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THE Massachusetts Legislature has finally rejected a bill, introduced in behalf of the city of Boston, and advocated by all the owners of property on the south side of Copley Square, for changing the special limit of height imposed on buildings on that side of the Square from ninety feet to one hundred feet. The newspapers, as it seems to us, have taken a mistaken view of the matter, in assuming that the bill was intended for the relief of the owners of the Westminster Chambers Building, against whom the Boston journalists appear to bear a singular grudge. As a matter of fact, it is said that the Westminster Chambers owners have taken little interest in the bill, the rejection of which simply adds to the damages which the taxpayers of Boston will have to pay them, while it involves, so far as they are concerned, only the removal of the cornice of their building, thus adding to the varied disfigurements with which this most ill-considered restriction threatens Copley Square.

IT is, however, the money question that is the important part of the matter, and we are disposed to think that some of the taxpayers who signed the petition for the restriction, with a hazy feeling that they were in some way contributing to the beauty of the city, will heartily repent of their action when they see the æsthetic results of an enormous expenditure, of which they will have to bear their share. No one, apparently, has as yet begun to realize the extent of the damages for which the taxpayers of Boston are, by the decision of the Legislature, made liable. The damages to be paid for the Westminster Chambers alone are said to have been estimated, by pure guesswork, at two hundred thousand dollars; but guesswork will be found to play a very small part in the legal assessment of damages, where figures alone are regarded. It is currently reported that the calculations upon which the original Westminster Chambers scheme was based contemplated a rental of seventy-five thousand dollars a year. Naturally, the number of rooms available, the probable income from them, and the probable expenses, would have been carefully estimated before the enterprise was undertaken, and the expectations of return do not appear to have been unreasonably sanguine, since the estimate only amounted to about five per cent on the investment of nearly a million and a half. After the contracts were made, and the foundations in, the ninety-foot restriction was imposed on the property, but the owners, injudiciously, as we think, instead of abandoning the scheme, and selling the land at auction, charging the city of Boston with a loss which could then have been accurately fixed, went on and completed the building, as they supposed, within the new restriction. Since then, the maximum return on the investment in any one year is said to have been twenty-five thousand dollars, and the amputation of the cornice, disfiguring the building, is likely to diminish, rather than increase it. If then, the owners of the property have, in accordance with definite estimates, which

can easily be verified, been deprived, through the restriction, of an income of fifty thousand dollars a year, the damages which the taxpayers of Boston are compelled, by the same statute which imposed the restriction, to pay, should be estimated at a reasonable capitalization of this income. Supposing five per cent to be considered a fair return, this capitalization, in the case of the Westminster Chambers alone, would be one million dollars. Nor is this, estimated in another way, an unreasonable amount. The owners are said to have paid originally three hundred thousand dollars for the land. Adding compound interest, taxes and expenses, the cost of the ground alone probably amounts now to nearly half a million. The building is reported to have cost nearly or quite a million, and it is certainly debatable whether the land would not be worth more, under present conditions, without the building, indicating, by this method, also, a loss of about a million, due to the imposition of the restriction. As we have said, neither sentiment nor guesswork is allowed to enter into the judicial award of damages when actual figures are available, and, however a court may interpret the figures, the taxpayers of Boston will have to pay the award.

BUT the damages in the case of the Westminster Chambers form only a small part of the bill which the taxpayers will have to pay for the luxury of singling out a few of their neighbors for special restriction,—or oppression. It is well known in building circles that Copley Square has for some years been regarded as a future business centre of great importance. Many plans have been made for theatres, hotels and other public buildings on or near it, and no part of Boston, except, perhaps, State Street, has been the scene of so many speculative real-estate projects. Since the special restrictions have been sustained by the Supreme Court, all talk of Copley Square enterprises seems to have died away. Among real-estate men, when one of the old projects is mentioned, the ninety-foot restriction is generally quoted as an insuperable objection to attempts at improvement of property on the Square, and the new mercantile buildings, of which several have been erected in the neighborhood within the past two or three years, and which would naturally have found Copley Square a very favorable location, have all gone beyond it, to that portion of Boylston Street not burdened with special restrictions. Whether the course of building will ultimately return to Copley Square, or will continue westward to Massachusetts Avenue, remains to be seen, but, in the meantime, the owners of property on the Square, which they would like to sell, may, very possibly, find their estimate of the damage to their estates by the special restrictions materially enhanced by the contemplation of the rapid transformation of the streets beyond. Many of the citizens of Boston are grieved just now, with reason, at the inability of the municipality to raise a million and a half dollars to pay for new school-houses which are urgently needed, and it may give some of them food for salutary thought to reflect that all the school-houses now needed could have been built for a sum much smaller than that which will have to be spent to pay for what seems to us, at least, to have been an arbitrary and ill-considered encroachment on the rights of a few of their fellow-citizens, in pursuance of a still more ill-considered notion of some æsthetic advantage to be gained thereby.

IT will be remembered that, a year ago, the King of England, in pursuance of a determination to use a vast sum of money, which had been placed in his hands for charitable purposes, in the provision of sanatoria for consumptives, offered prizes for the best essays on the design of buildings for the open-air treatment of tuberculosis, accompanied by plans. The prizes were offered to medical men, but they were allowed to associate architects with them in the study of the subject. Nearly three hundred essays and plans were received, three of which received prizes. These essays have now been published, and afford very interesting reading to architects, as well as to physicians. It may be observed that the open-air treatment of consumption is a very modern idea. In 1840, as one of the essays informs us, a certain Bodington, of Warwickshire, wrote upon the "Cure of Pulmonary Consumption," saying that "Cold is never too intense for a consumptive patient; the

apartment should be kept well aired, so that it should resemble the pure air outside, pure air being used in the treatment as much as possible." Bodington had already arranged an establishment for tubercular patients, and had, by his method, effected many cures of what was then considered an incurable disease; but the publication of his essay drew upon him the wrath of the whole medical profession. He was denounced as a lunatic; his patients were persuaded to leave him, and he was obliged, for want of any other use for his property, to turn his sanatorium into an asylum for the insane. Even a few years ago, the best authority on hospital construction in England said that it was considered necessary to "avoid draughts" in establishments for consumptives. Before that time, however, open-air sanatoria for tuberculosis had been constructed in Germany and Switzerland, and had proved very successful, and the sickness and old age insurance-companies, which sprang up in Germany after the adoption of the law making insurance of this kind compulsory for all working-people, finding that they really restored to earning capacity more than half of their patients, who, if left at home, or placed in an ordinary hospital, would in most cases have grown worse and died, decided, as a measure of financial prudence, to build sanatoria expressly for their consumptive policy-holders. In many cases they enlisted the help of towns and cities, in return for the promise of free beds; but the initiative was generally due to the companies, and, a few years ago, there were at one time no less than thirty sanatoria in process of erection at once in Germany, either wholly or in part for the account of insurance-companies.

IT is hardly necessary to say that the provision of such establishments, even in Germany, falls far short of what is needed, even for the amelioration of a disease which still carries off one-fifth of all who die; and, in England, the medical profession has studied the German experiments with deep interest. It was not, however, until the generosity of a private citizen put at his disposal the necessary funds that the King, who knew something of the new treatment, was enabled to take steps toward introducing it in England on a large scale, and with all the perfections which German and American experience might suggest. The first of these steps was the invitation of the prize essays, and, presumably, the next will be the incorporation of the ideas gained from them in actual buildings. This will not, perhaps, be an easy matter, for the curious reason that the authors of the three prize essays, although all of them experienced in the treatment of consumption, and familiar with German and American experience, differ irreconcilably in their notions of what an open-air sanatorium should be. We are inclined to think that the collaboration of the architects, at least so far as the three prize essays are concerned, has not much improved the matter. It is not very easy, at best, for an architect to comprehend and give expression to all a medical man's ideas, and it is still less easy for a medical man to conceive the architectural arrangement which will fulfil his wishes in the best and most economical manner; and all of the prize plans presented bear marks of misunderstanding and inexperience on the part of the architects who designed them, while certain recommendations in the essays have, to our mind, the air of being suggestions of the architect, of doubtful value, at best, adopted by the essayist without a very distinct comprehension of what they involved.

THE essay placed first, by Dr. Latham and Mr. West, gives a graphic account of certain virtues of the fresh-air cure.

One of the authors was formerly a great sufferer from rheumatism. In accordance with the received practice, he was very careful to avoid draughts, and to keep the temperature of the air about him as even as possible. It happened, one winter, that his duty called him to the famous open-air sanatorium at Nordrach, in Germany, where he stayed for several weeks, sharing the life of the patients. An ordinary incident of this was to sit bare-headed, and without an overcoat, often for hours, amidst the snow. Instead of killing him, this regimen made him feel so much better that, on returning to England, he imitated the Nordrach practice in his own house, and since then has been stronger than before, and absolutely free from rheumatism. It is hardly necessary to say that he is convinced of the hygienic efficacy of fresh air, and the plan provides for a large supply of it in the rooms used by the patients. In the details of the plan there are one or two rather questionable peculiarities. Believing, as its authors do, that "it is on the free circulation of the air that we must rely for the purity of our atmosphere," it is curious to find the lift and the stairs

placed in a space some twenty-five by thirty feet, entirely enclosed, except at one end, where it has a single window, opening on a court; while the patients, in going from their rooms to the dining-room, pass through this apartment, and then through a long corridor, also lighted from the court. Another feature of Dr. Latham's plan seems to us to involve a considerable sacrifice of the "free circulation of air" which he thinks so desirable, without much corresponding advantage. He repudiates entirely the exterior balconies and verandas in front of the bedrooms so universal in the Continental sanatoria, believing that, for the English climate, the shade which they give is objectionable, and that sunshine in the rooms is the first requisite; and, to secure as much sunshine as possible, he makes a sort of square bay in each bedroom, large enough to contain a bed, with windows on three sides, the recesses between the bays, which are only five feet apart, being also furnished with windows. The object of this arrangement is to enable the patient's bed to be placed in the bay, where sunlight and air can reach it from three sides; but the recesses between the bays, which are two stories high, form, to our mind, objectionable pockets for stagnant air and dust. The north side of the building, which is occupied by a corridor, is also broken up by a multitude of projections, each of which casts a shadow, creates an eddy to collect dust, and interferes with the free circulation of air. We have no wish to be hypercritical, but this would, in practice, be found a serious matter, far outweighing, as it seems to us, the doubtful advantage of the bay windows, which, if they caught, perhaps, a little more sunshine, would also catch a great deal more dust, while the fact that each overlooks the two adjoining ones, at five feet distance, would deter a great many sensitive patients from making use of them.

THE second-prize plan, by Dr. Wethered and Messrs. Law & Allen, provides a wide covered veranda in front of the patients' room on the ground floor, but gives an open balcony to a few only of the second-story rooms. Otherwise, the arrangement is not unlike that advocated by Dr. Latham, except that there are no bays to the rooms. The third essay, by Dr. Morland, associated with Mr. Geoffrey Morland, as architect, is particularly valuable for its concise statement of what is now accepted as the main element in a sanatorium for consumptives — that everything else should be "made subservient to the one essential of providing that a current of pure air shall constantly flow through" the rooms occupied by the patients. With this view the patients' bedrooms are arranged, according to the system now general in such establishments, in a single row, facing south, and opening on a corridor with north windows. The ground-floor rooms have a wide veranda in front of them. It seems as if a veranda of this kind might very well have a flat roof, which would serve as a balcony for all the patients in the second story, but none of the competitors seem to have thought of this. In other respects Dr. Morland's plan is well studied. He agrees with the German specialists that tuberculosis patients should not be encouraged to stay indoors, and, for this reason, he avoids billiard-rooms and other places for indoor diversion, providing only a library, which can be used as a day-room in bad weather, and various isolated "day huts" in different portions of the grounds, where patients can write and read. It is rather surprising to an American architect to read of verandas and out-of-door huts "brightly illuminated" with electric lights in the evening, or of patients' rooms through which the air is intended to flow freely at all seasons fitted with set wash-basins; but it must be remembered that mosquitoes, although not unknown, are not common in England, and that the thermometer rarely goes far below the freezing-point.

SOME of our readers may be interested in the result of the competition for the great church at Patras, in Greece, in which the American consul at Patras kindly interested himself, in behalf of American architects. It appears that thirty-two designs were received, and judged by a jury of distinguished Athenian artists, who, after eliminating twenty-four plans, selected eight, the authors of which have been requested to make more detailed drawings, to be judged definitely in Paris in July. Of the eight plans selected, the jury placed first that of M. Binet, of Paris; M. Robert, also of Paris, took the second place; and the succeeding ones were awarded in order to M. Duck, of Vienna; to a design from England, marked "Sophia"; to MM. Paniconi, of Rome; Tailler, of Dresden; Demades, of Athens, and Karathanasopoulos, of Athens.

ART HISTORY OF THE NETHERLANDS.¹

IT is difficult to trace the art of the Netherlands to its sources. Unlike Italian art, the progress of which we can follow from Cimabue and Duccio to Giotto and the Cinquecento painters, Flemish art, in the person of the Van Eyck brothers, emerged suddenly into maturity without childhood; faint foreshadowings of which can, however, be discovered in the patient labor of missal-painting monks.

The architects of early mediæval days were ecclesiastics who devoted themselves to building the churches belonging to the monasteries, the adornment of which led to a development of varied phases of art. Charlemagne, the mediæval pioneer of modern civilization, gave the first great impulse to art in the North. He surrounded himself with artists, sculptors, painters and decorators, who at his behest journeyed from Constantinople, Italy and England to adorn the palaces he had built for himself at Nimeguen and at Aix-la-Chapelle. A school of art was thus formed, and inspectors were appointed whose duty it was to visit the churches of his domains, and superintend the strict carrying out of the Imperial order that their walls should be covered with sacred paintings. These mural decorations have perished, and only faint traces remain, insufficient to determine their style or to what degree of perfection they attained. In other art-works, such as ivories, carved crystals and enamels, a strong Byzantine influence is evident. But it is to the illuminations and miniatures in manuscripts and missals that we must look for our knowledge of the art of this period. Among the earliest known illuminated books are two copies of the Gospels, still preserved in the church of Maeseyck, richly adorned with miniatures and ornaments, the work of two nuns, Harlincle and Belinde, probably sisters; women whose history, could it be brought into life from the parchments of ancient archives, would be replete with interest, for they were great ladies and rulers, having founded the Abbey of Aldeneyck, of which they were the first abbesses. From that time onwards we are enabled, by means of the illuminated manuscripts and sculptures that have been preserved, to trace the course of art through the centuries that intervene between Charlemagne and the palmy days of the Court of Burgundy.

