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CONTENTS.

SUMMARY:—

The Amount and Character of Building in New York. — Building Accidents in Denver, Col. — Transit between Boston and Cambridge, Mass. — International Exhibition of Medical and Sanitary Appliances. — The Smoke Question at Pittsburgh, Pa. — The Lorillard Expedition. — A Competition and a Lawsuit. — The Metal Worker's Stove Competition. — Silvering Mirrors. — The Transmutation of Microscopic Organisms.	169
OLYMPIA.	171
MUTUAL FIRE INSURANCE AND FIRE-PROOF BUILDING.	172
THE ILLUSTRATIONS:—	
Design for the New York Produce Exchange. — Design for a Dining-Room.	174
THIRD COMPETITION IN INTERIOR DECORATION.	175
LEGAL NOTES AND CASES.	175
RECENT BUILDING IN NEW YORK. — I.	176
BOOK NOTICES:—	
The Uses of the Steel Square. — Hallett's Specifications.	177
RENEWAL OF THE FOUNDATION OF A LIGHT-HOUSE.	177
NOTES AND CLIPPINGS.	178

SOME interesting statistics in regard to the building operations of the past year in New York are given by the *Tribune*. The total number of structures erected during 1880 was two thousand two hundred and fifty-two, the largest number in any year since 1871. Nearly half of these were built in the Harlem district, extending from Eighty-fifth Street to the Harlem River, and more than two-thirds were in the region lying about the East Side elevated railroads above Fortieth Street. Singular as it may seem, in spite of this large influx of population to the neighborhood, the business of the retail stores in Harlem has fallen off, undoubtedly on account of the increased accessibility, by means of the railroad, of the larger establishments "down town." A noticeable feature of the statement is the rapidity with which the fashion of apartment-houses has spread within a decade. The first building of this class in New York was erected in 1869. Similar ones had been constructed and found popular in Boston several years before, but the idea did not quickly gain favor in New York, and in five years after the first experiment, only a single house of the same kind was undertaken. In 1875 a change took place, and more than a hundred were built, with about as many more in 1876, 1877, and 1878. In 1879 two hundred and fifty-three were erected, and last year the number was five hundred and sixteen, making a total of twelve hundred and fifty-two such establishments now existing in a city which seven years ago possessed but two. This year there is reason to suppose that the number will be even greater, and the boarding-houses for which New York is renowned may yet be depopulated in favor of the home life which French flats have brought within the reach of so many families for whom it would otherwise be unattainable.

DENVER, Colorado, seems to be in danger of acquiring an unenviable reputation for constructions which, either from defects in the materials, the soil, or the design, meet with untimely failure. It is hardly three months since the great Tabor building, comprising an opera-house and a hotel, fell down, owing, as the committee of investigation decided, to the high winds which prevailed before the mortar in the walls had hardened. A few days ago came the fatal accident at the Strauss building, due probably to carelessness; and now the telegraph reports the failure of a third structure, causing serious, and probably fatal injury to two men. We are informed by correspondents that the soil is sandy and unreliable, and that the bricks used are of inferior quality, owing to the large proportion of sand incorporated in them. One of the bricks from the Strauss building, of average quality, has been forwarded to us for inspection. The shape is good, as is usual with sandy bricks, but the texture very poor. Not only are the edges friable, as is common with bricks of that class, but several deep fissures appear on the surface, indicating an irregular contraction of the clayey part, which would unfit the bricks for use under transverse strain, as in the corbellings and cornice work so common in other places. We regret not having the appliances at hand for applying a crushing test, but the resistance must be much less than the average standard. At the same time, we have seen far worse bricks put into buildings, and the best Denver architects are undoubtedly quite capable of testing the qualities of their materials, and proportioning the resistance to the strain,

so as to secure perfect stability under any circumstances, even with the poorest means.

THE inhabitants of Cambridge persist in their determination to obtain more rapid and frequent communication with Boston than they now have. A committee of the most influential citizens, appointed in a public meeting, have had several plans prepared, and seem to be still hesitating between some four or five different routes. The main question is whether the proposed railroad shall pursue an independent course into Boston, following the present main line of communication between the two cities, and entering Pemberton Square, the very heart of the business part of Boston, by a tunnel under Beacon Hill; or shall join either the Boston and Albany road, by a bridge at or near the Cottage Farm Station, or the Fitchburg, by a branch through Somerville. The first cost of a branch to either of the existing railroads would undoubtedly be smaller than that of an independent line, and this seems to be an important consideration with the committee, for two of the routes most favored lie for a considerable distance through the salt-marshes bordering Charles River, where the land damages would be unimportant. There is, we think, considerable danger in giving too much prominence to this point. It is well understood among railway managers that those roads pay the best which run through the most densely populated regions, however great may be their cost, and the expectation of those who favor the cheaper routes, that tributary lines of horse-cars will bring passengers to the stations of the steam line, is likely to be disappointed. Another great defect of the schemes for connecting with the two existing railroads of the vicinity is that neither of these lines would offer any accommodation for the residents of Cambridgeport, the most thickly settled section of Cambridge, and the nearest to Boston. It is argued by those who regard economy as the chief requisite that the people of the "Port" need no better facilities than the horse-railroads now offer. This may or may not be true, but so far as the interest of the projected steam railroad is concerned, no view of the subject could be more unfortunate. It is well understood that the greatest profit in passenger transportation is derived from the short lines: in other words, it would cost a railroad less *per mile* to convey a man one mile, from Pemberton Square to Cambridge bridge, than to carry him three or four, to Harvard Square or Mount Auburn, and the profit of the transaction would be proportionally greater, while the compactly built Port offers a much larger business for the same investment in right-of-way, track and equipment.

AN international exhibition of medical and sanitary appliances is to be held in London in connection with the international medical congress of 1881. The exhibition is intended to comprise everything that is of service for the prevention, detection, cure and alleviation of disease, including surgical instruments and apparatus, books, diagrams and models, plans of hospitals and houses, sanitary appliances, including everything connected with drainage, heating and ventilation, water-supply and filtration; besides examples of food and dietetic preparations, and school apparatus; and is under the charge of a committee from the Parkes Museum of Hygiene. Certificates of merit will be awarded, and new inventions will be protected. In order to defray a part of the expenses, exhibitors will be charged for space, although a large portion of the cost has been provided for by private subscription. No doubt the exhibition will be a most interesting and important one, and it is worth observing that many sanitary appliances now in general use owe their success to the favorable introduction which such an occasion has been the means of giving them. We could mention several American inventions which would probably gain distinction, and wish it were possible to send a good New York or Boston house for comparison with the average London habitation. Advanced as the English are in sanitary art, the lavishness with which our dwellings are supplied with hot and cold water, nickel-plating and marble is a continual surprise to travellers, and some of our commonest conveniences, such as the copper bath-boiler, the tinned and planished copper tubs and tanks, tin-lined pipes of wrought-iron and drawn brass, porcelain-lined soil-pipe, automatic pumps, and so on, would be novelties on the other side of the ocean. Applications for space from foreign countries will be received up to April sixteenth, and must be addressed to Mr. Mark H. Judge, Curator of the Parkes Museum of Hygiene, University College, London.

PITTSBURGH appears to be in a fair way to get rid of a part of the smoke which loads its atmosphere, gaining at the same time a cheap and convenient fuel, by a process which is about to be put in operation at a commercial scale under Smith & Markle's patents. Every one knows that for working iron it is customary to use coke, that is, bituminous coal from which all volatile portions have been expelled by heat; and as Pittsburgh is the seat of a vast iron industry, great quantities of coke are prepared in the vicinity, the hydrocarbons of the coal being simply thrown off into the air, for want of means to utilize them in the shape of illuminating gas. It is estimated that two hundred and forty million cubic feet of gas is thus lost every day. The dwellers in cities, who pay for this product at the rate of three dollars or more per thousand feet, will be shocked at such prodigal waste, but there are many items of collection, purification, and distribution which enter into its cost as they receive it. However, taking the value of the vapor as it leaves the retorts at ten cents per thousand feet, Pittsburgh and its environs expend twenty-four thousand dollars a day simply in adding to the foulness of their heavy atmosphere. Under these circumstances it is natural that the idea of constructing coke-ovens in such a way as to save the volatile waste for separate sale should have occurred to various persons, but perhaps the superabundance of the product may have interfered with the profit of manufacture. Now, however, instead of endeavoring to find a market for the gaseous portions of the coal for illuminating purposes, it is proposed to employ a much simpler process, which will give a gas of rather small illuminating power, but extremely cheap, and admirably suited for the production of heat. Such an article would meet with an unlimited demand. The company intend to deliver it through service-pipes in private houses, as well as at foundries and rolling-mills for use in puddling furnaces and under boilers, and the prospect would certainly seem to be favorable for their complete success.

M. DESIRE CHARNAY, who has been for some time in Mexico, in charge of the Lorillard archaeological expedition, has returned for a few months to the North. His investigations, though conducted in an unfavorable climate, have been very successful. Three ruined cities have been explored, and about a thousand objects of portable character have been secured, besides a large number of photographs and impressions of hieroglyphics. All the cities exhumed were thought by M. Charnay to have been built by the Toltecs, the original inhabitants of Mexico, on account of the similarity of their structure and ornamentation, as well as their hieroglyphic inscriptions, to those of Tula, which is known to have been the capital of the Toltecs. The resemblance of the hieroglyphic characters to the "old Chinese," which was lately said to be so perfect that persons skilled in one language could read the other, is denied by M. Charnay, who is, however, disposed to believe that there must have been some communication between Eastern Asia and Mexico, from a certain similarity between the Mexican and Japanese temples, with other indications that Buddhist theology had influenced the Toltec sun-worship. The subject is a very interesting one, and it is gratifying to learn that M. Charnay is to publish an account of his researches.

A RATHER embarrassing mistake in a competition was recently the occasion of a lawsuit in England. The Master and Fellows of Corpus Christi College, in Cambridge, wished to place a stained-glass window in the college chapel, and invited the plaintiff, Mr. Dixon, to submit a design, in competition with others. The understanding was that the artist whose design was selected should be commissioned to execute the work, and Mr. Dixon accordingly sent a sketch, another being submitted by Messrs. Heaton, Butler and Bayne. By-and-by he received a note saying that his design was rejected, and would be returned to him by train, and in due time a package was delivered to him, which, however, did not contain his drawing, but a strange one. Mr. Dixon then went to Cambridge to get an explanation of the matter, and saw the Dean of the College, who offered to show him the selected design. On being produced, this turned out to be Mr. Dixon's own sketch; but the college officials, although they made some apologies to Mr. Dixon for their mistake, nevertheless employed Messrs. Heaton, Butler and Bayne to execute the window, and Mr. Dixon brought an action to recover damages for the loss of the commission which he was clearly entitled to. Before the case came to trial, a compromise was effected, the college paying a satisfactory compensation to the justly aggrieved artist; and we shall probably

never know whether the successful competitor borrowed his rival's drawing to substitute for his own before the judges, or whether the judges, moved by the desire common among such bodies, of gratifying at once their preference for a particular design with their friendship for some other designer, had devised this method for attaining at once both these objects.

THE competition for stove designs, instituted some months ago by the *Metal Worker*, seems to have been quite successful in its results. The prize of one hundred dollars for the best design for a base-burning coal-stove was awarded to Mr. Thomas J. Gould, of Providence, whose name will recur to our readers as a successful contributor in our own recent competitions in interior design. The prize of twenty-five dollars for a base-burner top ornament was awarded to Mr. Frank W. Angel, also one of our own successful contributors. The prize of fifty dollars, offered for a design for a wood-burning stove, was not awarded, as only two designs were received, neither of them of sufficient merit to claim the reward. We must be allowed to compliment Messrs. Gould and Angel upon the versatility of talent which has enabled them to triumph in such different fields of design, and are pleased but hardly surprised that two architects should have been able to surpass professional stove-designers in their own business. A new competition is announced by the *Metal Worker*, of the same sort, and we hope that other architects and draughtsmen will be encouraged to engage in it. The second competition, which closes May 1, 1881, offers three prizes: the first, of one hundred dollars, for the best design for a heating stove for wood; the second, of fifty dollars, for the best design for the side of a low-reservoir cooking-stove; the third, of twenty-five dollars, for the best design for the top, and top ornament of a heating stove. Circulars, with further particulars, and a diagram of the necessary portions of a cooking-stove, can be obtained by addressing Mr. J. C. Bayles, editor of the *Metal Worker*, 83 Reade Street, New York.

EVERY one knows that the ancient method of "silvering" mirror plates by covering them with an amalgam made of tin and mercury has been to a great extent superseded by the process of depositing a coating of real silver upon the glass, the metal being thrown down in a smooth film by adding oil of cloves or other organic substances to a solution of ammoniacal nitrate of silver, retained upon the surface of the plate by a raised rim of wax or similar material. These silvered plates, although cheaper than those made by the old process, are inferior in lustre, the latter having the "black" color which silversmiths regard as indicating perfection of polish, while the others are yellowish in cast, and a process has long been sought by which the brilliancy of the mercurial coating could be imparted to the cheap and durable silver film. This has at last been accomplished by chemical reaction. After the silver plating is complete, the film is flooded with a weak, aqueous solution of the double cyanide of mercury and potassium; slow decomposition takes place, and the mercury is precipitated, which immediately amalgamates with the silver film. The result is said to be very satisfactory, the amalgam of silver being quite as brilliant as that of tin, and less subject to change; while the new process has the advantage of being readily applicable to the largest plates, which by the ancient method of manipulation could be treated only with great difficulty, if at all.

A STORY, which may or may not be true, comes to us from Germany, regarding a certain professor, who is said to have discovered the secret of transforming at will certain forms of microscopic organisms into others totally different, and again reproducing the original forms. He has, it would seem, applied the treatment to the *bacillus anthracis*, the minute form of life which appears to be the specific poison of the terrible splenic fever, or epidemic "malignant pustule," which is at times so fatal in Southern Russia, and has succeeded in transmuting it through an intermediate and hitherto unknown condition into one of the commonest and most harmless varieties of infusoria; and *vice versa*. It is said, however, by microscopists that the tiny threads which fill the blood of the victims of malignant pustule differ from others often found in the circulation of healthy animals by remaining motionless, while the harmless ones are in constant movement, and it has been suggested that the death or incipient decomposition of the organisms which were innocuous while living may be the real cause of the fatal disease; so that the account will need careful verification; but the suggestion of the possibility that morbid contagia may be with certainty transmuted into harmless forms is a valuable one.

OLYMPIA.

DR. DOERFFELD, an archaeologist whose name has often appeared in the official publications of the Olympian explorers, has lately made a preliminary report in the Berlin *Reichsanzeiger*, which touches at some length upon the architectural aspects of the work now so soon to be terminated. This account in great measure takes the place of the delayed folios which are to embody the result of the excavations made during the last seasons, and may be considered sufficient to complete a summary of the whole work in the Olympian plain, if taken in connection with the previous annual publications, of the first three of which notices have appeared in these pages.¹ The excavations, suspended as usual during four months of the summer, were recommenced for the last time upon the 21st of October, 1880. The number of laborers employed has been exceptionally small; the remaining area of the Altis to be freed from earth being limited, and the attention of the explorers being directed to thoroughly clearing the sites of buildings already known rather than to fresh excavations and the removal of deep layers of alluvium. Some additional points of topographical interest have indeed been determined, and some new structures unearthed, but the chief results of the last five months' work consist of facts which complete the survey, and allow a further insight into the architectural character of the Temples of Zeus and Hera, the Leonidaion, the two gymnasia, and especially of the treasure-houses.

Chief among the discoveries of detail is that of blocks which formed the base of the chryselephantine statue of Zeus, within the Great Temple, a foundation of black limestone, about six and a half metres broad and nine and a half metres long. As appears in the plan given with a former notice,² a passage was left between the statue and the rear wall as wide as the side aisles. Directly before the statue there appears to have existed a slightly sunken pavement of black limestone, about six and a half metres broad, surrounded by white marble. But all this part of the floor has been torn up and the determination of its arrangement has been attended with great uncertainty. In the report of Prof. Adler, who is well known as an upholder of the hypæthral theory of his former colleague, Boetticher,³ this pavement is considered as that part of the temple plan underneath an aperture in the roof. It is further stated that tiles which bordered this hypæthron have been discovered. The present writer takes especial pleasure in calling attention to this fact, as to any indication that may throw light upon the question, however contrary to his former belief; but it is impossible from the report now published to understand in how far the hypæthral destination of the blocks in question is certain. The interior arrangement of the temple has, in every other respect, now been positively determined, the vague report of these indications of a hypæthron still leaves the matter in suspense, and the appearance of the detailed publications of the Olympian explorers must still be awaited.

