with a brownstone front towards the north, because, in their most sanguine dreams, its builders never imagined the day when any one would live so far in that direction as to see its back. The growth of every great city, so far as my memory serves me, has been wholly a matter of accident, so far as the intentions of its founders were concerned. Modern times show some exceptions, as St. Petersburg in Russia, Berlin in Prussia and some lusty young American towns, which have sprung into existence from the discovery of some great natural product in their immediate neighborhood; but in considering the question generally, it may be admitted without discussion, that the founders of cities seldom had the forethought to look into the future. Certainly no man could have been more astonished at the result of his work than Columbus had he been given a glance into the future 400 years after his immortal voyage and witnessed the extraordinary events in New York and Chicago during the past month, events which, from his standpoint, were quite as extraordinary from the size and extent of the great cities in which they were performed, as from any inherent merit of the great celebrations from which we have scarcely yet recovered.

Now this want of forethought on the part of the founders, though no greater than we are ourselves displaying every day in the most commonplace matters, entails a great deal of unnecessary hardship upon the architects of the modern city. A city placed on the top of a hill, or in a secluded valley at the bottom, may answer well enough for the requirements of a few families, but it may be a matter of great inconvenience when the hamlet develops into a city of the first rank. Location near a stream of water, while extremely advantage-

ous during an epoch in which water transportation had no rival in swiftness and cheapness may be extremely disadvantageous when the city reaches beyond its banks and is cut in two by the very means which, in an earlier time, helped to make it great. Chicago and Milwaukee, and to a much less extent Philadelphia, are notable instances of cities in which a central river has divided them into sections, and which, through the exigencies of commerce are still employed for shipping purposes, to the great inconvenience of the citizens and the positive harm to the cities' growth. The building of New York on an island in the centre of a deep harbor has resulted most unhappily for the architectural and humanistic development of the city, no matter how beneficial it may have been to its commerce and the enriching of its citizens.

These illustrations are useful in directing attention to some of the fundamental and irremediable evils in the building of a great city. In most communities these are things which cannot be helped save at a great expense, before which the most extravagant of municipalities must quail. All that can be hoped in communities where these conditions prevail is that they repair as best as they can, and as expeditiously as possible, the unconscious harm their predecessors have wrought. If the founders of our cities are culpable in beginning operations near natural impediments, they can scarcely be held accountable for the nature of the soil which may have answered extremely well for log cabins, but which is quite unsuited for the modern heavy office-building of iron and stone or brick. Building operations in Chicago are much more costly and much more complicated from the compressibility of the soil than there is any need for them to be, yet such is the thoroughly admirable way in which the Chicago architects have attacked the problem that they have developed a rational business architecture which for artistic treatment, and utilitarian uses has no equal in this land, or in any other land. A more remarkable instance of the fact that necessity is the mother of invention, it would be hard to find.

If very little help can be looked for from the topography and geology of the site of the city, scarcely more can be depended on from its plan, from the direction and width of the streets. Good old William Penn thought he was making ample provision for his city of Philadelphia when he set apart certain portions for public parks and squares. Undoubtedly he was right so far as he went, but he laid out his Quaker city with the streets all at right angles, rendering it necessary to consume longer time in going around corners in Philadelphia than in any other city of its size. Apparently its worthy founder was oblivious of the fact, or had forgotten the instruction of his school days, as in the case with many a lesser man, that the square on the hypotenuse of a right-angled triangle is equal to the sum of the squares on the other two sides. Topography and geology are factors which modern methods may very largely overcome, though even cable roads, as in that most hilly of American cities, Kansas City, do not always provide the unfortunate inhabitant with comfortable and expeditious means of conveyance up and down his city as well as around it. The plan of the streets, however, is a matter which concerns architecture much more closely, and is one which requires the exercise of the greatest skill to overcome unsatisfactory arrangement. Like most other elementary factors in a city's growth the streets, in the larger and older communities, were planned wholly with reference to present necessities, without a thought of the future, and without the smallest idea of what the future would be like. The crooked streets of Boston are, as every one knows, everlasting monuments to the cows that day after day, week after week and year after year chose those particular directions for travel between their homes and their feeding grounds on the Common. Why those particular cows should be honored with such perpetual memorials I do not know, but it is interesting to note the impotency with which so cultured and advanced a community as Boston is forced to submit to the arrangement made by dumb brutes that, for all time, have determined the street topography, and in consequence, much of the street architecture of that great city. And so with the lower part of New York, where many of the narrow and crooked streets perpetuate the cow paths and lanes of early colonial days. As the older part of a city almost invariably becomes the most congested with traffic and buildings, and as property in it generally becomes the most valuable within the city limits, at least for business building purposes, and as, therefore, it is all but impossible to effect any change either in the direction or the width of the streets, no matter how necessary such changes may be from the modern standpoint, it is obvious how essential it is for younger communities, or those in which the demands of business may still be controlled, to modify their city plans with a special reference to convenient and rapid means of locomotion, and to widen highways and sidewalks with a view to rapidly increasing traffic of all kinds, as well as with reference to the buildings now essential to modern requirements.

The city plan affects architecture in many ways. Nothing could well be more unsatisfactory or more harmful than the system universal in New York of uniform lots 25 x 100 feet. The whole rectangular system is bad, although it is in such general use in America.

The greatest modern city is Paris, which was practically replanned and rebuilt under Napoleon III. The crooked maze of mediæval streets were straightened out, but great diagonal arteries run from the Arc de Triomphe, straight through the city, cutting off angles wherever necessary, reducing distances in a no inconsiderable degree and providing central arteries of greatest value in relieving and

hastening traffic. The rectangular plan is wholly obnoxious, though I presume it has the advantage of giving each lot owner an equal amount of land, and thus placing every one, theoretically, upon the same basis. As a matter of fact, the theory is worthless. Land never remains divided equally among a number of people, for the rich man is continually adding to his possessions. The rectangular plan is being neglected in some of the very new communities which owe their origin and much of their prosperity to the land-speculator. These suburban townships will doubtless long retain their suburban character, but it is interesting to note that in many of them an irregular plan has been adopted in preference to one on strictly right-angled ideas.

The city plan affects architecture in many ways. No one in New York wants to build a house twenty-five feet by one hundred feet, yet in many parts of the city land is so valuable, and the owners so hungry for rents, that the entire surface will be covered, save where so-called light-and-air wells are imperative, and where the law says some open area must be interposed between buildings placed back to back. An immediate consequence from this is the overcrowding of land by the building of houses with dark rooms, or rooms which open only upon a narrow air-shaft, or which do not open upon anything at all.

The dark room of the New York tenement and flat is one of the most atrocious features of architecture in that city, and is almost entirely due to the extremely awkward shape of the lots, which, in their turn, are dependent on the formation of the streets. Much the same may be said of business houses, though the hygienic effect there is not so bad as in dwellings, since no one is required to live in them. But the system has resulted in certain obvious peculiarities which may be well studied in our mother city across the bay. The most striking characteristic of the new buildings of New York is their narrowness of front, and their disproportionately great height. There is no quality in building so difficult to manage as that of upward extension, and when to this is added the misery of extreme narrowness the acme of misery to the artistic architect is reached.

I need only quote, I hope, the *Mail and Express* Building, the Tower Building, the Corbin Building and the Broadway front of the Columbia Building, all on the lower part of Broadway, to direct your attention to the very painful and unfortunate results which accrue from the universal use of long oblong lots with their narrow side to the street.

The objection is more than an aesthetic one; it is a distinct economic loss. Suppose a city block of ten lots, and suppose, which is no extreme case, that, within a few years, the ten different owners erect ten different and distinct buildings upon them at ten different times, each of the ten having an average height of from eight to ten stories. Now without entering into any statement of figures, which in the nature of the case is out of the question, it may be taken for granted that the cost of erecting these ten different buildings, of supplying them with ten different sets of elevators, janitor's service, plumbing and ventilating plants and the other essentials in the modern office-building, is very much greater than the total cost of erecting a single edifice covering the same amount of ground, carried to the same height, and supplied with corresponding conveniences. Our imaginary ten buildings are put to exactly the same uses which our imaginary single edifice would be put to, and serve the same end, at much greater cost, and in no better manner. There would have been a vast saving all round, to owners and tenants alike—for the latter unfortunates must bear the cost of this reckless, unnecessary expenditure—had the owners pooled issues, and built a single structure at an agreed upon time. I remember that among the things which used to puzzle my poor brain in my school-days was an arithmetical problem called equation of payments, the object of which was, if I remember rightly, to ascertain the time at which a man could pay a series of notes falling due at various times, without loss to himself or the party to whom he was indebted. I don't know how practical this problem was, because it did not tell how a man was to get the money he might use to pay a note ninety days from date, which he could by no means collect say thirty-five days beforehand, but it seems to me that if some arithmetical genius would apply the equation of payments to the equation of architectural construction in the great cities, some striking results would be obtained.

The modern man of business thinks himself a great economizer; in fact the whole modern business system is nothing less than paying the smallest possible amount for the largest possible returns. The maxim of current business is, not that the cents makes the dollars, but the half-cents, the quarter-cents, the eighth-cents perform that very interesting and useful operation. In architecture the utmost economy is practised in construction, and it has been due almost wholly to the devising of economic methods in building that much of the current interest in architecture as an investment is due, yet so long as small business buildings are erected side by side, where single structures might suffice, just so long will there be a great economic waste in building, which might, by the application of a little common-sense, be diverted to more profitable sources. But then our whole city life is largely a waste, economic practices while talked of in party programmes, in text-books, and on the lecture-platform are very far from being carried out. Even our economic societies, which are continually preaching on economics busy themselves with accumulating a mass of theory, of great interest, doubtless to the theorist, but of

little value in telling us how to live and save and prevent, not justifiable expenditure, but waste of all kinds in which we are thoroughly proficient without realizing our proficiency.

New York is characteristically a city of narrow fronts, and in this and many other things, a striking instance of what to avoid. In Chicago things are better managed, there being, so far as my memory serves me, no such tall, narrow, high buildings as may be seen in almost every block in New York. The Auditorium, the Masonic Temple, the Woman's Temple, the Ashland Block, the Title & Trust Co.'s Building and many other of the large new buildings of Chicago have unusually wide frontages which add very much to their dignity.

This is but one of the ways in which streets may affect the aesthetic side of architecture, a most interesting aspect of the question, but one which, for want of time, and a desire to direct your attention to other and more vital questions I am compelled to omit.

Difficult as are the architectural problems presented in the plan of the city, they are comparatively simple when compared with the group of problems suggested by the massing of population. Thus Philadelphia with a population of a million has 187,052 dwellings, while New York with a population of nearly two million has but 81,828 dwellings. Every one who has visited either city must see, from these figures, how relatively simple the architectural problem is in the former city as compared with the latter. And for New York the question is much more complicated when the situation is analyzed somewhat. Of its 81,828 dwellings, 23,596 contain twenty-one persons or more. Of the whole population nearly one-half live in dwellings containing ten or more persons, while the 21,596 dwellings, just mentioned as containing twenty-one persons or more, house 1,010,737 persons, or two-thirds of the entire population of Manhattan Island, or as many as the total population of Philadelphia.

I need not, I trust, point out to this audience, that such a condition as obtains in New York is to be avoided above all things in younger and smaller communities. To a certain extent this condition is necessitated in New York by the relatively small area on which the city is built. The development of a good rapid-transit system, and especially the providing of a swift and cheap transportation to New Jersey and Long Island will do much to relieve the pressure upon the metropolis, but even with the most elaborate systems of relief of this kind, the fact will remain that the workingman must reside near his place of labor.

To what extent he does this in New York, I do not know, but surely one of the most important architectural and industrial revolutions to be accomplished in the cities of the future will be the location of manufactories in the midst of workingmen's dwellings. During the past summer I was much impressed, among other impressive sights in our great West, by the gigantic plant of the Anheuser-Busch Brewing Association at St. Louis. This great group of buildings is so vast, and so thoroughly expresses the tremendous extent of the industry carried on there as to be really impressive, and seems almost like a city in itself. The surrounding buildings are not pleasant, being poor and small, and badly contrasted with the gigantic structures near which they are placed. I inquired of the Association if they made any provision for the housing of their employés. They do not, but several building-associations are maintained among their men, and as many as three hundred of them live in homes of their own, acquired through this most useful agency. I think one naturally looks for general prosperity by actual evidences of it, and it would surely be a great economic gain were this great brewing establishment surrounded by tidy homes, well built and well cared for and filled by its own people.

New York has long since passed the stage in which building-associations can be expected to materially benefit its working people as a class, but here in Newark, and in many other communities of a similar size, the building and loan associations afford a welcome and easy method of supplying the workingmen with homes of their own. Such at least is the example Philadelphia teaches, and it is, I think, the only lesson which the Quaker City can teach to outside observers.

It is a mistake, however, to attribute all of Philadelphia's home development to the building-associations. There has been much speculative building there in those small homes, which every workingman with a family looks upon as an essential part of his existence. The city extends over such a vast area that it has been found profitable to build small houses at low cost, which would not have been the case had the city's site been a restricted one. Indeed I am inclined to regard this as a much more potent element in Philadelphia's up-building than the ground-rents and building-associations which have proved so helpful in their way. Then again, Philadelphia has a very well developed, though exceedingly slow and cumbersome system of street-railways, which enables one to move from one part of the city to the most distant quarters for five cents, and with comparative ease, if one has abundant time. Finally, there is the very important fact that Philadelphia workingmen are accustomed to live in homes of their own, and the memory of living man goeth not back to the time when they did otherwise. There is a great deal in being accustomed to one phase of life, and just as the married couple who have lived all their lives in homes of their own find it not always easy to finish their days in a boarding-house, so the workingman who is accustomed to his own but diminutive home finds it extremely irksome to adapt himself to tenement-house life. The presence of tenements in New York, the absolute necessity for the laboring man to find shelter in them, from the lack of other sort of abode, helps

to perpetuate their presence, and it is hard to look forward to the day when the last of them shall disappear from the streets and alleys of the metropolis.