The great monastic foundations of the Netherlands and Northern France were practically miniature States, strongholds alike of spiritual and of temporal power, ruled over by abbots who were princes in the land, and who continued to rule even after the rising power of the free towns had entered into rivalry with them. These men also kept alive the sacred fire of intellectual culture, of art, of literature and of all that beautifies and ennobles life. They preached the sanctity and enforced the discipline of labor, and through the so-called Dark Ages the great monasteries of the Low Countries were the centres from which radiated civilization and her handmaidens, art. Their abbots were princes in the land; they revived agriculture and gardening; large tracts of the alluvial plains of Belgium were drained and planted by their hands; they fought a gallant fight with nature, and by patient toil and skilful industry converted the watery wilderness into smiling and fertile fields, intersected by a network of canals, and defended by huge barriers erected against the ever-intruding ocean. The men who could thus subdue the stubborn forces of nature had in them the qualities of a master race, destined to advance through commerce to wealth, through industrial associations to freedom. Wherever a monastery was planted it became the nucleus under the shelter of whose walls the inhabitants of the neighborhood clustered. Thus towns arose, civilized by Christian teaching, protected by the reverence that attached to the monks, and stimulated to industry by their example, while the abbots themselves became schools of learning and culture, and storehouses of art-treasures. Foremost among the sanctuaries of Flanders, and typical of many others of nearly equal renown, was the Cistercian Abbey of Notre Dame des Dunes, whose walls and pinnacles rose high above the sandbanks that form the barriers between the low lying plain of Bruges and the Northern Ocean, the far-off moaning music of whose breakers could be heard by the monks at their daily toil. The life within the monastery was one of ceaseless and many-sided activity. Swarms of laborers worked under the direction of the monks, either cultivating the land, or engaged in a never-ceasing struggle with their relentless foe the ocean, and some of their scientific inventions for this purpose were of such practical value that they are still in use at the present day. The abbey schools were attended by youths divided into two classes: Novices living within the walls, who received instruction in arts and science, and sons of dependents of the abbey, residing outside, who were trained to trades, and manual labor on the land. These latter were numbered by hundreds and even thousands; they enjoyed through life the protection of the abbey, they formed among themselves associations, and, under certain regulations of considerable strictness, were permitted to work for other masters besides the monks. To the monks themselves, and their pupil-novices, appertained the cultivation of art and literature. This large community was presided over by a long series of abbots, whose despotic sway controlled and regulated the varied interests and pursuits of those who might be called subjects. The influence of the abbots of Notre Dame des Dunes spread far beyond their own domain. They played a large part in the wider field of politics and Government, and so great was their power that during the frequent absences of the Counts of Flanders on distant campaigns the Government of the province was entrusted to their hands.

Within the *enceinte* of the abbey walls, by the labor of pious

hands, arose gradually a stately church dedicated to Our Lady, which became, as centuries rolled on, a treasure-house of art; altar-pictures, sculptures, tapestries and stained-glass, the life-work of generations of monks, adorned the sacred shrine; while the library contained precious illuminated missals, and a priceless collection of Oriental manuscripts, brought over by Crusaders connected with the abbey. This was, unfortunately, destroyed in one of the disturbances that swept over the Netherlands during the Middle Ages. But many of the missals were preserved, and a selection of them formed the choicest treasure of the collection brought together last summer in the old Hotel Groothouse at Bruges. . . .

Of the abbey itself no traces now remain, but its name and some of its art-treasures have been transferred to the Episcopal Seminary for Priests at Bruges. By the second half of the sixteenth century the old order had already changed, and at that period the abbots of the great abbeys were no longer undisputed rulers in the land. As early as the thirteenth century a rival power had begun to arise; the towns which had grown up under the protection of the abbeys showed signs of emancipation and independence. Feudalism was on the wane, the burgomaster became gradually a more formidable power than the baron or the abbot, the character of the people, their qualities of enterprise and steadfastness, began to assert themselves; commerce with foreign nations led to manufactures at home; and for safety and protection's sake these were carried on by associations of fellow-workers, which rapidly developed into the "Guilds," which became so marked a feature in the commercial, social and artistic life of the Netherlands. The spirit of association seems indeed to be ingrained in the Saxon race; indications of this system of coöperation, or guilds, can be discerned as early as the days of Charlemagne, when the rising power of the armed guilds, consisting chiefly of armed serfs, became a cause of anxiety to that monarch and defied his efforts to suppress them. Their political importance grew, and they gradually developed into the more peaceful, but no less powerful, mercantile guilds already alluded to.

These guilds soon monopolized both commerce and art. Every branch of trade had its guild, and craftsmen and artists alike, discovering that the protection of a monastery was no longer essential to safety, removed to towns, and, finding the position of an independent worker neither advantageous nor tenable, joined existing guilds. Thus sculptors united themselves to guilds of masons and carpenters, and painters to those of glaziers and workers in leather, until they became strong and numerous enough to form separate guilds of their own. But though no longer dependent on or residing within the abbeys, the connection between them was maintained and the artists and craftsmen continued to work for them and to enrich them with their products. Some, such as the Cistercian Abbey of Notre Dame des Dunes, and the Benedictine Abbey of St. Hubert in the Ardennes, maintained for a considerable period their own body of workmen; but the tendency to transfer the activities of life from the convent to the town was too strong to be long fought against.

The guilds, however, preserved the religious character inherited from their monastic origin. The oath of membership required fidelity and obedience to the Church as well as the State; piety and good conduct were essential to membership. The guild undertook the care of its widows and orphans, its destitute or incapacitated members. Each guild had its own chapel or altar in the parish church dedicated to its patron saint, and as these corporations increased in riches and in power they built for themselves churches on a large scale, lavishly decorated with paintings and sculptures and colored glass. But their first object was to build for themselves a guild-hall, with a tall "*beffroi*," or belfry-tower, and these remain to this day types of the highest standard of the decorative secular architecture of the Middle Ages. The laws which governed these guilds were despotic, and aimed at honesty of purpose, excellence of work, and exclusive devotion of time and labor to the guild. Those who joined one guild were restricted to the exercise of that craft only; the painter could not illuminate missals, the goldsmith could not carve statues, the sculptor could not work metal or precious stones. Members were pledged not to undertake work at a rate of pay below that laid down by the laws of their guild, nor were workmen permitted to exercise their crafts independently of the guild. All crafts were held in equal esteem; a painter or sculptor was not considered by the public as superior to any other craftsman. It was only when art began to decline, and guild-laws to be less strictly enforced, that painters began to give themselves airs of superiority. During the golden age of mediæval art they were paid for their work at fixed rates, like any other workmen. The dean and chapter of the corporation had the right of entry into the artist's studio to ascertain that the rules laid down were strictly complied with. If his materials did not come up to the standard, if the oak of his panel was gnarled or knotted, if his colors, his gilding, his mediums, were of inferior quality, they were confiscated and destroyed, even if the picture were well advanced, and the artist fined or punished. If differences arose between a painter and his patron, they were referred to the heads of the corporation, whose decision as to the proper value of the work, and as to whether it had been conscientiously and honestly executed, was final, and admitted of no dispute. If the artist was convicted of inferior and negligent workmanship, he was brought before the magistrates and severely dealt with. If, on the other hand, his work was pronounced of greater value than the sum stipulated, the patron who ordered it was required to pay not only the estimated difference, but the costs of the trial.

¹ Extracts from the *Edinburgh Review* for April.

Artists were in the habit of taking apprentices, who lived with their master, rendering him service and obedience, and receiving in return instruction in all the technicalities of his art, the preparation of his panels, the laying on the groundwork of "gesso," the making of his varnishes and glazes, the mixing of his colors. After five or seven years' service, the apprentice was qualified to become a master painter in his guild. For this he had to produce a "chef d'œuvre" to prove his competency; if a painter, a picture; if a decorator of buildings, he had to color or illuminate a statuette of the Virgin. It was also customary for the aspirant to the mastership to present to the guild an "écuelle," or porringer of silver, with gilt edges and the "blazon" of the trade in the centre. This custom is mentioned as existing in the Guild of Painters at Ghent as early as 1338.

For the young painter there generally ensued a period of "Wanderjahre" spent in working under artists in other towns, extending sometimes as far as Italy, before settling down as a life member of his own guild.

Interchange between the various guilds and schools of art was also maintained by means of periodical meetings at some central town, where they came together for the enjoyment of social intercourse and the discussion of professional topics. These meetings doubtless tended to promote the striking uniformity both in types and treatment and in art-processes which marks the various schools of the Low Countries.

The constitution and rules of the mediæval abbeys, and of their offspring the town guilds, have been dwelt on at some length, for they give an insight into the influences that presided over the cradle of art in the Netherlands. We can watch its infancy in the religious and restricted atmosphere of the monasteries, its growth in the freer but yet jealously guarded membership of the guilds, till we arrive, towards the close of the fifteenth century, at the period of emancipation, known as the Renaissance, that intangible but deep-reaching movement that spread from Italy over Europe, affecting, not events, but thought, throughout the civilized world, and touching with its magic wand every phase of life and of mind. It is difficult, if not impossible, accurately to define a movement so subtle, so gradual, so varied in its manifestations, and yet so permanent in its results. It was an awakening of dormant energies, a veering round of the compass of the human mind, a change, for better or for worse, in the ideals of religion, of literature, of art, of conduct, a revolt against feudal and ecclesiastical despotism, against long dominant ideas and superstitions no longer in harmony with awakening desires and aspirations. The thirst for knowledge led to a resuscitation of antique and classic learning, and the application of it to modern thought.

Already, in the centuries unjustly described as the "Dark Ages," there had been signs of awakening, in the domain of art more especially. From the eleventh to the fourteenth century the dominant note of art in Northern Europe was architecture. In the Netherlands stately abbeys and cathedrals arose throughout the land, displaying perfection of proportion and limitless richness of detail. Sculpture and painting were called in as the handmaids of architecture to give living interest to the edifice, to enrich the shrines, to let in light through jewelled tracery, to adorn the walls with sacred scenes. In the thirteenth century architecture reached her culminating point of perfection; in the fourteenth, painting had begun to emancipate itself from her service; by the fifteenth, the schools of painting in the Netherlands had achieved independence and entered into competition with those of Italy.

The civilized world was emerging from darkness into light, and entering on a new era, ushered in by an attempt to return to the golden age of human intellect in the past. In Italy the spirit of the Renaissance in its more serious aspect may be said to have culminated in Michael Angelo; in England, in Shakespeare and the literature of the Elizabethan era; in Germany it resulted ultimately in Luther and the emancipation of religious thought known as the Reformation. The barriers of the past were thrown down, the door of the human mind was opened, the modern epoch of scientific research and fearless investigation, of freedom of inquiry and liberty of opinion, had dawned upon the world. It was a season of ploughing up old fields and of sowing fresh seed, which sprang up in the new-turned earth and bore fruit an hundredfold in every department of human intelligence. In the domain of art and poetry in Italy the long-forgotten gods of pagan Greece and Rome appeared again upon the scene; men became penetrated with antique thought and antique standards of perfection; the earlier Christian motives yielded to pagan themes. Architects, sculptors and painters sought inspiration from the long neglected Classic masterpieces that surrounded them, and the cult of beauty as revealed in the human body supplanted the spiritual cult of Christian mysteries. Men discarded the images of gloom and terror that had distorted mediæval Christianity, and in the reaction of the joyous freedom of the new culture they sought to bring back the gods of a mythical past, whose cult demanded neither self-sacrifice nor self-restraint. But the glamour of antique art and antique mythology appealed only to the Latin races and to the few who had resided in Italy and imbued themselves with her spirit; among the more stable, less impressionable races of the North, the Renaissance moved on different and more strictly national lines.

REMARKABLE PHOTOGRAPHS OF LIGHTNING.—The most remarkable photographs of lightning on record have been made by a Hamburger named Walter, and are reproduced in the *Annalen der Physik*. They show that a flash lasting 8-10,000 of a second is preceded by at least five smaller flashes separated by 4-10,000 of a second.

THE RELATION OF WINDOW-AREA TO FLOOR SPACE.

DURING the last few weeks a somewhat informal, though careful, effort has been made in the halls of Cornell University to determine a general statement of the relative proportion between window-openings and their position, and the floor-area and the depth of the rooms to be lighted.

The data were intended to apply to the problem of securing an adequate supply of natural light in the lecture-rooms on all ordinary days between 8 A. M. and 5 P. M., under the climatic conditions which prevail in Ithaca, N. Y., conditions in no way differing from those usually found in this latitude.

Information was secured which was based on actual experience in six buildings on the Cornell Campus, and referred to rooms lighted from one side only. From the statements submitted by the professors in charge of the work in the several buildings the following data have been compiled regarding sixteen rooms adequately lighted, and nine rooms in which the light is "nearly sufficient."

Number of Rooms.	Total Area of the		Ratio.	Average Depth of Room.	Average Height of Window-tops.	Ratio.
	Floors.	Windows.				
Sufficient 16	10,466'	2,000'	1,000 : 191	22' 1"	11' 9"	1,000 : 538
Nearly so 9	5,392'	799'	1,000 : 146	20' 6"	10' 2"	1,000 : 495

All these rooms are alike in having unobstructed light; no buildings stand before the windows.

A peculiar relation which should be observed is that the well-lighted rooms have an average of 654 square feet of floor-area and average 22 feet 1 inch deep, while those whose light is "nearly sufficient" are smaller and shallower, being of 599 square feet area and 20 feet 6 inches deep.

One explanation of this unexpected result is found in the figures relative to the positions of the windows. In the well-lighted rooms the window-tops average 11 feet 9 inches above the floor and 1 foot 6 inches below the ceiling; in the other rooms they are 1 foot 7 inches nearer the floor and 11 inches farther from the ceilings.

The conclusions to which this local experience leads are these:—

(1) There should be at least 150 feet of window-space for each 1,000 square feet of floor-space in rooms which, in use and location, are similar to those here described, and are lighted only from one side.

Therefore an office 15' x 25' should have at least 56 square feet of window-space, and a class-room 30' x 40' should have at least 180 square feet of unobstructed lighting surface.

(2) The proportion between the height of the window-tops and the depth of the room lighted should be at least 500 to 1,000, or, in other words, the distance from the floor to the window-tops should be one-half the depth of the room to be lighted.

These figures support the old principle that "top-light" is the best; the nearer the window-tops come to the ceiling the more efficient will be the lighting to be secured from a given surface. Care should be taken that overhanging lintels be not allowed to obstruct the light.

STABLES AND STABLE FITTINGS.¹

THE question of the keep and management of horses is so intimately associated with the daily work of many of us that, although it is scarcely the professional side of the subject, I feel that I need offer no further apology in asking for an exchange of opinion on some points to which I have given my attention.

I shall endeavor in the few remarks I am going to make to speak only of those matters that will possess an interest for all of us who may be called upon to build stables, and here I may mention that I would take as a type the professional man's horse and stable, as it is more likely to come within our province to deal with our medical man before we have the good fortune to design stabling for a mansion or the buildings for a stud-farm.

No one would, of course, buy a horse that he knew to be unsound, and I do not propose to enter into what constitutes unsoundness, but I would advise any one who thinks of purchasing a horse to get him examined by a veterinary surgeon whose opinion he can rely on, and tell him to give his especial attention to the horse's feet, for here, I believe, a source of evil is often overlooked, and no horse with faulty feet can stand much hard work on the roads.

I will now pass on to say a few words about the place where the horse is kept, and I propose to discuss the site and construction of the buildings by and by under the detailed headings of this paper, as these questions must be studied minutely by those who are fortunate enough to build stables, and I want to insist upon the necessity of thorough and efficient ventilation and proper drainage in stables where it is expected to keep horses healthy.

The horse is possessed of very capacious lungs and active respiration, and is adapted by nature to live and thrive best in the open air; and it is in overcrowded, badly-ventilated stables, where sanitary rules are ignored, that horses are shortest lived.

¹ A paper read at a meeting of the members of the Architectural Association Discussion Section.