The supposition that the entablature of the Heraion was wholly timbered has been supported by the discovery of terra-cotta tiles which were destined to protect the wooden corona against the effects of the weather, to which its projection so greatly exposed it. Half-round roof-tiles, gutters, antefixes and acroteria of the same material have already been mentioned; but these newly-found slabs used for facing a vertical exterior surface are without analogy among the numerous remains of antique terra-cotta work hitherto known, and are, moreover, interesting from a purely decorative point of view, by reason of the extensive and varied application of the Oriental rosette.

¹ *American Architect*, Nos. 103, 126, 230, 231, 233 and 235.

² *American Architect*, No. 231. Plan of the Great Temple of Zeus.

³ Herrn Boetticher and Adler have long been the chief authorities of the Architectural Academy of Berlin, and, since the death of Gottfried Semper, may be regarded as pre-eminent representatives of architectural archaeology in Germany. Carl G. W. Boetticher, born in 1806, relinquished his chair in the Bau-schule and his position as Director of the Berlin Gallery of Sculpture some years ago, but his influence is there very strongly felt, and has determined a vigorous impulse, carried out in a school of great erudition, though of singular limitations and prejudices (Haugk). Boetticher's early architectural studies were under Schinkel, that great coryphæus of a classic school of building which, like the classic school of painting headed by Carstens and Cornelius, has now been, with right, almost entirely deserted, but unjustly allowed to become forgotten and profitless. The position of teacher in the School of Design was early obtained by Boetticher, where his first publications were various systems for instruction in drawing, and collections of ornamental patterns, printed in 1838, 1839, 1847 and 1858. It was in this period that he began to issue an extensive work in lithographed plates upon the Timbered Architecture of the Middle Ages (Berlin, 1836 to 1840), which has remained a fragment. But his fame rests alone upon his archaeological studies. Chief among these works is the *Tektonik der Hellenen* (Potsdam, 1844 to 1852). Second edition still incomplete, and in view of the great age of the writer will probably remain so, unfortunately) and the *Baukultur der Hellenen und Roemer* (Berlin, 1856). The former treats of Greek architectural forms with great originality and suggestiveness; the latter is a curious collection of facts and suppositions relative to certain mythological conceptions of the ancients. Of Boetticher's many essays, it may suffice to name those on the Erechtheum, the Hypæthral Temple, Suggestions concerning the Sacred and Profane in Greek Architecture, the Parthenon and Temple of Zeus in Olympia, and the Zophoros of the Parthenon. His last work of importance, Report on the Investigations upon the Athenian Acropolis made in the Spring of 1862, has caused him to be repeatedly accused of directly perverting the facts, and even of mutilating the monuments themselves (Erechtheum) in favor of preconceived opinions. Boetticher's restoration of the Parthenon plan, that given in Michaelis, is now generally admitted to be incorrect; that of the Olympian temple has been proved wholly imaginary by the recent excavations; Dr. Julius has refuted the distinction created by Boetticher between agonal and sacred temples; and indeed there remain few, if any, of his theories which can be accepted by conscientious scholars of the younger generation.

The chief work of Prof. F. Adler has hitherto been the folio upon the Medieval Brick Buildings of Prussia (Berlin, 1860, still in progress, or at least incomplete), but since his journey to the East, with Ernst Curtius, his attention has been mainly directed to antique architecture, with unquestionable success. The ultimate revision of the Olympian discoveries, in so far as they relate to architecture, has been placed in his hands, and has been effected with a thoroughness and an exceptional freedom from speculation worthy of that great undertaking.

A transitional stage between these primitive wooden structures, thus overlaid with terra-cotta, and the later edifices formed wholly of stone, is represented by the ancient Treasury built in the Altis by the Sicilian town Gela. In this Doric structure the entire cornice, though carved in a coarse stone, was yet covered with slabs of terra-cotta, decorated with a meander pattern, in meaningless imitation of a former method of construction. The iron nails by which this casing was attached are still visible in the massive blocks of the corona. Above the projection thus clothed, there rested a gutter of burnt clay, the water being allowed to escape, upon the sides of the building, through pipes ornamented at the nozzle with a wreath of leaves, in place of the lion's-head gargoyles customary in that position. This gutter was continued upon the horizontal corona beneath the tympanum, and there led to a curious and naive intersection of all the members of the cornice in the angles formed with it by the inclined gable. The ornaments of this terra-cotta casing have remained in an exceptionally perfect state of preservation; they display almost exclusively geometrical patterns in the three colors of archaic polychromy: black, white, and red. The general arrangement of this treasury of Gela is exceptional among the buildings of Olympia. Before the cella, which was nearly square in plan, there was a deep hexastyle pronaos, projecting two intercolumniations from the side wall, and connected with it by engaged columns in place of the pilasters there usually employed. The plan thus resembled that of the Temple of Augustus at Pola, and still more closely that of the Temple of Fortuna Virilis at Rome, with the exception that the engaged shafts were not continued around the sides and rear of the cella wall. Two narrow lateral aisles were partitioned off in the interior much in the manner described by Vitruvius for the plan of the Tuscan temple,⁴ indeed the entire arrangement of the treasury strikingly corresponds to that of the fane described by the Roman author.

The remaining treasure-houses upon the east of the low terrace were identified by the aid of an inscription, belonging to the building of the Megarians, discovered during the excavations of last year as those seen and mentioned by Pausanias. Those upon the west are now recognized in a similar manner by an inscription commemorative of the erection of the Sicyonian Treasury, a building hitherto designated by the German explorers as that of the inhabitants of Syracuse. Pausanias speaks of the Treasury of the Sicyonians as having been built in the thirty-third Olympiad (B. C. 644),⁵ and adds that the interior contained two chambers sheathed with bronze: one in the Doric, the other in the Ionic style. On the strength of this account all histories of ancient architecture have adduced the Treasury of the Sicyonians as the most remote example of that combination of the two styles which led in later times to such imposing results. But the building now under consideration, surely attested as that of the Sicyonians, and situated, agreeably to the description given by Pausanias, at the extreme west of the treasure-house terrace, is built, both within and without, in the Doric style alone, while its interior is not at all divided, nor are there any traces of a sheathing of metal having been attached to the walls. The account of Pausanias is evidently at fault, rarely as this occurs in the general descriptions of that conscientious traveller. To explain the passage satisfactorily would be impossible: one can only assume that some confusion of the buildings has led to this misstatement.

Behind the terrace of the treasure-houses, which is partially cut from the slope of Mount Cronion, there has been discovered an extensive retaining-wall, built to receive the weight of the earth and protect the various structures in the Altis beneath from being overthrown and buried by landslides. It was upon this wall that Herodes Atticus built the aqueduct which brought water from the upper valley of the Alpheios to Olympia, where it was presented to the thirsty public assembled in the sunny Altis by the exedra discovered during the second year of the excavations and described in a former notice.⁶

Among the buildings which have received particular attention during the past months there should be mentioned the entrance portal to the enclosure sacred to Pelops, a structure resembling the inner Propylæa of Eleusis, which appears from the character of the details to have been built toward the end of the fifth century, B. C. The excavations which were instituted upon the site of the ancient festal portal of the Altis wall have shown that the original structure was unfortunately removed, in the late Roman period, to make room for a triumphal gateway, which in its turn has been destroyed with the exception alone of the foundations. From this portal the Leonidaion was only separated by a narrow passage. It was erected upon the stylobate of an ancient Greek building, and served in the time of Pausanias as the dwelling of the Governor of Achaia. An inscription upon a leaden pipe found here assigns the construction of the Leonidaion, as at present recognizable, to the reign of the Emperor Nero. Its ruins have been almost wholly freed from the superincumbent earth during the past November, and an extended peristyle, with adjoining chambers, has been discovered in addition to the atrium and tablinum already known.

The great Hippodrome and the Stadion of Olympia were situated parallel to one another, occupying the entire eastern side of the Altis, north of the Leonidaion. The Hippodrome is being examined at the present moment; at least its position, extent, and arrangement are to be accurately determined. Beginning and end of the Stadion — the

⁴ Vitruvius IV. 7.

⁵ Pausanias VI. 19.

⁶ *American Architect*, No. 235. Plan of the Exedra of Herodes Atticus.

starting point and goal—have already been exposed; the distance between them is stated as 192.27 m., and this has been taken by Doerpfeld as the exact length of the Olympic stadion: that most important dimension of antiquity. The Greek foot, the six-hundredth part of the stadion, would consequently be very nearly equal to 0.32 m., an assumption which agrees with the metrical observations made upon the various buildings of the site. Near the southern wall of the Altis, without the sacred enclosure, there have been discovered two buildings, apparently dating from the Greek period; their purpose is not evident and their plans not yet described.

The extensive structures in the western part of the Olympian plain, which extend in almost unbroken line from the Altis to the Cladeos, have now been for the greater part exposed. The most extensive of them, that farthest to the south, has hitherto been termed the Great Gymnasium; Prof. Adler, however, doubts the correctness of this designation, from the fact that in the inner colonnade court there existed fountains and flower-beds in the place of enclosures for boxing, wrestling, and jumping. But as Pausanias does not refer to the building, notwithstanding its extent, it is not possible to bestow upon it a more fitting appellation. The gymnasia of the Romans were, in their inner courts, frequently thus transformed into pleasure-grounds, and the arrangement of the plots now evident within the Olympian buildings must, of course, date from the very latest epoch. To the north follow various edifices grouped around the Byzantine church, and its antique substructure already described as the Workshop of Phidias; among them a small structure like a tholos has been discovered, in which was an altar of beaten earth cased in stucco: inscriptions upon it make it probable that the building was a heroön. The remaining ruins of this group appear to be those of that dwelling of the priests mentioned by Pausanias as the Theocoleon; the group was immediately connected with the Altis enclosure by a small portal. Still farther on is the smaller Gymnasium, known to Pausanias,¹ and agreeing almost entirely with the arrangement described by Vitruvius for the Greek gymnasium²: upon the one side is situated the Palaestra, with the spaces for wrestling, boxing, and similar exercises, and with the peristyles, lecture-rooms and bathing-cabinets; upon the other the race-course in the open air, for use during the summer, and the two-aisled colonnade, or Xystos, one stadion long, for the trials of running and leaping in winter.

Pits are at present being sunk at the north of the Altis to ascertain the situation of the theatre described by Xenophon. They have hitherto been unable to find any traces of such a structure, but have brought to light numerous blocks of another archaic treasure-house, so that six of these buildings are now more or less known and will appear in restorations with the publication of the final work upon the explorations.

The extent of the architectural results in certain directions may be judged from the fact that, beside the seventeen capitals of the Heraion, no less than thirty-two varieties of Doric columns of Greek workmanship have been discovered, these representing an almost equal number of buildings which may, for the greater part, be recognized in arrangement and detail. The collection of architectural ornaments of terra-cotta and stucco, in relief and painted, already includes over one hundred varieties. Such results cannot fail to be of direct influence upon modern methods of design, as well as of the greatest importance to our comprehension of the spirit and methods of antique building.

J. T. C.

MUTUAL FIRE INSURANCE AND FIRE-PROOF BUILDING.

The undersigned was requested to address certain gentlemen in the city of New York Jan. 24, 1881, on the subject of "Mutual Insurance," a very pleasant duty, which he cheerfully performed.

It has not been so pleasant to observe that a plan for establishing an insurance company, to take large risks in the commercial sections of great cities and subject to the liability of heavy assessments, which constitutes a part of the system technically known as "mutual," has been attributed to him.

He is therefore very glad to have been called upon to print the address in order that its true purport may be comprehended.

EDWARD ATKINSON.

Gentlemen,—I will give you fair warning: you have just one hour's close work before you. This subject will not admit of hasty or superficial treatment. As I understand your invitation, you wish me to address you on two points:—

1st. The method of mutual insurance as applied by the manufacturer's mutuals to factories, and the question whether that method can or cannot be applied to the insurance of your warehouse risks in this and other cities.

2d. Entirely aside from the question of insurance or indemnity against loss by fire, what methods can you adopt for the prevention of fires, or the prevention of loss from the unavoidable fires that must occur, in the same premises?

In reply to the first question, that of mutual insurance so called, a few words may rightly be spoken upon the general question of what constitutes insurance, or the contract of indemnity against loss by fire. This business is conducted upon two methods, apparently quite different, but, in fact, substantially the same in principle. All insurance, whether under what is known as the stock or the mutual principle, constitutes a system of co-operation, and is in fact mutual, whether called so or not: the difference is in matters of detail and practice, and not in principle; but these differences in matters of

detail and practice are of the utmost importance, and bring into the subject an antagonism or want of identity among the parties in interest that ought to be eliminated if it can be.

I have said that all insurance is mutual. Let us consider the stock-insurance company: from what fund is it expected to pay the losses and expenses of the company? Only from the fund made up of the sum of premiums paid by the assured. The capital of a stock-insurance company is invested, and simply constitutes a guaranty *not* to be impaired. Whenever the sum paid in for premiums by those who are insured in such a company is more than exhausted by the losses and expenses, and the capital begins to be seriously impaired, the stock company must wind up; or, if it goes on, it really issues policies upon false pretences and trusts to the chance of future contributions of premiums to make up the losses of the past. It will rob the Peter of the future to pay the Paul of the past among its members.

In the so-called mutual system there is no capital stock invested; the premium is the sole fund from which losses and expenses are customarily paid; the guaranty consists in the obligation of the members—sometimes taking the form of a note, sometimes merely implied by their becoming members—to pay an assessment in addition to the premium, whenever the premium fund is exhausted; and this obligation is the guaranty on which the stability of the mutual company rests.

But now comes in the difference of detail, and the antagonism of interest. In the stock company, the interest of the stockholders, or owners of the capital which constitutes the guaranty fund, is simply to make money for themselves by agreeing to indemnify others for the loss they may sustain from fire. In the mutual company, the interest of those who enter into the obligation to pay an assessment, in case the premiums are not sufficient to meet losses and expenses, is identical with the interest of the assured, because they are the same persons. Their profit is sought in preventing fires, and saving loss from fire. The more they can prevent losses, and the lower they can reduce the premium and the obligation to meet assessments, the more successful they are. In the stock companies, it is not altogether desirable to prevent fires or to save losses in particular cases, because there may be, and often is, a larger profit to the stockholders in betting at a higher rate on bad risks than there is in having those risks made safe, and taking low rates of premium: hence it follows that there is always a passive resistance to the introduction of improvements and apparatus for the prevention of fires on the part even of very prominent stock underwriters, and sometimes an active opposition to such measures.

Betting on bad risks may be, and in fact is, profitable for a series of years, to the man who sells out before the year of disaster, because he gets dividends from premiums that ought not to be divided, but which ought to be accumulated to meet disaster.

The main difference in detail, however, is, that as matter of fact, without entering into the reason of what may be called a positive abuse, the expense of conducting the stock system of fire insurance absorbs so large a proportion of the premium or fund contributed by the assured for mutual indemnity, as to make the whole system simply absurd.

The Insurance Commissioner of Massachusetts, a year or two ago, made a computation of the proportion of the premium absorbed by expenses in all the companies in or licensed to do business in the State of Massachusetts; he found it to be substantially forty per cent. So that, of every hundred dollars paid by the assured into a fund which constituted the real fund on which each depended for indemnity, if permanence of the contract be considered, forty per cent, or forty dollars in each hundred, were eaten up by the expenses of making the contract each with the other. These expenses you all understand: they are heavy rentals, advertising, office expenses, salaries of officers, commissions to brokers and agents, and the like.

It is absurd to expect such a system to stand; and after the next great conflagration, wherever it is, you will be unable to procure any adequate insurance. I see that by the last report, just published, the average expense of the New York fire-insurance companies considerably exceeded forty per cent of the premiums. . . .

In this matter of expense, your case, gentlemen, is not quite so bad as that pictured by an old gentleman who subscribed a hundred dollars to a missionary fund, as he said, one dollar for the benefit of the heathen, and ninety-nine to get it out to them; but where you pay one hundred dollars for indemnity, you put about half into the indemnity fund, and spend the other half to get it there.

And now, gentlemen, the question arises whether you can or cannot apply the mutual principle of insurance to the dry-goods district of New York, or to large amounts of insurance in the city of New York, and in other cities.

Can you insure yourselves? To this I say yes, and yet must qualify that reply. You can do all the work that a mutual underwriter would call upon you to do as a condition of admission to a mutual company; and, when you have done that, you will have accomplished your main purpose.

You must be cautious in adopting the mutual system of an obligation, each to the other, to pay an assessment in case your premium fund is exhausted, because your risks are many of them concentrated, and exposed to each other; but you will observe, the more unsafe the mutual liability appears to you, the more you need to insure yourself, by adequate care, apparatus, and water-supply, against a conflagration that would make the mutual assessment very heavy,

¹ Pausanias VI, 21.

² Vitruvius V, 11.

and that may bankrupt half your stock-insurance companies if it occurs. . . .