New York's population is largely composed of freshly-landed immigrants. Certain nationalities have quarters of their own, which are as much avoided by other people as though they were located in the moon. It has always been so, and so closely has the line been drawn that some parts of New York have been inhabited successively by Americans, in the beginning, then by Irish, Germans and, lastly, by Russian and Polish Jews. These changes mean much more than a mere change in the kind of immigrants we are receiving. They imply that the better class is giving way to the less desirable, and it is a notorious fact that in this sequence the successors have invariably been satisfied with the accommodations their predecessors had long outgrown. The respective migrations have been due not alone to the influx of new nationalities, but to the fact that the older inhabitants have outgrown their old habitations and have removed to better quarters. The segregation of nationalities, which is to be found in nearly every American city, is to be avoided at all costs. Not alone does it mean the indefinite perpetuation of unsightly and uninhabitable buildings, but it means the perpetuation of national traits, characteristics, habits and languages which have no place at all in this American republic. It is one thing to speak of "Chinatown" and of "Little Italy" and marvel at their curious distinctiveness, but the maker of modern cities has no time for such reflections. A Chinatown or a Little Italy means simply the building up of small foreign cities or communities within our American municipalities, with no American instinct or thought, with no interest in the country or its welfare, and with no thought beyond their friends' of the same nationality.

The Italians, for example, who form the most marked portion of New York's recent immigrants, come here and live for years without learning a single word of English. I, myself, know of one Italian, who has been here twelve years and knows no English save a choice collection of oaths. This thoroughly admirable citizen earned, on an average, fifty cents a day. His family numbered six including himself, and most of the support was furnished by a boy of about seventeen years. There is little doubt in my mind that this gentleman might have been much more valuable to the land of his adoption had it not been that the condition of New York life threw him among his compatriots, without any reason for his mingling with Americans.

While I have treated this subject of overcrowding chiefly as relating to tenement-houses, it is found in fashionable localities also, as well as those devoted to business. I do not know, unfortunately, enough about the fashionable parts of Newark to offer any comment upon any manifestation of this phenomena in this city, but, however, it may be to-day, Newark expects in the near future to be a great city, and as overcrowding is a characteristic of every great city, I shall not be assuming too much in maintaining that if this problem has not already presented itself to the Newarkians it must do so at an early date. Pressure of population in a fashionable district must result in one of two ways; either in increasing the number of houses, by rendering land so valuable that holders of real estate will find it more profitable to sell than to hold, or in an extension of the fashionable district, which will result in building up values. In either case there is an increased architectural activity and an increased revenue, to the owners from rentals, to the city from taxes.

In business districts the result is the building of large office-buildings, which, in fact, are simply ways of multiplying the ground area by the number of floors, and thus increasing the real area given up to the transaction of business without going outside the business circle. So in fashionable localities the result is to keep down values outside the charmed circle, and enormously increase them within.

In this situation the only safe criterion is "the greatest good to the greatest number," and in the light of this maxim the merits of the high building stand unrivalled. The methods of modern business tend more and more to concentration, to the use of offices, as distinguished from large apartments and stores.

Great centres of trade like New York and Chicago could not exist were every merchant compelled to maintain a vast establishment in each city. A small office, in a well situated locality, is now all that is necessary for the transaction of a very large business. And where these can be conveniently had, provided with every modern necessity, as is the case with many large office-buildings in the great cities, tenants can be obtained without trouble, to the mutual advantage of all concerned, the city not less than the individual. If a city is to progress, rash is the man who would seek to stop its progress, and great his responsibility.

The influence of rent upon city architecture is quite as marked as that of pressure of population. Modern architecture as practised in all great cities is, in truth, wholly a matter of rent. The art side has no show at all. When a man starts in to build a building his first thought is, not, how beautiful it may be, but how much money will it bring? His building is an investment just as his stocks and bonds are, and he looks at both in the same light. This is very largely the reason why the high building for offices, and the gigantic hotel, and apartment-house for residential purposes have increased so much of late in all the large cities. Increased rents, however, do not always go hand in hand with modern improvements. Not many years ago thirty per cent on the investment was not considered an extraordinary income from tenement-house property. This happy result was achieved by a tremendous overcrowding, by leaving the

houses to fall into the most disreputable decay, and by conducting the whole business with reference only to squeezing the greatest possible income from the tenants.

This is no longer possible in New York. The building law has come to the rescue of the people, and, by insisting on the introduction of decent appliances, and by having the power to condemn buildings too utterly atrocious, has largely reduced the owner's profits, while very materially adding to the comfort and welfare of the people. Into the question of profits from tenements I am not prepared to enter, but it is an unquestioned fact, however, that many tenements which disgrace New York do so simply because the owners are unwilling to go to the expense of making necessary improvements. Then, again, it is sometimes difficult to secure tenants for improved structures, in which the rules may be too strict and the standard of respectability too high. It may not be desirable to improve only one house in a certain neighborhood, because, while a little leaven leaveneth the whole lump, the process may be too prolonged for the purposes of city owners. New York has not been the scene of many experiments in the way of improved dwellings, but such as have been undertaken have proved very successful, and the testimony they give, and which is supplemented by much ampler experience in London, is that it is easy enough to meet all ordinary expenses and pay a dividend of from four-and-one-half to five-and-one-half per cent on the investment. With Government bonds paying a little over two per cent dividend, this result does not seem unprofitably small.

The ownership of land and the formation of large estates sometimes has a very marked influence on architecture. It is a most interesting question whether the formation of estates is beneficial to a city or not. It is one that cannot be decided negatively or positively, since both answers can sometimes be given within the limit of a single city. If the landlord is wide awake, if he takes a personal interest in his holdings, if he seeks to improve it by new buildings and keeping old ones thoroughly up to date, his large estate may be a direct benefit to the municipality. This is the case with some large estates in London, in which wholesale improvements have been carried out which would have been impossible had the property been divided among a number of individual holders. On the other hand, there are blocks of buildings in New York belonging to one estate which are never improved from one year to another, simply because the owners are satisfied with the income they receive, or are unwilling to personally assume the risks and costs necessary to make them modern. Competition, which is the source of much modern progress, only obtains among a number of small owners, and hence I am inclined to regard large estates as things to be avoided rather than welcomed. Under no circumstances, however, should large estates be permitted to accumulate in one section of the city. New York has a striking instance of the dangers of such holdings in the Sailor's Snug Harbor property, located to the south of Washington Square. By its situation in the heart of the business region of the metropolis, this land should have become extremely valuable, and been covered with fine business buildings. But the fact that it was held on lease-hold, and so much of it in one place, has deterred investors from improving it, and it has only been within a year or two that even the adjoining property has begun to be opened up. Comparatively little harm would have resulted had this property been distributed over the city, but situated as it is, covering several blocks in a central locality, its effect has been extremely harmful.

In studying the architectural problem of cities, it is necessary to include such very essential elements as fires, sanitation, sewage, water-supply, etc. The general relations of these things to the municipality may better be left to specialists, but, as they are closely connected with architecture and its development, some few words may be devoted to them. Of all the calamities which can befall a city, none is so much dreaded nor so beneficial in its results as a great fire. Every great fire recorded in history has directly benefited the city it has desolated. The great fire of London completely stopped the pestilence which threatened to exterminate the citizens, and rendered necessary many improvements which were then looked upon as modern. The most conspicuous modern illustration of this fact is the great Chicago fire, which prepared the way for the present great and splendid city.

But please do not imagine that I am recommending a fire as a means to progress and improvement. On the contrary, our new cities should be so well built, they should be so entirely supplied with modern appliances and methods, as to call for no after-fire improvements. The question of fires is, I take it, more one of lack of vigilance and the want of care and forethought than anything else. We hear a great deal nowadays of fireproof structures. I am obliged to admit possessing a great scepticism as to the existence of such buildings. As a matter of opinion — and I offer this criticism only in that light, and not as a fact — a fireproof structure means, not that it is wholly fireproof, for its contents are often extremely dangerous, and considerable woodwork is still employed in interiors, but that modern skill and science has reduced the dangers of fire to a minimum.

Every day we hear of the destruction of "fireproof" structures, and every day the explainists are coming forward and pointing out grave structural defects which exist in no other building. Yet no sooner does another building burn down than a fresh set of explanations are put forward, and so it goes. The error doubtless arises

from the fact that people expect a fireproof building to be entirely and absolutely safe from fire. Not only is this assumption unwarranted, but we build so much with iron and stone, two of the most dangerous materials in a fire, as to render our much-praised structures a mockery rather than a safeguard.

In order to have fireproof structures, the whole city must be fireproof. While the interiors of our fireproof modern buildings contain many sources of danger, the greatest danger comes from without.

A huge modern building, supplied with every imaginable safeguard against fire, standing in the midst of small, old and dangerous structures, as is very likely to be the case in any city, runs a tremendous risk that the insurance company will be sure to make the owner pay for.

Sanitation, sewage and water-supply are too important topics to be dismissed with a few sentences, but I have already consumed so much of your time that I cannot give them the extended treatment they deserve. City architecture is largely a matter of sanitation, and the time may not be far distant when it will be considered by architectural authorities, as it is now by humanitarians, more important to construct dwellings so as to save life, render the mode of living more comfortable and safe, than to build beautiful and artistic structures. Modern architecture is becoming, and rightly, too, a science, not an art. The change is in every way for the better, because we have not yet developed sufficient common-sense, the rarest commodity in every market, to build both artistically and scientifically, meaning, by this term, in a sanitary manner. If the choice must be made, there can be no doubt, among thinking people, which to choose. Sanitation is a matter which rests almost wholly with the municipal authorities. The more stringent the law is in this respect, the better the community and the more healthy it is as a place of residence.

But legislation does not limit itself to sanitary questions. The building-law of every great city is filled with minute regulations concerning matters of construction. It is a sad commentary upon civilization that some people will not build well or properly unless compelled to do so, and herein comes the value of the building-law to the community.

Then there is the moral aspects of architecture. Social life in cities is generally considered a question apart from the structure of buildings, but there can be no greater mistake than to ignore the influence which buildings exert upon it. And this concerns not tenements alone, but private dwellings, apartments, hotels and work-rooms. It is as essential that a man have a pleasant, healthful place to work in, as to sleep in. If he spends his day in the open air, he loses the benefit of it by passing his nights in hot, stifling, crowded tenements.

Whether the tenement-house problem be at foundation a question of ethics, of education, or of architecture, I shall not undertake to determine. Whatever be the respective merits of these forces that of architecture is not the least. Be the man what he may, be his aspirations of the highest, the good that is in him will be stifled if his house be bad and his surroundings worse. He is moulded by his environments. He cannot purify himself if his home is in an impure building. And so, ministers of the gospel, missionaries, Sunday-schools and all the paraphernalia of aggressive Christianity, may exert themselves to the utmost, may put forth superhuman efforts for the regeneration of the tenement-house, philanthropists may exhibit model dwellings, and point the merits of cleanly living — if one has water enough — but unless there be a greater reformation in tenement-house architecture, and that within a shorter time than has yet been tried, the labors of this multitude will be lost. Some few individual souls may be saved, but the masses will be as they were, and go on, from year to year, living in impure dwellings, breathing impure air, thinking impure thoughts, in an environment that knows only badness and poverty and endless labor and care.

As I pointed out in the beginning the founders of our cities did not foresee what their present would be and did not make any preparation for anything but that to which they were personally accustomed. We cannot look into the future much farther than they did, but at least we can prepare for changes in time to come on a more enlightened basis than our predecessors. Much of their work has had to be changed, and what they did is still affecting some of our most enlightened communities, as the cow-paths of Boston amply testify. One great trouble with modern municipalities is their lack of consistent action as regards improvements. If a railroad enters a city, vast improvements are projected near its terminals, but little attention is paid to the property along which it passes, save, perhaps, to note its decrease in value. There is no occasion for this. Every railroad in our cities should be lined with manufacturing and warehouses, not only because it is neither safe nor desirable to live along the lines, but because such buildings are natural accompaniments of them. In the West this feature is to be seen in many instances, but in the East our warehouse centres, as well as great manufacturing establishments, often bear no relation whatever to the railroads or other lines of transportation. Certainly New York is a great offender in this respect, as her truck-laden streets, dangerous to man and beast alike, too thoroughly testify.

Younger communities want to avoid the errors of older ones. In studying the architectural problems in great cities, and I would wish above all things to emphasize the importance of such a study, New York offers an example of almost everything to avoid. Philadelphia in her homes for workingmen is a good object of study for commu-

nities who wish to make this special feature of their growth, but I would earnestly advise against any copying of Philadelphia architecture, or the absorbing of any of its traits save its abilities to provide its working people with individual homes, which, it is well to note, it does at less rental than is frequently offered in the tenements of New York. If you wish to make your city a magnificent one, with all the latest improvements of science, engineering and art then of all the world, Paris is the model. Paris is extremely beautiful and great, and both of these facts are due to the fact that the city has expended vast sums in beautifying itself. Without its parks and gardens and palaces and places of pleasure, Paris would be very dull; it would lack most of its attractions to the tourists, and would be deprived of a large part of its wealth. The city is especially interesting from the American standpoint, since in this country there is no art so little understood or so little appreciated as that of municipal embellishment. I have been compelled to omit any extended reference to this theme, because it is impossible to completely cover the architectural question in a single paper, and before the beautiful must come the practical. But Paris stands so much by itself, and is so conspicuous an example of what may be accomplished in deliberate beautification, that I venture to run the risk of taxing your patience by inviting your attention to it. The great lesson it teaches is briefly this: The more money a city spends in parks and artistic public buildings, in laying out ornamental streets, in insisting on a certain standard of excellency in its architecture, in insisting on the beautiful and the rich in every particular, in making fine art a municipal and not a private study, the more satisfactory the return, the more profitable the investment. The sums of money that have been required to bring Paris to its present splendid stage of development pass calculation, but the most superficial student of municipal growth dares not say the money was wasted, nor that it would have been better expended in different ways. Nor does the example of Paris end here, for its municipal affairs, the advantages it offers its citizens, its applications of the latest phase of scientific discovery and invention are unquestionably ahead of all other similar efforts. We cannot perhaps reproduce the beautiful capital on the Seine in this country, but we can study its methods and take to ourselves some practical lessons in municipal management as well as in municipal growth.

THE EXPLOSION OF RANGE BOILERS.