I shall come to the question of ventilation in due course, after we have settled the planning and paving. The methods are numerous, and the circumstances of each case must be fully considered in adapting means to the end. I must point out that ventilation cannot be efficient unless a sufficient amount of space be allotted to each horse, and unless the inlets and outlets are kept patent and the pavement properly designed. It is no uncommon experience to go into a stable, even one that is managed by one who would consider himself much insulted if you ventured to suggest anything wrong, and find every door and window shut, the ventilators closed or choked with bundles of straw, and the keyhole and every crevice through which fresh air can enter carefully stopped up, while the atmosphere is so impregnated with ammonia and organic impurities that it makes one gasp for breath and brings tears to the eyes. The drains, too, will probably be found in such a condition that they are worse than useless, and while they fail to carry off effete material, are themselves a fruitful source of noxious gases and organic impurities. Unfortunately, the floors of many stables are made of such material that it is impossible to obtain a quick and thorough removal of urine, etc., which collects in little pits and crevices, and there decomposes and leaks into the subsoil, which in time becomes thoroughly saturated with all that is most baneful. You have only to see the cobble paving taken up from an old stable to become thoroughly conscious of this, and it will be enough to make you insist on having a floor which is impermeable, and which can be easily cleaned with water and a brush.

The temperature of the stable is another very important point. A hot stable is generally a foul one, whereas there is a great deal of truth in the old saying that "A cool stable makes a healthy horse."

It is especially necessary that a horse should not be kept in a hot stable when he has often to leave it and stand about, perhaps for hours, on a cold night with scarcely any shelter or protection, when he will be much more liable to suffer harm if he has left a hot stable than a cool, well-ventilated one.

There can be no question, I think, that, whenever it is possible, horses should be kept in loose-boxes rather than stalls. No matter if the box be not more than 10 feet square, the horse will be able to rest better in it, to select the easiest position, to move about and be more comfortable and contented. He will be much less likely to acquire the bad habits of cribbing, kicking, etc.

Each horse in a stable should be allowed at least 1,200 cubic feet of space, and there is no object in having the floor-space larger than necessary, while the cost of bedding will be proportionately increased.

The War Office require 1,500 cubic feet in cavalry stables, with more space for officers' stables, and loose-boxes.

There is no doubt that straw looks best in a stable, and horses which lie on it are more easily kept clean than those whose coats get ingrained and stained with moss-litter; and although the latter is said to keep the stables purer, I believe that a stable which has good paving and efficient drainage and ventilation can be kept quite as healthy where straw is used.

A point that is too often forgotten is that the food of a horse should be carefully stored.

The position of the corn-chamber and hay-loft depends largely on the nature of the site, but the arrangement should be convenient for the cutting, bruising and mixing of the fodder.

It is generally found most convenient to have a space on the stable floor, and even when such accommodation is provided on the upper floor, one often finds an empty stall or box utilized for this purpose.

A truss of new hay or straw occupies about 11 cubic feet of space and a cubic capacity of 396 feet, *i. e.*, 8' 3" x 8' x 6' in height will give a floor-space of 66 feet, which will be sufficient to hold thirty-six trusses, or exactly one load of hay.

Computing the daily consumption per horse to be sixteen pounds, this would provide storage for 135 days. Old hay weighs fifty-six pounds and new hay sixty pounds per truss, and the size varies between 3' x 2' x 1' 3" for the former, and 3' x 2' 6" x 1' 6" for the latter, or 7.5 cubic feet and 11.25 cubic feet respectively.

From about eight to ten pounds of oats or mixed corn per diem, according to the size and work required of the horse, is considered sufficient.

Oats weigh from thirty-eight to forty pounds per bushel, and a bin measuring 6' x 6' x 3' in height will hold about eighty bushels.

ARRANGEMENT AND PLANNING.

In selecting a site for country-house stables on a large scale, and stud-farms, the utmost care should be taken to place such buildings in a warm, dry and well-sheltered situation, convenient to the residence or, in the case of a stud-farm, to the groom's house and the home farm; and in the latter case a suitable position would be off a roadway leading to the farm-buildings, with the groom's house on one side, if possible facing south. If you can take advantage of a wood or plantation to shelter your buildings from the north and east winds so much the better.

The buildings may take various forms of plan as circumstances may govern, but for all first-class stables on a large scale the quadrangular or an oblong form appears to be the best and most suitable; and by placing the back of your buildings to the north you secure the maximum amount of sunshine to your yard and boxes.

The administrative department, such as the coachman's residence, sleeping-room for grooms, harness and fodder rooms, should be in a central position and easily accessible from the stalls and loose-boxes.

Where there is plenty of room for the yard, as in the country, it will be easy to dispose your rooms to the best advantage as regards aspect; but in towns, where you are cramped for room, great care is required in planning; but I have found cases of well-planned stables for a large number of horses in towns.

If possible, it is better to do without rooms or lofts over stables, but where they are necessary the floors should be of concrete, for if the grooms' rooms are immediately over the horses, and with wooden floors, the noise is liable to be disturbing at night; and in the case of the hay-loft being over the stable the forage is likely to be contaminated.

The size of the ordinary stable, such as I have mentioned as suitable for the professional man, may be arrived at by the cubic measurement necessary for the number of horses it is to hold.

For the stalls a minimum width of 16 feet 6 inches is sufficient for a stable with a single row of stalls, which gives 9 feet 6 inches for the division and 7 feet passage-way at the heels, 6 feet 2 inches centre to centre of divisions and a height of 12 feet to the ceiling. This provides a cubic space of 1,221 feet per horse.

In the case of stables with a double row of stalls, a width of 29 feet and a height of 12 feet allow 1,073 cubic feet per horse.

If the roof be open, 27 feet is sufficient for the width of stable, with a height of 10 feet 6 inches to the underside of tie-beam. This gives 1,260 cubic feet per horse.

A combination of stalls and loose-boxes under the same roof is the arrangement generally adopted.

For loose-boxes, 12' x 12' x 12' high gives 1,728 cubic feet.

For sick-boxes, 14' x 12' x 12', 2,016 cubic feet, and a minimum area of 11' x 11', or 121 feet superficial, should be given to each loose-box.

The War Office are more generous, and make their ordinary boxes 14' x 13', and sick-boxes fitted with "slings" 16' x 13' deep.

Boxes for hunters should be at least 12' x 12', and for mares foaling 15' x 15', or thereabouts.

I have not included racing-stables, or such large buildings as omnibus and tramway stables, as each would require more time than that allotted for my paper.

In designing town stables it is always a difficult matter to obtain as much frontage as can be got in the country, and it is generally necessary to have the depth at right angles to the frontage, whereas in the country the length may be parallel to the frontage, thereby allowing more light and better means of ventilating.

PAVING AND DRAINING.

All paving should be water-tight, durable and non-slippery, and these conditions are most nearly filled by the use of the adamantine clinker bedded on concrete, not less than 6 inches thick. Before the concrete is laid the utmost care should be taken to ensure that the surface of the ground is solid and levelled to the proper falls.

The adamantine clinkers are 6" x 1 3/4" x 2 1/2" deep, with chamfered edges, have a sandy surface and a buff color, which gives the floor a brighter appearance than when paved with vitrified bricks. The grooves in paviers are made semicircular, and there are those with the grooves crossing them diagonally, so that the brick may be laid transversely while the drainage will take a diagonal course towards the central channel.

In cavalry stables good cement-concrete paving is found to answer most advantageously, but the stables should not be taken into use for three months after it has been laid, so as to give it ample time to set hard.

The floor of the stalls should have a fall of not more than 1 1/2 inches in 10 feet, and the passage at the back should have a slope of 1 in 40 to centre of channel. The stable floor should be 2 inches above the level of yard.

A greater fall than 1 1/2 inches in the length of the stall is not only unnecessary, but it puts a strain upon a horse and affects those which do not lie down to sleep. And I have frequently observed horses resort to all sorts of positions, sometimes right across the stall, in their endeavor to stand easily. Some owners of horses contend that the paving should be perfectly level, and for this purpose an iron gutter with a perforated top is designed with a slope in the bottom of 1 inch to 1 1/2 inches in the length of the stall.

Both stalls and loose-boxes should be free from traps or gullies, and the channels should discharge into traps in the open.

The herring-bone pattern of paving, to my mind, gives the most pleasing effect for passages, yards and coach-houses.

Stock bricks and granite cubes are sometimes used, but the former are too soft for prolonged wear, and the latter share the disadvantage with the vitrified bricks of becoming slippery with wear.

But no description of paving can supply a floor that will do without brushing and washing, and it is impossible to have a sweet and healthy stable unless the litter is removed once a day and the channels thoroughly washed down.

VENTILATION.

It is always desirable to have plenty of light — say at least 9 feet super of glass-space per horse, and, if possible, to design your window-openings at a sufficient height, not less than 7 feet above the floors. They should be placed opposite each other, and made to open by being hinged at the bottom and falling inwards, so that thorough ventilation may be obtained and the windows opened or closed as the temperature of the stable may necessitate.

Hopper ventilators may be used for this purpose. It is quite an exploded notion that dark stables are conducive to putting on flesh; on the contrary, defective sight, causing shying and ill-health, are the result.

When it is not possible to obtain windows on either side, Sherringham ventilators should be used for the inlet of fresh air, and a course of air-bricks about 1 foot 6 inches above the floor at the head of the stall, and for the extraction of foul air gratings should be fixed at or near the ceiling-level, discharging into air-ducts, and carried to the ridge-level by a vertical shaft, which should have an extract ventilator at the apex. The gratings should have an inlet-area of 54 square inches per horse, and the vertical shafts at least 18 square inches per horse.

A fan-light over the stable door is desirable, and answers far better than louvres, as it can be closed on cold winter nights, as a recuperative process is always going on by the natural pressure of the atmosphere through crevices and under the doors, thus causing the circulation to the gratings in the ceiling; but this is not always sufficient, and it is necessary to provide means of admitting fresh air as above described by means of ventilators and gratings. The temperature of a stable should average between fifty and sixty degrees, and to a great extent the automatic action of the ventilators can be depended on, while a careful attention to the prevailing wind and the pressure of the atmosphere by the opening and closing of doors and windows will result in an even and healthy temperature.

For loose-boxes when the roof is open lanterns with fixed louvres may be used, and thus form an agreeable feature in the elevation.

DETAILS AND FITTINGS.

All sharp corners liable to injure the horses should be avoided, as well as all projections in the nature of mouldings internally. The external angles of masonry and the outside edges of door-jambes, where the doors are not hung flush with the external face of the wall, should be rounded to a height of 8 feet, and in the case of brickwork this can be done by the use of bull-nosed bricks. These bricks can also be used for window-sills, where the openings are so low down as to make them dangerous to passing horses, by the use of the ordinary square projecting stone sill.

If the walls are plastered or rendered in cement, a washable distemper of an agreeable tint may be used. Where a matchboard dado of elm or other hardwood is preferred, a border of tiles above has a good effect, but they should not be glazed, as I am of opinion that the glare of light on the shiny surface is neither good for man nor horse. A neat-struck and fair joint for brickwork and the wall whitewashed looks clean and is healthy. The custom of coloring brickwork is objectionable.

The entrance-door should be in two heights, and hung to open outwards — unless made to slide — with a fan-light over for ventilation, and the opening should not be less than 8 feet high, 4 feet 6 inches in width.

The external doors to loose-boxes should have an iron grille fitted to the upper half of opening, fastened with a flush spring-catch, and hung to fall outwards. The internal doors to loose-boxes should be 3 feet 8 inches wide, and hung to open outwards or to swing both ways, but should not be made to open inwards only, as a horse generally takes up his position directly inside the door, and thus prevents its being opened.

Horses are separated in the stable either by wooden divisions technically known as traversers, by bails, or by poles, the latter being chiefly used in cavalry stables.

The general plan adopted is that of a wooden division with an ornamental heel-post and a wrought-iron ventilating ramp on the top.

A sill with a groove is fixed at the bottom to receive the boarding, or cleating, as it is termed, 1½ inches thick, of well-seasoned oak, elm, teak, pitch-pine, or red deal, fixed vertically into an intermediate iron rail which takes the underside of the ramp.

Plain wooden divisions without the ramp should be 4 feet 6 inches high at the heel-post, and 7 feet at the head. The heel-post may be of iron or wood carried up to the ceiling and strongly fixed and bedded in concrete at the base.

When an iron ramp is used, the intermediate rail should be fixed at a height of 4 feet 3 inches from the floor, and the ramp should be about 6 inches at heel-post, and 2 feet 6 inches high at the head. The height of the middle rail being only 4 feet 3 inches brings the horses into close proximity, and it is necessary to have a close panel of wood lined with sheet-iron for a distance of 3 feet 6 inches from the head.

Portable divisions, with clutch-boxes for fixing, are sometimes fixed with the advantage of converting two stalls into a box.

Safety-bars are useful, as they prevent horses which have got loose at night from injuring themselves by over-feeding, and others by kicking.

The pillars of loose-boxes and heel-posts of divisions should be about 4½ inches in diameter, with ornamental heads in brass or cast-iron, and the rings for pillar-chains which are fixed on the front of the post or on either side may be of brass or wrought-iron.

Loose-box partitions are similar to the stall divisions, and differ only in the top rail of the ramp being level instead of curved. The iron ventilating panels should be deeper in the front and door than in the partition. The pillars may be stiffened by the use of a wrought-iron bar in the form of an arch connecting the two. But the plainer the posts are made the better, and they should be firmly bedded in the concrete beneath the paving.

Wrought-iron work is preferable to cast-iron, but requires to be galvanized or frequently painted, as all ironwork is largely affected by the salts of ammonia.

Brewers' and omnibus companies' stalls are usually divided by means of bails. These are suspended at one end from poles, secured by cleats to the upper surface of the tie-beams, running the whole length of the stable or from a hook in the ceiling. At the manger end each bail is attached by a wrought-iron link, and protected by sheet-iron for a length of 3 feet.

They are made of elm or oak 2 inches thick and 14 inches deep. The upper bail is usually 8 feet long, and suspended 2 feet 1½ inches above the floor to the underside, and the lower bail 4 feet long, with a space of 3½ inches between, and bolted together by ½-inch iron bolts.

The use of bails can only be tolerated on the score of economy of space, and they are frequently interspersed with divisions. They are soon worn out and become destroyed, and are dangerous, as horses get their legs over them when kicking, so that they should always be provided with safety-hooks for the quick release of the horse.

For farm stables, etc., a plain manger of oak or elm, bound on the outer edge with sheet-iron, is the most economical, and may be considered the most suitable. They should be fixed at a height of 3 feet 7 inches, should be 12 inches deep, and can be fixed on brick corbels or manger-posts, and should have iron bolts to secure them to the wall. These bolts should run through the manger, and so prevent the horse from throwing out his food with his nose.

These mangers, though fulfilling the requirements of strength and economy, are not suitable fittings for a first-class stable, and for this purpose there are a variety of designs manufactured in cast-iron, with rounded edges.

The generally accepted design is that with the corn-trough and hay-rack at the same level, and with the rack in this position the horse feeds comfortably, and without the hay-seeds falling into his eyes. Much attention has been given to mangers with the view of protecting the horse from injuring his head by getting it under its fittings, and for this purpose stout boarding or concrete is sometimes carried down to the floor, and a manger is manufactured with a guard of wrought-iron bars carried down to the floor-level from the manger-plate.

This arrangement also prevents the bedding being packed underneath the manger instead of being properly cleared out of the stall each day.

Corner fittings are usually fixed in the angles of loose-boxes.