In your crowded cities you may be subject to a sweeping fire, a great conflagration; and it is for you to determine, not for me, whether there is a prospect of your establishing a mutual liability to assessment, over and above the ordinary premium, under such conditions. It would be extremely desirable that you should come to that conclusion, not because you will get any better contract for indemnity, in case the loss does happen, than you may now get from large stock companies with ample capital; but you will reach the one essential point of the mutual principle, namely, the identity of interest of the underwriter and the assured, and the saving of money to the assured if the underwriting is successful, and the losses are reduced to the minimum, but I cannot advise it. . . .

The main object of the strictly mutual system is, how to prevent fire, and if fire occurs, as fires will unavoidably occur, how to reduce the loss to the minimum; and this leads me to the second part of the subject, — how to prevent fire.

The first rule is cleanliness; the second is freedom from dirt; the third is cleanliness; and the fourth is freedom from dirt; and so on to the end of the chapter, as many times as you choose to repeat it.

How to prevent loss: the first rule is to have plenty of pails of water handy; the second is to have a large supply of buckets of water convenient; the third is to have plenty of pails full of water where you can lay your hand on them; and the fourth is, after you have put in plenty of pails, to add plenty of buckets, and keep them full of water. . . .

The second point in preventing loss by fire is to have your building so constructed that your fire can be held or will be held where it begins, and cannot find its way into a concealed space behind wooden furrings, in hollow floors, or in other well-devised wooden flues that have apparently been provided by the ordinary architects so as to protect fire from water, and to give the fire the widest opportunity to range from attic to cellar and throughout the building.

But it is too late for you to consider this method in the buildings that already exist. They are many of them *fire-traps*, in which, if a fire occurs in the basement, it may find its first outlet in the attic, five or six stories above the street, and beyond the reach of the ordinary fire apparatus.

The first duty of your mutual underwriter would be, to examine your buildings to find out where a little brick and mortar, or a little mortar, or a little wire lath and plaster, or a little tin, or some other cheap appliances, would cut off one story from another, and stop these wooden flues that infest many of your buildings.

The second duty would be, to see to what extent one floor can be separated from another by wooden doors covered with tin at the head of stairways, or by lining the wooden partitions that enclose your stairways with tin; to see what could be done to prevent the fire going from the basement to the attic through the elevator shaft, by automatic hatchways or other appliances; or to see how far the glass doors and other unsafe appliances of the passenger-elevators could be protected, so that the fire would not pass from the elevator shaft into any room; and also to supply the elevator shaft with a light thin-glass window at the top, to the end that, if the fire should get into the shaft from any story, it should not pass into another room, or be deflected by the solid roof into the attic, but might pass out, as in a chimney, through the thin window.

The next duty of the mutual underwriter would be, to see if there were internal appliances, — stand-pipes, hose-pipes, and the like, to be used in case of fire, — and whether, if they were there, there was any body of men on the premises that knew how to use them. Such inside appliances are not usually of much service, unless supplemented by a trained body of men belonging to the establishment, drilled in their operation. It is not uncommon for me to see the hose of an inside stand-pipe wound round the neck of the hydrant, from which it would take about ten minutes to unwind it, and another ten minutes to untwist it. Inside appliances are of the utmost value if managed by a private drilled fire department, but without it are not of much use. Not being under the care or supervision of the public fire department, the fire engineers seldom attempt to use them.

In the case of the Worth Street fire, however, the use of the apparatus in the warehouse of H. B. Claflin & Co. showed what effective work private fire apparatus could be made to do, while the recent destruction of a large hotel in Buffalo, in which all the internal apparatus broke down, showed its usual condition.

Having secured, in some degree, order, cleanliness, discipline, and by other measures having made it certain that some one would probably be equipped and have the presence of mind to attack the fire in the first five minutes, your mutual underwriter would next advise in many places, perhaps throughout large establishments, the introduction of the Parmelee Automatic Sprinkler, or some other sprinkler of like kind, if there is another kind that can be depended upon. This appliance is to meet the danger of a fire occurring in the night or in the day, but especially with reference to the night: by its instrumentality the fire will let on its own water, put itself out, sound its own alarm, and tell what room it is in. . . .

We have come to consider and to advise the adoption of the automatic system of sprinkling, or of extinguishing fires, as of the first importance; and it is of greater importance in the manufacturing departments that are carried on in the upper stories of your great warehouses than it is in our factories, because these manufacturing departments are often conducted by tenants who are not interested

in the occupancy of the stories below, — sometimes, or in fact often, by more than one tenant, over whom there is little or no control, — who may neglect their premises, who may leave oily waste subject to spontaneous combustion, and who may expose all your property to a danger that begins in some very insignificant part. The automatic sprinkler, therefore, constitutes the best watchman, the best detector of fire, and the best fire extinguisher, that has yet been found.

But all these appliances, all this discipline and order, may fail, and will sometimes fail, and a destructive fire may occur in a single building, and subject all the surrounding premises to the danger of a great conflagration. To meet this, especially where the water-supply is assumed to be inadequate and the street mains too small, we have devised and proposed a system of pipes with hydrants upon the roofs of warehouses. It has not been adopted to my knowledge in any city. It is purely theoretical so far as city warehouses are concerned; but hydrants upon the roofs of factories, operated either by static pressure of the water or by a pump at some far distant point, form a common and customary part of the means for controlling a fire in our factory system. In fact, the theory can be sustained by ample evidence of practice in most important premises. Let us assume the conditions of the block on Worth Street, which was so recently in part destroyed, on the opposite side of the way from Mr. Claflin's store. In that fire, as I have been informed, the hydrant upon the roof of Mr. Claflin's store, operated by his great steam-pump, was worked so that a stream of water was played across the street, over the end store next the street, and served an extremely valuable purpose in extinguishing the fire in the store beyond. Now suppose that the block itself had been furnished with a stand-pipe on the corner next to the Claflin store, to which a steam fire-engine could have been instantly coupled without need of waiting for hose or ladders; that on that stand-pipe there were no appliances for working at the several floors; that it was away from the windows, and could not be hurt by the heat, but that from its top there extended a complete roof-service of horizontal pipes carried around the whole block and furnished with hydrants at each party-wall; also, at the other end of the block diagonally from that first stand-pipe, there was another stand-pipe of the same sort, to which the steam fire-engine could be attached: it would then be obvious that, in case of fire in any one of the stories of that block getting a headway, and getting beyond the control of the engines operating from the street, the firemen would only have to break into any store in the block, mount to the roof, pass along to the parapet wall that separated the store on fire from the next, and there, attaching a short hose-pipe and causing the steam fire-engine to be started at a far distant corner on either end, be able to operate from above directly upon the burning building. I cannot doubt that such a roof-service could be put in operation vastly quicker than the long ladders could be raised and the long lines of hose carried up from below, and not be subject to the danger of the bursting of the hose, and of losing the water at the very most important moment.¹

At the time I proposed this in the city of Boston, this service of pipes, hydrants, and all appliances needed, could have been furnished in place, ready for use, at less than sixteen hundred dollars per acre of the flat roofs protected by it. There were three objections raised to it. The first objection was published, over the signature of one who called himself "underwriter," to this effect, "that, if it were adopted, insurance capital would be withdrawn from the city of Boston."

The second was repeated to me as having been the objection of the president of a stock-insurance company, to this effect, "that, if it were adopted, the water would be let on from above so quickly, that the Protective Department would not be able to cover the goods below with rubber blankets, and the liability to water-damage would be much greater."

The third objection — said to have been the objection on which the committee of the city council rejected a proposition made by me to furnish one block of three-fourths of an acre in extent with all the appliances, at a cost of twelve hundred and fifty dollars, as an example by which they might be guided — was to this effect, "that it would be proved so efficient on that block that the city would be obliged to carry it out throughout the business districts of Boston, and it might cost them a hundred thousand dollars before they got through."

These are the only objections that I know of in respect to this theory. I commend it to you as a first measure to be considered in the dry-goods district of the city of New York, because less water may be required with such a service, when applied at the right time from the vantage point above, than may be required by steamers operating from below, a large portion of whose water is dissipated or lost in the attempt to force it from below to the fifth and sixth floors. And if there is any inadequacy, either in the size of your pipes or the supply of water in that district, it behooves you to see that what water there is, is carried in the best and quickest manner to the vantage point above, and applied where it will do the most good. . . .

You doubtless have, in many of your buildings, iron doors in par-

¹Since this address was given, my attention has been called to iron pipes attached to several of the buildings in the dry-goods district for the purpose of carrying water to the roofs. They are good as far as they go, but are generally too small, and are connected upon the roofs only with a single hydrant. The vertical pipe should be five inches in diameter, and the roof-service should consist of four-inch pipes.

ty-walls. Sometimes they are named in leases, and none others are permitted. They are worth about as much as so many sheets of brown paper would be to stop a fire. At a very moderate heat, they will, if very solid and thick doors, be expanded so as to swell out one way or the other, and let the fire through at the top or bottom; if they are of the ordinary construction, they will warp and curl, usually in the first ten minutes of the fire, so as to be absolutely worthless. If your lease does not require them, they should be removed, and wooden doors covered with tin should be substituted; such wooden doors covered with tin being as nearly fire-proof as anything that a due regard to economy will permit you to use.

You also have innumerable slender iron posts supporting the main beams in stores of over twenty or twenty-five feet in width. Let but one of these break, and your whole structure may come down by the run, as the Pemberton Mill did. It would be a question of judgment, whether such iron posts needed to be protected or not, in all cases. In many cases it would be almost the first condition of safety. . . .

Into other minutiae which constitute a part of our work you will hardly expect me to enter.

I have various documents here, which are at the service of any committee that you may appoint to consider this subject.

If you can devise any method of underwriting, either under the mutual principle, or, perhaps, what is more feasible under the conditions of your case, by means of a participation of the assured in the profits of a stock company, — if, I say, you can devise any method by which it shall become a privilege on the part of the insured to be insured, and a penalty to be excluded, so that the trained inspector employed by the underwriter to visit all the risks at least once a quarter may be able to enforce the rules of safety, you will have taken a very long step toward a remedy for this terrible fire-tax, that costs this country annually more than it costs any nation in Europe to sustain its largest standing army in time of peace.

There is one method of fire insurance that has never been worked as efficiently as it might be, although it constitutes the surest and most adequate system of marine insurance; and that is the method of the Atlantic Mutual Insurance Company; viz., the issue to the assured of redeemable scrip representing a share of the profits of the business.

I know that some stock companies offer what are called participation policies on this plan; but it is a mere option. What I propose is a company on this plan, controlled by merchants whose main object is safety and indemnity, and the profit of underwriting a purely secondary purpose.

Although the law of chances, and the experience of a long period of years, constitute an element in the system of insurance, and although statistics covering a long period and a large number of each class of risks are almost indispensable to the executive officers of an insurance company as an aid to their judgment, yet it is obvious that this law of chances and the rule of statistics cover some years of great disaster, together with years of great exemption from loss. Now, if the apparent profits of an insurance company in the years of great exemption from loss are in large measure divided to a set of stockholders, and are not accumulated for the benefit of the assured who have contributed the money, the assured may find themselves left without indemnity in the year of disaster. What happened in the Chicago and Boston fires? The insurance companies that had been apparently most prosperous and best managed, that had paid large dividends, — for years from ten to thirty per cent per annum, — went down with the least prosperous, and, in some cases, paid the smallest dividends to their creditors.

Is not the great need of your city risks just this, — a system of insurance in which the capital shall be merely or mainly a guaranty fund, drawing its compensation almost entirely from the income of the property in which it is invested, coupled with or standing behind a method of accumulating the profits of prosperous years of underwriting to meet the contingency of an occasional year of great disaster?

I have said that the premium that you pay constitutes the real fund from which you are paid when you meet a loss. It is your own money that you rely upon for your indemnity; when you begin to be paid out of the money of the stockholders, you quit that company, if it is not too late, and insure somewhere else.

I will ask you the plain question, Can you not put up a capital that shall be entitled to a dividend not exceeding four or five per cent for at least five years, in which five years all the profits of underwriting shall be accumulated, a given proportion of such profit to be divided among the assured in redeemable scrip after the manner of the Atlantic Mutual, and a given proportion to be carried to the credit of the stockholders after having been at the risk of the business for at least five years?

This would be a mutual system without a mutual liability to assessment. In it you would have a prospect of profit to both stockholders and members, that would secure identity of interest.

There is nothing new in the plan; but it has not been adopted to any extent.

Another method has occurred to me that would make a company of immense strength, and that could enforce discipline among those whom it insured.

There are plenty of men here who do not care at all for annual payment of cash income on their property, provided they get something to represent it, and know that it is doing its own work and earning an income.

Suppose two hundred of you pool in five or ten thousand dollars each, to be at the risk of the business of underwriting for ten years *without any dividend*, but that the income of the investments and the profits of the business shall all be accumulated during that period, and then the company be wound up or reorganized for another and another decade: would not this be an endowment insurance to the stockholders, and also the strongest guaranty of indemnity to the members? Such a company could impose its own rules, and would not be obliged to compete for business: the best risks would come to it in a flood. It could be renewed each ten years.¹

On this plan could also be incorporated, if advisable, a scrip division of profits, redeemable at the end of the tenth year, and giving to the holder a share of the profit of the whole period proportionate to the ratio which the dollars of the scrip should bear to the total profits of the whole period.

Keeping constantly in mind that you are seeking protection against fire, and prevention of loss by fire, as your main purpose, and indemnity for loss or profit of underwriting only as incidental, I cannot doubt that some such plan may be adopted, by which the interest of the underwriter and the assured may be made substantially the same, without the liability to the assessments to which the members of the strictly mutual companies must be held.

As I have said before, if you choose to go into a mutual liability company, you may do so; that is your affair, not mine. My function is to show you what is absolutely essential to any plan that will give you any relief from the present absurd position in which you find yourselves of being obliged to pay one dollar of cost in order to get an uncertain contract for a dollar of indemnity.

Let me close this address with one consideration that you cannot long avoid taking action upon, whatever else you may omit to do.

The introduction of elevators in your high buildings, and the establishment of manufactures in the upper stories, is increasing the hazard of a great conflagration year by year; while, at the same time, your water-supply is becoming relatively less and less adequate to meet the danger.

If any one of your great business blocks were moved out into the country, away from all its dangerous surroundings, if it was there converted into a factory under single supervision and all the faults of its construction were remedied, and it was then furnished with only the single supply of water served through the street mains that you now have, *the risk upon it would not be taken by any Factory Mutual Insurance Company of any standing.*

Not until you had laid such a system of pipes as you can lay from the North River through the dry-goods district, with ample and adequate steam-pumps by the river to work them; not until you had fitted your premises with pipes and hydrants inside, outside, and upon the roofs; not until you had guarded every specially hazardous department of manufacturing with pails, buckets, tanks, sprinklers, and other appliances, — could you be admitted to membership in a strong mutual company.

And then every detail of your condition and equipment would be inspected by a trained man once a quarter. . . .

The present condition of the whole matter; the combustible methods of construction; the heavy cost and waste of the system of insurance; the want of knowledge, on the part of a large part of the owners, builders, and architects, how to combine good taste and safe construction with convenience for use in our shops, warehouses, and in the manufacturing departments of our great establishments, — are a positive disgrace to our intelligence and sagacity.

It is a matter of national importance, and warrants me in repeating, while thanking you for your attention, what I have of late so often said; viz., that the direct and indirect cost of fires in the United States imposes an annual tax upon the people greater than that imposed on any nation in Europe to support the largest standing army now in service.

THE ILLUSTRATIONS.

COMPETITIVE DESIGN FOR THE NEW YORK PRODUCE EXCHANGE.
MR. F. C. WITHERS, ARCHITECT, NEW YORK, N. Y.