THE approach of winter brings to mind the fatalities and disasters that annually occur from the cause which forms the subject of this article. It is not that every cause of these serious accidents has any relation to cold weather; in fact, there is only one cause which has, but this one is the most prolific of trouble, for at least four-fifths of the explosions are directly traceable to frost.

The causes which lead to explosions are four: 1, Frost; 2, Failure or shortness of water (sometimes due to frost); 3, Stop-cocks; and 4, Incrusted deposit. These four causes are placed in their order of virulence. There is a doubt whether the second and third should not be put upon terms of equality in regard to the degree of danger their existence creates; but, as regards the fourth, there is scarcely any danger at all traceable to it, notwithstanding the alarming advertisements to the contrary.

Taking these causes in the order of citation, one of the ways by which frost can cause an explosion is by solidifying, *i. e.* freezing, the water in the two circulating pipes that lead from the boiler, so that any steam generated cannot escape. The general safety of every apparatus is supposed to be provided for by an open pipe at the highest point. This pipe should allow free escape for steam, and is also intended to allow for the expansion of water as it is heated; it is, in fact, usually called the expansion pipe. This open pipe at the top is efficient in preventing danger so long as it is open or there is a clear way through the pipes from this point down to the boiler, as there always should be. If, however, any part of this pipe or the circulating pipes between it and the boiler be in exposed places where frost can act vigorously upon them, there is every probability that during the six or seven hours at night when the fire is out, the water may be cooled down sufficiently to freeze. If the frost can act in this manner and the water is frozen hard in three or four or more feet of pipe, the open pipe at the top is of no avail, as the passage between it and the boiler is cut off, and no other escape for steam, etc., exists.

In such a case as this we may, theoretically, look for an accident to occur; but fortunately there are several incidental chances that may ensure safety. When the steam escape-pipe is practically closed by ice in it, or in the circulating pipes below it, there is certainly no escape for steam if it is generated, nor is there room for expansion. Before, however, an accident of any kind can occur, we have to get the water at a high temperature, and this, with the time it occupies, is an element of safety. First, the gradual heating of the water may melt the ice in the pipes; and if it is warmed ever so little it will melt sufficiently to be loosened by the expansive force of the water as it gets heated. If it moves, then safety is assured, as it will quickly melt. Secondly, some one may go to a tap and at once discover that something is wrong; this is an element of safety, as every one who knows the danger of frozen pipes would immediately extinguish the fire. Undoubtedly very many disasters have been

avoided by these little incidental circumstances, and during the severe frosts of last winter there is no doubt some scores of kitchen-fires were lighted when it was highly dangerous to do so. Sometimes only one of the circulating pipes gets bitten, and then there is no danger; but as it is usual for both pipes to be run side by side, they generally fare alike.

When the apparatus is upon what is known as the "tank system," with the hot-water reservoir or tank at the top of the house, a danger exists if the frost attacks the cold supply-pipe alone. If this pipe is frozen up, the hot-water apparatus is no longer furnished with cold water as fast as the hot is withdrawn. The first intimation of this is that water cannot be obtained from the hot-water taps, and this means that the apparatus has been emptied down to the tap in question. This is a serious matter, and the fire should be extinguished at once, until water runs freely at the taps, or, in other words, until the cold supply-pipe is clear again. If the fire is not extinguished there is a considerable likelihood of an explosion, for what little water is in the boiler and pipes will be quickly evaporated, and the boiler will get red-hot. The red-heat of the boiler is not dangerous in itself, but if from any cause the frost-bitten pipe should suddenly run free again, and water enter the boiler while the latter was red-hot, the result would be disastrous to everything near it. This particular way in which an accident can occur is the one which without doubt has caused three-fourths of the fatalities on record. When a boiler bursts owing to the steam outlet being closed, the explosion is not of nearly so serious a nature as that from water flowing into a red-hot boiler. With the latter it is the effect of steam in its enormous expansive and rending force that does such serious hurt. With the former it is a burst and not an explosion in the true sense of the word. With the general freezing of cold supply-pipes that occurred in the last severe frost, the wonder is that accidents did not reach alarming numbers, instead of being so few. Of course there is scarcely a person who would be so injudicious as to continue working a range when the taps plainly indicate that the apparatus is short of water.

The remedy for all this is, of course, to prevent frost attacking the pipes. If pipes are run in sheltered places, where the temperature does not fall below freezing-point to any serious extent, no freezing can occur to the water sufficient to be dangerous. It is, however, of very little good caring for seven-eighths of the pipe if one-eighth is left so that frost can attack it successfully. This is frequently the case, the pipes in many instances being snugly cased and packed down in the house, while several feet are left uncared for in the roof. The cold-supply pipe, which is of so much importance, and the steam-escape pipe (also an important detail) are generally in as cold positions as they can well be placed in. Unless there is a cistern-room, some part of both these pipes will probably be exposed in a cold roof, where the cisterns are.

If pipes cannot be placed in fairly warm situations they should be covered with some material to keep them warm, that is, to prevent their losing heat. Hair felt, which is inexpensive, is a really good material, as it most nearly approaches what nature has provided to conserve the heat in living things. Some say that the warmth of a hot-water pipe within this material is conducive to the production of insect life. This may have occurred in some instances, but it is not usual. A material which cannot have this effect, but which is well adapted for preventing loss of heat, is silicate cotton. The only disadvantage of this material is that it is not made in sheets or strips for winding on pipes; it is necessary to encase it. Almost any material of a woolly or grassy or woody nature will answer fairly well. Saw-dust, carpet, cloth, hay-bands and such like, will all aid in keeping out frost, but hair-felt or felt-carpeting should be used if possible; not in one thickness only, but in two or three thicknesses—say three-fourths inch thick. If a pipe is put in a casing, it is worse off than before if the casing is not packed tight with some materials such as those named. Pipes in a case without any packing-material are worse off than exposed pipes, owing to the current of air that sets up within it, particularly if the casing be vertical or sloping. This applies to both cold and hot water pipes, but more especially to the latter. When hot-water pipes are carried up outside a house, as they are sometimes (not a commendable practice if there is a possible way of avoiding it) the encasing and packing becomes of considerable importance, as it must be done thoroughly. The casing should be large enough to admit of at least one and one-fourth inches of packing-material surrounding the pipes. Properly speaking, there should be some packing between the pipes and the wall, for if by any chance the casing warps, or comes away from the wall, the fissures so caused will lead directly to the pipes, and do all the harm possible.

So far we have spoken of the effect of frost in attacking the hot-water pipes, and in causing shortness of water by freezing the cold-water service. The particulars given in this latter case apply in just the same way when the failure of water proceeds from any other cause. In towns and places supplied by a water-company the water-supply is as regular as could be wished; but in outlying districts it is not so, and hundreds of country residences rely upon a gardener's attention to a pump, which commonly makes the supply very irregular indeed. In such houses it is no uncommon thing for the cistern to be emptied, not perhaps in the regular way, but when, on exceptional occasions, there is a greater than usual quantity of water used. With that system of hot-water works in which the tank or reservoir is at the highest point, there is every possibility of

danger occurring, as the apparatus requires to be emptied before any shortness of water is indicated. With the pipes erected on what is known as the "cylinder system," all the draw-off services are taken from above the reservoir, and this latter cannot be emptied. The result of this is that shortness of cold-water supply is an inconvenience only, for by this plan there remain some forty or fifty gallons of water in the apparatus after the taps cease to yield any, and the cylinder system should therefore always be adopted in residences that have an uncertain supply of water.

The next cause of explosions—stop-cocks in main circulation—is only less prolific of trouble than the last, due to stop-cocks not being in common use for this purpose. If it was the regular thing to put stop-cocks in the main circulating pipes, the number of accidents would be very large. It is a dangerous practice, and condemned by every practical man. What leads to people having stop-cocks so placed is the idea of saving labor and nuisance when the boiler has to be opened for cleaning purposes or repair. By means of stop-cocks so fixed, all communication can be cut off between boiler and tank when desired, and it would be possible to remove the old boiler, and replace it with a new one, without emptying the tank. It, however, must be repeated that the introduction of stop-cocks in these pipes is very dangerous, and should be avoided. One of the last recorded fatalities from boiler explosion was due to these. The plumber who closed them when he opened the boiler to clear it of deposit, omitted to open them when he had finished his work and lighted the fire again. *He was killed.* This was the result of stop-cocks in the hands of a "practical man." It is therefore easy to imagine what may happen if they are meddled with by inexperienced persons. When stop-cocks are not used it becomes necessary to empty the whole apparatus when the boiler is opened, but this is very little trouble, after all. An emptying service should be provided, but the tap should have a loose key, and only be used for actual emptying purposes. It may be added that there is no danger in putting a stop-cock in one pipe only, as one clear pipe will suffice to prevent a disaster.

The next and last cause of boiler explosions, pipes choked with incrustated lime deposit, is a possible cause, certainly, although it is doubtful if such a result has ever really taken place. In the first place, it is unusual for both circulating pipes to become furred seriously. The furring of the flow-pipe is very frequent, and occasionally (rarely) a section of this pipe is found quite solid with deposit. The return-pipe does not furr up so quickly, and the element of safety is the fact that when the flow-pipe becomes partially choked the apparatus gives out alarming noises and vibrations. The result is that weeks, and sometimes months, before there is any real danger the noises have necessitated something being done, as they simply frighten people. It has to be admitted that if the furring did not bring about these significant noises it would be the commonest cause of danger possible, and we should almost daily hear of accidents from this cause. The warnings, however, do occur, and before the pipes are choked to an actually dangerous extent they become quite unbearable. In this fact lies safety, for the collection of deposit is very gradual, and it never occurs suddenly.

The remedy for all these dangers is a safety-valve, but there should be some care exercised in this. A safety-valve cannot usually be put direct into the range boiler, and has, consequently, to be connected thereto by a pipe. It is better to have a distinct pipe for this rather than use one of the circulating pipes, as a pipe which has the water almost stationary within it is less liable to furr than one of the circulating pipes. This should also be of good size, so as to ensure its keeping clear and not being choked with deposit; and the shorter it is the better.

Safety-valves are of several kinds, but those most commonly used for this work are two, viz, the spring and the dead-weight. There are about as many used of one as the other, some people favoring the latter to the prejudice of the former; but on the only two occasions coming under the writer's experience, in which safety-valves were the means of preventing disasters, they were both of the spring variety. With the spring-valve the seating is a flat surface, and it is said that in course of time one flat surface against another (vulcanite or composition against metal) will become firmly fixed, and would not come apart or open when relief was required. Certainly, in course of time these surfaces do stick together, but it is doubtful if they would ever become so securely attached as this. With the dead-weight valve the seating is a knife-edge of metal against a flat metal surface, and there is undoubtedly less likelihood of union between two surfaces such as these. This latter valve is larger than the other, but this is no particular fault in a general way.

Considering the comparatively small expense, it should be a more prevalent practice to put safety-valves to range boilers than it is. It is quite a simple matter when the range is being fixed (although not so easy afterwards) and safety is thus purchased at little cost. Certainly dangers from the causes named are rather rare, or perhaps it is better to say accidents are rather rare; but when they do occur they are of such a terrible kind that really no boiler should go without this means of safety in emergency.

There is a kind of safety appliance known as a "fusible plug." This, although correct in principle, has met with little favor, and it must be admitted that it is not suitable for use in boilers that have to heat hard water. With these waters, which cause an incrustated deposit, the plug would probably get furred over, and this would vitiate its action.—*The Builder.*

COMPARATIVE MUNICIPAL BUILDING LAWS.—XVIII.

[Note:—In these tables bracketed letters invariably refer to preceding passages in the same column.]

Furnaces, Ranges, Stoves.

Boston:—*a.* Heating-furnaces set in brick shall have tops covered with brick, supported by iron bars, and constructed so as to be perfectly tight; such covering to be in addition to and not less than 6" from ordinary covering of hot-air chamber.

b. Heating-furnaces not set in brick shall have tops at least 8" below nearest wooden beam or ceiling.

c. With a shield of tin-plate made tight, suspended at least 2" below such beam or ceiling, and extending 12" beyond top of furnace on all sides.

d. (These requirements may be modified by the Inspector in First Class Buildings.)

e. No furnace shall be set on any floor above cellar floor, unless set on non-combustible beams or arch, and not without permit from Inspector.

f. No range, stove, oven or boiler shall be used for cooking in a hotel or restaurant, or for manufacturing purposes, until same has been examined and approved by Inspector.

Baltimore:—*(a)* or so covered with slate or metal, instead of brick. Tops of all furnaces kept at least 14" below joist or ceiling, with tight shield suspended below joist or ceiling, extending one foot beyond top of furnace on all sides.

Brooklyn:—

Charleston:—

Chicago:—*g.* Furnaces shall be kept at least 10" from unprotected wood-work.

h. Furnaces shall be placed on foundations of brick or stone, with proper hearths of incombustible material at least 24" wide in front of ash-pit.

i. Floors under stoves shall be protected by covering of incombustible material. Stoves shall be kept at least 20" and their smoke-pipes at least 12" from unprotected woodwork. No brick structure to contain fire shall be allowed on any wooden floor. No unprotected heater or light shall be allowed in room where highly inflammable material is kept unless protected by permanent wire screen meshes 1".

Cincinnati:—*j.* No unprotected structural woodwork or other combustible material shall be located within 20" of any stove, oven or heating-furnace. Heating-furnace, oven or stove used for heating or manufacturing shall be placed on fireproof foundation, provided with proper hearths, and floor-space around same covered with incombustible, non-conducting material.

Cleveland:—*(j).*

Denver:—*(a).*

k. If ceiling over furnace is plastered, the top of brickwork may be 6" from ceiling.

l. No furnace and no range set in masonry shall be placed, or its location changed, except as Inspector approves. *(b).*

m. No furnace for melting glass or metal shall be placed on any floor above basement or cellar floor unless set on wrought-iron beams or brick arches, and in no case without permit from Inspector. All woodwork shall be removed from floor under same.