Halter-tying weight-boxes should be fixed beside the manger in the loose-box and beneath the manger in the stalls.

Dressing-rings of wrought-iron or brass should be fixed on either side of the stalls, and also on the walls externally.

Where the walls are not cemented or boarded, and the brickwork is left bare, it is necessary to provide kicking-planks of elm or oak 1½ inches thick, about 4 feet high and 5 feet long, from the end of the stall. In some cases mats are hung over the backs of the stalls to deaden the sound of kicking and prevent injury to the horses' heels.

The harness-room should be fitted with a stove and, a supply of hot water being often necessary, it should have a back boiler, from which also a row of hot-water pipes may be taken to warm the coach-house.

For keeping bits, curb-chains, spurs and ornaments, especially those of steel, it is necessary to provide a cupboard with a glazed front and lined with cloth. Their fitting should be placed over the fireplace or against an inner wall. A stout deal table, a saddle-horse, saddle-airer and girth-stretcher should also be provided.

The following brackets may be of ornamental cast-iron and firmly fixed to a wooden rail:—

FOR SADDLERY.

- I. No. 1 ladies' saddle bracket.
- II. No. 1 gentleman's saddle bracket.
- III. No. 1 stirrup bracket.
- IV. No. 1 girth bracket.
- V. No. 2 bridle brackets.

FOR DRIVING HARNESS.

- VI. Single-harness pad bracket.
- VII. Double-harness pad bracket.
- VIII. Collar brackets.
- IX. Martingale and crupper bracket.
- X. Rein and crupper bracket.
- XI. Bridle brackets.
- XII. Harness brackets.

The coach-house doors should be made to open outwards if hinged, and with Collings's hinges, locking-bar and stops. They may be made to slide on runners or the opening may be closed with a revolving iron shutter. Either of these arrangements is more convenient than a centre-post.

A fan-light over the door may be sufficient for lighting purposes, but care should be taken to properly ventilate the coach-house.

In some cases where extra accommodation is required it may be

necessary to construct a basement, when the carriage may be lowered or raised by an elevator.

The corn should be stored in a wooden chamber, and in large stables a special granary is constructed, apart from the stable, with an air-space beneath the floor, and bins constructed for the reception of the corn.

Galvanized-iron bins of various sizes, with sloping lids, may be provided in small stables.

The Winchester bushel, which was formerly the standard for England and originally kept at Winchester, was measured by a law of King Edgar and observed throughout the kingdom. It contained 2,150.42 cubic inches. The imperial standard bushel now used contains 2,218.19 inches. The proportion of the latter is about 32 to 33 of the Winchester measure.

Sliding doors are the most convenient for the hay-loft, and it will be found the best method to suspend them from a wrought-iron rail and secured by a locking-bar.

A small hoist will be useful for lifting the sacks of grain or trusses of hay to the upper floor.

The water required for the various purposes may be obtained from a well; but in most cases it will be obtained from the water-company. A good-sized cistern should be provided.

Gas is most generally used for lighting, and care should be taken to fix the brackets or pendants high enough to be out of the way of the traffic, and with wire domes.

In conclusion I must say that I have purposely omitted any reference to the architectural treatment of the buildings, and may here remark that it is much better to design with taste and build with strength than to attempt the cheap and nasty.

Nothing causes so much displeasure and dissatisfaction as jerry-built work, which is continually requiring repairs, and is thus a constant source of annoyance and expense. So that if our stable is to prove a success it should be well planned, well built, thoroughly dry and wholesome, and properly drained, and efficiently lighted and ventilated.



"*OLD ST. PAUL'S*,"¹ a sumptuously turned-out monograph, is chiefly interesting to the architect for its engravings, many of which are colored fac-similes of manuscripts and service-books in the British Museum. It is notable, in passing, that in those of the fourteenth and fifteenth century, the altars have only two lights, or none at all; *avis*, to those whom it concerns. There were two churches before the one which was burned in the Great Fire which Pepys describes so vividly in his "*Diary*." This latter was commenced in the eleventh century by Bishop Maurice, a Norman, and, naturally, he commenced it in the style of his country; but, as time went on, it became an example of each succeeding style — Transitional and Early English. Whether we need lament its destruction is a question, as it was a terrible *pot-pourri* in its later days, the Norman windows of the nave having been repaired in the style of the sixteenth and seventeenth century; and probably the finest portion of the building was Inigo Jones's Classic portico, which, in connection with a twelfth to thirteenth century church, had become a perfect eyesore. Each succeeding age had left its finger-mark upon it, and it is pretty certain that had the Great Fire spared it, the nineteenth-century architects would have restored it, and we should have even lost Inigo Jones, whose fine work would have given place to Victorian revivals of "Gothic" — as at St. Albans and many another ancient town and city.

As a matter of fact, the Cathedral was decaying, or had decayed, in the reign of Charles I. Queen Elizabeth had made an effort to restore it. In her reign the spire fell and injured the roof; then, fifty years later, it was discovered that the repairs of the latter had been fraudulently done. James I appointed a Commission to see what work was required, of which Inigo Jones was the head, acting with the Lord Mayor and others. A curious book by one Farley, written in 1621, gives a description of the Cathedral at that time. "I have had," the church is supposed to say, "more sweeping, brushing and cleaning than in forty years before."

The nave of the church, "Paul's Walk," which had always been used, more or less, for business purposes, in spite of the efforts of Deans and Chapters, was now called the "lesser Ile (aisle) of Greate Brittain," "the whole woordes map, which you may discern in its perfect motion, justling and turning." It was "a heape of stones and men . . . and were the steeple not sanctified, nothing liker Babell; . . . the noyse of it is like that of bees, . . . an humming buzze mixed with walking tongues, and feet, . . . a market of young lecturers." It was the resort of thieves and vagabonds. "Dining in Paul's" meant going without a dinner if money would not buy one, "and men have still some others left to swear here." The "singinge men were drunken" and shamefully "loose of life." Such profanities were the custom in many cathedrals in the late fifteenth, sixteenth and seventeenth centuries.

Archbishop Laud tried to collect money for a complete restoration, and a great "Turkey merchant" who was King James's ambassador at Constantinople devoted £10,000 to the work. This was Sir Paul Pindar, whose house, a fine specimen of timber-work which stood in Bishopsgate Street up to 1890, may now be seen in the South Kensington Museum. But, soon after, the Civil War robbed the crumbling Cathedral of financial assistance. In 1640 the subscriptions amounted to £10,000; in 1641 they had dwindled to £2,000 and in 1643 they only amounted to £15.

When the Rebellion broke out, Inigo Jones's portico was let out for shops; sacred vessels and other valuables were sold, and revenues seized. Soldiers were prohibited from playing nine-pins between 9 p. m. and 6 a. m. because the noise disturbed the citizens' sleep; but the Church Liturgy was continued in the church of St. Gregory (which was attached to the southwest end of the Cathedral) during Cromwell's life, and he is said to have worshipped there with his daughter, Elizabeth Claypole.

After the Restoration, Sir Christopher Wren reported upon the condition of the church — this was in 1666, when the plans were drawn and estimates given by Wren. But a week later, the terrible fire destroyed the church and half the city, and purged it and its buildings of hideous foulness. The description of the fire is given vividly by Pepys: how he walked about and burned his shoes; how he talked to the King and the Lord Mayor, who almost lost his senses. On September 7 he writes: "Up at 5 o'clock, and blessed be God! find all well, and by water to Paul's Wharf. Walked thence and saw all the town burned, and a miserable sight of Paul's Church, with all the roof fallen, and the body of the choir fallen into St. Faith's [which was the crypt]; Paul's School also, Ludgate and Fleet Street."

Evelyn's account of the fire reads like a page of our own newspapers seven or eight months ago, when they described the Martini-catastrophe. A blackened sky "neer fifty miles in length," the crackling of timber, the falling of buildings, and the general paralysis of the people — it was as "Sodom or the last day, . . . the ruins resembling the picture of Troy." He found the "goodly church" a ruin, and the "beautiful portico (comparable to any in Europe) now rent in pieces." But he adds that "among the divers monuments, the body of one Bishop remain'd intire." Wren decided that the church was unrepairable, and it was his great opportunity — surely such a one as seldom falls to the lot of an architect, and certainly Wren was equal to the occasion. An anecdote relates that he told a mason to bring him a flat stone to mark the position of the dome. This was done, and upon it, an ancient tombstone, was the word "Resurgam" — a good omen.

The only monument reerected was the curious one of Dr. Donne (Dean from 1621 to 1631), which adorns the south aisle of the present Cathedral. It represents the Dean standing erect upon an urn, swathed in a winding-sheet — a curious conceit. It appears that the Dean, being ill, caused charcoal fires to be kindled in his study, where he betook himself and was tied up in his grave-clothes. Then he stood upon the urn, faced the East, "from which he expected the second coming of his and our Saviour Jesus" (says old Isaak Walton, his friend and biographer), and, closing his eyes, caused a drawing to be made, which he kept by his bedside until his death, and which was afterwards copied in marble by Stone.

The old Cathedral was enormous in measurements. Height of nave to ridge of vaulting, 93 feet. Height of choir, 101 feet 3 inches. Height of Lady Chapel, 98 feet 6 inches. Height of tower from ground, 285 feet. Height of spire from parapet of tower, 204 feet. Height of spire from ground, 489 feet. Length of entire church, 586 feet. Breadth of church, 104 feet.

Wren estimated the spire as only about 460 feet, but it was destroyed long before his time, and even at his figure it would have been 60 or 80 feet higher than Salisbury. The length exceeded Salisbury's by 100 feet. The tower was open as far as the base of the spire, which was of timber.

Canon Benham's monograph contains some good engravings of the church after W. Hollar, and although the exterior is a piece of patchwork, the interior must have been very fine. The Norman arches remained in the nave, but single shafts had been converted into clustered columns. The vaulting was of stone. The choir was Early English, with an exquisite rose-window at the East End. (The Canon gives a reproduction of it from a drawing made by Ferrey many years ago from an earlier drawing.) The beauty of many of the tombs and monuments is seen in Hollar's drawings — the Shrine of St. Erkenwald (fourth Bishop of London, 693), John o' Gaunt's, and Duke Humphrey's, all apparently hopelessly destroyed by fire and falling stone, though this seems a matter for doubt, as a drawing in the Cathedral library gives Inigo Jones's portico after the fire as mainly intact, the steps alone being replaced by a wall. Did Wren report the destruction as worse than it was in order to rebuild in a style to rival Michael Angelo's great church? It may have been so, as many influential people desired a restoration of the old building; but we cannot be surprised that the great architect should desire to carry out his ideas when so splendid an opportunity offered itself. Whether Wren succeeded in rivalling St. Peter's must be left for others to decide; but, possibly, some of his minor churches are more successful examples of his talent than St. Paul's, notably the perfectly beautiful little edifice, St. Stephen Walbrook, situated just behind the Mansion House. No visitor to London should miss this, the finest of all Wren's grand churches.

¹ "*Old St. Paul's Cathedral*," by W. Benham, D. D., F. S. A. London: Seeley & Co. New York: Macmillan. 5s. Cloth, 7s. 6d.

ILLUSTRATIONS

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

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NOTES AND CLIPPINGS

BURIED LISBON.—The present passion for digging into the bowels of the earth has broken out in a fresh spot, or will very shortly, thanks to an Anglo-American company which has been formed with several Portuguese in Lisbon. Their purpose is none other than probing and unearthing the ruins caused by the destruction of the palace at Lisbon in the great earthquake of 1755. Treasure is the company's object, not archaeological research. For buried in the great fissures are fully \$20,000,000 worth of diamonds, royal diamonds, whose value to-day would be five times as great. It is curious that eventually man strips the best kept secret from the bosom of Mother Earth. For nearly 150 years she has held this enormous fortune, but the time has come to deliver it up, if modern ingenuity knows its business. With such examples as Egypt and Crete afford, these excavations should be full of excitement and great results for the enterprising workers engaged in them. — *Boston Herald*.

AN ASPHALT GUSHING-WELL.—An asphalt gushing-well is reported from Texas, at Walters Park, twelve miles northwest of Austin. At one point on the bluff of Walnut Creek, where the dip of the earth, according to the statement of experts who have visited the place, points from different directions, are found strata of rock, paraffin, and what one geologist called embryo coal. In this last-named substance teeth of sharks and small bones of animals and fishes are found. These bones, though perfectly preserved, are as black as the asphalt, which is there found in the several test-wells, six or eight of which have been sunk and in each of which asphalt was found. Only a short distance, twenty-five or thirty yards, from the strata named, and at a point where the dips seem to converge to a common centre, the machinery is erected and at work sinking a shaft 6' x 12'. This shaft became necessary because of developments through the test-wells. After striking the cap-rock in the test-wells and boring into it a depth estimated at 2 to 5 feet, the asphalt rose to a height of 60 feet, and because of its density and tenacity it was determined that the product could not be pumped or drawn out with sufficient rapidity through a well. The theory of those who have discussed the matter is that the asphalt which rose 60 feet in the test-wells was evidently forced by a great pressure through some seam or fissure in the cap-rock. None of the test-wells, however, ever passed entirely through the cap-rock, and it is believed by the Company that when the cap-rock is penetrated that the asphalt will come with a gush. From first to last about twenty-five barrels of liquid asphalt were taken from the test-wells. — *N. Y. Evening Post*.