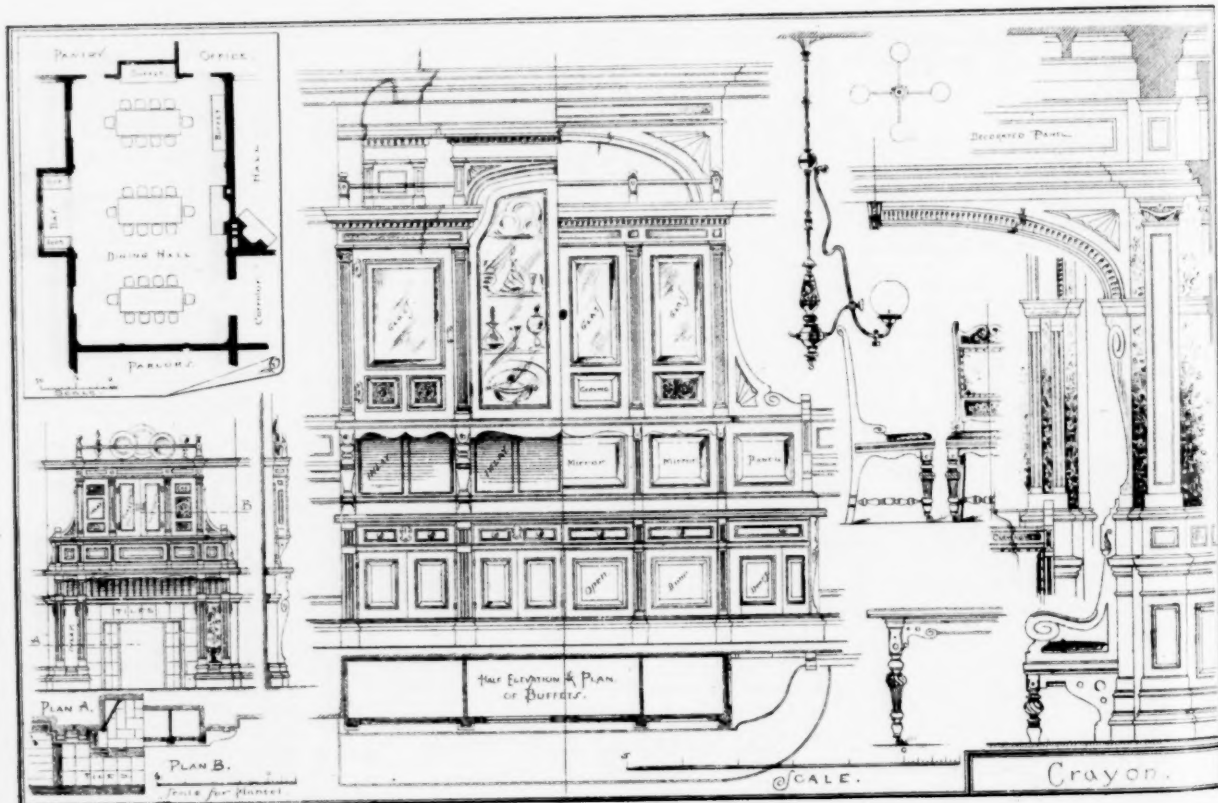
THE problem to be solved was a large Exchange room on the second floor, with an area of not less than 27,000 nor more than 30,000 square feet, and rooms in connection with it; large offices on the ground floor, and as many smaller offices on the floors above as the proposed outlay would permit. The site is irregular in shape, and in this plan it was proposed to isolate the building by continuing the street through from Beaver Street to Stone Street, for light and ventilation as well as for architectural effect. The principal entrance was proposed to be on Beaver Street, as the majority of the members and others would approach it in that direction, whilst other entrances were to be at the opposite corners of the building. The walls were designed to be built of brick with stone finish to windows, etc., and terra-cotta ornamentation. The estimate for the entire building, partially fire-proof, was \$650,000, and completely so, \$700,000.

DESIGN FOR A DINING-ROOM.

“Crayon.” No place of observation provided for head-waiter, as required. As ceiling indicates construction, the girders are too small; opportunity for design lost in not emphasizing connection between

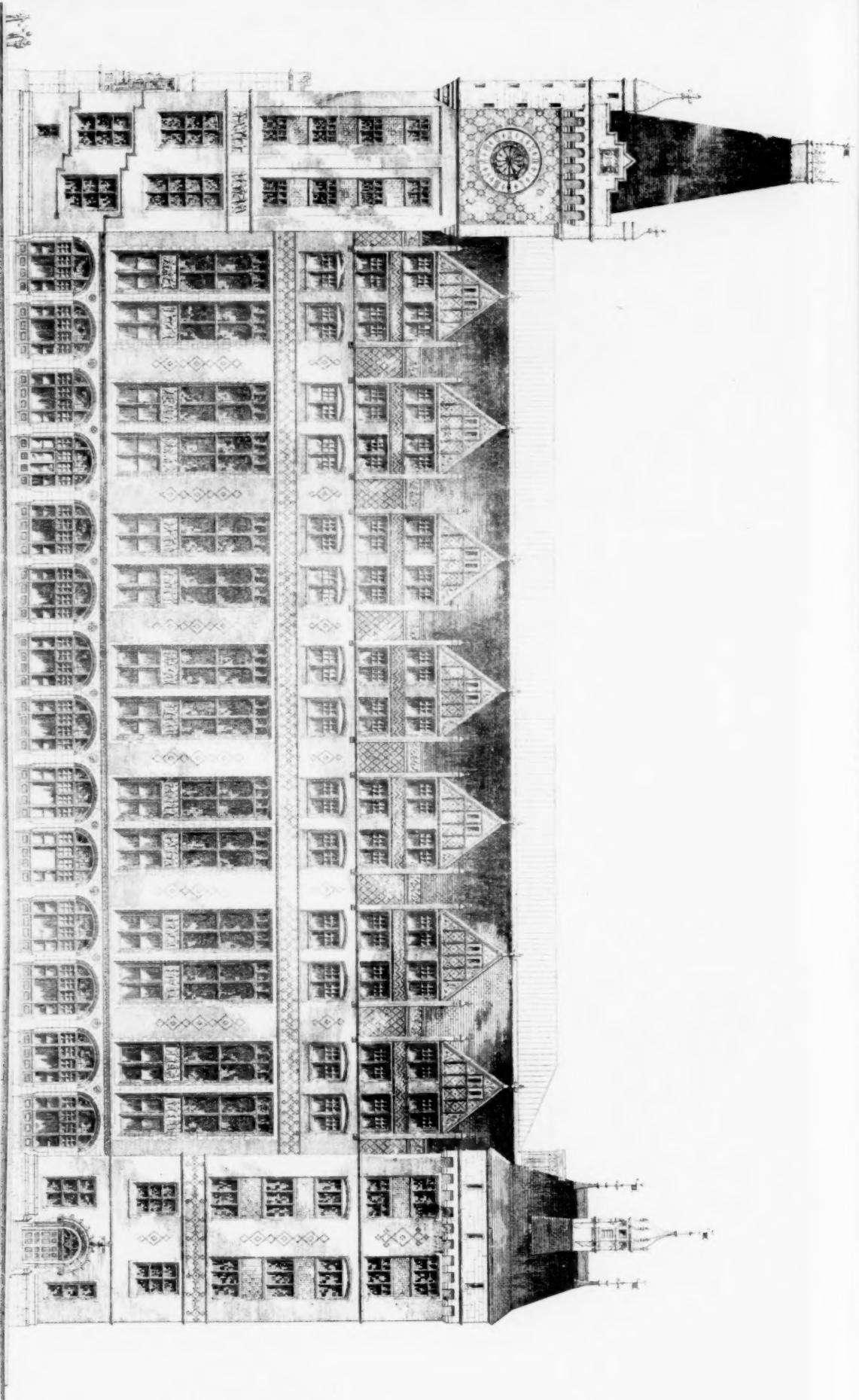
¹This company might well be named the *Compound Insurance Company*. As a mere matter of profit the time to start it will be after the next great conflagration, when it will be difficult to obtain insurance, and the premiums will, for a time, be very high.

[illegible]





Competitive Design for the New York Produce Exchange Building



ELEVATION OF BROADWAY AND WHITEHALL STREET.

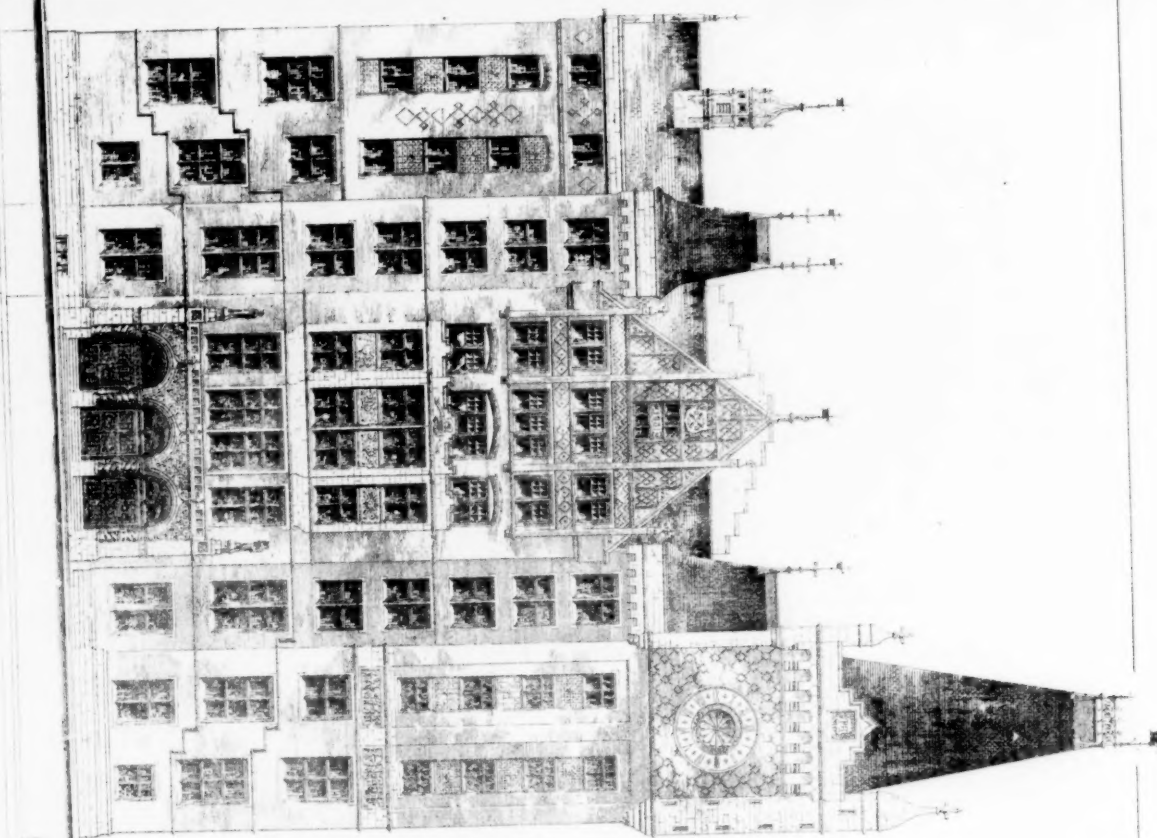
Competitive Design for the New York Produce Exchange Building

F. C. Withers, Architect

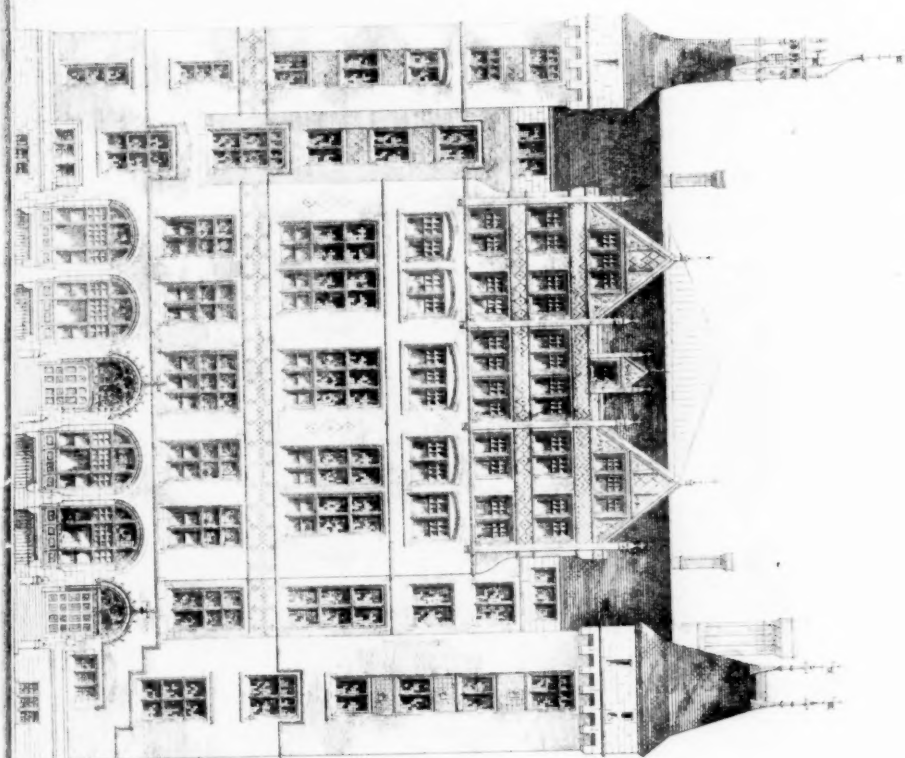
N. Y. A. C. S. D. 1881-1882.

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ELEVATION OF BAYLOR STREET.

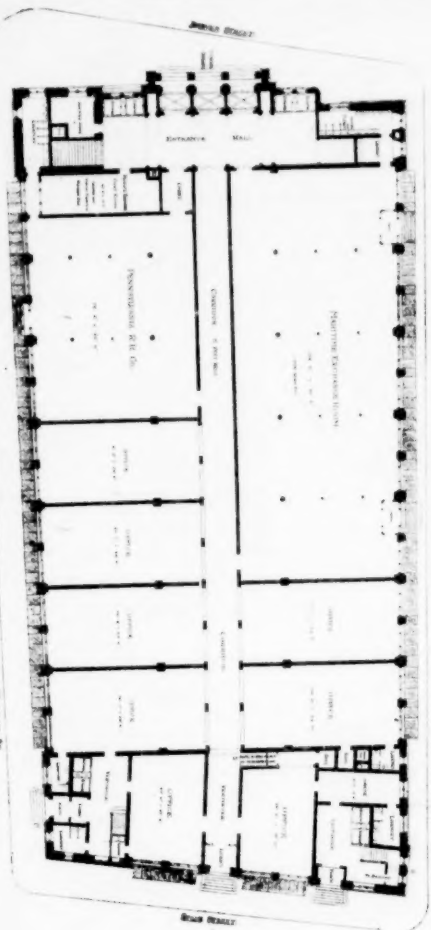


ELEVATION OF ELYNE STREET.



Competitive Design for the New York Produce Exchange Building

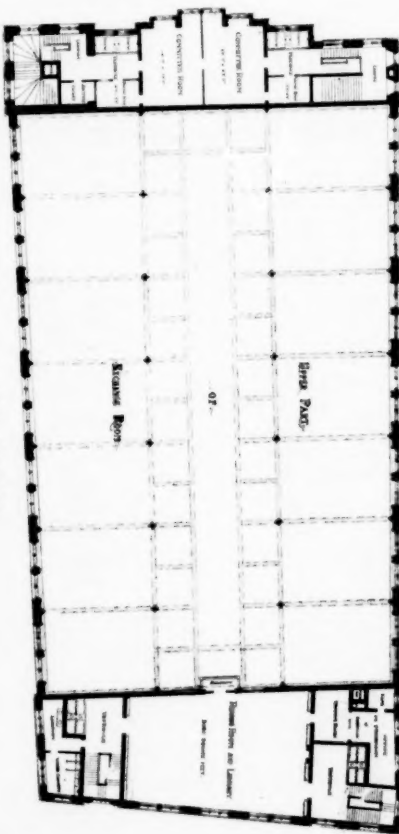
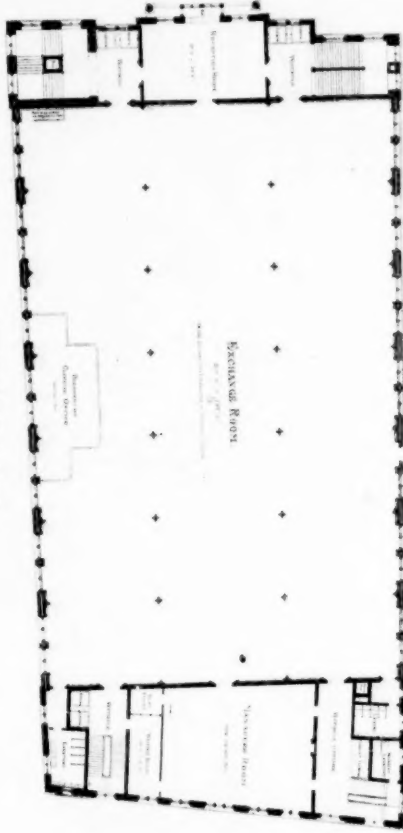
COPYRIGHTED 1880 JAMES H. BROWN & CO.