Detroit:—

District of Columbia:—*(a)* or so covered with slate or tin-plate, instead of brick.

n. If there is not height enough to build furnace at least 4" below floor beam or ceiling, floor beam must be trimmed around furnace, and the covering trimmers and headers must be at least 4" from them.

o. The top of any portable furnace not set in brick shall be kept at least 12" below beams and ceilings.

p. No foundry or furnace for working glass or metal shall be erected without written consent of all owners of buildings within 90', not used for similar purpose, and in no case within 30' of a dwelling.

Kansas City:—*(a), (m)* and under regulations prescribed by Superintendent as required for public safety.

q. Heating-furnaces not set in brick shall have top kept at least 12" below beam or ceiling. *(e)* of tin.

r. No furnace and no range set in masonry shall be placed, or its location changed, except as Superintendent approves.

Louisville:—No unprotected heater or movable light shall be kept in any building where inflammable articles are stored. Least protection shall be a permanent surrounding wire screen with meshes less than 1".

Memphis:—*p.* Brick hot-air furnaces shall have two covers with 4" air-space between. Inner cover of hot-air chamber shall be either a brick arch, or two courses of brick laid in galvanized-iron supported by iron bars. The outside cover or top of furnace shall be made of brick or metal supported by iron bars, constructed perfectly tight, and not less than 4" below floor beams or ceiling.

s. Furnace shall have two 4" walls separated by 3" air-space, the two walls properly banded together.

t. Furnaces must clear all wood at least 4".

u. Cold-air boxes shall be made of iron or brick for at least 3' from furnace.

v. Portable hot-air furnaces shall be kept at least 2' from any combustible partition or ceiling, unless they are protected by metal shield, when distance shall not be less than 12".

w. Wooden floors under portable furnace shall be protected by suitable stone or a course of brick well laid in mortar; said stone or brick to extend at least 2' beyond furnace in front of ash pan.

x. When heating appliances are placed in building, or flues or fireplaces changed, due notice shall be given Superintendent.

Milwaukee:—*(g), (h).*

Minneapolis:—*(a)* or *y.* So covered with slate or tin-plate in place of brick. *(o), (c).*

Nashville:—*(a)* or *(y), (o), (c).*

Newark:—

New Orleans:—(See "Hearths and Fireplaces.")

No stove shall be within 2' of any woodwork unless the latter is effectually protected by metallic covering.

New York:—*(r), (s), (t), (u), (v), (w), (x).*

Omaha:—*(a), (p).* If the ceiling is plastered, the plate or shield may be omitted. *(u), (c).*

No furnace, boiler or range shall be placed, or its location changed, except as Superintendent approves. *(r)* and a thickness of asbestos paper laid on floor before such stone or brick is laid.

Philadelphia:—

Pittsburgh:—

Providence:—Tops of furnaces set in brick shall be covered with brick so as to be perfectly tight, this in addition to and not less than 2" from covering of hot-air chamber, and shall be at least 4" below, and top of portable furnace at least 1' below wooden beams or ceiling.

Cold-air boxes to furnaces to be of incombustible material.

(i). Woodwork within said distances shall be protected by metal covering, and, if within one third of said distances, shall have double metal covering, with air-space between.

Heater in rooms where hay or highly inflammable articles are kept shall be protected by surrounding wire screen with not more than 1" meshes.

St. Louis:—*(a), (u), (o), (c).*

When furnaces are placed or their locations changed, due notice must be first given to Commissioner of Public Buildings.

Stove or furnace on wooden floor shall have beneath lower plate fronting the fire-door a platform of brick, or sheet of zinc, or other non-combustible material, extending at least 6" beyond such lower plate in all directions.

Top or side of stove shall not be nearer than 18" to unprotected woodwork.

San Francisco:—*(a)* or *(y), (u), (o), (c).*

When furnaces are placed in buildings, due notice shall first be given to the Board of Fire Wardens by owner or contractor.

Wilmington:—

Boilers.

Boston:—*a.* Every steam-boiler in a building to be used for office, mercantile or manufacturing purposes, or a lodging or tenement house, shall be enclosed in a fireproof room of brick, terra-cotta, stone, iron or other similar incombustible material, with openings closed by metal-covered doors hung to rabbetted iron frames, or to iron hinges in brick or iron rabbets.

b. No boiler used for steam or power shall be set on any floor above cellar unless set on non-combustible beams or arches, and not without permit from Inspector.

Baltimore:—Engines and boilers require a permit from Superintendent of Buildings.

Brooklyn:—

Charleston:—

Chicago:—*c.* Woodwork of all boiler-houses and boiler-rooms shall be kept at least 1' from boiler and 4' from breeching or smoke conductor, and 1' from dome of boiler, unless such wood is properly protected with incombustible material, and then there shall be at least 2' span from boiler or smoke pipe and protection.

d. Floors of rooms containing stationary boilers shall be of incombustible material 3' on all sides, and at least 8' in front of boiler.

e. Portable boilers on wood floors shall have such wood, with close protection of incombustible material at least 6" thick covering all space under boiler, projecting at least 2' sides and rear, and at least 6' in front, with an air-chamber not less than 2" formed in such protections. Hollow tiles, properly laid, may be used for such protection.

Cincinnati:—*f.* No unprotected structural woodwork or other combustible material shall be located within 4' of any part of stationary boiler.

g. Stationary boilers shall be placed on fireproof foundations provided with proper hearths, and floor-space around same covered with incombustible and non-conducting material.

Cleveland:—*(f), (g).*

Denver:—*h.* Steam-boiler of ten or more horse-power shall have space on floor allotted to boiler enclosed in incombustible material satisfactory to Inspector, and

i. All openings between boiler-room and other parts of building protected by iron or metal covered doors, which shall be securely closed at close of day.

(b), but for "incombustible" read "wrought-iron." All woodwork shall be removed from floor under same.

Detroit:—

District of Columbia:—All boiler-rooms shall be constructed of brick or iron. *(d).* No boiler shall be erected until written consent is obtained from owners of all buildings within 90' not used for similar purpose, and in no case within 30' of a dwelling.

Kansas City:—*(h), (i), (b);* for "incombustible" read "wrought-iron." All woodwork and timbers shall be removed from floor of same.

Before steam-boiler is set, permits from Superintendent shall prescribe such regulations as are needed for public safety.

Louisville:—*(c), (d).*

When portable boilers are used on wooden floors, due protection against fire shall be used, equivalent to that required for a stationary boiler.

Memphis:—

Milwaukee:—Boiler-rooms shall be built throughout of incombustible material, and the inside floor, ceilings and side, if of wood or combustible, shall be lined with terra-cotta, metal or other incombustible material, subject to approval of Inspector.

All openings to boiler-rooms shall have metallic shutters or doors, or of wood lined with metal on both sides and edges.

Minneapolis:—Boiler-rooms (other than in dwellings) shall be protected by brick or iron.

(i). This does not apply to fireproof buildings.

Nashville:—

Newark:—

New Orleans:—

New York:—(See "Construction of Theatres.")

Omaha:—

Philadelphia:—No steam-engine shall be erected without inspection and approval of Inspector. If built in connection with any wooden or brick paneled building, or in other dangerous manner contrary to permit or direction of Inspector, the same shall be altered or removed according to decree of court.

Pittsburgh:—

Providence:—Boiler-houses and boiler-rooms in woodworking establishments, or where inflammable materials are used, or where shavings or other highly inflammable fuel is used, shall be enclosed with brick, stone or concrete walls, or iron studs filled with concrete. Roofs or floors over such boiler-rooms shall be made of iron, brick, stone or concrete arches or slabs, or, if of wood, shall be protected with fireproof tile, or plastered on iron laths or iron netting, or covered with metal.

The doors of such rooms shall be of iron or of wood covered with metal, and have an opening in said door glazed with not less than 1" thick glass, and shall be kept securely shut, except during working hours.

The floors of rooms containing stationary boilers shall be made of incombustible materials for at least 10' in front, and for such distance on the side and rear as may be required by the Inspector.

Wooden floors under portable boilers shall have close protection of incombustible material.

No woodwork shall be placed within 1' of boiler or smoke pipe, or within 6' of the front, 4' of the sides, top, rear or smoke conductor, unless protected by fireproof tiles at least 1" thick, or by being plastered on iron laths or wire netting, or by metal sheathing with at least 1" air-space between wood and metal. The overheads immediately over hot-water or low-pressure steam-boilers used exclusively for heating, if within 4' of the top thereof, may be plastered on wooden laths or sheathed with metal.

Rooms for drying lumber or other inflammable material heated by direct heat from top of boilers shall be constructed and roofed, and have doors as described for boiler-houses.

No boiler shall be erected and put in operation without permit of Board of Aldermen.

St. Louis:—Boiler-rooms other than in dwellings shall be constructed of iron or brick, and all openings from such rooms into other parts of building shall be closed with iron or metal covered doors.

San Francisco:—Boiler-rooms and boiler-houses shall be built of brick, stone or iron, with all openings between such rooms or house and other parts of building closed by iron doors, or of wood covered on both sides with metal.

Boiler set in any building shall be isolated from other portions of building by fireproof partitions, and with doors as above.

No boiler shall be set above first floor of building unless foundation of same shall start from ground, or it may be supported by wrought-iron beams or girders built into brick walls.

No gas-engine exceeding four horse-power shall be set above basement floor.

Wilmington:—

Hot Pipes.

Boston:—*a.* Hot-air pipes shall be at least 1" from woodwork. (This may be modified by Inspector in First Class Building).
b. Any metal pipe conveying heated air or steam shall be kept 1" from any woodwork, unless pipe is protected by soapstone or earthen tube or ring, or metal casing.
Baltimore:—*c.* Metal flue for hot-air may be of one thickness of metal, if built into stone or brick wall.
d. Otherwise, it must be double, the two pipes separated by 1" air-space.
e. No woodwork shall be placed against any flue or metal pipe used for conveying hot-air.
Brooklyn:—
Charleston:—
Chicago:—*f.* Hot-air conductors placed within 16" of woodwork shall be made double, one within the other, with at least 1" air-space between the two.
g. All hot-air flues and appendages shall be made of 10 or 12 bright tin.
h. Steam-pipes shall be kept at least 2" from woodwork, unless protected by soapstone, earthen ring or tube, or rest on iron supports.
Cincinnati:—*i.* No pipes conveying heated air or steam shall be placed nearer than 6" to any unprotected combustible material. (*f*). All subject to approval of Inspector.
Cleveland:—(*f*); (*h*).
Denver:—(*e*). Otherwise it shall be made double or wrapped in incombustible material.
Detroit:—No metal pipe for conveying hot air shall be placed nearer than 3" to any woodwork. Such pipes over 15' long shall be safely stayed by wire or metal rods.
District of Columbia:—(*a*). Pipes passing through stud or wooden partitions shall be guarded by double collar of metal "giving at least 2" air-space, having holes for ventilation, or other device equally secure, to be approved by Inspector.
Metal pipe or (*c*) otherwise double, and the space filled with 1" non-combustible, non-conducting material, or a single pipe may be surrounded by 1" of plaster-of-Paris or other non-conducting material between pipe and timber.
Kansas City:—(*b*) or otherwise protected to satisfaction of Superintendent.
No wooden flue or air-duct for heating or ventilation shall be placed in any such building.
Louisville:—
Memphis:—*j.* All stone or brick hot-air flues and shafts shall be lined with tin pipes.
No wooden casing, furring or lath shall be placed against or cover any smoke-flue or metal pipe used to convey hot air or steam.
k. No metal flues or pipes to convey heated air shall be allowed unless enclosed with 4" thickness of hard, incombustible material, except horizontal pipes in stud partitions, which shall be built in the following manner: The pipes shall be double, one inside the other and 1/2" apart, and with 3" space between pipe and stud on each side; the inside faces of said stud well lined with tin plate, and the outside face with iron lath or slate. Where hot-air pipe passes through partition, shall be at least 8' from furnace.
l. Horizontal hot-air pipes shall be kept 6" below floor beams or ceiling. If floor beams or ceiling are plastered or protected by metal shield, then distance shall not be less than 3".
m. Where hot air pipes pass through wooden or stud partition, they shall be guarded by double collar of metal with 2" air-space and holes for ventilation, or by 4" of brickwork.
n. No hot-air flues or pipes shall be allowed between any combustible floor or ceiling.
o. Steam-pipe shall not be placed less than 2" from woodwork unless wood is protected by metal shield, and then distance shall not be less than 1".
p. Steam pipes passing through floors and ceilings or lath and plaster partitions shall be protected by metal tube 2" larger in diameter than pipe.
q. Wooden boxes or casings enclosing steam-pipes and all covers to recesses shall be lined with iron or tin-plate.
Milwaukee:—(*f*); (*g*).
Minneapolis:—(See "Smoke-Pipes.")
Nashville:—Sheet-iron flue running through floor or roof shall have a sheet-iron or terra-cotta guard at least 2" larger than flue.
Steam-pipes shall be kept at least 2" from woodwork.
All steam and hot-air flues and pipes must be suspended by iron brackets.
Newark:—Hot-air pipes shall be set at least 2" from woodwork, and the woodwork protected with tin.
Such pipes placed in lath and plaster partitions must be covered with iron, tin or other fireproof material.
New Orleans:—(See "Smoke-Pipes.")
New York:—(*j*); (*k*); (*l*); (*m*); (*n*); (*o*); (*p*); (*q*).
No hot-air flue or pipe allowed between combustible floor or ceiling.
Omaha:—(*a*); (*p*); (*q*).
Stud partitions in which hot-air pipes are placed to be at least 5" wide, and the space between studs at least 14".
Hot-air pipes shall not be placed between floor-joists unless same are doubled and the joists 14" apart.
Bright tin shall be used in construction of all hot-air flues and appendages.
Philadelphia:—
Pittsburgh:—(See "Smoke-Pipes.")
Providence:—(*a*). *r.* Unless protected by soapstone or earthen ring, or metal casing permitting circulation of air around pipe.
Steam-pipes must be kept at least 1" from woodwork, or supported by incombustible tubes or rest on iron supports.
St. Louis:—(*a*); (*r*). Steam or hot-water pipes carried through wooden partition or between joists, or in other close proximity to woodwork, shall be enclosed in clay pipe or covered with felt or other non-conducting material.
San Francisco:—(*c*). Otherwise double, one pipe within the other, 1/2" apart, and space filled with fireproof material. (*e*) nor hot-water, nor steam-pipes.
Steam-pipes shall be placed at least 3" from woodwork, or protected by ring of soapstone or earthenware.
Wilmington:—Metal pipes to carry hot air shall be doubled, one inside the other, 1/2" apart; or, if single, have a thickness of 2" of plaster-of-Paris between pipe and woodwork adjoining same.