SUCCESS OF MACHINE-BLOWN GLASS.—The first product of the window-glass blowing-machines which were installed at Gas City, Ind., have just been placed on the market, and it is said to be the most per-

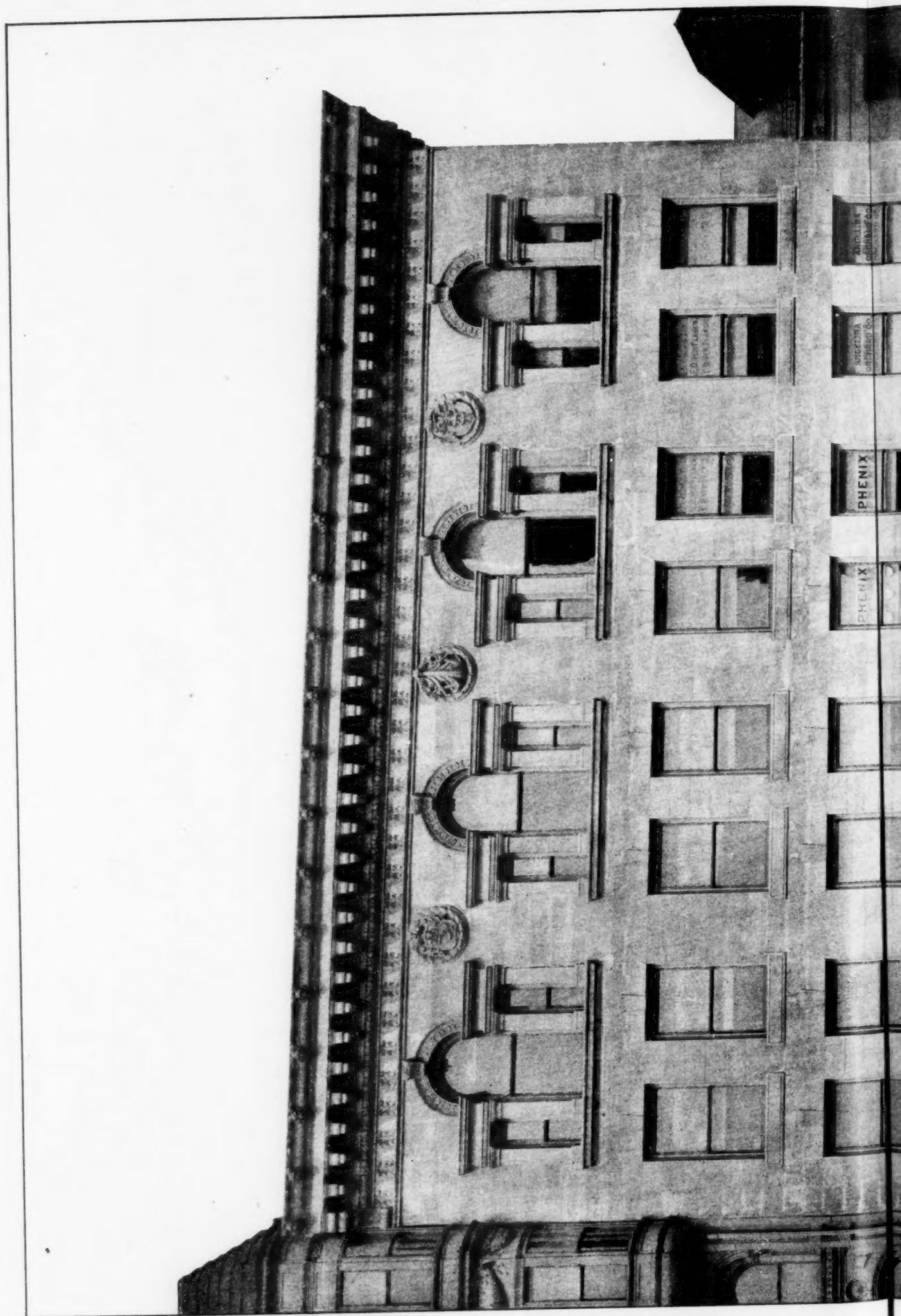
fect window-glass ever turned out at the factory, thus ensuring the success of the blowing-machines. Three shifts of men, forty-five in each, are employed, with flatteners and ladders, in the plant, but in no case has any of the three hundred old blowers been successful in obtaining a place in the Gas City plant. — *Exchange*.

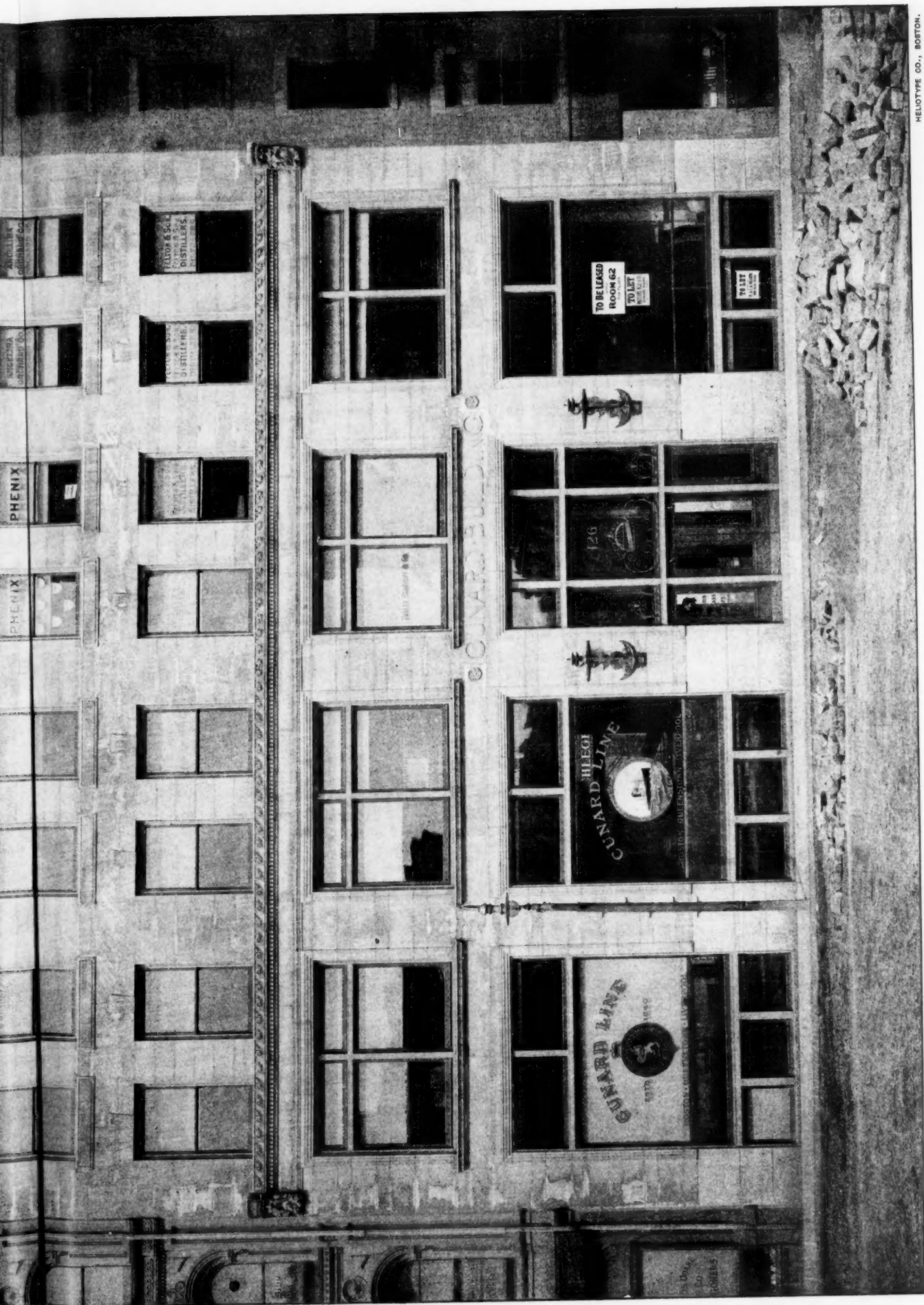
A COPYRIGHT DECISION.—A decision recently rendered by Justice Holmes of the Supreme Court, reversing the judgment of the Circuit Court of Appeals in a case of suit for infringement of the copyright law, is, to artists, of rather unusual interest. The alleged infringement consisted in the copying in reduced form of three chromo-lithographs prepared for advertisements of a circus, and the point in question was whether paintings and engravings made for other than a mechanical end could properly be considered among the "useful arts" which Congress, by the Constitution, is empowered to protect. That they could not was apparently the judgment of the lower courts. In supporting his decision to the contrary, Justice Holmes said: "The Constitution does not limit the useful to that which satisfies immediate bodily needs. . . . Personality always contains something unique. It expresses its singularity even in handwriting, and a very modest grade of art has in it something irreducible which is one man's alone. That something he may copyright unless there is a restriction in the words of the act." — *N. Y. Evening Post*.

BRIDGES AND ELECTROLYSIS.—"In and about New York the question of bridges becomes serious in its tendency to localize electrolysis," says the *Electrical World and Engineer*. "While it seems probable that no serious effect is to be expected on the bridges themselves, if reasonable care is exercised, the concentration of stray currents is very marked, and may be the source of considerable trouble. A careful watch, with frequent tests, should be kept for such effects, and a few years will locate the dangerous areas and enable local remedies to be applied. It is hard to say what is the probable value of local treatment, but it certainly has some importance, and should be employed wherever there seems to be prospect of good results. One of the topics which might be taken up with advantage is the possible effect of electrolysis in steel buildings. In these days steel is used in enormous amounts underground as well as above ground in such structures, and we have as yet very little knowledge as to whether electrolysis is at work or not. Both lighting and railway currents may conceivably be at work in such cases, and it is of some importance to find out the results. Even a small current steadily at work for a few years may do a great deal of mischief before it is discovered. Damage to buildings is particularly difficult to detect on account of its situation, and, while it may be practically of very little moment, it is well worth looking for. Possibly during the rebuilding of some of the earlier steel structures, which is likely to occur as ground-space gains in value, some very useful information may be gained. Where, as sometimes happens in exposed spots, returning railway-currents rise to considerable magnitude, local damage may be severe at points least expected, for no man can say just where the wandering currents flow. Electric currents can hardly be forbade the earth at present, but they will bear constant watching. In any event, constant alertness is required in dealing with the electrolysis problem, and electrical surveys properly conducted are necessary to a proper control of the conditions."

THE CAUSE OF THE COLOR OF THE SKY.—Professor Spring has examined the commonly accepted theory, advanced by Hagenbach, that the blue color of the sky is due to the refraction of light caused by solid or liquid particles floating in the air. In laboratory experiments the author never succeeded in obtaining the blue color, the reflected rays of light always showing either red, yellow or violet. After exhausting all physical means in an attempt to reproduce the blue color, the author concluded that the blue of the sky depends upon chemical conditions. The color deepens instead of fades as the observer rises above the earth. These conclusions are supported by the fact that liquid air is also blue. — *Scientific American*.

UNSUCCESS OF THE NEW ZEALAND ARBITRATION METHOD.—The Arbitration Court System in New Zealand is not working quite so smoothly as was hoped and expected. In several recent labor questions its decisions have caused much dissatisfaction, and in some instances open rebellion among the affected workmen. In the latest case the Court decided that 1s. 4d. an hour was the proper wage for carpenters. The men had demanded 1s. 6d., and when the award was made, held an indignation meeting. The chairman said the judge had not taken into consideration the increased cost of living and rent in the district; and a resolution was carried to the effect that the award given by the Court was entirely contrary to the weight of evidence adduced, while the Court itself, as at present constituted, was unworthy of the confidence of the workers. The meeting was practically unanimous in carrying this resolution, there being only one dissident. The seconder of the motion went so far as to charge the Court with having deliberately set aside more than one-half the evidence, and even hinted that in some way the judge had been brought over to the other side. Other speakers demanded an immediate strike, but they were overruled for the time. It seems plain that the existence of the whole arbitration scheme, in its present shape, is exceedingly precarious. The whole subject is receiving the anxious consideration of the Government. There is very little doubt that the Court is overworked, and that some vexatious delays have been due to this fact. It is probable that the judge will be provided with assistants. But the most ominous thing is the disposition of workmen to denounce as unjust any decision contrary to their wishes. — *N. Y. Evening Post*.