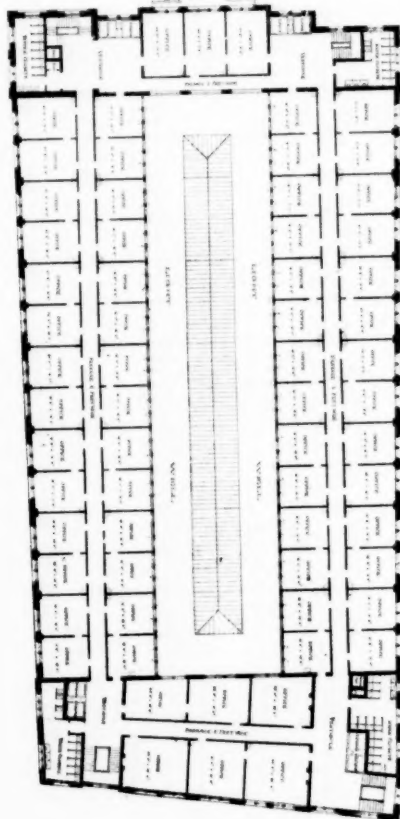
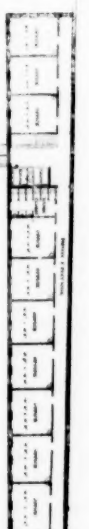
PLAN OF FIRST FLOOR



PLAN OF EXCHANGE ROOM



PLAN OF SECOND FLOOR



PLAN OF THIRD FLOOR



these and the pilasters. As a full order is suggested in wall-treatment, the want of a cornice in entablature is notable; it leaves frieze too wide, so as to compete with the space above impost moulding; architrave of entablature not broken in perspective over bay-window, as shown in details; form of central doors of principal buffet inelegant (see details). Perspective deficient in exactness of detail. Carving-shelf of principal buffet too low. Front legs of chairs clumsy. Main defects of design: Absence of proper proportions between horizontal divisions of wall-surface; impost moulding, while it draws attention to a certain unity in the design and a correspondence of parts which is well intended, disturbs the harmony of proportions in the wall-surface, and on the whole is an unwarranted intrusion. The composition would be better and quieter without it."—*Jury's Report.*

THIRD COMPETITION IN INTERIOR DECORATION.

THE publishers of the *American Architect and Building News* offer three prizes of twenty-five dollars (\$25) each, for each of the three designs, submitted in accordance with the following programme, which shall be adjudged of highest merit. Also an indeterminate number of "consolation prizes" of a minimum value of five dollars (\$5) will be awarded under the same conditions. The award will be made by a jury, the members of which are Henry Van Brunt, Arthur Rotch, and Eugène Létang, all architects of Boston. The conditions governing the competition are these:—

1. Every competitor, by taking part in the competition, signifies his willingness that his design be published in the *American Architect and Building News*, if the editors desire to publish it.
2. Each competitor is to submit one drawing, measuring 14 inches by 22 within the inner framing line, the drawings being executed in pen and ink, on smooth white paper, in a manner suitable for reproduction in this journal.
3. The authors of the successful designs surrender to the publishers all property right in their respective drawings and designs.
4. In awarding the prizes heed will be taken of the manner in which the programme has been followed, the excellence and appropriateness of the design, and the execution of the drawing.
5. Each competitor is requested to sign his drawing with some motto or simple device, which can be recognized from its verbal description, and to enclose to the editors, together with his *nom de plume*, his real name and address.
6. The drawings to be received at the office of the *American Architect and Building News*, 211 Tremont Street, Boston, Mass., on or before Saturday, May 14, 1881.
7. Drawings which are received after the day named will be excluded from competition, but not necessarily from criticism and publication.

PROGRAMME.

The subject of the third competition in interior decoration will be the furniture used in one of the bed-rooms of the small country hotel which has furnished the subjects of the previous competitions.

The bed-room in question has an area of about two hundred and twenty-five square feet and measures nine feet in the clear. It is therefore of such a size that the occupant may use it occasionally as a sitting-room, and in the furnishing the dual character of the room should be borne in mind. It is also to be remembered by the competitors that furniture—especially that of bed-rooms—is intended primarily for use and comfort, and only secondarily for decoration.

It is to be noted that although gas is supplied to this hotel, water is not laid on, therefore set-basins and similar fixtures are out of place. Proper ventilation should be provided.

Required:—A drawing showing a sketch of the room, which is to occupy not more than one-sixth of the sheet, a plan to one-eighth scale, showing also the dressing-room belonging to the bed-chamber, the remainder of the sheet being occupied by the designs of the furniture—bedstead, chairs, table, washstand, toilet-table, etc.—in elevation or perspective, and illustrated by the necessary details.

LEGAL NOTES AND CASES.

Sale of House.—Restrictions upon the Use of Adjoining Property.

In the case of *Musgrave vs. Sherwood*, decided in the New York Supreme Court, at New York, on the 11th of February last, the question was determined as to the right to an injunction to restrain the owner of adjoining property from violating the restrictions as to its use, which he represented were put upon it, to one purchasing from him.

The plaintiff, Mrs. Musgrave, bought one of a row of houses on Fifth Avenue, in the city of New York, from the defendant, Sherwood, for the sum of \$110,000. Before the purchase there were several conversations between Mrs. Musgrave, her husband, and the defendant about the houses, and certain statements and representations were made relating to them by the defendant. The plaintiff was a witness, and her testimony shows:—

"Q. Will you state what these representations or statements of Mr. Sherwood were? A. I remember perfectly, on one occasion—which conversation I can't remember—we were going through the lower rooms of the house; Mr. Sherwood had a cane in his hand, and he was constantly knocking the plate-glass to show the superiority of the glass, and also to examine the wood-work of the house. We came to the rear room of the house; the outlook was not very pleasant, as one of the lots on the north side was not cultivated at all or built upon, and I said to Mr. Sherwood, 'This does not look

very prepossessing,' and he said, 'Well, there will be nothing upon it that will be disagreeable, because all the property around these buildings are under restrictions; nothing that is objectionable can be built; I myself am restricted from putting anything but first-class private residences on this property, and they will always be, first and last, private residences.'

"Q. What influence did that declaration of Mr. Sherwood in regard to his buildings being always, first and last, private dwellings have upon your proposed purchase? A. It had a great influence upon me. It was upon that that we bought, knowing that the two houses on Fifth Avenue were all finished, and the one on Forty-fourth Street nearly completed, which he told me would be his own private residence.

"Q. Would you have made the purchase of this house without those statements and representations? A. No, sir; I should have seriously objected to it. I should not have bought."

At the time these representations were made, four houses on Fifth Avenue, including the plaintiff's, were finished, and one on Forty-fourth Street, forming a part of the defendant's plot of land, was nearly completed; so that the representations were made as to existing things, to facts accomplished, namely, houses completed, and one in process of erection, and nearly completed, and all of which were necessarily of the character named, because, as the defendant said, he was restricted from erecting other than first-class private residences on the property. Afterwards the defendant commenced to enlarge the other houses, for business purposes, as part of a family hotel, and the plaintiff brought an action to restrain the use of the party-wall for that purpose, and to restrain the work generally. Neither in the contract nor in the deed was there any reference to the restrictions. The injunction was refused by the trial judge, but on appeal it was granted as to the use of the party-wall, only.

Judge Brady, in the opinion, said: "It is evident from the testimony that the plaintiff was purchasing what she regarded as a first-class residence, in a desirable locality, the character of which was secured by restrictions to the extent stated, and her testimony is that it was bought as a private residence and as a permanent home. The inference justly to be drawn from the facts—namely, the locality and character of the house and its surroundings, and the consideration paid for it—was that the plaintiff was paying for the special privileges arising from the fact that it was, and the defendant's houses adjoining it were, by restrictions, stated to be private residences, in the language of the plaintiff, 'always, first and last,' as declared to her by the defendant himself. These representations having been made and the property having been purchased through the influence which they exercised upon the plaintiff, the defendant has created an obligation which imposes upon him the observance of his representations and promises, relating, as they do, not merely to acts in the future, but, as already suggested, to an existing state of facts—namely, the construction of houses completed—which in their character, by avowed existing restrictions, were, and were to continue, to be private residences, and this embraced the use of the easement connected with them. See *Tallmadge vs. East River Bank*, 26 N. Y., 105; *Meyers vs. Watson*, 1 Simons N. S., 523; *Powers vs. Woodward*, 6 Pick., 206; *Greenwald vs. Meyer*, 35 Penn. St., 369. It seems to be quite clear that if the plaintiff attempts to appropriate her house to purposes inconsistent with the design of the defendant in constructing it and the other houses, she can be prevented on her statement, by a just application of the rule of law now invoked for her benefit. It must not be forgotten, in the consideration of the question involved, however, that the plaintiff's house was built with an easement, a party-wall, and which consequently existed at the time of the negotiations for, and the sale of it to the plaintiff, and which was referred to in the conveyance to her. Therefore, it is the use of the existing easement for purposes antagonistic to the expressed design of the defendant in building the houses, made patent by his statements and representations, which is complained of and by which the house adjoining the plaintiff's, to the prejudice of her property, as shown by the evidence, was enlarged not as a private residence but for business purposes, namely, as part of a family hotel. We do not wish to be understood, however, as declaring it to be our judgment that the defendant would have no right to build upon the party-wall, if the object were to enlarge his house as a private residence. *Brooks vs. Curtis*, 50 N. Y., 639. Such a use might be in perfect harmony with the original design in the structure of the houses and the representation and restriction to which reference has been made. The enlargement of the houses adjoining the plaintiff's premises was not contemplated with any such intention or for any such purpose, according to the findings of the learned judge who presided at the trial, but, as already suggested, was for the purpose of affording accommodation for a larger number of guests in the hotel to which the defendant's houses adjoining had been appropriated.

"We do not wish to be understood either as declaring that the defendant is under obligation to reform the character of the houses, other than the one adjoining the plaintiff, because we think that the changes which were made prior to the commencement of this action in the other houses must be regarded as having been assented to or acquiesced in by the plaintiff, because she allowed them to be thus changed without objection, and in equity must bear the consequences of the alterations so made. Our judgment is, therefore, it appearing that plaintiff did not assent to the use of the party-wall between her and the adjoining premises for the erection of the additional stories which were made for business purposes, her right to protection from

such a use by the defendant exists, and in equity and good conscience should be enforced; and that the learned judge at the Special Term erred in his conclusion of law upon that subject. This view renders the defendant liable to the consequences of his statements and representations discussed, which, as we have seen, induced the plaintiff to purchase."

RECENT BUILDING IN NEW YORK.—I.

PUBLIC BUILDINGS.

NEW YORK, March 30.

THE remarkable increase of building activity within the past few months could scarcely have failed to be accompanied by a greater or less revival of architectural interest. It is surprising, however, to see how many miles of brick or brownstone may be put up, and how much moulding and carving may be applied to them, without betraying a single architectural idea. A draughtsman is necessary to the projectors of a commercial palace, and it must sometimes happen that the draughtsman is an architect. When this is the case, after he has satisfied his principals concerning the rent-paying properties of the structure, they are commonly content to let him have his own way with the architectural "trimmings," content if these be neither outlandish nor out of fashion. Sometimes, of course, he is afflicted with an aesthetician in the building committee, but the cheerful apathy which generally prevails at least gives the architect liberty, and with it responsibility, and the dearth of ideas is more discreditable than it would otherwise be, and it is the stranger that there should be so little individuality in the great aggregate of new work. If there is little art, however, there is a fashion. Queen Anne has now arrived at the currency to which a new opera attains when its tunes descend to the hand-organs. The speculative builder orders small mouldings from his carpenters and his plasterers, and the pleasing dish-towel ornament depends in brownstone over the doors of tenement-houses. The "movement" has not gone so far yet as to displace, or even seriously to threaten, the umbrageous tin cornice, though the spring styles of 1881 indicate that that member is to be worn lower than heretofore, and that, except cornices, trimmings are to be worn smaller. It is impossible to give a general survey of new buildings without emulating the eloquence of the fashion writers, and perhaps it is better to confine ourselves to the very small minority of the new buildings which have an interest different in kind from that of millinery.

One of the most noteworthy facts about all this building activity is that it is entirely secular. No new churches of any importance are building, and, so far as I know, none are contemplated. Moreover, there are very few public buildings in the list of recent work. Of the competition for the Produce Exchange, and the sorry showing which resulted from it, you have already been informed. No competent person, I think, who has had the opportunity of studying the rejected designs of Mr. Withers, Mr. Eidlitz, and Mr. Upjohn, would consider that the successful design was either first or second in merit, or that the other designs shown had the least claim of any kind to exhibition. Each of these three unconsidered designs had features of interest, and one of them, it seems to me, was a completely satisfactory solution of the problem. That they were not considered seems to have been due not merely to the inevitable incompetency of the committee, but to a sordidness of view which was in its degree rather peculiar. From this it resulted not only that the requirements of the Exchange were subordinated to the "investment" in fact, but that the committee insisted that the subordination should be conspicuous, and that the Exchange should be visibly mutilated for the sake of the shops under it and the offices over it. Those architects, who, while satisfying the commercial needs of the building, studied to keep these from ruining the building as a monument, simply threw their labor away.

The new Stock Exchange, like the Produce Exchange, is a *quasi* public building; but it is not a new building, only the remodelling of an old one. Architecturally, it consists only of a street front, and Mr. Renwick has not taken the monumental view of the problem it presents, so far as the exterior is concerned. In this, considering his limitations, he is very likely right. His street front, which is nearly completed, is a piece of very florid Renaissance, executed in a coarse white marble. It contains a great many things, and they are not ill combined, but the design does not go beyond pretentious commonplace, and is everywhere overloaded. The general character attained is a certain ostentation of costliness, which very possibly expresses well enough the temper of the body for which the place is built, but by no means does justice to Mr. Renwick's abilities. His Booth's Theatre is one of the most carefully studied and effective pieces of Renaissance in New York, with which the New York Exchange is not to be compared for a moment. The carving, which is profuse, is entirely coarse and mechanical.

Mr. Post's building for the Brooklyn Historical Society has been for some time completed. It is very simple in plan and outline, being indeed in general design a reproduction of the same architect's Chickering Hall. Like that building, it consists of two ranges of very large arches, the upper and more important series being round-headed with a low attic and a steep roof. A tower is added to the Brooklyn building, at the corner which is not the street corner, but it does not at all help the general effect. The cornice, however, is much less aggressive than that of Chickering Hall, and the color-treatment is entirely different. The arches in the New York building are in brownstone, with red brick piers and walls, and the spandrels of the main arches are filled with a mosaic of tiles. The Brooklyn build-

ing is treated throughout in a monochrome of red—red brick and red terra-cotta—and in color is much more agreeable. The reproduction in moulded clay, however, of protruding keystones is not at all agreeable. The building contains some interesting sculptural decoration in terra-cotta by Mr. Warner.

Perhaps the most important, and pretty certainly the most interesting, of all the recent buildings is Mr. Haight's addition to Columbia College, which, indeed, is scarcely a recent building, although I do not recall having seen any notice of it in your columns. It is a long, rather low range, in red brick and a light chocolate-colored sandstone. It is designed in the latest phase of English Gothic, which one is tempted to call, *pace* Mr. Pearson, the one really national expression which mediæval architecture attained in England, and Mr. Haight's essay in it combines fidelity to style with much freedom of composition. The "features" of the design, a rich oriel, an angle turret, and groups of tall chimney-stacks, are very cleverly introduced so as to relieve what would otherwise be a tame composition, without disturbing the quiet and cloisteral aspect of the building. The detail throughout is carefully and intelligently designed and disposed. This is the most scholarly and best studied of Mr. Haight's works, in New York at least, and shows a gratifying advance in all artistic qualities upon the buildings which he designed for Columbia some seven or eight years ago, although those were noteworthy, as things go in New York. Perhaps part of the superiority of the later work is to be found in the fact that it makes no attempt at novelty, but only at excellence, and might furnish a text on the disadvantages of eclecticism; but it is as natural to refer it simply to the artistic growth of the designer. At any rate, the new work is very satisfactory to look at, besides being almost the only one of the recent buildings which is quite untainted by the prevailing epidemic. It is good news that Mr. Haight is to go on and complete the quadrangle of which his buildings now form two sides.

Very few people, it is to be presumed, whom it would be likely to interest, have seen a building not long ago put up in Cherry Street, after Mr. Cady's designs, for a Sailors' Home, unless they have gone especially to see it. Fate has put Mr. Cady's light in the way of illuminating an unusual number of bushels. Two interesting buildings of his are hidden, one in Catherine Street and one in Leonard Street, which is a pity, considering how many architects one could pick out whose work he would prefer to see transferred from Fifth Avenue and the region round about the Park to Cherry and Catherine Streets and the heart of the tenement-house quarter. The Leonard and Catherine Street buildings are Gothic, or at least the architecture of them proceeds from the construction, while the Sailors' Home is a reminiscence of colonial work. One prefers to see architects devote themselves to this who need the restraint of the style to prevent them from burgeoning into vulgarity and extravagance, and Mr. Cady is as far as possible from being one of these. The present work owes its effectiveness to its broad and simple treatment of masses. It is only a street front, though an ample one. A red brick wall, divided by piers into a centre and wings, stands upon a Doric colonnade in gray granite, which forms a recessed veranda along the whole front. The central division is crowned by a curvilinear Dutch gable, and an emphatic belt of brickwork converts the upper story into an attic. The treatment of the openings is very simple, and the expression attained is one of homely comfort. It is necessary, however, to look at the front in elevation in order to get its effect, which is disturbed in the view from either side by the circumstance that the roof of the building is flat, and that the gable appears as a mere excrescence, with a relation of lines which is rather distressing.