Compiled by H. A. PHILLIPS.



MR. FISHER UNWIN has put together in a sumptuous volume of very thick paper and very large print, three monographs which, separately, would have formed, or rather have formed short magazine articles. The illustrations form the best part of the book, being all reproductions from the original works, but it is a pity the portrait of Lepage in his latter days was omitted. Sad and ghastly no doubt it is, but in a book devoted to the study of two painters who went in for truth, and rather exaggerated the ugliness of much

"Jules Bastien-Lepage and his art." A memoir, by André Theuriot; Jules Bastien-Lepage as artist, by George Clauson, A. R. W. S.; Modern Realism in painting, by Walter Sickert, N. E. A. C.; and A Study of Marie Bashkirtseff, by Matilde Blind; illustrated with reproductions of Bastien-Lepage's and Marie Bashkirtseff's works. London: T. Fisher Unwin.

that is true, a little more or less ugliness matters little. Mr. Clausen resents the verdict of most of us (great admirers nevertheless of Lepage's art), that it is ugly art, that the painter "had no feeling for beauty—or, at any rate, that he was indifferent to it; but as it is impossible to arrive at any satisfactory definition of beauty, this point cannot be discussed. Taking the word, however, in its obvious and generally accepted meaning," (then why say the point cannot be discussed?) that of personal beauty, it seems to me that there is no fair ground for the charge; for such works as the "First Communion," the portrait of "Sarah Bernhardt," and "Joan of Arc," all show a most refined and delicate appreciation of personal beauty, and should surely have led his critics to consider whether the man who painted them had not very good reasons for painting people who were not beautiful, too. Now here is just the point. Lepage determined to paint peasants as he found them, beautiful only through the soul within; the outer man and woman being clumsy, ungainly, plain. The girl of the "First Communion," is just the type we who have lived in France all know so well. A plain girl to start with, made utterly hideous by a wreath of flowers, a white veil, cotton gloves too long in the fingers, and a muslin gown, starched and beflowered. Intensely ugly surely, in the "accepted meaning of the word;" but also intensely interesting from the earnestness of the girl's gaze, on the most solemn occasion of her young life. The same may be said of Jeanne d'Arc. The expression is vivid, ideal, what you will; the girl (much too old, by the way) listens to those voices, and so intently that it was quite unnecessary to plant the angels among the trees behind her. But of beauty of form, there is none. And then the divine Sara, as we all know, there is no pretense to beauty in the actress, but there are moments when the whole soul pours itself into her face, and her expression renders her more beautiful than perhaps any actress one can remember. But Lepage has lost this, and given us simply a study of white or gold, and a profile, of a more, than less, idiotic expression. What the painter really arrived at in this, and the "Communicant," was probably the study of tones of white and gold; and in so far he is eminently successful. With the exception of the great actress's portrait, all Lepage's work is perfect in the rendering of truth of expression. Look at the face of the old grandfather, the exquisite little portrait of Theuriot, that gem, the picture of Mme. Drouet and other subject works, "Père Jacques," "Par Mèche," the "Mendiant," "L'Amour au Village"; the main point insisted on is truth of expression. That he often spoiled his work by want of generalization, by an over devotion to truth of detail, is also obvious; and in so far, perhaps, Mr. Clausen is right in assigning him a second place to Millet; but Bastien-Lepage was a better draughtsman, and had the power of putting life into his subjects, so that we feel we know each individual. Moreover, he was far more versatile than Millet, whose work is always in one key—a charming key no doubt; but if you cut away the much over-estimated "Angelus," and its exquisite sentiment, it is doubtful if Millet would ever have made the reputation he has obtained to the benefit of the dealers' pockets. Lepage's great fault as an artist, was his inability to sacrifice what he loved. If a picture be a landscape, the figures are mere *silhouettes*; if it be a portrait, the background can but be an accessory. That is a fact proved by the whole history of art. But Lepage aimed at truth in his grass and flowers, in his figures and in his skies; consequently the whole thing jumps, and is false in values. In some of his work, we do not find this; not from design probably, but accident. As one rushed to see his works on the Salon walls, upon the "vernissage," the first feeling was always a want of repose; when this was conquered, and one's eye was accustomed to the clamour of flowers, sticks, grass, child and man, each striving for the uppermost place, then came admiration for the absolute truth of details, although their relative truth was false. Do we not all remember that obtrusive shutter in the "Mendiant," the tiresome foreground of the "Jeanne d'Arc," and the nasturtiums and cabbages of "L'Amour au Village?"

M. Theuriot's memoir, is like all he writes, charming in style; but what a pity not to have printed it in French. Why should not a volume contain essays in two or three languages? Every one is supposed to be able to read French and German; then why not test their attainments, in giving them practice? And another query ere I end. Is it not gratuitous to translate the names of pictures, as to wit; "Les Foins Murs" (Ripe Grasses) "Les Foins" (The Hay). Mr. Sickert makes a funny mistake, which proves the futility of readers, the uselessness of correcting manuscripts, and so on, in writing of the French Exhibition of 1890. Jules was always a lover of drawing, and his father, wise man, made him do the pots and pans about the house; but to be a professional artist was quite out of the ken of the old people at home, and so he was educated for some clerkship, in the meantime, decorating, in the manner usual to youth, books, palings and doors—only much better than is generally the wont of the young. But Bastien *files* one day astonished Bastien père, by suggesting a sojourn in Paris to study art! Hitherto Lepage had lived mostly at home, at Damvillers upon the Meuse, and at Verdun College. What was to be done? How support the boy during his studies? A way out of the difficulty was found, and Bastien became a supernumerary in the Post-office for a time; but the strain of such work added to study in off hours, was too much, and he resigned his clerkship to enter the atelier of Cabanel. Self-denial at home, and a small grant from the Council-general of the Meuse, helped the painter in his early days, but the struggle was hard, and to make both ends approach each other, he had the usual

recourse to fan-painting, having tried the editors of illustrated papers with little success. In 1875, Lepage went in for the Prix de Rome competition, the subject being the "Annonciation aux Bergers." Every one, except the powers that were, accorded the prize to his work, so original in treatment, so true in effect, so realistic, but just because the shepherds were shepherds, unidealized but intensely true, with their earnest gaze of astonishment, just for that very reason, Lepage failed, and convention carried off the prize. His own estimate of what he learned at the School is worth quoting: "I learned my business in Paris, I shall not forget that; but my art I did not learn there. I should be sorry to undervalue the high qualities and the devotion of the masters who direct the School. But is it my fault if I have found in their studios the only doubts that have tormented me? When I came to Paris, I knew nothing at all, but I had never dreamed of that heap of formulas they pervert one with. In the School, I have drawn gods and goddesses, Greeks and Romans, that I knew nothing about, that I do not understand. . . . I wonder, now, if anything has resulted from this education." His real education was the new-mown hay, the corn, the peasants; as he says to his friend Theuriet; "Your verses are just the picture I should like to paint. They smell of the hay and the heat of the meadow. . . . If my hay smells as well as yours, I shall be content."

Lepage had a project of telling the whole story of country life in a series of pictures; but it was unfortunately never carried out; illness and death coming too soon. Imagine the charm of "Les Mois Rustiques," of which the text was to be by Theuriet, and the illustrations by Lepage!

When he went to Italy, he did not appreciate it, possibly because he was essentially rustic in heart and soul. He loved his native place with the passion of the simple French peasant, and all the petting and spoiling of Parisian life left him unscathed. As a man he was a faithful friend and a cheerful companion, as full of gaiety and fun as a child. And yet when sorrow came in the shape of the loss of the old grandfather, this is how he writes: "He was goodness and self-abnegation personified; he loved us so! . . . What is to be done? We must try to fill the void with love for those who remain, and who are attached to us, always keeping in mind him who is gone, and working much to drive away the fixed idea." His love of nature was acute, and he went into raptures over a branch of a tree and some autumn leaves. "Ah, how beautiful! How one would like to make a careful study of these leaves—so decorative, so finely cut—of dark green, almost brown, out of which comes this pale green stem, with its clusters of greenish flowers edged with pale rose color. What lovely forms and what a variety of tender shades! This is what they ought to give as a copy to the children in the schools of design, instead of the eternal and wearisome Diana of Gabii."

When weary and sick, he went to Algiers, we find the same acute observation. "They [the Algerians] all wear a shirt and burnoose; not one like another. It seems as if each one, at every moment, gave expression to his thought by his manner of draping his garment. It is once more the triumph of blank truth over arrangement and conventionalism. The sorrowful man, whether he wishes it or not, in spite of himself, is not draped like the gay. Beauty, I am convinced, is exact truth, neither to the right nor left, but in the middle." Did he not mean rather, that truth as truth, not being anything but beautiful, there being nothing ugly in nature; all must be beautiful in art, which renders nature truthfully.

Mr. Sickert's estimate of Lepage must make many of us somewhat astonished if not irate. After criticising not unfairly "Joan" and "Sara," he thus concludes: "In his portrait of his grandfather, at the same exhibition, it was quite possible to see Lepage at his best as a workmanlike and photographic copyist of a figure in repose. It was at the same time possible to turn from this picture straight to Manet's "Fifre" and to his "Bon Bock," and thus to measure the gulf that separates a meritorious workman from an inspired executant of the first rank. [?] No useful end can be gained by obscuring their facts, and if, in league with the modern conspiracy of toleration [!] we are to speak of Bastien-Lepage as a master, what terms are left us for Keene and Millet, for Whistler and Degas?" Degas, the realizer of the trippings of the *corps de ballet*, the sculptor of wax dancers with satin shoes and sandals, tulle skirts, real hair and painted faces! Putting Millet aside, what a trio to place above Lepage: the draughtsman of drunkards, the symphonic fog painter, and the author of the apotheosis of ballet-girls! And to think of Manet being an "inspired executant." Formerly we thought the cleverness of that wonderful "Fifre" consisted in its intense realism. But surely "no useful end can be gained" by the depreciation of Lepage in order to exalt Manet. To most of their catholic minded followers, whether we look at Manet, Lepage, Millet or Whistler, we see a man who was faithful to his instincts, who searched for truth and found it, each after his own fashion and temperament.

Miss Blind adds nothing to our knowledge of that forced hot-house plant, Marie Bashkirtseff. She too aimed at truth. She saw the Parisian *gamin* in the street as she hurried by to her work, and painted him as she saw him. Perhaps she is the most wonderful instance of early talent with so little work, upon record, for she was only really studying for some five or six years. But then, what a pace she went at! Lepage produced some two hundred pictures in his thirty-six years of life; Marie about one hundred in her twenty-four. Whether, had she lived, she would have gone on and attained

the highest rank as an artist, no one can say; but that few men have done what she did in the time, is a fact. Her portrait of herself is most vigorous, and what a beautiful face it is. Not as the world considers beauty, but from the artist's point-of-view, of color and picturesqueness. It is curious that Marie conceived the idea of a realistic "entombment," treating the subject as Béraud has since done, making the three Marys forlorn outcast women of the lower class of Parisians. It was the dawn of the modern religious school, and Marie Bashkirtseff was eager to get into the swim, but death cut her off before she had fairly started, and art has lost one who might have been a great painter, and one of the few women who have attained to the first rank. Putting aside all her advantages of position, her riches, her all-round cleverness and her wit; allowing that much of her success was due to the dinners and receptions given to distinguished persons and to her own talent of making the best of herself (people mostly take us at our own valuation) yet, so much remains, that the loss of so much abnormal talent cannot but be an immense misfortune to the whole world.

S. BEALE.

Is it not just possible that in the course of the next twenty years there will be less pleasure to be had than now in visiting the Hôtel de Cluny, the Musée des Arts Decoratifs and other similar places in all countries? What now makes a visit to the Hôtel de Cluny so charming is that one finds one's self propelled into the midst of surroundings that are thoroughly unlike those one has been habituated to associate with, and the imagination is stimulated to complete the furnishing by summoning historic personages to accompany him in his stroll through rooms that teem with suggestion and reminiscence. There are there *mobiliers* and *bibelots* in abundance that unquestionably have qualities of abstract beauty and hence will always command attention, but even with that they have an equal interest in that they are rarities. Let them cease to be rarities and is there not danger that their apparent value will be scaled down rapidly? Familiarity breeds contempt, and if this precept be very truth it seems to be the passion of the age to make all things contemptible.

Myths and legends are exploded, one after another, agnosticism replaces a reverent faith, old masters are proved to be copies, history is shown to be lying and false witness, and the architects of the day seem to be trying to render trivial much that the world has for centuries held in high esteem as the work of artists of inapproachable excellence, by taking up one after another the historic styles and treating them as "fashions" of the hour, which must be dropped everywhere by everybody at the same time at the dictate of the same impersonal and invisible autocrat who orders that now our trousers shall cling to our legs and now that our legs shall be all too small for the encasing garment. This is a nice, sincere and reasonable treatment to accord to that which it is our boast to call an art! Isn't it?

The treasures at Cluny and similar places will always be interesting historically, but the people who visit museums because of their historical value are very different from the class of people who now visit Cluny because it holds such rare treasures of artistic worth. A while ago one brought away memories of chairs and tables, cabinets, sideboards and chests such as are not ordinarily seen in the houses one visited or in the warerooms of dealers in such commodities. The wonderful Gothic and Renaissance chimneypieces seen in the different rooms were regarded with a kind of awe, and one felt that the people who sat down before their warm comfort were creatures whose luxurious mode of life we could never hope to enjoy. But now how different it is, many leading dealers in furniture will show you "in stock" the same tables, chairs, sideboards and so on, and if you step around the corner you will find a wareroom lined with chimneypieces awaiting a chance purchaser, not a few of them as elaborate, as elegant and intrinsically as artistically deserving as those elder fellows whose stimulating presence in the museum has brought into existence these later imitations.