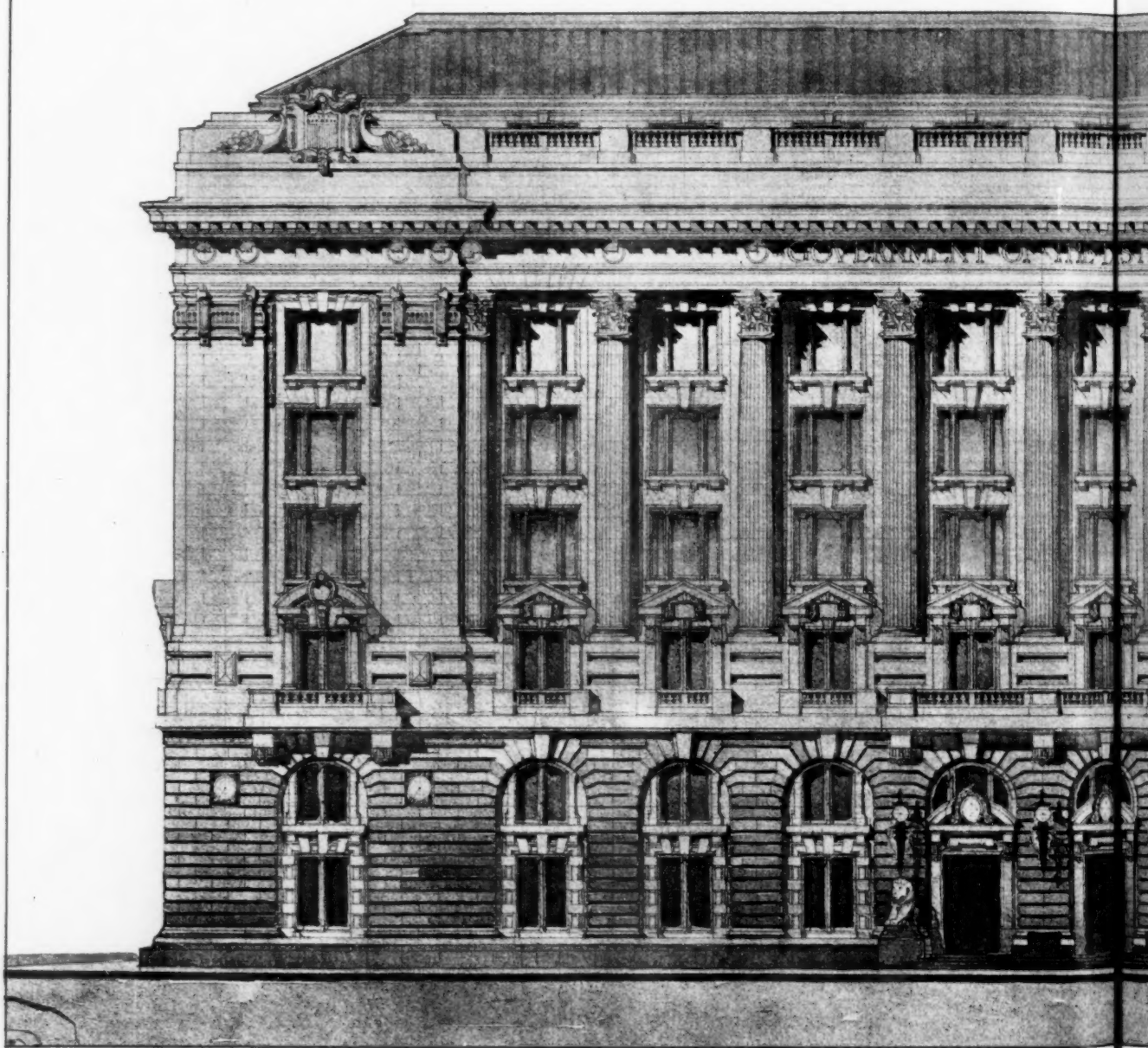


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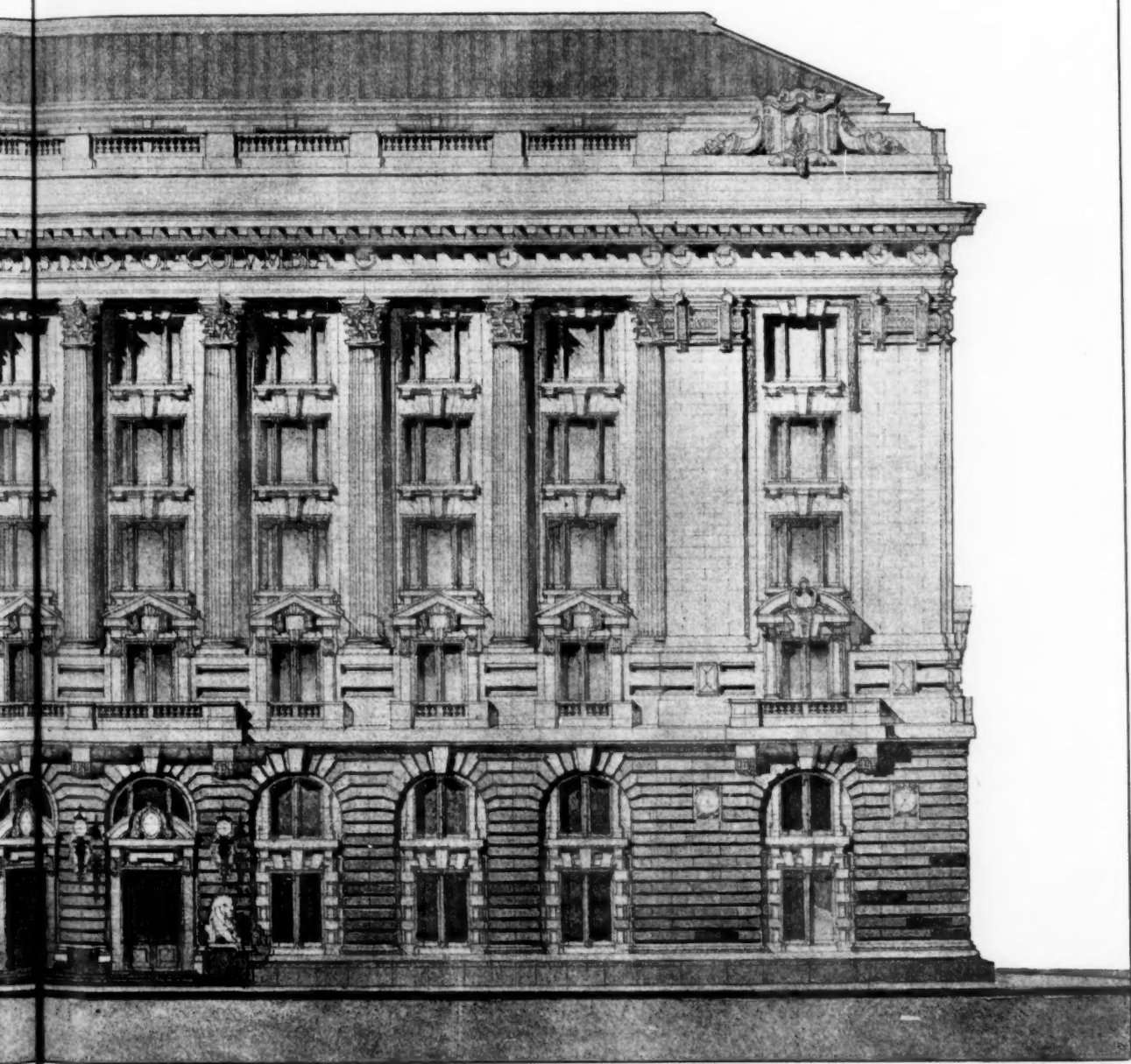
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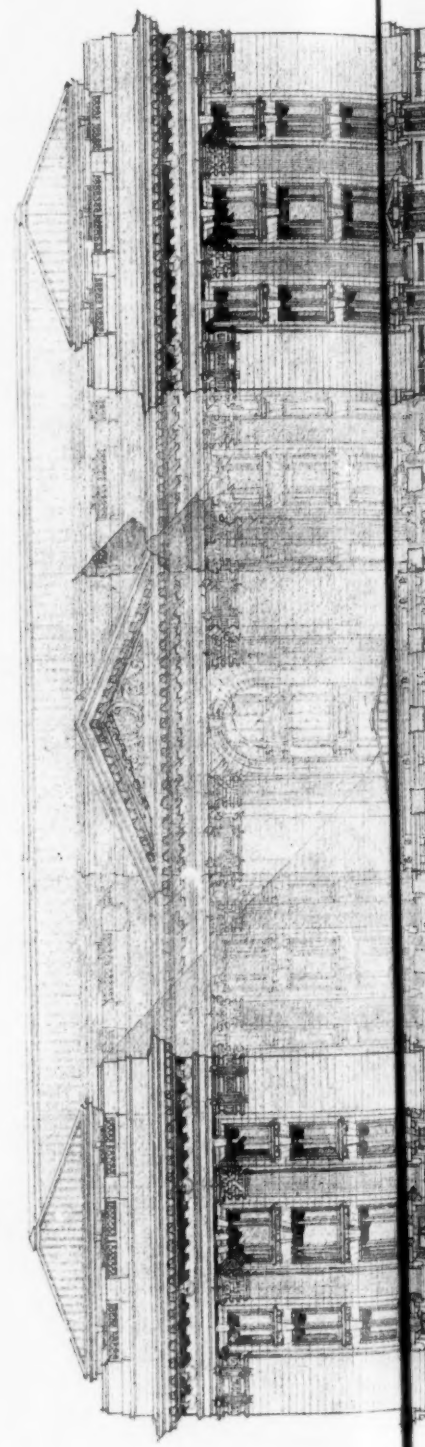
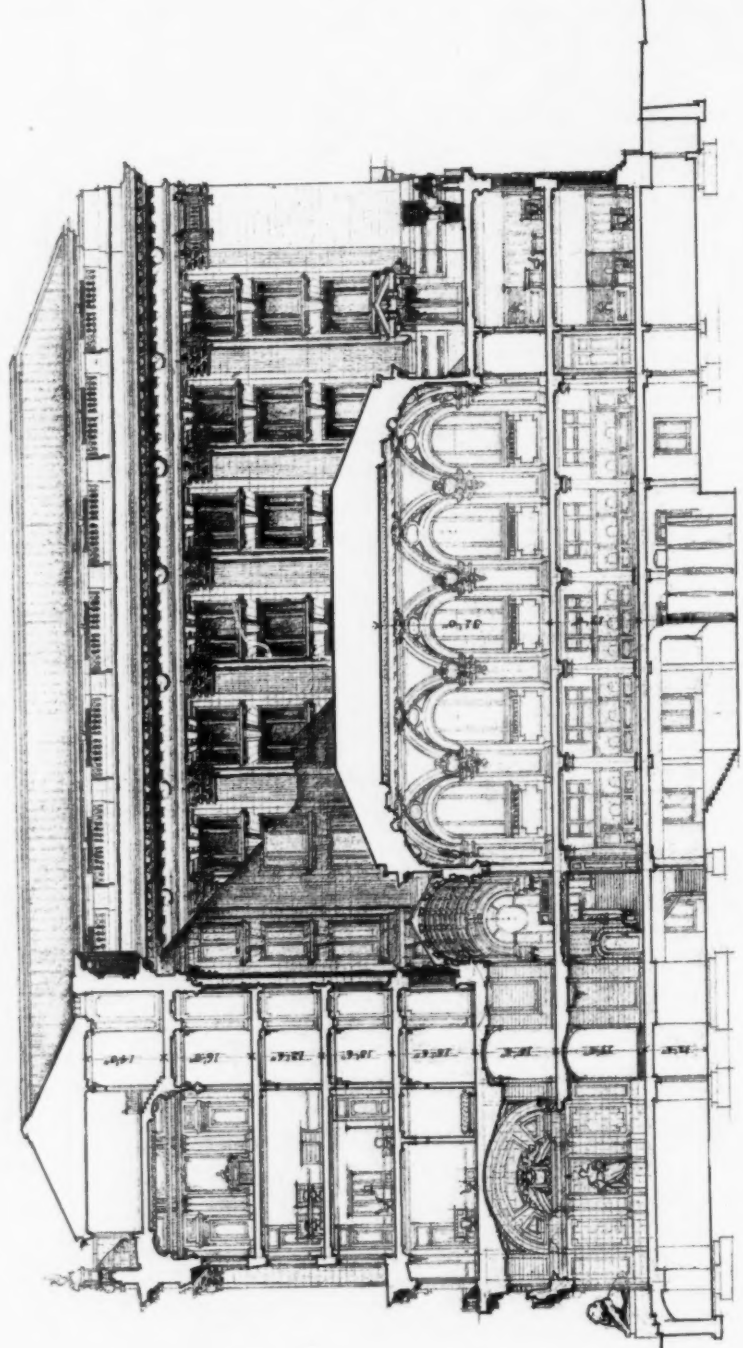
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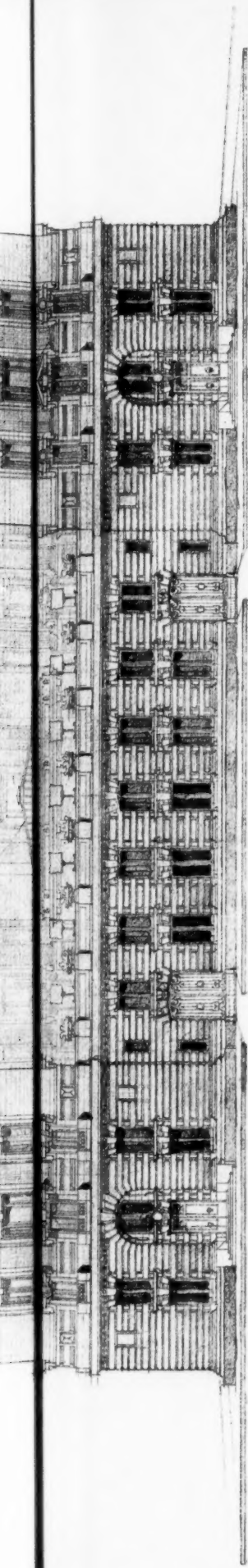


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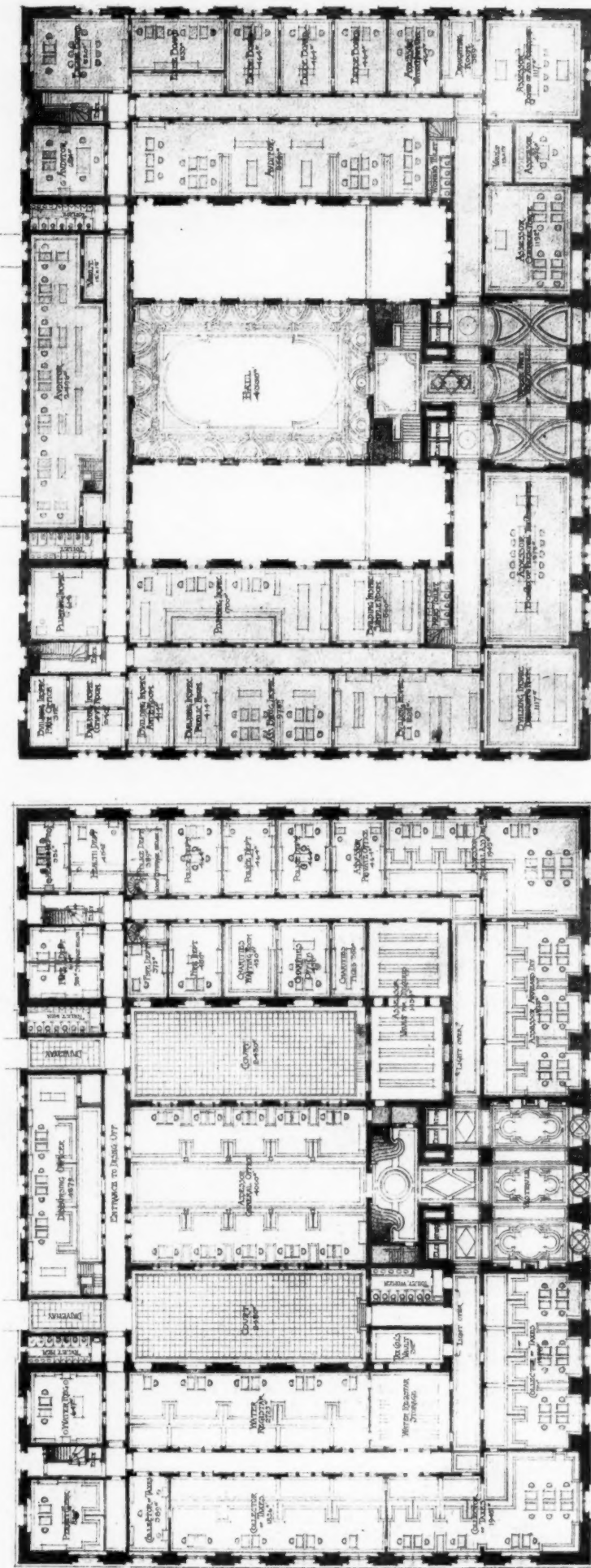
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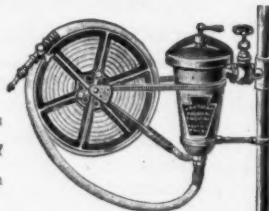
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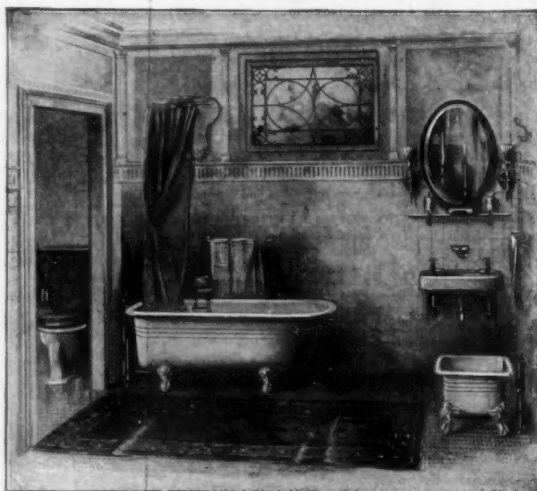
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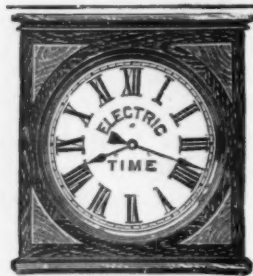


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CODE OF PRACTICE FOR SUB-ESTIMATING AND SUB-CONTRACTING

Adopted by the Master Builders' Association of the City of Boston, Aug. 2, 1894.

ARTICLE I.

Obligation of Principal Contractor to Sub-Contractor.

A principal contractor is under obligation to treat upon an equal basis all estimates which he "receives" prior to putting in his own bid. Estimates must be considered as "received" when they come into a principal contractor's possession, either by his direct solicitation or by being accepted by him. The opening of a bid, knowing it to be such, constitutes receipt of the same.

A principal contractor is under no obligation to use a bid which he has not solicited, accepted, or received, but if he does not wish to use the estimate of a sub-bidder he should decline it, if proffered personally, or should return it unopened if sent to him by mail or otherwise. The retention of a bid should be construed as a receipt of the same.

A principal contractor, when making up his estimate, is not entitled to receive bids from sub-contractors if he is at the same time making himself their competitor by figuring their portion of the contemplated work. It is legitimate for a principal contractor to figure all portions of a bid, depending upon no one for what are usually known as sub-estimates, but it is not legitimate for him to receive bids from others for sub-work if he is himself figuring those portions independently.

ARTICLE II.

Award of Sub-Contracts.

The principal contractor having been awarded a general contract should immediately award the sub-contracts to the lowest bidder in each branch.

ARTICLE III.

Penalty for not Awarding Contract to Lowest Sub-Bidder.

A principal contractor failing to award a sub-contract to the lowest sub-bidder to whom he is under obligation as previously provided should be liable to pay damages to the said lowest bidder, in amount not less than ten per cent of the amount of the estimate.

Payment of such damages will not relieve the principal contractor from liability to discipline under provisions of Article X of the By-Laws of this Association.

ARTICLE V.

Payments to Sub-Contractors.