The Union League Club, as your readers are doubtless aware, has not made a popular success, in its exterior architecture, at least, and the reasons are sufficiently evident. The chief of these is that the building is a collection, rather than a union, of parts. The building as it stands has more unity than was shown in Messrs. Peabody & Stearns's competitive design. It is gathered under one roof, and this roof is simple, of steep pitch, and in itself an agreeable object, both in form and color. The omission of the tower rids the building of a conspicuous irrelevancy, which would have seriously marred the unifying influence of the great roof. But in spite of this improvement the building still "scatters." The portico on the long side, with its four brownstone columns standing well clear of the wall, is, as one perceives on examination, a development of the same motive which appears on the Fifth Avenue side in the form of four brick pilasters; but it takes examination to perceive this. At a casual glance, the two sides of the building have very little relation to each other. The theatre at the end of the long side has little relation to either, and the treatment of the gable over it, with its appendix of a brick wall pierced by an arch, which is added after the gable is completed, cannot be called fortunate. In spite of the enormous members used to accentuate the division of the principal masses, this division is not clear, and the impression made by the building is not single, but confused. Of course this defect is one which cannot be redeemed by any treatment of detail, and the detail is not for the most part interesting in itself. The flat arches of the basement are not without vigor, although their vigor is not increased by rock-facing the sandstone of which they and their piers are composed in alternation with red brick; nor is the device of projecting the keystone of a flat arch some feet, in order to carry a balcony, justified by its results. The failure to mark the impost of the round arches in the principal stories also adds perceptibly to the appearance of confusion which is the chief defect of the design, and which indeed proceeds

in great part from the want of a strong horizontal line to mark the division of the wall-space between the basement and the cornice into a principal and a subordinate story. S.

THE USES OF THE STEEL SQUARE.¹

It is not too much to say that few of those who use the steel square know half the ways in which it is capable of being of service to them, and even the marks and graduations upon its blades are not entirely understood by many of those who own one. Attention has been called to its capabilities in more than one technical journal within a few years, but it seems to have been reserved for Mr. Hodgson to illustrate and explain them through sixty-eight closely printed pages, without having exhausted the subject. It would be impossible to give any idea of the book unless by means of numerous quotations and cuts, but one out of many equally simple but ingenious rules of practice will be understood without a diagram. This rule is one for finding the centre of a given circle, and is a corollary from the geometrical theorem that every triangle inscribed in a semicircle contains a right angle. The mode of applying it is to place the index or corner of the square at any point on the circumference of the circle; then mark the points where the blade and tongue intersect the circumference, and connect them by a straight line, which will, as a consequence of the theorem, be a diameter of the circle. Applying the corner of the square again at a different place on the circumference, another diameter can be drawn as before, and the intersection of the two diameters will be the centre of the circle. This rule, the author says, has been in use among advanced workmen for years, but has never been in print before; and there are scores of others, of the same sort. While architects and those whose interest in the subject is only general will find many interesting and ingenious applications of geometrical science in these rules for the use of a tool the value of which few of them suspect, no one who owns a good square, and wishes to avail himself of all its varied powers, should be without this excellent little book.

HALLETT'S SPECIFICATIONS.²

It is gratifying to find that the demand for Mr. Wm. T. Hallett's well-known model specifications for frame houses has been so great as to call for a third edition, which appears in entirely new type, and with various corrections and additions. The corrections are not very numerous, and indeed the work was so complete from the first that few would be necessary. Those that we notice are as a rule intended to make the application of the specification more general; as, for instance, where the Averill chemical paint was exclusively mentioned in the early editions, the later issue leaves the description indefinite; and some particulars of framing are varied to correspond with the common practice. More modifications of a similar kind might have been made without disadvantage, especially in the Plumbing Specification, which although remarkably intelligent and complete for the period when it was first published, seven or eight years ago, has now fallen rather below the best standards. For example, no mention is made of any extension of the soil-pipe above the roof, or even of ventilation to the traps, beyond a single pipe, called a "suction preventive," which is directed to be carried to the outside of the building. Lever cocks are also everywhere specified, and pan closets with valves, instead of the much superior appliances now in general use. Throughout all the trades, a rather economical character of work and materials are called for, no doubt with the intention of making the book more widely useful, and in spite of the omission of a few modern improvements, it is still one of the best works that a young architect or builder can own.

RENEWAL OF THE FOUNDATION, AND TRANSFER OF A LIGHT-HOUSE IN PASCAGOULA HARBOR.³

The coast of the Gulf States is a low, sandy foundation, presenting no bold, abrupt headlands, and very few points where a depth of water sufficient for small schooners can be found near the coast line. The bottom is a long, gradual slope extending for several miles seaward. The outlying islands are loose banks of sand continually changing in contour by the force of storms from different points of the compass.

The Government finds it necessary to maintain lights on the islands near the channels, and to mark the channels by buoys. A great difficulty in maintaining light-houses arises from the shifting character of the islands. It is difficult to excavate to any great depth, as the water washes in, bringing with it the loose sand.

Screw pile foundations were adopted some years since by the Light-House Department, but the piles cannot be driven to a depth below where they are liable to be washed out in a single storm. Some islands have been cut in two, and channels formed through, while others have entirely disappeared.

The channel entrance to Pascagoula Harbor and River is between the east end of Horn Island and the west end of Petit Bois Island. The light is on Horn Island, and was built a few years ago near the

centre of the island, north and south, on screw piles. Gradually the island has been disappearing, and the sea approaching, while the point of Petit Bois, across the channel, has been extending. Brush mattresses were placed along the front and secured by piles to protect the light-house, but were about as effective as the commands of King Canute. To resist the strength of the waves, they were about like spider webs in the path of a locomotive.

The erosion progressed until the sea stood there four, five, six feet deep, under one side of the light-house, excavating and filling according to the direction of the wind, but always carrying out more than was brought back. A removal of the light-house was found to be its only salvation, but its removal a mile to the westward would necessitate a change in the charts.

Not desiring to make such extended and expensive changes, Capt. W. H. Heuer (Corps of Engineers, Member A. S. C. E.), light-house engineer in charge of the district, turned his attention towards creosoted piles, with which a foundation could be made, reaching to a depth below the deepest water of the harbor or pass, and through which the storms could drive without injury.

Borings made on the island revealed the fact that it was a bank of loose sand, and worn and broken shells, to a depth of about twenty feet. Below that was an old and submerged grass marsh, from which pieces of sod were brought up, containing all the little roots and fibres of the ordinary marsh sod. It had evidently been formed at or above the surface of the water, and plainly indicates the subsidence of the continent.

Below this marshy, vegetable deposit of about twenty feet, was found a hard, sandy stratum, making a firm and solid bearing for the piles. Yellow-pine piles, seventy-five feet long, were procured and thoroughly creosoted at the creosote works of the New Orleans and Mobile Railroad.

As the piles were to be driven as near the old site as practicable, and in barely water enough to float a pile-driver, no pile-driver could be had with leaders (or gins) tall enough to swing its hammer over the top of a seventy-five-foot pile. One was procured from the railroad company having leaders over sixty feet high, and carrying a five thousand pound hammer, the leaders being adjusted by machinery so as to drive a pile at any desired angle. With a powerful force-pump the piles were washed down until the hammer would pass over the top, and from there they were driven to a depth of fifty feet below the water line.

The nature of the work, and fluctuations of the tide, rendered progress slow and tedious, less than one pile a day being driven.

Three piles were driven at each corner of the house, and one in the centre to support the lamp. One pile at each corner was driven vertically, and the other two obliquely, spreading from each face of the house at an angle from the vertical of about one in four. The three were then faced and brought together and secured by heavy bolts, making a firm and steady foundation. At the top of the vertical pile is framed a tenon six inches in diameter by eighteen inches long, which enters the iron socket formerly occupied by the iron pile, and the flattened ends of the oblique piles press against the sides of the iron socket.

The light-house was transferred from the old to the new foundation over a trestle twenty feet high, and with such care that its delicate revolving machinery performed its accustomed work at night, never failing to flash a welcome to the mariner. The keeper, Capt. Freeman, says that it never stood as steady as at present.

It is, I think, the only light-house foundation of its kind in existence. It offers a solution to the question: What can be done to render secure and permanent the sand-bar lights? It is comparatively cheap and, if as indestructible by decay and the teredo navalis as all appearances indicate, will outlast iron piles.

When the New Orleans and Mobile Railroad built their creosoted bridges, a few piles were driven alongside to be removed for examination from time to time. The superintendent, having decided a few weeks ago to make one of these examinations, invited several gentlemen, among them some officers of the United States Engineers, to be present.

Two piles were taken out, one of which was driven in the autumn (December, I think) of 1872, and the other in June, 1876. They were beside different bridges, but where piles have been frequently cut off by the ship-worm in one year. Both piles were perfectly free from any marks of the teredo.

I have to-day made examinations of one of our oldest creosoted bridges, and find both piles and superstructure in the most perfect condition, though, had the timber not been creosoted, some of it would have been so far decayed as to require renewal.

During the discussion of this paper, questions were asked by several members of the Society, and have been answered by the author as follows:—

What did the work cost?

Ans.—Three thousand dollars; this included the cost of the thirteen creosoted piles, seventy-five feet long, towing the pile-driver to Horn Island and back, driving the piles, building camp, building a trestle over which to move the house, the timber and lumber required for blocking and stagings, and all labor from first to last; the trestle was thirty feet wide, and strong, and braced to stand any probable storm; the house weighs about fifty tons, I think, from the indications while handling it. The bents of trestle were fifteen feet, from centre to centre, resting on a floor of short plank, five feet wide

¹The Carpenter's Steel Square and its Uses. By Fred. T. Hodgson, Editor of the Builder and Wood-worker. New York: Industrial Publication Company, 1880. 75 cents.

²Specifications for Frame Houses Ranging in Cost from Two Thousand to Twenty Thousand Dollars. By William T. Hallett. New York: Bicknell & Comstock, 194 Broadway. Price \$1.00.

³A paper by J. W. Putnam, Associate A. S. C. E., read December 1, 1880, before the American Society of Civil Engineers.

underneath the sills; the stringers were thirteen inches by sixteen inches, and the timbers placed underneath the sills of the house, of the same size, thirty-five feet long; rollers were placed between the timbers and stringers; the stringers bent so that the rollers near the bents carried the greater part of the load; we found it necessary to use fifteen rollers on each side; to move the house required a heavy pair of double blocks and a pair of smaller blocks for a luff on each side, and a double six-inch line to a winch on the pile-driver.

Why not lower the pile the whole distance by the water process?
Ans. — About twenty feet of the upper part of the island is loose, white sand, and ground and broken shells; it washes very easily, having no bond but gravity to hold it in place; before the pile could be lowered, so as to swing under the hammer, the sides of the excavation would cave in around the pile and stop its descent, the water from the pump being diffused through the loose sand; the pile then had to be raised and lowered again, with, perhaps, the same result; in this way it often required fifteen or twenty trials to get the pile under the hammer; we used the pump to loosen the sand, while driving, at first, but found it of little value.

What were the details of the method of getting the piles down by the water process?

Ans. — After the pile had been raised by the pile-driver, a two-inch gas-pipe, forty feet long, was placed beside it, the lower end passing through a staple driven near the point of the pile; the upper end was lashed to the pile; a hose leading from the pump was connected to the pipe by a union; the pump was then set in motion, and the pile lowered as the sand was washed away.

What is the level of the top of piles above water?

Ans. — Twenty feet.

What is the present depth of water?

Ans. — From one and one-half to two feet.

What distance was the light-house moved?

Ans. — About three hundred feet; I do not recollect the exact distance.

What will be the probable security of this light-house, standing on five supports only, in case the sand shall be washed to a considerable depth, as the paper seems to indicate as possible or probable?

Ans. — Though the light-house is supported at only five points, the three piles at each corner so diverge as actually to constitute thirteen points of support at the bottom; the house is about thirty feet square, and the spread of the piles gives it a base of sixty-five or seventy feet square. They are so bolted together at the top as to resist a storm that would destroy the house. I have driven them for bridge foundations in water forty and fifty feet deep, the end piles of each pier being driven obliquely, in a similar manner, and with the current running faster than the Mississippi River ever runs at New Orleans, and estimated at ten miles per hour. There was no perceptible variation in the alignment of the track. This result cannot possibly be obtained if the piles are driven vertically, and sprung for bracing in the usual way. I therefore think that if the whole island should wash away, to a depth of thirty or forty feet, the light-house would be perfectly safe, that is, as far as its foundation is concerned. I think it altogether probable that within the next few years the whole eastern end of Horn Island will disappear, and that the whole outlying chain of islands that divides the Gulf from Mississippi Sound will follow suit. Perhaps the sand may drift around and pile up in dams, so as to keep a picket line for the continent. Of this I feel assured, that the old coast line was far outside the line now occupied by those islands, perhaps along the border of the great plateau, extending to six or seven hundred feet in depth of water; that we are gradually subsiding, and that the sea is backing up the Mississippi River.

NOTES AND CLIPPINGS.

A SURVEYOR'S BLUNDER. — It is said that by a surveyor's blunder a substantial brick hotel was built in a Philadelphia suburb on a lot forty feet from the one bought for the purpose.

DANGERS OF UNEQUAL LOADS. — In a recent discussion before an architectural society, in Paris, one of the engineers attributed the fall of the roof of St. Martin Market to the unequal distribution of the snow, which had been swept by the wind and drifted in some places to a depth that had never been anticipated. It can readily be seen that such drifts might break a weak purlin, and thus withdraw a part of the support of one of the beams, so as to lead to the destruction of the entire roof. — *Chronique Industrielle*.

WHY ICE BREAKS DOWN TREES. — A gentleman recently had his curiosity aroused, while the trees were covered thickly with ice, as to the relative weight of the ice and the wood it surrounded. So he cut off a limb and found it weighed two and three-quarter pounds; after the ice was melted it weighed two ounces. Two hours later another trial was made; at first the limb weighed four and one-half pounds; after the ice was removed it weighed three ounces. Another trial showed a weight of thirty-two pounds, while the limb alone weighed two pounds.

SEWAGE POLLUTION OF RIVERS. — Professor Tidy, in a paper read before the London Chemical Society, on March 3, restates, in reply to Dr. Frankland, his firm conviction that a fairly rapid river, having received sewage in quantity not exceeding one-twentieth of its volume, regains its purity after a run of a few miles, and becomes wholesome and good for drinking.

PAINTING MARBLE AND MAHOGANY. — My first personal observation of this manifestation of Philistinism was at the villa of a commercial friend, not far from London. He was in no way concerned in it except as its discoverer, for he is not only a man of remarkable intelligence and comprehensiveness of mind, but also one of fine taste and of uncommon social attractiveness. The house was built in Queen Anne's time, and some parts of it earlier. I remarked to him one day upon the beauty of the wood of the solid mahogany door of the principal entrance. He, laughing, replied: "Yes; but I had a hard time with that door. When I bought the house that door was green." "Green!" "As green outside as that grass, and white inside; but it was blistered in spots, and I had it repainted. Still it would blister in warm weather, and after two or three trials I ordered all the paint scraped off down to the wood, that we might begin afresh; and what should we find, after removing three or four old coats, but this noble old mahogany. The paint was very old, and so hard that it almost turned the workmen's tools. It had been painted again and again during the last century." I was amazed; but I found other examples of the same vile taste, which was characteristic of the time when the term Gothic was used to imply rudeness. England at that time was full of noble monuments which had been defaced in this ridiculous and deplorable way. In one of the old churches of London, I forget which one, there is an elaborately carved tomb of a John Spencer, erected A. D. 1609. It is mostly in a beautiful green-veined marble, but partly in variegated pale red and yellow marble, equally beautiful. One of the church-wardens, who was kind enough to do the honors of the place for me, told me that this tomb as it stands now is the result of restoration; that it was once all painted and gilded. The paint had been laid over this beautiful stone to the thickness of five-eighths of an inch! Since then I have found that British critics have remarked the same desecration. Mr. De Longueville Jones, in his description of a beautiful old country-house in Herefordshire, says, "There was the bachelor's room, a nice little square apartment, about twice as high as it was broad, all panelled in oak, which some Goth of a squire had painted light blue!" And Mr. Jennings, in his delightful *Rambles among the Hills*, just published, describing Charles Cotton's pew in the old church at Alstonfield, says, "It was elaborately carved and of good old oak, but had received a thick coat of green paint at the hands of some barbarian many years before." The taste which covered beautiful veined marble and carved oaken panels with paint was Philistine. The people who sculptured the marble and covered the oak were not Philistines. — *R. G. White in the Atlantic*.