These reflections are suggested on looking over Mr. Frederick Litchfield's excellent "*Illustrated History of Furniture*"¹ which, excellent as it is, we cannot but regard as one more factor not exactly in the degradation of art but in the cheapening, through vulgarization, of museums of art; and as it is none too easy now to secure funds to properly maintain these institutions it will hardly become more easy when it is found that they contain little that the opulent householder cannot duplicate beneath his own roof. Still, as it is not reasonable that the product of industrial art should be stored only in museums, and as it is the effort of our present civilization to impress on our artisans the desirability and possibility of emulating and surpassing the handicraftsmen of former times, it is just as well that such a work as this should spread its collated information before the discriminating public who must create the demand for our artisans to satisfy, even if the result be that our museums, having accomplished the object of their being, come to be like the deserted farm-houses of New England, merely the outward sign of an advancing tide of civilization, comfort and luxurious living.

Although Mr. Litchfield's book has rather a ready-made air, since its illustrations are palpably procured from here, there and everywhere—from earlier publications, old prints, trade-catalogues and

¹ "*Illustrated History of Furniture*" from the earliest to the present time. By Frederick Litchfield, author of "*Pottery and Porcelain*," "*A Guide to Collectors*," etc., with numerous illustrations. Boston: Estes & Lauriat, 1893. Price \$10

so on — it is, in spite of this, fairly attractive in its general air, while typographically it is unusually inviting. It is, moreover, made accessible by intelligent indexing, and contains in an appendix an alphabetical biographical index of the most noted designers and manufacturers of furniture, which is of great value to one who wishes to take up the study of the subject with system and thoroughness. In one point, however, an omission has been made, which is unfortunate, for the book could otherwise well serve as an introductory study-book. There is no bibliography given, and, as the number of books treating of furniture which have been published is a considerable one, such a list attached to each chapter dealing with a separate style would have been of real value. Another thing might have been done, not particularly valuable, but still interesting, and that is the tabulation of prices at which celebrated pieces have been sold, often over and over again.

Those who observe such things tell us — some that the fashion of the hour is now setting toward a revival of the Louis Quinze rococo work; others declare that it is "the turn" for Empire designs. If the first informants are right, we trust that the fashion, in its revived form, will be as short-lived as was the original. It seems more natural that Empire work should follow after the revival of the Chippendale and Sheraton forms which accompanied the introduction of the present — or, shall we say the late — fashion for colonial design in architecture, just as the Jacobean forms accompanied the Queen Anne work, and the "Eastlake" followed the Victorian Gothic. It cannot be thought a good sign that the purposeless and tormented *rocaille* forms, which suited the frivolous and dissolute times of the Bourbon Louis, are now considered right and fitting for our own times and manners of life. It would be a safer course, morally and aesthetically, to stop with the English workers of the eighteenth century, who understood elegance and comfort in a way that we like to understand them, and, if we feel the need to progress, then let us study to give our furniture the same perfection of finish and workmanship which has enabled their seemingly fragile creations to continue in constant use for near two hundred years.

Mr. Litchfield has done well in drawing attention to the fact that the many publications which Chippendale and Sheraton put out has obscured the names of other of their contemporaries who were their equals, and possibly their superiors, and he points out that many articles now dubbed "Chippendale" are as likely to be the work of Sheraton, Ince, Heppelwhite, France, Elliott, Campbell, Johnson, Davy, Collet or one of many other skilled designers. It may be argued that Chippendale's use of irrational forms drawn from Chinese art is a proper introduction to the rococo work that the upholsterers are hankering after. But the fact is, that the forms we have been lately using are closer to those used by Sheraton and the brothers Adam, and the natural sequence for them is Empire, and not Louis Quinze.

In dealing with his subject, Mr. Litchfield has preserved a chronological order, giving a chapter to each of the leading styles, and showing what development it had in the different countries; but he does little by way of attempting to explain how and why ethnical considerations differentiated one from the other. The work is, in spite of its size, a hand book and guide, rather than a treatise. It is none the less valuable for this, however, and the reader will find in it many instructive and interesting facts concerning an art which architects should know more about, and which once was held in such repute that when Colbert, in 1664, founded the Royal Academy of Painting, Architecture and Sculpture, the designing of furniture and decoration was admitted into its curriculum.

A WOMAN ON THE WOMAN'S BUILDING.

COMMENT on the success "or lack of success" of the Woman's Building designed by Miss Hayden is unfair to her and to the general architectural profession.

The conditions of the competition and the selection of a design made it impossible to secure satisfactory results. What other building, whether given by appointment or by competition, could have fallen into the hands of an architectural student without experience or practice?

Miss Hayden must always remain the chief sufferer from the condition which made it possible for her to secure a commission, for which, "however great her ability," she was unprepared through lack of practical experience.

The uncalled-for dictation of the women connected with the Board, though trying, is, after all, what every architect must meet in clients to a greater or less degree, and must be taken as a part of the penalty we pay in undertaking their work.

It is not fair, because one woman makes a doubtful success, to draw conclusions from her example. It is time to put aside prejudice and sentimentalism, and judge women's work by their ability. Let the conditions and restrictions be exactly the same as those under which men work, since women as well as men are selecting architecture as a profession, and the standard in morals and ethics have always been high for women, to raise the standard of architectural ability and scholarship for both men and women, so that the restriction shall be one of ability, and not sex. We do not need women as architects, we do not need men, but we do need brains enough to lift the architecture of this country beyond the grasp of unskilled and unqualified practitioners. Because one woman suffers

from exhaustion in the daily wear and tear of her household duty, you would not say that women were unfitted for domestic life. Because one woman, worn with the care of her children, died, or was a nervous wreck, you would not withhold from women the most sacred occupation which a woman can undertake. And because one inexperienced woman, tried by a new position, perhaps discouraged with the result of her own work, from which she had expected so much, is ill, you rush into the ranks to save all other women from a like fate. Is illness so unusual? Our hospitals and asylums are full of nervous wrecks, and, I am safe to say, they always will be. The alarmist must look at our society women, housewives, servants, clerks and saleswomen to find some calling in which some of its members are not constantly suffering from nervous exhaustion.

MINERVA PARKER NICHOLS.



[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

ST. AGNES'S CHAPEL, NINETY-SECOND ST., NEW YORK, N. Y.
MR. W. A. POTTER, ARCHITECT, NEW YORK, N. Y.

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

THE COLONIAL CLUB, BOULEVARD AND SEVENTY-SECOND STREET,
NEW YORK, N. Y. MR. HENRY F. KILBURN, ARCHITECT, NEW
YORK, N. Y.

THE material of the building is limestone up to the second floor, and above that long, thin, gray brick with terra-cotta trimmings, except for the top story, which is entirely of terra-cotta. A broad stone balcony, with wrought-iron railing, extends around both fronts of the building at the dining-room, or fourth, floor. The main entrance on the Boulevard side is through a broad porch supported by columns with carved capitals, and the ladies' entrance through a shallow porch on the west end of the Seventy-second Street front.

In the Colonial Club-house cellar, beneath the basement bowling-alleys, are the elevator and electric-lighting machinery, refrigerating apparatus, steam boilers and fans for heating and ventilating the building. The most interesting feature of all this is the refrigerating apparatus, and its results are seen in many parts of the building. This is most noticeable in the wine store-room, which is in the basement on the same floor with the bowling-alleys. There a small room has been partitioned off and zinc-lined, and on three sides of it are wine-racks. These wine-racks are made of iron pipes, not a very safe resting-place one might think for fragile glass bottles, but the safety is secured through the fact that every pipe is made as soft as and to look like white plush. That is because the pipes are all covered with an eighth of an inch of downy frost, on which the bottles of champagne repose in chilly safety. These same refrigerator pipes extend up into the café, where another set of racks provide the proper chill for a smaller supply of champagne ready for immediate use, and whose stock is supplied from the larger room below. They also extend up to the fifth floor, where the kitchen is, and enable the *chef* to promptly chill you a plate of asparagus, a mould of jelly, or any other dainty that is better cold than hot. In the basement also, where the refrigerating apparatus is doing its wonders, you find a room where a score of carafes of distilled water are being frozen, and long, clear cakes of ice are made from filtered and distilled water. There also are the store-rooms for meat and vegetables, kept down to any desired degree of temperature.

In the basement, again, are four seventy-foot bowling-alleys, to which, in the daytime, ladies holding member's cards have access by a separate stairway from the ladies' hall on the first floor.

On the first floor, connecting with the main entrance, is a deep vestibule opening into a wide hall, from the rear of which ascends a double stairway with broad landings lighted by large windows and extending from the basement to the roof. To the left of the main hall, on the first floor, is the billiard-room, forty-two feet long by thirty-two feet wide. At the southern end of this room is a raised platform with a large fireplace, and on this platform are chess and checker tables. Back of the platform is the barber shop. On the right of the main entrance is a smoking-room of oval shape, with broad windows on the Boulevard and Seventy-second Street, and with great easy leather chairs and divans, and papers and periodicals at hand, with everything to make a man who has sworn off smoking wish he hadn't. West of the billiard-room is the café, whose large open fireplace, convenient buffet and comfortable furniture make the ante-prandial cocktail and the post-prandial *pousse café* things of luxury.

Over the billiard-room, on the second floor, is an assembly-room, sixty-six feet long by thirty-two feet wide, and extending up through two floors to a height of twenty-five feet. This can be used as a ball-room or theatre. At its south end is a little stage, having a private stairway to a dressing-room above. At the north end is a large mezzanine box nearly the entire width of the room, and on the west side is a mezzanine gallery for the orchestra. The library is also on this floor, over the smoking-room, and of the same size and oval shape as the smoking-room.

The third floor, on account of the height of the assembly-room, is a mezzanine story, but space is afforded over the library for committee rooms and offices, and a private dining-room which will accommodate twenty-five diners, who would be as secluded from the rest of the club as a party might wish to be if they were celebrating the election returns, for instance. It has its private pantry, and the kitchen elevator runs conveniently by.

On the fourth floor are the main dining-room, four private dining-rooms, which may be thrown in with the main dining-room, and in the corner an oval dining-room for ladies. This ladies' dining-room can be reached directly from the elevator landing, and as the elevator itself can be taken from the ladies' entrance, they reach their dining-room without passing through any inhabited portion of the club.

The main dining-room, thirty-eight feet long by thirty-two feet wide, also extends through two floors to a height of twenty feet. All its windows reach to the floor, and open on the balcony which has been mentioned. There is a mezzanine gallery for an orchestra in the dining-room.

On the fifth floor is the kitchen. On the fifth floor also there are six sleeping-rooms intended for transients, and on the sixth floor are eleven suites of rooms, each consisting of a parlor, fronting either on the Boulevard or Seventy-second Street, a bedroom, closets and bathroom.

The roof of the Colonial Club, which is made of brick, is to be fitted up as a summer garden. — *N. Y. Sun.*

FRENCH FARMHOUSE AT MESNIL-MAUGER, NORMANDY, FRANCE.

MANOIR DE VITANVAL, STE.-ADRESSE, NORMANDY, FRANCE.

This plate exhibits the result of a competition in pen-and-ink rendering, held some time ago by the Buffalo Architectural Sketch Club.

SKETCH FOR A HOUSE, PITTSBURGH, PA. MR. S. T. MCCLAREN, ARCHITECT, PITTSBURGH, PA.

UNION CLUB-HOUSE, ST. LOUIS, MO. MR. T. C. LINK, ARCHITECT, ST. LOUIS, MO.

[Additional Illustrations in the International Edition.]

VARIOUS DETAILS OF THE PALAIS DU SENAT, BUCHAREST, ROUMANIA. M. MARCEL, ARCHITECT.

[Copper-plate Photogravure.]

NORTH FRONT OF ST. AGNES'S CHAPEL, NINETY-SECOND ST., NEW YORK, N. Y. MR. W. A. POTTER, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

APSE OF ST. AGNES'S CHAPEL, NINETY-FIRST ST., NEW YORK, N. Y. MR. W. A. POTTER, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

WYCHEN CASTLE, NYMEGEN, HOLLAND.

THE MUSIC SCHOOL, NYMEGEN, HOLLAND. MR. R. BLOMFIELD, M. A.

VIEW IN BROAD STREET, OXFORD, ENG.

DESIGN FOR HOUSE AT CROYDON, ENG. MR. W. HOWARD SETH-SMITH, ARCHITECT.

This house was designed for the late Mr. Benjamin Scott, F. R. I. B. A., Chamberlain of the City of London, the principal aim of its plan being to secure the best possible aspect as regards sunshine to all the living and bed rooms, and absolute protection from draughts. There is no basement or second floor, and the staircases are specially easy and spacious, and all made as snug and fatigue-saving as possible, as suited to elderly people, at a cost of 2,200*l.* The materials, red brick and Bath stone, with Brosely tiles.

BRAUBACH-ON-THE-RHINE.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

PROFESSOR LÉTANG.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—My great respect for Mr. Létang and the strong affection I bore him prompt me to send you these words of remembrance.

It was in the autumn of 1871 that I first heard his name. Three

years' experience at the Institute of Technology had confirmed me in the opinion that in order satisfactorily to carry on the work that had been entrusted to my care, qualifications and attainments were needed very different from any which I could myself supply, or which could be found in any one at my command. At that time there were not half-a-dozen architects in the country who had had any other than a practical training in their profession, and none of these was available for academic work. My own brief studies with Mr. Hunt a dozen years before, and what I had seen in Paris some years later had sufficed, not indeed to make me well-versed in the methods of the *Ecole des Beaux-Arts* but to convince me of their value, and I now, naturally, turned to Paris for the assistance I needed. Happily I had there, in Alfred Greenough, a friend who perfectly understood our wants and whose hearty interest in our undertaking warranted me in taxing his time and patience to supply them. The German war was just over, the Commune just put down, and in the unsettled condition of business I thought that it might not be impossible to find some young man, just returned from the field and not yet established again in work, who would be willing to face even exile and banishment in our service. This was not so easy as it had seemed, but at last came a letter—it seems as if it were but yesterday—saying that a man had been found, "one of the most *ancien* and most serious in the atelier," Mr. Greenough said, "and perhaps the first to whom I should myself have gone for advice and upon whom one could best rely for sound practical views." This was in November, and the next letter said that he would arrive in New York by the beginning of the new year.