Unless the contracts made with sub-contractors otherwise provide, payments during the progress of the work should be made by the principal contractor to the sub-contractors upon the same basis of payment, in relation to amount of work performed, as is prescribed in the contract made by the principal contractor with the owner.

Final payment to a sub-contractor should be considered as due at the expiration of thirty days after the completion of his work and its approval by the architect or owner, unless otherwise provided by the sub-contract or agreement.

ARTICLE VII.

Obligation of Sub-Contractor to Principal Contractor.

Should a sub-contractor refuse to contract at the amount of the estimate he has given to a principal contractor who has used the said estimate in good faith, he then should be liable to the said principal contractor for damages in amount not less than the difference between the amount of the estimate which was submitted by him and the amount at which the principal contractor may be obliged to contract the work.

Payment of such damages will not relieve the sub-contractor from liability to discipline under provisions of Article X of the By-Laws of this Association.

ARTICLE X.

Bids to Architects or Owners.

When bids for separate departments of work on a building are solicited by the architect or the owner, they should be submitted with the understanding that they are direct estimates, for which direct contracts are to be made by the owner with the lowest bidder, and no other disposition of such bids should be permitted without consent of the bidder submitting the same.

Sub-bids should be given only to the principal contractors who are estimating the work in question, and should not be left with architects or owners for the inspection and information of principal contractors. Sub-contractors must understand that bids thus left with architects or owners are in great danger of losing their confidential character, and that if they so leave them they cannot claim protection or redress under the first article of this Code.

SUGGESTIONS.

Members of this Association having sub-contracts to let, or material to buy, should, as far as may be consistent with business principles, deal only with members of the Association, or at all events give their fellow-members an opportunity to compete, and then give them the preference, other things being equal.

All bidders should take cognizance of the danger they may be subjected to through the practice, so prevalent in some architects' offices, of making change in plans or specifications, or in both, during the progress of estimating. Correction of this pernicious practice can only be obtained through refusal by contractors to estimate under such conditions.

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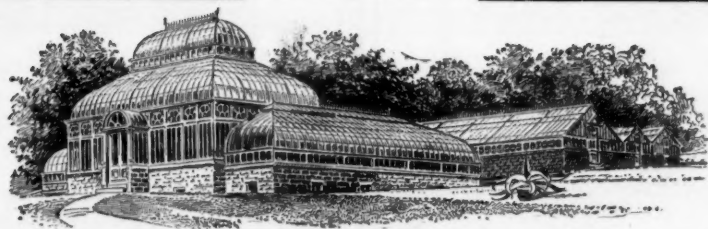
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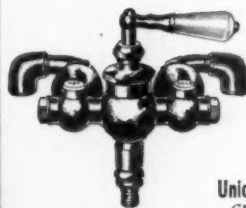
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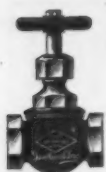
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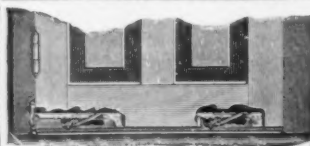
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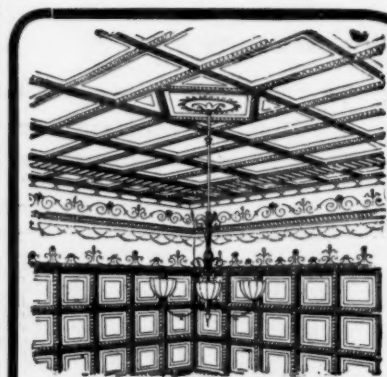


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The Bill prays for a preliminary writ of injunction, to be continued during the pendency of the suit, and upon the final determination thereof to be made perpetual, and also demands an accounting and damages.

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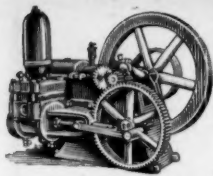
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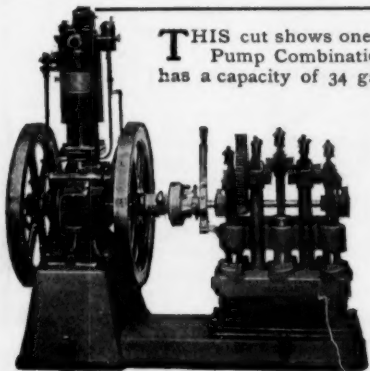
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(Advance Rumors Continued.)

24th and University Aves. It will be three-story, brick, with plate glass, steam heat, gas and electric lights, hardwood finish throughout. Cost, \$25,000.
Detroit, Mich.—The city's Women's Clubs will erect a building to accommodate the various musical and literary clubs. The building will be erected on the corner of Witherell and Columbia Sts. and must cost not more than \$50,000. Mrs. H. B. Joy, Mrs. J. S. Newberry are among the board of directors.
 The Globe Tobacco Co. has purchased a lot, 82' x 138', on Champlain St. and will erect a seven-story building on the site.
 L. W. Fuller will erect a six-story flat, corner Jefferson and McDougall Aves. Cost, \$45,000.
Dubuque, Ia.—Martin Heer, 1301 Clay St., is preparing plans for a \$60,000 building for the Sisters of St. Francis.
Duluth, Minn.—Press reports state that the Zenith Furnace Co. will construct a gas plant here, to cost \$400,000.
 W. A. Eaton has plans under consideration for a \$15,000 dwelling. Guy A. Eaton will erect a similar residence.
East Cambridge, Mass.—The contract for the new grammar school to be located on Elm St. has been awarded to Architect Harry D. Joll. The cost will be \$65,000. The school will be a three-story structure of brick and limestone, 75' x 105', with abundant yard room. Contracts for the work will be awarded in the course of a few weeks, and it is expected that the building will be ready for occupancy by January 1, 1904.
Fall River, Mass.—It is reported that \$50,000 has been appropriated for new sewers.
Galveston, Tex.—The Parlin & Orendorff Co. have decided to rebuild their building recently destroyed by fire. The structure will be seven-story, 50' x 200', and cost \$75,000.
Harrodsburg, Ky.—A city-hall and engine-house combined will be erected in the near future. J. Hall Grimes, mayor.
Homewood, Pa.—St. James Memorial Episcopal Society will erect an edifice at Kelly and Collier Sts. to cost \$75,000. Carpentier & Crocker, archts.
Kansas City, Mo.—Root & Siemens, Postal Telgh. Bldg., have prepared plans for a brick store on Baltimore Ave. and 10th St., to cost \$60,000.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

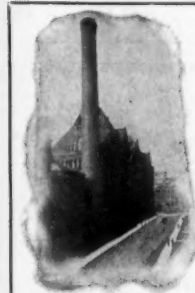
Lawrence, Mass.—It is stated that the Boston & Maine R. R., the County, the City of Lawrence and the Boston & Northern St. Ry. Co. intend constructing, jointly, a \$20,000 bridge at S. Union St.
 Governor Bates has signed the bill to allow the further expenditure of \$50,000 on the old courthouse, and work will be begun at once on the remodeling, the building to be ready for use for the September term of court.
Lewistown, Pa.—The Town Council is reported to be considering the construction of a sewerage system, to cost \$65,000.
Lexington, Ky.—Plans have been drawn by Richards, McCarty & Bulford, of Columbus, O., for a building to be erected at Short and Mill Sts. for the Security Trust & Safety Vault Co. Cost, \$100,000.
Little Rock, Ark.—Press reports state that Eckle & Mann, of St. Joseph, Mo., will supervise the erection of the \$2,000,000 State-house of Arkansas. The legislature is stated to have passed bill providing for same.
Madison, Wis.—It is stated that the Milwaukee R. R. will erect a new passenger depot to cost \$50,000.
Manchester, N. H.—Alfred A. Collins, of Danville, and Frank E. Kaley, of Milford, have been appointed a committee to have charge of erecting the union armory; appropriation, \$48,000.
Marion, O.—C. F. Schweinfurth, of Cleveland, will prepare plans for an edifice for the congregation of the Free Baptist Church; probable cost, \$25,000.
McKeesport, Pa.—This city will probably erect a new fire station in the 9th Ward.
Melrose, Mass.—The Methodist Society of this city will soon begin the erection of a handsome church to replace the old building, which was destroyed by fire recently. It will cost \$60,000 and will be constructed of Scotch brick and stone and will be built on what is known as the one-floor plan. The building will cover an area of 9,000 square feet. The building committee consists of George Emerson, W. F. Fitch, George P. Anderson, Frank H. Merrill and Prof. J. B. Colt, of Boston University.
Menominee, Mich.—August Spies offers a \$30,000 library building to the city.
Milwaukee, Wis.—The Christensen Engineering

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 It is stated that Charles Abresch will rebuild his wagon and vehicle factory at 4th and Poplar Sts. Cost, \$20,000.
Minneapolis, Minn.—The J. L. Case Threshing Machine Co., of Racine, Wis., has purchased a tract of land on 7th Ave. S. and Washington Ave., and a substantial warehouse will be erected on the site. Plans are now being made. It is understood the building will cost about \$80,000.
New York, N. Y.—It is reported that the contract for the Scarlet Fever Pavilion at the Willard Parker Hospital has been awarded to John Monks & Sons, 130 Water St., for \$22,700.
 Two dwellings are to be built at the corner of 63d St. and 5th Ave., on the site of the Progress Club, by J. B. Haggin, one of which will be occupied by the owner. Its cost will be \$200,000. The other will cost \$100,000, and both will be of white marble. Plans by Copeland & Dole.
 Plans have been completed for a theatre to be erected at a cost of \$75,000, at the northeast corner of 147th St. and Bergen Ave., the Bronx. The theatre will have a frontage of 75 feet in Bergen Ave., and will be 150 feet deep. In connection with it there will be a roof garden and rathskeller. The plans for the buildings were drawn up by R. Napier Anderson.
 Carrère & Hastings, 28 E. 41st St., have drawn plans for the new dwelling which Secretary of War Elihu Root will erect at the corner of Park Ave. and 71st St., which he purchased this week. It is said that the new dwelling will cost in the neighborhood of \$150,000.
 The Hebrew Technical School for Girls, at 267 Henry St., has bought the plot at the corner of 2d Ave. and 15th St. and will erect as soon as possible a new building similar to that of the Hebrew Technical School for Boys in Stuyvesant St.

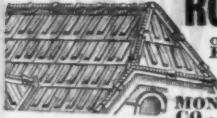
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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

A press report states that the Manhattan-Kniekerbocker Athletic Club-house, at the corner of Madison Ave. and 45th St., will be extensively altered and opened as a hotel. The plans are being prepared by Washington Hull, 16 E. 23d St.

Philadelphia, Pa.—Twenty-six dwelling houses will be erected on Walton Ave., from 50th to 51st Sts., by Bowman S. Sterling, speculative builder. The houses will be two stories high, of brick and stone, finished in hardwood, and are to have furnace heat, bathroom, etc.

It is stated that plans are being prepared for four buildings for Hahnemann Hospital to cost \$300,000.

Pittsburgh, Pa.—A brick two-story engine-house will be erected in the 11th Ward; cost, \$26,000.

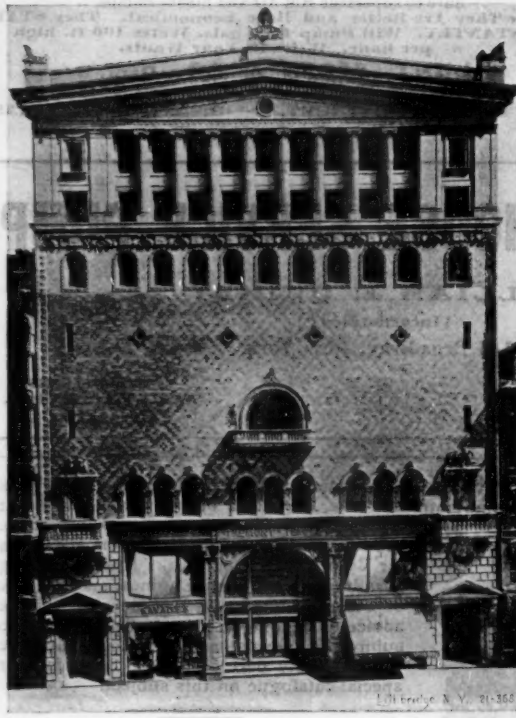
Portland, Ore.—The Elks are stated to have decided to erect a six-story, 109' x 100' building at 7th and Stack Sts., at a cost of \$109,000.

Stillwater, Minn.—Clarence H. Johnston, St. Paul, is at work on plans for the new cell house and ward for insane prisoners at the State prison. Bids will soon be asked. The appropriation for the building and equipments was \$55,000.

St. Paul, Minn.—Fryer & Jenkins are having plans prepared for a four-story apartment building to be erected on Summit and 6th Sts., opposite the park. It will be of gray Roman pressed brick and cut stone. Cost, \$50,000.

Syracuse, N. Y.—The Syracuse Rapid Transit Co. is to erect a car-house at Tallman St. and Cortland Ave.; probable cost, \$50,000.

Winona, Minn.—The Northwestern R. R. will build



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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

an addition to the local shops. It will be 114' x 142', and will cost \$50,000.

ALTERATIONS AND ADDITIONS.

New York, N. Y.—E. Sixty-seventh St., No. 39, three-sty' & base, extension to four-sty' bk. & st. dwell.; \$50,000; o., Arthur H. Scribner, 2 W. 43d St.; a., Ernest Flagg, 35 Wall St.

APARTMENT-HOUSES.

New York, N. Y.—Willett St., cor. Delancey St., six-sty' bk. flat, 44' 8" x 98'; \$60,000; o., Herman Fichter, 306 E. 119th St.; a., A. E. Badt, 1 Union Sq.

Forty-second St., nr. Broadway, six-sty' bk. & st. flat, 87' 6" x 87' 10"; \$150,000; o., Michael Tully, 211 W. 107th St.; a., Israel & Harder, 31 W. 31st St.

Second Ave., Nos. 57-59, nine-sty' bk. & st. apart., 48' x 85'; \$130,000; o., Joseph Wittner, 238 E. 53d St.; a., G. F. Pelham, 503 Fifth Ave.

Forty-sixth St., nr. 6th Ave., twelve-sty' bk. & st. apartment hotel, 55' x 85'; \$350,000; o., Allison Realty Co., 320 Broadway; a., Neville & Bagge, 217 W. 125th St.

Avenue C, cor. 9th St., six-sty' bk. flat, 40' x 74' 8"; \$60,000; o., Urry Goodman, 104 Rivington St.; a., A. E. Badt, 1 Union Sq.

EDUCATIONAL.

New York, N. Y.—Tenth Ave., Fifty-eighth St., Fifty-ninth St., five-sty' & attic bk. & st. school; \$600,000; o., City of New York; a., C. B. J. Snyder, 590 Park Ave.

FACTORIES.

New York, N. Y.—E. Forty-third St., Nos. 232-238, six-sty' bk. factory, 82' x 100'; \$35,000; o., Max and Albert Gerstendorfer, 43 Park Pl.; a., Henry Davidson, 240 W. 20th St.

HOUSES.

Minneapolis, Minn.—Pillsbury Ave., No. 3212, two-sty' fr. dwell., 38' x 42'; \$6,000; a., S. H. Davis, 503 Lumber Exchange.

New York, N. Y.—Fifth Ave., cor. 63d St., 2 five-sty' & base, marble dwells., 63' x 93' 8" & 32' x 100'; \$300,000; o., James B. Haggin; a., Copeland & Dole, 51 Exchange Pl.