YELLOW-PINE TIMBER. — The very best of yellow-pine timber is not that of greatest density. Pitch-pine is not as good for decks or deck frames as other fine-grained pine from the South. Before the war of 1861 there was a species of yellow-pine grown about Wilmington, N. C., whose specific gravity equalled the best pine on our coast, the mean of which was $.637 = 39$ lbs. 13 oz. when squared; when round and in bark, $.781 = 48$ lbs. 13 oz. The very best yellow-pine timber is that in which the even fineness and firmness of the grain is continued to the centre or pith of the tree, ranging from fifteen to twenty-five grains to the inch. The thinner the sap-wood, the less the specific gravity. There is an error in the prevailing opinion in relation to the durability of yellow-pine timber. Our Government has become a heavy stockholder in this prevailing error, by acting on the supposition that yellow-pine timber requires a great amount of seasoning. The consequence has been that large timber-houses have been erected and filled with this timber, and kept for many years, and when in a state of decay it has been used for new vessels and vessels undergoing repairs. This is a very great mistake; an equal number of months would have answered a better purpose than as many years, as regards the shrinkage and durability of yellow-pine. When in pieces of any considerable size, it shrinks but little after the vessel is in active service; when used as deck plank, they should be made narrow. Our judgment, based upon a large experience, leads us to the conclusion that yellow-pine requires no seasoning to make it durable. The ebb and flow of the turpentine are through the sap, as the specific gravity will show; hence we say that the capillary tubes of the heart would have no more of the resinous property if cut at the proper season than is required for strength and to render it durable. The continued use of yellow-pine timber in the private shipyards of New York has proved it incontestably. We could name ships built in this city more than thirty years ago that have their first yellow-pine beams in their decks; and we could point to others that have exhibited a durability unknown to our navy. Proper care should be taken to clear the timber of all sap; and as regards shrinkage in naval vessels, if the same measures were adopted as in private yards, making strakes of planks narrow, there would be no cause of complaint. The strakes of clamps, deck plank, bulwarks and ceiling of naval vessels are too wide by at least twenty per cent. — *American Ship*.

CARLYLE'S STUDY. — While writing his life of Frederick the Great, Carlyle brought upon himself a vast amount of discomfort, which was none the less real because it had its comic aspects, by fitting up a "study" at the top of his house — "whole area of the house," he says in his "Reminiscences," "to be thrown into one sublime garret-room, lighted from above, thirty feet by thirty, say, and at least eleven feet high; double-doored, double-windowed, impervious to sound, to — in short, to everything but self and work." Unfortunately, in the making of this room, no "good and faithful work was to be had." "The 'work' of planning, to begin with, and then of executing, in all its details, was mere work of Belial, that is, of the Father of Lies; such 'work' as I had not conceived the possibility of among the sons of Adam till then." The result was that his "new illustrious 'study' was definable as the least inhabitable and most entirely detestable and despicable bit of human workmanship in that kind, sad and odious to me very." The "architect" was "really a clever creature," but "swimming as for dear life in a mere 'mother of dead dogs' (ultimately did become bankrupt)," and "his men of all types, Irish hodmen and upwards, for real mendacity of hand, for drunkenness, greediness, mutinous nonadism, and anarchic malfeasance throughout, excelled all experience or conception. Shut the lid on their 'unexampled prosperity' and them, for evermore." — *St. James's Gazette*.

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for (outside the city) cents.]

- 239,311. REFLECTOR.—Charles F. Brush, Cleveland, Ohio.
 239,312. The same.
 239,337. SASH-FASTENER.—Edmund A. Parker, Meriden, Conn.
 239,338. TRANSOM FIXTURE.—Francis V. Phillips, Chicago, Ill.
 239,359. VENTILATOR.—Levi J. Wing, New York.
 239,362. DOOR-HANGER.—Benjamin F. Blye, Syracuse, N. Y.
 239,390. CLAPBOARD-GAGE.—John R. Kivett, Zumbrota, Minn.
 239,392. SHUTTER-BOWER.—Henry Leguay, St. Louis, Mo.
 239,393. ENAMELLING BRICKS.—John D. Logan, Philadelphia, Pa.
 239,408. DOUBLE-LIFT HOIST.—Henry E. Towne & T. W. Capen, Stamford, Conn.
 239,444. LATHE-CHUCK.—Ambrose Chatwin, Brooklyn, N. Y.
 239,451. FIRE-ESCAPE.—Stephen B. Conover, New York, N. Y.
 239,460. TILE AND BRICK KILN.—Eben Davenport, Waynesville, Ill.
 239,472. SMOKE-CONSUMING FURNACE.—Adam C. Engert, Three Mills Lane, Bromley-by-Bow, County of Middlesex, England.
 239,473. APPLIANCE FOR DISTRIBUTING SOUND, ETC.—Adam C. Engert, Three Mills Lane, Bromley-by-Bow, County of Middlesex, England.
 239,499. CALCIMING CEMENT.—Joshua Holmes, Mount Union, Ohio.
 239,512. MEANS OF PREVENTING ESCAPE OF SEWER-GAS FROM WASTE-PIPES.—Willis Knowlton, New York, N. Y.
 239,514. SHEET-METAL WATER-PIPE.—James E. Leadley, Camden, N. J.
 239,529. MORTICE-LOCK CASE.—Eugene M. Mix and James E. Mix, Buffalo, N. Y.
 239,531. DIE FOR CUTTING THE THREAD ON PIPES.—George Murray, Jr., Cambridgeport, Mass.
 239,534. HOUSE.—Gottfried L. Norman, Spartanburg, S. C.
 239,558. FIRE-ESCAPE.—Charles F. Sands, Jr., Nassau, New Providence, West Indies.
 239,572. AUTOMATIC WATER-ELEVATOR.—James H. Taylor, Greenville, S. C.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS.—The following building permits of importance have been issued since the last report:—
 Wm. F. Thiede, 3 two-sty brick buildings, on Eutaw St., between Franklin and Ross Sts.
 Rev. Franklin Wilson, 6 three-sty brick buildings on Vincent St., near Mulberry St.
 T. W. Heath & Co., addition and improvement to building on Grindall St., between Johnson and Williams Sts.
 C. B. Turner, three-sty brick warehouse, 92 Gay St., between Saratoga St. and Falls Ave., 23' x 60'.
 Trustees of Thos. Wilson Sanitarium, three-sty brick building, n e cor. Charles and Saratoga Sts., 48' 6" x 87'.
 J. M. Cone, 3 three-sty brick buildings on Edmondson Ave., near Mount St.
 Rosendale & Co., four-sty brick factory on Frederick St., near Fayette.
 Mrs. Welsenfeld, 2 five-sty brick and stone warehouses, 11 and 13 South Howard St., between German and Lombard, 23' x 105' each.
 Frederick Burger, three-sty brick building on Canton Ave., near Dillon St.
 Bernard Black, two-sty brick building on Canton Ave., near Dillon St.
 A. Weiskettel, 6 two-sty brick buildings on Canton Ave., near Dillon St.
 Mr. W. F. Weber, architect, is preparing drawings for a two-sty addition, 37' x 53', to the Phoenix factory, at Phoenix Station, U. C. R. R., of stone.
STORE.—Mr. Wm. F. Weber is also preparing drawings for a two-sty brick store and dwell., 22' x 24', for Mr. W. L. Stork, on Wilson St., near Madison Ave.; cost, \$2,200.
WAREHOUSE.—The old brick dwelling 46 Hanover St. is being demolished in order to make room for a four-sty brick-and-iron warehouse, 32' x 142'. The building is being erected by Messrs. Newbold & Son.
BANK-BUILDING.—The Western National Bank is to build a new banking-building on the site of the present building, on Eutaw St., near Baltimore. The plans are not yet decided on.
WAGES.—The Journeyman Bricklayers' Society have determined to demand \$3.00 per day, commencing April 18.

Boston.

BUILDING PERMITS.—Brick.—No. 461 Columbus Ave., for Geo. B. Taylor, family hotel, 24' 6" x 80', five stories; Thomas B. White, builder.
 Casanova Place, near Columbus Ave., for N. M. Jewett, family hotel, 68' x 131', five stories; Stephen Moxon, builder.
 Nos. 45-51 Charlestown St., for Francis Fisk, store, 34' x 43', four stories; Alonzo Bowers, builder.

Dartmouth St., cor. Newbury St., for Boston Art Club, exhibition building, 55' x 90', three stories, pitch roof; Norcross Bros., builders.
 No. 282 Roxbury St., for Louis Frang & Co., boiler, engine and dry house, 34' x 38', two stories; Charles Chipman, builder.

Huntington Ave., near Rogers Ave., for New England Merchants' and Mechanics' Institute, exhibition building, 384' x 532', two stories.

South St., near Essex St., for Benj. W. Nichols, store, 32' x 70', five stories, mansard; Webster & Dixon, builders.

South St., cor. Essex St., for Benj. W. Nichols, store, 27' x 85', five stories, mansard; Webster & Dixon, builders.

No. 236 Marlboro St., for Samuel T. Eames, dwell., 25' x 55', three stories; Samuel T. Eames, builder.

Nos. 203-215 Washington St., on estate of Chas. O. Rogers, stores and offices, 72' 2" x 72' 9", six stories; Timothy E. Stuart, builder.

Wood.—No. 6 Murray Ave., for Wm. Donaldson, dwell., 16' x 32', two stories; William Donaldson, builder.

No. 663 East Sixth St., for Edmund C. Coleman, dwell., 22' x 34', two stories.

C St., cor. West Seventh St., for Patrick White, dwell., two store, 22' x 37', three stories; Patrick White, builder.

Bennington St., for Thomas P. McCulpha, dwell., 19' x 25', two stories, pitch; James H. Coffin, builder.

No. 277 Dorchester St., for Wm. Peard, dwell. and store, 25' x 36', three stories, L 12' x 25'; Wm. Peard, builder.

Milmont St., near Elmore St., for Alden Frink, dwell., 24' x 48', two stories; Charles H. Blodgett, builder.

Nos. 648-652 East Sixth St., for Richard and Onville Woodcock, 3 dwells., 20' x 30', two stories, mansard, L 12' x 14'.

No. 53 White St., for John K. Erskine, dwell., 20' 6" x 51', two stories, mansard; Davis Damon, builder.

White St., for John K. Erskine, dwell., 20' 6" x 44' 6", two stories, mansard; Davis Damon, builder.

No. 247 Princeton St., for Wm. C. Hardy, dwell., 22' x 32', two stories, mansard; J. J. Hamilton, builder.

Baker St., near Wild St., for Martin Luther Orphan's Home, barn, 41' x 81', two stories, pitch; John D. Wester, builder.

Mt. Beadon Ave., near Eldon St., for Geo. A. Valentine, dwell., 26' x 34', two stories, pitch, L 21' x 24'; Wm. Hunt, builder.

Pleasant St., for Roger L. Barstow, stable, 20' x 38', one story, hip roof; McNeil Bros., builders.

Perrin St., near Alaska St., for C. H. and W. A. Paine, dwell., 35' x 35', two stories, hip roof, L 20' x 30'.

The following table gives the number of permits issued from the Inspector's office for the first three months of the year:—

Brick	49	Boilers	110
Wood	88	Heating Apparatus ..	42
Special	5	Street permits	238
Repairs	503		
Total	1035		

That the building market is on the increase is shown by the statement that the brick permits for the three months of 1881 are in advance of the corresponding three months of any year since 1874, except 1880. Wood permits are in advance of any year since 1878, except 1880. Permits for repairs, alterations, etc., are in advance of any year, and permits for boilers remain the same. The total number of permits issued is greater than for the corresponding time for any year since the organization of the office.

OFFICE-BUILDING.—The new building on the site of the Joy's building will be a six-sty marble front, for stores and offices. Mr. Fred Pope is the architect.

HOTEL.—Young's Hotel is soon to be enlarged and rebuilt. The old buildings between the hotel and Court St. are to be removed, and a seven-sty marble front building erected. The parlor and dining-room will each be 35' x 100'. There will be four private dining-rooms and some seventy-five additional sleeping-rooms. Two stories more are to be added to the present building.

Brooklyn.

BUILDING PERMITS.—De Kalb Ave., n w cor. Debe voice Place, four-sty brick store; cost, \$12,000; owner, S. T. Payson, 288 Clinton Ave.; architect, F. D. Norris; builders, Thos. Donlon and Morris & Selover.

Bushwick Boulevard, n e cor. Montrose Ave., four-sty frame store; cost, \$7,500; owner and carpenter, L. Bossert, 28 Johnson Ave.; architects, J. Platte and W. Dafeldecker.

Van Buren St., s s, 201' 9" w Throop Ave., 5 two-sty brownstone dwells.; owner, E. V. Isbill, 340 Monroe St.; builder, C. Isbill.

Grand St., Nos. 341 and 343, n s, 70' w Tenth St., 2 four-sty brick stores; total cost, \$10,000; owner, M. Evans; architect, S. F. Covert.

President St., near Van Brunt St., three-sty brick stable; cost, \$4,000; owner, Mr. Kaine, 4 President St.; architect, Geo. Daumen; builder, not selected.

Commercial St., cor. Ann St., three-sty brick warehouse; cost, \$30,000; owners, Havemeyer Sugar Refining Co.; architect, H. C. Havemeyer.

Third Place, n s, 249' w Clinton St., 2 three-sty brownstone dwells.; owner, J. J. Williamson, 25 Third Place; architect, F. C. Jones; builder, F. Carlin.

Evergreen Ave., n e cor. Troutman St., 2 three-sty frame tenements; cost, total, \$7,500; owner, H. Loeffler, 1924 Stockton St.

Tompkins Ave., n w cor. Stockton St., three-sty frame store; cost, \$5,000; owner, Geo. Loeffler, 138 Floyd St.

Hancock St., n s, 220' e Nostrand Ave., 3 three-sty stone dwells.; cost, each \$7,500; owner and builder, Geo. Phillips.

Hewes St., n s, 200' e Lee Ave., 10 three-sty stone dwells.; owner and builder, J. F. Ryan, 142 Rodney St.

ALTERATIONS.—Forrest St., near Bushwick Ave., four-sty brick extension; cost, \$16,000; owner, Rudolph Lipsius, on premises; architect, Chas. Stoll.
 Clinton Ave., No. 477, one-sty brick extension; cost, \$3,000; owner, J. C. Hutchinson, on premises; architect, S. Evelet; builder, J. J. Quinn.

Chicago.

BUILDING PERMITS.—W. Shaefer, two-sty brick dwell., 24' x 60', 1089 West Twelfth St.; cost, \$4,500.

K. Hierholzer, two-sty brick dwell., 22' x 60', 2700 Shields St.; cost, \$3,500.

J. Lafens, three-sty brick dwell., 22' x 72', 2702 South Park Ave.; cost, \$7,000.

Joseph Sack, two-sty brick dwell., 24' x 56', 3139 Harmon St.; cost, \$3,000.

W. Case, two-sty brick dwell., 21' x 50', 15 Ann St.; cost, \$3,500.

R. Platt, two-sty brick dwell., 22' x 44', 274 Leavitt St.; cost, \$3,500.

D. Cameron, two-sty brick shop, 19' x 50', 14 Quincy St.; cost, \$2,500.

G. W. Adams, two-sty brick dwell., 23' x 58', 3202 Indiana Ave.; cost, \$5,000.

J. Hadel, two-sty brick store and dwell., 24' x 62', 3638 Halsted St.; cost, \$3,500.

C. Hanson, two-sty brick dwell., 22' x 42', 624 Robey St.; cost, \$2,500.

A. Martziller, two-sty brick dwell., 22' x 50', 641 North Franklin St.; cost, \$3,000.

BUILDING PERMITS.—Chisholm Bros., two-sty brick stores, 50' x 100', 64 and 66 Clinton St.; cost, \$8,000.

J. Sleder, two-sty brick dwell., 18' x 60', 2125 Vernon Ave.; cost, \$3,000.

M. F. Tuley, three-sty brick store, 27' x 189', 158 West Monroe St.; cost, \$7,500.

G. W. Straight, two-sty brick factory, 75' x 100', Centre Ave., near Twenty-Second St.; cost, \$4,000.

Thomas Power, two-sty brick store and dwell., 25' x 65', 2925 Archer Ave.; cost, \$5,500.

A. Schubert, two-sty brick dye-house, 25' x 80', 360 Sedgwick St.; cost, \$2,500.

W. C. Loebenstein, four-sty brick warehouse, 100' x 100', Michigan and La Salle Sts.; cost, \$26,000.

Mrs. — Kilnert, 3 three-sty brick dwells., 40' x 60', 147 to 149 North Halsted St.; cost, \$10,000.