One naturally feels a fresh anxiety and a sense of added responsibility when his plans begin to succeed, and his dreams to fulfil themselves according to his wish. So I found it now, with a strange Frenchman presently on my hands, for better, for worse. I thought over all the young architects I had known in Paris, wondering which of them my man would be like. But it seemed to me that if he should resemble any one of them in any essential particular, the relations that I had so rashly ventured upon would prove intolerable, and it was with a timorous heart that I went to meet the steamer and learn my fate. By-and-by I saw approaching me from the end of the pier a tall, thin, yellow-haired laddie, all bone and sinew, looking much more like a Scotchman than like a Frenchman, with a frank and open face, a firm tread, and such a pair of honest blue eyes and such an unmistakable air of simple-heartedness and integrity, that long before we were within speaking distance my doubts and anxieties had vanished; I saw that he was all right, and was ready to welcome him as a friend and helpmeet without one misgiving. The trust and confidence of this first moment the daily contact of ten years' companionship only strengthened and confirmed. No shadow of doubt or misunderstanding ever came between us. He was always then, as he remained to the end, single-minded, single-hearted, loyal, modest, unselfish, patient and devoted. Moreover, he proved to be thoroughly trained in his calling, skilful and experienced both in construction and in design, an admirable draughtsman, and possessed of a quickness of intelligence and a fertility of resource, both in memory and in invention, that no one could witness without surprise and delight.

It has been said that no creature is so serious as a serious Frenchman, and in the essential traits of his character Mr. Létang illustrated this saying to the letter. He was in touch with the realities, like the peasants from whom he had sprung, and his life was perfectly sincere. He believed in the importance of his work, whatever he put his hand to, and would tolerate no trifling in his pupils. No one could work with him or under him without being fortified and stimulated in his moral nature, and being made ashamed of shuffling and half-hearted endeavor. But into this manly fibre were interwoven threads of kindness and humor that made him the most delightful of companions. Above all, he had a personal charm and delicacy of manner, or, rather, let me say, of disposition, that inspired friend and pupil alike with a sort of tender and affectionate regard. No one was ever more sensitive than he to any manifestation of such good will, or more grateful for words of sympathy and appreciation.

The sudden accession of numbers to his classes that accompanied General Walker's acceptance of the presidency of the Institute in 1881 greatly increased Mr. Létang's labors and responsibilities, and he soon began to feel the effects of a burden which was greater than any one man could bear. Year by year he found his strength failing and his energies consumed. The summer vacations, spent in the woods of Maine or in visits to his own country, failed to restore his jaded nerves and tired brain. In 1889 he broke down altogether, and obtained a year's leave of absence, hoping that a year of rest in his native village would make him young again. But it was too late. Two years more completed the work and he died at last utterly worn out, though only fifty years of age. He was one of a thousand.

WILLIAM R. WARE.

A DAMAGED OIL-PAINTING.

NEW ORLEANS, LA.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I have presented to me the following interesting question, on which I should be pleased to receive such light as you can throw yourself, or by referring it to a competent authority.

About a year ago I erected a tomb, in the form of a small cross-shaped chapel, each face of which is formed of a single slab of Georgia granite, eight inches thick with joints only at the angles. Against the rear face I was requested to place, under glass, an oil painting, smaller than the slab, imported from Greece, where, I think, it had been newly made, and therefore was presumably but a few months' old when put in place. It was there sealed under a plate-glass and marble frame, to all appearances air-tight, except possibly at the two upper corners, where the joints appear imperfect. The painting is now very materially decomposed, the freshest parts being about a couple of inches at each of the imperfect corners.

What I would like to elucidate, is, whether it is likely that the decomposition is due to the insufficient dryness of the painting itself at the time of its immuration, to any moisture which may have been enclosed, or to moisture penetrating through the granite (there is no backing); and what it would be advisable to do in reference to restoring the painting? I should imagine that it ought to be left uncovered and with free ventilation behind until the paint is thoroughly hard; but the owner would prefer to leave nothing to be done at a future date when it might be neglected, as he fears his own days are numbered. Would it do to dry it artificially, remove it from the frame and seal it between two sheets of glass while yet warm?

The top of the picture is about at the level of the top of the door of the chapel-tomb, which is about four feet six inches by seven feet, some eight feet off, directly in front and closed only by an open brass-work door, and faces south.

The painting is on canvas, in oil, on an ordinary stretcher like a portrait. It has the usual large amount of gilding which, alone, is well preserved. There is no backing. I think it was placed directly against the monolith granite wall, covered with plate-glass and marble frame, the joints made air-tight by rubber.

I have consulted a couple of artist-painters who say it should not have been sealed up before two or four years old, whereas it was most probably made to order and not more than seven months old.

Yours truly, JAS. FRERET.

[We have referred this question to Mr. Harold Fletcher, an expert in the restoration of oil paintings, and he writes: "I cannot think that the painting is actually injured, but that it is obscured rather by 'bloom,' caused by dampness which would naturally come from the stone and marble. It would be an experiment, I should think, worth the while, to place it between two glasses sealed together, but I should think also that provision ought to be made for future care and attention, as this is always necessary for paintings under all conditions. I should think that in preparing the painting before sealing it up it would be well to avoid varnish if possible, as it would be less likely to 'bloom' again. I would suggest wiping the surface with a damp cotton cloth and then covering it with linseed oil, well thinned with turpentine. Be sure to use only a little of the oil. The picture should not be sealed up until it is thoroughly dry. Do not in any case let it be mounted—canvas upon a wooden panel—as the wood always shrinks and forces the canvas up in blisters when treated in this way."—EDS. AMERICAN ARCHITECT.]

A CORRECTION.

BOSTON, MASS., December 3, 1892.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In your issue of December 3d, the illustration entitled "House for M. H. Birge," should be "Houses for M. H. Birge, George K. Birge and Henry M. Birge, Buffalo, N. Y." Will you kindly correct this error, and oblige, Yours very truly, CRAM, WENTWORTH & GOODHUE.

NOTES AND CLIPPINGS

FAILURE FOR DEEP ARTESIAN-WELL IN TEXAS.—A very interesting experiment was recently concluded in Galveston, Tex., in the boring of an artesian-well over 3,000 feet in depth in the unsuccessful attempt to secure a supply of fresh water. The water-supply of the city is furnished by thirteen artesian-wells, varying in depth from 825 to 1,350 feet, but while the water is good enough for fire and manufacturing purposes, it is totally unfit for drinking and domestic use. The city concluded to invest \$75,000 in order to procure a supply of pure water. Work was begun more than a year ago, what is termed the "rotary and jetting" being used. The well was started with a twenty-two-inch casing. Inside this casing a fifteen-inch pipe was sunk to a depth of 870 feet, and inside of this a twelve-inch pipe was telescoped to a depth of 1,500 feet. Then a nine-inch pipe was telescoped to a depth of 2,363 feet. A six-inch pipe was then inserted and a depth of 3,070 feet and 9 inches was reached. No water was found nor was any rock penetrated. The contractors have complied with their contract, which was to bore to a depth of 3,000 feet, were paid \$76,000, and further work is abandoned. The well is the deepest on the sea-coast in the United States, and a description of the different strata pierced by the boring is interesting. From the surface to a depth of 46 feet there was a stratum of gray sand; thence to a depth of 64 feet was a layer of red clay and shells; thence to a depth of 100 feet was a stratum of blue clay, sea shells and fragments of rotten wood. From this to 315 feet sands and sea-shells were encountered, and from that depth to the 815-foot level sand and clay were discovered. From the 815 foot level to the depth of 1,288 feet, sand, clay, sea-shells and decayed wood were found, and from that depth to the 3,070-foot level varying strata of sand, clay and large logs were encountered. At the very bottom of

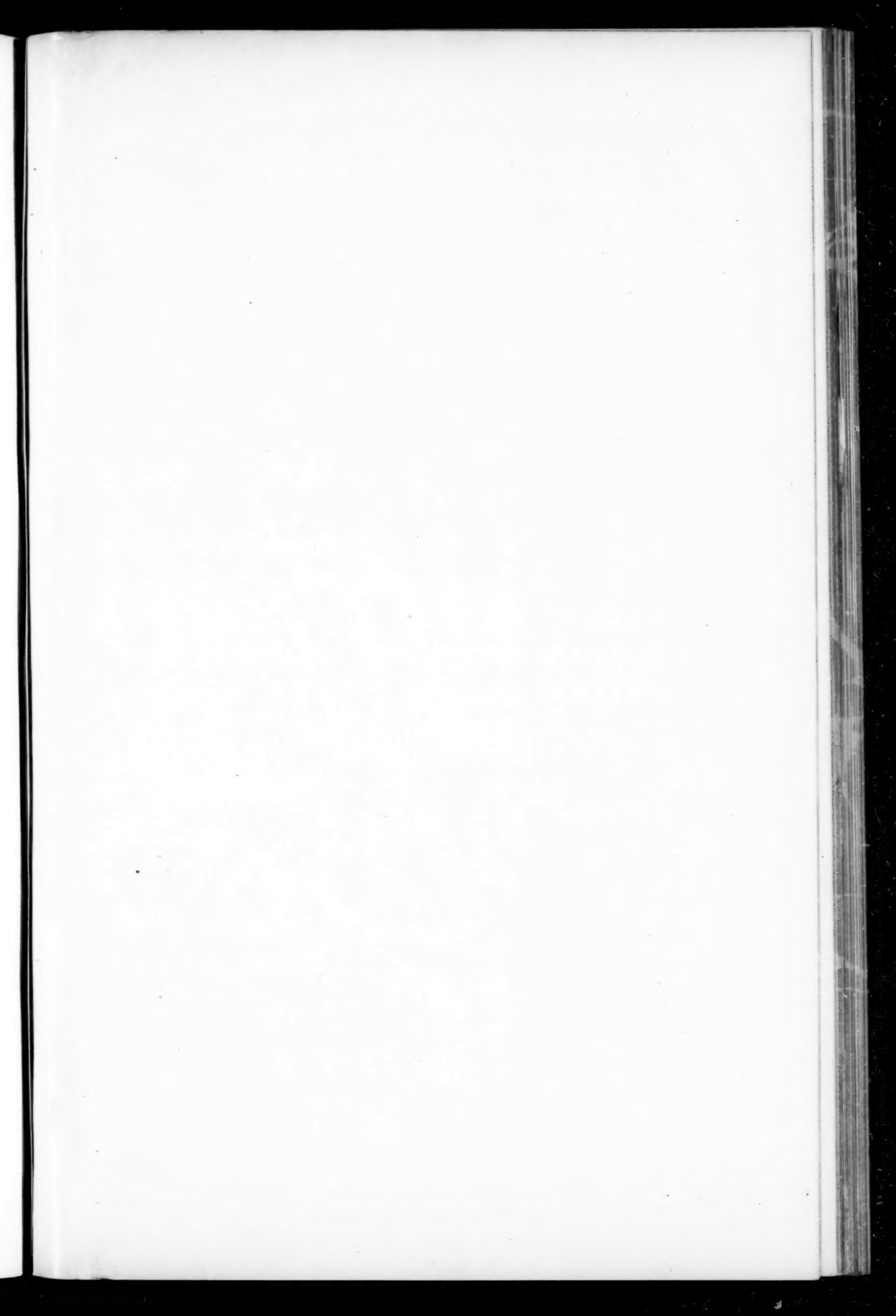
the hole a bed of sea-shells was struck. The contractors expended \$63,000 before they completed the work, and eminent engineers who have made examinations have expressed the opinion that it will be impossible to secure a supply of pure water on the island. Therefore wells will be sunk on the mainland fourteen miles away, and water brought across the bay by means of iron pipes. The estimated cost and amount available for the work is \$800,000.—*Fire and Water.*

THE MOST OVERCROWDED ENGLISH CITY.—In connection with the demonstrations of the unemployed, it may be of interest to point out that London is not the most overcrowded city of the country. Liverpool enjoys that unenviable distinction. In the thirty-three great towns from which the Registrar-General receives weekly returns, the average number of persons to the acre is thirty-four. In Liverpool, however, there are ninety-eight persons to the acre. In Plymouth there are fifty-eight. London comes third with fifty-seven. In no other town does the average reach fifty, but Brighton, Bristol, Bolton and Sunderland all have averages of more than forty persons to the acre. The average for Manchester is exactly forty.—*London Daily News.*