Woodlawn Road, cor. Hull Ave., 4 three-sty' bk. dwells., 21' x 46' 6" & 23' x 46' 6"; \$26,000; o., Henry Weiler, 118 E. 11th St.; a., Jobst Hoffmann, 371 W. 116th St.

E. Fifty-first St., Nos. 21-23, four-sty' bk. & st. dwell., 29' x 72', & one five-sty' dwell., 20' x 72';

BUILDING INTELLIGENCE.

(Houses Continued.)

\$90,000; o., William Hall's Sons, 39 E. 42d St.; a., Welch, Smith & Provot, 11 E. 42d St.

Webster City, Ia.—Two-sty' & base, dwell., hot water; \$5,000; o., C. D. Hellen; a., Liebbe, Nourse & Rasmussen, Des Moines.

OFFICE-BUILDINGS.

New York, N. Y.—E. Seventeenth St., No. 3, nine-sty' bk. & st. office-building, 25' x 82' 9"; \$120,000; o., Gabay Construction Co., 22 E. 21st St.; a., Fred C. Zobel, 22 E. 21st St.

Thirty-fourth St., nr. 5th Ave., twelve-sty' bk. & st. office-building, 50' x 106' 9"; \$175,000; o., Century Realty Co., 135 Broadway; a., Clinton & Russell, 32 Nassau St.

STABLES.

New York, N. Y.—Fifty-second St., nr. 7th Ave., two-sty' bk. stable, 25' x 85' 8"; \$18,000; o., J. A. Mitchell, 20 W. 46th St.; a., Carrière & Hastings, 28 E. 41st St.

St. Paul, Minn.—Meriam Park, two-sty' & base, fr. barn, 44' x 60'; \$7,000; o., O. R. Robertson; a., A. F. Gauger.

STORES.

New York, N. Y.—Twenty-fourth St., No. 133, seven-sty' bk. lofts & store, 25' x 105'; \$35,000; o., Albert von den Driesch, 935 Sixth Ave.; a., Kurtzer & Rents, Spring St. & Bowery.

Third Ave., Nos. 442-444, six-sty' dwell. & stores, 49' 4 1/2" x 87'; \$45,500; o., Joseph Wittner, 236 E. 53d St.; a., Bernstein & Bornstein, 72 Trinity Pl.

TENEMENT-HOUSES.

New York, N. Y.—E. Twenty-first St., Nos. 240-242, six-sty' bk. tenement, 42' x 79'; \$35,000; o., Alexander Grief, 282 E. 3d St.; a., Horenburger & Straub, 122 Bowery.

Catherine St., No. 90, six-sty' bk. tenement & store, 26' x 80'; \$30,000; o., Lewis O. Shinsky, 266 E. Broadway; a., Horenburger & Straub, 122 Bowery.

WAREHOUSES.

Worcester, Mass.—Harrison St., one-sty' bk. storehouse; \$3,000; o., Nathan Kurin; a., J. P. Kingston; day work.

MISCELLANEOUS.

Worcester, Mass.—Grafton St., three-sty' fr. building, 28' x 69'; \$5,800; o., Patrick Connors; a., E. D. Carlson; o., Thos. D. Foley.

Putnam Lane, three-sty' bk. slaughter-house, 24'

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(Miscellaneous Continued.)

317; o. W. B. Page, Boston; a. White, Perry &
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PROPOSALS.**SEWER SYSTEM.**

[At Fair Haven, Vt.]
Sealed proposals will be received by the Sewer Commissioners of the Village of Fair Haven, Vt., for the furnishing of all materials in, and the construction of, a system of sewers in said village, in accordance with plans and specifications prepared by H. M. Geer, C. E., Ballston Spa, N. Y. All bids shall be addressed to the "Secretary of the Sewer Commission" of the Village of Fair Haven, Vt., and shall be presented in time to be publicly opened at a meeting of said Commissioners to be held at their office, in said village, at 1.30 o'clock in the afternoon, on Friday, the 22d day of May, 1903. Printed copies of the specifications and proposal may be obtained upon application to the undersigned. FRANK E. ALLEN, Secretary of Sewer Commission, Fair Haven, Vt. 1429

GYMNASIUM.

[At Plattsburg Barracks, N. Y.]
Office Constructing Q. M., Burlington, Vt. Sealed proposals will be received until May 25, 1903, for remodeling drill hall at Plattsburg Barracks, N. Y., into a gymnasium, which includes construction, plumbing, gas-piping, heating, electric wiring and gymnastic apparatus. Information furnished on application. CAPTAIN T. B. LAMOREUX, Q. M. 1429

FIRE STATION.

[At Youngstown, O.]
Bids will be received May 23 by the City Comrs. for furnishing material for erecting a fire station on Madison Ave. and Elm St. E. R. Thompson, archt., Diamond Block. C. E. CROSS, Clk. 1429

LIBRARY.

[At Cleveland, O.]
Bids will be received May 27 by the Pub. Library Bd. for furnishing material and erecting a library on Willson Ave. and Marquette St., including ventilating, heating, plumbing, sewers, gas fitting, structural iron and steel work, electric wiring, etc. W. R. Waterson, archt., 1203 New England Building. HARRY DIXON, Sec'y. 1429

PILES, LUMBER, ETC.

[At Fort Monroe, Va.]
Bids will be received at U. S. Engineer's Office, Norfolk, May 25 for piles, lumber, bolts, etc., at Fort Monroe. 1429

GATES, VALVES, ETC.

[At Washington, D. C.]
Office Washington Aqueduct, 2728 Pa. Ave., Washington, D. C. Sealed proposals for Venturi metres, sluice gates and gate valves, special castings, pumping engines, boilers, stokers and economizers will be received here until May 22, 1903. Information on application. A. M. MILLER, Lt. Col., Engrs. 1429

LUMBER.

[At Cavite, P. I.]
Proposals will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until June 2, 1903, to furnish at the naval station, Cavite, P. I., a quantity of lumber. A. S. KENNY, paymaster general, U. S. Navy. 1430

GYMNASIUM.

[At Fort Logan, Col.]
Denver, Col. Sealed proposals will be received here until June 1, 1903, for constructing a gymnasium and post exchange building at Fort Logan, Col. Information furnished on application to quartermaster, Fort Logan, or the undersigned. LIEUT. COL. J. W. POPE, chief quartermaster. 1430

BROKEN STONE.

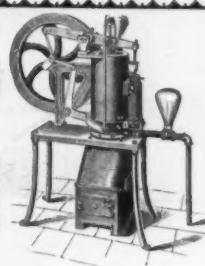
[At Superior Entry, Wis.]
U. S. Engineer Office, Duluth, Minn. Sealed proposals for furnishing 43,000 cubic yards broken stone, or 43,000 cubic yards pebbles for concrete south pier at Superior Entry, Wis., will be received here until May 29, 1903, and then publicly opened. Information on application. D. D. GAILLARD, Capt., Engrs. 1430

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PROPOSALS.**BARN.**

[At Morris, Minn.]
The Indian Department will receive bids until May 25 for the erection of a frame barn at Morris, Minn., Indian School. 1429

OIL HOUSE.

[At Tompkinsville, N. Y.]
Sealed proposals will be received at the office of the Light-house Engineer, Tompkinsville, N. Y., until May 28th, 1903, for furnishing the material and labor necessary for the completion and erection of an oil house at the General Light-house Depot, Tompkinsville, N. Y., in accordance with specifications, copies of which, with blank proposals and other information, may be had upon application to MAJ. WILLIAM T. ROSSELL, U. S. A., Engineer Third Light-house District. 1430

GYMNASIUM.

[At Fort Myer, Va.]
Fort Myer, Va. Proposals, in triplicate, for construction of gymnasium will be received until May 29, 1903. Information on application. CAPT. W. F. CLARK, Q. M. 1430

Treasury Department, Office of the Supervising Architect, Washington, D. C., May 6, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 11th day of June, 1903, and then opened, for the construction (including electric wiring and conduits, but excluding heating apparatus) of the extension to the U. S. Post-office, Court-house, etc., at Paducah, Kentucky, in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Custodian at Paducah, Kentucky, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1430

Treasury Department, Office of the Supervising Architect, Washington, D. C., May 6th, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 9th day of June, 1903, and then opened, for furnishing the steam heating and ventilating apparatus, complete in place, for the U. S. Post-office and Court-house, etc., at Paducah, Kentucky, in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Paducah, Ky., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1430

Treasury Department, Office of the Supervising Architect, Washington, D. C., May 11, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 10th day of June, 1903, and then opened for the construction of the U. S. Temporary Post-office and Custom-house at Burlington, Vermont, in accordance with drawings and specification, copies of which may be had at this office or the office of the Custodian at Burlington, Vermont, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1430

PROPOSALS.**SCHOOL.**

[At Toledo, O.]
Bids will be received May 23 by the Jerusalem Township Bd. of Educ. for erecting a brick school on Corterrail Road. H. A. SCHABOW, Township Clk. 1429

GYMNASIUM.

[At San Francisco, Cal.]
San Francisco, Cal. Sealed proposals will be received here until June 1, 1903, for construction of gymnasium and post exchange building at the Presidio of San Francisco, Cal. Information furnished on application to C. P. MILLER, deputy quartermaster general, chief quartermaster. 1430

ALTERATIONS TO GUARD-HOUSE.

[At Fort Morgan, Ala.]
Sealed proposals will be received until May 25, 1903, for constructing extension to and alterations in guard-house here. U. S. reserves right to reject or accept any or all proposals. Information furnished on application. Inclose proposals in sealed envelope marked "Guard-house," addressed A. D. RAYMOND, Q. M. 1429

BUILDING.

[At Charleston, S. C.]
Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, until May 23, 1903, for constructing a three-story brick and steel building for equipment at the Navy Yard, Charleston, S. C. Limit of cost, \$125,000. Plans and specifications can be seen at the Bureau, or will be furnished by the Commandant of the navy yard named upon deposit of \$20 to secure their return. MORDECAI T. ENDICOTT, chief of bureau. 1429

BUILDING.

[At Norfolk, Va.]
Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, until May 23, 1903, for constructing a one-story steel storage building at the Navy Yard, Norfolk, Va. Appropriation, \$27,500. Plans and specifications can be seen at the Bureau, or will be furnished by the commandant of the navy yard named. MORDECAI T. ENDICOTT, chief of bureau. 1429

CEMENT AND STONE.

[At Fort Wool, Va.]
Engineer Office, U. S. Army, Room 2, Custom-house, Norfolk, Va. Sealed proposals for furnishing and delivering Portland cement and broken stone at Fort Wool, Va., will be received here until May 27, 1903. Information furnished on application. 1429

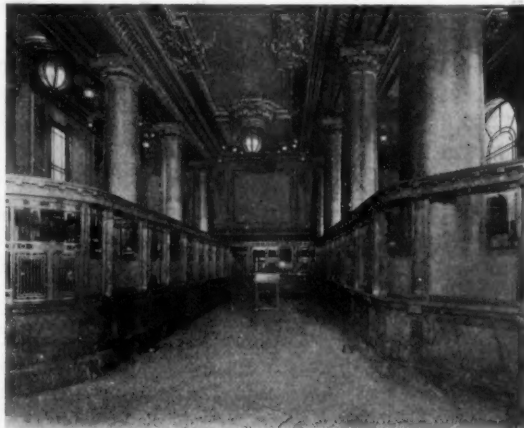
PUMPING STATION.

[At Allegheny, Pa.]
Proposals for the erection of a brick pumping station will be received by D. L. Fulton, director department of public works, until August 1. 1429

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Railings



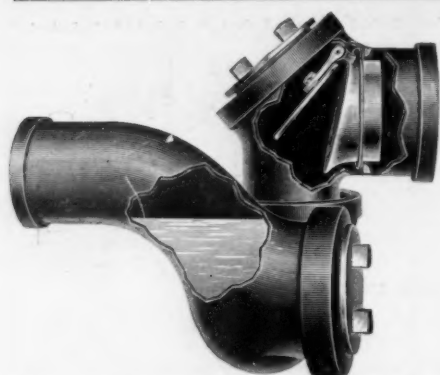
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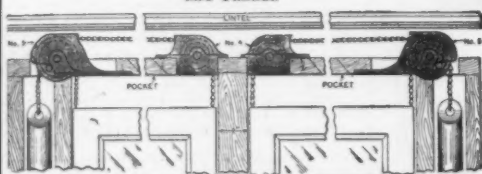
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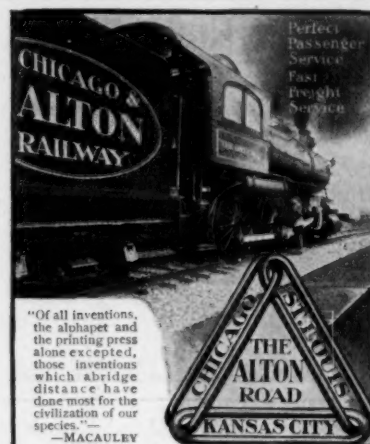


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. . . CODE OF ETHICS . . .

Prepared in Conformity with the Best Standards of Practice, and Recommended to its Members by the Boston Society of Architects, WAS

ADOPTED BY THE SOCIETY, FEBRUARY 1,
. . . 1895. . .

SECTION 1. No Member should enter into partnership, in any form or degree, with any builder, contractor, or manufacturer.

SECTION 2. A Member having any ownership in any building material, device or invention, proposed to be used on work for which he is architect, should inform his employer of the fact of such ownership.

SECTION 3. No Member should be a party to a building contract except as "owner."

SECTION 4. No Member should guarantee an estimate or contract by personal bond.

SECTION 5. It is unprofessional to offer drawings or other services "on approval" and without adequate pecuniary compensation.

SECTION 6. It is unprofessional to advertise in any other way than by a notice giving name, address, profession, and office hours, and special branch (if such) of practice.

SECTION 7. It is unprofessional to make alterations of a building designed by another architect, within ten years of its completion, without ascertaining that the owner refuses to employ the original designer, or, in event of the property having changed hands, without due notice to the said designer.

SECTION 8. It is unprofessional to attempt to supplant an architect after definite steps have been taken toward his employment.

SECTION 9. It is unprofessional for a Member to criticise in the public prints the professional conduct or work of another architect except over his own name or under the authority of a professional journal.

SECTION 10. It is unprofessional to furnish designs in competition for private work or for public work, unless for proper compensation, and unless a competent professional adviser is employed to draw up the "conditions" and assist in the award.

SECTION 11. No Member should submit drawings except as an original contributor in any duly instituted competition, or attempt to secure any work for which such a competition remains undecided.

SECTION 12. The American Institute of Architects' "schedule of charges" represents minimum rates for full, faithful and competent service. It is the duty of every architect to charge higher rates whenever the demand for his services will justify the increase, rather than to accept work to which he cannot give proper personal attention.

SECTION 13. No Member shall compete in amount of commission, or offer to work for less than another, in order to secure the work.

SECTION 14. It is unprofessional to enter into competition with or to consult with an architect who has been dishonorably expelled from the "Institute" or "Society."

SECTION 15. The assumption of the title of "Architect" should be held to mean that the bearer has the professional knowledge and natural ability needed for the proper invention, illustration and supervision of all building operations which he may undertake.

SECTION 16. A Member should so conduct his practice as to forward the cause of professional education and render all possible help to juniors, draughtsmen and students.

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