J. Lamson, two-sty brick dwell., 29' x 60', Grand Boulevard and Thirty-Seventh St.; cost, \$12,000.

Henry Rehn, two-sty brick dwell., 22' 6" x 49', 624 Wells St.; cost, \$5,000.

Aug. Dethmann, two-sty brick store and dwell., 25' x 75', 1126 Milwaukee Ave.; cost, \$5,000.

A. Bauer, four-sty brick store, 20' x 72', 424 La Salle St.; cost, \$8,000.

GRAIN ELEVATOR.—The old Rock Island elevator is being torn down, to be replaced by a new one, planned by Mr. Baumann, which will be 85' x 355', will have a capacity of 1,500,000 bushels, and will cost \$300,000.

STORE.—Mr. Rothschild is building a five-sty store for himself, 50' x 180', on the site of the American Express Building; cost, \$70,000.

Cincinnati.

BUILDING PERMITS.—The following building permits have been issued since our last report:—

John Kennedy, double brick, cor. of Scott and Powell Sts., 8 rooms each; cost, \$4,000.

Henry Mixall, repairs on frame house; cost, \$700.

Frank Sievers, brick house, 3 rooms, on Fifth St.; cost, \$7,000. Also brick house on Sixth St.; cost, \$2,550.

Cleveland.

STORES.—Mr. Charles Body is to build a block of 4 stores on Garden St., from plans by Mr. L. P. Eldridge.

Block of stores, cor. Broadway and Hamlet St.; cost, \$8,000; Walter Blythe, architect.

Store for F. Holtworth, Woodland Ave.; cost, \$3,500; W. Blythe, architect.

Messrs. Coburn & Barnum are the architects of stores for J. B. Perkins, Seneca St., cost \$20,000; stores, offices and power building, J. B. Perkins, Seneca and Frankfort Sts.; cost, \$80,000.

HOUSES.—Mr. L. P. Eldridge is to build a two-sty brick house for Mr. H. Neidlinger.

Mr. Truman Dunham will build on Euclid Ave. a stone house, 58' square; cost, \$30,000; C. H. Griese, architect.

Messrs. Blackburn & Charlot are the architects of a house for Stephen Howland, on Fifth Ave.; cost, \$7,000.

Dwell., for H. P. McIntosh, Superior St.; cost, \$3,500; W. Blythe, architect.

Dwell., for Fred. Diebolt, on Willson Ave.; cost, \$10,000; W. Blythe, architect.

Four houses for Felix Nicola; cost, \$3,500 each; W. Blythe, architect.

Residence for Geo. Warrington, cor. Franklin and Pearl Sts.; cost, \$4,000; W. Blythe, architect.

Messrs. Coburn & Barnum, architects, have in hand:—

Stone house for H. H. Little, on Euclid Ave.; cost, \$20,000.

Stone and frame house, Dr. N. Schnieder, Prospect St.; cost, \$10,000.

Frame house, for Judge S. E. Williamson, Prospect St.; cost, \$7,000.

Brick and frame house for L. McBride, Euclid Ave.; cost, \$10,000.

Frame house, for J. H. McBride, Euclid Ave.; cost, \$10,000.

Double stone dwell., for Geo. P. McKay, Prospect St.; cost, \$12,000.

Frame dwell., for F. A. Wyman, Fifth Ave.; cost, \$2,500.

Three frame tenements, detached, for I. P. Lamson, Jennings Ave.; cost, \$2,500 each.

Four frame tenements, detached, for W. J. Gordon, Arlington Court; cost, \$2,500 each.

MARONIC TEMPLE.—Cor. Superior and Bond Sts., stone, 85' x 200'; cost, \$150,000; Walter Blythe, architect.

Milwaukee.

THE OUTLOOK.—Five months solid winter has deterred all building operations in this city for that

(Continued on next page.)

Publishers' Department.

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lishers, either by draft or post-office order.JAMES R. OSGOOD & CO., Publishers,
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New Advertisements.

W. & J. SLOANE (New York), Art in Carpets. I.
ROBERT COLGATE & CO. (New York), Atlantic
White Lead and Linseed Oil. Page vi.
H. Q. FRENCH (New York), Granite. Page i.
E. VAN NOORDEN (Boston), Patent Ventilators and
Chimney Caps, and Hayes Patent Skylights. xi.
SOMERSET & LITTLE (London), Designs. Page 3.
A. C. KEENEY, CLARK & CREQUE (New York),
Copper Work. Page iii.
WELLINGTON & BURRAGE (Boston), Household
Art Rooms. Page i.
OHIO BUILDING STONE CO. (Cleveland, O.), Stone. I
K. S. GROVES & STEEL (Philadelphia, Pa.), Stained
Glass. Page ii.
EDWIN A. JACKSON & BRO. (New York), Heat-
Saving and Ventilating Grate. Page vi.
U. S. PATENT AND PROMOTING CO. (New York),
Important. Page 180.
ARTHUR E. RENDLE (New York), Patent Glass
Roofing. Page ii.
FIRE-PROOF BUILDING CO. (New York), Fire-
Proof Buildings. Page i.
EDWARDS & CO. (New York), Electric Bells, An-
nunciators, etc. Page vii.
ELLIOT & GOODWIN (New York), Decoration. vi.
WANTED. — Draughtsman. Page 180.

VENTILATORS.

The attention of our readers is directed to the
advertisement on another page of Van Noorden's
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so efficient in action as to find favor with numerous
architects and mill-owners, and as a consequence
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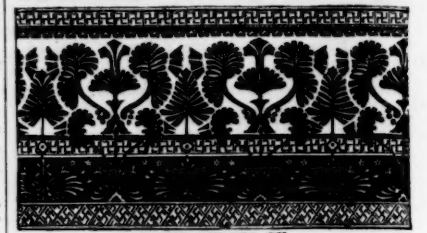
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BUILDING INTELLIGENCE.

length of time, and about four feet of snow on the
ground at present is not a very promising outlook
for an early beginning. A number of permits have
been issued by the Board of Public Works during
the month of March, for small buildings mostly, and
building will be active as soon as the snow disap-
pears.

BUILDING PERMITS. — The following is the list of the
most important permits granted: —

N. Ludwig, frame dwell., Jefferson St.; cost,
\$5,000.
Wm. Rilger, frame dwell., Jefferson St.; cost,
\$5,000.
C. Schuknecht, frame dwell., Greenbush St.; cost,
\$3,500.
J. Wandergue, frame dwell., Eighteenth St.; cost,
\$3,000.
C. Shuknecht, brick store, Third St.; cost, \$11,000.
C. Shuknecht, brick store, Wells St.; cost, \$14,000.
Wm. Rilger, ice-house, Walnut St.; cost, \$30,000.
C. Luuzeman, addition to brewery, Cherry St.;
cost, \$20,000.

New York.

BUILDING PERMITS. — Twenty-Third St., Nos. 367 and
369 w, 2 five-sty brownstone tenements, 28' 4" x 101';
cost, each \$20,000; owner, C. H. Raymond, 103 Reade
St.; architect, G. W. Da Cunha; builder, Jno.
Smith.

One Hundred and Twenty-Sixth St., n s, 250' w
Fifth Ave., 4 three-sty brownstone dwells., 17' 6" x
20' x 50'; cost, each \$10,500 and \$12,000; owner,
C. E. Van Tassel, One Hundred and Forty-Ninth St.
and Mott Ave.; architect, C. Baxter; builder, I. G.
Van Tassel.

Bowery, No. 243, five-sty brick-and-iron store, 24'
8" x 69'; cost, \$20,000; owners, Trustees Roosevelt
Hospital, 22 East Sixteenth St.; architect, J. G.
Fragus.

First Ave., cor. One Hundred and Twenty-Third
St., four-sty brick store and tenement, 24' x 52';
cost, \$11,000; owner, Joseph Murray, 315 East One
Hundred and Sixteenth St.; architect, A. Spence.

First Ave., Nos. 2386, 2400 and 2402, near One Hun-
dred and Twenty-Third St., 3 four-sty brick tenement-
ments, 19' and 19' 11" x 52'; cost, each \$9,000; owner,
Joseph Murray, 315 East One Hundred and Sixteenth
St.; architect, A. Spence.

First Ave., No. 2388, four-sty brick store and tenement,
19' x 52'; cost, \$9,000; owner, Joseph Murray,
315 East One Hundred and Sixteenth St.; architect,
A. Spence.

One Hundred and Twenty-Third St., s s, 53' e
First Ave., 3 four-sty brick tenements, 18' x 52'; cost,
each \$9,000; owner, Joseph Murray, 315 East One
Hundred and Sixteenth St.; architect, A. Spence.

New St., Nos. 42 and 44, seven-sty brick office-
building, 44' and 50' x 50'; cost, \$20,000; owner, Mr.
Livingston, Hyde Park; architect, M. C. Merritt.

One Hundred and Twenty-Eighth St., n s, 100' w
Seventh Ave., 3 three-sty brownstone dwells., 16' 8" x
50'; cost, each \$8,000; owner, W. M. Reynolds, 76
West One Hundred and Thirty-First St.; architect,
T. S. Godwin; carpenter, J. B. Smith.

Seventy-Sixth St., s s, 125' w Third Ave., 2 four-
sty brownstone apartment-houses, 25' 8" x 80'; cost,
each \$14,000; owner, Fred. W. Styles, 350 East Sixty-
Second St.; architect, S. M. Styles.

BUILDING INTELLIGENCE.

Forty-Fourth St., n s, 100' w Eighth Ave., four-sty
brick apartment-house, 25' x 71'; cost, \$12,000; owner,
A. Quinne, 110 West Fortieth St.; architects, Smith
& Howe.

Seventy-Sixth St., s s, 225' w Second Ave., 3 four-
sty brownstone flats, 25' x 60'; cost, each \$15,000;
owner and builder, Robert Stone, 124 West Fifty-
Fourth St.; architect, J. H. Valentine.

Madison Ave., n w cor. Twenty-Eighth St., seven-
sty brick-and-stone flat, 50' and 74' 11" x 91'; cost,
\$18,000; owners, P. G. Hubert, et al., 1251 Broad-
way; architects, Hubert, Pirson & Co.

Fifty-Ninth St., s s, 100' e First Ave., six-sty brick
factory, 50' x 100'; cost, \$25,000; owners, Mathew and
James Baird, 306 East Fifty-Seventh St.; architect,
A. B. Ogden.

Greene St., Nos. 93, 95, 97, and 99, 3 six-sty iron
stores; cost, each \$30,000 and \$40,000; owner, David
L. Einstein, 14 and 16 White St.; architect, Henry
Fernbach; builders, Amos Woodruff's Sons.

Fifty-Eighth St., s s, 200' e Tenth Ave., 5 five-sty
stone tenements; cost, each \$15,000; owner, Wm. F.
Burroughs, 152 Broadway; builder, K. Shaw.

Fifty-Fifth St., Nos. 132 and 134 w, 2 two-sty brick
stables and dwellings; cost, each \$6,500; owner, A. H.
Barney, 82 Broadway; builders, L. N. Crow and Mc-
Guire & Sloan.

Pier No. 1, North River, two-sty iron shed, 75' x
416'; cost, \$54,000; owner, Iron Steamboat Co., 26
Broad St.; architect, L. B. Valk; builder, Iron
Steamboat Co.

One Hundredth St., s s, 67' 6" w Ninth Ave., 2 two-
sty brick dwells.; cost, each \$3,500; owner, Mrs.
Mary Diersen, Ninth Ave., s w cor. One Hundred
and Fifth St.; architect, R. S. Townsend.

Franklin St., No. 173, three-sty stone fire-engine
house; cost, \$14,000; owner, City New York; archi-
tect, N. Le Brun & Son.

Fortieth St., No. 216 e, three-sty brick fire-engine
house; cost, \$12,000; owner, City New York; archi-
tects, N. Le Brun & Son.

Oliver St., No. 35, cor. Madison St., five-sty brick
tenement; cost, \$13,000; owner, John Meyer, on
premises; architect, Wm. Jose.

One Hundred and Third St., n s, 82' e Third Ave.,
four-sty brick dwell., 30' x 40'; cost, \$6,000; owner,
Peter Asten, 208 East Thirty-Second St.; architect,
Bart Walther.

Kingsbridge Road, n w cor. One Hundred and Fift-
y-Seventh St., frame dwell.; cost, \$5,000; owner, W.
W. Mills, Tenth Ave., One Hundred and Fifty-Sixth
St.; architect, C. Baxter.

ALTERATIONS. — Pearl St., No. 369, centre wall re-
moved, etc.; cost, \$4,000; owner, Edward B. Cobb,
111 Broadway; architect, Mr. Ostrander; builders,
W. Carsey and W. Stafford.

Madison Ave., No. 276, raised one story, mansard;
also two-sty extension, 14' x 16' 6"; cost, \$5,000;
owner, Joseph L. Luddington, on premises; archi-
tect, H. R. Marshall.

Lexington Ave., No. 305, two-sty brick extension;
cost, \$4,000; owner, S. L. Cohen, 305 Lexington Ave.;
architect and builder, C. Buek.

Williams St., Nos. 33 and 35, elevator shaft, etc.;
cost, \$16,000; owner, Bank State New York, 35 Wil-
liam St.; architects, O. P. & R. F. Hatfield; builders,
Robinson & Wallace and Haight & Monnia.

Hudson St., Nos. 630 and 632, one-sty brick exten-

BUILDING INTELLIGENCE.

sion, etc.; cost, \$6,000; owner, Hugh King, 450 Green
wich St.

New St., Nos. 30 and 34, and No. 38 Broad St.,
raised one story; cost, \$7,500; owners, Charter Oak
Life Ins. Co., 71 Broadway; builders, Morton & Ches-
ley.

Seventh Ave., No. 41, raised one-half story, front
and interior alterations; cost, \$6,000; owners, How-
eustine Bros., care of W. Jose, architect.

Thirty-Fourth St., No. 108 w, five-sty brick exten-
sion; cost, \$3,500; owner, Jos. Thompson, 256 West
Fifty-Second St.; architect, J. E. Terhune; builders,
E. Vreeland and — Wm. Dorn.

Allen St., No. 26, raised one story, front altera-
tions, etc.; cost, \$4,000; owner, Wm. E. Waring, 62
Bowery; builder, Julius Poeschke.

Seventy-Eighth St., s s, 100' w Fourth Ave., four-
sty brick extension; cost, \$13,000; owner, John
Webb, 72 East Seventy-Eighth St.; architect, A. B.
Ogden.

LABOR MARKET. — Wages are now in a precarious
condition, and it is not possible to give correct quot-
ations. Within a few days it is expected that rates
will be fixed for the season. The masons have ar-
ranged from the 1st April to 1st December at \$3.50
per day.

CLUB-HOUSES. — The Knickerbocker Club has pur-
chased the Moller property, on the n e cor. of Fifth
Ave. and Thirty-Second St., for \$200,000, and pro-
poses to build thereon a new club-house.

The Liederkranz Society have voted to build on
Fifty-Eighth St., near Fourth Ave., on land costing
\$70,000, a new club-house, to cost about \$100,000.

ADDITION. — Mr. Geo. E. Harding has prepared plans
for an addition to residence No. 10 Lexington Ave.
HOUSE. — A house for Mr. Sloane is to be built from
designs of Mr. R. H. Robertson.

OFFICE-BUILDING No. 41 Broadway will be torn down
May 1st, and a new building erected.

STORE. — A six-sty iron front store, 40' x 100' is to be
built at Nos. 37 and 39 Green St., from designs of
Messrs. Lamb & Wheeler.

Philadelphia.

BUILDING PERMITS. — Norris St., between German-
town Road and Sixth St., two-sty store, 15' x 30';
Geo. Graul, owner.

Twelfth St., n Diamond St., 33 three-sty dwells.,
16' x 60'; H. R. Shoch, owner.

Dickinson St., w Twenty-First St., 2 three-sty
dwells., 14' x 28'; W. E. Tenbrook, owner.

Fortieth St. and Ludlow Ave., three-sty dwell., 25'
x 42'; W. Bunch, Jr., contractor.

Fifth and Hoffman Sts., two-sty dwell., 16' x 52';
Aug. Schriber, contractor.

Centre St., No. 279, two-sty weave-shop, 17' x 24';
Henry White, owner.

Twentieth and Dickinson Sts., two-sty store and
dwell., 16' x 54'; A. G. McElwee.

Nineteenth and Wharton Sts., 2 three-sty dwells.,
15' x 44'; Jno. McConaghy, contractor.

Jefferson St., No. 1017, three-sty dwell., 24' x 26';
Frank Gilbert, contractor.

Darrah St., w Webster St., 2 two-sty dwells., 17' x
42'; A. Shinkle, owner.

Columbia Ave., w Merrine St., three-sty store and
dwell., 16' x 55'; Geo. Weidner.

(Continued on next page.)