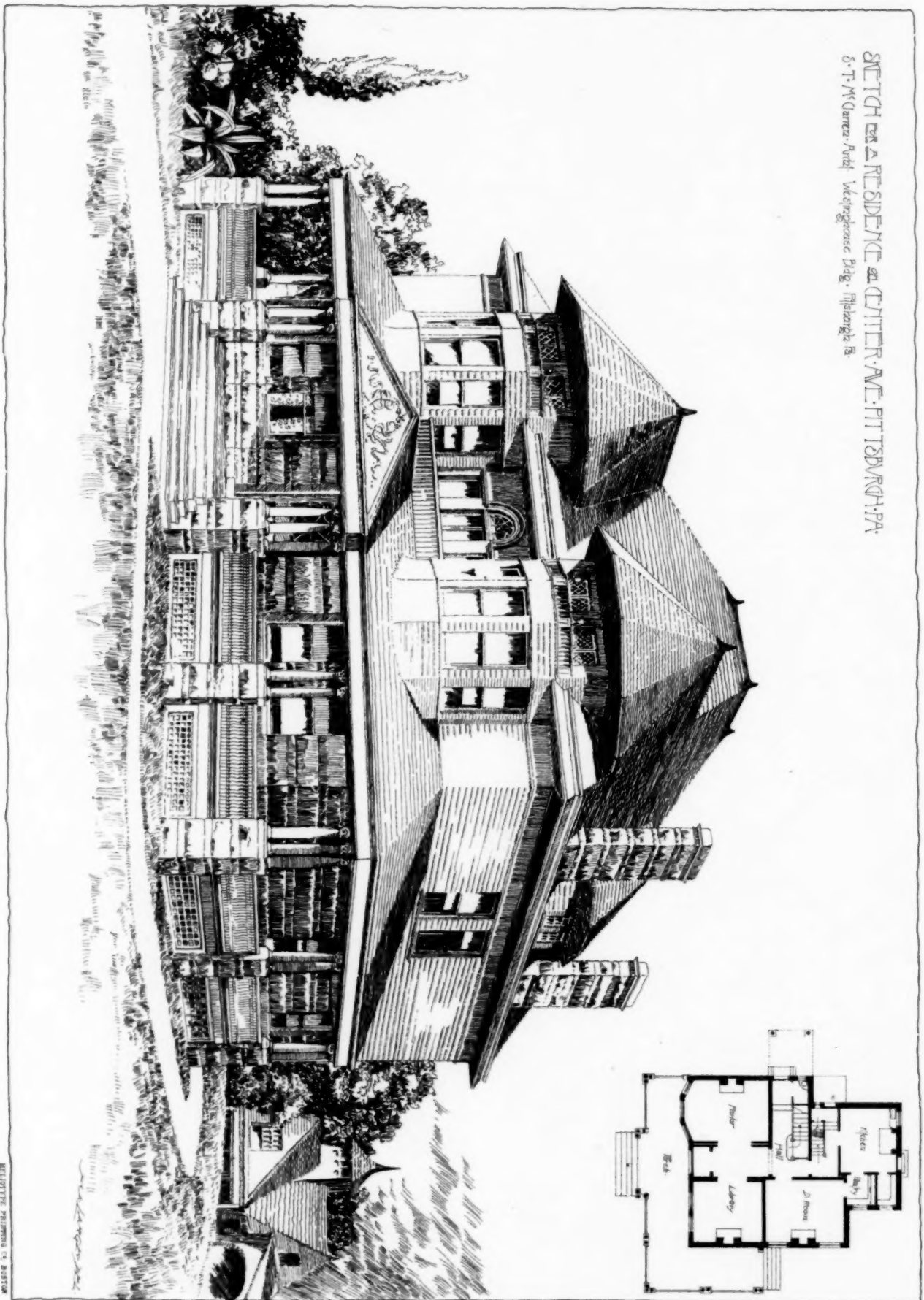
JAY GOULD AND MOUNT VERNON.—When Russell Sage was in Congress in the fifties he advocated the purchase by the Government of Mount Vernon. Several years ago it was telegraphed from Richmond that some unknown Northern man had responded to the appeal of those in charge at Mount Vernon and had purchased additional acres of land to be added to the old Washington estate. It turned out that Mr. Gould had bought the property and turned it over to the Mount Vernon people. This was one of the results of his close friendship with Mr. Sage.—*N. Y. Sun.*

TRADE SURVEYS

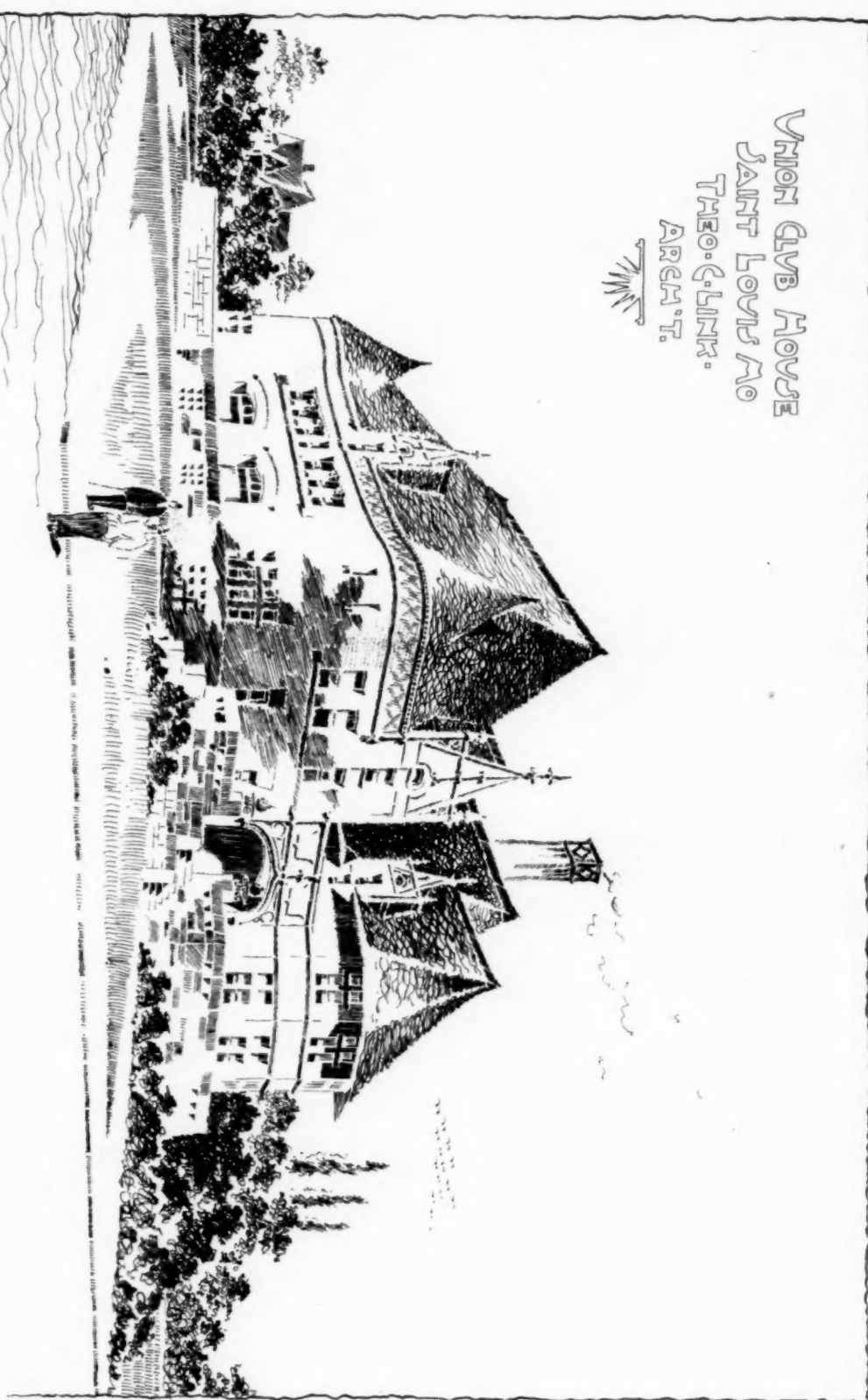
THAT nothing definite or satisfactory can be said on the silver question is apparent to all who are familiar with the antagonistic undercurrents in the financial and commercial world. Leading American financial authorities, who are stubbornly opposed to silver, yet admit that it is to be deeply regretted that something is not done. What that something is is not stated. The apparent collapse of the Brussels conference is an unwelcome result to even the gold advocates on both sides of the water, who recognize, also, that there is an indefinable "something" that ought to be, somehow, done. The fact is, that it is recognized that present driftings cannot continue without danger, the extent and kind of which no one can tell. The world is in a transition state, if it ever was. Dangers to existing conventionalities of every sort are arising, and, with these dangers, new and urgent necessities. Rapid industrial decentralization and progress is witnessed on every side. The people of Europe are aspiring and groaning as never before—aspiring for liberties and groaning over military taxes, which will and must increase. Unrest is universal, and where before a thousand were seeking new homes in new lands, ten thousand are now preparing for departure. On this side, we are working ourselves up to the proper degree of fright to shut the gates against the increasing stream of humanity. On the other side, all Christian (?) Europe is lifting its hand to smite the Jew. In South American countries, financial jugglery has obstructed progress. The world's big store-keepers and cashiers do not know whether to keep on selling and counting as they have been, or reverse their standards and methods. It is safe to say they will hold on to the worn-out past, and wait for the budding necessities of the present and the overwhelming requirements of the near future to force changes. Reduced cost of ocean and land travel is working a quiet revolution in policies. The latest figures show that the volume of business transacted this year in the country, as indicated by clearing-house exchanges, is nine per cent greater than last year. Railroad figures show that there has been no falling off in traffic within a week. The distribution of dry goods, clothing, knit-goods and hosiery, according to best authorities, since September 1, will exceed last year's to same date by nearly ten per cent. The advance in cotton has caught a great many manufacturers. The workers in cotton think the advance will hold, but think any attempt to force a speculative advance will react. The boot and shoe manufacturers have begun to buy more liberally of leather, lest something unfavorable might happen. A large speculative purchase of pig-iron was attempted in Alabama recently, but failed. An increased demand for wheat for export has created expectations of stronger prices, but there are too many sellers ready to sell. These and some other like facts might seem to lend force to the belief in many quarters that an era of stronger prices is near at hand. The anthracite coal production on Saturday was 1,069,075 tons in excess of same time last year. The stocks of white pine have been run still lower, but stocks of yellow pine have lately been increasing. A great deal of new timber territory has been developed this year in various sections of the United States; also a great deal of valuable coal territory. Architects have been forecasting 1893, and those who have spoken say that all the obtainable evidences point to great activity in building. Their opinion is that house-building in cities will be prosecuted as in the past; that the ease by which loans can be made to partly pay for homes is helping in that direction, and that the low prices of material and the sharp competition among builders will smooth the way for purchasers of homes. The steady growth of building and loan associations is to be noted. The accumulation of funds in savings-banks made up of small deposits is a good indication. Forty-nine vessels are being built in the Lake ship-yards to carry ore. A new motor for street-cars, to be operated by naphtha or gas, and which, it is represented, will cost much less than either horse or electric power, is being boomed in two or three Western cities. The subject of fireproofing large buildings has received much attention of engineers and architects, and some very valuable results have been reached by severe and practical tests recently in Chicago. During the past month nineteen horse and motor railings have been projected, and during the past week thirteen electric roads. A great deal of new railroad is projected, and capitalists are investing with less trepidation in some few selected properties. The iron and steel makers predict greater activity during the winter, but at present there is nothing beyond the covering of immediate wants to report.



SKETCH OF A RESIDENCE ON CENTER AVE. PITTSBURGH, PA.
S. T. M. Gurnea, Archt. W. J. Gurnea, Eng'g. J. H. Gurnea, Bldg.



UNION CLUB HOUSE
SAINT LOUIS MO
THEO. CLARK
ARCH'T.



FRENCH FARM HOUSE.
AT MESNIL MAUGER.



J. J. JOHNSON



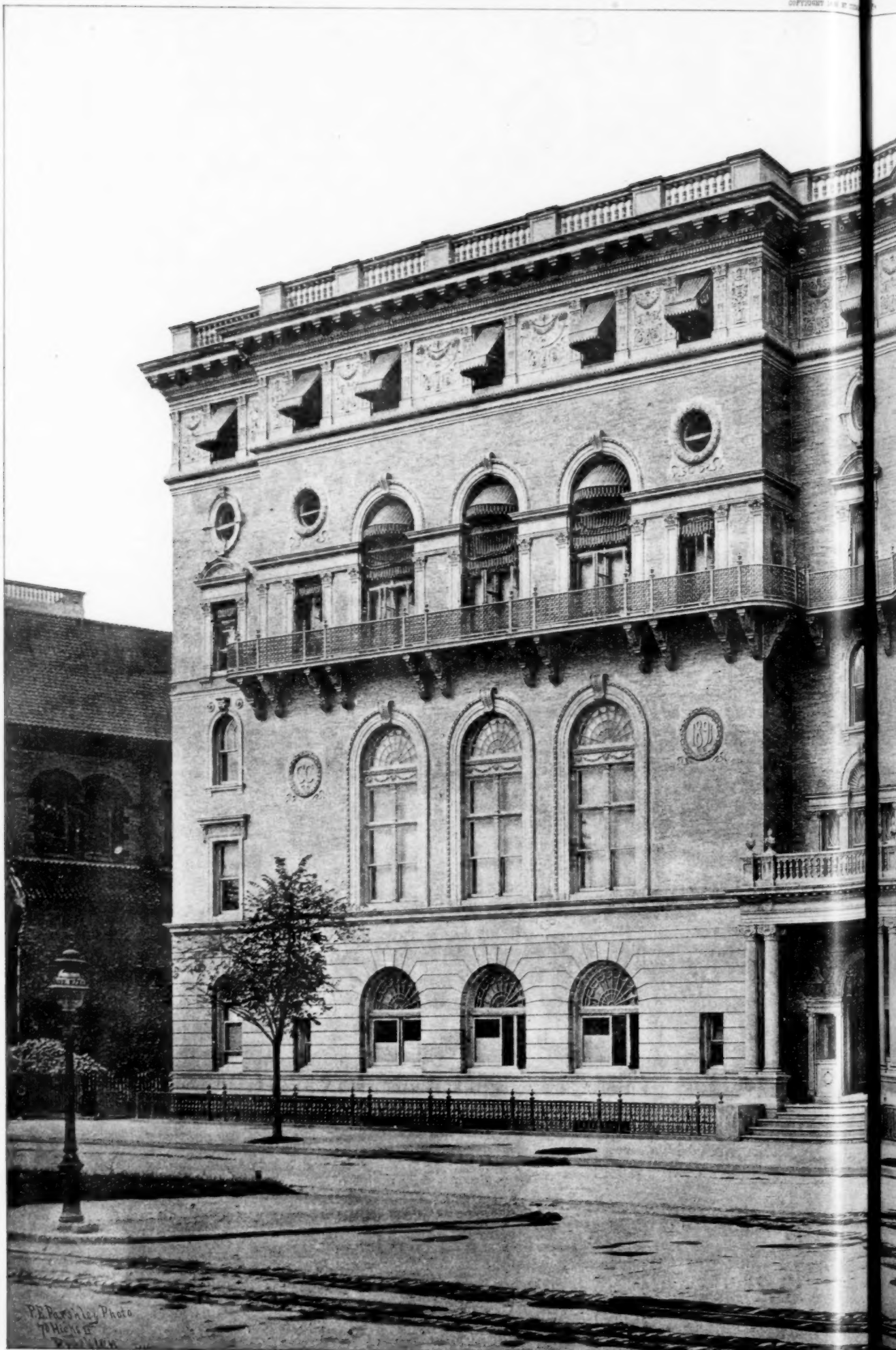
“BASIC”
“COMPETITION”
“RENDERING”
“ROY”



Submitted - What is it -



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J. KILBURN: ARCH'T.